

1. Summary

1.1 Purpose and Objectives of the Proposal

The purpose of the Thurston Highlands proposal is to develop a Master Planned Community on a 1,240-acre site in the southwest quadrant of the incorporated area of the City, in accordance with the City's *Comprehensive Plan* vision for this property. The objectives of the proposal are to develop the southwest area of Yelm in a manner that would:

- Be consistent with the Washington State Growth Management Act and the City of Yelm *Comprehensive Plan* to provide for anticipated growth in the community.
- Implement sustainable development principles to the maximum extent practicable within an urban area. Develop a community that thoughtfully provides for the needs of its residents with efficiency and stewardship for the future.
- Implement characteristics the citizens of Yelm would like to see in their community.
- Minimize impacts to environmentally sensitive areas and preserve natural areas for public enjoyment.
- Provide for efficient growth in public services and utilities required to serve phased development of the Master Planned Community.

1.2 SEPA Procedures and Public Involvement

The City of Yelm received the Conceptual Master Site Plan Application for the Thurston Highlands Master Planned Community in mid-April 2006. On April 18, 2006, the City issued a Notice of Application, Determination of Significance, and EIS Scoping Notice. The notice was mailed to all property owners within 1,000 feet of the project, to Federal, State and local agencies, and to neighboring Indian Tribes. General public notice was also advertised in the *Nisqually Valley News*, and posted on the City's website. The Notice of Application advised interested parties of where they could review the application and supporting documents. The Determination of Significance identified the need for an Environmental Impact Statement (EIS) to be prepared to describe and evaluate the potential adverse impacts of the proposed development. The proposed scope of the EIS was also published and distributed on April 18, 2006, to identify the elements of the environment and alternatives to be reviewed in the EIS. A public comment period of at least 21 days was indicated in the Scoping notice. The actual duration of the Scoping comment period was 35 days.

The City conducted an expanded Scoping process in accordance with WAC 197-11-410. Two open houses were held in the Yelm Middle School gymnasium, during which the public was encouraged to help the City determine the potential impacts and alternatives that should be analyzed in the EIS. The dates of these open houses were: April 25, 2006 and May 18, 2006. In addition, the City held 10 meetings with interested Tribes, State agencies, neighboring jurisdictions, school districts and other public service providers, and public utility providers.

Following the close of the EIS Scoping period on May 26, 2006, the City prepared, distributed, and posted a *Final EIS Scope* document. The Final Scope document described how public comments had influenced the analysis to be performed in the EIS, and addressed comments that were outside the scope of an EIS process. The *Final EIS Scope* document was

sent via first class mail to the SEPA Agency contact list and property owners within 1,000 feet, and via e-mail to everyone in the City's contact database related to the Thurston Highlands project. This distribution occurred on June 9, 2006.

During the Draft EIS preparation period, the City and EIS team continued to meet with various agency and public service representatives (e.g., WSDOT, Thurston County Transportation, Yelm Community Schools, Rainier School District, SE Thurston Fire/EMS, and Puget Sound Energy) for input to the analysis being performed. In order to keep the public informed during this period, the applicant prepared and published newsletters in Fall 2006, Winter 2006–2007, and Fall 2007, and distributed these to the City's Thurston Highlands contacts list, to report on progress with the technical studies and environmental review.

Issuance of this Draft Environmental Impact Statement on June 10, 2008 initiated a 45-day public comment period during which Tribes and agencies with jurisdiction, and interested individuals were invited to review and comment on the proposed action, alternatives, and analysis of potential environmental effects. Draft EIS Chapter 5 contains the Distribution List, identifying recipients of the document (in electronic form), and/or recipients of a Notice of Availability of the Draft EIS. The Draft EIS comment period closed July 28, 2008.

The City and applicant held two public open houses during the Draft EIS comment period: one on June 25, 2008, and one on July 16, 2008. Parties on the Distribution List received notification of the date, time and location of these open houses. Comment forms were used and submitted at each open house. In addition, the City of Yelm Community Development Department received numerous letters of comment and e-mail communications concerning the Thurston Highlands Master Planned Community proposal. These have all been reviewed, and are reproduced in Appendix A and Appendix B of this Final EIS. Comments received have been entered in Final EIS Chapter 2, followed by the City's response to each. The Final EIS will be distributed to everyone on the Draft EIS Distribution List, as well as anyone not listed there who commented on the Draft EIS. The Final EIS Distribution List is provided in Chapter 4 of this document.

The Draft and Final EIS, as companion documents, will be provided to the Hearing Examiner and Yelm City Council for their use (along with other information about the proposal) during the decision-making process for the Thurston Highlands Master Planned Community. Draft EIS Section 2.4 describes the Master Site Plan Review Process.

1.3 The Proposed Action and Alternatives

The Thurston Highlands Master Planned Community is a mixed-use development proposal. The project site is located within the City of Yelm, west of State Routes 507 and 510, between Fort Lewis and the City's central business district. The site encompasses all of Section 27, the eastern portion of Section 26, and the southern portion of Section 23, Township 17 North, Range 1 East, Willamette Meridian, Thurston County, Washington (see Figure 1.3-1). Under any conceptual land use alternative, the development scenario would include approximately 5,000 homes to be provided in a mix of housing types and densities; commercial development; office space; several hundred acres of permanent open space; a Regional Sports Complex; school sites; an on-site fire station; and on-site provisions for other public services (e.g., water supply; wastewater collection, treatment and reuse or disposal; stormwater management facilities; electrical power and communications; transit facilities; churches; and a possible satellite police station); and extension of Tahoma Boulevard through the site to SR 507.

Insert Figure 1.3-1: Vicinity Map (8-½ x 11-inch color)

The Preferred Alternative. The Preferred Alternative is a blend of characteristics of traditional development and an urban village concept, described below as the range of land use alternatives. For planning and environmental review purposes, the Preferred Alternative is estimated to include approximately 3,000 single-family detached homes, 546 duplex units, 509 multi-family units (3 to 4 dwelling units per building), and 945 multi-family units with 5 or more dwelling units per building. Other uses would include approximately 825,000 square feet (sf) of retail commercial development, 135,000 sf of professional office space, and about 400 acres of permanent open space (approximately 32 percent of the site), including common areas like a Farmers Market and Village Square. Figures 1.3-2 and 1.3-3 are conceptual illustrations of the Preferred Alternative. More detailed descriptions of the proposed Master Planned Community and conceptual land use alternatives are provided in Drat EIS Chapter 2.

Traditional Development Alternative. The Traditional Development Alternative would be characterized by suburban development similar to what has occurred within the City of Yelm over the past several years: a curvi-linear, gridded street system with an emphasis on single-family residential neighborhoods and small-scale neighborhood convenience commercial uses (see Figures 1.3-4 and 1.3-5). A larger portion of the site would be allocated to a low-density zone. Traditional neighborhoods would spread the residential density out over the majority of the project site, providing larger lot sizes (5,000 to 7,000 square feet) and an average density of 4 dwelling units per buildable acre, resulting in a more automobile-oriented community. For planning and environmental review purposes, the Traditional Development Alternative is estimated to provide approximately 4,000 single-family detached homes, 400 duplex units, 400 multi-family units with 3 to 4 dwelling units per building, and 200 multi-family units with 5 or more dwelling units per building. Other uses would include approximately 480,000 sf of commercial development, 150,000 sf of office space, and about 315 acres of permanent open space (approximately 25 percent of the site).

Urban Village Alternative. The Urban Village Alternative would create compact areas of high-density residential uses inter-mixed with commercial uses around a central Village Square (see Figures 1.3-6 and 1.3-7). This development pattern could reduce reliance on automobile travel. Neighborhoods would have much smaller single-family lots, with an average density ranging from 5 to 7 dwelling units per buildable acre. Private yards would generally be smaller, though some areas of the site would still be developed as traditional single-family residential subdivisions. For planning and environmental review purposes, the Urban Village Alternative is estimated to provide approximately 1,000 single-family detached homes, 1,240 duplex units, 1,420 multi-family units with 3 to 4 dwelling units per building, and 1,340 multi-family units with 5 or more dwelling units per building. Other uses would include approximately 850,000 sf of commercial development, 650,000 sf of office space, and 400 to 500 acres of permanent open space (30 to 40 percent of the site).

No Action Alternative. It is assumed under the No Action Alternative that the property would temporarily remain undeveloped. This is the basis for comparison of the No Action Alternative to the Preferred Alternative and other conceptual land use alternatives.

Alternatives Considered and Eliminated. The applicant for the Thurston Highlands Master Planned Community did not consider alternative development concepts for the property other than those described and evaluated in this Draft EIS. Prior proposals considered and eliminated by others are described in Draft EIS Section 2.3, *History and Background of Environmental Review, Land Use Regulations, and Development Proposals for the Site*, in Chapter 2.

Insert Figure 1.3-2: Preferred Alternative Conceptual Land Use Plan (8-½ x 11-inch color)

Insert Figure 1.3-3: Preferred Alternative “Zoom-In” Site Plan (8-½ x 11-inch color)

Insert Figure 1.3-4: Traditional Development Conceptual Land Use Plan (8-½ x 11-inch color)

Insert Figure 1.3-5: Traditional Development “Zoom-In” Site Plan (8-½ x 11-inch color)

Insert Figure 1.3-6: Urban Village Alternative Conceptual Land Use Plan (8-½ x 11-inch color)

Insert Figure 1.3-7: Urban Village Alternative “Zoom-In” Site Plan (8-½ x 11-inch color)

Phased Development Proposal. The applicant proposes to build-out the Thurston Highlands master planned community over a period of 10 to 30 years in response to market demand, and in response to the availability of public services and infrastructure required to accommodate this growth in the community. At this rate, 250 to 400 residential units per year could be built and made available for occupancy. Full build-out is expected to be complete in the timeframe between 2018 and 2038.

To assist public service providers with planning for early stages of development within Thurston Highlands, a Phase 1 development concept is described, illustrated, and evaluated in this Draft Environmental Impact Statement (see Figure 1.3-8). Phase 1 would consist of approximately 1,008 homes (single-family detached and multi-family) to be constructed between approximately 2008 and 2011, and to be occupied between approximately 2009 and 2012. The projected resident population of Phase 1 development is approximately 2,527 persons, including about 534 students (approximately 298 elementary, 101 middle school, and 135 high school students). It is anticipated that the character of development within Thurston Highlands Phase 1 would be that of a traditional urban neighborhood, similar to the adjacent Tahoma Terra Master Planned Community, as a transition to higher development densities within the Highlands. The Phase 1 conceptual site plan includes approximately 70 acres of open space and habitat area to be preserved, and the 87-acre Regional Sports Complex. The Regional Sports Complex would be completed in phases, to be determined during the Final Master Site Plan review and Development Agreement process.

Insert Figure 1.3-8: Phase 1 Conceptual Land Use Plan (8-½ x 11-inch color)

1.4 Significant Impacts and Mitigation Measures

The full text of the Affected Environment, Potential Impacts, and Mitigation Measures for the proposed action and alternatives is presented in Draft EIS Chapter 3. For those elements of the environment with probable significant environmental impacts, technical reports were prepared by experts in each respective field. The full content of these technical reports is available on a CD sent to everyone on the Distribution List, and available from the City upon request. The project-specific technical reports, listed at the beginning of the References section (Final EIS Section 4), are incorporated by reference into the environmental review documents prepared by the City for the proposed Thurston Highlands Master Planned Community, in accordance with WAC 197-11-600(4)(b).

1.4.1 Summary of Direct Impacts and Mitigation

A summary matrix of potential impacts and mitigation measures is provided in Table 1.4-1. Changes made to the Draft EIS Summary are indicated in strike-out and underscore. These descriptions are considerably abbreviated from the full discussion in the technical reports and Draft EIS Chapter 3, and lack explanations of terminology and analytical methods. Summary statements of project impacts in the table also appear in the absence of the context of existing environmental conditions (the Affected Environment discussions in Draft EIS Chapter 3). For these reasons, readers are encouraged to review the more comprehensive discussion of issues of interest in Draft EIS Chapter 3 to develop the most accurate understanding of impacts and mitigation measures associated with the proposed action and alternatives.

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community.

| <i>Potential Impacts</i> | <i>Mitigation Measures</i> |
|---|--|
| EARTH | |
| Significant recontouring the site would be required to develop grades suitable for the construction of roads, utilities, and buildings. <u>Where excavation is undertaken, deeper, more permeable soils may be exposed.</u> | Forested bluffs that separate upland areas from the alluvial plain would be retained in erosion hazard protection areas. |
| | A site excavation plan would be required by the City of Yelm, as well as grading permits for individual phases of development. |
| | To the extent practicable, cut and fill volumes would be balanced during each phase of development, and excavated topsoil would be stockpiled for reuse. |
| | Roadway and building foundation setbacks from the top of slopes will be determined by additional geotechnical and engineering analyses at the time of specific development applications. |
| | To mitigate potential local instability, steep slopes may be recontoured by grading and terracing. |
| | Drainage would be directed away from steep slopes to areas where infiltration would not impact stability. |
| Installation of utilities in excavations would require temporary cuts. | Potential instability impacts would be mitigated by temporary support of excavations or by laying back cut slopes. |
| The proposal includes obtaining construction fill material (gravel) from borrow areas on the Tahoma Terra and Thurston Highlands sites. | Borrow areas and gravel quarries would be regulated by applicable State and local permits. As sections of borrow area are excavated to final grade, they would be reclaimed and vegetated with native plant and tree species. |
| | Temporary impacts associated with borrow material excavation would be mitigated by installing appropriate erosion and sediment control measures. |
| Soils with a significant fines fraction will likely be moisture-sensitive, and therefore difficult to operate on or adequately compact during wet weather. | Earthwork in areas with moisture-sensitive soils could be performed during dry weather, whenever practicable. Alternatively, sand and gravel could be incorporated into material containing excessive amounts of fines to improve soil properties during construction. |
| It is likely that deeper, more permeable glacial deposits may be utilized for on-site stormwater infiltration. | See Section 3.3 Water Resources for the results of the Thurston Highlands Draft Infiltration Effects Assessment (PGG 2008). |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|---|
| During construction, when site soils are exposed by grading, there would be a potential for surface water runoff to cause erosion and transport sediment to wetlands and/or Thompson Creek. | The proposal includes complying with the Department of Ecology <i>Stormwater Management Manual for Western Washington</i> (2005) or more recent guidance in the future. Proper installation and maintenance of Best Management Practices specified in the Manual would minimize or avoid potential adverse impacts associated with erosion/sedimentation during construction and in the completed condition of the project. |
| | Construction contractor(s) would be required to prepare and implement an Erosion and Sedimentation Control (ESC) Plan during construction. |
| | The applicant would obtain and comply with the conditions of a Department of Ecology National Pollutant Discharge Elimination System (NPDES) Construction Stormwater permit. |
| Significant Unavoidable Adverse Impacts: Mass grading would result in unavoidable changes to existing topography; however, these changes would not necessarily be adverse. Predominant features such as forested slopes would be retained. Site development would consume natural resources in the form of sand and gravel. | |
| AIR QUALITY | |
| Temporary, localized emissions of fugitive dust and vehicle emissions would occur during construction; however, these are not expected to result in any significant adverse impact to overall ambient air quality in Yelm. | Construction contractors would be required to develop and implement a dust control plan; spray exposed soils with water or other suppressant; cover or wet-down trucks transporting friable material; use quarry spalls or other approved construction entrances; pave or use gravel on staging areas or roads that would be exposed for long periods; remove particulate matter deposited on paved public roads and sidewalks. |
| | Contractors would be encouraged to use only equipment and trucks that are maintained in good operational condition; encourage construction worker car pooling or other trip reduction strategies; stage construction trips to avoid or minimize periods of overall transportation system congestion; limit idling of construction equipment. |
| | Construction contractors would be required to comply with Olympic Region Clean Air Agency (ORCAA) Rule 8.3 requiring the use of reasonably available control technology to minimize fugitive dust emissions. |
| Diesel-fueled heavy trucks and construction equipment would emit air pollutants that would slightly degrade local air quality. | Contractors would be asked to locate construction equipment and staging zones as far away as practicable from sensitive receptors and sensitive populations. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|---|
| | Use of an on-site gravel resource will minimize truck trips on public roadways that would otherwise be required to import this material. The balanced grading proposal would also minimize the number of off-site export trips. |
| Some construction activities (such as asphalt paving) would cause odors detectable to some people in the area; however, these occurrences would be short-term. | Construction contractors would be required to comply with applicable Olympic Region Clean Air Agency (ORCAA) Rule 8.5 requiring the use of reasonably available control technology to mitigate odor-bearing gases emitted to the atmosphere. |
| The developed condition of the project would not be expected to result in more than minor emissions of any pollutants. | The applicant proposes to use covenants, codes and restrictions to prohibit residential wood-burning in fireplaces or stoves. |
| A microscale carbon monoxide (CO) hotspot analysis using computer models recommended or required by EPA guidelines and/or air quality rules shows that calculated maximum peak 1-hour and 8-hour CO concentrations would actually decline in future years, with or without Thurston Highlands project traffic, due to federal vehicle emission reduction requirements. | Inherent to the Master Planned Community will be shopping, employment, and recreational opportunities that will minimize the number of off-site trips for these purposes. The proposal also includes making a site available to Intercity Transit for development of a transit center within the project area. |
| Greenhouse gas emissions would be generated during construction to the extent that non-renewable resources are used in development (such as wood products harvested from natural forests, exotic lumber, virgin metals, or more than essential quantities of concrete). | The applicant proposes to encourage builders to minimize the use of concrete and maximize the use of locally-produced wood and wood composites, to the extent available. |
| There are, as yet, no particular means to gage whether carbon dioxide (CO ₂) emissions associated with the useful life of residential development constitute an impact in terms of their potential effects on climate. | "Built green" and other proposed energy conservation measures described in Draft EIS Sections 3.2 and 3.6 would minimize greenhouse gas emissions attributable to the project, as would measures described above to keep trips internal to the site and/or use transit. |
| Significant Unavoidable Adverse Impacts: No significant adverse air quality impacts attributable to ozone, particulate matter, carbon monoxide or greenhouse gas emissions have been identified. | |
| WATER RESOURCES: Surface Water | |
| Regrading the site will result in changes to existing drainage systems, and an increase in runoff since the "reprod" forest cover will be removed. <u>Where deep excavations occur, more permeable soils may be exposed.</u> | Mitigation alternatives for the increased volume of stormwater runoff, and increased peak flows, would be based on reducing runoff using Low Impact Development (LID) strategies, and reducing peak flows using retention/detention facilities, as described below under Utilities: Stormwater Management, and in Draft EIS Section 3.19.4. |
| Water quality impacts could arise from erosion of bare ground, and/or from spills of petroleum products associated with the operation of construction equipment on the site. | Mitigation measures for stormwater management and pollution prevention during construction are described above in the Earth section, and in Draft EIS Section 3.1. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|---|
| <p>Stormwater infiltrated in the developed condition of the project will recharge groundwater. Modeling indicates that about 30% of the increase in <u>stormwater</u> recharge will reach Thompson Creek via the shallow aquifer, with the remainder flowing west or to the deeper aquifer.</p> | <p>Mitigation strategies currently under consideration to minimize the volume of infiltrated stormwater that would report to Thompson Creek include: reducing the quantity of stormwater that needs to be infiltrated; infiltrating stormwater in an area where recharge does not report to Thompson Creek; storing stormwater during the wet season until the timing of recharge would have a minimal impact on the Creek; improving the conveyance capacity of the Creek channel; and/or adding storage capacity to the Creek. <u>Possible mechanisms for addressing improvements to conveyance and/or storage capacity within the Thompson Creek system would be include formation of a Drainage District or Flood Control District (described in Draft EIS Section 3.19.4), and/or off-channel storage in an adjacent wetland, described and analyzed in the <i>Final Surface Water Technical Report</i> (Brown and Caldwell, November 2008).</u></p> |
| <p>The effect of an increase in shallow groundwater flow to Thompson Creek will depend upon the volume of flow in the creek at the time. In general, the added contribution would affect flow rates, water surface levels, and duration of seasonal flows in the Creek.</p> | <p>Same as above.</p> |
| <p>If reclaimed water from the City's wastewater treatment process were infiltrated on the Thurston Highlands site, approximately 30% 15% of this volume would also reach Thompson Creek via the shallow aquifer.</p> | <p>Mitigation options for reclaimed water infiltration include: reducing the amount infiltrated; limiting the time of infiltration to a period when flow in Thompson Creek would be low; selecting an infiltration location on the site where recharge does not report to Thompson Creek; and/or infiltrating reclaimed water at a different location within the City.</p> |
| <p>Surface water runoff from the developed-condition of the site is likely to have impaired water quality.</p> | <p>The Thurston Highlands stormwater management proposal described in Draft EIS Section 3.19.4 will include water quality treatment facilities in accordance with City of Yelm and Washington Department of Ecology requirements.</p> |
| | <p><u>The <i>Integrated Pest Management Plan (IPMP)</i> required for non-residential development within the Master Planned Community could also be required for residential neighborhoods within the development, to be enforced by the Homeowners' Association. The <i>IPMP</i> could require homeowner education through the adoption of methods to minimize the quantity and/or occurrence of nitrates in stormwater runoff from lawn areas. Commonly-accepted practices are described in Final EIS Section 3.3.1.</u></p> |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Significant Unavoidable Adverse Impacts: No significant unavoidable adverse impacts to surface water movement, quantity or quality have been identified. | |
|--|---|
| <i>Potential Impacts</i> | <i>Mitigation Measures</i> |
| WATER RESOURCES: Groundwater | |
| The increased volume of surface water runoff from the site that will result from removal of the “reprod” forest cover will create a larger volume of stormwater to be infiltrated on the site, resulting in an increase in the downstream high groundwater hazard area on the order of approximately 5% 4% to 8% 11%. The effects of increased stormwater infiltration are described above under Water Resources: Surface Water, and in Draft EIS Section 3.1. | Mitigation strategies currently under consideration to minimize the volume of infiltrated stormwater that would report to Thompson Creek are described above under Water Resources: Surface Water, and in Draft in Final EIS Section 3.1, in the <u>Final Infiltration Effects Assessment (Pacific Groundwater Group, October 2008)</u> , and in the <u>Final Surface Water Technical Report (Brown and Caldwell, November 2008)</u> . |
| <u>If reclaimed water from the City’s wastewater treatment process were also infiltrated on the Thurston Highlands site, the downstream high groundwater hazard area would increase on the order of 5% to 11%, though the relationship between groundwater rise and the area of groundwater flooding would be unique for each flood area.</u> | <u>Same as above.</u> |
| Some of the increased recharge would flow downward into deeper aquifers. These increases would be small, and generally considered beneficial for steam and river base flows. | Stormwater infiltrated on the Thurston Highlands site would undergo water quality treatment prior to discharge, consistent with requirements defined in Ecology’s 2005 <i>Stormwater Manual for Western Washington</i> , formulated to reduce suspended solids, oil and grease, and phosphates. |
| | City of Yelm Code requirements for Critical Aquifer Recharge Areas limit development within 50 feet of the outer edge of high groundwater flood hazard areas, or 2 feet above the base flood elevation. |
| | <u>To the extent that methods are implemented to minimize the quantity and/or occurrence of nitrates in stormwater runoff from lawn areas (as described above in Surface Water Mitigation Measures), infiltration of nitrates to groundwater would also be minimized.</u> |
| Significant Unavoidable Adverse Impacts: Identified groundwater impacts are either not adverse or not significant, or are avoidable by proposed mitigation. | |
| WATER RESOURCES: Public and Private Water Systems | |
| Well drilling creates the potential for contaminants to enter the aquifer from the surface of the ground or other, more shallow water-bearing strata. | Deep, water supply well drilling is not a direct element of the Thurston Highlands Master Planned Community proposal. |
| Construction activities create the potential for fuel and chemical spills that could potentially reach existing public and private water systems if a spill were to occur within the critical aquifer recharge area. | Erosion and Sedimentation Control Plans, and Spill Prevention Control and Clean-up Plans would be in-place and implemented at all times during construction on the site, in compliance with City of Yelm and Department of Ecology requirements. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|--|
| Land uses such as gasoline service stations, print shops, and dry cleaners, if proposed within the Master Planned Community, would use and store petroleum products and chemicals on the site. | The City of Yelm Critical Areas Code currently prohibits certain high-risk land uses and establishes standards for other land uses to protect the aquifer from contamination from petroleum and chemicals. The Master Planned Community would be subject to the requirements for development within a critical aquifer recharge area as provided in the most current version of the Yelm Critical Areas Code; therefore, the risk of aquifer contamination from these sources is considered extremely low. |
| The proposed Regional Sports Complex may require the application of fertilizers, herbicides, and pesticides. | Same as above. |
| Stormwater runoff from residential, commercial and recreational land uses has the potential to contaminate the local aquifer used by public and private water systems. | Same as above. Also see the description of proposed stormwater quality treatment measures in Draft EIS Section 3.19.4. |
| Any potential direct impacts to public or private water systems from development of the Thurston Highlands Master Planned Community relate to the City's acquisition of additional water rights sufficient to serve the proposed development and development elsewhere within the City's UGA. | The Washington Department of Ecology (Ecology), as part of its review of new water right applications, considers the water rights of other water systems and the impact that additional groundwater withdrawal may have on public and private water systems that could potentially be affected by the approval of new water rights. A request by the City of Yelm to Ecology to review and act on the City's pending application will include groundwater modeling consistent with the policies of the <i>Nisqually Watershed Plan and Detailed Implementation Plan</i> . The request will also include a detailed mitigation plan, if impacts were indicated to other water rights holders or to in-stream flows in the Nisqually River or Deschutes River. |
| Withdrawal of additional water from the regional aquifer by the City of Yelm to expand its water system to serve Thurston Highlands and other anticipated growth within the City's water service area has the potential to impact other public and private water systems if the additional withdrawal would impact the static water level in wells used by other water systems. | Same as above. |
| Significant Unavoidable Adverse Impacts: No significant adverse impacts to public or private water supplies are anticipated that could not be avoided or mitigated. | |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| <i>Potential Impacts</i> | <i>Mitigation Measures</i> |
|---|---|
| WETLANDS | |
| The potential for erosion/sedimentation to adversely affect wetlands during construction is considered low, due to the fully vegetated condition of project wetlands that would trap sediments. | The proposed Erosion/Sedimentation Control Plan to be in-place at all times during construction on the site would minimize the potential for sediments to reach wetland buffers. |
| The proposal includes preserving all significant, high-value wetland systems within the property. | Protective wetland buffers may go beyond simple linear dimensions to incorporate distinctive upland features. Buffer averaging may occur in the outer 25% of on-site wetlands, with the exception of the Wetland A, H and B complexes. |
| Isolated “kettle” wetlands on the site that are small, low-value systems, may be used as stormwater detention/infiltration ponds, or may be filled. | If a decision is made to use some of the isolated kettle basin wetlands for stormwater detention and infiltration, stormwater runoff would be treated in accordance with Washington Department of Ecology standards prior to release to these wetlands. |
| | It should be a requirement of the Thurston Highlands Homeowners’ Association to maintain kettle wetlands free from windblown (and other) debris, whether or not these features are used for stormwater management. |
| | Compensatory mitigation for the loss of kettle wetlands would be provided in the form of expanding or enhancing one or more of the high-value wetland complexes on the site. |
| Extension of Tahoma Boulevard through the site would result in unavoidable wetland crossings at two locations in the southern portion of the site (approximately 2.35 acres, total). | Efforts will be made to cross wetlands at the narrowest points practicable with the Boulevard alignment. Conceptual compensatory wetland mitigation within the Wetlands A, B, D and F complexes shown on Draft EIS Figure 3.4-4 indicates opportunities to connect and/or expand these wetlands by approximately 205,340 sf (4.71 acres), which would more than offset the fill. |
| An unavoidable wetland crossing (approximately 3,286 sf) is also required to provide access to an adjacent property east of the Wetland H complex within the Thurston Highlands Phase 1 development area. | Efforts will be made to cross Wetland H at the narrowest point while simultaneously avoiding several small wetland systems east of the drainage on property not within Thurston Highlands. Conceptual compensatory wetland mitigation within the Wetland H complex shown on Draft EIS Figure 3.4-4 indicates an opportunity to expand this wetland by approximately 22,420 sf (0.52 acre), which would more than offset the fill. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|---|
| <p>Stormwater runoff from urban environments has the potential to adversely affect wetlands as a result of chemical and biological pollutants, or large volumes that could cause erosion and/or alter wetland hydrology.</p> | <p>Stormwater impacts to wetlands will be largely avoided by site design and existing habitat structure. All stormwater runoff is to be infiltrated, rather than being directed as surface flow to wetlands or streams. If infiltration to the shallow aquifer reports to on-site wetlands as expected, prolonged hydrology in these wetlands would provide birds, aquatic organisms, and invertebrates with an improved chance of completing their life cycles before these systems dry out. Due to the outlet characteristics of on-site wetlands, no higher level of inundation is expected as a result of the stormwater influence. Existing vegetation within these wetlands is accustomed to “flashy” annual water regimes.</p> |
| | <p>If it would be feasible to design stormwater infiltration in shallow spreaders at a location that would maximize input to the Wetland H complex through the months of May or June, this source could be used to increase the temporal duration of standing water in this wetland for the benefit of shallow marsh wildlife, to extend the duration of favorable conditions during the breeding season.</p> |
| <p>Significant Unavoidable Adverse Impacts: Unavoidable wetland fill for road crossings (approximately 2.43 acres, total) would constitute less than 0.2% of total site area, and less than 4% <u>0.04</u> of total wetland area on the property, and would be offset by on-site compensatory wetland mitigation. Several small kettle wetlands may be filled or used for stormwater management. On-site opportunities for compensatory mitigation have also been identified for these potential impacts (up to 9.5 acres, total), with the result that there may actually be a net increase in wetland area on the property. Therefore, no significant unavoidable adverse impact to wetlands is anticipated.</p> | |
| <p>WILDLIFE, HABITATS, AND FISH</p> | |
| <p>The seasonal timing of site clearing could affect wildlife survival. If performed during the general “breeding” season (March 1–July 1), significant potential would exist for the loss of wildlife reproductive efforts due to the loss of nest sites with eggs or young.</p> | <p>City decision makers may be asked to consider could be given to confining site clearing activities to the non-breeding season, to avoid the seasonal wildlife reproductive effort.</p> |
| <p>The clearing and grading proposal would result in approximately 100 to 300 acres of the site being cleared, undergoing development, and/or awaiting landscaping at any one time.</p> | <p>Minimizing the amount of land cleared in any one year would minimize the impact to wildlife from habitat loss, because fewer numbers of organisms would be searching out new areas in which to live in any given year.</p> |
| <p>Because grading would occur after all woody vegetation on the site had been removed from areas undergoing development, little if any wildlife would still be present in these areas of the site.</p> | <p>It would not be necessary to consider seasonal restrictions on grading to avoid the wildlife reproductive effort, as there would be minimal impact to wildlife after site clearing.</p> |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| | The landscaping proposal for the site includes replanting with native vegetation to the extent practicable. This would partially compensate for the loss of wildlife habitat on the property, though the human presence would still cause the development to be repopulated by more urban species. |
| | Artificial nest boxes could be placed within undeveloped open space areas to attract cavity-nesting bird species. |
| Nocturnal construction, if any, and if it involved artificial lighting in close proximity to undeveloped property, could temporarily disrupt wildlife use of adjacent areas. | Construction hours would be regulated by applicable City code. A variance would be required for nighttime work, if any is considered. As a condition of a variance for nighttime work, the City should require shielding bright, artificial lighting from shining into non-construction areas where significant wildlife habitat exists. |
| Two areas of high-value upland habitat (Mature Forest communities) would be almost completely avoided by proposed development. Approximately 0.56 acre of Mature Forest habitat would be lost due to extension of Tahoma Boulevard through the site. | The proposal includes preserving the majority of Mature Forest habitat in the northeast portion of the site within a protected wetland buffer, and or directly as valued habitat. |
| There would be no impacts to Washington State priority habitats (such as prairie or oak woodland) or species, as none are present on the property. | No mitigation required. It would, however, be beneficial to eradicate invasive, exotic species (such as Scot's broom and Himalayan blackberry) should be undertaken in all undeveloped open space areas of the site where clearing is not otherwise proposed. |
| | Approximately 315 to 500 acres of the site (25 to 40% of total acreage) would be preserved in open space and common areas. |
| There would be no impacts to Federally-listed threatened or endangered species or critical habitat, as none were found on the Thurston Highlands property. | No mitigation required. |
| There would be no impacts to listed species of anadromous fish, as a physical barrier to fish passage downstream of SR 510 blocks access to Thompson Creek. | No mitigation required. |
| The stormwater infiltration proposal has the potential to have a beneficial impact on resident fish (stickleback) habitat in the Thompson Creek system, as a result of prolonged seasonal stream flow. | No mitigation required. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|--|
| Urban development of the site would be a significant deterrent to potential terrestrial wildlife movements into and across the site, due to the absence of cover and foraging areas. If wildlife were to wander into the urban area, it would likely result in an undesirable and potentially dangerous outcome. | The <i>Fish and Wildlife Species and Habitats Inventory</i> prepared for the project recommends that a perimeter fence should be constructed along the Thurston Highlands west and northwest boundary, between the site and Fort Lewis, sufficient to deter, at a minimum, access by deer, elk, bear and cougar. |
| | Consideration should be given to incorporating an elevated structure across wetland crossings by roads in the southern portion of the project area (Wetlands A7 and F), capable of allowing animal passage beneath the roadway. |
| Human presence can disturb wildlife, some species more than others, in the developed condition of the site. | Urban species of wildlife likely to inhabit the completed condition of the Master Planned Community will habituate to persistent, non-threatening human presence. |
| | All human access into undeveloped open space should be restricted to defined trails. Dogs and other domestic pets should only be allowed on trails if on a lease. |
| Significant Unavoidable Adverse Impacts: The number and diversity of wildlife that presently use the site would be significantly reduced, and the southwest quadrant of the City would be significantly degraded for potential wildlife use. Organisms displaced from the site as a result of mass clearing and grading in areas to be developed would have to relocate or would perish. | |
| RELATIONSHIP TO PLANS AND POLICIES | |
| The Thurston Highlands Master Planned Community must be consistent with policies of the <i>Yelm Comprehensive Plan</i> as part of the Master Planned Community approval. | Any of the conceptual land use alternatives would achieve urban densities of greater than 4 dwelling units per gross acre, and could provide for the cost-effective phasing of urban infrastructure. |
| | Any of the conceptual land use alternatives would provide a mix of housing types and densities, and accordingly a range of housing prices. |
| | Each of the conceptual land use alternatives identifies public service sites within the development for schools, a fire station, and a possible satellite police station. |
| | Public facilities will be designed and constructed concurrent with phased development of the project in a manner that will maintain adopted levels of service. |
| | The <i>Transportation Impact Analysis</i> prepared for the project identifies local and regional transportation system improvements that will be required to serve proposed development, and describes a mitigation strategy identifying four types of developer contributions and responsibilities. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| | Each of the conceptual land use alternatives includes a mix of neighborhood, community, and regional parks that would be consistent with the <i>Yelm Parks Plan</i> . |
| | Any of the conceptual land use alternatives would protect and preserve environmentally sensitive areas on the site. |
| The City of Yelm has adopted a series of Capital Facilities Plans that identify public infrastructure needs for the next 20-year planning period, and establish a list of improvements for 6-year periods. | As construction within the Thurston Highlands Master Planned Community begins to occur, and Final Master Site Plans and development applications are submitted for phased implementation of the project, infrastructure needs will be identified in the City's Capital Facilities Plan updates, along with funding sources that may include impact fees and developer contributions. |
| The Yelm Chamber of Commerce and the local community created a <i>Vision Plan</i> in the 1990s designed to improve the economic vitality, convenience and appearance of the downtown commercial area. The <i>Vision Plan</i> is adopted by reference in the <i>Yelm Comprehensive Plan</i> , and became a guiding document in the creation of development regulations such as the <i>Yelm Design Guidelines</i> . | The <i>Yelm Vision Plan</i> will be utilized by the City during the Thurston Highlands application review process for final Master Site Plan approval, and during formulation of a Development Agreement (or similar instrument) that will establish project-specific development standards and requirements for construction within the proposed Master Planned Community. |
| Significant Unavoidable Adverse Impacts: No significant unavoidable adverse impacts are anticipated in the form of the relationship of the proposal to existing City of Yelm plans, policies, and regulations, as the Development Agreement (or similar instrument) to be executed between the City and the applicant will assure compliance with the City's intent as well as requirements in these documents. | |
| LAND USE | |
| Vacant land would be converted to urban uses – residential, commercial, recreational, and public service sites, over a period of 10 to 30 years. | The City's Capital Facilities Plans would be updated annually in order to provide the necessary infrastructure to accommodate Thurston Highlands and other anticipated growth. |
| The <i>Buildable Lands Report for Thurston County</i> concludes that there is sufficient buildable area within the existing City limits and associated UGA to accommodate the anticipated 20-year population growth within the City of Yelm. | It is not anticipated that the Thurston Highlands Master Planned Community would change the land use patterns planned for by the City through its <i>Comprehensive Plan and Joint Plan with Thurston County</i> , nor would the project create a need to expand the Yelm UGA to accommodate the upcoming 20 years of population growth. |
| The proposed Master Planned Community would change the character of the City of Yelm through creation of a large population center somewhat separate from the Central Business District and existing residential neighborhoods; a major population center would be created to the west. | Proposed development of community and regional parks, and community facilities such as a Farmers Market and Village Square within the Master Planned Community, for use and enjoyment by all citizens within the Yelm community and surrounding area, could minimize distinctions between Thurston Highlands and greater Yelm. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| The proposed Urban Village to serve the retail and professional service needs of residents of the Master Planned Community, together with public services to be provided within the development, could create a feeling of a separate community within the greater Yelm community. | Same as above. Also, the proposed transportation system that will provide multiple connections in the form of streets, pedestrian paths, and bicycle paths between the Master Planned Community and the greater Yelm community would facilitate blending the development with the existing community. |
| Commercial development within the Master Planned Community to serve the needs of the resident population within the development will comprise a significant percentage of total commercial development within the City, though separate from the existing commercial core. | It is anticipated that the Development Agreement (or similar instrument) to be created between the City and the Thurston Highlands applicant would include regulations that encourage retail and commercial services sufficient to serve the needs of residents, but not compete with the existing Yelm commercial core. |
| Significant Unavoidable Adverse Impacts: Because development of the proposed Thurston Highlands Master Planned Community has been anticipated in the City's <i>Comprehensive Plan</i> for 15 years, no significant unavoidable adverse impacts to land use within the City or its UGA would be anticipated. | |
| NOISE | |
| Construction equipment operating on the site would generate sound levels ranging from approximately 76 to 89 a-weighted decibels (dBA) at a distance of 50 feet from receiving sources. The standard distance reduction for point source noise is 6 dBA per doubling of distance from the source. | A minimum 50-ft buffer is proposed around the perimeter of the Thurston Highlands site. Therefore, with the exception of the boundary with Fort Lewis, construction equipment would not work in closer proximity to adjacent land uses. In addition, the applicant proposes to locate noise-generating equipment during construction as far as practicable away from sensitive off-site receivers. |
| | Contractors would be required to comply with City of Yelm noise rules that specify hours of the day and days of the week during which construction is allowed. If unusual circumstances require occasional nighttime construction activities, the contractor would be required to obtain a variance from the City. |
| Excavation of gravel from an on-site source is proposed within 100 feet of adjoining properties within unincorporated Thurston County. The proposed gravel processing area would be approximately 1,200 feet to the north. | Noise received on off-site properties generated by gravel extraction and gravel processing would be subject to the State noise limits adopted by the City of Yelm in their development regulations. |
| | Approximately 35,000 off-road truck trips would occur internal to the site to distribute gravel from the on-site source for use in site development. This would avoid generating this volume of trips on the surrounding public road system if gravel had to be imported. |
| The proposed Regional Sports Complex would have the greatest potential to generate noise audible at off-site locations. | As an operational measure, no amplified sound is contemplated within the Regional Sports Complex |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|---|
| Residents and visitors to public areas of the Master Planned Community would, at times, experience noise generated by training activities on the adjoining Fort Lewis Military Reservation. | The applicant proposes to include notification in real estate transaction documents to advise prospective home purchasers and business owners of the proximity to Fort Lewis, and possible noise and visual impacts associated with military training exercises. This notification should include the most current update of Fort Lewis noise-complaint procedures. |
| Significant Unavoidable Adverse Impacts: No significant unavoidable adverse noise impacts have been identified. When the Regional Sports Complex is more specifically defined in the future, the City will review its potential noise impacts in the context of adjacent land uses at that time, and will impose appropriate mitigation requirements. | |
| RELATIONSHIP TO THE FORT LEWIS MILITARY RESERVATION | |
| Clearing and grading activities on the Thurston Highlands would increase the potential for erosion and the movement of sediments off-site toward the Fort Lewis Military Reservation. | Construction Best Management Practices are both proposed and required at all times during all phases of site development, for compliance with Ecology's 2005 <i>Stormwater Management Manual for Western Washington</i> . See mitigation measures summarized above for Earth and Surface Water Resources. |
| Toxic air pollutants are generated during smoke training by Fort Lewis chemical units. | Fort Lewis complies with mitigation requirements in NEPA Environmental Assessments prepared to address smoke training exercises, and is required to meet Olympic Region Clean Air Agency and National Ambient Air Quality Standards at installation boundaries. |
| Prescribed burning occurs approximately once per year on the Military Reservation to maintain prairie habitat quality, consistent with the Fort Lewis Forestry Program. This activity may be a source of smoke and odor on the Thurston Highlands site. | The City of Yelm could request Fort Lewis to notify neighboring residents of the date and time of prescribed burning practices. The project would introduce a resident population in closer proximity to the Rainier Training Area than presently occurs. |
| The Wetland B complex extends across the shared border between the Fort Lewis Military Reservation and the Thurston Highlands site. | The proposal includes preserving the high-value Wetland B complex with a substantial buffer to protect existing functions and values. |
| There are no drinking water extraction wells located on Fort Lewis in proximity to the boundary with Thurston Highlands. | If a new City of Yelm water supply well is completed on the Thurston Highlands site at the existing location of test wells, the wellhead protection area would not extend onto the Military Reservation. |
| Fort Lewis provides habitat for numerous wildlife species, including Federally-listed species, candidates for listing, and other special status species. Loss of habitat on the Thurston Highlands site due to clearing and grading would put increased pressure on habitats within the Military Reservation as displaced individuals seek comparable habitats in which to live. | The <i>Fish and Wildlife Species and Habitats Inventory</i> prepared for the project recommends constructing a perimeter fence along the boundary with Fort Lewis to block large mammal movements (at a minimum) between the Military Reservation and the urban environment of the Master Planned Community. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|---|
| Military training exercises generate noise associated with aircraft, artillery, explosives, and small arms firing. Sound from these sources can affect neighboring land uses. | Fort Lewis implements measures to keep noise at a minimum, but must be allowed to continue to fulfill the need for combat-readiness training. Fort Lewis has an established procedure to deal with noise complaints. Also see mitigation measures for Noise, above. |
| Light sources associated with military training exercises may include the use of high-intensity spotlights and flares during nighttime exercises. During maneuvers, spotlights may sweep across the Thurston Highlands site. | Fort Lewis is currently in the process of securing off-installation special use areas for training activities that may include this type of activity. |
| The Regional Sports Complex and lower residential densities are proposed near the shared boundary between Thurston Highlands and the Fort Lewis Rainier Training Area. | Buildings taller than an average home are proposed in the higher density and commercial districts near the interior of the site. Development regulations would limit the height of buildings, towers and antennas. Application review would take into consideration avoiding structural heights with the potential to interfere with military flight maneuvers. |
| The existing fence along the shared boundary between the Thurston Highlands site and the Fort Lewis Rainier Training Area is in poor repair. It is possible that unauthorized access onto the Military Reservation by people and domestic pets could increase with development of the Master Planned Community. | If City decision makers support construction of the perimeter wildlife fence recommended in the <i>Fish and Wildlife Species and Habitats Inventory</i> , this fence would also serve as a barrier to unauthorized access by people and pets (depending on the type of fencing used). |
| There are no public services or utilities on the Fort Lewis Rainier Training Area at the present time. | Public services and utilities would be provided to the Thurston Highlands Master Planned Community from existing City, County, and franchise utility systems, originating east, north, and south of the site. The project would neither require nor extend public services and utilities onto the Military Reservation. |
| The existing Centralia Power line easement may be relocated from its existing diagonal corridor through the Thurston Highlands site to a 50-foot easement along the west boundary adjacent to the Fort Lewis Rainier Training Area. | Coordination with a designated representative of Fort Lewis Public Works during preparation of this EIS confirmed no anticipated adverse effects to the Military Training Area associated with the power line relocation. |
| Significant Unavoidable Adverse Impacts: No significant unavoidable adverse impacts have been identified that would affect compatibility between the proposed Master Planned Community and the Fort Lewis Military Reservation. | |
| POPULATION | |
| Depending on the alternative selected for development of the Master Planned Community, the resident population at full build-out over a 10- to 30-year period could range from approximately 10,998 persons to 13,859. | Development of the Thurston Highlands site as a Master Planned Community has been anticipated in the City's <i>Comprehensive Plan</i> for 15 years, and has been included in Washington State Office of Financial Management population projections for the City of Yelm and its UGA. |
| Significant Unavoidable Adverse Impacts: From a City planning perspective, no significant unavoidable adverse impacts to population growth within the City of Yelm and its UGA would be expected. | |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|---|
| HOUSING | |
| Under any conceptual land use alternative, it is anticipated that approximately 5,000 dwelling units would be constructed within the Master Planned Community. The mix of housing types would vary from predominantly single-family (the Traditional Development Alternative), to predominantly multi-family (the Urban Village Alternative), or a mixture of the two (the Preferred Alternative). | As the Thurston Highlands Master Planned Community has been anticipated in the City's <i>Comprehensive Plan</i> for 15 years, and has been considered as part of the City's housing needs assessment, development of this project over time will not alter the anticipated provision of or demand for housing within the City of Yelm. |
| At full build-out, there would be an impact to affordable housing opportunities within the City of Yelm that would vary considerably depending on which conceptual land use alternative is selected for implementation. | The approved Conceptual Master Site Plan should provide for a mix of housing types and styles, as well as mixed densities to provide housing that is affordable to people of various income levels, as reflected in the conceptual land use alternatives evaluated in this EIS. |
| Both the rate and character of residential development over the 10- to 30-year build-out of the Master Planned Community will be influenced by market factors unknown at this time. | The Development Agreement (or similar instrument) to be prepared between the City and the applicant should include flexibility to respond to changing circumstances over time. |
| Significant Unavoidable Adverse Impacts: No significant adverse impacts to housing supply within the City of Yelm and its UGA are anticipated. | |
| LIGHT AND GLARE | |
| Neighboring residents, particularly those in Tahoma Terra, would observe temporary sources of light and glare on construction sites within Thurston Highlands. During future phases of construction within Thurston Highlands, residents of earlier phases of the development would have this same experience. | Hours of construction limited by the Washington State noise rule and City of Yelm development standards would have the secondary affect of also limiting nighttime illumination associated with construction. |
| Development of the proposed Master Planned Community on the site would introduce a substantial number of new sources of light and glare associated with several different sources. | Lighting plans will be developed and evaluated during review of project-specific development proposals under the Final Master Site Plan. Yelm City Code and the Development Agreement (or similar instrument) to be executed between the City and the applicant will address lighting requirements with an intent to ensure efficient, aesthetically-pleasing, and non-intrusive lighting throughout the project. |
| The proposed Regional Sports Complex may have the greatest potential to generate nighttime illumination that would be visible from off-site locations. | The Development Agreement and/or specific mitigation measures required for the Regional Sports Complex can include operational requirements that would limit the hours when field lighting could be on, and could require that these lights be equipped with timers to automatically turn off at a specified time when not in use. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| <p>Significant Unavoidable Adverse Impacts: Light emanating from the site and potential sources of glare would be substantially increased as a result of development of the Master Planned Community. Whether this would constitute an adverse impact is subject to interpretation by different observers. Some may object to the change from undeveloped land; others may find the change an acceptable consequence of planned urban development of the site.</p> | |
|--|--|
| <i>Potential Impacts</i> | <i>Mitigation Measures</i> |
| AESTHETICS | |
| <p>Similar to the light and glare impacts described above, residents of neighboring properties and early-phase residents of the Thurston Highlands Master Planned Community would experience potentially the most significant aesthetic change in the appearance of the property during construction when the “reprod” forest cover is removed, extensive grading is performed, and site development begins.</p> | <p>The change in the appearance of the site during construction would be an unavoidable impact.</p> |
| <p>The undeveloped character of the site will be converted to an urban, mixed-use community. Approximately 315 to 500 acres of natural open space and common areas would be preserved on the site (25% to 40% of total land area), integrated with residential and commercial development.</p> | <p>The Development Agreement (or similar instrument) to be executed between the City and the applicant will include project-specific development standards at least as restrictive or more so than existing City Code, intended to result in an aesthetically-pleasing Master Planned Community.</p> |
| <p>Significant Unavoidable Adverse Impacts: Views of the site during clearing, grading, and construction would likely be objectionable to some observers. Conversion of the property from a dense “reprod” forest to an urban community with some vegetated slopes, mature forest, and wetland complexes integrated into the development would be a significant change in the aesthetic condition of the site that would be interpreted differently by different observers; i.e., it may be pleasing to some and objectionable to others.</p> | |
| PARKS AND RECREATION | |
| <p>Similar to the aesthetics impacts described above, residents of neighboring properties and early-phase residents of the Thurston Highlands Master Planned Community would experience temporary unsightly conditions on the property during construction of parks, trails, and the Regional Sports Complex.</p> | <p>Construction mitigation measures would be required for park, trail, and Regional Sports Complex development with an intent to minimize nuisance factors for adjoining properties.</p> |
| <p>The City of Yelm <i>Comprehensive Plan</i> establishes a level of service for neighborhood and community park and recreation facilities of 5 acres of land per 1,000 population. The <i>Parks & Recreation Technical Report</i> prepared for the project also considered the National Recreation and Park Association (NRPA) range of standards, from 6.25 to 10.5 acres per 1,000. At this rate, the Master Planned Community would require between approximately 70 and 145 acres of park land, depending on the conceptual land use alternative selected for implementation.</p> | <p>In the process of updating its <i>Parks Plan</i>, the City of Yelm may increase its park land requirement (i.e., level of service) in proportion to resident population projections commensurate with NRPA recommendations. In any event, however, it is anticipated that the Thurston Highlands Master Planned Community would satisfy more than minimum requirements as a result of the Regional Sports Complex proposal in addition to mini parks and neighborhood parks that would be required with subdivision approvals to implement the project.</p> |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|--|
| | Wetlands, wetland buffers, and mature forest habitat to be preserved in various locations within the development would provide additional passive open space. These areas would not be counted toward park and recreational land requirements. |
| Significant Unavoidable Adverse Impacts: No significant unavoidable adverse impacts to parks and recreational facilities are anticipated due to the City requirement to provide park land and recreational improvements concurrent with phased implementation of the Master Planned Community. | |
| HISTORIC AND CULTURAL RESOURCES | |
| There are no known historic or cultural sites on the Thurston Highlands property. The site is, however, located within an area used by Native American Tribes in the past; therefore, there is a possibility of discovering cultural materials even though much of the property has been disturbed by past logging practices. | Because the potential to encounter presently unknown resources would be greatest during earthwork activities, the developer would prepare a plan of action prior to initiating ground-disturbance, describing procedures to be followed in the event that suspected archaeological or cultural resources are found. |
| | Contractors should be trained in how to recognize cultural or archaeological resources during earthwork activities. Staff representatives of the Nisqually Tribe have offered to provide this training. |
| Significant Unavoidable Adverse Impacts: In the absence of any known historic or cultural sites on the property, and with the proposal to comply with applicable regulations and standards of practice for exercising care and observation during ground-disturbing activities, no significant unavoidable adverse impacts to cultural or archaeological resources are anticipated. | |
| TRANSPORTATION SYSTEM | |
| Construction of the Thurston Highlands Master Planned Community will generate additional traffic on local and regional study area roadways, and will have a measurable impact on those roadways and intersections. The project <i>Transportation Impact Analysis</i> and Draft EIS Section 3.17 provide a detailed description of modeled effects at a total of 21 local study area intersections, and 35 regional study area intersections, along with explanations of methodology and technical terminology. Future traffic projections include traffic forecasts for projects within the study area that are either under construction, approved for construction, or in the permitting process, as well as background growth at an annual rate of 2%. | Development of the proposed Master Planned Community has been anticipated in the City's planning process for some time. The City has prepared comprehensive and project-specific documents over the past 15 years that address the traffic potential of this large-scale project in the southwest quadrant of the City. Local and regional transportation corridors have been identified to accommodate this project as well as other anticipated growth in the area. A phased mitigation strategy is described in Draft EIS Section 3.17.7. |
| Conceptual Phase 1 development is projected to generate approximately 9,200 average daily trips, and 727 trips during the PM peak hour by approximately the year 2012. | Transportation concurrency will be addressed at the time of specific applications for the initiation of Phase 1 development within the Master Planned Community. |
| With the addition of Thurston Highlands conceptual Phase 1 project traffic, six local study area intersections and seven regional study area intersections are projected to operate at LOS F in the PM peak hour. | The mitigation strategy for Thurston Highlands conceptual Phase 1 development is described in Draft EIS Section 3.17.7.1. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| Approximately 1,884 new-to-network PM peak hour trips and 22,200 daily trips would be generated at completion and full occupancy of Thurston Highlands conceptual Phase 2 development (projected to occur by the year 2015 for planning purposes). | A separate TIA and concurrency evaluation will be prepared for each phase of development within the Master Planned Community to ensure that the necessary improvements are in-place at the time of each specific application, or that a financial guarantee has been made by the agency to construct the improvement within 6 years. |
| With the addition of Thurston Highlands conceptual Phase 1 and Phase 2 development, five local study area intersections and 12 regional study area intersections are forecast to decline to LOS F during the PM peak hour. | The mitigation strategy for Thurston Highlands conceptual Phase 1/Phase 2 development is described in Draft EIS Section 3.17.7.2. |
| At full build-out (projected to occur by 2025 for planning purposes), PM peak hour trips would range from approximately 4,675 to 5,345, depending on the conceptual land use alternative selected for implementation. Average daily trips at full build-out would range from approximately 52,450 to 68,200. | Four types of developer contributions and responsibilities for transportation system improvements will be imposed by the City as they prepare the Development Agreement to be executed with the applicant: developer-funded off-site infrastructure improvements; site access and circulation improvements; traffic mitigation fees, and developer proportionate-share contributions. Specific mitigation measures to be required of development beyond the year 2015 will be verified upon receipt and review of an updated TIA at the time of applications for phases of development beyond the year 2015. |
| Residential development and employment centers within the Master Planned Community can be expected to generate an increased demand for transit service. | The applicant proposes to work with Intercity Transit to provide a site for future development of a park-and-ride facility or transit center, bus stops, shelters, pullouts, and layover space for future flexible and fixed-route transit service within and through the Master Planned Community. <u>Bicycle storage areas should be developed at or near public areas, such as retail centers, bus stops, and parks.</u> |
| Residents, students, employees, and visitors to the Master Planned Community can be expected to generate an increased demand for non-motorized circulation facilities. | The proposal includes constructing curbs, gutters, and raised sidewalks on all new roadways. Bicycle lanes are planned on Tahoma Boulevard. |
| | <u>An at-grade crossing is proposed at Concurrent with planning and design work to extend Tahoma Boulevard to SR 507, additional study will be performed to determine whether the intersection of the Yelm-Tenino Trail with Tahoma Boulevard will be an at-grade crossing or elevated, when the Boulevard is extended to SR 507.</u> |
| | The applicant proposes to work with the school district(s) to provide safe walk routes for students within the development. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| <p>Significant Unavoidable Adverse Impacts: The Thurston Highlands Master Planned Community will construct transportation improvements as conditions of its approval in order to mitigate impacts to transportation facilities and operations. After each major phase of project development, a separate Transportation Impact Analysis (TIA) will be prepared to reassess project impacts in the context of actual traffic conditions at that time – including traffic generated by regional growth, regional land use patterns, and the effect of transportation demand strategy policies on the regional level. Each updated TIA will be used to identify appropriate mitigation measures and network strategies required to support proposed uses and the trip generation potential of the planned community. These intermediate traffic reviews and assessments will ensure that no significant unavoidable adverse impacts will result from the project that cannot be adequately mitigated.</p> | |
|---|--|
| Potential Impacts | Mitigation Measures |
| PUBLIC SERVICES: Cost of Public Services in General | |
| <p>During the planning, permitting, infrastructure construction, and building of proposed uses within the Master Planned Community, the City of Yelm Community Development Department and Public Works Department will experience the most significant impact on staff time to provide support services in the form of permit processing, plan review, utility inspections, and building inspection services.</p> | <p>The City of Yelm has a fee structure in-place that will require the applicant to pay for development review and inspection services.</p> |
| <p>In the developed-condition of the Master Planned Community, the significant increase in number of dwelling units and resident population within the City limits would increase the demand for all public services provided by the City, County, and other taxing district entities.</p> | <p>Careful consideration of operational costs during design and construction is the primary mitigation measure to minimize impacts to general governmental services. The proposal includes implementing the Sustainable Development Principles adopted by the City of Yelm in September 2006 by concentrating residential populations in compact neighborhoods, close to commercial services (see Draft EIS Appendix A).</p> |
| PUBLIC SERVICES: Fire Protection and Emergency Medical Aid | |
| <p>SE Thurston Fire/EMS can expect to experience medical aid calls during the 10- to 30-year development period of the Thurston Highlands Master Planned Community, due to safety hazards associated with construction practices.</p> | <p>Pre-construction meetings and periodic on-going meetings once construction is underway could be held with emergency service provider representatives to keep them apprised of locations on the site where work is occurring, the type of construction and type of materials being transported to and used on the site, etc.</p> |
| | <p>If there is a condition during construction that precedes the availability of fire flow to an area, the Fire District recommends that the developer arrange to have a tanker truck on-site equipped with Fire District fittings to facilitate fire suppression.</p> |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| A fire station location and needs analysis conducted by SE Thurston Fire/EMS in March 2007 indicates a demand for a new fire station to serve the Master Planned Community, and a need to approximately centrally-locate this new station within the development. The SE Thurston Fire/EMS will also require additional firefighters, two or more fire engines, and two or more aid units. | Thurston Highlands, L.L.C. proposes to provide a site for construction of a new fire station within the Master Planned Community. The development may also be assessed an impact fee to contribute to the cost of constructing, manning, and equipping the station. |
| At least the first phase of fire station construction, to house two engines and a crew of 4 to 6 firefighters/EMTs would be needed at the time of full build-out and occupancy of Thurston Highlands Phase 1. | Same as above. |
| | Residential, commercial, office, and recreational development within the project would comply with all applicable Building Codes and the International Fire Code to minimize the risk of fire and maximize measures for fire suppression. |
| | The proposal to complete the extension of Tahoma Boulevard between SR 510 and SR 507 through the Thurston Highlands site would have a beneficial effect on the provision of emergency services by improving transportation links in the southwest quadrant of the City, and avoiding the more constricted downtown intersection of these roadways. |
| PUBLIC SERVICES: Police Protection Services | |
| Construction sites are often the target of theft. These types of calls generally comprise less than 5% of all criminal investigation calls for service from the Yelm Police Department. | The most important mitigation measure to minimize potential impacts to the City of Yelm Police Department would be to ensure that funding is in-place to maintain a level of service that provides for both response to calls and community policing. |
| The developed-condition of the site could be expected to generate additional traffic patrol requirements for the Yelm Police Department, and additional calls for community policing activities. At full build-out, the Thurston Highlands Master Planned Community could exert approximately 35% of total patrol duties within the City limits. | Same as above. Consideration is also being given to co-locating a satellite police station with the new fire station to be constructed on a site donated by the applicant, approximately centrally-located within the development. This would create efficiencies for the Police Department by reducing transit time to the downtown Public Safety Building. |
| | Consideration could be given to applying Crime Prevention through Environmental Design (CPTED) principles during planning for structures and landscaping to minimize visual obstacles, maintain visual surveillance corridors, and eliminate places of concealment. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| | Other possible public service sites within the development may include a location for an urgent care facility, a firearms training facility, and/or a joint training facility. |
| PUBLIC SERVICES: Schools | |
| <p>The Thurston Highlands site is approximately bisected by the boundary between two school districts: Yelm Community Schools on the east, and the Rainier School District on the west. Conceptual site plans available at the time of this writing show commercial development planned in the southeastern portion of the site, which would generate higher tax revenues for the Yelm School District, whereas the Rainier School District would be dependent on tax revenues generated predominantly by residential development. There could be inefficiencies inherent in capital expenditures for school buildings and operational expenditures for teachers, administration, and school bus transportation services in two districts.</p> | <p>In keeping with the City's <i>Sustainable Development Principles</i>, City decision makers will consider efficiencies involved in providing school sites, school buildings, and school bus transportation services within a single school district to serve the Thurston Highlands student population, and may make a recommendation to Yelm Community Schools and the Rainier School District in this regard. It is presently anticipated that early phases of development would be within the existing boundary of the Yelm School District, and that residential development within the westerly portion of the site (i.e., within the existing boundary of the Rainier School District) would not likely occur until sometime after 2015.</p> |
| <p>In the absence of a certain phased development proposal for the Master Planned Community, the EIS quantitatively evaluates a Phase 1 development concept, and full build-out. The Phase 1 development area, entirely within the Yelm School District, is projected to generate a total student population of approximately 534 students, to enroll in local schools between approximately 2009 and 2012.</p> | <p>The Yelm <i>Capital Facilities Plan</i> (May 2007) includes an estimate of 964 Thurston Highlands students within the current 6-year planning period; i.e., through the 2012–2013 school year – nearly twice the actual student population estimate developed using the District's student generation rates.</p> |
| <p>Fiscal analysis of the Phase 1 development concept indicates that there would be a shortfall in revenues generated by the Master Planned Community in this period of time in relation to both Yelm Community Schools operating expenses (approximately 4%) and capital costs (approximately 41%) required to serve the projected number of students. Phase 1 would require construction of a new elementary school.</p> | <p>The City of Yelm presently requires <i>mitigation fees</i> for schools as a SEPA condition of development approval. School districts are also authorized to impose <i>impact fees</i> on new development, though there is no school impact fee in-place at the present time. It will be a requirement of the Development Agreement (or similar instrument) to be executed by the City and the applicant that Thurston Highlands, L.L.C. enter into a mitigation agreement with the school district(s) to adequately meet capital and operating expense requirements, with credit for the value of land donated for use as school sites.</p> |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|--|
| <p>Fiscal analysis of full build-out of the conceptual land use alternatives indicates that Yelm Community Schools would experience small shortfalls in operating expenses under the Preferred Alternative or Traditional Development Alternative, but could experience a surplus under the Urban Village Alternative (due to the smaller number of students that would be generated). The Rainier School District is projected to experience an annual shortfall equivalent to approximately 3% to 5% of its incremental annual operating expenditures, depending on the alternative selected. Both Districts are also projected to experience capital shortfalls in relation to the number of new schools required.</p> | <p>Development of the Master Planned Community under any of the conceptual land use alternatives would include donation of three or four school sites to the school district(s) to help offset the projected capital costs of serving the Thurston Highlands student population. The applicant will work with the school district(s) to accomplish land transfers in a timely way to enable new school construction as expeditiously as possible in relation to the need to serve students generated by the development.</p> |
| <p>Significant Unavoidable Adverse Impacts to Public Services: There would be shortfalls between revenues generated by the development and the requirement for public services in the early phases of the project. Provision of services during this period of time would require interim provisions and/or operations funding by the developer or City at higher levels than those assumed in the fiscal analysis. It can be expected that a “shortfall agreement” will be an element of the Development Agreement (or similar instrument) to be executed between the City and applicant, so that no significant adverse fiscal impact to the City or other public service providers would occur.</p> | |
| <p>UTILITIES: Water Service</p> | |
| <p>Construction of new or expanded infrastructure improvements to the City’s water system would be required within Thurston Highlands and elsewhere within the City’s existing system.</p> | <p>Water system extension into and through the Thurston Highlands site would be constructed within public rights-of-way or easements, located under or adjacent to public streets.</p> |
| | <p>All proposed water system improvements would be designed and constructed in compliance with applicable local and State regulations.</p> |
| <p>Older, aging facilities within the City’s existing system (such as wells and reservoirs) may no longer be needed, and may be taken off-line.</p> | <p>Land for new reservoirs at higher elevations within the development and pump station locations would be required within the Master Planned Community.</p> |
| <p>There may be temporary disruptions in service to existing customers during water system construction.</p> | <p>The City would notify existing customers in advance of potential temporary disruptions to service during construction of new water system components.</p> |
| <p>A new booster station, reservoir, almost one mile of 16-inch water main and associated appurtenances would be needed to serve Phase 1 conceptual development.</p> | <p>The City’s 2008 <i>Water System Plan</i> update will fully analyze the technical details required to expand the water distribution system to serve Thurston Highlands and maintain existing service levels at lower elevations within the City’s system.</p> |
| <p>The Thurston Highlands Master Planned Community is projected to generate an average daily water supply demand of at least 1.61 million gallons per day (exclusive of fire flow demand). Actual water service requirements will be determined at the time of specific land use applications.</p> | <p>Provisions for meeting the water supply requirements of the development are discussed in Draft EIS Section 3.3.3. Measures for minimizing the water supply requirements of the development are described in Draft EIS Section 3.19.1.</p> |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|--|
| | The Development Agreement (or similar instrument) to be executed between the City and the applicant will specify the developer's responsibility for the cost of capital improvements to the City's water system. |
| UTILITIES: Sewage Collection, Treatment, and Reuse/Discharge | |
| Construction of a new Septic Tank Effluent Pumping (STEP) system or gravity sewer mains would be required throughout the Thurston Highlands Master Planned Community. | City decision makers will determine which form of sewage collection would be optimum for expanding the City's system into southwest Yelm during the 2008 update of the <i>Sewer System Plan</i> . Sewage collection system components would be constructed within public rights-of-way or easements located under or adjacent to public streets. |
| The City's wastewater treatment plant (WWTP) will require an upgrade and an increase in capacity to serve full build-out of the Master Planned Community. If a gravity collection system is selected, it will be necessary to construct new headworks facilities at the WWTP. | All proposed sewer system improvements would be designed and constructed in compliance with applicable local and State regulations. Consideration may be given to constructing a satellite wastewater treatment plant within Thurston Highlands. |
| The City's existing sewage collection system between the treatment plant and Tahoma Terra requires improvement to serve full build-out of this adjoining development. When these improvements are made, the City's system will be capable of serving Thurston Highlands conceptual Phase 1 development without increasing the capacity of the WWTP. If a gravity collection system is selected for Phase 1 sewage collection, modification of the WWTP to add headworks would be required with Phase 1 development. | Developer cost responsibilities for sewer system improvements would be identified in the Developer Agreement to be executed between the City and the applicant. |
| There may be temporary disruptions in service to existing customers during construction of new system components. | The City would notify existing customers in advance of potential temporary disruptions to service during construction of new sewer system components. |
| UTILITIES: Reclaimed Water | |
| Reclaimed water distribution pipelines will be installed throughout all phases of the Thurston Highlands Master Planned Community. | Construction-related impacts should be minimal, as the reclaimed water distribution system would be constructed concurrently with other underground utilities, utilizing the same trenches. |
| In addition to several possible beneficial uses of reclaimed water within the development, the Thurston Highlands site is being considered as a possible location for infiltration of all or some portion of reclaimed water generated by the City's wastewater treatment process. | The City will be responsible for decisions regarding whether and how to utilize and/or infiltrate reclaimed water on the Thurston Highlands site. As technology advances over the course of this development, the number and type of beneficial uses of reclaimed water is likely to increase. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|---|
| | Washington State regulations adopted by the City of Yelm require specific treatment and disinfection procedures beyond those of most conventional wastewater treatment facilities to avoid or significantly minimize potential human health hazards associated with the use and/or infiltration of reclaimed water. |
| UTILITIES: Stormwater Management | |
| The potential for wind and water erosion of site soils would increase during site development as a result of the significant clearing and grading proposal. | Construction Best Management Practices are both proposed and required for compliance with Ecology's 2005 <i>Stormwater Management Manual for Western Washington</i> . Representative mitigation measures are described in Draft EIS Sections 3.1, 3.3, and 3.19.4. |
| Clearing and grading activities would alter the volume and characteristics of surface water runoff, evapotranspiration, and infiltration in existing on-site drainage basins. | Detailed design to be performed at the time of specific development applications for the the project may purposely redirect runoff from an existing basin with low permeable soils to a different basin with better permeability so that runoff would be retained and infiltrated on-site. |
| Impervious cover to be introduced on the site is estimated to range between approximately 43% and 47% depending on the conceptual land use alternative selected for implementation. | Washington Department of Ecology regulations require that developed-condition runoff rates must not exceed pre-developed condition rates ranging from 50% of the 2-year peak flow up to the 50-year peak flow. The goal of stormwater quantity control is to protect downstream areas from erosion and flooding due to increases in the rate and peak frequency of runoff from developed areas. |
| | Consistent with the City's Sustainable Development Principles, the proposal includes implementing Low Impact Development technologies for stormwater management, to manage stormwater closer to its source and within smaller drainage areas. |
| Urban development of the site would introduce pollutants in site runoff in the form of petroleum product residues, heavy metals, biological agents and nutrients (see Table 3.3-4 in Draft EIS Section 3.3.1). These pollutants would have the potential to degrade the quality of water being infiltrated into the ground if not properly treated. | The proposal includes designing and constructing water quality treatment facilities in accordance with Washington Department of Ecology requirements to remove pollutants contained in stormwater runoff. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|--|--|
| | Each stormwater management facility would need to be periodically observed and maintained to ensure design performance. The Thurston Highlands Homeowners' Association would own and be responsible for stormwater management facilities within the Master Planned Community after construction is complete and lots are legally platted. The City of Yelm would own and maintain stormwater management facilities that serve public right-of-way. |
| UTILITIES: Electrical Service | |
| The Puget Sound Energy (PSE) electrical supply system will be extended underground throughout the proposed Master Planned Community within designated easements for ease of access for inspection and repair. PSE requires 10-ft wide easements on private property, and "bubble" easements at vault locations. | The electrical service requirements of the Thurston Highlands Master Planned Community will be coordinated with the PSE Engineering and Construction Departments during preparation of construction documents for the project. Underground conduits are already in-place in Tahoma Boulevard through Tahoma Terra to serve initial phases of Thurston Highlands. If any bridge crossings are proposed within the development, PSE would like to coordinate attaching lines to these. |
| If the energy requirements of the project were to be met entirely with electricity, the peak load estimate would range from approximately 38,903 kW to 41,093 kW, depending in the conceptual land use alternative selected for implementation. This would require approximately two-thirds of the capacity of a typical substation. | PSE has determined that there is capacity to serve Thurston Highlands through its transmission and distribution systems in the near future. PSE may need to accelerate the timing of some planned transmission and distribution improvements within Thurston County, depending on the actual customer growth rate in the area. |
| | Because the proposal includes providing natural gas service throughout the development, the electrical peak load estimate could be reduced by more than half (to a range of approximately 17,661 kW to 20,720 kW overall) by serving residential heat and hot water demands with gas. The residential electrical load alone could be reduced by approximately 64%. |
| | The applicant proposes to encourage the construction of "built green" homes within the Master Planned Community. Representative energy-efficient characteristics of this type of construction are described in Draft EIS Section 3.6. |
| PSE has plans to expand the existing Yelm Substation and construct a third transmission line from the Saint Clair Substation to increase capacity, improve reliability, and meet the demands of ongoing development within the Yelm area, with or without the Thurston Highlands. | No mitigation required. |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| Potential Impacts | Mitigation Measures |
|---|---|
| PSE has also identified a need for a new distribution substation through their long-range planning process, with or without development of Thurston Highlands. PSE is currently analyzing prime locations to determine an ideal site. Electrical power transmission to the distribution substation would be 115 kV overhead lines. | It is possible that PSE may identify a need for a distribution substation site within the Thurston Highlands development. |
| It is an element of the proposal to relocate the Centralia Utilities overhead transmission line from the existing diagonal easement across the property to the perimeter of the site. | A 50-foot easement will be provided to Centralia Utilities along the west and north boundaries of the Thurston Highlands property, adjacent to Fort Lewis. |
| UTILITIES: Natural Gas Service | |
| The Puget Sound Energy (PSE) natural gas system will be extended throughout the proposed Master Planned Community within designated easements for ease of access for inspection and repair. PSE anticipates typical natural gas main extensions and services, to be fed by an 8-inch loop main. | The natural gas service requirements of the Thurston Highlands Master Planned Community will be coordinated with the PSE Engineering and Construction Departments during preparation of construction documents for the project. |
| Natural gas requirements to serve residential and commercial development within the Master Planned Community are estimated to range from approximately 548,750,000 cubic feet per year to 619,000,000 cubic feet per year, depending on the alternative selected for implementation. | PSE reports that natural gas facilities and improvements under design and construction at the time of this writing have the capacity to serve all of Thurston Highlands without a need for additional off-site improvements to these systems. |
| UTILITIES: Telecommunications Service | |
| Telecommunications installation will follow the regulated requirements of each provider, using the same trenches as electrical service installation. | All three telecommunications service providers in the Yelm area have indicated that they have networks with capacity to provide service to the proposed Master Planned Community. |
| UTILITIES: Solid Waste Collection Service | |
| If requested by the site developer and/or contractor, Pacific Disposal can provide containers for the collection of construction/demolition/land clearing (CDL) debris. | The developer and City could encourage contractors to implement waste reduction, sorting, and recycling practices for building materials on-site during construction. |
| The volume of solid waste and recyclables that would be generated for collection is estimated to range from approximately 6,100 cubic yards to 7,200 cubic yards per month, depending on the alternative selected for implementation. | With the 10- to 30-year projected build-out of the proposed Master Planned Community, this growth is within the range anticipated for the area by Pacific Disposal; they have no concerns about their ability to meet the gradual increase in demand. |
| Significant Unavoidable Adverse Impacts: Most existing utility systems would require expansion and upgrade to serve the proposed Master Planned Community. Some system improvements are already planned, designed, and/or under construction to serve anticipated growth in the area, with or without Thurston Highlands. It is customary for system improvement/system extension costs directly attributable to a development to be paid for by the developer, and covered by new connection fees charged to users within the project. Therefore, there should be no significant adverse economic impact to the City or existing customers. | |

Table 1.4-1. Summary matrix of environmental impacts and mitigation measures associated with the Thurston Highlands Master Planned Community, *continued*.

| <i>Potential Impacts</i> | <i>Mitigation Measures</i> |
|---|--|
| FISCAL ANALYSIS | |
| <p>City services required during construction, not covered by permit and inspection fees, would include fire protection, emergency medical aid, and police surveillance/response.</p> | <p>The one-time construction tax revenue estimate for full build-out of the conceptual land use alternatives would generate approximately \$11.3 million to \$15.5 million for the City of Yelm, and \$8.5 million to \$9.9 million for Thurston County. These funds could be used to fund the demand for public services during construction.</p> |
| <p>City operating expenses to serve the developed-condition of the proposed Master Planned Community would include law and justice, fire and emergency services, health and human services, transportation system and street maintenance, natural resources, general government, and other (miscellaneous).</p> | <p>The estimated tax base with full build-out of the Thurston Highlands Master Planned Community under the conceptual land use alternatives would range from approximately \$1,175,070,000 to \$1,359,700,000 depending on the alternative selected for implementation. The City would collect operating revenues in excess of expenses.</p> |
| <p>City capital expenditures required to serve the developed-condition of the Master Planned Community would include predominantly parks and recreation facilities, streets and utilities.</p> | <p>Same as above.</p> |
| <p>Potential funding shortfalls have been identified for the Regional Sports Complex, school districts, and fire protection capital improvements.</p> | <p>The fiscal analysis of impacts and mitigation measures for fire protection and schools is discussed in Draft EIS Sections 3.18.2 and 3.18.4, respectively. Potential funding sources and organization structures to address these shortfalls are described in Draft EIS Section 3.20.</p> |
| <p>Non-City taxing districts that would benefit from the development include Washington State, Thurston County, Timberland Library, Medic One, the Port of Olympia, the Cemetery District, and the Public Utility District.</p> | <p>Taxing districts and service providers other than the City of Yelm, school districts, and SE Thurston Fire/EMS will receive increased tax revenues without significant increases in requirements for service.</p> |
| <p>Significant Unavoidable Adverse Impacts: The significant adverse fiscal impacts of the project would be limited to capital cost shortfalls for school and fire protection facilities. The fire facility shortfall could be funded by an impact fee higher than the amount adopted by the City in January 2008. The school facility shortfall could also be funded by impact fees that exceed the amount adopted by Pierce County, presently collected in the unincorporated Pierce County areas of the Yelm Community Schools District. The City, through the Development Agreement (or similar instrument) to be executed with the applicant, will require that an adequate mitigation agreement be in-place with these entities as a condition of project approval.</p> | |

1.4.2 Summary of Thurston Highlands Impacts and Mitigation Measures in Relation to Baseline Environmental Conditions

The City does not anticipate that the Thurston Highlands Master Planned Community would precipitate any cumulative effects as defined in Subsection 1.5, below. It may, however, be helpful for City decision makers to consider the impacts and mitigation measures of the Master Planned Community in the context of the current baseline condition of environmental resources within the City and its Urban Growth Area. To facilitate this review, Tables 1.4-2 and 1.4-3 have been prepared to provide a uniform structure for this comparison. Table 1.4-2 identifies a study area for each element of the environment, and summarizes the historical context and current status of the resource. Table 1.4-3 provides a qualitative assessment of the magnitude of affect of Thurston Highlands on the current baseline context of each resource, and whether the mitigation measures identified in this EIS will substantially and effectively address significant changes.

Table 1.4-2. Historical context and current baseline condition of elements of the environment.

| Elements of the Environment | Study Area and/or Regulatory Compliance Area | Historical Context of the Resource | Current Status of the Resource ¹ |
|---------------------------------------|--|--|---|
| EARTH | | | |
| Topography | Thurston Highlands site | Geologically-recent times | S |
| Geology and Soils | Puget-Willamette Lowland | Same as above | S |
| Erosion | Thurston Highlands site | Weyerhaeuser tree farming through current ownership | S |
| AIR QUALITY | | | |
| Criteria Air Pollutants | Olympic Region | 1990s to present | I |
| GHG Emissions | Washington State | Recent | D |
| WATER RESOURCES | | | |
| Surface Water | Thompson Creek basin | Range, Dry and Wet Water Years 1981 – 1997 | S |
| Groundwater | Thompson Creek basin from the Nisqually River (east) to the Deschutes River (west) | Geologically-recent times | S |
| Public Water Supplies | Nisqually and Deschutes River Watersheds | Inception of City provision of municipal water supply | I |
| WETLANDS | Site and adjacent lands | Inception of GMA planning | S |
| WILDLIFE | | | |
| Wildlife Species | Site and Yelm UGA | Euro-American settlement (mid-1880s) to present | D |
| Wildlife Habitat | Site and Yelm UGA | Same as above | D |
| Fish | Thompson Creek | Current conditions at the discharge to Nisqually River | S |
| ENERGY & NATURAL RESOURCES | PSE service area | Inception of GMA planning | S |
| LAND USE | City of Yelm and UGA | Inception of GMA planning | I |
| NOISE | Site and adjacent lands | Inception of Fort Lewis Rainier Training Area | S |
| RELATIONSHIP TO FORT LEWIS | Rainier Training Area | Inception of Fort Lewis Rainier Training Area | S |
| POPULATION | City of Yelm and UGA | Inception of GMA planning | I |
| HOUSING | City of Yelm and UGA | Same as above | I |

1 I = Improving or Increasing; S = Stable; D = In Decline

Table 1.4-2. Historical context and current baseline condition of elements of the environment, *continued*

| Elements of the Environment | Study Area and/or Regulatory Compliance Area | Historical Context of the Resource | Current Status of the Resource ¹ |
|--|---|---|---|
| LIGHT & GLARE | Site and adjacent lands | Same as above | I |
| AESTHETICS | Site and adjacent lands | Same as above | I |
| PARKS & RECREATION | City of Yelm and Thurston Co. | Same as above | I |
| HISTORIC AND CULTURAL RESOURCES | Site and Yelm UGA | Euro-American settlement (mid-1880s) to present | S |
| TRANSPORTATION | | | |
| Planned Improvements | Local and Regional study areas defined in TIA | 1993 SW Yelm Annexation | I |
| Trip Generation | Same as above | Same as above | I |
| Traffic Operations | Same as above | Same as above | I |
| Public Transportation | Intercity Transit service area | Current services | I |
| Non-Motorized | Site and regional trails | 2004 completion of the Yelm-Tenino Trail | I |
| PUBLIC SERVICES | | | |
| Fire and Emergency Medical Aid | SE Thurston Fire/EMS service area | SE Thurston Fire District Capital Facilities Plan planning period | I |
| Police Protection | City of Yelm incorporated area | 2006 to present | I |
| Schools | Yelm Community Schools and Rainier School Districts | Yelm Community Schools Capital Facilities Plan planning period | I |
| UTILITIES | | | |
| Water Supply | City of Yelm and UGA | Inception of GMA planning | I |
| Sewer Service | Same as above | Same as above | I |
| Reclaimed Water | Same as above | Same as above | I |
| Stormwater Management | Site and Thompson Creek basin | Inception of Dept of Ecology regulation | I |
| Electrical Service | PSE service area | Inception of GMA planning | I |
| Natural Gas | PSE service area | Same as above | I |
| Telecommunications | Service provider service areas | Current services | I |
| Solid Waste | Pacific Disposal/LeMay Enterprises Thurston County service area | Current Thurston County Comprehensive SWMP planning period | S |
| FISCAL ANALYSIS | | | |
| | City of Yelm and other taxing districts | 2006-2007 tax years | I |

¹ I = Improving or Increasing; S = Stable; D = In Decline

Table 1.4-3. Qualitative summary of Thurston Highlands Master Planned Community impacts and mitigation measures in relation to current baseline environmental conditions.

| Elements of the Environment | Study Area and/or Regulatory Compliance Area | Relationship of Thurston Highlands Impacts ¹ to Current Status of the Resource ² | Substantial and Effective Mitigation Proposed |
|--|--|--|---|
| EARTH | | | |
| Topography | Thurston Highlands site | Low | Y |
| Geology and Soils | Puget-Willamette Lowland | No Additional Effect | Y |
| Erosion | Thurston Highlands site | Low | Y |
| AIR QUALITY | | | |
| Criteria Air Pollutants | Olympic Region | Low | Y |
| GHG Emissions | Washington State | Low | Y |
| WATER RESOURCES | | | |
| Surface Water | Thompson Creek basin | Moderate | Y |
| Groundwater | Thompson Creek basin from the Nisqually River (east) to the Deschutes River (west) | Low | Y |
| Public Water Supplies | Nisqually and Deschutes River Watersheds | Substantial | Y |
| WETLANDS | | | |
| WILDLIFE | | | |
| Wildlife Species | Site and Yelm UGA | Substantial | N |
| Wildlife Habitat | Site and Yelm UGA | Substantial | Y |
| Fish | Thompson Creek | No Additional Effect | N |
| ENERGY & NATURAL RESOURCES | | | |
| PSE service area | PSE service area | Moderate | Y |
| LAND USE | | | |
| City of Yelm and UGA | City of Yelm and UGA | Substantial | Y |
| Site and adjacent lands | Site and adjacent lands | Low | Y |
| RELATIONSHIP TO FORT LEWIS | | | |
| Rainier Training Area | Rainier Training Area | Low | Y |
| POPULATION | | | |
| City of Yelm and UGA | City of Yelm and UGA | Substantial | N |
| HOUSING | | | |
| City of Yelm and UGA | City of Yelm and UGA | Substantial | Y |
| LIGHT & GLARE | | | |
| Site and adjacent lands | Site and adjacent lands | Substantial | Y |
| AESTHETICS | | | |
| Site and adjacent lands | Site and adjacent lands | Substantial | Y |
| PARKS & RECREATION | | | |
| City of Yelm and Thurston Co. | City of Yelm and Thurston Co. | Substantial | Y |
| HISTORIC AND CULTURAL RESOURCES | | | |
| Site and Yelm UGA | Site and Yelm UGA | No Additional Effect | Y |

¹ Metrics used for the relationship analysis (note that effects may be beneficial or adverse, or simply constitute change from existing conditions):
 No additional effect = No measurable or expected effect from the project, or of such rare occurrence that it would be impossible to measure or detect.
 Low additional effect = Measurable effect, but of small amount or infrequent occurrence.
 Moderate additional effect = Measurable effect at some level between Low and Substantial.
 Substantial additional effect = A high impact attributable to the project that would be measurable and/or expected, or likely to occur frequently.

² A qualitative characterization of the current status of each resource is provided in Table 1.4-2.

Table 1.4-3. Qualitative summary of Thurston Highlands Master Planned Community impacts and mitigation measures in relation to current baseline environmental conditions, *continued*.

| Elements of the Environment | Study Area and/or Regulatory Compliance Area | Relationship of Thurston Highlands Impacts ¹ to Current Status of the Resource ² | Substantial and Effective Mitigation Proposed |
|--------------------------------|---|--|---|
| TRANSPORTATION | | | |
| Planned Improvements | Local and Regional study areas defined in TIA | Substantial | Y |
| Trip Generation | Same as above | Substantial | Y |
| Traffic Operations | Same as above | Substantial | Y |
| Public Transportation | Intercity Transit service area | Substantial | Y |
| Non-Motorized | Site and regional trails | Substantial | Y |
| PUBLIC SERVICES | | | |
| Fire and Emergency Medical Aid | SE Thurston Fire/EMS service area | Substantial | Y |
| Police Protection | City of Yelm incorporated area | Substantial | Y |
| Schools | Yelm Community Schools and Rainier School Districts | Substantial | Y |
| UTILITIES | | | |
| Water Supply | City of Yelm and UGA | Substantial | Y |
| Sewer Service | Same as above | Substantial | Y |
| Reclaimed Water | Site and Thompson Creek basin | Substantial | Y |
| Stormwater Management | Site and Thompson Creek basin | Substantial | Y |
| Electrical Service | PSE service area | Moderate | Y |
| Natural Gas | PSE service area | Moderate | Y |
| Telecommunications | Service provider service areas | Moderate | N |
| Solid Waste | Pacific Disposal/LeMay Enterprises Thurston County service area | Moderate | Y |
| FISCAL ANALYSIS | | | |
| | City of Yelm and other taxing districts | Substantial | Y |

¹ Metrics used for the relationship analysis (note that effects may be beneficial or adverse, or simply constitute change from existing conditions):

- No additional effect = No measurable or expected effect from the project, or of such rare occurrence that it would be impossible to measure or detect.
- Low additional effect = Measurable effect, but of small amount or infrequent occurrence.
- Moderate additional effect = Measurable effect at some level between Low and Substantial.
- Substantial additional effect = A high impact attributable to the project that would be measurable and/or expected, or likely to occur frequently.

² A qualitative characterization of the current status of each resource is provided in Table 1.4-2.

1.5 Cumulative Effects

1.5.1 City of Yelm Comprehensive Plan and Joint Plan with Thurston County

The site of the proposed Thurston Highlands Master Planned Community is located within a portion of 2,000 acres that was annexed to the City of Yelm in 1993. From the time it was annexed, the site has been designated for development of a master planned community, originally anticipated to include, along with the Dragt Farm property which is now the Tahoma Terra Master Planned Community, approximately 4,000 dwelling units, retail commercial space, professional offices, public service sites, a significant recreational component, and open space totaling 25 to 40 percent of total site area. Subsequent to annexation of the area that includes the Thurston Highlands property, the City of Yelm adopted an updated *Comprehensive Plan and Joint Plan with Thurston County* in 1996 (the *Comprehensive Plan*), consistent with the Washington State Growth Management Act (GMA). As required by GMA, the *Comprehensive Plan* identifies appropriate infrastructure to accommodate the urban portion of forecast regional population growth within the City's Urban Growth Area (UGA). The required County-wide planning policies adopted by both Thurston County and cities within the County established the baseline for this land use planning. The *Thurston County Comprehensive Plan* provides for the other two types of land use elements required by GMA: rural lands and resource lands. The relationship of the Thurston Highlands proposal to the City's *Comprehensive Plan* is discussed in Section 3.7 of this Draft EIS.

The *Comprehensive Plan* adopted by the City of Yelm establishes urban land use districts within the City and the unincorporated UGA for residential, commercial, and industrial development. The *Comprehensive Plan* also establishes policies for development of these areas consistent with GMA. The City's development regulations and Capital Facilities Plans are consistent with the policies of the *Comprehensive Plan*, and with the GMA itself. The *Comprehensive Plan* was reviewed and updated by the City Council in 2006 to ensure that the Plan remained consistent with the goals of the Growth Management Act, and the *Plan* has been updated annually to ensure that it remains current.

At the same time as adoption of the *Comprehensive Plan*, the City prepared a Draft and Final Environmental Impact Statement that specifically conducted environmental review for the non-project action, and evaluated probable significant impacts on elements of the environment as a consequence of planned growth envisioned in the *Comprehensive Plan*. Emerging from the *Comprehensive Plan* policies and environmental review were the City's current development regulations, which are designed to mitigate potential environmental impacts resulting from the planned growth.

In conjunction with the City of Yelm's GMA planning and programmatic SEPA environmental review, Thurston County conducted its growth planning for rural and resource lands, culminating with an adopted *Comprehensive Plan* in December 1995. Environmental review of the *Thurston County Comprehensive Plan* was provided in a Draft and Final Environmental Impact Statement (FEIS) issued in 1994.

1.5.2 SEPA / GMA Integration

The SEPA Rules (Chapter 197-11 WAC) were amended in 1995 to help local governments planning under GMA to integrate SEPA and GMA analysis. The amended rules required GMA-compliant plans and development regulations to include comprehensive environmental review,

which individual project proposals could consistently rely upon and incorporate into project-specific environmental review. To the extent that environmental impacts are adequately addressed by the environmental review for the City's *Comprehensive Plan*, or addressed by development regulations adopted pursuant to the *Comprehensive Plan*, additional environmental review is not required for project-specific environmental impacts. Consequently, SEPA/GMA integration allows cumulative effects to be identified and addressed during the City's comprehensive planning, providing a more consistent framework for project review and required mitigation.

1.5.3 Cumulative Effects Analysis under SEPA

SEPA Rules do not specifically define cumulative effects but indicate that such effects include those impacts that would result from growth outside the boundaries of the proposed project but caused by the proposed project, as well as the likelihood that the project would serve as a precedent for future actions. The purpose of a cumulative effects analysis is to provide decision-makers with a reasonably thorough discussion of the significant probable environmental impacts from the proposed project related to their decision to approve, deny or condition the project. The cumulative effects analysis examines probable significant environmental impacts beyond project-specific impacts, offering a predictive tool of what may occur in the immediate project area and surrounding community, for which the proposed project would be a contributing factor.

1.5.4 Cumulative Effects Analysis for Thurston Highlands Development

Because both the City of Yelm and Thurston County have planned for growth under the requirements of the Growth Management Act, and because both the City and County comprehensive plans have included the Thurston Highlands Master Planned Community in population projections and buildable lands analysis, it is not anticipated that Thurston Highlands will precipitate any current or reasonably foreseeable future actions that are not otherwise addressed in the *Comprehensive Plan and Joint Plan with Thurston County* (City of Yelm 2006). For example, Thurston Highlands is not expected to spur a demand for additional commercial or residentially-zoned lands that would require an expansion of the Yelm UGA. The official growth projections prepared by the Thurston Regional Planning Council address growth both within the Thurston Highlands Master Planned Community and within the remainder of the City limits and UGA (see Draft EIS Section 3.11).

As noted above, the City undertook environmental review and prepared the FEIS when it adopted its *Comprehensive Plan*. Addressed in the FEIS were the probable significant environmental impacts that would result from the City's planned growth, to include the Thurston Highlands development, the City and adjacent areas within unincorporated Thurston County within the City's UGA. Moreover, the FEIS specifically addressed those impacts reasonably foreseeable within the City's 20-year planning horizon, during which time the Thurston Highlands development is proposed to occur.

1.5.4.1 Geographical Boundaries of the Cumulative Effects Analysis

Geographical boundaries limit the potential for Thurston Highlands to precipitate unplanned growth that may have cumulative impacts to the environment. The site occupies the southwest quadrant of the incorporated area of the City of Yelm, within a triangular area delineated by State Routes 510 and 507. Further, the entire western boundary and most of the northern boundary of the site borders the Fort Lewis Military Reservation (see Draft EIS Figure 2.2-1 in

Chapter 2). The Fort Lewis Rainier Training Area adjacent to Thurston Highlands has been in federal government ownership for this use since 1943–1944 (personal communication with Bill Van Hoesen, NEPA Program Manager, Fort Lewis Public Works, April 22, 2008).

1.5.4.2 Temporal Boundaries of the Cumulative Effects Analysis

It is envisioned that the Thurston Highlands Master Planned Community would be developed over a period of 10 to 30 years. This would result in a gradual introduction of project impacts to service providers and the community. Because of this long timeframe, the change in baseline conditions that will occur, and more specific definition at a later time of development phases that will occur beyond Phase 1, supplemental environmental review requirements are likely at the time of development applications for future phases of Thurston Highlands.

1.6 Major Issues, Significant Areas of Controversy and Uncertainty, and Issues to be Resolved

The City's ability to obtain sufficient additional water rights to serve the proposed Thurston Highlands Master Planned Community and other properties within the Yelm Urban Growth Area, remains the sole significant area of uncertainty. The City of Yelm, however, has undertaken a methodical and comprehensive process toward obtaining the water rights needed to provide for the anticipated urban growth that the City is required to accommodate pursuant to the requirements of the Growth Management Act.

The process for resolving this area of uncertainty is well established in Washington State. The City of Yelm has a long period of engagement in this process, and is committed to seeing it through to resolution.

