3.4 Wetlands and Streams

This section summarizes the observation and description of jurisdictional wetlands, streams and required buffers on the site of the proposed City Heights project as reported in the *City Heights, City of Cle Elum, Wetlands and Wildlife Habitat Report* (Sewall Wetland Consulting, Inc., October 26, 2009). Four on-site wetlands meet the criteria of Category 2 or Category 3 wetlands (depending on which Washington Department of Ecology rating system is used). Total wetland area on the 358-acre site is approximately 2.1 acres. Seven streams were identified on the site, of which two appear to flow year-around. Using the Washington Department of Natural Resources (WDNR) Water Typing System, on-site streams are classified as Type 3, 4, and 5 waters. Two of the seasonal streams are identified in the more recent WDNR Forest Practices Application Review System (FPARS) as Type F (fish-bearing) waters, though no fish were observed during June−July 2009 inspections of the site, and physical barriers exist to fish passage in one of the two streams classified as Type F. Potential impacts to wetlands and streams would occur at locations where existing roads would be widened or where the internal project road would be constructed to connect proposed Development Areas. Impacts in the form of fill would be limited to the minimum amount necessary to construct proposed road crossings.

3.4.1 Wetlands

AFFECTED ENVIRONMENT

The site was inspected for wetlands in June and July 2009. Methods used are described in the technical report. Wetland determinations and classifications were made using the 1989 *U.S. Army Corps of Engineers Federal Manual for Delineating Jurisdictional Wetlands* as required by the City of Cle Elum; the *Washington State Wetlands Identification Manual* (Ecology, March 1997) currently recognized by Kittitas County and the State of Washington; and the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), as required by the U.S. Army Corps of Engineers. Following delineation, wetland stream flag locations were surveyed by Encompass Engineering & Surveying and placed on site maps reproduced as figures in this Draft EIS.

Prior to visiting the site, a review of natural resource inventory maps was conducted. Resources reviewed included the National Wetland Inventory (NWI) Map, the Kittitas County Mapsifter website with Wetland layers, and data on file at the Kittitas County Natural Resources Conservation Service (NRCS) office in regards to soil types on the site. General field review was also conducted by walking transects during numerous visits to the property.

None of the soils mapped on the property by the Natural Resources Conservation Service (NRCS) are considered hydric or wetland soils (see Figure 3.1.2-3 in Draft EIS Section 3.1). Soil pits excavated within the upland areas of the site generally revealed a gravelly sandy loam with no hydric characteristics. Detailed descriptions of soil characteristics found in each test pit are described in the *City Heights, City of Cle Elum, Wetlands and Wildlife Habitat Report* (Sewall Wetland Consulting, Inc., October 26, 2009). Soils within upland areas were dry during all site visits conducted in June and July 2009.

Neither the NWI map that includes the site (used in the City of Cle Elum *Critical Areas Code*), nor the Kittitas County Mapsifter website show wetlands on or near the property. NWI maps are prepared primarily from aerial photograph interpretation with some field verification. The NWI maps for this area have not been field verified and are only an interpretation of potential wetlands identified from an aerial photograph. Typically, NWI maps can show some areas as wetlands that are not actually wetland, and can miss many areas that are wetland. For this reason, a site-specific investigation was conducted.

Field observations by Sewall Wetland Consulting staff confirmed the presence of a total of four (4) wetlands on the City Heights property. There are also three wetlands in close proximity to the site. All of the wetlands are associated with streams that flow through the property.

According to Chapter 18.01.030 of the City of Cle Elum Municipal Code, wetlands are areas that are "*inundated or saturated by surface water or groundwater 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. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities. However, wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetland, if permitted by the county or city.*"

The City of Cle Elum uses the Washington Department of Ecology – *Washington State Wetland Rating System for Eastern Washington* (October 1991 Pub#91-58). This system rates wetlands on a point system based upon functions as a Category 1, 2, 3 or 4 wetland, with Category 1 wetlands being the highest value wetlands and Category 4 being the lowest value wetlands.

Wetlands were also rated using the more recent *Washington Department of Ecology – Washington State Wetland Rating System for Eastern Washington Revised March 2007 (*Pub #04-06-15). This system also rates wetlands on functions with a numeric score to determine if a wetland rates as a Category 1, 2, 3, or 4 wetland. As with the 1991 rating system, Category 1 wetlands are of the highest value or function, and Category 4 wetlands are of the lowest value or function. The 2007 rating system is more detailed and provides a better analysis of the function and values of wetlands. Kittitas County as well as the Washington Department of Ecology and the U.S. Army Corps of Engineers use this rating system in their review of proposed project actions.

Wetlands were also classified using the methodology in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, L., V. Carter, F. Golet, and E. LaRoe 1979). Known as the U.S. Fish and Wildlife Service or Cowardin wetland classification system, this method classifies wetlands based upon hydrologic location as well as vegetation classes. These classes are then utilized in the wetland rating systems of other agencies (described above) to determine wetland functions.

Table 3.4-1 lists on-site and adjacent wetlands by category according to the regulatory criteria described above, along with City and County buffer width requirements for wetlands in these categories. Wetlands F, G, and H are offsite, but in close proximity to the City Heights boundary, to the extent that the buffer requirements for these wetlands may extend onto the City Heights property. Wetlands listed in Table 3.4-1 are described in more detail below.

Table 3.4-1. Wetland ratings and regulatory buffer width requirements for wetlands on and adjacent to the City Heights property.

Wetland	Area in square feet	Category (Ecology 1991)	Cle Elum Code Buffer Width	Kittitas County Buffer Width[a]	Category (Ecology 2007)
A	1,507 sf	2	100 ft	–	2
B	18,596 sf	2	100 ft	25 to 100 ft	3
C	31,989 sf	2	100 ft	25 to 100 ft	3
E	38,289 sf	2	100 ft	25 to 100 ft	3
F	1,786 sf	3[b]	50 ft	–	2
G	6,630 sf	3[b]	50 ft	–	4
H	35,787 sf	3[b]	50 ft	20 to 80 ft	3

[a] Kittitas County buffer widths reported in Table 3.4-1 apply to Category 2 wetlands more than 2,000 sf in size, and Category 3 wetlands more than 10,000 sf in size (KCC 17.04.020).

[b] Offsite Wetlands F, G, and H would remain in unincorporated Kittitas County if the City Heights site is annexed to Cle Elum; therefore, the County's buffer width requirements would apply (unless the property on which these wetlands are located is annexed to the City as a result of an action by others).

Wetland A

Wetland A consists of a 1,507 sf riparian wetland located just upstream of the Montgomery Road crossing of the power line easement (see Figure 3.4-1). The road crossing historically appears to have caused a dam effect allowing a wetland to form in the area upstream of it. Stream B (Deer Creek) forms the east side of Wetland A.

Wetland A is a riparian wetland with its hydrology supported by stream bank overflow and seepage from the Deer Creek. Overstory vegetation includes scattered red alder and Pacific willow. Understory includes red-osier dogwood, water leaf, manna grass, and horsetail.

Using the U.S. Fish and Wildlife Service Wetland Classification Method (Cowardin et al. 1979), Wetland A would be classified as PFO1C (palustrine, forested, broad leaved deciduous, seasonally flooded).

Using the 1991 *Washington Department of Ecology (Ecology) Wetland Rating System* recognized by the City of Cle Elum, Wetland A is a Category 2 wetland. According to Chapter 18.01.460 of the Cle Elum Municipal Code, Category 2 wetlands are required to have a 100-ft buffer measured from the wetland edge. Kittitas County also utilizes the 1991 Ecology Wetland Ratings System. Under Kittitas County Code (KCC) Section 17A.04.020, Category 2 wetlands less than 2,000 sf in size have no buffer requirement.

Wetland A was also rated using the revised Ecology 2007 *Wetland Rating System for Eastern Washington* to determine functions. This is the current system used by Ecology for establishing function ratings for wetlands; however, there is no requirement for the City Heights project to provide these ratings, as neither the City of Cle Elum or Kittitas County have adopted this system to date.[1] Wetland A is a Category 2 riverine wetland, with low to moderate habitat value.

[1] Kittitas County typically sends wetland studies to Ecology for peer review as the County has no wetland staff. Therefore, the Ecology 2007 system of ratings is provided in the *City Heights, City of Cle Elum, Wetlands and Wildlife Habitat Report* (Sewall Wetland Consulting, Inc., October 26, 2009) for Ecology's convenience, if they are asked to review the development proposal for the City Heights property.

Insert Figure 3.4-1. City Heights Property Streams and Wetlands Delineation Map: East End.

(11 x 17-inch color)

Wetland B

Wetland B is a 18,596 sf emergent and scrub-shrub slope wetland located under the power line in the Steam C riparian corridor (see Figure 3.4-2). There is a "jeep" road through the center of the wetland. Vegetation within this area may have been cleared or sprayed by the electrical utility companies to keep growth at a minimum.

Wetland B appears to receive its hydrology from groundwater seeps as well as stream flow entering the wetland from Stream C. Numerous small ruts and depressions hold water and provide seasonal amphibian breeding areas in this wetland. The scrub shrub portion of Wetland B includes a small area at the north end under the power line that is vegetated with a mix of red-osier dogwood, willow, and some hawthorne. The emergent portion of Wetland B is vegetated with a mix of small-fruited bulrush, spikerush (*Eleocharis palustrus*), soft rush, sedge, bluegrass, bentgrass and some quackgrass.

Using the U.S. Fish and Wildlife Service Wetland Classification Method (Cowardin et al. 1979), Wetland B contains areas that would be classified as PSS1C (palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded) and PEM1C (palustrine, emergent, persistent, seasonally flooded).

Using the 1991 *Washington Department of Ecology Wetland Rating System*, Wetland B is a Category 2 wetland. Under City of Cle Elum Municipal Code (CEMC), Wetland B is required to have a 100-ft buffer.

Kittitas County Code 17A.04.020 requires a buffer ranging from 25 to 100 feet for a Category 2 wetland greater than 2,000 sf in size, depending upon the following:

> *The wetland buffer ranges have been established to reflect the impact of certain intense land uses on wetland function and values. The director shall base the buffer size on the following criteria and shall establish the least restrictive width of buffer necessary to account for all of the following considerations:*
>
> 1. *The overall intensity of the proposed use*
> 2. *The presence of threatened, endangered, or sensitive species*
> 3. *The site's susceptibility to severe erosion*
> 4. *The use of a buffer enhancement plan by the applicant which uses native vegetation or other measures which will enhance the functions and values of the wetland or buffer. (Ord. 94-22 (part), 1994).*

Using the revised Ecology 2007 *Wetland Rating System for Eastern Washington* to determine functions, and rating Wetland B as a slope wetland, Wetland B is a Category 3 wetland with moderate habitat value.

Wetland C

Wetland C is a 31,989 sf forested wetland located in the Steam C riparian corridor (see Figure 3.4-2). This wetland is an apparent historic excavation presumably related to past mining operations. The wetland is defined by steep sides and a large fill berm at its south end. The bottom of the wetland is flat and has been disturbed recently by trucks "mudding" in the bottom, creating ruts and bare disturbed soil.

Wetland C appears to receive its hydrology primarily from Stream C flows spreading out through the bottom of the wetland. Cottonwood trees comprise the overstory vegetation. The sparse understory includes willow and red-osier dogwood, with little in the herb strata other than quackgrass around the perimeter.

Insert Figure 3.4-2. City Heights Property Streams and Wetlands Delineation Map: West End.

(11 x 17-inch color)

Using the U.S. Fish and Wildlife Service Wetland Classification Method (Cowardin et al. 1979), Wetland C would be classified as PFO1C (palustrine, forested, broad leaved deciduous, seasonally flooded).

Using the 1991 *Washington Department of Ecology Wetland Rating System*, Wetland C is a Category 2 wetland, requiring a 100-ft buffer under City of Cle Elum Municipal Code, or a 25 to 100-ft buffer under Kittitas County Code.

Using the revised Ecology 2007 *Wetland Rating System for Eastern Washington* to determine functions, and rating Wetland C as a slope wetland, Wetland C is a Category 3 wetland with low to moderate habitat value.

Wetland D – Offsite

Wetland D was originally identified during field work and thought to be on the property. However, it was later determined to be more than 200 feet off-site to the north of Wetland E. Therefore, details of this wetland are not included in this analysis.

Wetland E

Wetland E is a 38,289 sf emergent, scrub-shrub and forested slope wetland located under the power line in the Steam D riparian corridor (see Figure 3.4-2). This wetland includes primarily scrub shrub and forested plant communities dominated by a mix of red-osier dogwood, Sitka alder, and cottonwood. Understory species include field mint, sedge, spikerush, small fruited bulrush, veronica, and willow herb. In addition, a small lobe of cattail-dominated wetland is present along the west side of Wetland E in the area at the toe of the old coal mine tailings pile. It is possible this area is a groundwater outflow from an old coal mine opening, or possibly a natural spring. Water appears to be seeping and flowing from this area throughout the year, supporting obligate wetland species including broad-leaved cattail and small-fruited bulrush.

Wetland E appears to receive its hydrology from groundwater seeps as well as stream flow. Numerous small ruts and depressions hold water and provide seasonal amphibian breeding areas in this wetland.

Using the U.S. Fish and Wildlife Service Wetland Classification Method (Cowardin et al. 1979), Wetland E contains areas that would be classified as PFO1C (palustrine, forested, broad leaved deciduous, seasonally flooded), PSS1C (palustrine, scrub-shrub, broad leaved deciduous, seasonally flooded) and PEM1C (palustrine, emergent, persistent, seasonally flooded).

Using the 1991 *Washington Department of Ecology Wetland Rating System*, Wetland E is a Category 2 wetland, requiring a 100-ft buffer under Cle Elum Municipal Code, or a 25 to 200-ft buffer under Kittitas County Code.

Using the revised Ecology 2007 *Wetland Rating System for Eastern Washington* to determine functions, Wetland E (a slope wetland), rated as a Category 3 wetland with moderate to high habitat value.

Wetlands F, G and H (offsite)

Wetland F (1,786 sf) was found to be an off-site riparian forested wetland similar in character to Wetland E although smaller in size. Wetland G (6,630 sf) is a small forested wetland located within a swale between the hillside and the Coal Mines Trail, potentially off-site. Wetland H is a 35,787 sf, forested, quaking aspen-dominated wetland located south of Stream C along the west side of Summit View Road, just north of its intersection with W Sixth Street (see Figure 3.4-2). Since these are off-site features,

detailed characteristics were not analyzed. They are in close proximity to the site, and required some review as buffers may extend onto the City Heights property. Based upon general observations, these wetlands appear to be Category 3 wetlands, all within the unincorporated area of Kittitas County. Category 3 wetlands more than 10,000 sf in size (Wetland H) require a 20 to 80-ft buffer under Kittitas County Code. Category 3 wetlands smaller than 10,000 sf in size (Wetlands F and G) do not require buffers (KCC 17A.04.020). If the property owned by others between the City Heights south boundary and the existing City limits is annexed at some future time before development occurs in the western portion of the City Heights site, Cle Elum Municipal Code would require a 50-ft buffer around these Category 3 wetlands.

POTENTIAL IMPACTS DURING CONSTRUCTION

There would be a potential for construction impacts to occur in wetlands with development of any of the conceptual land use alternatives if Best Management Practices (BMPs) are not utilized. Construction impacts could include the operation of machinery in and around wetlands, compaction of soils within wetlands, erosion of soil and sediment deposition in wetlands. Clearing in and around wetlands and their associated buffers could result in changes in the hydroperiod or hydrologic regime of wetlands if there are alterations to surface or subsurface migration of water to these landforms.

POTENTIAL DEVELOPED-CONDITION IMPACTS

Direct, permanent impacts (fill) to Wetlands B and C are likely with implementation of Alternative 1, 2, or 3A due to the proposal to widen Summit View Road under any of these alternatives. In addition, impacts to Wetland E are possible associated with proposed road construction in the power line corridor to connect proposed Development Areas A and B under these alternatives. If the road crossings are built as conceptually shown, wetland buffer impacts would also occur at these crossings. Although it is not yet possible to specifically quantify areas of wetland impact, the applicant proposes that all fills would be the minimum necessary to construct the proposed road crossings: in the range of 2,000 to 6,000 sf total (for both road crossings described here). Wetland impacts and compensatory mitigation will be quantified at the time permit applications are prepared, and will be regulated by local, State, and Federal agencies with jurisdiction.

The developed condition of the site also has the potential to impact wetland hydrology (depth and duration of inundation) if surface water runoff and/or shallow groundwater flow is altered by the introduction of impervious surfaces, depending on provisions made in the on-site stormwater management system. If wetland hydrology is altered, it could affect wetland vegetation and wetland functions and values.

Potential indirect impacts to wetlands in the developed condition of the site include increased human intrusion into the wetlands due to the introduction of a resident population on the site. Human intrusion impacts may include additional noise, light, and possible stormwater discharge to wetlands, and possible use by children at play. These effects could diminish the wildlife habitat values of wetlands.

If on-site sewage disposal systems (OSDS) are used in Alternative 3A or 3B rather than connection to the City sewer or connection to an on-site Membrane Bioreactor (MBR) plant, there could be a potential for nutrient input to wetlands over the long-term if OSDS fail and result in groundwater contamination and migration. The potential for this impact to occur would be highest in areas adjacent to riparian corridors and wetlands. Alternative 3B could have the greatest potential for alteration of hydrologic inputs to wetlands and streams if a large number of exempt wells were used throughout the site to provide domestic water supply. Potential wetland impacts due to road construction to implement Alternative 3B are difficult to project, but could be much higher than with Alternative 1, 2 or 3A as there would be no

planned road system that largely avoids wetlands and minimizes stream crossings under these alternatives. Access would need to permitted for each parcel in Alternative 3B regardless of abutting parcel access or impact characteristics.

Under the No Action Alternative, impacts to wetlands and wetland buffers that presently occur due to off-road riding and mudding in Wetlands B, C and E for example, would likely continue.

MITIGATION MEASURES

Mitigation Measures Included in the Development Proposal. Construction contractors will be required to comply with all applicable permit conditions to avoid inadvertent clearing or compaction within wetlands and their associated buffers. Prior to the start of construction in areas where delineated wetlands occur, wetland boundaries will be flagged and silt fencing will be installed to alert contractors to the "no disturbance" requirement for these areas.

Best Management Practices to be implemented during construction, and water quality treatment facilities in the developed-condition stormwater management system, would minimize or avoid water quality impacts to wetlands. These measures would potentially improve water quality discharges over existing conditions, as removal of the off-road vehicle use would reduce the amount of untreated sediment-laden runoff that currently flows into creeks and enters wetlands.

Direct impacts to wetlands (i.e., fill at road crossings) will be mitigated at required ratios per City or County Code (depending on the alternative selected for implementation) through wetland creation, likely by expanding the edge of impacted wetlands outside the area of fill. Potential impacts to wetland buffers will be mitigated through buffer averaging as allowed by Code. Buffer averaging allows reduction of a buffer in one area as long as an equal area is added to (or preserved in) the buffer in another location. Under buffer averaging, the actual area of the buffer remains the same as the standard full width buffer.

In compliance with Ecology's *Stormwater Management Manual for Eastern Washington* (SWMMEW), potential impacts to wetland hydrology would be minimized or avoided by the proposed stormwater management system that would re-direct treated water back toward wetlands that received stream hydrology prior to development.

Applicable Regulations. On-site sewage disposal systems, if installed on the site under Alternative 3A or 3B, would be required to comply with Kittitas County Code and Washington State Department of Health regulations (WAC 246-272A) for the proper design, construction, operation, and maintenance of these systems to avoid leaking inadequately-treated wastewater into the groundwater system.

City of Cle Elum Municipal Code Title 18 (Critical Areas Development) lists detailed regulations that apply to wetlands. If Alternative 1 or 2 is selected for implementation, all work in and around wetlands would be required to comply with CEMC Title 18, Sections 18.01.430 through 18.01.500. The City's wetland buffer requirements are described above. A 25-ft building structure setback is required from any wetland buffer (CEMC 18.01.460). Wetland replacement ratios if there is no reasonable alternative to fill in a Category 2 through 4 wetland are defined in CEMC 18.01.490.

Kittitas County regulates wetlands under Title 17A of the Kittitas County Code. If Alternative 3A or 3B is selected for implementation, any work that would impact on-site wetlands (or off-site wetlands under the County's jurisdiction) would be required to comply with the County's Critical Areas Code. Wetland buffer requirements are described above. A building setback equal to the side yard setback of the applicable zoning district would also be required from the edge of any wetland buffer. Minor intrusions into the building setback area are allowed subject to the discretion of the Kittitas County Director of

Community Development Services (KCC 17A.04.045). Wetland replacement ratios if there is no reasonable alternative to fill in a Category 1 through 4 wetland are defined in KDD 17A.04.050.

Filling or dredging (if any) within "waters of the United States" would fall under the jurisdiction of the U.S. Army Corps of Engineers (Corps). Waters of the United States are generally natural waterbodies that have some connection to navigable waters. The Corps regulates all discharges into "waters of the United States" (wetlands and streams) under Section 404(b) of the Clean Water Act. Wetlands that are hydrologically isolated are not regulated by the Corps. Only the Corps can decide when a wetland is isolated or not. Isolated wetlands generally do not have any above-ground hydrologic connection to any other waterbody which is, or is connected to a navigable water.

The Washington Department of Ecology would have Section 401 jurisdiction over any wetland impacts for which a Corps permit is required.

Other Recommended Mitigation Measures. The increased human presence in close proximity to on-site wetlands could potentially be mitigated by fencing to discourage intrusion. Lights and noise-generating uses could be located away from wetlands to minimize impacts from glare and sound.

To the extent that on-site sewage disposal systems may be installed with Alternative 3A or 3B, these systems should be sited, designed, installed and maintained in areas that would avoid potential shallow groundwater contamination that could migrate to wetlands in the event of unanticipated septic system failure.

Groundwater wells should be located in areas where hydrologic analysis reveals the least likelihood of impact to base flows or the hydrology of wetlands. The impairment analysis performed to determine the potential effects of groundwater wells on other users in the basin also evaluates potential effects on shallow groundwater hydrology that sustains existing wetlands in the basin.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The proposal to limit wetland fill to the minimum necessary to construct road crossings would minimize the potential for direct wetland impacts associated with site development. If road crossings are built as shown on the conceptual land use plan for Alternative 1, 2 or 3A, wetland fill in the range of 2,000 to 6,000 sf (total) may occur. Actual wetland impacts and compensatory mitigation requirements will be determined at the time of specific development applications.

Provided that an on-site stormwater management system is designed, constructed, operated, and maintained in accordance with Ecology's 2004 SWMMEW, no significant unavoidable adverse impacts to wetland hydrology would be expected to occur in the developed condition of the project with any of the conceptual land use alternatives.

3.4.2 Streams

AFFECTED ENVIRONMENT

Concurrent with the site inspection for wetlands in June and July 2009, all drainage courses on the City Heights were inspected, described, and classified. The ordinary high water mark (OHWM) of streams on the property was located based upon the criteria described in Ecology's draft publication: *Determining the Ordinary High Water Mark on Streams in Washington State* (March 2008). Following delineation, all

stream flags were surveyed by Encompass Engineering & Surveying and placed on site maps reproduced as figures in this Draft EIS.

Prior to visiting the site, the Washington State Department of Natural Resources (WDNR) Forest Practices Application Review System (FPARS) stream mapping website was reviewed. This source shows six streams on the City Heights property (see Figure 4 in the *City Heights, City of Cle Elum, Wetlands and Wildlife Habitat Report*; Sewall Wetland Consulting, Inc., October 26, 2009). Three of these are depicted as Type F waters (equates to Type 3 waters described below) and four as Type N waters (equates to Type 4-5 waters).

Rivers and streams within both the City of Cle Elum and Kittitas County are classified using the Washington Department of Natural Resources Water Typing System, the definitions for which are described below. The City and County have somewhat different buffer width requirements for the various stream types. These are compared in Table 3.4-2.

Type 1 Waters − Shorelines of the State.

Type 2 Waters – Segments of natural waters that are not Type 1 and have high use and are important from a water quality standpoint for a) domestic water supply; b) public recreation; c) fish spawning, rearing or migration, or wildlife uses; d) are highly significant to protect water quality.

Type 3 Waters – Segments of natural waters not Type 1 or 2 with slight to moderate importance from a water quality standpoint for a) domestic water supply; b) public recreation; c) fish spawning, rearing or migration, or wildlife uses; d) are highly significant to protect water quality.

Type 4 Waters – Segments of natural waters not Type 1, 2 or 3 until the width between the ordinary high water mark (OHWM) becomes less than 2 feet.

Type 5 Waters – All natural waters not classified as Type 1, 2, 3 or 4 with or without well-defined channels.

Table 3.4-2. Classification of streams that flow through the City Heights property, and City or County buffer width requirements.

Stream	Water Type[a]	Cle Elum Buffer	Kittitas County Buffer	New Water Type Equivalent[b]
A	4	25 ft	10 to 20 ft	N
AA	5	None	None	N
B	3	50 ft	20 to 50 ft	F
BB	4	25 ft	10 to 20 ft	N
C	4	25 ft	10 to 20 ft	N
D	3	50 ft	20 to 50 ft	F
E	4	25 ft	10 to 20ft	N

[a] Water typing according to WDNR, recognized by the City of Cle Elum and Kittitas County.
[b] Water typing according to WDNR Forest Practices Application Review System (FPARS).

Stream A

Stream A is an intermittent stream channel located on the extreme eastern side of the City Heights site (see Figure 3.4-1). This stream was dry during the June 2009 site inspection, although several small standing water pools were found in the stream on depressions in portions with a bedrock bottom. The stream bed consists of cobble and sand substrate with areas of high bank erosion where some small

landslides had occurred, as well as areas where the channel runs across sandstone outcroppings/bedrock. The sides of the channel are steeply sloping up the small ravine-type feature within which it is located. The open shrub community that borders Stream A generally consists of small pine seedling/saplings and antelope bitter brush. The stream width ranges from 2 to 6 feet, and exits the site in a culvert under a gravel road/driveway. Piles of debris and wood were found in this area at the south edge of the site, deposited by the January 2009 flood event.

The WDNR FPARS Maps indicate that Stream A is a Type N water, which is consistent with its ephemeral character and apparent lack of any use by fish. Under the older WDNR water typing system used by the City of Cle Elum and Kittitas County, Stream A would be considered a Type 4 stream due to its lack of use by fish and channel width greater than 2 feet. The City of Cle Elum Municipal Code buffer requirement for a Type 4 stream is typically 25 feet as measured from the OHWM. Under Kittitas County Code, the buffer requirement for Type 4 waters is typically 10 to 20 feet as measured from the OHWM.

Stream AA

Stream AA is a small, apparently perennial-flowing channel located north of the Cle Elum Senior Center along the south boundary of the City Heights site (see Figure 3.4-1). This stream starts at a spring feature and drains southerly several hundred feet before infiltrating into the ground at the bottom of the hill. This feature has an iron pipe with a valve on it, and may potentially be a piped water source. It is also possible that this is a spring that originates in an old mine opening.

Under the City of Cle Elum Municipal Code, Stream F would be considered a Type 5 stream due to its narrow channel, lack of fish use and lack of connection to any higher-order water. Typically, Type 5 streams have no protection under City of Cle Elum Code. Under Kittitas County Code, Type 5 waters have no buffer requirements, but are typically required to have a 15-ft building setback measured from the channel.

Stream B (Deer Creek) and Stream BB

Deer Creek/Stream B. Stream B (locally known as Deer Creek) is an apparent perennial-flowing stream channel located along the west side of Montgomery Road (see Figure 3.4-1).

This stream contains a variable channel width ranging from 4 to 10 feet with a mixed cobble, sand and mud substrate. The fill slope of Montgomery Road forms much of the eastern bank of Stream B. Several mine openings on the west side of the channel upstream of the power line corridor may seasonally discharge water to Stream B. Stream BB (described below), another mine outlet, also drains into Stream B (Deer Creek).

The WDNR FPARS Maps indicate Stream B (Deer Creek) is a Type F water, which indicates some use by fish. This stream classification was discussed with a Washington Department of Fish and Wildlife (WDFW) Area Habitat Biologist who indicated that WDFW has not actually found fish in the stream, but it is possible they could be present (personal communication with Brent Renfrow, WDFW Area Habitat Biologist, June 10, 2009). No fish were observed in Stream B (Deer Creek) during Sewall Wetland Consulting's flagging of the channel.

Under the older WDNR stream typing system used by the City of Cle Elum and Kittitas County, Stream B would be considered a Type 3 stream due to potential fish use. The City of Cle Eum buffer requirement for Type 3 streams is typically 50 feet measured from the OHWM. Under Kittitas County Code, Type 3 waters are typically required to have a 20 to 50-ft wide buffer measured from the OHWM.

Stream BB. Stream BB is a short perennial-flowing ditched stream that is the outflow from an abandoned mine. This stream flows from the east of Montgomery Road under Montgomery and joins Deer Creek just upstream of Wetland A and the power line corridor (see Figure 3.4-1).

Stream BB is not shown on any stream maps. Stream BB under the City of Cle Elum Municipal Code, would be considered a Type 4 stream due to its lack of fish use and channel width greater than 2 feet. The City typically requires Type 4 streams to have a 25-ft buffer measured from the OHWM. Under Kittitas County Code, Type 4 waters are typically required to have a 10 to 20-ft wide buffer measured from the OHWM.

Stream C

Stream C is an intermittent-flowing stream channel located within the middle of the site (see Figure 3.4-2). This stream channel has been substantially disturbed in the past as it passes through the property near Summit View Road. Disturbance has included re-alignment and placement in a ditch-like channel as it flows to the west.

The upper end of Stream C under the power line is a diffuse meandering channel that passes through Wetland B with no well-defined channel except where it exits a culvert under a power line access road at the north edge of the site. This area has been disturbed by clearing as well as off-road vehicle use (tire ruts). Water sheet-flows through Wetland B and enters a large, sand-filled culvert under Summit View Road before discharging into Wetland C (see Figure 3.4-2). There is no defined channel through Wetland C although water ponds and follows tire ruts in the wetland to a defined channel outlet at the south end of the wetland. At the south end of Wetland C, a ditched channel funnels flow to the southwest. The stream passes back under Summit View Road further downhill, travels in a deeply dug and incised ditch to the southwest, and then appears to spread out and follow an old road bed (see Figure 3.4-2). The channel becomes small and narrow at the west end before passing back though an 18 to 24-inch diameter culvert under a gravel driveway to the south. The stream then appears to sheet-flow into a meadow or wetland area off-site before entering Crystal Creek near the Coal Mines Trail. The Stream C channel currently has a very unusual configuration in that the channel bed is higher than the surrounding landscape, or forms a ridge of sorts. It appears that during the winter 2009 flood events, the snow pack formed channel banks, and flow and debris occurred within the snow-formed banks. Debris then built up against the snowbanks and when the snow melted a large pile of sand and gravel was left higher than the banks. This indicates that next winter/spring, flow will go outside the location of the channel today. It appears that much of the water that discharges from this channel infiltrates under the gravel driveway near its southwest end, migrating south under the roadbed into the meadow with little flow actually going through the culvert.

Historically, the Stream C channel appears to have gone south from Wetland C and down through the ravine and stream channel near Stafford Street (see Figure 3.4-2).

The WDNR FPARS Maps indicate that Stream C is a Type F water, which indicates some use by fish. However, this seems to be a mapping error as it does not seem possible for fish to pass through the flat areas with no defined channel and the blockages throughout these features. This stream is dry in the summer and appears more appropriately identified as a Type 4 water. Under the older WDNR stream typing system used by the City of Cle Elum and Kittitas County, Type 4 streams are typically required by Cle Elum Municipal Code to have a 25-ft buffer as measured from the OHWM. Under Kittitas County Code, Type 4 waters are typically required to have a 10 to 20-ft wide buffer measured from the OHWM.

Stream D (aka Tributary 1209555472010)

Stream D is a tributary to Crystal Creek, and is identified in the WDFW Priority Habitat Maps as Stream LLID #1209555472010. This stream originates north of the site and flows south through the City Heights property, eventually connecting to Crystal creek off-site to the south along the north side of the Coal Mines Trail (see Figure 3.4-2). A small 1-ft wide flow from a very wet emergent cattail-dominated portion of Wetland E flows easterly into Stream D (see Figure 3.4-2).

Stream D is a narrow, mud bottom channel north of the power line corridor, and a more defined, steep-sided cobble and gravel bottom channel to the south and extending off-site. A gravel road passes through the channel under the power line creating a large mud bottom area.

Stream D was flowing during the June 2009 site inspection, and was dry in the area north of the power line in July 2009. South of the power line corridor, flow remained in July due to the groundwater discharge coming out of the westerly lobe of Wetland E flowing into Stream D from Stream E (see Figure 3.4-2).

No fish were observed within the Stream D channel, although the stream is of flat enough slope that fish could access the channel from Crystal Creek.

The WDNR FPARS Maps indicate that Stream D is a Type F water, which indicates use by fish. The WDFW Priority Habitat Maps indicate rainbow trout were found in this channel as recently as 2007. Under the older WDNR stream typing system used by the City of Cle Elum and Kittitas County, Stream D would be considered a Type 3 stream due to the indication that it is used by fish. Cle Elum Municipal Code typically requires Type 3 streams to have a 50-ft buffer measured from the OHWM. Under Kittitas County Code, Type 3 waters are typically required to have a 20 to 50-ft wide buffer measured from the OHWM.

Stream E

Stream E is a small intermittent flowing channel located within a natural drainage way just west of Stream B (see Figure 3.4-1). This area appears to only have flow in the Spring during snowmelt, and is characterized by a narrow (1-ft wide) gravel and sand bottom channel in a densely shrub-covered ravine. This stream leaves the site and enters a culvert passing under existing homes located along the Fourth Street alley west of Montgomery Avenue.

The WDNR FPARS Maps do not show Stream E. Under the older WDNR stream typing system used by the City of Cle Elum and Kittitas County, Stream E would be considered a Type 4 stream due to its narrow channel and lack of use by fish use. Cle Elum Municipal Code typically requires Type 4 streams to have a 25-ft buffer measured from the OHWM. Under Kittitas County Code, Type 4 waters are typically required to have a 10 to 20-ft wide buffer measured from the OHWM.

POTENTIAL IMPACTS DURING CONSTRUCTION

Development under conceptual land use Alternative 1, 2 or 3A could result in impacts to Streams A, B, C, and D to construct proposed road crossings. Stream A would be impacted if the extension of Columbia Avenue is widened beyond its existing footprint. This work may include extension of the existing culvert and construction disturbance within the creek buffer. The Stream B buffer as well as portions of the channel could be impacted by any improvements to the width of Montgomery Avenue beyond its existing footprint. Portions of Stream C and its associated buffer could be impacted as a result of widening Summit View Road beyond its existing footprint. Portions of the Stream D channel and buffer would be

impacted during construction of a road crossing shown on conceptual land use plans for Alternative 1, 2 or 3A to provide access between proposed Development Areas A and B. Alternative 3B could potentially have the most significant construction impact to streams due to development of a less coordinated road system, likely resulting in a larger number of stream crossings.

If access to the west end of the City Heights site from SR 903 is granted through the Cle Elum Pines (Deneen) property to serve Alternative 1, this alternative could result in temporary construction impacts to the buffer of Crystal Creek due to the proposal to construct an elevated bridge that would span the crossing to avoid direct impacts to the channel (see Figure 2.9-1 in Chapter 2). If the Alternative 2 west access is selected for implementation, widening and improvements to the existing Alliance Road at-grade crossing of Crystal Creek could result in temporary construction impacts at this location.

There would also be a potential for construction impacts to streams that flow through the site if Best Management Practices were not utilized. Such impacts could include the operation of machinery in and around stream channels, disturbance of gravels and stream bed materials, erosion of soil and sediment transport, or accidental discharge of machinery fluids into a stream.

Streams AA, BB, and E and their associated buffers would not be impacted by development as shown in the Alternative 1, 2, or 3A conceptual land use plans.

POTENTIAL DEVELOPED-CONDITION IMPACTS

Potential developed-condition impacts to on-site streams under any build alternative include an increased volume of surface water runoff and reduced vegetative cover. If vegetation is removed from stream buffers, there could be an increase in sediment transport to streams, an increase in water temperature, and loss of woody debris recruitment to the channels. Woody debris recruitment is the natural deposition of downed trees, shrubs and branches to streams and their banks.

If an elevated bridge is constructed across Crystal Creek for west access to the development (as described and illustrated for Alternative 1), there could be shading impacts to the creek channel depending on the bridge design and materials used.

Potential surface water quality impacts from the developed-condition of the site include heavy metals, nutrients, and sediment loads in stormwater releases from paved surfaces used by vehicles (i.e., roads and parking areas) if there were no coordinated stormwater management system on the site. If on-site sewage disposal systems were installed on the site under Alternative 3A or 3B, there could be potential nutrient inputs to streams over the long-term if septic systems failed and groundwater contamination and migration were to occur. This could potentially impact water quality as well as fish and invertebrate habitat within streams.

Under the No Action Alternative, uncontrolled runoff and on-going degradation of streams would likely continue to occur, exacerbated by off-road vehicle use in and around stream channels.

MITIGATION MEASURES

Mitigation Measures Included in the Development Proposal. Potential impacts to streams will be avoided or mitigated through the installation and operation of a stormwater management system on the site – both during construction and in the developed-condition of the project – in accordance with the Washington Department of Ecology 2004 *Stormwater Manual for Eastern Washington*. The proposed system is described in Draft EIS Section 3.18.3.

Construction contractors will be required to comply with all applicable permit conditions for the protection of stream beds, stream banks, and stream water quality.

Applicable Regulations. The Cle Elum Municipal Code (Sections 18.01.160 through 18.01.200) regulates riparian habitat adjacent to streams under Title 18, the Critical Areas Development Code. Kittitas County Code (Title 17A Section 17A.07) regulates riparian habitat under their Critical Areas Code, as well. Riparian buffers (discussed above as stream buffers) may be modified by averaging buffer widths (CEMC 18.01.180 or KCC 17A.07.010[4]). Riparian buffer areas are to be retained in their natural condition or may be improved to enhance functions and values. If riparian buffer disturbance occurs during construction, revegetation with native species is required (CEMC 18.01.190 or KCC 17A.07.010[5]).

The Washington Department of Fish and Wildlife (WDFW) regulates all work within waters of the State (rivers and streams) under the Hydraulic Project Approval (HPA) process (Washington Administrative Code Chapter 220-110, *Hydraulic Code Rules*). Any work proposed within the bed or banks of streams on the City Heights site (such as new road construction or widening existing road crossings of streams) would require obtaining a HPA from WDFW. Culverts approved by WDFW will be installed at stream crossings, and stream enhancement or restoration work will be performed in compliance with conditions of permit approvals. Specific designs will be reviewed by WDFW at the time permit applications are prepared.

Other Recommended Mitigation Measures. To the extent that on-site sewage disposal systems may be installed with Alternative 3A or 3B, these systems should be sited, designed, installed, and maintained in areas that would avoid potential shallow groundwater contamination that could migrate to streams in the event of septic system failure. Groundwater wells should be located in areas where hydrologic analysis reveals the least likelihood of impact to base flows or the hydrology of streams.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

With construction activity that may impact streams to be controlled through the conditions of City or County codes (depending on the alternative selected) and conditions of a WDFW Hydraulic Project Approval, and with the proposal to construct, operate, and maintain an on-site stormwater management system in compliance with all applicable State and local regulations, no significant unavoidable adverse impacts to streams would be expected as a result of site development.