4.3 WATER RESOURCES

4.3.1 ALTERNATIVE A – PREFERRED CASINO-RESORT PROJECT

SURFACE WATER

This section discusses potential direct and indirect impacts associated with the development of Alternative A on surface water resources. Potential impacts to water supply and distribution are discussed in **Section 4.10**, Public Services.

Flooding

Executive Order 11988 addresses floodplain management and requires that Federal agencies evaluate the potential effects of any actions it may take in a floodplain. Specifically, the Order states that agencies shall first determine whether the Proposed Action will occur in a floodplain. If an agency proposes to allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains. If the only practicable alternative action requires siting in a floodplain, the agency shall minimize potential adverse impacts to the floodplain. The La Center Interchange Site is located outside the 100-year and 500-year floodplains. Additionally, the Tribe has committed in the Memorandum of Understanding (MOU) with Clark County and the Tribe's Environment, Public Health and Safety (EPHS) Ordinance to develop the property and stormwater facilities consistent with Clark County Code (CCC) Chapter 40.420, Flood Hazard Areas. As a result, no impacts from flooding are expected to occur.

Construction Impacts

Construction activities under Alternative A would result in ground disturbance, which could lead to erosion. Erosion can increase sediment discharge to surface waters during storm events thereby degrading downstream water quality. Project construction also has the potential to discharge other construction-related materials (concrete washings, oil, and grease) onto the ground and then into nearby surface waters during storm events. Construction would also involve the use of diesel-powered equipment and would likely involve the temporary storage of fuel and oil on site. Discharges of pollutants, which include grease, oil, fuel and sediments, to surface waters from construction activities and accidents are a potentially significant impact. Implementation of mitigation measures presented in **Section 5.0** would reduce or prevent adverse impacts from construction operations to the local and regional watershed to a less than significant level.

Stormwater Runoff

Development of the casino and hotel facilities, and other ancillary components, would generate increased runoff during rain events due to increased impervious surfaces on site. The southeast corner of the site, adjacent to the west side of Interstate 5 (I-5), drains to a 48-inch culvert that crosses under I-5. This culvert is currently sized to accommodate a 25-year storm event. Stormwater runoff

under Alternative A would be directed into on-site stormwater control facilities sized to accommodate water draining from impervious surfaces as discussed in **Section 2.2.3** of the FEIS (Olson Engineering, 2006a) (DEIS Vol. I, **Appendix F**). As discussed in the project description (**Section 2.2.3**) the stormwater control facilities would be designed to the standards in Clark County Code 40.380 (Stormwater and Erosion Control) according to Section 10.0 of the MOU and Section 3(G) of the Tribe's EPHS Ordinance (**Appendix U** of the FEIS). The proposed stormwater control facilities, which include using Wetland Cs as a natural stormwater detention basin, would reduce peak stormwater flows to the unnamed seasonal stream on site to less than significant levels. Accordingly, the increased runoff would not result in significantly increased problems with the I-5 culvert. Stormwater would be diverted to the I-5 culvert at rates equivalent to existing rates. No mitigation is required.

SURFACE WATER QUALITY

Stormwater

Runoff from project facilities could flush trash, debris, oil, sediments, and grease into area surface waters, impacting water quality. Fertilizers used in landscaped areas could also result in impacts to water quality if allowed to enter nearby surface waters. As noted in the *Stormwater/Grading/Erosion Control Requirements* report prepared by Olson Engineering (2006a) (DEIS Vol. I, **Appendix F**), several features designed to filter the surface runoff prior to release into the unnamed seasonal stream and wetlands on site have been incorporated into the site design. These features include the use of storm filter vaults to remove suspended solids such as trash and soil sedimentation, oil, grease and other potential materials that could degrade surface water quality. Use of vegetative swales would provide additional filtering of runoff prior to release into the stream and wetlands, by capturing sediment and pollutants. Estimated concentrations of treated stormwater contaminants are provided in **Table 4.3-1**. The levels listed in **Table 4.3-1** comply with State Environmental Policy Act (SEPA) limits under Clark County Municipal permit conditions for stormwater discharges (Olson Engineering, 2006d) (**Appendix G** of the FEIS). Based on the baseline sampling discussed in **Section 3.3**, estimated contaminant concentrations would be similar to existing conditions, and in several cases water quality would improve.

After release into the unnamed seasonal stream and wetlands within the La Center Interchange Site, treated stormwater would ultimately make its way to the East Fork Lewis River. Since stormwater would be directly treated through stormwater treatment facilities and indirectly filtered through wetland buffer mitigation as identified in the *Preliminary Buffer Reduction and Mitigation Plan for Cowlitz Tribal Casino, Clark County, Washington* (Appendix 9 to Olson Engineering, 2006a [DEIS Vol. I, **Appendix F**]), no adverse impacts to the East Fork Lewis River would occur from stormwater generated by Alternative A. Refer to **Section 4.5**, Biological Resources for a more detailed discussion of the potential effects of stormwater discharge on species that reside in the East Fork Lewis River.

Because the existing land use would be changed and an on-site membrane bio-reactor (MBR) ultra-violet (UV) wastewater treatment plant (WWTP) developed instead of the existing septic systems, water quality within the wetlands will improve as well. Contaminant levels would significantly drop compared to those identified in Section 3.3.

TABLE 4.3-1
ESTIMATED TREATED STORMWATER CONTAMINANT CONCENTRATIONS

Constituent	Storm Facility A	Storm Facility B	Storm Facility C	Storm Facility D
Total Suspended Solids (mg/L)	3	1.2	3	3
Total Kjeldahl Nitrogen (mg/L)	0.43	0.43	0.77	0.43
Copper (mg/L)	0.003	0.0015	0.004	0.003
Lead (mg/L)	0.009	0.0046	0.013	0.009
Zinc (mg/L)	0.020	0.0098	0.028	0.020
Phosphorous (mg/L)	0.021	0.013	0.0385	0.021
Cadmium (mg/L)	0.00006	0.00003	0.00008	0.00006

NOTE: mg/L = milligrams per liter.
Source: Olson Engineering, Inc., 2006d.

Additionally, the Tribe has committed in the MOU with Clark County and EPHS Ordinance to develop and operate the stormwater system in accordance with the provisions of CCC Chapter 13.26A, Water Quality. In the event that the U.S. Environmental Protection Agency (USEPA) and Clark County have different levels of mitigation requirements, the Tribe would adhere to the stricter of the two. Based on the implementation of a stormwater control plan, as outlined in DEIS Vol. I, **Appendix F** (Olson Engineering, 2006a) the antidegradation provisions of the Washington Administrative Code (WAC) would be met for this alternative. Thus, the impact to water quality from stormwater runoff would be less than significant. Mitigation measures are presented in **Section 5.0** that would further reduce stormwater runoff impacts to water quality including potential impacts from suspended clays, ensuring they remain minimal.

During the rainy season, stormwater temperature would be equivalent to ambient air temperature or colder and would not adversely impact the East Fork Lewis River. During the summer months, stormwater would infiltrate into soils at the project site and dissipate within the stormwater facilities described above, resulting in no to very infrequent discharges into the unnamed stream leading to the river. Therefore, the increase in impervious surfaces related to implementation of the Proposed Project would not adversely impact water temperatures of surface waters.

Wastewater

As described in **Section 2.0**, Alternatives, *Water & Wastewater Service Requirements Cowlitz Indian Tribe Casino Project* (Olson Engineering, 2006b) (DEIS Vol. II, **Appendix G)**, and the MOU with Clark County and EPHS Ordinance, wastewater from Alternative A would be treated at an on-site wastewater treatment plant, in accordance with CCC 40.370.10, Sewerage Regulations, and recycled for irrigation, toilet flushing, fire suppression, and use in the cooling system. In accordance with the MOU and EPHS Ordinance, the use of recycled water will be regulated under the Water Reclamation and Reuse Standards as published by the Washington State Department of Health (DOH) and Washington State Department of Ecology (DOE). Wastewater will be treated according to DOH and DOE standards for Class A Reclaimed Water for release to wetlands and potential human contact (fire suppression). Wastewater will be oxidized, coagulated, filtered, and disinfected prior to discharge. Refer to **Table 4.3-2** for reclaimed water quality as required by the DOH and DOE. The Tribe will abide by DOE water quality standards for Class A reclaimed water and obtain an NPDES waste discharge permit from the USEPA prior to operation of Alternative A. The Tribe will comply with the conditions of the NPDES permit. Although the casino-resort complex may be able to recycle all generated effluent, periodically some treated wastewater would be discharged near the stormwater discharge line at the unnamed stream on site in compliance with the National Pollutant Discharge Elimination System (NPDES) permit required by the USEPA.

TABLE 4.3-2
REQUIRED RECLAIMED WATER QUALITY – (CLASS A)

Parameter	Compliance
30-Day Biochemical Oxygen Demand	<30 mg/L
30-Day Total Suspended Solids	<30 mg/L
7-Day Biochemical Oxygen Demand	<45 mg/L
7-Day Total Suspended Solids	<45 mg/L
7-Day Total Coliforms	<2.2 CFUs per 100mL of wastewater
Max Total Coliforms	23 CFUs per 100 mL of wastewater
Total Ammonia-Nitrogen	Shall not exceed Washington surface water quality standard for freshwater (pH dependent)
Total Phosphorous	Shall not exceed 1 mg/L on an average annual basis
Metals (arsenic, cadmium, copper, lead, mercury, nickel, zinc)	Shall not exceed Washington chronic standards for freshwater for each analysis
30-Day Turbidity	<2 NTU
Maximum Turbidity	5 NTU

NOTES:
mg/L = milligrams per liter
CFU = colony forming units
NTU = nephelometric turbidity unit

Source: Olson Engineering, 2006b.

By comparing anticipated quality of treated wastewater with the existing water quality identified in **Table 3.3-2**, the development of Alternative A would improve water quality in the unnamed seasonal

stream on site. Furthermore, based on a lack of flow during the summer months under existing conditions, discharge of treated wastewater effluent would constitute the entire stream flow and water quality would resemble anticipated wastewater characteristics. Refer to **Table 4.3-3** for expected quality of treated wastewater from the MBR UV WWTP to be constructed on site. Temperature and metals levels were estimated from influent data obtained from the WWTP at La Center and Woodland. Fecal coliform, BOD, TSS, Ammonia-Nitrogen, and turbidity estimates are based upon information reported at other WWTP using MBR systems with denitrification and UV disinfection, the proposed treatment train for the Proposed Project (**Appendix F** of the FEIS). The expected levels of constituents identified in **Table 4.3-3** are below Washington SEPA limits, DOE water quality standards for Class AA waters, and Washington State's antidegradation provision.

TABLE 4.3-3
EXPECTED WATER QUALITY OF TREATED WASTEWATER

Constituent	Anticipated Level
pH	7.0-8.0
Fecal Coliform	<2 MPN per 100 ml
Biological Oxygen Demand	<5mg/L
Total Suspended Solids	1 mg/L
Ammonia as Nitrogen	<1 mg/L
Turbidity	<1 NTU
Arsenic	2 µg/l
Copper	5 µg/l
Lead	1 µg/l
Phosphorous	0 µg/l
Silver	0.02 µg/l
Zinc	27 µg/l

NOTES:
mg/L = milligrams per liter
µg/l = micrograms per cubic meter
NTU = nephelometric turbidity unit
MPN = most probable number

Source: Olson Engineering, 2006c

Fecal Coliform

Reduction of fecal coliform discharge to the stream is expected with the La Center Interchange Site development compared to the discharges from the current land use of the site as discussed in **Section 3.3**. Using an MBR/UV with denitrification wastewater treatment train would provide effluent with total coliform levels of less than 2 MPN per 100 ml (DEIS Vol. II, **Appendix G**). The reduction in coliform would be drastic compared to existing concentrations identified within the unnamed stream. Implementation of the Proposed Project would introduce water into the unnamed stream with fecal coliform levels 98% lower than existing conditions (**Table 3.3-2**, Sample S-1). Discharge of treated

wastewater into the unnamed stream would be considered a beneficial impact when effluent characteristics are compared to the baseline sampling data in **Table 3.3-2**.

Ammonia as Nitrogen

Ammonia as nitrogen levels in wastewater effluent are estimated at less than 1 mg/L. In accordance with WAC, the ammonia standard is based on a pH dependent equation and would not be calculated until the NPDES permitting process. Therefore, the NPDES permit for the City of La Center WWTP was reviewed for comparison. Ammonia criteria level for the La Center WWTP was calculated at 4.5 mg/L monthly and 9 mg/L daily. According to calculations located on the NPDES permit fact sheet, the following ammonia criteria were calculated:

- 4.5 mg/L for the summer acute total;
- 0.73 for the summer chronic total;
- 9.5 mg/L for the winter acute total; and
- 2.16 mg/L for the winter chronic total.

Based on the above criteria, only the summer chronic total may be periodically violated based on the existing design of the WWTP. The anticipated wastewater effluent ammonia concentration was based on MBR systems that have higher ammonia criteria. Therefore, mitigation measures have been included in **Section 5.0**, to ensure denitrification is adequate to ensure compliance with the WAC criteria for ammonia.

Turbidity

Discharge of treated wastewater to the unnamed seasonal stream on site would flush particulates, remove debris, increase low flows, and provide better habitat by supplying more water for the growth of shading riparian vegetation. The results of the supplemental sampling event indicate the discharge of treated effluent from the proposed WWTP would constitute the entire source of stream flow from July to October of each year and would constitute a majority of the flow during the remainder of the year. The discharge converting the stream to perennial is not expected to create any on going turbidity in the stream. If the stream is fully dry when the discharge begins there may be some minor siltation movement downstream as is the case in the first runoff flows annually, however the stream is expected to stabilize rapidly due to the good vegetative cover already present on the banks. The overall water quality will meet or exceed all of the standards for the East Fork Lewis River, which state that for a baseline of turbidity under 50 NTU, discharge shall not create an increase greater than 5 NTU. Wastewater would have turbidity of less than 1 NTU and would therefore comply with the WAC water quality criteria for Class AA waters. The beneficial uses of the unnamed stream are also addressed in the new Biological Assessment (**Appendix I** of the FEIS). Refer to **Section 4.5**, Biological Resources for a more detailed discussion of the effects of wastewater discharge on species that reside in the East Fork Lewis River.

Water Temperature

As noted in **Section 3.3**, the ambient water temperature of the East Fork Lewis River exceeds the WAC water criterion for Class AA waters during the summer months. Water quality could further degrade if stormwater and wastewater from the Proposed Project discharged into the unnamed stream increases the temperature of the already impacted East Fork Lewis River.

During transport and treatment, the temperature of wastewater effluent increases over ambient conditions. If discharged directly into the unnamed stream after treatment at the proposed WWTP, the higher temperature treated wastewater could adversely impact receiving waters. In order to reduce potential impacts from the increased temperature of treated wastewater an underground heat transfer pipe filed will be developed and is included as mitigation in **Section 5.2.2**. Implementation of mitigation outlined in Section 5.0 would reduce treated wastewater temperatures to 16ºC. Therefore, no adverse impact will result on the ambient temperature of receiving waters downstream from the discharge point of treated wastewater generated by the Proposed Project. A beneficial impact may occur by discharging cooler water into the East Fork Lewis River helping maintain ambient temperatures below the water quality criterion.

Other Constituents

Other constituents of the wastewater discharge from the Proposed Project would meet established criteria. This includes metals, biological oxygen demand, total suspended solids. Further investigations required through the NPDES permitting process will ensure wastewater discharge is in compliance with local restrictions.

Large Storms/Flash Flooding

The stormwater treatment facilities for the Proposed Project were designed to treat the "water quality design storm". In accordance with Clark County Code (40.380), the "water quality design storm" is designated as storm flows equal to 70% of the 2-year storm flow, which accounts for greater than 90% of storm events that occur within Clark County. Water quality design storms typically precede large storms and provide the first flush of surface contaminants such as automobile fluids and sediment. After the water quality design storm, subsequent storms would encounter fewer ground-level contaminants and therefore would not require the same level of treatment. Flows from these subsequent storms will pass through the stormwater treatment facilities receiving some treatment, but not as much as the water quality storm event. Flash flooding occurs when the ground is saturated and stormwater detention basins are at capacity. At this time, the water quality storm has already entrained contaminants from the site and been treated through the stormwater treatment facilities. Therefore, runoff levels above the water quality storm event are considered clean, similar to roof runoff (**Appendix G** of the FEIS). Therefore, untreated stormwater during large storms and flash

flooding that traverses the project site would not impact the water quality of the unnamed stream nor the East Fork Lewis River.

Impacts from stormwater runoff to the Type 5 unnamed seasonal stream and wetlands on site, including the effects of erosion and increased discharge volume to habitats and wildlife, are discussed in detail in **Section 4.5** Biological Resources.

GROUNDWATER

Development of Alternative A would not require the use of on-site groundwater supplies as water would be provided pursuant to a services agreement with Clark Public Utilities as discussed in **Section 4.10**, Public Services. Therefore, no adverse impacts to on-site groundwater supplies and private wells would occur. During construction of Alternative A, existing on-site wells would be properly abandoned according to DOE requirements.

Use of reclaimed water on site would not adversely affect groundwater quality. As mentioned above, the water quality expected from the wastewater treatment plant would be comparable to or higher than the existing groundwater quality (Olson Engineering, 2006b) (DEIS Vol. II, **Appendix G**). Additionally, recycled water that infiltrates into the ground would be sufficiently filtered by the soil environment prior to reaching the nearest groundwater aquifer used by nearby wells 50 feet below the surface of the site. Therefore, the operation of Alternative A would have a less than significant effect on groundwater quality. No mitigation is required.

If not treated properly prior to discharge, surface water runoff has the potential to negatively impact groundwater quality. However, the stormwater plan includes various water quality features to improve stormwater quality as described above. Along with the treatment facilities, the soil would act as a filter for percolating storm water. With a depth to groundwater of over 75 feet, the stormwater, which has already been filtered through vegetation uptake and separated from oils and like contaminates in the stormwater treatment facilities, would be adequately filtered through the process of soil adsorption and infiltration by the time it intercepts the groundwater table. Soil adsorption involves contaminants in stormwater adhering to the surface of soil particles as the water passes through. Infiltration involves contaminants becoming entrained in the tiny spaces created by the shapes of soil components. Therefore, by the time storm water reaches the groundwater table, it will be of similar quality to pre-existing conditions. Storm water generated by the Proposed Project would not adversely impact groundwater quality.

The conversion of agricultural land to commercial land introduces large areas of impermeable surfaces such as paved parking lots and new roads. The introduction of these surfaces can reduce groundwater recharge in areas where surface percolation accounts for a large percentage of natural recharge. Although the development of Alternative A would introduce large areas of impermeable

surfaces, the use of stormwater vaults and Wetland Cs as a natural stormwater detention basin for storing treated stormwater would allow collected stormwater to percolate into the groundwater table. Therefore, the introduction of impermeable surfaces would not have an adverse impact on quantities of groundwater resources.

4.3.2 ALTERNATIVE B – PREFERRED PROJECT WITHOUT REROUTING NW 319TH STREET

SURFACE WATER

Impacts to surface water, including flooding and construction impacts, stormwater runoff, and wastewater, as a result of the development of Alternative B would be similar to those of Alternative A as both alternatives are similar in design and size. However, some minor differences are apparent. The increased impermeable surface resulting from the relocation of the road under Alternative A will not occur under Alternative B, which has been accounted for in the drainage plan for Alternative B. Although stormwater detention basins and runoff control structures differ in placement between the two alternatives, the design principals and requirements for Alternative B would be the same as discussed above for Alternative A and would result in minimal adverse impacts to surface water resources. Refer to **Section 4.3.1** for a general discussion of impacts to surface water.

Water Temperature

As discussed in **Section 4.3.1**, no adverse impacts to the ambient temperature of the East Fork Lewis River would occur as a result of stormwater and wastewater discharged into the unnamed tributary that traverses the project site. The project would also include the pipe field to allow heat transfer from the treated wastewater to the cooler soils reducing temperatures below the State water quality criterion. A beneficial impact may occur by discharging cooler water into the East Fork Lewis River helping maintain ambient temperatures below the water quality criterion.

GROUNDWATER

Impacts to groundwater supply and quality as a result of the development of Alternative B would be similar to those of Alternative A as both alternatives are similar in design and size. Refer to **Section 4.3.1** for a discussion of impacts to groundwater. The operation of Alternative B would have a less than significant effect on groundwater. No mitigation is required.

4.3.3 ALTERNATIVE C – REDUCED INTENSITY

SURFACE WATER

Under Alternative C the casino-resort complex would be reduced in size; however, the entire site would be developed in a similar manner as under Alternatives A and B. Impacts to surface water, including flooding and construction impacts, stormwater runoff and wastewater, as a result of the

development of Alternative C would, therefore, be similar to, but less than, those of Alternatives A or B. Refer to **Section 4.3.1** for a discussion of impacts to surface water.

Water Temperature

As discussed in **Section 4.3.1**, no adverse impacts to the ambient temperature of the East For Lewis River would occur as a result of stormwater and wastewater discharged into the unnamed tributary that traverses the project site. The project would also include the pipe field to allow heat transfer from the treated wastewater to the cooler soils reducing temperatures below the State water quality criterion. A beneficial impact may occur by discharging cooler water into the East Fork Lewis River helping maintain ambient temperatures below the water quality criterion.

GROUNDWATER

As with Alternatives A and B, on-site groundwater supplies would not be developed. The expected water quality from the wastewater treatment plant would be comparable to or higher than the existing groundwater quality (Olson Engineering, 2006b) (DEIS Vol. II, **Appendix G**). Additionally, recycled water that infiltrates into the ground would be sufficiently filtered by the soil environment prior to reaching the nearest groundwater aquifer used by nearby wells 50 feet below the surface of the site. Therefore, the operation of Alternative C would have a less than significant effect on groundwater quality. No mitigation is required.

4.3.4 ALTERNATIVE D – BUSINESS PARK

SURFACE WATER

Development of the business park under Alternative D would encompass the entire La Center Interchange Site in a similar, but more extensive manner, than under Alternative A or B. Components of this alternative include a three-story office building, several single-story office/warehouse buildings, and surface parking lots. Under Alternative D, wastewater would be disposed of off-site at the La Center municipal wastewater system (with agreement from the City) and no recycled water would be used. Impacts related to flooding, construction, and stormwater quality would be the same as described under Alternative A.

Under Alternative D the topography of the site would be altered to a greater extent, resulting in more substantial changes to the natural drainage patterns of the site. Additionally, the extensive amount of surface parking under Alternative D provides for a greater amount of impervious surfaces. However, as described for Alternative A, stormwater runoff would be directed into on-site stormwater control facilities sized to accommodate water draining from impervious surfaces (Olson Engineering, 2006a) (DEIS Vol. I, **Appendix F**). The stormwater control facilities would be designed to the standards in CCC 40.380 (Stormwater and Erosion Control) according to Section 10.0 of the MOU and Section 3(G) of the Tribe's EPHS Ordinance (**Appendix U** of the FEIS), which also applies to Alternative D.

The proposed stormwater control facilities, which include using Wetland Cs as a natural stormwater detention basin, would reduce peak stormwater flows to the unnamed seasonal stream on site to less than significant levels. No mitigation is required.

Water Temperature

Impacts to receiving water temperature would be similar to Alternative A, except no WWTP is planned for Alternative D. Stormwater would be treated according to Clark County standards, and as discussed in **Section 4.3.1**, temperature would be equivalent to ambient air temperature during the wet season and stormwater would mainly infiltrate into the soil and evaporate within treatment facilities during the summer. Implementation of Alternative D would not adversely impact the temperature of receiving waters in accordance with the State water quality criterion.

GROUNDWATER

Development of Alternative D would not require the use of on-site groundwater supplies as water would be provided pursuant to a services agreement with Clark Public Utilities as discussed in **Section 4.10** Public Services. Therefore, adverse impacts to on-site groundwater supplies and private wells would not occur. Existing on-site wells would be properly abandoned according to DOE requirements during construction of Alternative D.

Surface water runoff has the potential to negatively impact groundwater quality if not treated properly prior to discharge. However, as described above under Alternative A, the incorporation of storm filter vaults and vegetated swales would provide additional filtering of runoff prior to release into the unnamed seasonal stream on site by capturing sediment and pollutants. Therefore, surface water runoff is not expected to have an adverse impact on groundwater quality. Mitigation measures are presented in **Section 5.0** to ensure impacts to groundwater quality from stormwater discharge remain less than significant

Wastewater

No on-site wastewater treatment plant is proposed for Alternative D. As noted in **Section 3.9**, Land Use, the City of La Center has included the La Center Interchange Site within its Urban Growth Area (UGA) expansion request to Clark County. Once the site is contained within the La Center UGA, the Tribe would negotiate with the City for connection to the municipal wastewater system for off-site disposal of wastewater. Therefore, there would be no adverse impacts to groundwater quality associated with on-site wastewater disposal.

4.3.5 ALTERNATIVE E – RIDGEFIELD INTERCHANGE SITE

SURFACE WATER

This section discusses direct and indirect potential impacts associated with the development of Alternative E on surface water resources. Potential impacts to water supply and distribution are discussed in **Section 4.10**, Public Services.

Flooding

The property is located outside the 100-year and 500-year floodplains. As a result, no effects from flooding are expected to occur.

Construction Impacts

Like with the other development alternatives, construction activities under Alternative E on the Ridgefield Interchange Site would result in ground disturbance, which could lead to erosion. Erosion can increase sediment discharge to surface waters during storm events thereby degrading downstream water quality. Project construction also has the potential to discharge other construction-related materials (concrete washings, oil, and grease) onto the ground and then into nearby surface waters during storm events. Construction would also involve the use of diesel-powered equipment and would likely involve the temporary storage of fuel and oil on site. Discharges of pollutants to surface waters from construction activities and accidents are a potentially significant impact. Implementation of mitigation measures specified in **Section 5.0** would reduce or prevent adverse impacts from construction operations to the local and regional watershed to a less than significant level.

Stormwater Runoff

Development of project components on the Ridgefield Interchange Site would generate increased runoff during rain events due to increased impervious surfaces. Stormwater runoff under Alternative E would be directed into on-site stormwater control facilities sized to accommodate water draining from impervious surfaces (Olson Engineering, 2006a) (DEIS Vol. I, **Appendix F**). The proposed stormwater control facilities, which include five stormwater storage vaults with discharge to the mid-site wetland area, would reduce the impact of stormwater runoff to a less than significant level. No mitigation is required.

Stormwater Quality

Runoff from project facilities, especially surface parking lots, could flush trash, debris, oil, sediments, and grease into area surface waters, impacting water quality. Fertilizers used in landscaped areas could also result in impacts to water quality if allowed to enter nearby surface waters. Several features designed to filter the surface runoff prior to release into the natural drainage channels on site have been incorporated into the site design (Olson Engineering, 2006a) (DEIS Vol. I, **Appendix F**). These features include the use of storm filter vaults to remove suspended solids such as trash and soil

sedimentation, oil, grease, and other potential materials that could degrade surface water quality. Use of vegetative swales would provide additional filtering of runoff prior to release into the wetlands by capturing sediment and pollutants. After release into the wetlands within the Ridgefield Interchange Site, treated stormwater would ultimately make its way to the East Fork Lewis River. Since stormwater would be directly treated through stormwater treatment facilities and indirectly filtered through wetland buffer mitigation, no adverse impacts to the East Fork Lewis River would occur from stormwater generated by Alternative E. Refer to **Section 4.5**, Biological Resources for a more detailed discussion of the effects of stormwater discharge on species that reside in the East Fork Lewis River.

Water Temperature

Temperature of receiving waters would not be adversely impacted from the implementation of Alternative E. Stormwater would be treated according to Clark County standards, and as discussed in **Section 4.3.1**, stormwater temperature would be equivalent to ambient air temperature during the wet season and stormwater would mainly infiltrate into the soil and evaporate within treatment facilities during the summer. No wastewater would be discharged into surface waters, as the project would connect to the municipal system.

GROUNDWATER

Development of Alternative E would not require the use of on-site groundwater quantities. Therefore, adverse impacts to on-site groundwater quantities and private wells would not occur. Existing on-site wells would be properly abandoned according to DOE requirements during construction of Alternative E.

Surface water runoff has the potential to negatively impact groundwater quality if not treated properly prior to discharge. However, as described above, stormwater runoff from project facilities would be filtered to remove pollutants prior to discharge and, therefore, is not expected to have an adverse impact on groundwater quality. Mitigation measures are presented in **Section 5.0** to ensure impacts to groundwater quality from stormwater discharge remain less than significant.

Wastewater

On-site disposal of wastewater is not proposed under Alternative E. Under Alternative E, a sanitary pump station would be located on the site. Wastewater would be pumped from the pump station to the municipal system and routed to the City of Ridgefield's water treatment plant. Adverse impacts to groundwater quality associated with on-site wastewater disposal would, therefore, not occur. Impacts to the City of Ridgefield's water treatment plant from the Proposed Project are discussed in **Section 4.10**, Public Services.

The conversion of agricultural land to commercial land introduces large areas of impermeable surfaces such as paved parking lots and new roads. The introduction of these surfaces can reduce groundwater recharge in areas where surface percolation accounts for a large percentage of natural recharge. Although the development of Alternative E would introduce large areas of impermeable surfaces, the use of stormwater vaults for storing treated stormwater would allow collected stormwater to percolate into the groundwater table. Therefore, the introduction of impermeable surfaces would not have an adverse impact on groundwater resources.

4.3.6 ALTERNATIVE F – NO ACTION

SURFACE WATER

No new development is proposed under Alternative F. Under this alternative, there would be no change in impact on surface water in the project area.

Water Temperature

Under the No Action Alternative, the site conditions for both the La Center and Ridgefield sites would remain vacant. No stormwater management facilities or wastewater treatment plants would be constructed. Ambient temperature of the East Fork Lewis River would continue to surpass the water quality criterion established by the State. There would be no potential cooling effect from cooled treated wastewater discharging into the unnamed stream included as mitigation for Alternatives A through C.

GROUNDWATER

Because existing land uses would remain under this alternative, no change in impact to groundwater would occur.