# 3.5 Fish and Wildlife

## 3.5.1 Sources of Information

Primary sources of information related to habitat, fish, and wildlife include:

- Site-specific biological resource surveys conducted in September 1998 and October 1999 by the applicant's consultants (Dames & Moore and Black & Veatch)
- Scientific literature (as cited)
- Interviews with local biologists
- Species lists provided by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service
- Aerial photos (dated August 17, 1998)
- Topographic maps (Bellingham North, Bertrand Creek, Blaine, Kendall, Lawrence, Lynden, and Sumas quadrangles 7.5 minute series)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species maps
- The ASC for the Sumas Energy 2 Generation Facility (Sumas Energy 2 et al. 2000)

## 3.5.2 Existing Conditions

### *3.5.2.1 Overview*

The project area is located within northern Whatcom County, which is a relatively flat, agricultural lowland containing cropland and pasture interspersed with dense patches of forest and streamside vegetation. Homes, farms, and light industry are scattered throughout the landscape, connected by a wide range of county roads and highways. Many of the smaller roads form a grid-like pattern typical of farming country. Residential uses are concentrated near the urban centers of Sumas, Lynden, Bellingham, and Abbotsford, B.C.

Within the project area, fish are associated with the larger streams and rivers, most notably the Nooksack and Sumas Rivers and Sumas Creek. Several other creeks, as well as wetlands, seasonal drainages, and uplands, are also considered an element of fish habitat because of the critical role these areas play in water quality and water supply, and in performing other ecological functions (such as contributing woody debris for habitat structure).

Salmon and trout are the most important fish in this area. Coho salmon, chum salmon, coastal cutthroat, steelhead trout, and native char (bull trout and Dolly Varden) are known or expected to inhabit many of the creeks and streams. Pink salmon and the threatened Puget Sound chinook salmon are also present within the Nooksack River. (Note: Scientific names for fish and wildlife species are listed in Appendix E; common names are used in the text for readability.)

The area supports relatively diverse wildlife populations. Common wildlife includes small mammals (moles, voles, shrews, and mice), raccoons, skunks, black-tailed deer, and opossum. Muskrats, beavers, mink, and river otters may be found along the banks of the streams and the Sumas and Nooksack Rivers.

Large flocks of waterfowl and shorebirds are common during spring and fall migration as well as during winter. Trumpeter swans and sandhill cranes also winter in the area. Several birds of prey are also common in the area, including red-tailed hawk, northern harrier, American kestrel, great horned owl, and bald eagle. Forested and shrubby habitats provide nesting and feeding sites for a wide range of song birds.

#### *3.5.2.2 Key Species and Habitats of Concern*

To incorporate local species of concern, as well as consistency with local environmental review, this assessment focuses on Whatcom County Code, 16.16.710 critical areas (Sumas does not have a separate critical areas ordinance). This ordinance defines the following types of areas as key areas of environmental review for fish and wildlife (referred to collectively as fish and wildlife habitat conservation areas):

A. Areas with which listed species have a primary association (meaning species officially designated by the WDFW and/or USFWS as endangered, threatened, sensitive, or candidate)

B. Habitats and species of local importance

C. Shellfish habitat conservation areas

D. Kelp and eelgrass beds, Pacific herring spawning areas

E. Surf smelt and Pacific sand lance spawning areas

F. Ponds and wetlands

G. Lakes and marine water bodies

H. Rivers and streams

I. Natural area preserves (Ord. 97-056 § 1)

Of these, categories A (listed species), B (habitats and species of local importance), F (Ponds and Wetlands), and H (Rivers and Streams) are present in the project area.

### *Listed Species and Species of Local Importance*

Table 3.5-1 lists species and habitats known or assumed to be present in the project area and potentially affected by project construction and/or operation. Table 3.5-2 lists species evaluated but determined to be absent (or potentially present, but for which no sensitive, primary and/or limiting habitat is present).

### *Ponds and Wetlands (as Fish and Wildlife Habitat)*

Ponds and wetlands are described in Section 3.4. Most of the wetlands have been greatly altered due to agriculture and other human activities. Still, these wetlands may support some amphibians as well as marsh-associated birds (e.g., marsh wren, red-winged blackbird). Wetlands I, J, K, and L contain shrubby and/or forested habitat that provide habitat for more diverse wildlife communities, including larger mammals (e.g., mink).

Other wetland functions and values are described in Section 3.4.

### *Rivers and Streams*

The project area includes numerous drainage ditches. The most notable rivers and streams in the project area are as follows:

- Johnson Creek, Bone Creek, and the Sumas River (within the proposed natural gas pipeline route)
- Sumas Creek (within the proposed sewer and water pipeline routes and the 230 kV S2GF to Canadian border electrical transmission line)

Table 3.5-3 describes the location of rivers and streams crossed by project features. Appendix E lists in detail the fish species present and salmonid habitat of those streams.

**Table 3.5-1: Special Status Species Likely to be Present within the Proposed Project Area**

| Species | Status* | Key Habitats of Concern | Key Habitat Present within Affected Environment |
|---|---|---|---|
| Bald eagle | FT, SC | Nests/roosts<br>Perch trees<br>Concentrated foraging<br>Open fields | Nest located 1/8 mile west of transmission line in the Johnson Creek area<br>Nest located 1 mile north of natural gas pipeline and 1 mile east of the plant site along the Sumas River<br>Occasional foraging throughout area |
| Bull trout | FT | Rivers/streams where present, associated riparian areas and contributing waters | Occasional Bull Trout in Bertrand and Fishtrap Creeks<br>Potential rearing in Johnson and Sumas Creeks |
| Chinook salmon | FT, SC | Rivers/streams where present, associated riparian areas and contributing waters | Documented in Nooksack River basin and independent drainages<br>Use the Nooksack River in the project vicinity as a migration corridor<br>Fall-run spawn in the north fork of Dakota Creek<br>Planted, but sustaining population not documented in Squalicum Creek |
| Coho salmon | FC | Rivers/streams where present, associated riparian areas and contributing waters | Rear young in Johnson and Sumas Creeks<br>Spawn in Sumas Creek, upper Johnson Creek, the north fork of Johnson Creek, and tributaries north of the project<br>Rear young in Bone Creek in the vicinity of the pipeline<br>Sumas River is a migration corridor to spawning |
| Pacific lamprey | FSC | Rivers/streams where present, associated riparian areas and contributing waters | Species is known to spawn and rear in the Sumas River and Nooksack River basins<br>Likely to spawn and rear young in all of streams in the vicinity of the project area<br>The status of populations in project area streams and rivers is unknown at this time, no Pacific lamprey have been sampled in the project area |
| River lamprey | FSC, SC | Rivers/streams where present, associated riparian areas and contributing waters | No river lamprey have been sampled in the project area<br>Species is known to spawn and rear in the Sumas and Nooksack River basins<br>River lamprey are likely to spawn and rear in the lower reaches of all of the larger streams in the vicinity of the project area<br>The status of river lamprey populations in project area streams and rivers is unknown at this time |

| Species | Status* | Key Habitats of Concern | Key Habitat Present within Affected Environment |
|---|---|---|---|
| Vaux's swift | SC | Chimneys for roosting<br>Forested areas for roosting and nesting | Roost in large numbers in the chimney of the old Sumas Customs Building near the proposed sewer line (WDFW 1998b and WDFW 1999)<br>Suitable roosting and nesting sites, in the forested areas, are scarce within the project area |
| Western toad | FSC, SC | Wetlands, particularly ponds and small lakes | Not reported in areas but potentially present |
| Red legged frog | WCSLI | Streams and forested wetlands with dense ground cover<br>Deep, still or slow moving water | Likely present throughout project area, particularly near wetlands |
| Band-tailed pigeon | WCSLI | Coniferous or mixed coniferous forests | Documented foraging near agricultural fields, wetlands, and river bars in the vicinity of the Sumas River all summer<br>Also documented to use a mineral spring site in an abandoned gravel pit near East Pole Road |
| Mink | WCSLI | Associated with wetlands and streams | Likely fairly common throughout the project area |
| Pileated woodpecker | WCSLI | Mature forests with snags and woody debris | Present within forested areas of the project vicinity |
| Trumpeter swans | WCSLI | Agricultural fields<br>Shores of inland lakes | Use farm fields as wintering areas near two sites, one just northeast of the Everson City limits and the other northwest of the intersection of Noon and East Pole Roads |
| Great blue heron | WCSLI | Rivers, marshes, ditches | Common in the area and likely forage along proposed project activity areas<br>No nesting areas are near where the project activities would occur |

* Status categories:
FT- Federally threatened species
SC- State candidate species
FC- Federal candidate species
FSC- Federal species of concern
WCSLI- Whatcom County Species of Local Interest

**Table 3.5-2: Special Status Wildlife Species Evaluated and Found Likely to be Absent within the Proposed Project Area**

| Species | Status* | Key Habitats of Concern | Key Habitat Present within Affected Environment |
|---|---|---|---|
| Cascade frog | FSC | Aquatic, marshes, forested wetlands, small ponds and lakes<br>Elevations above 2000 feet | Project below lower elevation limits of species and outside of reported range |
| Long-eared myotis | FSC | Roosts in caves, buildings | Foraging habitat and open water is available, however, no prime roosting or hibernating habitat is present within areas that would be disturbed |
| Long-legged myotis | FSC | Winter hibernacula in caves and mines | Possible maternity and solitary roosting sites are limited to older trees located in the forests adjacent to the plant site, near the transmission line, and along streams and the Sumas River<br>Caves and mines used for hibernation are not present |
| Olive-sided flycatcher | FSC | Large forest patches near open areas, burns, or water bodies | Possible nesting in the small forest patches and foraging in forests and open fields near and within the project area |
| Pacific Townsend's big-eared bat | FSC, SC | Only roost from walls and ceilings<br>Requires large open space for flight in the roost | No typical roost sites (caves, mines, or old abandoned buildings) are available in the project area<br>Foraging and drinking opportunities are the same as for long-eared bats |
| Tailed frog | FSC | Inhabit cold, rocky mountain streams in the Cascade and Olympic Mountains | Streams are not suitable for this species (requires rocky-bottomed mountain streams) |
| Sandhill crane | WCSLI | Open habitats, fields, large marshes, and shallow water marshes with emergent vegetation | Staging area for spring migration in farm fields between Squaw Creek and the Kamm Ditch, about a mile south of proposed transmission line |
| Black-crowned night heron | WCSLI | Nest trees near water<br>Wooded swamps and ponds | Project area is outside of documented distribution range |

* Status categories:
SC- State candidate species
FSC- Federal species of concern
WCSLI- Whatcom County Species of Local Interest

**Table 3.5-3: Waterway Crossing Locations**

| Waterway Name | Stream Crossing Numbers[1] | Tributary to | Associated Wetlands[2] | RM[3] |
|---|---|---|---|---|
| **S2GF TO CANADIAN BORDER OVERHEAD TRANSMISSION LINE WATERWAY CROSSINGS** | | | | |
| **Sumas River Basin** | | | | |
| Sumas Cr. | C-S1 | Chilliwack R. | C-W1 | 0.4 |
| **S2GF TO CANADA SEWER LINE WATERWAY CROSSINGS** | | | | |
| **Sumas River Basin** | | | | |
| Sumas Cr. | S-S1 | Chilliwack R. | S-W1 | 0.2 |
| **S2GF TO CANADA GAS LINE WATERWAY CROSSINGS** | | | | |
| **Sumas River Basin** | | | | |
| Johnson Cr. | G-S1 | Sumas R. | A-W28 | 1.9 |
| Bone Cr. | G-S2 | Sumas R. | L | 0.9 |
| Sumas R. | G-S3 | Chilliwack R. | I | 3.0 |

1. Sumas Energy 2 et al. (2000) stream crossing number.
2. Wetlands associated with crossings of streams are identified by a Dames & Moore wetland number. None of these wetlands provides fish rearing habitat.
3. The location of each waterway crossing is given in River Miles (RM) obtained from the Williams, et al., 1975. Several ditches not mapped in Williams, et al., 1975 were not assigned stream numbers and were given approximate RM locations. The Sumas River basin was not included in Williams, et al., 1975 and, as a result, Sumas River basin crossings are also assigned approximate RMs

### *3.5.2.3 S2GF Site*

The S2GF site has undergone intense agricultural activity and artificial drainage with ditches and drain tile. The majority of the site (27.5 acres) is idle cropland that has produced corn and possibly other crops. Open cropland is common in the area and is used for foraging by many species of wildlife.

Waterfowl are expected to use the site during migration and wintering periods. The site is likely used by foraging red-tailed hawks and northern harriers, which feed on small mammals (voles, moles, and mice) and snakes common within croplands. Bald eagles may also occasionally use the site for foraging. Pacific tree frogs are expected to be common in this area and likely use the field during spring for courtship and feeding. Drainage ditches and nearby wetlands are likely to be used by Pacific tree frogs for breeding. American crows are also common in the area and are likely to use the site.

The 8.8-acre forested wetland immediately west of the proposed site (Section 3.4) provides habitat suitable for amphibians, as well as a variety of breeding birds. Red-tailed hawks are expected to occasionally perch within the cottonwoods, and bald eagles may perch in this location as well.

### *3.5.2.4 Natural Gas Pipeline*

The gas and transmission line corridors lie almost entirely in existing easements that have been previously cleared as road ROW or to accommodate existing sewage and water lines. As a consequence, the upland vegetation in both corridors is subject to occasional or regular maintenance in the form of mowing, trimming, and/or chemical treatment.

While forested lands occur in the region, the easements in which the transmission lines are to be located have been cleared and in most cases provide adequate space for the construction and operation of the lines. The existing vegetation in these areas is typically composed of shrubs, grass, and herbaceous vegetation. The following is a brief description of the vegetation communities occurring in or immediately adjacent to the plant site, gas line, and transmission corridors.

The natural gas pipeline route is mapped in Figure 3.4-2. Wetland and waterway locations are also mapped in this figure. Wetland locations along the proposed corridor are described in Appendix C.

The majority of the proposed natural gas lines would be constructed within agricultural areas dominated by corn and hay fields. Wildlife use is expected to be similar to that described for the plant site.

The natural gas pipeline route would cross under Johnson Creek, Bone Creek, and the Sumas River at crossings G-S1, G-S2, and G-S3. Waterway locations along the proposed corridor are given in Table 3.5-3. Fish presence and fisheries habitat at waterway crossings are described in detail in Appendix E.

These stream crossings occur in agricultural fields with reed canarygrass the dominant streambank vegetation. A 10- to 30-foot-wide hedge of Himalayan and evergreen blackberry starting approximately 5 to 10 feet from the edge of the channel lines the edge of the streams. A small amount of canopy cover is provided by scattered deciduous trees such as red alder, big-leaf maple, paper birch, and willows occurring primarily as individuals or small patches.

Deciduous trees are found in scattered patches along Johnson Creek, Bone Creek, and the Sumas River. Red alders and a big-leaf maple border Johnson Creek at the natural gas pipeline crossing location. Pacific willow, Scouler's willow and red alder provide habitat and cover at the Bone Creek crossing location. Trees found near the Sumas River crossing include paper birch and pacific willow.

These streams and the Sumas River provide resting, breeding, cover, and foraging areas for a variety of waterfowl, songbirds, raptors, mammals, amphibians, and fish.

One salmonid Evolutionarily Significant Unit (ESU) and one salmonid Distinct Population Segment (DPS) in the project area have been listed as threatened under the Endangered Species Act (ESA). These are the coastal/Puget Sound bull trout DPS and the Puget Sound chinook salmon ESU. In addition, the Puget Sound coho salmon ESU is a candidate for federal listing and Pacific lamprey and river lamprey are federal species

of concern. The status of both species of lampreys in the project area is unknown, but they may occur in all streams crossed by the natural gas pipeline.

The channel of Johnson Creek at the pipeline crossing is approximately 16 feet wide and 2 feet deep at normal high water with a substrate composed of approximately 10 percent gravel and 90 percent sand. The creek has less than a 1 percent gradient. Johnson Creek had a 3- to 4-cubic feet/second (cfs) flow of clear water at the time of the survey and juvenile salmonids were observed. The creek flows through numerous channels separated by aquatic vegetation. Undercut banks provide good habitat for rearing salmonids. Coho salmon, chum salmon, steelhead trout, and coastal cutthroat trout spawn in the headwaters of Johnson Creek and rear in the area of the pipeline crossing. Johnson Creek is one of the major coho salmon producers in the Sumas River basin. Both resident and sea-run forms of coastal cutthroat trout are found in Johnson Creek. Bull trout and Dolly Varden may enter the Sumas River basin, but water temperatures are probably too high for reproduction to occur (Kraemer 1998). Bull trout and Dolly Varden are managed as "native char" by the Washington Department of Fish and Wildlife.

Bone Creek may provide habitat for coho salmon and coastal cutthroat trout, but at the time of the survey, no flow was present at the site of the pipeline crossing. The water in the 4-foot-wide channel was approximately 1 foot deep, stagnant, and completely covered with duckweed. The substrate of the stream is composed of fine organic debris. No fish were observed at the time of the survey.

The channel of the Sumas River at the pipeline crossing was approximately 20 feet wide and 1 to 2 feet deep at the time of the survey with a substrate composed of sand and silt. The river has less than a 1 percent gradient. The streambanks slope gradually with no undercutting, the streambed is heavily graded with little channel complexity, and there is no large woody debris to add structure. No fish were observed at the time of the survey and it is unlikely that this portion of the river provides spawning or rearing habitat for salmonids. Coho salmon, chum salmon, steelhead trout, and cutthroat trout use this section of the river as a migration corridor between spawning and rearing areas and for smolt migration. Native char and lamprey may also use this reach as a migration corridor.

### *3.5.2.5 Sewer and Water Pipelines*

An existing water pipeline would be used except for one 300-foot segment from Front Street to Bob Mitchell Avenue, and a second segment to connect the plant site with the existing water pipeline parallel to Bob Mitchell Avenue. The sewer pipeline is to be installed parallel to existing paved city roads. The sewer line is mapped in Figure 3.4-2.

Because the proposed water and sewer pipelines would be installed in previously disturbed areas, wildlife habitat and species present are those common throughout the area. Affected areas would be located along road shoulders and adjacent to pasture and cropland, residential lawns, and other developed areas. No habitats or species of local concern are present within construction and/or operational areas.

The sewer pipeline route crosses Sumas Creek at crossing S-S1 near the railroad grade along railroad street, north and east of the proposed plant site. This crossing is mapped in Figure 3.4-2. This creek has the least disturbed riparian buffer and the greatest density of deciduous trees when compared to the other stream crossings. This stream is bordered at the crossing locations by red alders and various willows. Wildlife use of this creek is similar to that of the streams crossed by the natural gas pipeline.

The channel of Sumas Creek at the crossing is approximately 6 feet wide and 1 foot deep with a substrate composed of approximately 15 percent gravel and 85 percent sand. The creek has less than a 1 percent gradient and contains a moderate amount of large woody debris. Approximately 30 percent of the creek is pool habitat, with a good degree of channel complexity present. Sumas Creek had a flow of three to four cfs of clear water at the time of the survey, and coho salmon and coastal cutthroat trout were observed. This stream has the best quality salmonid spawning and rearing habitat in the project area. Steelhead trout and native char may also use the creek.

#### *3.5.2.6 230 kV Electrical Transmission Line to Canada*

This route is situated along existing roadway and railroad ROWs and other developed areas and contains no habitat nor species of local importance other than Sumas Creek (described below). Wildlife use in these areas is likely limited to common species.

The route crosses Sumas Creek north of the S2GF site. This creek has the one of the least disturbed riparian buffers and highest density of deciduous trees of all the stream crossings associated with the proposed transmission lines. This stream is bordered at the crossing locations by red alders and various willows. Wildlife use of this creek is similar to that of the streams crossed by the natural gas pipeline.

The channel of Sumas Creek at the crossing is approximately 6 feet wide and 1 foot deep with a substrate composed of approximately 15 percent gravel and 85 percent sand. The creek has less than a 1 percent gradient and contains a moderate amount of large woody debris. Approximately 30 percent of the creek is pool habitat, with a good degree of channel complexity present. Sumas Creek had a flow of 3 to 4 cfs of clear water at the time of the survey, and coho salmon and coastal cutthroat trout were observed. This stream has the best quality salmonid spawning and rearing habitat in the project area. Steelhead trout and native char may also use the creek.

## 3.5.3 Environmental Impacts of Proposed Action

### *3.5.3.1 Construction*

*S2GF Site*

**Wildlife**

The proposed S2GF would be placed on an existing agricultural field and a wetland area dominated by reed canary grass. Developed areas within the site would result in the permanent loss of 27.5 acres of agricultural land.

This loss would reduce habitat for the wildlife species identified in Section 3.5.2.3 (Existing Conditions), but, since this habitat is abundant in the area, the overall impact would not significantly affect populations. Wildlife species and habitats that would be lost include: waterfowl migration and wintering habitat; shorebird migration and wintering habitat; hawk and owl foraging; and Pacific treefrog courtship, breeding, and foraging habitat.

**Fish**

The S2GF would be placed on an existing agricultural field and a ditch with a seasonal connection to Johnson Creek. Although fish may enter this ditch during periods of high flow in Johnson Creek, high temperatures would prevent use of this channel for an extended period. Therefore, loss of this ditch during construction would not result in a loss of fish habitat.

Any construction requiring vegetation removal and grading has the potential for water quality impacts. However, runoff from the proposed plant site would be detained and treated prior to discharge. The methods for stormwater pollution prevention discussed in Section 3.2 are expected to prevent degradation of surface waters that would be harmful to fish or fish habitat. SE2 has entered into agreements with the Washington State Department of Ecology (Ecology) and the Washington State Department of Fish and Wildlife (WDFW) stipulating specific measures to be used to prevent degradation of surface water quality during construction and operation of the project facility. Based on the commitments made by SE2 in these agreements, Ecology and WDFW have withdrawn issues that were raised in the adjudicative hearing. Overall impacts to fisheries resources would not be significant because no loss of spawning or rearing habitat for fish would occur and pollution of runoff from construction areas would be prevented.

*Natural Gas Pipeline*

**Wildlife**

Approximately 40 acres of agricultural land, including an estimated 26,160 square feet of wetlands, would be temporarily impacted over a 4.1-mile ROW due to installation of the pipeline. Wetland impacts within or along the proposed natural gas pipeline corridor are described in Appendix C.

Pipeline installation would temporarily disturb common wildlife habitat types and species. Since no large trees would be removed, impacts to nest sites would be avoided. Eagle nests and other species/habitats of local importance are sufficiently distant to not be disturbed by the proposed action. Habitat values would return to existing levels within about five years following installation of the pipeline. Eagles and trumpeter swans that frequent local fields in late winter would avoid the construction zone and use other areas.

Impacts to the Johnson Creek, Bone Creek, and the Sumas River riparian areas would be avoided by boring under them to install the natural gas pipeline.

**Fish**

Impacts to the Johnson Creek, Bone Creek, and the Sumas River riparian areas and instream habitat would be avoided by drilling under them to install the natural gas pipeline. Best Management Practices (BMPs) would be followed to avoid spills of drilling lubricant (bentonite) into the stream through fractures in the soil or rock while boring under waterways. Although it is impossible to completely avoid the possibility of a fracture and spill of bentonite, crossings would be surveyed before drilling to assess the stability of the substrate. Crossings would be bored at an adequate depth below the surface of the streambed to prevent the release of bentonite into the streambed or water.

Except for the slight possibility of a release of bentonite, no loss of fisheries or aquatic habitat would occur. In the event of a bentonite spill, drilling operations would be immediately stopped and the spill contained as quickly as possible. Drilling operations would not resume until the spill is contained and the leakage controlled. No spawning gravel occurs near or below the crossings and stream substrates consist mostly of fine organic sediments. Fisheries impacts from bentonite-related turbidity increases would be limited to a short-term reduction in feeding success or the temporary suspension of upstream migration of adult salmonid spawners (less than a day). Bentonite could be removed from sediments if a large area of substrate is affected. BMPs used in directional drilling construction to prevent spills of drilling lubricant and subsequent water quality problems are discussed in Section 3.2.

### *Water/Wastewater Pipelines*

**Wildlife**

Since the installation of water/wastewater pipelines would occur along existing and maintained pipeline or along road shoulders, impacts on wildlife would be minimal. No key habitats would be impacted, and, as with the natural gas pipeline impacts, habitat values would soon return to pre-project levels following construction.

The sewer pipeline is approximately 0.86 mile in length and is to be installed parallel to existing paved City roads. Work areas would be set up from the road pavement edge to 10 feet out from the pavement edge. About 1 acre of grass or unvegetated road shoulder would be temporarily impacted during construction. No trees would be removed during construction. While installing the sewer line, impacts to the Sumas Creek riparian area would be avoided by boring under the 60-inch culvert beneath Second Street that Sumas Creeks runs through.

**Fish**

Impacts to the Sumas Creek riparian area would be avoided by boring under the 60-inch culvert beneath Second Street to install the sewer line. Boring under the culvert would prevent the possibility of a bentonite spill through a fracture in the substrate. No loss of fisheries or aquatic habitat would occur.

### *230 kV Electrical Transmission Line to Clayburn Substation, Abbotsford, B.C.*

**Wildlife**

Construction of the 230 kV electric transmission line to Abbotsford would require the removal of forest and other habitats adjacent to existing railroad ROWs. This habitat is not used by rare, threatened, or endangered species, but rather is habitat for several common species of wildlife. This habitat would be reduced.

**Fish**

The electrical transmission line would be placed over Sumas Creek within an existing railroad ROW, without disturbing the streambank or stream channel. No loss of fisheries or aquatic habitat would occur. However, one red alder (15 inch diameter at breast height or dbh) and three bitter cherry trees (5 inch dbh) may require removal on the south riparian buffer of Sumas Creek. The loss of these four trees would allow additional sunlight penetration. The additional sunlight would eventually increase the density of understory shrubs, partially mitigating for the loss of canopy cover. The small amount of canopy lost would not cause a significant increase in stream water temperature or reduction in potential large woody debris (LWD). Sumas Creek is approximately 6 feet wide at this location. Threes and shrubs up to 25 feet tall would be adequate to provide complete shade to the channel.

### *Endangered Species Act Impacts*

In compliance with the Endangered Species Act (ESA), potential impacts to listed species are discussed below.

The project would not have a significant impact on bald eagles. No prime foraging habitat in rivers and streams in the project vicinity would be affected because the boring technique would be used for all natural gas line and utility line crossings. Most of the recorded nest sites, winter concentration areas, and roosting sites would not be disturbed because they are located at least 1 mile from all project activities. Impacts are limited to a slight chance of disturbance to individual eagles while perched or foraging in the project area during project construction. This would not affect their survival or reproduction. No construction would occur within a mile of the bald eagle winter concentration area between October 31 and March 31. No construction would occur near night roosts when eagles are present. All construction activities would occur in the immediate vicinity of roads where an equivalent level of traffic related disturbance already exists. Transmission line construction would only take a few days at any one location. Mitigation for potential eagle collisions would include the use of visible markers such as aircraft warning balls to reduce avian mortality in the 230 kV transmission line ROW (Hoopes 1992 and Olendorff et al. 1981). In addition, the thin shield or grounding wires that are responsible for most avian transmission line collisions would not be used for the proposed transmission line (APLIC 1994). The electrocution of bald eagles, due to landing on a transmission line, is unlikely because the large spacing between the lines prevents contact with both phases by large birds landing on the lines (O'Neil 1988).

Vaux's swifts, their habitat, and their chimney roost in Sumas would not be impacted by the project. The project would not affect their foraging areas and potential roosting and nesting sites. Olive-sided flycatcher habitat would not be affected by the project. No forested areas are to be cleared and only one small agricultural field would be lost at the plant site.

The Cascades frog and tailed frog are extremely unlikely to be found in the project area due to their habitat requirements and known distributions. Prime roosting and hibernacula sites for special status bat species are not found in the project area. There would be no impacts to these species.

Overall impacts to chinook salmon, coho salmon, bull trout, or lampreys would not be significant. Johnson Creek, Bone Creek, the Sumas River and their associated riparian areas would be avoided by boring under them to install the natural gas pipeline. No loss of spawning or rearing habitat would occur. The 230 kV electrical transmission line to Canada would be placed over the Sumas Creek crossing within an existing street or railroad ROW, without disturbing the stream channel or banks. Potentially, four small trees would have to be removed at the Sumas Creek transmission line crossing. No loss of spawning or rearing habitat would occur, but a slight reduction in canopy cover would occur. This would not cause any significant reduction in LWD recruitment, stream cover,

or increase in stream temperature. Potential water quality impacts associated with construction of the facility are discussed in Section 3.2.

### *3.5.3.2 Operation*

#### *S2GF Site*

Operational impacts to wildlife would be similar to the construction impacts described previously. However, there would be no additional displacement of wildlife from the S2GF site after construction is completed and the slight potential of any runoff of turbid water from the site would be greatly reduced after construction, stormwater detention facilities, and revegetation of the site are completed.

#### *ROW Maintenance*

The pipeline corridors would be returned to the present agricultural use after construction. After the first agricultural crops are planted on the disturbed land, there would be no further impacts to fish and wildlife.

#### *Sewer and Water Pipelines*

The routes for sewer and new water pipelines would only be temporarily impacted by construction and the disturbed areas would return to their original condition within a season of vegetation growth. After revegetation is completed in previously vegetated areas, there would be no further impacts to fish and wildlife.

#### *230 kV Electrical Transmission Line*

The construction of the proposed transmission line creates a potential for avian collisions. The majority of avian collisions with transmission lines occurs due to birds not being able to see the thin shield or grounding wires used to protect transmission lines during electrical storms (APLIC 1994). Because electrical storms are infrequent in the northwest, the 230 kV transmission line would not use grounding wires. However, a similar communications wire approximately twice as thick as a grounding wire would be used. The additional wire thickness is expected to increase visibility, reducing the potential for avian collisions.

The electrocution of raptors, caused by their landing on a conductor wire and touching both phases is precluded by the design of the proposed 230 kV transmission line. The large spacing of the conductor wires prevents contact with both phases by large birds landing on the lines (O'Neil 1988).

Disturbance to the areas around the transmission line poles would be short term and the land would return to its original condition within a season of vegetation. The only operational impacts would be from maintaining a trimmed 30-foot-wide band above 25 feet for the transmission lines. This type of maintenance would prevent new trees growing under the lines from reaching maturity.

## 3.5.4 Environmental Impacts of No Action

If no action is undertaken, there would be no impacts to fish and wildlife species or habitat.

## 3.5.5 Mitigation Measures

### *3.5.5.1 Construction*

#### *S2GF Site*

To avoid and reduce impacts to fish from water quality effects, BMPs would be implemented to control and minimize erosion and sedimentation that may occur during construction. BMPs to prevent impacts associated with incidental fuel spills would be implemented to protect surface and groundwater quality. Separate stormwater pollution prevention plans would be prepared as required for construction and operation of the facility. These plans would describe the specific BMPs that would be used to prevent pollution by erosion or contamination of runoff with deleterious substances as described in the ASC (Sumas Energy 2 et al. 2000). BMPs would be consistent with the *Puget Sound Stormwater Management Manual* (Ecology 1992, or as amended) and would include features such as stormwater detention, silt fencing, rock placement where vehicles leave the site during construction, and hydroseeding of the plant site after construction. No additional mitigation measures would be required.

#### *Natural Gas, Sewer and Water Pipelines*

Impacts associated with pipeline construction would be avoided, minimized, and rectified. The top 12 inches of topsoil would be removed and reserved for replacement. Grass areas would be re-seeded and agricultural areas would be left in their current condition for cultivation. In all cases, the land would be graded to pre-installation contours. These measures would allow the temporarily disturbed areas to revert to pre-construction condition within a season. Impacts to wetlands would also be mitigated by using the BMPs outlined in Section 3.4 - Wetlands and Vegetation.

Restricting the timing of directional drilling under streams to the in-water work windows determined by WDFW would further minimize the risk of a bentonite spill through a streambed fracture. Steps taken to reduce the potential for adverse effects of soil fracture

during horizontal directional drilling (HDD) would be outlined in a stormwater pollution prevention plan (SWPPP), to be prepared by the applicant for the project prior to construction, and would include:

- Construction work would be monitored continuously while drilling under fish-bearing watercourses. The monitor would be an individual familiar with the symptoms of soil fractures, and knowledgeable in the correct contingency measures in the event of soil fracture.
- The SWPPP would include a contingency plan that clearly sets out the range of measures to be taken in the event of a soil fracture or the release of drilling fluid.
- Drilling fluids selected for HDD under fish-bearing waters would be specifically chosen for reduced toxicity to fish. Fluids with additives potentially deleterious to fish would be avoided.

#### *230 kV Electrical Transmission Line*

Transmission line construction activity at any one location would last a few days. The electrical transmission line poles would be placed in upland areas. The Sumas Creek crossing would be spanned. BMPs would be used during construction to prevent discharge of fill material into any nearby wetlands. Footing construction areas would be re-seeded as necessary.

The above measures are expected to eliminate or minimize the impacts of the project. No additional mitigation measures for construction impacts are anticipated.

### *3.5.5.2 Operation*

#### *S2GF Site*

A 19.41-acre combined mitigation/preservation area is proposed to compensate the loss of wildlife habitat associated with the two emergent wetlands after site construction. (See Section 3.4 – Wetlands and Vegetation.)

To prevent water quality impacts to fish, plant site stormwater runoff would be treated by a lined stormwater detention pond that would flow into a stormwater drainage channel, which would also receive runoff from the south. Runoff from the drainage channel would flow into the existing drainage ditch that flows through crossing B-S14 along the eastern border of the plant site.

No additional mitigation measures for operational activities are required.

### *Natural Gas Pipeline*

No mitigation measures for operational activities are required.

### *Sewer and Water Pipelines*

No mitigation measures for operational activities are required.

### *230 kV Electrical Transmission Line*

To protect possible red-tailed hawk nest sites, it is recommended that the applicant conduct surveys at the wooded area next to the project site to determine the presence of a hawk nest. If one is present, then a nest site management plan should be prepared to protect the nest during the nesting season. If protection isn't possible, then off-site mitigation may be considered in the form of nest site creation and/or perch pole placement.

To protect other nesting birds, clearing of vegetation should be restricted during the breeding season (generally April 1 through July 15). Mitigation for potential avian collisions would include the use of visible markers, such as aircraft warning balls and the non-use of ground wires, to reduce avian mortality in the transmission line ROWs (Hoopes 1992). Specific designs should be developed by a specialist with expertise in preventing avian collisions with powerlines. The electrocution of raptors, due to landing on a transmission line and touching both phases is precluded by the design of the project's transmission lines. The large spacing between the lines prevents contact with both phases by large birds landing on the lines (O'Neil 1988).

## 3.5.6 Cumulative Impacts

The transmission lines preclude the establishment of large trees in these areas. In this way, the transmission lines contribute to the loss of large trees and recruitment of large woody debris in these streams. Other land uses such as road crossings and clearing for agriculture have and would likely continue to prevent the restoration of portions of the riparian areas associated with these streams to a natural condition.

These impacts would contribute, in a small yet incremental way, to past and likely future losses of fish habitat that have occurred in the project area. Past adverse effects on fish and wildlife can be greatly attributed to large-scale conversion of wetlands, streams, and forested habitats to cropland and pastureland. In effect, these past impacts reduce the overall impact of the proposal, since the loss of high-quality native communities has already occurred.

The likely future losses to which impacts from the proposal would add are mostly related to residential and industrial development. Agricultural lands, which replaced native habitats, nevertheless can often provide better fish and wildlife habitat than residential and industrial development.

However, the project would not cause growth or additional development, since it is intended to meet and service existing energy needs, rather than to create surplus needs to promote growth beyond that which is currently expected. Also, the project would not serve as a precedent for future actions that may impact fish and wildlife habitat.

In conclusion, the project would contribute only minimally to cumulative impacts on fish and wildlife.

### 3.5.7 Significant Unavoidable Adverse Impacts

Wildlife habitat loss is an unavoidable adverse impact of the project, although rare, threatened, and endangered species and their habitat would not be significantly affected.