

Hawk Property Planned Action Final Environmental Impact Statement

November 2013



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City of Covington

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November 14, 2013

Subject: Hawk Property Final Planned Action Environmental Impact Statement (EIS)

Dear Reader:

The City of Covington proposes adoption of the Hawk Property Subarea Plan and associated amendments to the comprehensive plan, zoning, and development regulation that will allow for future urban development in Covington's Northern Gateway. The Hawk Property Subarea encompasses approximately 212 acres, southeast of SR 18, and contains both land currently within the Covington city limits and land in unincorporated King County but the entire Subarea is located within the city's Urban Growth Area. In addition, the City proposes to provide for efficient environmental review of future development proposals through a Planned Action Ordinance.

This Final EIS responds to public and agency comments received on the Draft EIS, issued on July 26, 2013 and provides corrections and clarifications to the environmental analysis contained in the Draft EIS. The Final EIS also evaluates a Preferred Alternative identified by the Planning Commission, which consists of the range of the Minimum and Maximum Urban Village alternatives studied in the Draft EIS (Alternatives 2 and 3, respectively). While market conditions would determine the precise level of growth achieved, the range would include between 1,000 and 1,500 residential units and between 680,000 and 850,000 square feet of commercial space.

Adoption of the Proposal would provide additional employment and housing options in an urban village layout with added roadway circulation connections and parks, open space, and trail features. The Proposal would change the study area from the current asphalt batch plant and mine reclamation operation to an urban village with commercial, residential, and parks and open space uses. There would be improvement of stormwater quality, increased access to parks and open spaces, and improved emergency service response times. The key environmental issues facing decision-makers are potential increased impervious surfaces, traffic congestion, noise, air emissions, demand for public services and utilities, and reduction of wildlife habitat space.

Please refer to the project website for public meetings and project information:

http://www.covingtonwa.gov/city_departments/communitydevelopment/northern_gateway_study.html

If you desire clarification or have questions, please contact

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Sincerely,

A handwritten signature in black ink that reads "Richard Hart".

Richard Hart, AICP, SEPA Official
City of Covington Community Development Director

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FACT SHEET

Project Title

Hawk Property Subarea Plan and Planned Action Environmental Impact Statement

Proposed Action and Alternatives

The City of Covington proposes adoption of the Hawk Property Subarea Plan and associated amendments to the comprehensive plan, zoning, and development regulations that would allow for future urban development in the Hawk Property Subarea of Covington's Northern Gateway area. The Hawk Property Subarea encompasses approximately 212 acres, southeast of SR 18, and contains both land currently within the Covington city limits and land in unincorporated King County but the entire Subarea is located within the city's Urban Growth Area. In addition, the City proposes to provide for streamlined environmental review of future development proposals. The Draft EIS evaluated three alternatives that establish a range of land use patterns and development types within the Hawk Property Subarea:

- Alternative 1: No Action – The Hawk Property Subarea Plan is not implemented, and current comprehensive plan land use designations and zoning focusing on mineral resource activities remain in effect on the site.
- Alternative 2: Minimum Urban Village Proposal – The Hawk Property Subarea is developed as an urban village featuring regional and local commercial space and a mixture of housing types and densities.
- Alternative 3: Maximum Urban Village Proposal – The Hawk Property Subarea is developed as an urban village featuring additional regional and local commercial space and residential units, compared with Alternative 2.

The Final EIS reflects a Preferred Alternative consisting of the range of the Minimum and Maximum Urban Village alternatives (range of Alternative 2 and 3). While the conceptual plans and alternatives are similar to the Draft EIS, in response to Planning Commission and public comments and improved subarea plan implementation, the City has prepared edits to Draft subarea plan goals, policies, and regulations in the "Preferred Hawk Property Subarea Plan" available under separate cover (see Location of Background Data below).

Proponent & Lead Agency

The City of Covington

Tentative Date of Implementation

January 2014

Responsible Official

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Licenses or Permits Required

As legislative items, the Planning Commission has authority to make recommendations on comprehensive plan and development regulation amendments. The City Council has authority to approve such amendments.

In addition, the Washington State Department of Commerce reviews proposed comprehensive plan and development regulation amendments during a 60-day review period prior to adoption. The Puget Sound Regional Council reviews comprehensive plans for consistency with regional plans.

Authors and Principal Contributors to the EIS

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Final EIS Date of Issuance

November 14, 2013

Draft EIS Date of Issuance

July 26, 2013

Draft EIS Review

The City established a 30-day public and agency comment period on the Draft EIS and Draft Subarea Plan extending from July 26, 2013 to August 26, 2013. A Planning Commission public meeting was held during the period on August 15, 2013. Responses to written and public meeting comments are provided in this Final EIS.

Date of Final Action

The City anticipates taking final action on the adoption of the Subarea Plan, Final EIS, and Planned Action Ordinance in early 2014. If approved, annexation of the portion of the Hawk Property Subarea within the City's unincorporated UGA would occur in 2014.

Location of Background Data

See Contact Person above.

Purchase of Final EIS

The document is posted at the City's website at:

http://www.covingtonwa.gov/city_departments/communitydevelopment/northern_gateway_study.html

Copies for purchase are available at Covington Copy It Mail It, LLC, 27111 167th Place SE, Suite 105, Covington, WA; 253-630-6670.

A reference copy of the document is also available at the following locations:

- Covington City Hall, 16720 SE 271st Street, Covington, WA 98043
- Covington Chamber of Commerce, 27116 167th PI SE #114 Covington, WA 98042

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1.0 SUMMARY

This Chapter summarizes significant impacts, mitigation measures, and significant unavoidable adverse impacts evaluated in this EIS. Text that has been inserted or deleted since the Draft EIS is shown in strikeout or underline format. See Section 1.3 for a description of the contents of the EIS.

1.1 Purpose of Proposed Action

The purpose of the proposed action is to guide future development in the Hawk Property Subarea and provide for streamlined environmental review of future development proposals through use of a Planned Action Ordinance. The Planned Action Ordinance would define land use options, protect environmentally sensitive areas, foster economic development, and create an urban village for housing and regional commercial development.

1.2 State Environmental Policy Act Process

Planned Action

The City proposes to designate the Hawk Property Subarea as a planned action, pursuant to SEPA and implementing rules. According to WAC 197-11-164, a planned action is defined as a project that is characterized by the following:

- Designated by a Planned Action Ordinance;
- Analyzed through an EIS that addresses any significant impacts;
- Prepared in conjunction with a comprehensive plan, a subarea plan, a master planned development, a phased project, or with subsequent or implementing projects of any of these categories;
- Located within an Urban Growth Area (UGA);
- Not an essential public facility unless they are accessory to or part of a project that otherwise qualifies as a Planned Action; and
- Consistent with an adopted comprehensive plan.

Projects meeting these requirements qualify as planned action projects and do not require a subsequent SEPA threshold determination, but still require a completed environmental checklist to be submitted. Future planned action projects must be reviewed for consistency with the City's zoning and development regulations, the proposed subarea plan, conceptual site plan, and development agreement where applicable.¹ Planned actions must also acquire all necessary permits, and satisfy all necessary public notice requirements of said permits.

The proposed action specifies a maximum level of growth allowed within the Hawk Property Subarea. Consistency with this limit would be ensured through the execution of a development agreement with the property owner and developer, Oakpointe LLC, and/or through approval of a final conceptual site plan consistent with the Subarea Plan, Planned Action Ordinance, and Covington Municipal Code (CMC).

¹ The Planned Action is based on development thresholds and performance standards (mitigation measures) of this EIS. Provided the development agreement meets the thresholds and performance standards of the Planned Action Ordinance, it is considered a planned action.

Prior Environmental Review

No other recent SEPA analysis has been conducted in the vicinity of the Hawk Property Subarea, but the Northern Gateway Area Study (2012) collected information on conditions in the subarea and surrounding areas and analyzed suitability for future development.

1.3 Organization of this Document

The City of Covington issued a Draft Environmental Impact Statement (Draft EIS) issued on July 26, 2013, presenting a description of three alternatives and an evaluation of several environmental elements. This Final Environmental Impact Statement (Final EIS) completes the environmental review process by providing responses to comments received regarding the Draft EIS along with clarifications and corrections. References to the Final EIS are to this document whereas references to the Environmental Impact Statement (EIS) include both the Draft EIS and the Final EIS.

This Final EIS includes the following chapters and appendices.

- This Chapter 1 summarizes significant impacts, mitigation measures, and significant unavoidable adverse impacts evaluated in this EIS. Text that has been inserted or deleted since the Draft EIS is shown in strikeout or underline format.
- Chapter 2 describes the City of Covington's Preferred Alternative for the Hawk Property.
- Chapter 3 provides clarifications and corrections to the Draft EIS.
- Chapter 4 provides responses to comments received during the 30-day comment period for the Draft EIS.
- Chapter 5 provides references cited in this document.
- Chapter 6 provides a distribution list of agencies and individuals sent a notice of availability of this document.
- Appendix A presents clarifications and information in response to comments on the Transportation Analysis.
- Appendix B provides a Revised Draft SEPA Planned Action Ordinance.
- Appendix C provides Covington Water District Technical Memo Information.
- Appendix D provides scientific papers submitted by the Muckleshoot Tribe.
- Appendix E provides historic photos regarding prairie conditions.

With the exception of Chapter 1 Summary, this Final EIS does not repeat the entire contents of the Draft EIS, and both documents should be considered together.

This Draft Planned Action EIS is organized into chapters with the following purpose:

- ~~• **Chapter 1 – Summary:** This chapter provides a brief discussion of the proposed action, the environmental review process, and the public involvement process, as well as a summary of the potential environmental impacts and recommended mitigations measures associated with each EIS alternative.~~
- ~~• **Chapter 2 – Alternatives:** This chapter describes proposal objectives, the proposed actions and alternatives for the Hawk Property Subarea, and summarizes public review opportunities.~~
- ~~• **Chapter 3 – Affected Environment, Significant Impacts, and Mitigation Measures:** This chapter describes the existing conditions for each environmental topic area and includes an analysis of the potential impacts associated with each EIS alternative. Recommended mitigation measures to reduce impacts to less than significant levels are also discussed.~~
- ~~• **Chapter 4 – References:** This chapter contains a list of all documents and personal communications referenced in the analyses contained in Chapter 3.~~

- ~~Chapter 5 – Distribution List: This chapter contains a list of all government agencies and community groups who will receive notices of availability or copies of the Draft EIS.~~

1.4 Public Involvement

The City of Covington has created opportunities for public and agency review and comment throughout the planning and environmental review process. Key efforts are described below:

- **Project Website.** The City has created a website for the subarea plan and EIS, located at http://www.covingtonwa.gov/city_departments/communitydevelopment/northern_gateway_study.html. The website provides background information on the subarea plan and EIS, describes the schedule, and provides links to relevant documents as they are released for public review. Contact information for City staff is also provided to allow the public to submit comments or ask questions about the subarea plan and EIS.
- **Scoping Comment Period.** Public and agency comment was solicited in a 21-day scoping period from March 9 to March 29, 2013. During this period, the general public, as well as public agencies and stakeholders, were invited to submit written comments on the scope of the EIS and offer written suggestions. The scoping notice, SEPA Checklist, and comments are provided in [Draft EIS](#) Appendix A. As a result of public and agency comments, the topic of groundwater resources was added. In addition, the potential transportation and emergency access implications of providing a local access connection or emergency access connection to the southern neighborhoods is also addressed; as described later in the presentation of alternatives, access via 191st Place SE is studied.
- **Community Workshop.** During the scoping period, the City also hosted a public workshop on March 25, 2013, attended by approximately 37 members of the public. In addition to taking comments from the public, the City answered questions about the subarea plan and EIS and engaged attendees in a planning exercise to graphically illustrate their preferred vision for the future of the Hawk Property Subarea. See Appendix B.
- **Draft EIS Comment Period.** This Draft EIS was released for public review on July 26, 2013, initiating a 30-day comment period, during which the general public, as well as public agencies and stakeholders ~~are~~ were invited to submit comments on the alternatives, identified environmental impacts, and mitigation measures. See the Fact Sheet for more information. The City ~~will issue~~ issued a Final EIS anticipated in ~~late 2013/early 2014~~ [November 2013](#), providing responses to comments.
- **Legislative Meetings.** The Planning Commission and City Council have held and will hold study sessions, hearings, and deliberations on the subarea plan development and design standards and planned action, and ultimately a development agreement, as applicable. Please see the City's website for a schedule of meetings.

1.5 Proposed Action, Alternatives, and Objectives

Objectives

SEPA requires a statement of objectives that address the purpose and need for the proposal and around which reasonable alternatives can be evaluated. Objectives of the Hawk Property Subarea planning effort include:

- To plan for future development of the Hawk Property Subarea in Covington's Northern Gateway area by defining land use options;
- To protect environmentally sensitive areas while fostering economic development;
- To create an urban village for regional and local commercial uses and related employment, a mix of housing types, as well as community gathering and recreation spaces that is unique from and secondary to Covington's downtown;
- To plan for an orderly transition of the Hawk Property Subarea from mineral extraction to urban uses appropriate for its location as Covington's Northern Gateway;

- To improve transportation mobility in the area with a new arterial connection between SR 18 and 204th Avenue SE through the subarea and the connection to SE 272nd Street;
- To provide housing options, such as multifamily, townhomes, and small lot single family homes, that are not widely available in Covington; and
- To provide unique open space amenities such as an on-site pond and parks, and provide access to the regional trail system such as the Tri-City/Covington Highlands Trail.

Proposed Action and Alternatives

The Draft EIS ~~evaluates~~ evaluated three alternatives that establish a range of land use patterns and development types within the Hawk Property Subarea: The Final EIS reflects a Preferred Alternative consisting of the range of the Minimum and Maximum Urban Village alternatives (range of Alternative 2 and 3). While the conceptual plans and alternatives are similar to the Draft EIS, in response to Planning Commission and public comments and improved subarea plan implementation, the City has prepared edits to Draft subarea plan goals, policies, and regulations in the “Preferred Hawk Property Subarea Plan” available under separate cover and summarized below.

Alternative 1: No Action

Under the No Action Alternative, the Hawk Property Subarea Plan would not be adopted, and the existing mining reclamation and asphalt batch plant activities would continue. In this analysis, due to the Mineral zoning, it is assumed that employment at the on-site asphalt batch plants would increase, and additional building square footage would be added (from roughly 3,750 square feet of structure to 11,250 square feet of structure, an approximately 7,500 square foot increase).

Alternative 2: Minimum Urban Village Proposal

Under Alternative 2, the Hawk Property Subarea would transition from its current mineral resource uses to an urban village featuring both commercial development and a variety of housing types across a range of densities. Approximately 5.5 acres of parks, open space, and trails would also be provided to serve the needs of local residents and be accessible to the Covington community.

204th Avenue SE would connect through the site to serve offsite and onsite traffic, mitigate traffic impacts, and improve citywide circulation. A local street would connect to the southern neighborhood to allow local access for nearby residents and improve emergency vehicle access and response times.

A planned action would be adopted to facilitate future environment permitting as the subarea develops in phases over time, and would provide consistent application of mitigation measures based on this EIS. The minimum urban village proposal would contain approximately 680,000 square feet of regional, iconic, and local retail uses and about 1,000 dwelling units with a mix of single family, townhome, and multifamily residences.

Alternative 3: Maximum Urban Village Proposal

Under Alternative 3, the Hawk Property Subarea would transition from its current mineral extraction use to an urban village similar to the minimum urban village proposal under Alternative 2, though featuring an additional 170,000 square feet of commercial space and an additional 500 residential units. Approximately 8.3 acres of parks, open space, and trails would also be provided to serve the needs of local residents and be accessible to the Covington community. Transportation and trail connections would be provided. A park and ride would support transit service.

Similar to Alternative 2, 204th Avenue SE would connect through the site to serve offsite and onsite traffic, mitigate traffic impacts, and improve city circulation. Consistent with Alternative 2, a local street would connect to the southern neighborhood to allow local circulation and improve emergency vehicle access and response times. A park and ride would be developed onsite at about 125 spaces, similar in size to a facility in Maple Valley currently.

A planned action would be adopted to facilitate future environment permitting as the subarea develops in phases over time, and would provide consistent application of mitigation measures based on this EIS. The maximum urban village proposal would contain approximately 850,000 square feet of regional, iconic, and local retail uses and about 1,500 dwelling units with a mix of single family, townhome, and multifamily residences.

Preferred Alternative

The City of Covington proposes to select a Preferred Alternative consisting of the range of the Minimum and Maximum Urban Village alternatives.

While the conceptual plans and alternatives are similar to the Draft EIS, in response to Planning Commission and public comments and improved subarea plan implementation, the City has prepared edits to the draft subarea plan's goals, policies, and regulations in the "Preferred Hawk Property Subarea Plan" available under separate cover and summarized below.

- The proposed zoning map for the Hawk Property Subarea was amended to incorporate a small area of R-6 zoning in the southeast corner of the subarea. This is consistent with the conceptual site plans for the two alternatives, which showed single-family residential uses in this area.
- Proposed Parks and Recreation policies PRP 5.11 and PRP 5.12 were amended to clarify that the purpose of the proposed trail network in the Hawk Property Subarea is to connect the subarea to surrounding neighborhoods and the regional trail system and that the trail system should be integrated with the sidewalk system associated with development.
- Policies are added regarding vegetation conservation along the perimeter of the property near Timberlane as well promoting tree retention and mitigation sequencing in critical areas and buffers for roads, trails, and utilities.
- A policy to coordinate the 204th Avenue SE Connector and the local access road at 191st Street SE to avoid cut-through traffic on the local street is proposed.
- The proposed purpose statement for the Mixed Residential (MR) zone in CMC 18.15.050(1)(e) was revised to focus on the intent of the zone to provide a variety of housing types at a range of densities. Rather than listing specific uses that would accomplish the purpose of the zone, the revised language states that the purposes of the zone would be accomplished by allowing a mixture of residential development and neighborhood-serving commercial uses that are complementary to and supportive of mixed-density housing.
- Several uses previously prohibited in the Regional Commercial Mixed Use (RCMU) zone were changed to Permitted uses as they meet the intent of the proposed zone and are compatible with the land use pattern described for Draft EIS alternatives, including the following:
 - Senior citizen assisted housing; and
 - Veterinary clinics;
- In response to public comments and in recognition that the City's stormwater standards promote low impact development (LID) forms, Sections 18.30.030 and 040 reduce the proposed maximum impervious area for the MR and RCMU zones compared to the Draft Subarea Plan.
- Proposed building frontage standards in CMC 18.35.310(3) were revised to clarify exceptions to the standards.
- In support of proposed policy LNP 19.3, which encourages emphasis of the Hawk Property Subarea as the northern entrance to Covington, an additional standard for the creation of visual gateways was inserted in CMC 18.35.310(8), including examples of gateway signage from other projects.

- In response to public comments that off-street parking standards were too confusing, revisions were made to proposed standards in CMC 18.15.110(1)(g) to clarify the desired spatial arrangement of building façades, parking areas, and street frontages. Illustrative diagrams were also provided to further clarify this standard.

The Preferred Subarea Plan is anticipated to be modified following public meetings and hearings before the Planning Commission and City Council. For example, zoning or design standards may be further refined. It is also anticipated that a subarea capital facilities plan incorporating the mitigation measures of this EIS regarding transportation and parks would be prepared for inclusion in the Comprehensive Plan Capital Facilities Element.

As described in the Draft EIS, the final plan that would ultimately be adopted would not be exactly one of the EIS alternatives, but would fall within the range of the alternatives analyzed in the EIS.

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

Adoption of the Proposal would provide additional employment and housing options in an urban village format with added roadway circulation connections and parks, open space, and trail features. The Proposal would change the study area from the current asphalt batch plant and mine reclamation operation to an urban character with commercial, residential, and parks and open space uses. Major issues associated with the proposal include the transition of the subarea from mineral extraction to urban land uses, including commercial and multifamily uses, as well as the associated increases in impervious area, traffic, air quality emissions, noise, and demand for public services and utilities, and reduction of wildlife habitat space. Issues to be resolved include selection-refinement of a preferred alternative and development of a final subarea plan.

1.7 Summary of Impacts and Mitigation Measures

Impacts Common to All Alternatives

This section describes impacts that could occur under all of the studied alternatives, organized by topic area.

Earth

While no landslide or erosion hazard areas have been identified within the Hawk Property Subarea, the entire Puget Sound region lies within a seismically active area, and future development under any of the alternatives could be subject to seismic and soil liquefaction hazards, depending on mine reclamation backfill conditions.

Surface Water Resources

Under all alternatives, continued construction and ground disturbance would occur in the subarea, which could affect erosion, sediment transport, and pollutant loading for nearby water bodies. Levels of impervious surface coverage and presence of pollutant-generating uses and activities would vary by alternative.

Groundwater Resources

Under all alternatives, development and use of the subarea would have the potential to affect groundwater availability and quality through infiltration of untreated stormwater, transportation related spills, and on-site spills of hazardous materials. Levels of impervious surface coverage and the presence of stormwater treatment measures and pollutant-generating uses and activities would vary by alternative.

Air Quality

Under all alternatives, construction and vehicle travel within and to the subarea would produce greenhouse gas and dust emissions. The levels of emissions would vary by alternative.

Plants and Animals

Because the approved reclamation plan will be implemented regardless of future zoning, the area of open water on-site will be reduced under all three alternatives, and some incidental degradation of critical area buffers may occur.

Noise

Noise from vehicle traffic and equipment usage would be generated under all alternatives. The levels and sources of such noise impacts would vary by alternative.

Land Use Patterns/Policies

Under all alternatives, the gravel mine in the subarea would be reclaimed, and the subarea would be converted to either an expanded industrial use (asphalt batch plant) or urban growth including residential and commercial uses. Specific land uses and zoning changes would vary by alternative.

Transportation

Under all alternatives, vehicular traffic to and from the subarea will have the potential to affect the surrounding street network and place additional demand on local transportation infrastructure. Specific transportation impacts would vary by alternative.

Public Services

Under all alternatives, future development in the subarea would require police and fire protection services, as well as solid waste service. Demand for parks and recreation facilities, as well as schools, would only occur in response to a population increase associated with residential development in conjunction with both Alternatives 2 and 3. The precise level and nature of demand for public services would vary by alternative.

Utilities

Development under all alternatives would require water, wastewater or sewer, and storm drainage service, though the type of infrastructure necessary and the level of demand for each of these utility services would vary by alternative.

Matrix of Impacts by Alternative

Exhibit 1.7-1 highlights the impacts that would potentially result from the alternatives analyzed in ~~this the~~ Draft EIS. The Preferred Alternative in this Final EIS carries forward the growth range of Alternatives 2 and 3 as a preferred alternative range. Thus the results of the Draft EIS analysis, as clarified in this Final EIS, continue to apply to the Preferred Subarea Plan and associated actions. This summary table is not intended to be a substitute or replacement for the complete discussion of impacts contained in Draft EIS Chapter 3.

Exhibit 1.7-1. Summary of Impacts by Alternative

Resource	Alternative 1	Alternative 2	Alternative 3
3.1 Earth			
<i>Steep Slope and Landslide Hazard Impacts</i>	<p>The Hawk Property Subarea contains no areas mapped as landslide hazard by the City of Covington. However, mining activities at the site have created steep slopes mostly below the water table. In some areas, these slopes likely present moderate to high steep slope and landslide hazards.</p>	<p>Landslide hazard impacts are similar to Alternative 1. While the likelihood of landslide occurrence will not be substantially affected by development, the consequences of potential landslides would increase due to development in and around the affected zones (i.e., slides occurring in undeveloped areas will have no structures to affect). Stability of post-reclamation steep slopes will need to be assessed during the design phase. Depending on the design details of the proposed extension to 204th Avenue, which ascends a hill in the southeast corner of the site, additional stability assessments may be needed in this area as well.</p>	<p>The impacts would be similar to those described for Alternative 2.</p>
<i>Erosion Hazard Impacts</i>	<p>The Hawk Property Subarea contains no areas mapped as erosion hazard by the City of Covington. Due to the relatively flat topography and permeable near-surface soil at the Hawk Property Subarea, erosion hazards at the site are expected to remain low after reclamation. However, the site should be evaluated for erosion after reclamation as reclamation backfill may contain soil with greater erosion susceptibility.</p>	<p>Erosion hazard impacts for the minimum buildout alternative are similar to Alternative 1. However, site development will inevitably reduce erosion potential in areas surfaced with impervious development (e.g., buildings, concrete, pavement, etc.) and potentially increase in areas where surface runoff is concentrated if not controlled by other means. Erosion potential will likely be highest during construction, particularly on slopes that exceed 15 percent. Construction activities will also tend to increase erosion due to soil disturbance. Soil erosion Best Management Practices should be utilized during construction to manage/minimize these effects.</p>	<p>Impacts under Alternative 3 would be similar to Alternative 2.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Seismic Hazard Impacts</i>	Potential seismically induced settlement and/or liquefaction will not create a significant hazard if the site is not developed.	Potential seismic hazards include soil liquefaction and ground rupture. The liquefaction hazard potential associated with reclamation fill can be substantially reduced by adequately compacting good quality fill (discussed further under “Mitigation Measures”). The Hawk Property Subarea lies about 8½ miles south of the Seattle Fault Zone and 7 miles north of the Tacoma Fault Zone (DNR 2013b). Accordingly, it is the opinion of the EIS author that ground rupture will not be a significant part of the site-specific seismic design for the future site improvements, and mitigation to prevent ground rupture impacts will not be required.	Impacts under Alternative 3 would be similar to Alternative 2.

3.2 Surface Water

<i>Construction</i>	<p>Under Alternative 1, construction impacts would be similar to existing conditions.</p> <ul style="list-style-type: none"> • Sediment transport, erosion, fuel, and other spills would be the main pollution concerns. • Runoff rates may increase. • Sediment control measures would be implemented. • A Spill Prevention Plan would be developed. • Land would be less disturbed than under Alternatives 2 and 3. 	<p>Under Alternative 2, construction impacts would convert from mineral extraction to a mix of residential and commercial uses:</p> <ul style="list-style-type: none"> • Sediment transport, erosion, fuel, and other spills would be the main pollution concerns. • There could be an increase of runoff rates • Sediment control measures would be implemented. • A Spill Prevention Plan would be developed. • There would be larger sediment control facilities. • There may be more potential for sediment transport and higher erosion risk. • There would be more construction equipment. • Alternative 2 is anticipated to generate 75.8 acres of new impervious surface, about 35% of the total study area. 	<p>Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater:</p> <ul style="list-style-type: none"> • Sediment transport, erosion, fuel, and other spills would be the main pollution concerns. • There could be an increase of runoff rates • Sediment control measures would be implemented. • A Spill Prevention Plan would be developed. • There would be larger TESC facilities. • More potential for sediment transport and higher erosion risk • There would be more construction equipment. • Alternative 3 is anticipated to generate 99.6 acres of new impervious surface, about 47% of the total study area.
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Resource	Alternative 1	Alternative 2	Alternative 3
<i>Operations</i>	<p>Under Alternative 1, operations impacts would be similar to existing conditions</p> <ul style="list-style-type: none"> Continue to discharge stormwater runoff to the pond. 	<p>Under Alternative 2, construction impacts would result from the development of the reclaimed mine site to a mix of residential and commercial uses:</p> <ul style="list-style-type: none"> Traffic and transportation and parking facilities would be a significant source of pollutants. There is a possibility of flow rate increases due to the increase of impervious area. Potential water quality concerns from the use of fertilizers and herbicides in parks and lawn areas. 	<p>Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater:</p> <ul style="list-style-type: none"> Traffic and transportation and parking facilities would be a significant source of pollutants. There is a possibility of flow rate increases due to the increase of impervious area. Potential water quality concerns from the use of fertilizers and herbicides in parks and lawn areas.
<i>Cumulative</i>	<p>There could be reduced surface water quality in the immediate vicinity as a result of expanded asphalt batch plant activities.</p>	<p>The current water quality treatment will be upgraded as the site develops.</p>	<p>The current water quality treatment will be upgraded as the site develops.</p>
3.3 Groundwater			
<i>Construction</i>	<p>Under Alternative 1, no appreciable construction impacts occur in association with construction of a new asphalt batch plant facility. Reclamation would also proceed under Alternative 1.</p>	<p>Under Alternative 2, the existing asphalt batch plant would be demolished, reclamation implemented, and a new urban village constructed. Impacts to groundwater may occur during construction due to infiltration of untreated stormwater, transportation-related spills, and National Pollutant Discharge Elimination System (NPDES) permitted discharges.</p>	<p>Impacts would be similar under Alternatives 2 and 3; there would be greater impervious area and level of development under Alternative 3.</p>
<i>Operations</i>	<p>Continuing and additional industrial uses may increase in untreated stormwater infiltration and pose an increased risk of impacts to groundwater quality.</p>	<p>Reductions in groundwater recharge will occur due to 75.8-acres of impervious surface; this is not likely to affect groundwater users.</p>	<p>Reductions in groundwater recharge will occur due to 99.6-acres of impervious surface; this is not likely to affect groundwater users.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Cumulative</i>	Groundwater quality may be impacted over time by the asphalt batch plant use given the current stormwater management.	With implementation of Alternative 2 impacts may include: <ul style="list-style-type: none"> • Improved groundwater quality due to stormwater treatment upgrades. • Reduction of groundwater recharge. • Potential reduction of seasonal baseflow contributions to Jenkins Creek. The site represents less than 2% of the recharge area for this reach of the creek and net effects, if they occurred, would be small. 	<ul style="list-style-type: none"> • Impacts would be similar under Alternatives 2 and 3; there would be greater impervious area and level of development under Alternative 3.
3.4 Air Quality			
<i>Construction</i>	Under Alternative 1 no development would occur, apart from a minor expansion of the asphalt batch plant, so minimal construction-related impacts would occur.	Under Alternative 2, air quality impacts to nearby homes or businesses could occur as a result of fugitive dust or tailpipe emissions from new construction sites.	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater.
<i>Operations</i>	Under Alternative 1 the ongoing asphalt batch plant operations would emit air pollutants from stationary industrial equipment, mobile on-site equipment, and tailpipes of haul trucks. It is unlikely those emissions would cause ambient concentrations to approach the National Ambient Air Quality Standards.	Under Alternative 2, air pollutants would be emitted from tailpipes of on-road vehicles and from stationary equipment, parking lots and loading docks at commercial businesses. It is unlikely those emissions would cause ambient concentrations to approach the National Ambient Air Quality Standards.	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater.
<i>Indirect</i>	Under Alternative 1 tailpipe emissions from haul trucks serving the ongoing asphalt batch plant operations would slightly affect air quality along public roads outside the study area. It is unlikely those emissions would cause ambient concentrations to approach the National Ambient Air Quality Standards.	Under Alternative 2, tailpipe emissions from new cars and trucks traveling on public roads outside the study area would slightly affect air quality. It is unlikely those emissions would cause ambient concentrations to approach the National Ambient Air Quality Standards.	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater.
<i>Cumulative</i>	Under Alternative 1, the annual greenhouse gas emissions would be less than the existing emissions.	Under Alternative 2, greenhouse gas emissions generated from new building construction, space heating, and on-road vehicles would cumulatively contribute to global climate change. However, the increased emissions caused by this proposed action would be small and would not be significant.	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater.

Resource	Alternative 1	Alternative 2	Alternative 3
3.5 Plants & Animals			
<i>Construction</i>	<p>It is generally assumed, no new critical area buffer impacts would occur under Alternative 1.</p> <p>Increased runoff, erosion, and transportation-spills may all occur during clearing, grading and construction.</p>	<p>New road construction is likely to require some critical area buffers impacts.</p> <p>Increased runoff, erosion, and transportation-spills may all occur during clearing, grading and construction.</p> <p>Existing stands of vegetation, potentially including approximately 9-acres forest, may be cleared.</p> <p><u>Trails shown at this time are conceptual in nature and actual locations will be determined in the course of future site planning and permit review; final trail plans will need to comply with the City's CAO which requires impact avoidance and minimization to the extent feasible.</u></p>	Impacts under Alternatives 2 and 3 are similar.
<i>Indirect</i>	<p>Some wildlife could be displaced by an increase in adjacent asphalt batch plant industrial land use.</p> <p>Open water area will be reduced as the reclamation plan is implemented, displacing waterfowl.</p>	<p>Higher intensity adjacent land use is likely to increase critical area disturbance by people and pets.</p> <p>Open water area will be reduced as the reclamation plan is implemented, displacing waterfowl.</p>	Impacts under Alternatives 2 and 3 are similar.
<i>Cumulative</i>	<p>Some habitat loss would occur as the reclamation plan is implemented and new facility constructed.</p> <p>Site use by the following priority species is likely to decline: pileated woodpecker, Vaux's swift, purple martin, and cavity-nesting ducks.</p>	<p>Some habitat loss would occur as the reclamation plan is implemented, additional land is cleared, the urban village is constructed, and land use intensity increases.</p> <p>Site use by the following priority species is likely to decline: pileated woodpecker, Vaux's swift, purple martin, and cavity-nesting ducks.</p> <p>There may be increased habitat fragmentation, and a reduction or loss of on-site habitat.</p>	Impacts under Alternatives 2 and 3 are similar.

Resource	Alternative 1	Alternative 2	Alternative 3
3.6 Noise			
<i>Construction</i>	Under Alternative 1 (No Action), the mine would not be developed after reclamation is completed, apart from a small asphalt batch plant expansion and therefore, minor construction noise would be produced within the gravel mine area.	Under Alternative 2 construction of new homes and commercial buildings within the study area would generate temporary construction noise at other existing homes and businesses in the vicinity.	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater which may increase construction traffic and associated equipment that would generate noise.
<i>Operations</i>	Noise from the mine reclamation will cease, but the asphalt batch plants will continue to operate and potentially expand. Asphalt batch plant noise would be negligible at the residential receivers including the existing residential area south of the mine site.	<p>Under Alternative 2 noise generated by stationary equipment and loading docks at commercial businesses would increase noise levels at nearby dwellings. However, commercial noise sources would be regulated under the City’s noise code, and would be required to be designed to avoid noise impacts to nearby neighbors.</p> <p>Increased population and development could lead to the following types of events, which could result in future traffic noise impacts:</p> <ul style="list-style-type: none"> • Increases in traffic volumes along existing streets, with resulting impacts on existing homes near the streets; and • Construction of new streets through lightly developed land. <p>For example, there would be added noise along both the existing and proposed new segments of 204th Avenue SE.</p>	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater, generating more traffic trips and associated noise.

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Indirect</i>	Under Alternative 1 haul trucks associated with the asphalt batch plant operation would generate noise along public roads outside the study area.	Under Alternative 3 additional vehicles traveling on public streets in existing neighborhoods outside the study area would increase traffic noise levels at dwellings near the street.	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater, generating more traffic trips and associated noise.

3.7 Land Use Patterns/Plans and Policies

<i>Land Use Patterns</i>	Under Alternative 1, land use patterns would be similar to existing conditions. Employment is anticipated to increase slightly, including development of an additional 7,500 square feet of industrial building space, added to the existing asphalt batch plant. Use of the property would remain unchanged.	Under Alternative 2, land use patterns would convert from mineral extraction to a mix of residential and commercial uses: <ul style="list-style-type: none"> • Residential development would increase by approximately 1,000 dwelling units. • Commercial development would increase by approximately 680,000 square feet. • Impervious surface coverage would increase by approximately 75.8 acres. • Allowed building heights would be 35 feet for commercial, single-family, and townhome development. Multifamily residential uses would be allowed up to 60 feet. 	Impacts under Alternative 3 would be similar to Alternative 2, though the overall intensity of development would be greater: <ul style="list-style-type: none"> • Residential development would increase by approximately 1,500 dwelling units. • Commercial development would increase by approximately 850,000 square feet. • Impervious surface coverage would increase by approximately 99.6 acres. • Building heights would be similar to Alternative 2.
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Resource	Alternative 1	Alternative 2	Alternative 3
<i>Land Use Policies</i>	Under Alternative 1, no subarea plan would be adopted, and the site would continue as an asphalt batch plant and reclaimed gravel mine, consistent with current zoning, comprehensive plan land use designations, and issued permits.	Alternative 2 is generally consistent with adopted policy frameworks, including the Growth Management Act, King County Countywide Planning Policies, and the Covington Comprehensive Plan. <u>The Subarea Plan identifies the land use designations and goals and policies that would amend the Comprehensive Plan. In addition, capital facilities studied in the EIS should be included in the Comprehensive Plan. Minor housekeeping text amendments should be made to reflect the change in the mine site status from a reclaimed property to an urban village.</u>	Alternative 3 is generally consistent with adopted policy frameworks, including the Growth Management Act, King County Countywide Planning Policies, and the Covington Comprehensive Plan. <u>Integration of the Subarea Plan and additional housekeeping amendments would be needed as identified for Alternative 2.</u> Because of the inclusion of a Park-and-Ride facility, Alternative 3 provides greater consistency with GMA policies for promotion of carpooling, ridesharing, and transit use.
3.8 Transportation			
<i>Traffic Volumes</i>	Vehicle trips are expected to be similar in magnitude to the number of trips currently generated by the site.	Alternative 2 is projected to generate approximately 28,900 total daily trips, of which about 22,000 are expected to be new trips on the roadway system. Of these, about 2,600 are expected to occur during the PM peak hour, with about 2,000 reflecting new trips on the roadway system.	Alternative 3 is projected to generate approximately 36,500 total daily trips, of which about 28,300 are expected to be new trips on the roadway system. Of these, about 3,300 are expected to occur during the PM peak hour, with about 2,600 reflecting new trips on the roadway system.

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Intersection Operations</i>	<p>Under future 2035 conditions with build-out of local and regional land use plans, 20-18 intersections defined in the City of Covington’s Concurrency Management Program are projected to operate at level of service (LOS) E or F during the PM peak hour, which exceeds the City’s standard of LOS D. Five intersections defined in the City of Maple Valley’s Concurrency Management Program are projected to operate at LOS E or F, as well as the weighted average delay of the City’s North and South concurrency groups, which exceeds the City’s standard of LOS D.</p>	<p>Alternative 2 is expected to:</p> <ul style="list-style-type: none"> • Add delay to 18-17 intersections located in Covington and Maple Valley that are projected to operate at LOS E or F during the PM peak hour under Alternative 1. • Reduce trips and/or average delay at seven-six intersections located in Covington that are projected to operate at LOS E or F during the PM peak hour under Alternative 1, due to shifts in traffic patterns resulting from the proposed 204th Avenue SE connector roadway. Operation at two-one of the locations is expected to improve to LOS D, eliminating the need for mitigation. • Degrade operations to LOS E or F during the PM peak hour at four locations in Covington that are projected to operate at LOS D or better under Alternative 1. 	<p>Impacts would be similar to Alternative 2. There would be a projected reduction in trips and average delay at seven-five intersections which would improve operations to LOS D during the PM peak hour; however there would be only operation at one location instead of two that would improve to LOS D, eliminating the need for mitigation at this location.</p>
<i>Arterial Segment Operations</i>	<p>The City’s Transportation Adequacy Measure (TAM) thresholds are only applied to proposed new developments. If the existing asphalt batch plant were to expand, it would be subject to City concurrency regulations, but would be expected to generate a negligible number of PM peak hour trips on citywide arterial segments. Therefore, under Alternative 1, no impacts related to arterial segments are identified.</p>	<p>The 2035 TAM value is projected to be 0.75 for Alternative 2, which is below the City’s 0.89 threshold. No impacts related to arterial segments are identified.</p>	<p>The 2035 TAM value is projected to be 0.78 for Alternative 3, which is below the City’s 0.89 threshold. No impacts related to arterial segments are identified.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Site Access and Circulation</i>	<p>With Alternative 1, the 204th Avenue SE Connector would not be built. Although the subarea would generate a low volume of trips that would not require an additional major access point, this alternative would also not receive the benefit of adding another route option for vehicles traveling between SE 272nd Street and SR 18.</p> <p>With Alternative 1, the 191st Avenue SE Local Connector would not be built. However, since there would be no demand to be served between the site and the residential neighborhood to the south, no adverse impact is identified.</p> <p>No new site access points would be constructed, and a low volume of traffic generated by continuing operation of the asphalt pavement plant would continue to access the site via SE 256th Street. No adverse impact related to site access and circulation is expected to result.</p>	<p>The proposed new 204th Avenue SE Connector, between SE 256th Street and SE 272nd Street, would serve as the spine of the site’s internal roadway circulation system, would provide a second major roadway connection to the site from the east, and would provide an additional emergency vehicle access point. Additionally, it would carry vehicle trips not related to the proposed project, traveling between SE 272nd Street (east of 204th Avenue SE) and the SR 18/SE 256th Street interchange. This would result in a reduction of overall trips using SE 272nd Street between 204th Avenue and SE Wax Road, and also using SE Wax Road/180th Avenue SE between SE 272nd Street and SE 256th Street. This connection is also expected to attract trips currently cutting through residential neighborhoods (e.g. via Timberlane Way SE) to access the SE 256th Street/SR 18 ramps while avoiding the SE 272nd Street/SE Wax Road intersection, reducing volumes on those neighborhood roadways. The additional trips generated on 204th Avenue SE would degrade the stop-controlled intersection at SE 272nd Street to LOS F. However, if mitigation is provided at this intersection, the new roadway connection is expected to result in an overall benefit to the citywide road system, by providing more options for vehicles traveling between SE 272nd Street and SR 18.</p>	<p>Impacts would be similar to Alternative 2.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
		<p>The proposed 191st Avenue SE Local Connector would provide a direct connection between the subarea and residential development located to the south. It would also provide an additional emergency vehicle access point. This connector is expected to have a beneficial effect on city-wide roadway operations because it would allow direct access between the subarea and adjacent residential development. Without this connection, trips generated to and from these neighborhoods would need to use SE 272nd Street and access the site via SE 256th Street or 204th Avenue SE. This would increase overall vehicle miles traveled on the roadway system, and would also increase traffic volumes along these alternate routes. With traffic calming measures such as on-street parking, landscaping, and/or devices such as traffic circles in place to discourage cut-through traffic, no adverse transportation impacts are expected to result from this connection.</p> <p>The internal roadway and walkway system within the subarea would be subject to City design standards provided in the Covington Design Guidelines CMC Chapter 18.50, to ensure that internal mobility and safety objectives are met. With City design standards incorporated into site design, no adverse internal circulation impacts are expected to result.</p>	<p>Impacts would be similar to Alternative 2.</p> <p>Impacts would be similar to Alternative 2.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Traffic Safety</i>	<p>Historical collision data in the site vicinity do not indicate any unusual safety concerns and the addition of future projected traffic is not expect to substantially change overall safety conditions. Projected increases in vehicle traffic on the study area street network resulting from regional land use growth could increase the potential for vehicle conflicts. High average delays at stop-controlled intersections projected to operate at LOS E or F with all three alternatives could also result in drivers on the stop-controlled approaches taking shorter gaps to cross or enter the major street, which could increase the potential for vehicle conflicts. However, mitigation identified to address operational impacts would also address potential safety issues at these locations. None of the three alternatives are expected to result in significant adverse impact to traffic safety.</p>	<p>Impacts would be similar to Alternative 1, although Alternative 2 would add more trips to the roadway system, as compared to Alternative 1.</p>	<p>Impacts would be similar to Alternative 1, although Alternative 3 would add more trips to the roadway system, as compared to Alternative 1</p>
<i>Transit</i>	<p>No residential or retail land uses would be constructed with this alternative, and no transit demand is expected to occur at the site.</p>	<p>Alternative 2 is expected to generate some transit trips. The area is served by two bus routes with stops located within one-half mile of the site. The decision to extend transit service to the site would be at the discretion of King County Metro and/or Sound Transit and could be dependent on funding availability. However, higher density residential and commercial development could encourage extension of transit routes to directly serve the site. Higher density could potentially also encourage private transit services (such as Microsoft’s Connector buses) to stop at the site. No adverse impacts to transit are expected to result.</p>	<p>The potential effects on transit due to Alternative 3 would be similar to those described for Alternative 2. However, the proposed park & ride lot with this alternative, as well as higher density residential and commercial development compared to Alternative 2 would increase the likelihood that public or private transit service would be extended to directly serve the site. No adverse impacts to transit are expected to result from Alternative 3.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Non-Motorized Facilities</i>	No residential or retail land uses would be constructed, and no non-motorized demand is expected to occur at the site.	Alternative 2 is expected to generate pedestrian and bicycle trips. It includes proposed connections to the planned future trails that would be located adjacent to the site, which would encourage non-motorized travel to and from the site. Both major roadways providing access to the subarea (existing SE 256th Street and proposed 204th Avenue SE connector) would have sidewalks that would allow non-motorized traffic to be separated from vehicular traffic. No adverse impacts to non-motorized facilities are expected to result.	Impacts would be similar to Alternative 2, although higher retail and residential density under Alternative 3 would be expected to generate a higher level of non-motorized activity.
<i>Parking</i>	No residential or retail land uses would be constructed, and no parking demand beyond what is needed to support continued operation of the asphalt plant is expected to occur at the site.	The parking supply within the subarea would be subject to City code requirements (CMC Chapter 18.50 Development Standards – Parking and Circulation) to ensure that adequate parking supply is provided to meet demand. With City parking code requirements incorporated into site design, no adverse parking impacts are expected to result.	Impacts would be similar to Alternative 2, although higher retail and residential density under Alternative 3 would be expected to require a greater amount of parking supply.
<i>Freight Mobility and Access</i>	No substantial increase in truck traffic is anticipated and no adverse impact to freight mobility or access is expected to occur.	Alternative 2 would generate delivery trucks typical of retail development, but increases are not anticipated to substantially change the overall percentage of trucks within the project study area. This alternative would increase traffic volumes on roadways that also carry freight and some additional delays are expected. However, this alternative would also include two roadway connectors that are expected to have beneficial effect on citywide roadway operations. New development within the subarea would be subject to City code requirements for loading spaces (CMC Chapter 18.50.070). With City loading space requirements incorporated into site design and mitigation in place to address identified traffic operational impacts, no adverse impacts to freight mobility or access are expected to result.	Impacts would be similar to Alternative 2 although higher retail and residential density under Alternative 3 would be expected to generate a higher traffic volumes and truck trips.

Resource	Alternative 1	Alternative 2	Alternative 3
<u>Construction</u>	<u>The No Action alternative is not expected to generate a substantial amount of truck traffic, although addition of building square footage at the existing mine site would generate some construction vehicle trips.</u>	<u>During development of the Hawk Property site with Alternatives 2 and 3, construction activities would generate truck and construction worker commute trips that could potentially disrupt vehicular and non-motorized traffic. Activities that typically generate the largest construction traffic volumes are earth excavation and concrete pours. Improvement of the existing segment of SE 204th Avenue could also be disruptive to existing residences located along the roadway. In addition to truck and worker commute trips generated by construction activities, construction in the roadway right-of-way could require temporary lane narrowings or closures. Access to adjacent properties would need to be maintained at all times.</u>	<u>Impacts would be similar to Alternative 2 although higher retail and residential density under Alternative 3 would be expected to generate a higher number of construction truck and worker commute trips.</u>
3.9 Public Services			
<i>Police Protection</i>	No additional population would result under the No Action Alternative, and no additional demand for police protection would be generated.	Approximately 1,838 residents would be added to the City’s population under Alternative 2. At the current LOS standard, this would create demand for approximately 3 additional officers. <u>The cost associated with contracting for additional police services from King County can be at least partially offset by increased tax revenue from development of the subarea.</u>	Approximately 2,760 residents would be added to the City’s population under Alternative 3. At the current LOS standard, this would create demand for approximately 4.5 additional officers. <u>The cost associated with contracting for additional police services from King County can be at least partially offset by increased tax revenue from development of the subarea.</u>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Fire Protection</i>	<p>Under the No Action Alternative, no population growth would occur in the Hawk Property Subarea. As a result, no additional demand for fire protection services is anticipated.</p>	<p>Increased residential and commercial development under Alternative 2 would create additional demand for fire protection:</p> <ul style="list-style-type: none"> • 140 additional emergency responses annually from residential development; • 75 additional emergency responses from annually from commercial development; and • Increased workload at KFD Station 78 requiring 2 additional 24-hour staff. <p>Construction of the spine connector street through the subarea would also improve emergency response time from Station 78 to the subarea and surrounding properties.</p> <p><u>Because the subarea would no longer be part of the jurisdiction for Maple Valley Fire and Life Safety (MVFLS), no additional demand for fire protection services from MVFLS would be generated, and development under Alternative 2 is not anticipated to result in any adverse impacts to fire protection service in the MVFLS service area.</u></p>	<p>Increased residential and commercial development under Alternative 3 would create additional demand for fire protection:</p> <ul style="list-style-type: none"> • 210 additional emergency responses annually from residential development; • 92 additional emergency responses from annually from commercial development; and • Increased workload at KFD Station 78 requiring 2-3 additional 24-hour staff. <p>Construction of the spine connector street through the subarea would also improve emergency response time from Station 78 to the subarea and surrounding properties.</p> <p><u>Because the subarea would no longer be part of the jurisdiction for Maple Valley Fire and Life Safety, no additional demand for fire protection services from MVFLS would be generated, and development under Alternative 3 is not anticipated to result in any adverse impacts to fire protection service in the MVFLS service area.</u></p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Schools</i>	<p>No additional demand for school services would be generated under the No Action Alternative.</p>	<p>Population growth under Alternative 2 would increase the demand for school services. While currently split between two school districts, it is likely the entire subarea could be annexed to one district or the other.</p> <p>If completely annexed by the Kent School District, the following levels of student demand are anticipated, based on the Kent School District’s adopted student generation rates:</p> <ul style="list-style-type: none"> • 393 elementary students; • 92 middle school students; and • 174 high school students. <p>If completely annexed to the Tahoma School District, the following levels of student demand are anticipated, based on the Tahoma School District’s adopted student generation rates:</p> <ul style="list-style-type: none"> • 268 elementary students; • 81 middle school students; and • 99 high school students. 	<p>Population growth under Alternative 3 would increase the demand for school services. While currently split between two school districts, it is likely the entire subarea could be annexed to one district or the other.</p> <p>If completely annexed by the Kent School District, the following levels of student demand are anticipated:</p> <ul style="list-style-type: none"> • 590 elementary students; • 138 middle school students; and • 262 high school students. <p>If completely annexed to the Tahoma School District, the following levels of student demand are anticipated:</p> <ul style="list-style-type: none"> • 401 elementary students; • 122 middle school students; and • 149 high school students.
<i>Parks and Trails</i>	<p>While no additional demand for park and recreational facilities would be generated by the No Action Alternative, future development after reclamation of the mine would be subject to the on-site recreation standards of the City’s municipal code (CMC 18.35.150). Because the standards of the code do not match the LOS standards of the Comprehensive Plan, such development would have the potential to increase existing deficiencies or reduce existing surpluses of various types of park space. In addition, CMC 18.35.150 does not require provision of trail or bike paths for new development, which creates the potential to increase the City’s current trails deficiency.</p>	<p>Population growth under Alternative 2 would increase demand for park space by 3.3 acres according to code standards. The Minimum Urban Village Alternative would provide 5.5 acres of park space and 1.4 miles of trails, consistent with the LOS standards of the Comprehensive Plan and exceeding City code requirements.</p>	<p>Population growth under Alternative 3 would increase demand for park space by 5.1 acres according to code standards. The Minimum Urban Village Alternative would provide 8.3 acres of park space and 2.1 miles of trails, consistent with the LOS standards of the Comprehensive Plan and exceeding City code requirements.</p>

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Solid Waste</i>	Under the No Action Alternative, continued use and expansion of the asphalt batch plant could generate a small amount of demand for solid waste service, but this increase would not be significant on a regional scale, and no impacts are anticipated.	Alternative 2 would result in population growth in the subarea of approximately 1,838 persons. Based on King County’s projected 2020 waste generation rates of 20.4 pounds per capita per week, Alternative 2 would result in approximately 975 tons of additional solid waste per year. These rates are anticipated to be manageable within the existing capacity of the Cedar Hills landfill.	Alternative 3 would result in population growth in the subarea of approximately 2,760 persons. Based on King County’s projected 2020 waste generation rates of 20.4 pounds per capita per week, Alternative 3 would result in approximately 1,464 tons of additional solid waste per year. These rates are anticipated to be manageable within the existing capacity of the Cedar Hills landfill.
3.10 Utilities			
<i>Storm Drainage</i>	A small expansion of the asphalt batch plant would occur, generating up to approximately 7,500 square feet of additional impervious surface. This would be subject to current City standards in effect at the time of development. It is estimated that the building roof square footage increase will be considered clean runoff and not result in significant adverse impacts to storm drainage facilities.	Additional impervious surface created as a result of development would increase storm drainage flows from the Hawk Property Subarea. Construction of stormwater drainage facilities estimated to be a system of swales, catch basins and pipes up to 24 inches in diameter would be required by current City standards to collect and treat these flows...	Additional impervious surface created as a result of development would increase storm drainage flows from the Hawk Property Subarea. Alternative 3 is anticipated to generate greater stormwater flows than Alternative 2 or the No Action Alternative, due to a greater amount of impervious surface coverage, which could require construction of a correspondingly greater amount of stormwater infrastructure. The elements of the infrastructure would be the same as those in Alternative 2: swales, catch basins, and pipes up to 24 inches in diameter

Resource	Alternative 1	Alternative 2	Alternative 3
<i>Water Supply</i>	Under the No Action Alternative, the estimated 7,500 square foot building increase is not anticipated to result in a significant additional demand on water service facilities.	<p>Development of Alternative 2 is anticipated to generate additional demand for water service, proportional to the needs of the future development.</p> <ul style="list-style-type: none"> Water mains along the south side of SR18, in SE 248th Street, and in 208th Street SE will be required to be upgraded to 8-12 inches in diameter, with an estimated length of 1.5 miles, to supply water to the subarea. A proposed 16-inch transmission main will be required to connect the vicinity of the existing Tank 2 site from the current end of distribution at 204th Avenue to an existing main and casing under SR 18 at SE 248th Street. The alignment of this water main will most likely follow existing and proposed street networks and will be finalized at a later date pursuant to District requirements, during the development process. The proposed water supply network within the subarea is estimated to range between 8 and 16-inch diameter pipes. Water utility infrastructure will be further quantified, at a later date pursuant to District requirements, during the development permit review process. 	Development of Alternative 3 is anticipated to generate a greater demand for water service than Alternative 2; however, the facilities necessary to serve Alternative 2 also will meet the water demands of Alternative 3.
<i>Sanitary Sewer</i>	Under the No Action Alternative, the estimated 7,500 square foot building increase is not anticipated to result in significant additional demand for sewer service.	Alternative 2 is estimated to generate a demand for sanitary sewer service, proportional to the needs of the future development: The proposed sanitary sewer network within the subarea is estimated to range between 8 and 16 inch diameter pipes. The estimated flow for Alternative 2 is 400,000 gallons per day (gpd).	Alternative 3 is estimated to generate a greater demand for sanitary sewer than Alternative 2, proportional to the overall amount of development in the subarea. The proposed sanitary sewer network within the subarea is estimated to range between 8 and 16 inch diameter pipes. The estimated flow for Alternative 3 is 600,000 gallons per day (gpd).

Summary of Mitigation Measures

Exhibit 1.7-2 summarizes the mitigation measures proposed in [Draft EIS](#) Chapter 3 to reduce identified impacts. These measures are in addition to applicable state, federal, and local regulations and commitments described in [Draft EIS](#) Chapter 3. Unless otherwise stated, the listed mitigation measures apply to both Action Alternatives. [This summary table is not intended to be a substitute or replacement for the complete discussion of mitigation measures contained in Draft EIS Chapter 3.](#)

Exhibit 1.7-2. Summary of Mitigation Measures

Resource	Proposed Mitigation
3.1 Earth	
<i>Incorporated Plan Features</i>	The proposed alternatives do not currently incorporate mitigation measures for soil erosion or seismic impacts to structures.
<i>Applicable Regulations and Commitments</i>	<p>Existing state regulations under the NPDES construction permit program require construction contractors to implement erosion and sedimentation control measures.</p> <p>The City of Covington building permit program requires the foundations for all new occupied buildings to be designed according to stringent design standards. The City uses the International Building Code as adopted by the State of Washington and amended by the City of Covington in the Covington Municipal Code.</p> <p>The City also adopted critical areas regulations in the Covington Municipal Code (Chapter 18.65). These regulations do not preclude development within critical areas, but do require permitting and special design and review to show that the proposed development minimizes impacts to critical areas to a satisfactory degree and manages hazards appropriately.</p>
<i>Other Potential Mitigation Measures</i>	<p>The City would require all new occupied buildings to be constructed with foundations designed under the International Building Code to be suitable for site-specific soil conditions identified at the time of building design.</p> <p>Development adjacent to steep slopes would require site-specific slope stability analyses prior to construction (CMC, Sections 18.65.280 and 18.65.310).</p> <p>During construction, contractors should employ temporary erosion and sedimentation control (TESC) measures and Best Management Practices to control erosion as required under the NPDES construction permit. These measures should be consistent with the City of Covington critical area and grading regulations (CMC, Chapter 18.60 and Section 18.65.220).</p> <p>Ground improvement and foundation support requirements should be determined as part of the design and permit approval process for each future onsite development project. Using a high quality, well-compacted crushed rock or gravel fill material during reclamation would also significantly reduce the potential for soil liquefaction.</p> <p>Although not associated with a specific environmental hazard, structure settlement should be mitigated during the design and permitting for individual future structures.</p>
3.2 Surface Water	
<i>Incorporated Plan Features</i>	<p>Alternatives 2 and 3 would have:</p> <ul style="list-style-type: none"> • Larger development with larger construction management budget; • Larger area for TESC facilities; and • Greater phasing opportunities.

Resource	Proposed Mitigation
<i>Applicable Regulations and Commitments</i>	<ul style="list-style-type: none"> • Department of Ecology, Stormwater Manual for Western Washington as adopted by the City or as amended in the future • City of Covington Surface Water Management Program, CMC 13.25 as adopted by the City or as amended in the future • City of Covington Clearing and Grading Regulations, CMC 14.60.120, which require spill prevention and control measures for the maintenance, fueling, and repair of heavy equipment on a construction site. • City of Covington Design and Construction Standards • Low Impact Technical Guidance Manual for Puget Sound • Washington State Statues • US Environmental Protection Agency Clean Water Act: Total Maximum Daily Load (TMDL) plans and standards could in the future result in greater stormwater standards for affected surface waters.
<i>Other Potential Mitigation Measures</i>	<ul style="list-style-type: none"> • Basic Water Quality Treatment: water quality treatment would be accomplished using the Basic Water Quality menu from 2012 Stormwater Management Manual for Western Washington or the manual in effect at the time of development applications. <ul style="list-style-type: none"> ○ The goal is to removal 80% of total suspended solids (TSS) for influent concentrations that are greater than 100 mg/l, but less than 200 mg/l. ○ Biofiltration swale is the most likely low impact development (LID) option due to its cost effectiveness and aesthetic character. • Enhanced Basic Water Quality Treatment: for some areas in the Hawk Property where the development is more intensive. <ul style="list-style-type: none"> ○ Applicable to development sites that generate highest concentrations of metals in stormwater runoff such as in the commercial or multifamily areas. ○ Would require stormwater facilities remove 30% dissolved copper and 60% dissolved zinc. ○ Enhanced treatment menu would include: infiltration, large sand filter, stormwater treatment wetland, compost-amended vegetated filter strip, two facility treatment trains, bioretention, media filter drain, and emerging stormwater treatment technologies.

3.3 Groundwater

<i>Incorporated Plan Features</i>	<ul style="list-style-type: none"> • Alternative 1 maintains stormwater infiltration by retaining forested and vegetated areas beyond the protected critical areas. • Alternatives 2 and 3 maintain critical area protections and would improve management and treatment of runoff from new impervious surface areas. Stormwater infiltration is projected to maintain groundwater volumes.
<i>Applicable Regulations and Commitments</i>	<p>The following regulations and plans would apply as adopted or as amended at the time of development applications:</p> <ul style="list-style-type: none"> • 2012 Stormwater Management Manual for Western Washington (or the manual in place at the time of application) • City of Covington Standard Plan Notes and Covington Municipal Code, Chapter 13.37 • 2012 Stormwater Management Manual for Western Washington Chapter 2.5.2 Element 13: Minimum Requirements for New Development and Redevelopment – Protect Low Impact Development BMPs.

Resource	Proposed Mitigation
<i>Other Potential Mitigation Measures</i>	<ul style="list-style-type: none"> ● A Best Management Practices (BMP) Plan should be developed for the entire property. ● Through the Planned Action Ordinance<u>Ordinance</u>, the City could require compliance with the 2008 City of Kent Draft Water System Plan Chapter 8: Wellhead Protection Program similar to the City’s practice of applying appropriate conditions through the permit and SEPA process. ● <u>During site construction, equipment refueling should be located in a specific designated location and include secondary containment in the event of a spill, including spill kits and associated equipment. Fuel storage should not occur on-site during construction. In the event of an on-site spill, notification should be reported to Ecology, City of Covington, and City of Kent, noting that the spill area is located adjacent to an aquifer protection area.</u> ● Design stormwater treatment to maximize infiltration and maintain no net loss of recharge to the aquifer. ● <u>Following the 2012 Stormwater Manual, stormwater designs for the subarea can be optimized by separating roof runoff from other pollution-generating impervious surfaces.</u> ● Decommission abandoned wells. ● Plant native species in landscaped areas to reduce pesticide use and promote water conservation. ● <u>To increase public awareness, signage should be posted stating, “protect groundwater, it’s the water you drink” or equivalent. These signs should be placed adjacent to any stormwater facility with infiltration or overflow to the pond or critical areas.</u>
3.4 Air Quality	
<i>Incorporated Plan Features</i>	<p>The majority of the Hawk Property Subarea is located within the city limits and all of the subarea is within the city’s UGA. The Land Use and Transportation elements of the City’s Comprehensive Plan include a number of goals and policies that could contribute to reducing vehicle tailpipe emissions and greenhouse gas (GHG) emissions. See Section 3.4.</p>
<i>Applicable Regulations and Commitments</i>	<p>Proposed future developments will be required to comply with these existing regulations:</p> <ul style="list-style-type: none"> ● National and State Ambient Air Quality Standards (NAAQS): The US EPA establishes NAAQS and specifies future dates for states to develop and implement plans to achieve these standards. ● Puget Sound Clean Air Agency Regulations: All construction sites in the Puget Sound region are required to implement rigorous emission controls to minimize fugitive dust and odors during construction. Commercial facilities with substantial emissions are required to obtain a Notice of Construction air quality permit before construction is allowed to begin. ● Prohibition on Outdoor Burning: Burning yard waste and land-clearing debris is not allowed at any time in areas of King County. PSCAA enforces state outdoor burning regulations required by RCW 70.94.743. ● State of Washington GHG Laws: As described above in State of Washington Greenhouse Gas Requirements, Washington enacted a new law establishing GHG reduction limits.
<i>Other Potential Mitigation Measures</i>	<p>The City should require all construction contractors to implement air quality control plans for construction activities in the Hawk Property Subarea. See Section 3.4.</p> <p>The City should require developers to design future buildings and developments within the subarea to include greenhouse gas reduction measures to use sustainable construction materials, increase building energy efficiency, and reduce use of single-occupancy vehicles. See Section 3.5 of this EIS.</p>

Resource	Proposed Mitigation
3.5 Plants & Animals	
<i>Incorporated Plan Features</i>	<ul style="list-style-type: none"> • Alternatives 1, 2 and 3 avoid direct wetland or stream impacts. • Alternatives 1, 2 and 3 maintain intact critical area buffers to the extent feasible. • Alternatives 2 and 3 incorporate parks and open space into the conceptual site plan (Note: These areas may include hardscape; design details have not yet been developed.)
<i>Applicable Regulations and Commitments</i>	<ul style="list-style-type: none"> • Covington Municipal Code (CMC) 18.65, Critical Areas. • King County Zoning Code (KCC) 21A.24, Critical Areas (only applicable until annexation is complete). • US Army Corps of Engineers (Corps) regulates wetlands under section 404 of the Clean Water Act. • Washington State Department of Ecology may require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination for Corps permits. • U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, for federally permitted actions that could affect endangered species (i.e. salmon or bull trout). • No State or federally listed threatened or endangered plant or animal species have been observed on or adjacent to the site. The site does contain habitat that could be used by such species. It is recommended prior to completion of reclamation and upon any amendment to the current reclamation permit (e.g. to resize the lake), the applicant should consult with the lead federal agency regarding compliance with state and federal laws, including the State Hydraulic Code, Sections 401 and 404 of the Clean Water Act, and Section 7 of the Endangered Species Act.
<i>Other Potential Mitigation Measures</i>	<ul style="list-style-type: none"> • <u>In addition to the mitigation measures identified here, the mitigation measures identified in the Surface Water and Groundwater sections should be implemented to avoid aquatic habitat degradation. The project will follow the 2012 Ecology Stormwater Manual, including LID practices (or the manual in place at the time of application).</u> • <u>To further reduce impacts to baseflow and salmonids, the City could modify zoning under Alternative 3 to further mitigate potential impervious surface increases (compared to Alternative 2).</u> • Place protected critical areas and natural open spaces in a non-buildable tract and dedicate it to the City or a conservation group. • Develop a long-term stewardship program for natural open spaces and critical areas prior to future redevelopment. Elements such as removing non-native and invasive plants, native vegetation, removing garbage, and trail maintenance could be included. This program could include stewardship goals and objectives for the care of the Jenkins Creek natural corridor as well as overall, long-term goals for the ecological health and habitat value of Jenkins Creek and associated wetland and buffer areas. Long-term goals and allowed maintenance practices for critical areas/non-buildable tract(s) could be incorporated into a vegetation management plan (CMC 18.65.150). • Educate the public about the surrounding critical area functions and values through the use of an interpretive sign program. • Mitigate for any unavoidable buffer impacts. This would likely be accomplished through buffer averaging or buffer enhancement. • Incorporate special habitat features and native plants into landscaping to attract wildlife. • Reduce habitat fragmentation between the Jenkins Creek corridor and habitat patches to the south and west as feasible, potentially by including a wildlife crossing in the new road design.

Resource	Proposed Mitigation
3.6 Noise	
<i>Incorporated Plan Features</i>	The proposed alternatives do not currently incorporate mitigation measures for noise.
<i>Applicable Regulations and Commitments</i>	<ul style="list-style-type: none"> ● Chapter 8.20 of the Covington Municipal Code (CMC) establishes regulations to minimize the exposure of citizens to excessive noise. ● WAC 173-60-040 establishes maximum permissible noise levels for various environments, and construction activities under all alternatives would be subject to these provisions. ● Federal FHWA funding, distributed WSDOT, may be used for street improvements associated with this project, and as such, the noise criteria established in Title 23, Part 772 of the Code of Federal Regulations (CFR) may apply. WSDOT has adopted the FHWA noise standards for evaluating noise impacts and for determining if such impacts are sufficient to justify funding of noise abatement for new roadway construction and roadway widening projects with state funding.
<i>Other Potential Mitigation Measures</i>	<ul style="list-style-type: none"> ● Nighttime construction will not be allowed without a waiver from the City Manager or his/her designee. The CMC does not regulate noise from daytime construction activities. Regardless, based on site-specific considerations at the time of construction permit review, the City may require all construction contractors to implement noise control plans for construction activities in the study area for daytime activities. ● Construction noise could be reduced by using enclosures or walls to surround noisy stationary equipment, installing mufflers on engines, substituting quieter equipment or construction methods, minimizing time of operation, and locating equipment as far as practical from sensitive receivers. ● The City should require the developers to consider traffic noise mitigation at new homes along the new segment of 204th Avenue SE within the planned action area. This screening-level traffic noise study indicated the potential for traffic noise impacts at future dwellings to be constructed adjacent to the proposed new section of 204th Avenue SE within the planned action area. Although the CMC does not regulate traffic-related noise, based on site-specific considerations the City may, at its discretion under the planned action ordinance, require the new developments to install noise control measures at the new dwellings along the proposed new section of 204th Avenue SE within the development. <u>For example, based on this programmatic analysis, with a 35-foot minimum setback, the modeled traffic noise levels at new dwellings would be less than the impact criteria.</u> Noise control measures could include site-specific noise studies, building insulation, or noise barrier walls. <u>As part of site-specific noise studies, the City could require developers to perform noise field measurements as a condition of engineering approvals once the ultimate roadway alignment, width and final grade for Alternatives 2 and 3 have been designed.</u>

Resource	Proposed Mitigation
3.7 Land Use Patterns/Plans and Policies	
<i>Incorporated Plan Features</i>	<ul style="list-style-type: none"> ● On-site stormwater detention and treatment will be provided to compensate for the additional impervious surface coverage generated by the Action Alternatives. The Subarea Plan also includes policy guidance for new development to implement LID practices whenever feasible to offset increases in impervious surface coverage. ● Both Action Alternatives include sufficient park and open space dedications to adequately offset the need generated by increased population. Alternative 2 would provide approximately 6 acres, and Alternative 3 would provide approximately 8 acres. ● Both Action Alternatives would be developed under the provisions of the Hawk Property Subarea Plan, which includes development standards and design guidelines intended to minimize incompatibilities between commercial and residential uses within the subarea and to reduce overall visual bulk. Examples of such provisions include lower height limits on commercial buildings than residential buildings and façade articulation requirements. A full description of the proposed development and design standards and design guidelines is contained in the Draft Hawk Property Subarea Plan. Adoption of the Hawk Property Subarea Plan under Alternatives 2 and 3 would include amendments to the City’s municipal code to incorporate these development and design standards.
<i>Applicable Regulations and Commitments</i>	<ul style="list-style-type: none"> ● All development in the Hawk Property Subarea after annexation would be subject to the provisions of the Covington Municipal Code Title 18 – Zoning, including the following Chapters: <ul style="list-style-type: none"> ○ 18.25: Permitted Uses ○ 18.30: Development Standards – Density and Dimensions ○ 18.35: Development Standards – Design Requirements ○ 18.40: Development Standards – Landscaping ○ 18.50: Development Standards – Parking and Circulation ○ 18.55: Development Standards – Signs ○ 18.65: Critical Areas ● Prior to annexation to the City of Covington, the unincorporated portion of the subarea would be subject to the provisions of King County Code Title 21, including the following Chapters: <ul style="list-style-type: none"> ○ 21A.08: Permitted Uses ○ 21A.12: Development Standards – Density and Dimensions ○ 21A.14: Development Standards – Design Requirements ○ 21A.16: Development Standards – Landscaping and Water Use ○ 21A.18: Development Standards – Parking and Circulation ○ 21A.20: Development Standards – Signs

Resource	Proposed Mitigation
	<ul style="list-style-type: none"> ○ 21A.22: Development Standards – Mineral Extraction ○ 21A.24: Critical Areas
<p><i>Other Potential Mitigation Measures</i></p>	<p><u>As part of integrating the Subarea Plan into the Comprehensive Plan, the City should amend land use designations, goals, policies, and capital facility improvements supporting the anticipated growth of the urban village. In addition, the City should make associated housekeeping amendments to update the status of the reclaimed mine site as transforming to an urban village.</u>None proposed</p>
<p>3.8 Transportation</p>	
<p><i>Incorporated Plan Features</i></p>	<ul style="list-style-type: none"> ● 204th Avenue SE Connector – Alternatives 2 and 3 include a new roadway connection between the east terminus of SE 256th Street and the north terminus of 204th Avenue SE. This roadway would be a 2- to 3-lane arterial (one general purpose lane in each direction, and a center two-way left-turn lane where needed), and through the city’s street standard deviation process (CMC 12.60) could potentially also have parking lanes on each side. The existing section of 204th Avenue SE between its north terminus and NE 272nd Street would also be improved to this standard, providing a continuous connection between NE 256th Street and NE 272nd Street. ● 191st Avenue SE Local Connector – Alternatives 2 and 3 include a local roadway connection between 191st Avenue SE, and the local internal roadway system at the south end of the subarea. The purpose of this roadway would be to provide a direct connection between the subarea and residential development located to the south. It would also provide an additional emergency vehicle access point. The local access connection should be designed with traffic calming measures such as on-street parking, landscaping, and/or devices such as traffic circles to limit access to the local neighborhood and discourage cut-through traffic. ● Non-Motorized Connections – Alternatives 2 and 3 include connections to existing and planned future non-motorized facilities adjacent to the subarea (see Section 3.9 Public Services). These connections could encourage higher use of non-motorized modes for trips generated by the site, and would improve safety and mobility for pedestrians and bicyclists entering and exiting the site. ● Park & Ride Lot – Alternative 3 proposes to provide a park & ride lot at the subarea. This would increase the likelihood that transit service would be extended to directly serve the site.
<p><i>Applicable Regulations and Commitments</i></p>	<ul style="list-style-type: none"> ● City of Covington Design Standards – For Alternatives 2 and 3, internal roadways, and non-motorized facilities are subject to design standards presented in Covington Design Guidelines (City of Covington 2005) and CMC Chapter 18.50 - Development Standards – Parking and Circulation. The proposed new roadway connections would be subject to the City’s Design and Construction Standards for roadways. (City of Covington 2009) ● City of Covington Parking Code – For Alternatives 2 and 3, the amount of parking supply provided as the subarea develops would be subject to parking requirements defined in CMC Chapter 18.50 - Development Standards – Parking and Circulation.

Resource	Proposed Mitigation
<i>Other Potential Mitigation Measures</i>	<ul style="list-style-type: none"> For Alternative 1, roadway capacity improvements are identified at 15-13 locations in Covington and five locations in Maple Valley. The roadway capacity improvements identified for Alternative 1 would also address Alternative 2 impacts at 11-10 locations and Alternative 3 impacts at 12-11 locations in Covington. The roadway capacity improvements identified for Alternative 1 would also address Alternative 2 and Alternative 3 impacts at all five impacted intersections in Maple Valley. Alternatives 2 and 3 would eliminate the need for mitigation at one location, compared to Alternative 1. Alternative 2 would eliminate the need for mitigation at one additional intersection, and reduce the level of improvement needed at one other intersection, compared to Alternatives 1 and 3. <u>Alternatives 2 and 3 would trigger a need for capacity improvement at four additional locations. At two of those locations (SE Wax Road/SE 180th Street and SE 272nd Street/204th Avenue SE), the same projects are identified for both alternatives. At the other two locations (both SE 256th Street/SR 18 Ramp intersections adjacent to the west side of the site), Alternative 3 would require a higher level of improvement than Alternative 2 <u>if the intersections are signalized. Alternatively, roundabouts could be constructed at each intersection.</u></u> <u>For Alternatives 2 and 3, a Traffic Control Plan would need to be prepared in accordance with City guidelines to minimize the potential short-term traffic impacts resulting from construction.</u> <u>The City should adopt comprehensive plan policies stating that the City of Covington will plan cooperatively with WSDOT and neighboring cities to define the ultimate capacity for this roadway.</u>
3.9 Public Services	
<i>Incorporated Plan Features</i>	<p>Fire:</p> <ul style="list-style-type: none"> Both Action Alternatives include construction of a central spine street connecting the west and east ends of the subarea. This street will reduce response times for emergency vehicles throughout the subarea, as well as residential areas to the east, which currently must be accessed by a more circuitous route. <p>Parks & Trails:</p> <ul style="list-style-type: none"> Both Action Alternatives include development of sufficient park space to offset the demand created by additional residential development in the subarea, in compliance with the LOS standard established in the City’s Comprehensive Plan. This is in excess of what is required by the City’s current development regulations for the proposed housing mix. Both Action Alternatives include development of sufficient trails to meet the trails LOS standard established by the City’s Comprehensive plan, thereby maintaining the City’s current level of trail service.
<i>Applicable Regulations and Commitments</i>	<p><u>Fire:</u></p> <ul style="list-style-type: none"> <u>Implement the City’s adopted fire code at CMC 15.20 Fire Code</u> <p>Schools:</p> <ul style="list-style-type: none"> After annexation by the City of Covington, development in the Hawk Property Subarea will be subject to assessment of school impact fees, as required by Covington Municipal Code Chapter 18.120. Until annexation by the City of Covington, development in the unincorporated portions of the Hawk Property Subarea will be subject to assessment of school impact fees, as required by King County Code Chapter 27.44.

Resource	Proposed Mitigation
<i>Other Potential Mitigation Measures</i>	<p>Police Protection:</p> <ul style="list-style-type: none"> ● The City could adopt a formal LOS standard for police service and coordinate with the King County Sheriff’s Office on monitoring of call responses to incidents by members of the Covington Police Department. ● The City should contract with the King County Sheriff’s Office for the services of additional police officers commensurate with the level of development ultimately approved for the subarea. <p>Fire Protection</p> <ul style="list-style-type: none"> ● The City should require a mitigation agreement between the developer and Kent Regional Fire Authority prior to development to address the impacts identified in this Chapter. The mitigation agreement should address impacts to daily and peak hour workload at KFD Station 78 resulting from development of Alternative 2 or Alternative 3. <p>Parks & Trails</p> <ul style="list-style-type: none"> ● At the time of development application, the City should review submitted conceptual and detailed site plans to ensure that sufficient park space and trails are provided to be consistent with both the LOS standards of the Parks and Recreation Element of the Comprehensive Plan and with the requirements of CMC 18.35.150, as established in the Planned Action Ordinance.
3.10 Utilities	
<i>Incorporated Plan Features</i>	None.
<i>Applicable Regulations and Commitments</i>	<p>Plans and regulations adopted at the time development permits are submitted will be applicable, such as:</p> <ul style="list-style-type: none"> ● Department of Ecology, Stormwater Manual for Western Washington ● City of Covington Surface Water Management Program, CMC 13.25 ● CMC Title 13 Public Utilities ● Soos Creek Water and Sewer District Comprehensive Plan ● Covington Water District Water System Plan
<i>Other Potential Mitigation Measures</i>	<ul style="list-style-type: none"> ● Mitigation measures for impacts to stormwater runoff from the proposed development may include incorporating LID best management practices in the developed conceptual site plan. See Section 3.2 for additional potential mitigation measures related to surface water management. ● No additional mitigation measures are necessary for the water supply and sanitary sewer utility infrastructure.

1.8 Significant Unavoidable Adverse Impacts

Earth

No significant unavoidable adverse impacts have been determined for the earth elements at the Hawk Property Subarea. Methods are available to build out the Hawk Property Subarea under each EIS alternative without resulting in significant unavoidable adverse impacts.

Surface Water

Alternative 1 would result in some modest changes to the site as reclamation is executed, batch operations continue and new facility construction occurs. Overall, these actions would not significantly change site conditions in terms of surface water quality.

As mitigated, Alternatives 2 and 3 would not create significant adverse environmental impacts.

Groundwater

Increased impervious surface area could reduce groundwater recharge volumes, thereby reducing seasonal baseflows in Jenkins Creek. The site currently has limited stormwater treatment facilities. Under Alternatives 2 and 3, compliance with stormwater design standards in effect at the time of the development application would provide greater stormwater quantity and quality control than under existing conditions, and no significant impacts would be expected to downstream water resources (Jenkins Creek and Big Soos Creek).

As mitigated, Alternatives 2 & 3 would not create significant adverse environmental impacts on groundwater resources.

Air Quality

No significant unavoidable adverse impacts on regional or local air quality are anticipated for any of the alternatives. Temporary, localized dust and odor impacts could occur during the construction activities under each alternative. The regulations and mitigation measures described above are adequate to mitigate any adverse impacts anticipated to occur as a result of Hawk Property Subarea growth increases under Alternatives 2 and 3.

Plants and Animals

Alternative 1 would result in some modest changes to the site as reclamation is executed, batch operations continue, and new facility construction occurs. Overall, these actions would not significantly change site conditions in terms of critical areas, plants and animals. The area that is vegetated is expected to increase over time as reclamation is completed. However, the site would still be in industrial use via the asphalt batch plant.

Alternatives 2 and 3 would cause some cumulative and avoidable impacts to critical areas and wildlife. These include increased human activity associated with more dense urban development, which could result in long-term disturbance to sensitive wildlife species in the vicinity of the Jenkins Creek corridor, and an increase in impervious surface area, which may impact the quantity and quality of surface water runoff. These impacts would be mitigated as described in Sections 3.2 and 3.3, Surface Water and Groundwater Resources.

Cumulative impacts, such as increased impervious surface, increased pollutants, and habitat fragmentation, generally occur as a watershed is developed. While these impacts cannot be wholly avoided, they can be minimized and mitigated. Despite significant increases in impervious surface area, Alternatives 2 and 3 minimize adverse impacts through the following measures: 1) concentrating development in the area that is currently disturbed, 2) largely avoiding critical area impacts, 3) maintaining a native primarily forest buffer, 4) modifying site zoning to reduce impervious surface impacts, and 5) implementing LID stormwater practices.

Noise

The screening-level noise study used for this analysis indicated potential traffic noise impacts at future dwellings located adjacent to the proposed new segment of 204th Avenue SE within the development; however, this impact appears avoidable if the residential buildings and residential outdoor use areas are setback (e.g. 35 feet). Appropriate site design can be considered when the roadway alignment is determined, and additional field measurements or noise studies are performed as indicated in mitigation measures. Depending on the specific configuration of the new street and the future dwelling units, it is possible that conventional traffic noise mitigation measures (e.g., noise barrier walls or window insulation) might not be technically feasible or economically reasonable. In addition, it is uncertain whether traffic noise mitigation would be technically feasible or economically reasonable at the existing homes along 204th Avenue SE south of the planned action area.

Therefore, it is possible that the future traffic noise impacts could not be mitigated. In that case the future increases in traffic noise levels at the proposed new dwellings and at the existing dwellings along 204th Avenue SE would constitute a significant and unavoidable impact.

Land Use Patterns/Plans and Policies

Under the Action Alternatives, land reclaimed and revegetated pursuant to the requirements of a Department of Natural Resources Surface Mining permit and reclamation plan would be permanently converted from open area to urban uses. However, much of this area is and historically has been disturbed. With implementation of the identified mitigation measures, no significant unavoidable adverse impacts to land use patterns, plans, or policies are anticipated.

Transportation

For all three alternatives, the roadway capacity improvement mitigation measures are expected to address all impacts in Covington with the exception of impacts at intersections located along SE 272nd Street. For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. No additional capacity improvement mitigation measures have been identified at these intersections. Additionally, mitigation identified in Maple Valley includes widening of SR 516 (Kent-Kangley Road) to five lanes between 216th Avenue SE and SR 169, which is not included in the City's or WSDOT's current plans. See mitigation measures for a description of a potential policy on ultimate capacity.

The projected year 2035 conditions with Alternative 1 (No Action) indicate that traffic volumes on the section of SR 516 (SE 272nd Street) between 156th Place SE and SE Wax Road, and also between 216th Avenue SE and SR 169, would be high enough that most intersections along these sections would operate at LOS E or F. While some spot improvements at these locations may improve conditions slightly, they would not be sufficient to improve operation to meet current level of service standards defined by the Cities of Covington and Maple Valley. Improvement to LOS D or better would require widening of the roadway under projected conditions. If 2035 growth occurs to the degree reflected in the Covington model projections (which reflects full build-out of both cities' future land use plans, as well as substantial growth in regional development), it is likely that both Cities would reevaluate their long-term plans for the corridor, and determine if major widening is warranted, or if it would be warranted to reexamine level of service standards and allow the roadway to operate at a lower level of service. Under these circumstances, the Cities would be required to decide upon one of these options—capacity improvement or a level of service policy change—in order to support concurrency and comply with the Growth Management Act. With either measure in place, no significant adverse impacts would result from the No Action alternative.

These 2035 conditions are projected for the No Action alternative; Alternatives 2 and 3 would not affect the need to make this decision, nor would they affect the decision that the Cities would ultimately make. While Alternatives 2 and 3 are projected to add trips to some intersections along SR 516, any capacity improvement or policy solution identified by the Cities to address operational issues for the No Action alternative would also be expected to

address Alternatives 2 or 3 without the need for additional measures. Therefore, with recommended mitigation in place at all other locations, no additional significant adverse unavoidable transportation impacts are expected to result from Alternatives 2 or 3.

Public Services

Future population growth and development will continue to increase demand for all public services on both a local and regional level. With implementation of mitigation measures, no significant unavoidable adverse impacts are anticipated.

Utilities

While both proposed Alternatives will generate additional demand for stormwater drainage, water, and sanitary sewer facilities, no significant unavoidable adverse impacts are anticipated. The City's Stormwater standards address the drainage impacts created by the Alternatives. The water supply and sanitary sewer impacts have been anticipated by both the Covington Water District and the Soos Creek Water and Sewer District. The existing water supply and sanitary sewer capacity are adequate to accommodate the demands of the subarea, but additional water and sewer transmission facilities will be needed to and within the subarea.

2.0 PREFERRED ALTERNATIVE DESCRIPTION

2.1 Preferred Alternative

The City of Covington proposes to select a Preferred Alternative consisting of the range of the Minimum and Maximum Urban Village alternatives. Market conditions would determine the level of growth in the range of the two alternatives. Exhibit 2.1-1 compares growth potential of the Minimum and Maximum Urban Village alternatives, and Exhibit 2.1-2 compares site development statistics.

Exhibit 2.1-1. Maximum Urban Village Proposal

Use Type			Minimum Urban Village Proposal		Maximum Urban Village Proposal	
			Dwelling Units and Square Feet	Anticipated Maximum Building Height (Feet) ¹	Dwelling Units and Square Feet	Anticipated Maximum Building Height (Feet) ¹
Single Family Detached (dwelling units)		130	35	200	35	
Townhomes (dwelling units)		270	35	400	35	
Multi-family Flats (dwelling units)		600	60	900	60	
Residential Total (dwelling units)		1,000		1,500		
Large format Retail (square feet)		600,000	35	708,940	35	
Iconic/Local Retail (square feet)		80,000	35	141,060	35	
Commercial Retail Total (square feet)		680,000		850,000		

¹ Heights listed are typical for identified uses. Zoning districts address multiple uses and apply maximum heights across zones. See Subarea Plan under separate cover.

Source: Communita, Stalzer and Associates, 2013

Exhibit 2.1-2. Alternatives 2 and 3 Site Development Comparison

Site Development Category	Minimum Urban Village Proposal	Maximum Urban Village Proposal
Commercial/Residential Development	110.4 acres	104.6
Parks	5.5 acres	8.3 acres
Spine Road	9 acres	9 acres
Park-and-Ride	0	3 acres
Critical Areas/Open Space	67.2 acres	67.2 acres
Pond	19.9 acres	19.9 acres
Total	212 acres	212 acres

Source: Communita, BERK, 2013

2.2 Preferred Hawk Property Subarea Plan

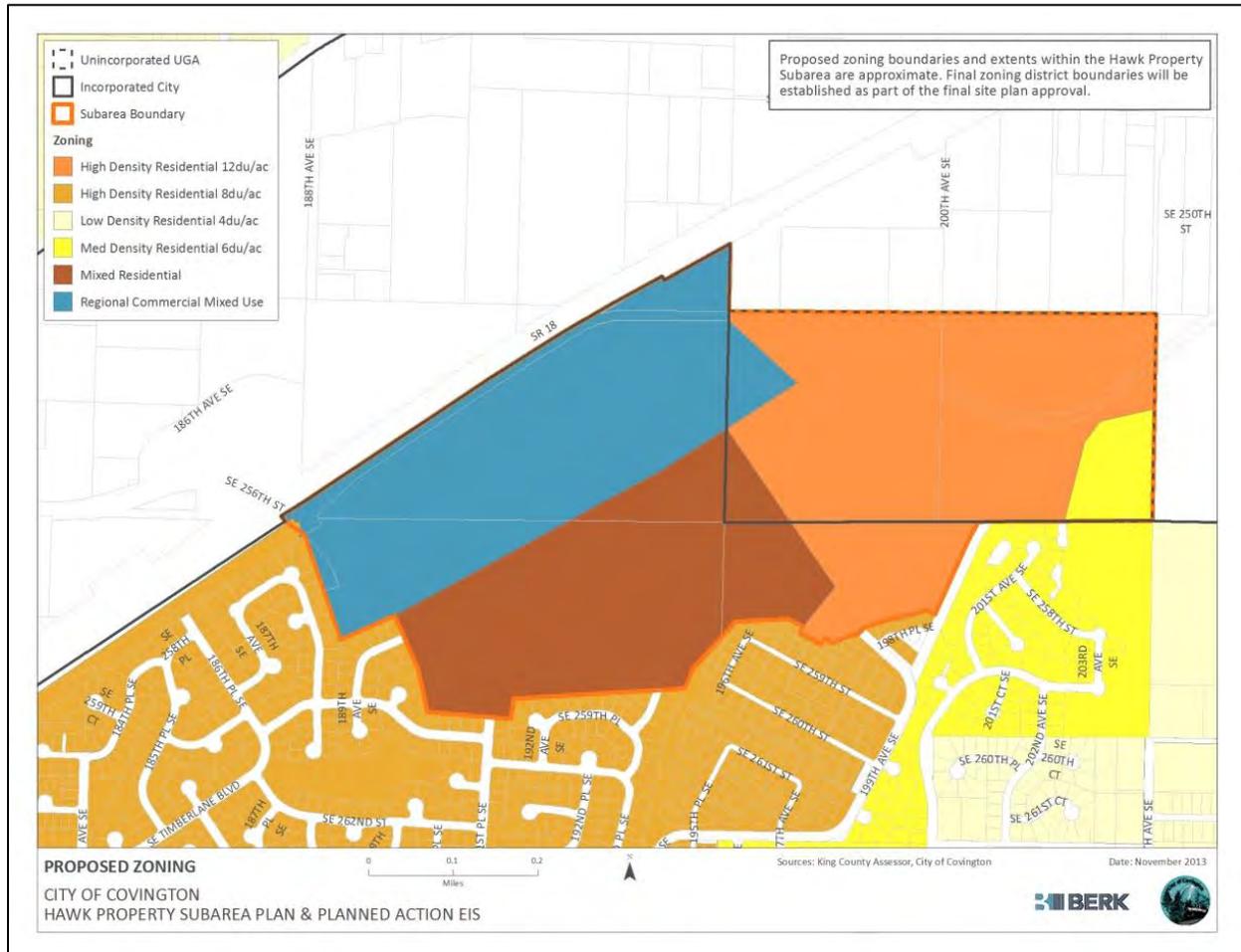
While the conceptual plans and alternatives are similar to the Draft EIS, in response to Planning Commission and public comments and improved subarea plan implementation, the City has prepared edits to Draft subarea plan

HAWK PROPERTY PLANNED ACTION EIS | PREFERRED ALTERNATIVE DESCRIPTION

goals, policies, and regulations in the “Preferred Hawk Property Subarea Plan” available under separate cover and summarized below.

- The proposed zoning map for the Hawk Property Subarea was amended to incorporate a small area of R-6 zoning in the southeast corner of the subarea. This is consistent with the conceptual site plans for the two alternatives, which showed single-family residential uses in this area. This is shown in the exhibit below.

Exhibit 2.2-1. Preferred Alternative Proposed Zoning



- Proposed Parks and Recreation policies PRP 5.11 and PRP 5.12 were amended to clarify that the purpose of the proposed trail network in the Hawk Property Subarea is to connect the subarea to surrounding neighborhoods and the regional trail system and that the trail system should be integrated with the sidewalk system associated with development.
- Policies are added regarding vegetation conservation along the perimeter of the property near Timberlane as well as promoting tree retention and mitigation sequencing in critical areas and buffers for roads, trails, and utilities.
- A policy to coordinate the 204th Avenue SE Connector and the local access road at 191st Street SE to avoid cut-through traffic on the local street is proposed.

HAWK PROPERTY PLANNED ACTION EIS | PREFERRED ALTERNATIVE DESCRIPTION

- The proposed purpose statement for the Mixed Residential (MR) zone in CMC 18.15.050(1)(e) was revised to focus on the intent of the zone to provide a variety of housing types at a range of densities. Rather than listing specific uses that would accomplish the purpose of the zone, the revised language states that the purposes of the zone would be accomplished by allowing a mixture of residential development and neighborhood-serving commercial uses that are complementary to and supportive of mixed-density housing.
- Several uses previously prohibited in the Regional Commercial Mixed Use (RCMU) zone were changed to Permitted uses, including the following:
 - Senior citizen assisted housing; and
 - Veterinary clinics;
- In response to public comments and in recognition that the City's stormwater standards promote low impact development (LID) forms, Sections 18.30.030 and 040 reduce the proposed maximum impervious area for the MR and RCMU zones compared to the Draft Subarea Plan.
- Proposed building frontage standards in CMC 18.35.310(3) were revised to clarify exceptions to the standards.
- In support of proposed policy LNP 19.3, which encourages emphasis of the Hawk Property Subarea as the northern entrance to Covington, an additional standard for the creation of visual gateways was inserted in CMC 18.35.310(8), including examples of gateway signage from other projects.
- In response to comments that off-street parking standards were too confusing, revisions were made to proposed standards in CMC 18.15.110(1)(g) to clarify the desired spatial arrangement of building façades, parking areas, and street frontages. Illustrative diagrams were also provided to further clarify this standard.

The Preferred Subarea Plan is anticipated to be modified following public meetings and hearings before the Planning Commission and City Council. For example, zoning or design standards may be further refined. It is also anticipated that a subarea capital facilities plan incorporating the mitigation measures of this EIS regarding transportation and parks would be prepared for inclusion in the Comprehensive Plan Capital Facilities Element.

As described in the Draft EIS, the final plan that would ultimately be adopted would not be exactly one of the EIS alternatives, but would fall within the range of the alternatives analyzed in the EIS.

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3.0 CLARIFICATIONS AND CORRECTIONS

This Chapter provides clarifications and corrections to the Draft Environmental Impact Statement (Draft EIS) due to responses to comments or due to review by City staff or consultants. Changes are noted in the order of the Draft EIS Chapters and subsections, and provide track changes. The clarifications and corrections do not change the order of magnitude analysis of the Draft EIS Alternatives. In some cases impacts are reduced by the addition of additional mitigation measures or based on corrected information.

Chapter 1: Summary

See Chapter 1 which includes track changes identifying clarifications or corrections to the Draft EIS.

Chapter 2: Alternatives

Amend Exhibit 2.4-1 on page 2-6 of the Draft EIS as follows to include additional information on projected population increase associated with Alternative 2.

Exhibit 2.4-1. Minimum Urban Village Proposal

Use Type	Dwelling Units/Square feet	Assumed Persons per Dwelling	Projected Population	Anticipated Maximum Building Height (Feet)
Single Family (dwelling units)	130	2.6	338	35
Townhomes (dwelling units)	270	2.0	540	35
Multi-family (dwelling units)	600	1.6	960	60
Residential Total (dwelling units)	1,000		1,838	
Large Format Retail (square feet)	600,000			35
Iconic/Local Retail (square feet)	80,000			35
Commercial Retail Total (square feet)	680,000			

Notes: Estimates of future population in the Hawk Property Subarea under each alternative were based on a combination of decennial census and American Community Survey (ACS) 5-year Estimate data from the US Census Bureau, as well as forecasts from the Puget Sound Regional Council (PSRC) 2040 household population projections. Single-family: 2.6 persons per unit is based on PSRC forecasts of a household size of 2.62 by 2040. Multifamily (apartments and condominiums): 1.6 persons per unit. This is slightly higher than the average multifamily household size reported by the US Census Bureau's ACS 5-Year Estimates. Townhomes: 2.0 persons per unit. This assumption reflects the status of townhomes as a "middle ground" between single-family residences and multifamily flats.

Source: Communita, Stalzer and Associates, 2013

Amend Exhibit 2.4-3 on page 2-8 of the Draft EIS as follows to include additional information on projected population increase associated with Alternative 3.

Exhibit 2.4-3. Maximum Urban Village Proposal

Use Type	Dwelling Units/Square feet	Assumed Persons per Dwelling	Projected Population	Anticipated Maximum Building Height (Feet)
Single Family (dwelling units)	200	2.6	520	35
Townhomes (dwelling units)	400	2.0	800	35
Multi-family (dwelling units)	900	1.6	1,440	60

Use Type	Dwelling Units/Square feet	<u>Assumed Persons per Dwelling</u>	<u>Projected Population</u>	Anticipated Maximum Building Height (Feet)
Residential Total (dwelling units)	1,500		<u>2,760</u>	
Large Format Retail (square feet)	708,940			35
Iconic/Local Retail (square feet)	141,060			35
Commercial Retail Total (square feet)	850,000			

Notes: Estimates of future population in the Hawk Property Subarea under each alternative were based on a combination of decennial census and American Community Survey (ACS) 5-year Estimate data from the US Census Bureau, as well as forecasts from the Puget Sound Regional Council (PSRC) 2040 household population projections. Single-family: 2.6 persons per unit is based on PSRC forecasts of a household size of 2.62 by 2040. Multifamily (apartments and condominiums): 1.6 persons per unit. This is slightly higher than the average multifamily household size reported by the US Census Bureau's ACS 5-Year Estimates. Townhomes: 2.0 persons per unit. This assumption reflects the status of townhomes as a "middle ground" between single-family residences and multifamily flats.

Source: Communita, Stalzer and Associates, 2013

Chapter 3: Affected Environment, Significant Impacts, and Mitigation Measures

Earth

No changes proposed.

Surface Water Resources

Amend page 3-16, fourth bullet under "Applicable Regulations and Commitments" as follows:

- US Environmental Protection Agency, Clean Water Act: Total Maximum Daily Load (TMDL) plans and standards could in the future result in greater stormwater standards for affected surface waters.

Groundwater Resources

The introductory paragraph of the Section on page 3-18 of the Draft EIS should be corrected as follows:

This section describes the hydrogeologic setting, groundwater conditions, and conceptual impacts to groundwater in the area of the proposed development. The discussion includes ~~three~~two alternative scenarios for mixed-use development of the site.

Page 3-23 of the Draft EIS should be amended to add the following mitigation measures or clarifications:

Other Potential Mitigation Measures

During site construction, equipment refueling should be located in a specific designated location and include secondary containment in the event of a spill, including spill kits and associated equipment. Fuel storage should not occur on-site during construction. In the event of an on-site spill, notification should be reported to Ecology, City of Covington, and City of Kent, noting that the spill area is located adjacent to an aquifer protection area.

Potential impacts due to reduced recharge could be mitigated by stormwater detention and infiltration design and construction considerations as discussed in Section 3.2. Site soils are well drained and suitable for infiltration; infiltration should be required with pretreatment of stormwater inflows. Given the potential creation of 87 acres of impervious area on the site, natural recharge from critical areas and the pond should be protected, such as through the use of stormwater infiltration methods, which could significantly reduce potential impacts due to loss of groundwater recharge. Following the 2012 Stormwater Manual, stormwater designs for the subarea can be optimized by separating roof runoff from other pollution-generating impervious surfaces.

To increase public awareness, signage should be posted stating, “protect groundwater, it’s the water you drink” or equivalent. These signs should be placed adjacent to any stormwater facility with infiltration or overflow to the pond or critical areas.

Any abandoned wells on the site should be decommissioned consistent with requirements from the Washington State Department of Ecology. Existing wells, properly constructed with sanitary seals and steel casing, would not pose much of a risk to groundwater resources.

A Best Management Practices (BMP) Plan should be developed for the entire property, especially if there are planned fueling areas, gas stations, and any associated automotive services, to protect groundwater resources. Assistance with the development of a BMP plan may be available from the King County Local Hazardous Waste at (206) 296-3976. In addition, King County Envirostars program may be beneficial to the applicant and resource conservation.

Stormwater management facilities should be designed to maintain a no net loss of recharge to the aquifer. All stormwater should be treated appropriately to avoid any potential degradation to groundwater resources.

Aquifers in this area, as documented in the Aspect report and other studies, are primarily groundwater discharge areas (increasing hydraulic head with depth). Infiltration of stormwater is less of an issue for aquifer storage and more important for maintaining seasonal baseflows in local streams, as noted above.

Any landscaping associated with the development should consist of native species to reduce the potential use of pesticide/fertilizer application. Native vegetation also will promote water conservation, as these species require less irrigation.

Through the Planned Action ~~Ordinance~~Ordinance, the City could require compliance with the 2008 City of Kent Draft Water System Plan Chapter 8: Wellhead Protection Program similar to the City’s practice of applying appropriate conditions through the permit and SEPA process.

Air Quality

Amend Exhibit 3.4-5 as follows to reflect the correct amount of acres disturbed which lowers emissions slightly:

Exhibit 3.4-5. Comparison of Annual Greenhouse Gas Emissions

	Average Annual GHG Emissions During 60-Year Project Lifetime (metric tons CO2-equivalent per year)			
	Existing	Alternative 1 – Future No Action	Alternative 2 – Minimum Urban Village Proposal	Alternative 3 – Maximum Urban Village Proposal
Asphalt Batch Plant Operation	3,849	3,849	0	0
Mine Reclamation	378	0	0	0
Residential and Commercial Land Use for Action Alternatives	--	--	18,159	25,340
“Soil Carbon” for Vegetation Removal for Action Alternatives	--	--	1714	1714
Credit for “Soil Carbon” for Re-vegetated Reclamation of Existing Gravel Mine	--	193	--	--
Total GHG Emissions	4,227	3,656	18,176 <u>18,173</u>	25,357 <u>25,354</u>
Net Increase Compared to Alternative 1 (Future No Action)	--	--	14,520 <u>14,517</u>	21,701 <u>21,698</u>

Source: Landau, 2013

Amend pages 3-39 and 3-40 to correct forested acres disturbed which lowers emissions slightly:

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE PROPOSAL)

The annual GHG emissions for Alternative 2 are calculated based on the future land use listed in Exhibit 3.4-2. Exhibit 3.4-5 lists the life-cycle GHG emissions increases caused by future development in the Hawk Property Subarea under each alternative. Alternative 2 would provide additional residential and employment growth in the Hawk Property Subarea, whereas Alternative 1 would provide none. Therefore, Alternative 2 would increase localized GHG emissions within the Hawk Property Subarea by ~~14,520~~14,517 metric tons per year compared to Alternative 1. The future GHG emission increases within the Hawk Property Subarea for Alternative 2 would be similar but slightly less than the future GHG emission increases associated with Alternative 3.

To evaluate the significance of the estimated GHG emission increases for Alternative 2, the relative future increase compared to the future no-action alternative (Alternative 1) was compared to the 25,000 metric tons per year significance threshold that is used by Ecology for SEPA determinations for which Ecology is the SEPA lead agency (Ecology, 2013b). Ecology's threshold is not directly applicable to this EIS because Ecology is not the lead SEPA agency. However, Ecology's published threshold is relevant because Ecology will use it to evaluate land use projects similar to the one being considered in this EIS. The increase of future GHG emissions in the Hawk Property Subarea for Alternative 2 (compared to the No Action Alternative 1) is only ~~14,520~~14,517 metric tons CO₂-equivalent per year which is less than the 25,000 metric tons CO₂-equivalent per year significance threshold used for this EIS. Therefore, this evaluation demonstrates that GHG emission increases caused by increased development in the Hawk Property Subarea (associated with Alternative 2) would not be significant.

Total GHG emissions for Washington State were estimated to exceed 101,000,000 metric tons CO₂-equivalent in 2008 (Ecology 2010). In comparison to state-wide annual GHG emissions, the relatively small increase in GHG emissions within the Hawk Property Subarea associated with Alternative 2 (~~14,520~~14,517 metric tons per year) is not considered to be significant.

The disturbance of soil associated with construction and development and the resulting permanent removal of biomass is also a source of GHG emissions, because it permanently eliminates vegetation that would otherwise have removed CO₂ from the atmosphere during photosynthesis. Using the Buildcarbonneutral.org calculator (Build Carbon Neutral 2013), GHG emissions associated with soil disturbance and biomass removal was calculated for each alternative based on the total acreage of disturbed land that is anticipated. Impacts associated with land disturbance would be greatest for Alternatives 2 and 3. Approximately ~~915~~ acres of forest land would be permanently removed; however, approximately ~~620~~ acres of pocket parks would be added as part of the development. The annualized GHG emission rate associated with the forest removal after subtracting the carbon credit received for restoring the pocket parks is ~~17-14~~ metric tons CO₂-equivalent per year. This relatively small contribution to GHG emissions by biomass removal is much lower than the contribution from future operational activity. For Alternative 2 the annualized GHG emission rate caused by biomass removal is ~~17-14~~ metric tons per year, while Exhibit 3.4-5 shows the total operational GHG emission rate is 18,159 metric tons per year. Therefore, the GHG emissions caused by biomass removal are not considered significant.

Amend pages 3-41 and 3-42 to correct forested acres disturbed:

ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE PROPOSAL)

The annual GHG emissions for Alternative 3 are calculated based on the future land use listed in Exhibit 3.4-2. The emissions estimate for future land use conditions associated with the Alternative 3 accounts for GHG emissions reductions expected as a result of local development policies and goals. Exhibit 3.4-5 lists the life-cycle GHG emissions increases caused by future development in the Hawk Property Subarea

under each alternative. The future GHG emission increases within the Hawk Property Subarea for Alternative 3 would be the highest of any of the studied alternatives, but close to the GHG emission increase associated with Alternative 2.

Alternative 3 would provide the most residential and employment growth in the Hawk Property Subarea compared to the other two alternatives. Therefore, it would increase localized GHG emissions within the Hawk Property Subarea compared to the other alternatives. The increase of future GHG emissions in the study area for Alternative 3 (compared to the No Action Alternative 1) is only ~~21,701~~21,698 metric tons CO₂-equivalent per year which is less than the 25,000 metric tons CO₂-equivalent per year PSD significance threshold assumed for this EIS. Therefore, this evaluation demonstrates that GHG impacts caused by increased development in the Hawk Property Subarea (associated with Alternative 3) would not be significant.

Additionally, in comparison to state-wide annual GHG emissions (101,000,000 metric tons CO₂-equivalent in 2008), the relatively small increase in GHG emissions within the Hawk Property Subarea associated with Alternative 3 (~~21,701~~21,698 metric tons per year) is not considered to be significant.

GHG emissions associated with soil disturbance and biomass removal was calculated based on the total acreage of disturbed land that is anticipated. As noted above, impacts associated with land disturbance would be greatest for Alternatives 2 and 3. Approximately ~~915~~ acres of forest land would be permanently removed; however, approximately ~~820~~ acres of pocket parks would be added as part of the development. The annualized GHG emission rate associated with the forest removal after subtracting the carbon credit received for restoring the pocket parks is ~~17-14~~ metric tons CO₂-equivalent per year. This relatively small contribution to GHG emissions by biomass removal is much lower than the contribution from future operational activity. For Alternative 3 the annualized GHG emission rate caused by biomass removal is ~~17~~14 metric tons per year, while Exhibit 3.4-5 shows the increased operational GHG emission rate is 25,340 metric tons per year (net increase of ~~21,701~~21,698 metric tons, still below the Ecology study threshold of 25,000 metric tons). Therefore, the GHG emissions caused by biomass removal are not considered significant.

Plants and Animals

Modify the “critical areas” subsection on page 3-49 of the Draft EIS as follows:

Critical Areas

The sub-area is an approximately 212-acre site south of Highway 18, located off the SE 256th Street exit; it currently spans City of Covington and King County jurisdictions (Exhibit 3.5-1). The entire study area is in Covington; 132-acres are in current City limits and the remaining 80-acres are in a Potential Annexation Area (PAA). The annexation area is within the City of Covington’s Urban Growth Area (UGA); annexation of this area is anticipated in the future.

Modify the Fisheries subsection of the “Affected Environment and Methodology” on page 3-55 of the Draft EIS as follows:

FISHERIES RESOURCES

Jenkins Creek is a fish-bearing stream that is home to coastal cutthroat trout and Coho salmon within the project site according to WDFW Priority Habitat and Species distribution maps (WDFW March 2013). Other resident fish, such as sculpins and lamprey, are presumed to utilize the onsite segment of Jenkins Creek. Steelhead trout are mapped north of highway 18, but not onsite. WDFW Priority Habitat and Species distribution maps also document Chinook salmon (presumed) presence in Jenkins Creek, approximately 0.5 mile downstream of the study area; Chinook salmon are not documented in the onsite stream segment (WDFW March 2013 and King County DNR February 2009). In-stream elements, such as

large woody debris, provide habitat niches and riffle/pool features. The riparian corridor is shaded and densely vegetated.

Modify the analysis of the action alternatives on pages 3-56 and 3-57 of the Draft EIS as follows:

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE PROPOSAL) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE PROPOSAL)

Additionally, to improve trail connections and expand passive recreation opportunities, some new trails will be created within critical areas. Alternatives 2 and 3 show trails along the steep slopes at the south end. The City also discussed possibly creating a trail through the Jenkins Creek/wetland corridor at the north end of the site; this would serve as a connection to existing trails to the east. Trails would increase pedestrian use of these critical areas. Typically use by people and pets results in increased litter, increased pollutants (pet waste), and disturbance to wildlife. While a formal trail would increase use, it would also encourage people to stay on the path, thus managing site use. This could be an improvement over the present condition, where people have established several informal trails and at least one make-shift camp; illegal dumping and littering is also a problem at this site, particularly off the pipeline corridor. Trails shown at this time are conceptual in nature and actual locations will be determined in the course of future site planning and permit review; final trail plans will need to comply with the City's CAO which requires impact avoidance and minimization to the extent feasible. To minimize impacts trails should be field-located to avoid loss or disturbance of significant and/or heritage trees.

Amend Page 3-58 of the Draft EIS, as follows:

Development results in landscape changes that affect physical, chemical and biologic process within critical areas and the greater watershed. A number of scientific studies have documented ecologic consequences of urbanization, including flashy and erosive hydrologic conditions, increased sedimentation, higher nutrient loads, increased input of toxic contaminants, and habitat fragmentation. Landscape changes elsewhere in the Soos Creek watershed have caused a reduction in riparian vegetation and recruitment of woody debris, increased pollutants, a reduction in dissolved oxygen levels, and higher water temperatures (Department of Ecology July 2012). Some of the proposed landscape changes may result in sub-standard water quality, as measured by total maximum daily load (TMDL) values, if not adequately mitigated.

Effective wetland buffer widths presented in the literature generally range from 25 to 300+ feet depending on land use intensity (stressors) and habitat functions. Effective riparian buffer widths range from 33 to 600 feet with most functions not requiring more than a 150-foot buffer. Since the onsite segment of Jenkins Creek is encompassed by a broad wetland and wetland buffer, the effective stream buffer ranges from approximately 200 to 800 feet in width. This concept-level impact analysis assumes existing critical areas and associated buffers will be largely undisturbed.

As described above, Alternatives 2 and 3 would likely impact a small area of wetland buffer for construction of the arterial street and potentially for utility services. New utilities are presumed to follow the road alignment to the extent feasible. To follow City and County regulations, site planning should seek to avoid critical area impacts, minimize any unavoidable impacts, and lastly provide compensatory mitigation. It must be demonstrated that critical area functions and values are maintained in a manner equivalent to or greater than the standard buffer widths. Under Alternatives 2 and 3, the majority of the buffer would remain intact. Buffer losses are presumed to be slight and could be off-set through buffer width expansion in other continuous, equivalent, and well vegetated areas.

Amend page 3-59 of the Draft EIS as follows:

Indirect/Cumulative Impacts

Long-term impacts occur over the landscape with higher population densities and increased development activities. Sources, or areas of habitat in which a population is able to produce a net gain in individuals, decrease with habitat loss, and fragmentation impacts the ability of wildlife species to travel and reproduce (Marzluff and Ewing 2001, Marzluff 2001). Both habitat loss and fragmentation tend to increase with development. The proposed land use under all three alternatives maintains a habitat corridor by preserving Jenkins Creek, associated wetlands, and buffers. The riparian corridor is and will continue to be the primary habitat corridor through the site. Additionally, landscape-scale changes may result in impacts to stream water quality and quantity, which may negatively affect aquatic fauna, if not properly mitigated.

Amend page 3-62 of the Draft EIS, Applicable Regulations and Commitments as follows:

Applicable Regulations and Commitments

Critical area impacts will be avoided and minimized to the extent possible. This will include retaining the forested condition of the existing critical areas and buffers to the extent feasible. Any impacts would be fully mitigated as required by the Covington’s critical areas regulations. Temporary critical area impacts, such as disturbance and possible erosion/sedimentation would be addressed by restoring the affected areas to the same or an improved condition, as required by Covington’s critical area regulations and other applicable state and federal regulations. Keeping development away from stream banks, maintaining a riparian corridor, and maintaining wetland/floodplain connections all help to sustain viable habitat for fish, birds, reptiles, and mammals. These measures are known to reduce stressors on our urban streams (Department of Ecology July 2012).

Add the following to “Other Potential Mitigation Measures” on page 3-64 of the Draft EIS:

Other Potential Mitigation Measures

WATER QUALITY AND BASEFLOW

In addition to the mitigation measures identified here, the mitigation measures identified in the Surface Water and Groundwater sections, which start on page 3-16 and 3-23, respectively, should be implemented to avoid aquatic habitat degradation. Runoff must be captured, treated, and where feasible infiltrated to prevent poor water quality spikes. Untreated urban runoff contains metals and polycyclic aromatic hydrocarbons (PAHs) which has been shown to adversely affect salmon, particularly Coho salmon (Feist, B. et al 2011; McIntyre, J. et al. 2012). Implementing LID stormwater practices following guidance in the 2012 Ecology Stormwater Manual (or the manual in place at the time of application) is recommended. Additionally, based on typical City requirements, direct discharges to Jenkins Creek and any discharges up to and including a 100-year storm event would be avoided. Where applicable, since Coho salmon are particularly vulnerable to metals and PAHs in urban runoff, the City could choose to require use of the enhanced treatment menu from the 2012 manual.

To further reduce impacts to baseflow and salmonids, the City could modify zoning under Alternative 3 to further mitigate potential impervious surface increases (compared to Alternative 2). Additionally, the project will follow the 2012 Ecology Stormwater Manual, including LID practices (or the manual in place at the time of application).

Add the following to “Significant Unavoidable Adverse Impacts” on page 3-64 of the Draft EIS:

Significant Unavoidable Adverse Impacts

Alternative 1 would result in some modest changes to the site as reclamation is executed, batch operations continue, and new facility construction occurs. Overall, these actions would not significantly change site conditions in terms of critical areas, plants and animals. The area that is vegetated is expected to increase over time as reclamation is completed. However, the site would still be in industrial use via the asphalt batch plant.

Alternatives 2 and 3 would cause some cumulative and avoidable impacts to critical areas and wildlife. These include increased human activity associated with more dense urban development, which could result in long-term disturbance to sensitive wildlife species in the vicinity of the Jenkins Creek corridor, and an increase in impervious surface area, which may impact the quantity and quality of surface water runoff. These impacts would be mitigated as described in Sections 3.2 and 3.3, Surface Water and Groundwater Resources.

Cumulative impacts, such as increased impervious surface, increased pollutants, and habitat fragmentation, generally occur as a watershed is developed. While these impacts cannot be wholly avoided, they can be minimized and mitigated. Despite significant increases in impervious surface area, Alternatives 2 and 3 minimize adverse impacts through the following measures: 1) concentrating development in the area that is currently disturbed, 2) largely avoiding critical area impacts, 3) maintaining a native primarily forest buffer, 4) modifying site zoning to reduce impervious surface impacts, and 5) implementing LID stormwater practices.

Noise

Amend pages 3-67 and 3-68 of the Draft EIS as follows:

The FHWA Traffic Noise Model Version 2.5 (Federal Highway Administration, 2004) was used to predict existing and future noise levels during the peak hour under the following screening-level assumptions. The model was configured as follows for SE 256th Street, 204th Avenue SE, and the proposed new segment of the 204th Avenue SE connector street within the study area.

- No field measurements were performed for this screening-level noise analysis. The reference noise emission levels included in the FHWA Traffic Noise Model were presumed to be accurate enough to forecast traffic noise levels for this screening-level analysis.
- Medium trucks and heavy trucks were each assumed to represent 1% of traffic volumes.
- Traffic was assumed to operate at 35 miles per hour.
- The surface between the street and nearby residences consists mainly of asphalt and packed soil. Therefore, the ground surface type was defined as “hard surface” for the model.
- The analysis distance from the center of the street to existing homes was assumed to be 75 feet under existing conditions. ~~Future distance between the center of the street and average allowable setbacks (for new developments) was assumed to be 60 feet.~~

- The width of the new 204th Avenue SE street segment was assumed to ~~be the same as the width of the existing 204th Avenue SE roadway (44 feet)~~ 66 feet, including one travel lane in each direction plus a center turn lane.²

Amend Exhibit 3.6-3 on pages 3-68 and 3-69 with the addition of a table note, as follows:

Exhibit 3.6-3. Modeled Peak-Hour Noise Levels in the Study Area

Noise Sensitive Receiver	Daytime Peak-Hour Noise Level (dBA, Leq)			
	Existing Conditions	Future Alternative 1 (No Action)	Future Alternative 2 (Minimum Urban Village)	Future Alternative 3 (Maximum Urban Village)
Wetlands Within Northern Study Area				
Mine Reclamation	50	Discontinued	Discontinued	Discontinued
Asphalt Batch Plant	58	55	Discontinued	Discontinued
Roadway (SR-18)	50	50	50	50
Roadway Increase Compared to Existing Condition	0	3 dBA decrease	8 dBA decrease	8 dBA decrease
New Residential Areas Within Study Area, Near New Section of 204th Avenue SE				
Mine Reclamation	N/A	Discontinued	Discontinued	Discontinued
Asphalt Batch Plant	N/A	Discontinued	Discontinued	Discontinued
New Roadway (204th Ave. SE) ¹	N/A	N/A	65	66
Roadway Increase Compared to Existing Condition	N/A, noise receiver does not currently exist			
Existing Homes Along SE 256th Street				
Mine Reclamation	43	Discontinued	Discontinued	Discontinued
Asphalt Batch Plant	41	41	Discontinued	Discontinued
Existing Roadway (SE 256 th Street)	63	64	65	65
Roadway Increase Compared to Existing Condition	0	1	2	2

² The 66 foot width is based on a response to Draft EIS comments. The 66-foot total width assumes that there would be 33 feet from the centerline to the curb. This represents the closest point at which a vehicle would be located in relation to a sensitive receptor such as a home. This is considered a conservative assumption. The City's collector standard is for a 48 foot expanse of pavement curb to curb and a total 80 foot right of way; this could mean a 24 foot distance between the centerline and the curb which is less conservative than the analysis assumption of 33 feet. The Draft EIS assumed a 22-foot distance from the centerline to the curb, and the Final EIS assumes a 33-foot distance. The resulting noise change between the two assumptions is 1 dB or less, which is small. The Final EIS mitigation measures recommend noise field measurement and a noise study when the alignment and the design of the road are known.

Noise Sensitive Receiver	Daytime Peak-Hour Noise Level (dBA, Leq)			
	Existing Conditions	Future Alternative 1 (No Action)	Future Alternative 2 (Minimum Urban Village)	Future Alternative 3 (Maximum Urban Village)
Existing Homes Along Existing 204 Ave, SE				
Mine Reclamation	43	Discontinued	Discontinued	Discontinued
Asphalt Batch Plant	41	41	Discontinued	Discontinued
Existing Roadway (204 th Avenue SE)	51	55	62	62
Roadway Increase Compared to Existing Condition	0	4	11	11
Existing Homes South of Mine Site				
Dense suburban background noise	60	60	60	60
Mine Reclamation	50	Discontinued	Discontinued	Discontinued
Asphalt Batch Plant	49	49	Discontinued	Discontinued
New roadway (new section of 204 th Avenue SE)	N/A	N/A	Less than 50	Less than 50
Roadway Increase Compared to Existing Condition	0	0	0	0

Source: Landau, 2013

1 See the mitigation section. At this conceptual planning level, if residential buildings and outdoor use areas are setback from the new roadway by approximately 35 feet, the noise level under Alternative 2 would decrease to 64 dBA and under Alternative 3 to 65 dBA, below noise thresholds.

Amend the discussion of Alternative 3 on page 3-71 regarding noise related to traffic as follows:

ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE PROPOSAL)

Exhibit 3.6-3 shows the forecast traffic noise levels at each receiver location. Under the maximum urban village proposal, the modeled peak-hour traffic noise increase at existing homes along SE 256th Street would not exceed the WSDOT “substantial increase” impact threshold of 10 dBA, while the modeled peak-hour traffic noise increase at existing homes along the existing segment of 204th Avenue SE would exceed this threshold similar to Alternative 2’s 11 dBA increase. In addition, the traffic noise levels at future dwellings adjacent to the new section of 204th Avenue SE within the development were modeled to be 66 dBA, which triggers WSDOT’s noise impact criterion; however, with proposed mitigation including a planning assumption of a 35-foot setback from the roadway to the edge of residential buildings or residential outdoor use areas, this impact could be avoided. ~~Therefore,~~ Alternative 3 would have no noise impact on existing homes along SE 256th Street, but forecasted traffic noise increases may have an impact on existing homes along ~~both~~ the existing ~~and proposed new~~ segments of 204th Avenue SE. No impacts from traffic-related noise will occur at the existing residential neighborhood south of the mine site.

Noise levels at the wetland system in the north portion of the study area will be dominated by traffic on SR 18 and would remain the same. Therefore, Alternative 3 would not affect the wetland.

Amend the description of incorporated plan features on page 3-72 as follows:

Incorporated Plan Features

The proposed alternatives do not currently incorporate mitigation measures for noise. The City may, however, require noise mitigation measures be implemented by commercial and residential developers and construction crews on a case-by-case basis. Additionally as described below, due to predicted noise impacts for future residences located along the new 204th Avenue SE within the development, the City could elect to implement traffic noise mitigation measures along that new street, such as incorporating a minimum setback of 35 feet between new dwellings (including outdoor use areas) and the outer edge of the new travel lanes along the new section of 204th Avenue S.E. With that minimum setback, the modeled traffic noise levels at new dwellings would be less than the impact criteria.

Amend applicable regulations and commitments on page 3-73 and 3-74 as follows:

STATE: WASHINGTON DEPARTMENT OF TRANSPORTATION TRAFFIC NOISE REGULATIONS

WSDOT has adopted the FHWA NAC for evaluating noise impacts and for determining if such impacts are sufficient to justify funding of noise abatement for new roadway construction and roadway widening projects with state funding. The WSDOT traffic noise policy described below meets the federal requirements of 23 CFR 772 described above, so compliance with the WSDOT traffic noise policy will meet FHWA noise requirements. For WSDOT-funded roadway projects, a noise impact occurs when a predicted traffic noise level under the design year conditions approaches within 1 dBA of the FHWA NAC (for example, WSDOT defines a traffic noise impact at a dwelling to be 66 dBA or higher). In addition, WSDOT defines a traffic noise impact to occur when the predicted traffic noise level substantially exceeds the existing noise level. A 10-dBA increase over existing noise levels is considered a substantial increase.

The results of the screening-level TNM modeling study conducted for this EIS show that traffic-related noise from Alternative 3 may impact proposed new dwellings along the proposed new segment of 204th Avenue SE within the development. However, WSDOT would have no authority over mitigation for those impacts because WSDOT funding would not be used to construct the new street. However, as described in mitigation measures below, with a 35-foot minimum setback, the modeled traffic noise levels at new dwellings would be less than the impact criteria.

This screening analysis also indicates potential noise impacts potentially significant increases in traffic noise (i.e., increases exceeding 10 dBA) at existing homes along the existing segments of 204th Avenue SE outside the planned action area. Regardless, WSDOT funds would not be available for potential mitigation along that segment because that segment would not include WSDOT-funded improvements.

Amend traffic noise mitigation on page 3-74 as follows:

TRAFFIC NOISE MITIGATION

This screening-level traffic noise study indicated the potential for traffic noise impacts at future dwellings to be constructed adjacent to the proposed new section of 204th Avenue SE within the planned action area. Although the CMC does not regulate traffic-related noise, based on site-specific considerations the City may, at its discretion under the planned action ordinance, require the new developments to install noise control measures at the new dwellings along the proposed new section of 204th Avenue SE within the development. Noise mitigation measures could include:

- Require developers to perform noise field measurements as a condition of engineering approvals once the ultimate roadway alignment, width and final grade for Alternatives 2 and 3 have been designed. Require developers to conduct site-specific traffic noise studies, to confirm the number and location of dwellings that would be impacted by traffic noise.

- Based on the noise study and specific alignment, appropriate site design can be considered. For example, based on this programmatic analysis, with a 35-foot minimum setback, the modeled traffic noise levels at new dwellings would be less than the impact criteria.
- Double-pane glass windows or other building insulation measures designed in accordance with the Washington State Energy Code (4-5-040). These would reduce indoor noise levels, but would not reduce exterior noise at outdoor use areas.
- Installation of noise barrier walls to shield outdoor use areas facing the street.

Amend significant unavoidable adverse impacts on page 3-75 as follows:

Significant Unavoidable Adverse Impacts

The screening-level noise study used for this analysis indicated potential traffic noise impacts at future dwellings located adjacent to the proposed new segment of 204th Avenue SE within the development; however, this impact appears avoidable if the residential buildings and residential outdoor use areas are setback (e.g. 35 feet). Appropriate site design can be considered when the roadway alignment is determined, and additional field measurements or noise studies are performed as indicated in mitigation measures. Depending on the specific configuration of the new street and the future dwelling units, it is possible that conventional traffic noise mitigation measures (e.g., noise barrier walls or window insulation) might not be technically feasible or economically reasonable. In addition, it is uncertain whether traffic noise mitigation would be technically feasible or economically reasonable at the existing homes along 204th Avenue SE south of the planned action area.

Therefore, it is possible that the future traffic noise impacts could not be mitigated. In that case the future increases in traffic noise levels at the proposed new dwellings and at the existing dwellings along 204th Avenue SE would constitute a significant and unavoidable impact.

Land Use Patterns/Plans and Policies

Amend page 3-85 as follows:

ACTION ALTERNATIVES

As illustrated in Exhibit 3.7-3, Exhibit 3.7-4, and Exhibit 3.7-5, both Action Alternatives are generally consistent with adopted policy frameworks. As identified in the Draft Subarea Plan a new Comprehensive Plan land use designation, goals and policies, and implementing zoning map and development regulations would be needed to implement the alternatives. In addition, housekeeping amendments would be needed in tandem with the Subarea Plan such as updating descriptive text and tables and adding required capital facilities (analyzed in the EIS) o the Transportation and Capital Facilities Element. Because of the inclusion of a Park-and-Ride facility, Alternative 3 provides greater consistency with GMA and Land Use policies for encouraging carpooling, ridesharing, and transit use.

Amend page 3-86 to add a mitigation measure under “Other Potential Mitigation Measures”:

Other Potential Mitigation Measures

None proposed. As part of integrating the Subarea Plan into the Comprehensive Plan, the City should amend land use designations, goals, policies, and capital facility improvements supporting the anticipated growth of the urban village. In addition, the City should make associated housekeeping amendments to update the status of the reclaimed mine site as transforming to an urban village.

Transportation

OVERVIEW

In the roundabout analyses presented in the Draft EIS, coding errors were discovered in the analysis files that resulted in overestimation of delay. With correction made to the coding, all three roundabouts are projected to operate well within City level of service standards through 2035, and no future impacts are expected to result under any of the alternatives. Corrections have been made to the level of service results for the roundabout-controlled intersections in Exhibits 3.8-7, 3.8-16, and 3.8-18 and in the transportation impact discussion. Potential improvement projects were removed from Exhibit 3.8-17 for the SE 256th Street/164th Avenue SE (ID #8) and SE 267th Place/SE Wax Road/180th Avenue SE (ID #17) and from the accompanying mitigation discussion, because they are not needed. The Chapter 1 Summary was also revised to reflect the corrected information. This correction primarily improves projected conditions for the 2035 Alternative 1 (No Action) scenario. Alternatives 2 and 3 are projected to add 2% to 3% traffic to SE 256th Street/164th Avenue SE (ID #8) and reduce the demand at SE 267th Place/SE Wax Road/180th Avenue SE (ID #17), and were not identified as having significant impacts at these locations. The corrections to the roundabout analyses do not change the conclusions about the impacts of Alternatives 2 or 3.

The SE 270th Place/172nd Avenue SE intersection (ID #44) was mislabeled in the Draft EIS level of service summary tables as SE 240th Place/172nd Avenue SE. This was a typographical error that was corrected in Exhibits 3.8-7, 3.8-16, and 3.8-18.

INDIVIDUAL CHANGES

Amend discussion of the Transportation Study Area and analysis methodology on page 3-87 of the Draft EIS as follows:

Transportation Study Area and Study Period

The transportation study area includes all roadways and intersections that the City of Covington has defined for its Concurrency Management Program, which is the program by which cities identify infrastructure needed to support existing and future land use. Intersections that the City of Maple Valley has designated for its Concurrency Management Program have also been included in the study area. Exhibit 3.8-1 shows the analysis intersections included in the transportation study area, along with their existing traffic control. The transportation study area includes transit service located within one mile of the subarea, and existing and planned future non-motorized facilities located within one-quarter mile of the site.

Analysis is provided for the weekday PM peak hour condition (the highest volume one-hour period between 4:00 and 6:00 p.m.), which reflects the most congested hour of a typical week, and is the analysis period on which both Covington's and Maple Valley's concurrency management programs are based. The City can choose to additionally analyze AM peak hour conditions, when appropriate. However, the proposed project is expected to generate the highest number of trips during the PM peak hour. Since the PM peak hour reflects the most congested cumulative conditions (highest level of background traffic combined with the highest level of project-generated traffic), AM peak hour analysis was determined not to be needed for the EIS analysis. Future conditions are evaluated for year 2035, which is the City of Covington's long-range planning year.

Add the following text to Note 2, Exhibit 3.8-4 on page 3-92 of the Draft EIS:

2. Source: City of Covington, 2013. Although this improvement is not currently programmed in the TIP, the City of Covington is committed to continuing the widening projects currently underway east to the city limits, and have reasonable certainty that this will be complete by 2035. This project is being added to

the City's 2035 Capital Improvement Program as part of the Comprehensive Plan update accompanying the Planned Action Ordinance.

Add the following text to the discussion of Intersection Level of Service Method on page 3-94 of the Draft EIS:

INTERSECTIONS

Level of Service Method

Level of service (LOS) analysis was performed at the study area intersections for the PM peak hour. Level of service is a qualitative measure used to characterize traffic operating conditions. Six letter designations, "A" through "F," are used to define level of service. LOS A and B represent conditions with the lowest amounts of delay, and LOS C and D represent intermediate traffic flow with some delay. LOS E indicates that traffic conditions are at or approaching congested conditions and LOS F indicates that traffic volumes are at a high level of congestion with unstable traffic flow.

Levels of service for the study area intersections were analyzed using methodologies presented in the *Highway Capacity Manual* (HCM) (Transportation Research Board 2000). All level of service calculations were performed with Trafficware's *Synchro 7.0* analysis software. Intersection analysis was completed using the HCM Signalized and Unsignalized modules, consistent with the methods applied in both Covington's and Maple Valley's current comprehensive plans. Operations at roundabouts were evaluated using *SIDRA* analysis software.

As described previously, the weekday PM peak hour is analyzed because it reflects the most congested hour of a typical week. HCM methods include application of a peak hour factor (PHF), which additionally assumes that peak 15-minute flow rate within the hour occurs over the entire hour. This results in a more conservative estimation of traffic volumes for the purpose of level of service analysis.

Amend Exhibit 3.8-7 on page 3-96 of the Draft EIS as follows:

Roundabout			
8	SE 256 th St/164th Ave SE	B	<u>10.910.3</u>
17	SE 267th Place/SE Wax Rd/180th Ave SE	A	<u>7.46.5</u>
44	SE 240th <u>270th</u> Place/172 nd Ave SE	A	<u>5.86.2</u>

Amend the discussion of Future Travel Demand on pages 3-101 and 3-102 as follows:

Future Travel Demand

Future 2035 travel demand was projected using the City of Covington's travel demand forecasting model, which is a traffic analysis tool used for forecasting future traffic volumes based on existing traffic patterns and forecasted land use growth. It provides future traffic volumes for development review and comprehensive planning. The model forecasts the traffic distribution of proposed future development for traffic impact analysis related to development review. The City's model includes each jurisdiction's planned land use in the analysis area; the The model integrates elements of the regional model developed by the Puget Sound Regional Council (PSRC), including the modeled roadway network and regional land use projections outside of Covington. Within Covington and Maple Valley, the modeled roadway network is consistent with the PSRC model network, but is more detailed. The PSRC model is used as the basis for these elements because it is the most reliable source for regional land use forecasts and roadway network characteristics, and ensures consistency of the City's travel demand forecasts with regional planning efforts.

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Amend Exhibit 3.8-16 on page 3-113 as follows:

Roundabout							
8	SE 256 th St/164 th Ave SE	<u>FC</u>	107.0 <u>24.8</u>	<u>FC</u>	124.5 <u>27.3</u>	<u>FC</u>	120.9 <u>26.0</u>
17	SE 267 th Place/SE Wax Rd/180 th Ave SE	<u>FB</u>	70.6 <u>14.2</u>	<u>DA</u>	34.8 <u>10.0</u>	<u>EB</u>	40.8 <u>10.6</u>
44	SE 240th-270th Place/172 nd Ave SE	A	6.96.3	A	6.96.2	A	7.06.3

Add text after Exhibit 3.8-16 as follows:

It is noted that the existing peak hour factors (PHF) were applied to the projected 2035 intersection volumes for future level of service analysis. This typically results in more conservative estimates of future levels of service because as traffic volumes grow, the variations in peak 15-minute flows within the peak hour tend to decrease (e.g. increasing hourly volumes tend to become more evenly distributed throughout the hour).

Amend the summary of intersection impacts for the No Action Alternative on page 3-114 as follows:

ALTERNATIVE 1 (NO ACTION)

The following intersections are projected to operate at LOS E or LOS F with the No Action alternative, if no additional capacity improvements are made.

Signalized

- 21 – SE 272nd Street/Covington Way
- 22 – SE 272nd Street/164th Avenue SE
- 26 – SE 272nd Street/168th Avenue SE
- 29 – SE 272nd Street/172nd Avenue SE
- 32 – SE 272nd Street/SE Wax Road
- 37 – SE 272nd Street/216th Avenue SE
- 310 – SE 231st Street/SR 169
- 313 – SE 240th Street/SR 169
- 314 – SR 516/Witte Road SE
- 315 – SR 516/SR 169

Roundabout-Controlled

- ~~8 – SE 256th Street/164th Avenue SE~~
- ~~17 – SE 267th Place/SE Wax Road/180th Avenue SE~~

Amend the summary of intersection impacts for Alternatives 2 and 3 on pages 3-115 and 3-116 as follows:

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

At the following intersections projected to operate at LOS E or LOS F with the No Action alternative, both Action alternatives are projected to add delay.

Signalized

- 21 – SE 272nd Street/Covington Way

- 22 – SE 272nd Street/164th Avenue SE
- 26 – SE 272nd Street/168th Avenue SE
- 37 – SE 272nd Street/216th Avenue SE
- 310 – SE 231st Street/SR 160
- 313 – SE 240th Street/SR 169
- 314 – SR 516/Witte Road SE
- 315 – SR 516/SR 169

~~Roundabout-Controlled~~

- ~~8 – SE 256th Street/164th Avenue SE~~

Stop-Controlled

- 1 – SE 240th Street/180th Avenue SE
- 2 – SE 240th Street/196th Avenue SE
- 3 – SE 240th Street/SE Wax Road/200th Avenue SE
- 6 – SE 256th Street/148th Avenue SE
- 20 – SE 272nd Street/156th Place SE
- 50 – SE 240th Street/156th Avenue SE
- 51 – SE 240th Street/164th Avenue SE
- 55 – SE 272nd Street/156th Avenue SE
- 301 – SE 256th Street/Eastbound SR 18 Ramps

Both Alternatives 2 and 3 are projected to add a small amount of delay to the Maple Valley concurrency intersections, compared to the No Action alternative, both to the individual intersections and to the weighted averages for the North and South concurrency groups.

At the following intersections projected to operate at LOS E or LOS F with the No Action alternative, both Action alternatives are projected to reduce trips and/or average delay. The projected improvement in operations at these locations is due to shifts in citywide traffic patterns expected to primarily result from the proposed 204th Avenue SE connector street. At ~~intersections 17 (Alternative 2 only) and intersection~~ 58 (Alternatives 2 and 3), operations are projected to improve to LOS D, eliminating the need for mitigation. At the other intersections, mitigation would still be needed to meet the City's LOS standard.

Signalized

- 29 – SE 272nd Street/172nd Avenue SE
- 32 – SE 272nd Street/SE Wax Road

~~Roundabout-Controlled~~

- ~~17 – SE 267th Place/SE Wax Road/180th Avenue SE~~

Stop-Controlled

- 13 – SE 261st Street/180th Avenue SE
- 18 – SE 268th Place/164th Avenue SE

- 39 – SE 275th Street/SE Wax Road
- 58 – SE 272nd Street/186th Avenue SE

Add the following discussion of SR 18/SE 256th ramp operations to page 3-116, to be inserted immediately before the discussion of Arterial Segment Operations.

SR 18/SE 256th Street Ramp Operations

Additional level of service analysis was completed for the operation of the ramp-freeway junctions at the SR 18/SE 256th Street ramps. Analysis was completed for Alternative 3 (Maximum Village) because it would result in the highest 2035 ramp volumes. The analysis was performed according to methods established in the Highway Capacity Manual (Transportation Research Board 2000), using Highway Capacity Software (HCS). The level of service of on-ramp merge operations and off-ramp diverge operations is determined by the vehicle density within the merge/diverge areas, measured in passenger cars per mile per lane (pc/mi/ln). The level of service criteria for ramp operations is as follows:

- LOS A – vehicle density of 10 or lower pc/mi/ln
- LOS B – vehicle density of 10 to 20 pc/mi/ln
- LOS C – vehicle density of 20 to 28 pc/mi/ln
- LOS D – vehicle density of 28 to 35 pc/mi/ln
- LOS E – vehicle density greater than 35 pc/mi/ln
- LOS F – demand exceeds capacity

(Transportation Research Board 2000)

The PM peak hour levels of service of the SR 18/SE 256th ramps were calculated as follows for 2035 Alternative 3 (Maximum Village) conditions:

- SR 18 Westbound On-Ramp – LOS C (density = 20.5 pc/mi/ln)
- SR 18 Westbound Off-Ramp – LOS C (density = 27.0 pc/mi/ln)
- SR 18 Eastbound On-Ramp – LOS C (density = 22.9 pc/mi/ln)

SR 18 Eastbound Off-Ramp – LOS C (density = 22.5 pc/mi/ln)

Since all ramps are projected to operate at LOS C under the “worst case” alternative, no adverse operational impacts to ramp operations are identified.

Add the following discussion of short-term construction impacts to page 3-119, immediately after the ~~the~~ discussion of Freight Mobility and Access.

Short-term Construction Impacts

ALTERNATIVE 1 (NO ACTION)

The No Action alternative is not expected to generate a substantial amount of truck traffic, although addition of building square footage at the existing mine site would generate some construction vehicle trips.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

During development of the Hawk Property site with Alternatives 2 and 3, construction activities would generate truck and construction worker commute trips that could potentially disrupt vehicular and non-motorized traffic. Activities that typically generate the largest construction traffic volumes are earth excavation and concrete pours.

Improvement of the existing segment of SE 204th Avenue could also be disruptive to existing residences located along the roadway. In addition to truck and worker commute trips generated by construction activities, construction in the roadway right-of-way could require temporary lane narrowings or closures. Access to adjacent properties would need to be maintained at all times.

Amend the discussion of Non-Motorized Connection mitigation measures on page 3-120 as follows:

NON-MOTORIZED CONNECTIONS

Alternatives 2 and 3 propose to provide connections to existing and planned future non-motorized facilities adjacent to the subarea (see Section 3.9 Public Services). As described previously, both alternatives propose connections to the planned future trails that would be located adjacent to the site, which would encourage non-motorized travel to and from the site. Both major roadways providing access to the subarea (existing SE 256th Street and proposed 204th Avenue SE connector) would have sidewalks that would allow non-motorized traffic to be separated from vehicular traffic. These connections could encourage higher use of non-motorized modes for trips generated by the site, and would improve safety and mobility for pedestrians and bicyclists entering and exiting the site.

Amend the discussion of Other Potential Mitigation Measures on page 3-121 as follows:

Other Potential Mitigation Measures

ROADWAY CAPACITY IMPROVEMENTS

Exhibit 3.8-17 summarizes the roadway capacity improvements that have been identified to mitigate intersection operation impacts of all three alternatives. For each intersection location, an “X” indicates whether the identified measure would be required for each alternative. For Alternatives 2 and 3, the table also summarizes the share of total PM peak hour trips through each intersection that build-out of the proposed project is expected to contribute. With these alternatives, the developer would need to pay a proportionate share of the costs of the projects needed to support concurrency. The projects listed in Exhibit 3.8-17 are being added to the City’s Capital Facilities Plan as part of the Comprehensive Plan update accompanying this Planned Action Ordinance.

Amend Exhibit 3.8-17 on pages 3-121 through 3-125 as follows:

Exhibit 3.8-17. Roadway Capacity Improvements and Action Alternative Proportional Trip Shares

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
Signalized								
21	SE 272 nd St/Covington Way	None Identified ⁽²⁾	Covington, WSDOT	X	X	<1%	X	1%
22	SE 272 nd St (SR 516)/164 th Ave SE	None Identified ⁽²⁾	Covington, WSDOT	X	X	1%	X	2%
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	None Identified ⁽²⁾	Covington, WSDOT		X	3%	X	4%
26	SE 272 nd St/168 th Ave SE	None Identified ⁽²⁾	Covington, WSDOT	X	X	<1%	X	1%
29	SE 272 nd St/172 nd Ave SE	None Identified ⁽²⁾	Covington, WSDOT	X	X	-2%	X	-1%
32	SE 272 nd St (SR 516)/SE Wax Rd	None Identified ⁽²⁾	Covington, WSDOT	X	X	-4%	X	-4%
37	SE 272 nd St/216 th Ave SE	Add eastbound through lane, add eastbound receiving lane. (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	X	X	10%	X	12%
310	SE 231 st St/SR 169	Add westbound through lane (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	X	X	1%	X	2%
313	SE 240 th St/SR 169	Add eastbound right- turn lane (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	X	X	1%	X	2%
314	SR 516/Witte Rd SE	Add eastbound through lane, convert westbound right-turn lane to right-though, add northbound right- turn lane, add eastbound and westbound receiving lane. ⁽³⁾	Maple Valley, WSDOT	X	X	1%	X	2%
315	SR 516/SR 169	Convert westbound right-turn lane to right-though, add westbound receiving lane. ⁽³⁾	Maple Valley, WSDOT	X	X	1%	X	1%

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ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
Roundabout								
8	SE 256 th St/164 th Ave SE	Widen northbound and southbound approaches to two lanes; widen east and west sides of circulating street to two lanes.	Covington	X	X	2%	X	3%
17	SE 267 th Place/SE Wax Rd/180 th Ave SE	Widen southbound approach to two lanes; widen west side of circulating street to two lanes.	Covington	X		-7%	X	-6%
All-Way Stop-Control								
2	SE 240 th St/196 th Ave SE	Add eastbound left-turn lane.	Covington	X	X	6%	X	7%
5	SE Wax Rd/SE 180 th St	Add northbound right-turn lane, or add traffic signal. ⁽⁴⁾	Covington		X	11%	X	12%
51	SE 240 th St/164 th Ave SE	Add eastbound left-turn lane, add westbound left-turn lane, add traffic signal.	Covington, King County ⁽⁵⁾	X	X	4%	X	6%
One- or Two-Way Stop Control								
1	SE 240 th St/180 th Ave SE	Add traffic signal.	Covington	X	X	9%	X	11%
3	SE 240 th St/SE Wax Rd/200 th Ave SE	Add traffic signal.	Covington, King County ⁽⁵⁾	X	X	6%	X	7%
6	SE 256 th St/148 th Ave SE	Add westbound right-turn lane and eastbound left-turn lane (CIP #1041), add traffic signal.	Covington	X	X	4%	X	5%
13	SE 261 st St/180 th Ave SE	Add traffic signal.	Covington	X			X	-12%
		Add eastbound left-turn lane.	Covington		X	-15%		
18	SE 268 th Place/164 th Ave SE	Add traffic signal.	Covington	X	X	-4%	X	-3%
20	SE 272 nd St/156 th Pl SE	Add westbound left-turn lane, add traffic signal. ⁽⁶⁾	Covington, WSDOT	X	X	<1%	X	1%

HAWK PROPERTY PLANNED ACTION EIS | CLARIFICATIONS AND CORRECTIONS

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
36	SE 272 nd St/204 th Ave SE	Add southbound left-turn lane, add traffic signal.	Covington, WSDOT		X	10%	X	13%
39	SE 275 th St/SE Wax Rd	Add traffic signal.	Covington	X	X	2%	X	3%
50	SE 240 th St/156 th Ave SE	Add traffic signal.	Covington, King County ⁽⁵⁾	X	X	6%	X	7%
55	SE 272 nd St/156 th Ave SE	Add traffic signal. ⁽⁷⁾	Kent, Covington ⁽⁸⁾	X	X	1%	X	1%
58	SE 272 nd St/186 th Ave SE	Restrict northbound and southbound movements to right-turn-in, right-turn-out	Covington	X		-17%		-16%
300	SE 256 th St/Westbound SR 18 Ramps	Option A Add traffic signal. Add eastbound left-turn lane. Coordinate signal timing/phasing with new signal at the northbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾		X	49%		
		Add traffic signal. Add eastbound and southbound left-turn lanes. Coordinate signal timing/phasing with new signal at the northbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾				X	50%
		Option B <u>Add a roundabout with one lane on the north side and two lanes on the south side. Add a second eastbound approach lane, and a right turn lane on the southbound approach.</u>	<u>Covington, King County, WSDOT ⁽⁵⁾</u>		X	49%	X	50%

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ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
301	SE 256 th St/Eastbound SR 18 Ramps	Option A Add traffic signal.	Covington, King County , WSDOT ⁽⁵⁾	X				
		Add traffic signal. Remove bike lanes across SR 18 overpass, restripe to add eastbound left-turn lane and to channelize bicycles to use sidewalk across the overpass. Add westbound right-turn lane. Coordinate signal timing/phasing with new signal at the westbound SR 18 ramp intersection.	Covington, King County , WSDOT ⁽⁵⁾		X	69%		
		Add traffic signal. Remove bike lanes across SR 18 overpass, restripe to add eastbound left-turn lane and to channelize bicycles to use sidewalk across the overpass. Add westbound and northbound right-turn lane. Coordinate signal timing/phasing with new signal at the westbound SR 18 ramp intersection.	Covington, King County , WSDOT ⁽⁵⁾				X	72%
		Option B <u>Add a one-lane roundabout. Add right-turn lanes on the northbound and westbound approaches.</u>	Covington, King County, WSDOT⁽⁵⁾		X	69%	X	72%

Source: Heffron Transportation, [David Evans & Associates](#), ~~May~~ November 2013.

- The roadway improvement measures that have been identified would improve operation to meet local level of service standards under projected 2035 conditions with build-out of local and regional land use plans, with the three alternatives. [Projects located at Covington concurrency intersections are being added to the City's 2035 Capital Improvement Program as part of the Comprehensive Plan update accompanying the Planned Action Ordinance. However, if regional development growth occurs to the extent projected, it is possible that other measures could be identified to address the impact at the time the need for improvement is triggered.](#)
- No mitigation measures have been identified at these intersections. For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. If growth occurs to the degree reflected in the model projections, it is likely that the City of Covington would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service

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standards and allow this section to operate lower than LOS D. The two Action alternatives do not significantly affect this outcome.

3. Analysis indicates that with projected 2035 volumes and any of the three alternatives, SR 516 would need to be widened to 5 lanes between 216th Avenue SE and SR 169 in order to meet City of Maple Valley concurrency standards. If growth occurs to the degree reflected in the model projections, it is likely that the City of Maple Valley would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. This issue is identified for the 2035 No Action alternative, and the two Action alternatives do not significantly affect this outcome.
4. Analysis indicates that addition of a northbound right-turn lane would address the level of service impact for both Action alternatives. However, addition of an additional lane may not be feasible due to space constraints at this location, in which case addition of a traffic signal would also address the impact.
5. While this intersection is located outside of the Covington city limits in King County, the City of Covington monitors operations at this location, ~~and it is included as an analysis intersection in the City's Concurrency Management Program.~~
6. While addition of a traffic signal would greatly improve safety and operations at this location, projected signalized operation at this location is LOS F with all three alternatives. Improvement to LOS D or better would require widening of this section of SE 272nd Street. See Note 1.
7. Alternatively, turn movements could be restricted to right-turns only at this intersection. In this case, it is assumed that the projected westbound left-turn movement (180 vehicles in each alternative) would instead turn at 152nd Avenue SE. Phasing changes could be made to allow SE 256th Street/152nd Avenue SE to operate at LOS E in this circumstance, but additional capacity improvements would be needed to improve operation to LOS D.
8. This intersection is located outside of the Covington city limits in the City of Kent. However, Covington monitors operations at this location ~~as part of its Concurrency Management Program.~~
9. This project is included in the City of Maple Valley's long-range Transportation Improvement Program provided in the City Comprehensive Plan (City of Maple Valley 2011). The City's planned improvements would address level of service issues with all three alternatives, and no additional improvements would be needed.

Amend the discussion of No Action mitigation measures on pages 3-125 and 3-126 as follows:

Alternative 1 (No Action) Mitigation Measures

For the No Action alternative, roadway capacity improvements are identified at ~~15-13~~ locations in Covington, and at five locations in Maple Valley.

As described previously and shown in Exhibit 3.8-4, the 2035 analysis assumed that the City of Covington would continue its 5-lane widening of SE 272nd Street to include the segment between 192nd Avenue SE and the east city limits. This segment of the project is not currently included in the City's Capital Improvement Program. This project, along with the projects identified in Exhibit 3.8-17 to address impacts resulting from the No Action Alternative, will need to be added to the City's Capital Improvement Program as part of its next Comprehensive Plan update. Additionally, the City's Traffic Impact Fee Program will need to be updated to include these additional projects.

The mitigation measures summarized in Exhibit 3.8-17 are expected to address all roadway operational impacts in Covington identified to result from the No Action alternative, with the exception of impacts at intersections located along SE 272nd Street. No mitigation measures have been identified at these intersections. For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. 2035 model projections indicate that with the No Action alternative, traffic volumes on the section of SE 272nd Street between 156th Place SE and SE Wax Road would be high enough that most intersections along the section would operate at LOS E or F. While some spot improvements at these locations may improve conditions slightly, they would not be sufficient to improve operation to LOS D. Improvement to LOS D or better would require widening to 6 or 7 lanes of this section of SE 272nd Street. If growth occurs to the degree reflected in the model projections, it is likely that the City of Covington would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. Under these circumstances, the City would be required to decide upon one of these options—additional capacity improvement or a level of service policy change—in order to support concurrency.

For Maple Valley intersections in the North Concurrency Group (located along SR 169), mitigation measures reflect future recommended capacity improvements identified in the City’s *Comprehensive Plan* (Maple Valley 2011). For Maple Valley intersections in the South Concurrency Group (located along SR 516), analysis indicates that with the projected 2035 volumes, SR 516 would need to be widened to five lanes between 216th Avenue SE and SR 169 in order to meet City of Maple Valley level of service standards. WSDOT, in cooperation with local jurisdictions, recently completed a corridor study for SR 516, which evaluated traffic conditions along the roadway through the year 2030 (WSDOT 2013). This report did not recommend widening of the portion of SR 516 east of 216th Avenue SE. It is noted that recommendations in the WSDOT report reflect a lower standard than both Covington’s and Maple Valley’s standards, with improvements identified only to address operations projected at LOS F. Also, the long range planning year evaluated for this Draft EIS is 2035, reflecting five years of additional regional growth; Covington model projections along SR 516 were higher than those reflected in the WSDOT report. If regional land use growth occurs at the rate reflected in the Covington model assumptions through 2035, it is likely that the City of Maple Valley would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. Under these circumstances, the City would be required to decide upon one of these options—capacity improvement or a level of service policy change—in order to support concurrency.

Amend the discussion of Alternative 2 and Alternative 3 mitigation measures on pages 3-126 and 3-127 as follows:

Alternative 2 (Minimum Urban Village) and Alternative 3 (Maximum Urban Village) Mitigation Measures

COVINGTON

The roadway capacity improvements identified for Alternative 1 (No Action) are expected to also address impacts identified for both Alternatives 2 and 3 at the following locations.

- 1 – SE 240th Street/180th Avenue SE
- 2 – SE 240th Street/196th Avenue SE
- 3 – SE 240th Street/SE Wax Road/200th Avenue SE
- 6 – SE 256th Street/148th Avenue SE
- ~~• 8 – SE 256th Street/164th Avenue SE~~
- 13 – SE 261st Street/180th Avenue SE *(Needed for Alternative 3 only, which is projected to reduce average delay as compared to No Action, but would still require mitigation. Alternative 2 is also projected to reduce average delay and would require a lower level of mitigation, as described below.)*
- ~~• 17 – SE 267th Place/SE Wax Road/180th Avenue SE *(Needed for Alternative 3 only, which is projected to reduce average delay as compared to No Action, but would still require mitigation. Alternative 2 is also projected to reduce average delay and would eliminate the need for mitigation, as described below.)*~~
- 18 – SE 268th Place/164th Avenue SE *(Alternatives 2 and 3 projected to reduce average delay, as compared to No Action, but mitigation would still be required.)*
- 20 – SE 272nd Street/156th Place SE
- 39 – SE 275th Street/SE Wax Road *(Alternatives 2 and 3 projected to reduce average delay, as compared to No Action, but mitigation would still be required.)*
- 50 – SE 240th Street/156th Avenue SE

- 51 – SE 240th Street/164th Avenue SE
- 55 – SE 272nd Street/156th Avenue SE

It should be noted that Alternatives 2 and 3 do not trigger the need for improvements at these locations, though as shown in Exhibit 3.8-17, they are expected to contribute vehicle trips that vary between 0% and 12% of total trips through the intersection, depending on the intersection. At three intersections noted below, Alternatives 2 and 3 are projected to reduce the number of vehicle trips.

In addition, the same potential operational issues are identified on SE 272nd Street between 156th Place SE and SE Wax Road, as described for the No Action alternative. While both Alternative 2 and Alternative 3 would be expected to add trips to some locations, the proportional share would be relatively small (4% or less). Alternatives 2 and 3 are also projected to improve conditions at other locations along the corridor, such as the SE 272nd St (SR 516)/SE Wax Rd (180th Ave SE) intersection, due to changes in citywide traffic patterns resulting from the proposed 204th Avenue SE Connector; however, the reduction in delay is not projected to improve operation to LOS D or better. Overall, the trips generated by these alternatives do not affect the overall outcome described for No Action, which would require the Cities to decide upon either capacity improvement or a level of service policy change. Alternatives 2 and 3 would not affect the need to make this decision, nor would they affect the decision that the City would ultimately make. If by 2035, regional growth occurs at the rate reflected in the model projections, any capacity improvement or policy solution identified by the City to address operational issues for the No Action alternative would also be expected to address Alternatives 2 or 3 without the need for additional measures.

In addition, both Alternatives 2 and 3 are expected to reduce delay and eliminate the need for left-turn restrictions at intersection 58–SE 272nd Street/186th Avenue SE that are recommended for No Action. As described above, delay reductions anticipated from Alternative 2 would also allow for less mitigation at two locations. At intersection 13 – SE 261st Street/180th Avenue NE, mitigation would not need to include signalization, but could be limited to addition of an eastbound left-turn lane. At intersection 17–SE 267th Place/SE Wax Road (180th Avenue SE), delay reduction expected to result from Alternative 2 would eliminate the need for mitigation.

The following additional roadway capacity improvements are identified to address impacts triggered by Alternatives 2 and 3.

- **5 – SE Wax Road/SE 180th Street:** Increased traffic volumes resulting from Alternative 2 or 3 would require additional capacity improvement at this location. Analysis indicates that addition of a northbound right-turn lane would allow the intersection to operate at LOS D or better through 2035. However, space at this location is constrained by a retaining wall located along the east side of the roadway. If it is not feasible to widen the roadway at this location, installation of a traffic signal would also address the impact.
- **36 – SE 272nd Street/204th Avenue SE:** Increased traffic volumes resulting from the 204th Avenue SE Connector Roadway, would require that this intersection be signalized. The planned three-lane section would also need to be extended to this intersection, providing a southbound left-turn lane.
- **300 – SE 256th Street/SR 18 Westbound Ramps:**
 - Option A (Signal):** Both Alternative 2 and Alternative 3 would trigger the need to signalize this intersection and add an eastbound left-turn lane. Alternative 3 would additionally need to add a southbound left-turn lane on the ramp.

Option B (Roundabout): Alternatively for Alternative 2 or 3, level of service impacts could be mitigated by construction of a roundabout that has one lane on the north side and two lanes

on the south side. A second eastbound approach lane and a right-turn lane on the southbound approach would also need to be added.

- **301 – SE 256th Street/SR 18 Eastbound Ramps:**

Option A (Signal): Addition of a traffic signal at this location would be triggered with the No Action alternative, but additional capacity improvements would be needed to accommodate traffic volumes generated by Alternatives 2 and 3. In order for the intersection to operate at LOS D or better with both alternatives, it will be necessary to add an eastbound left-turn lane on the existing SR 18 overpass. The width of the west leg of this intersection is constrained by the bridge structure; however, it appears there may be adequate curb-to-curb width to accommodate three travel lanes. The addition of a center left-turn lane would require that the existing bicycle lane striping be removed, and bicyclists instead be directed to use the sidewalk to cross SR 18. As described previously, ~~with additional trips attracted to this interchange via~~ as project-generated trips decrease on the 204th Avenue SE Connector, model projections indicate that ~~total demand for the interchange is not substantially influenced by differences in non-~~ project-generated trips would increase. As a result, there is very little difference in the projected eastbound traffic volumes between the two Action alternatives at this location. In addition to the eastbound left-turn lane, a westbound right-turn lane would be needed with both Alternative 2 and Alternative 3. Alternative 3 would also need to add a northbound right-turn lane on the ramp. Construction of this project would require retaining walls to be built on the east side of the intersection.

Option B (Roundabout): Alternatively for Alternative 2 or 3, level of service impacts could be mitigated by construction of a one-lane roundabout, with right-turn lanes added on the northbound and westbound approaches. Similar to the signal option, construction of this option would require retaining walls to be constructed on the east side of the intersection, but no additional vehicle lanes would be needed across the bridge structure.

Note, with Alternative 2 or 3, for the SE 256th Street/SR 18 ramp intersections, the same improvement option (Option A – signal, or Option B – roundabout) would need to be chosen for both intersections. Although the City monitors operations at these intersections, they are located outside the city limits and are under the jurisdiction of King County and WSDOT. The City and developer would need to coordinate with both jurisdictions to implement capacity improvements at the SE 256th Street/SR 18 ramp intersections.

The need for improvement at these four locations would be triggered by the proposed development at the Hawk Property. The expected timing is as follows:

- At SE Wax Road/SE 180th Street, it is estimated that the need for improvement would be triggered when trips generated by the development reach about 92% of the total estimated for the Maximum Village, approximately 2,370 net new primary trips.
- The other three locations requiring improvement would become the endpoints of the proposed new 204th Avenue SE Connector, once it is constructed. Therefore, it is expected that the improved traffic control would be installed at the time that the new roadway is constructed. If it were desired to phase in the intersection improvements at a later date, the developer would need to submit a detailed traffic analysis showing that concurrency would still be met.

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Amend Exhibit 3.8-18 on pages 3-128 and 3-129 as follows:

Exhibit 3.8-18. Future (2035) Level of Service – Mitigated

ID	Intersection	Alternative 1 No Action		Alternative 2 Minimum Action		Alternative 3 Maximum Action	
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay
Signalized							
1	SE 240th St/180th Ave SE	C	23.9	D	35.7	D	38.7
3	SE 240 th St/SE Wax Rd/200 th Ave SE	C	29.2	C	31.3	C	32.1
4	SE 251 st St/164 th Ave SE	A	6.4	A	7.3	A	7.3
6	SE 256 th St/148 th Ave SE	B	16.0	B	17.9	B	18.2
7	SE 256 th St/156 th Ave SE	C	23.3	C	23.1	C	23.0
9	SE 256 th St/168 th PI SE	A	8.8	A	9.6	A	9.3
11	SE 256 th St/SE Wax Rd/SE 180 th St	D	40.7	D	54.6	D	52.8
13	SE 261 st St/180 th Ave SE	A	10.0		(3)	A	9.5
14	SE 262 nd St/180 th Ave SE	C	24.9	B	18.9	C	20.3
18	SE 268 th Place/164 th Ave SE	B	18.3	B	13.7	B	14.4
20	SE 272 nd St/156 th PI SE (SB)	F	118.4	F	108.5	F	119.6
21	SE 272 nd St/Covington Way	F	>200	F	>200	F	>200
22	SE 272 nd St (SR 516)/164 th Ave SE	E	68.2	E	69.0	E	68.3
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	D	51.2	E	57.3	F	65.6
24	SE 272 nd St (SR 516)/Eastbound SR 18 Ramps	D	36.0	D	44.5	E	46.2
26	SE 272 nd St/168 th Ave SE	E	54.6	E	57.5	E	57.7
29	SE 272 nd St/172 nd Ave SE	E	68.7	E	60.7	E	65.8
32	SE 272 nd St (SR 516)/SE Wax Rd	F	115.8	F	100.3	F	99.7
34	SE 272 nd St/192 nd Ave SE	B	12.3	B	11.1	B	11.8
36	SE 272 nd St/204 th Ave SE		(4)	D	45.0	D	46.3
37	SE 272 nd St/216 th Ave SE ⁵	C	26.9	C	27.8	C	29.1
39	SE 275 th St/SE Wax Rd	B	17.6	B	16.6	B	16.5
40	Covington-Sawyer Rd/SE Wax Rd	D	43.8	D	45.5	D	46.2
43	SE 270 th Pl/SE Wax Rd	B	13.5	B	14.0	B	13.9
50	SE 240 th St/156 th Ave SE	B	10.3	B	10.7	B	10.7
51	SE 240th St/164th Ave SE	D	41.9	D	51.7	D	55.0
54	SE 272 nd St/152 nd Ave SE	C	25.5	C	24.7	C	24.9
55	SE 272 nd St/156 th Ave SE (WBL)	C	20.2	C	22.3	C	22.8
57	SE 272 nd St/185 th Ave SE	D	47.2	C	25.0	C	29.2
59	165 th PI SE/Covington-Sawyer Rd	D	36.0	C	34.2	C	34.2
233	Kenwood HS Access/164 th Ave SE	A	7.4	A	7.3	A	7.2
300	SE 256 th St/Westbound SR 18 Ramps <u>(Option A)</u>		(6)	D	54.5	C	21.2

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ID	Intersection	Alternative 1 No Action		Alternative 2 Minimum Action		Alternative 3 Maximum Action	
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay
301	SE 256 th St/Eastbound SR 18 Ramps <u>(Option A)</u>	B	19.3	C	36.8	C	30.3
310	SE 231 st St/SR 169 ⁷	F	94.9	F	103.2	F	105.1
311	SE Wax Rd/SR 169 ⁷	C	25.6	C	26.3	C	26.0
312	Witte Rd SE/SR 169 ⁷	C	20.6	C	20.0	C	20.1
313	SE 240 th St/SR 169 ⁷	D	43.3	D	44.9	D	47.9
314	SR 516/Witte Rd SE ⁵	D	45.2	D	44.6	D	47.6
315	SR 516/SR 169 ⁵	E	54.2	E	55.1	E	55.3
Roundabout							
8	SE 256 th St/164th Ave SE	DC	26.5 <u>24.8</u>	DC	34.5 <u>27.3</u>	DC	33.5 <u>26.0</u>
17	SE 267th Place/SE Wax Rd (180th Ave SE)	DB	34.9 <u>14.2</u>	DA	34.8 <u>10.0</u>	CB	21.0 <u>10.6</u>
44	SE 246th <u>270th</u> Place/172 nd Ave SE	A	6.9 <u>6.3</u>	A	6.9 <u>6.2</u>	A	7.0 <u>6.3</u>
<u>300</u>	<u>SE 256th St/Westbound SR 18 Ramps (Option B)</u>		<u>(6)</u>		<u>(9)</u>	<u>A</u>	<u>9.4</u>
<u>301</u>	<u>SE 256th St/Eastbound SR 18 Ramps (Option B)</u>		<u>(6)</u>		<u>(9)</u>	<u>B</u>	<u>14.9</u>
All-Way Stop-Control							
2	SE 240th St/196th Ave SE	D	25.8	D	34.0	D	34.8
5	SE Wax Rd/SE 180th St	C	21.6	C	21.3	C	21.6
15	SE Timberlane Boulevard/Timberlane Way SE	A	9.7	A	8.4	A	8.8
19	SE 267th St/Timberlane Way SE	A	9.6	A	9.3	A	9.5
One- or Two-Way Stop Control⁸							
10	SE 256 th St/175 th Way SE (NB)	D	26.5	D	31.9	D	30.8
12	SE 260 th St/156 th Ave SE (WB)	B	13.3	B	13.5	B	13.4
13	SE 261 st St/180 th Ave SE (EB) ⁸		(3)	D	32.3		(3)
16	SE 267 th St/172 nd Ave SE (SB)	A	9.0	A	8.7	A	8.7
35	SE 272 nd St/201 st Ave SE (SB)	D	25.9	C	16.5	C	16.7
36	SE 272 nd St/204 th Ave SE (SB)	D	31.2		(4)		(4)
52	SE 260 th St/164 th Ave S (EB)	C	19.5	C	22.2	C	22.1
53	SE 261 st St/172 nd Ave SE (EB)	B	14.0	B	13.1	B	13.2
56	SE 272 nd St/IHOP Driveway (SB)	B	11.5	B	10.6	B	10.7
58	SE 272 nd St/186 th Ave SE (NB)	C	16.7	D	34.8	D	34.6
300	SE 256 th St/Westbound SR 18 Ramps (SB)	C	17.2		(6)		(6)

Source: Heffron Transportation, David Evans and Associates, November~~May~~ 2013.

1. LOS = level of service
2. Delay = average delay per vehicle in seconds
3. Intersection #13 is signalized with Alternatives 1 and 3, and eastbound stop-controlled with Alternative 2.
4. Intersection #36 is southbound stop-controlled with Alternative 1, and signalized with Alternatives 2 and 3.

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5. Part of Maple Valley's South Concurrency Intersection Group – concurrency is satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. With mitigation, the average weighted delay for this group is 42.7 (LOS D) for Alternative 1, 42.7 (LOS D) for Alternative 2, and 44.0 (LOS D) for Alternative 3.
6. Intersection #300 is westbound stop-controlled with Alternative 1, and signalized or has roundabout with Alternatives 2 and 3.
7. Part of Maple Valley's North Concurrency Intersection Group – concurrency is satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. With mitigation, the average weighted delay for this group is 50.0 (LOS D) for Alternative 1, 53.2 (LOS D) for Alternative 2, and 54.5 (LOS D) for Alternative 3.
8. For one- and two-way stop-controlled intersections, the most congested movement is reported. The direction of the most congested movement is shown in parentheses.
9. Level of service analysis was completed only for Alternative 3 (Maximum Village) because it reflects the upper range of the Final EIS Preferred Alternative, and has the highest projected traffic volumes at the SE 256th Street/SR 18 Ramp intersections. Since the Alternative 2 (Minimum Village) traffic volumes are lower, it is expected that with roundabouts in place, the SE 256th Street/SR 18 Westbound Ramps would also operate at LOS A, and the SE 256th Street/SR 18 Eastbound Ramps would operate at LOS B or better.

Add the following discussion of short-term construction and concurrency mitigation on page 3-130, immediately before Significant Unavoidable Adverse Impacts.

MITIGATION TO ADDRESS SHORT-TERM CONSTRUCTION IMPACTS

In order to minimize the potential short-term traffic impacts resulting from construction of the alternatives, a Traffic Control Plan would need to be prepared in accordance with City guidelines. All Building Permits would be reviewed and conditioned to mitigate construction traffic impacts. The types of transportation-related measures that could be considered would depend on the type and size of the phase under construction. The Traffic Control Plan could potentially include, but would not be excluded to, the following provisions.

- Truck haul-routes to and from the site.
- Peak hour restrictions for construction truck traffic and how those restrictions would be communicated and enforced.
- Truck staging areas (e.g., locations where empty or full dump trucks would wait or stage prior to and during loading or unloading.)
- Measures to reduce construction worker trips such as rideshare or shuttles.
- Provision of on-site or nearby parking for construction workers.
- Road, lane, sidewalk, or bike lane closures that may be needed during utility, street or building construction. A plan detailing temporary traffic control, channelization, and signage measures should be provided for affected facilities.
- Plan to maintain access to residences and businesses at all times.
- Provision of flaggers to direct traffic when appropriate.
- Restoration or repair of the pavement in the road right-of-way to its original condition or better upon completion of the work.
- Other elements or details may be required in the Traffic Control Plan as required by the City of Covington. The project developer/owner and the contractor would be required to incorporate other City requirements into an overall plan, if applicable.

MITIGATION TO ADDRESS CONCURRENCY ON SR 516

As described in the impact analysis, projected year 2035 conditions with Alternative 1 (No Action) indicated that, with build-out of regional land plans, traffic volumes on the section of SR 516 (SE 272nd

Street) between 156th Place SE and SE Wax Road would be high enough that most concurrency intersections along this segment would operate at LOS E or F. Concurrency could be addressed either by widening the roadway or amending level of service standards to allow the roadway to operate at a lower level of service after it has been improved to an ultimate capacity. The City should adopt comprehensive plan policies stating that the City of Covington will plan cooperatively with WSDOT and neighboring cities to define the ultimate capacity for this roadway.

Amend the discussion of Significant Unavoidable Adverse Impacts on page 3-130 as follows:

Significant Unavoidable Adverse Impacts

The projected year 2035 conditions with Alternative 1 (No Action) indicate that traffic volumes on the section of SR 516 (SE 272nd Street) between 156th Place SE and SE Wax Road, and also between 216th Avenue SE and SR 169, would be high enough that most intersections along these sections would operate at LOS E or F. While some spot improvements at these locations may improve conditions slightly, they would not be sufficient to improve operation to meet current level of service standards defined by the Cities of Covington and Maple Valley. Improvement to LOS D or better would require widening of the roadway under projected conditions. If 2035 growth occurs to the degree reflected in the Covington model projections, it is likely that both Cities would reevaluate their long-term plans for the corridor, and determine if major widening is warranted, or if it would be warranted to reexamine level of service standards and allow the roadway to operate at a lower level of service. Under these circumstances, the Cities would be required to decide upon one of these options—capacity improvement or a level of service policy change—in order to support concurrency and comply with the Growth Management Act. With either measure in place, no significant adverse impacts would result from the No Action alternative.

These 2035 conditions are projected for the No Action alternative; Alternatives 2 and 3 would not affect the need to make this decision, nor would they affect the decision that the Cities would ultimately make.

While Alternatives 2 and 3 are projected to add trips to some intersections along SR 516, any capacity improvement or policy solution identified by the Cities to address operational issues for the No Action alternative would also be expected to address Alternatives 2 or 3 without the need for additional measures. Therefore, with recommended mitigation in place at all other locations, no additional significant adverse unavoidable transportation impacts are expected to result from Alternatives 2 or 3.

Public Services

Amend the discussion of Police Protection impacts on 3-142 as follows to include additional information on cost associated with contracting for additional police staff.

Police Protection

Alternative 1 (No Action)

Under the No Action Alternative, no population growth would occur in the subarea, and no changes in the use of the site would occur. While employment at the existing asphalt batch plant is anticipated to increase slightly, it is unlikely that this will result any additional demand for police service. No significant impacts to police protection are anticipated under the No Action Alternative.

Alternative 2 (Minimum Urban Village Proposal)

Under Alternative 2, the unincorporated portions of the subarea would be annexed to the City of Covington and would fall under the jurisdiction of the Covington Police Department. Approximately 1,838 residents would be added to the City's population. If the City wishes to maintain its current level of service of 1.6 patrol officers per 1,000 residents, implementation of Alternative 2 would result in demand for approximately 3 additional officers. The cost associated with contracting for additional police services

from King County can be at least partially offset by increased tax revenue from development of the subarea.

Alternative 3 (Maximum Urban Village Proposal)

Under Alternative 3, the unincorporated portions of the subarea would be annexed to the City of Covington and would fall under the jurisdiction of the Covington Police Department. Approximately 2,760 residents would be added to the City's population. If the City wishes to maintain its current level of service of 1.6 patrol officers per 1,000 residents, implementation of Alternative 3 would result in demand for approximately 4.5 additional officers. The cost associated with contracting for additional police services from King County can be at least partially offset by increased tax revenue from development of the subarea.

Amend the discussion of Fire Protection impacts on page 3-143 as follows to clarify potential for impacts to Maple Valley Fire and Life Safety.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE PROPOSAL)

Under Alternative 2, the unincorporated portion of the subarea would be annexed to the City of Covington and would then be removed from the jurisdiction of Maple Valley Fire and Life Safety; these areas would then be served by the Kent Regional Fire Authority. Population in the subarea would increase by approximately 1,838 persons in 1,000 dwelling units, creating an increase in service demand. According to Kent Regional Fire Authority, this population increase would result in approximately 140 additional emergency responses annually. Additional commercial development would also increase demand for fire protection service by approximately 75 incidents per year. In total, development under Alternative 2 is anticipated to increase demand at KFD Station 78 by an amount equal to approximately 23% of its daily work load, which would possibly use all reserve capacity for peak hour services and create the need for an additional fire unit and two (2) additional 24-hour staff. However, one of the major obstacles to emergency response in the vicinity of the subarea is the current lack of a direct vehicular connection from SE 256th Street to 204th Avenue SE. As illustrated in Exhibit 3.9-9, construction of the proposed spine street through the Hawk Property Subarea would extend the number of locations that could be reached by fire units dispatched from KFD Station 78 within the allotted response time, as well as improve response times in areas already served.

Because the subarea would no longer be part of the jurisdiction for Maple Valley Fire and Life Safety, no additional demand for fire protection services from MVFLS would be generated, and development under Alternative 2 is not anticipated to result in any adverse impacts to fire protection service in the MVFLS service area.

ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE PROPOSAL)

Under Alternative 3, the unincorporated portion of the subarea would be annexed to the City of Covington and would then be removed from the jurisdiction of Maple Valley Fire and Life Safety; these areas would then be served by the Kent Regional Fire Authority. Population in the subarea would increase by approximately 2,760 persons in 1,500 dwelling units, creating an increase in service demand. According to Kent Regional Fire Authority, this population increase would result in approximately 210 additional emergency responses annually. Additional commercial development would also increase demand for fire protection service by approximately 92 incidents per year. In total, development under Alternative 3 is anticipated to increase demand at KFD Station 78 by an amount equal to approximately 32% of its daily work load, which is likely to use all reserve capacity for peak hour services and create the need for an additional fire unit and two to three (2-3) additional 24-hour staff. As described under Alternative 2, the proposed street network connections would substantially improve emergency access to the subarea and reduce response times.

Because the subarea would no longer be part of the jurisdiction for Maple Valley Fire and Life Safety, no additional demand for fire protection services from MVFLS would be generated, and development under Alternative 3 is not anticipated to result in any adverse impacts to fire protection service in the MVFLS service area.

Amend Exhibit 3.9-10 on page 3-145 as follows to include additional information on student generation rates for the Kent and Tahoma school districts and clarify the relationship between housing types and projected enrollment.

Exhibit 3.9-10. Maximum Student Generation by District (Alternative 2)

School Type	Kent	Tahoma
Elementary	393	268
Middle School	92	81
High School	174	99

School Type	Kent			Tahoma				
	Adopted Student Generation Rate	Housing Units	Projected Enrollment	Adopted Student Generation Rate	Housing Units	Projected Enrollment		
Elementary	SF	0.486	400	194	SF	0.426	400	170
	MF	0.331	600	199	MF	0.162	600	97
	Subtotal			393	Subtotal			268
Middle School	SF	0.13	400	52	SF	0.132	400	53
	MF	0.067	600	40	MF	0.047	600	28
	Subtotal			92	Subtotal			81
High School	SF	0.25	400	100	SF	0.149	400	60
	MF	0.124	600	74	MF	0.066	600	40
	Subtotal			174	Subtotal			99

Source: Kent School District, 2012; Tahoma School District 2012.

Amend Exhibit 3.9-11 on page 3-146 as follows to include additional information on student generation rates for the Kent and Tahoma school districts and clarify the relationship between housing types and projected enrollment.

Exhibit 3.9-11. Maximum Student Generation by District (Alternative 3)

School Type	Kent	Tahoma
Elementary	590	401
Middle School	138	122
High School	262	149

School Type	Kent			Tahoma				
	Adopted Student Generation Rate	Housing Units	Projected Enrollment	Adopted Student Generation Rate	Housing Units	Projected Enrollment		
Elementary	SF	0.486	600	292	SF	0.426	600	256
	MF	0.331	900	298	MF	0.162	900	146
	Subtotal			590	Subtotal			401
Middle School	SF	0.13	600	78	SF	0.132	600	79
	MF	0.067	900	60	MF	0.047	900	42
	Subtotal			138	Subtotal			122
High School	SF	0.25	600	150	SF	0.149	600	89
	MF	0.124	900	112	MF	0.066	900	59
	Subtotal			262	Subtotal			149

Source: Kent School District, 2012; Tahoma School District 2012.

Amend page 3-148 with the addition of applicable regulations and commitments:

- Implement the City’s adopted fire code at CMC 15.20 Fire Code
- Require development to meet provisions of Chapter 18.122 Parks, Recreational Facilities and Open Space Impact Fees.

Utilities

Amend page 3-149 as follows to clarify current water infrastructure and water system plan status:

Water Supply

There is no existing potable water infrastructure in the subarea. Water supply in the vicinity of the subarea is provided by the Covington Water District from a water towers (Tanks 2A and 2B) tower (Tank 2, totaling a storage volume of 6 million4 Million gallons in the of storage at a static hydraulic grade of 660 pressure zone feet) currently located to the southeast of the subarea. Water service to the subarea would be provided by the District from Tanks 2A and 2B. Tank 2.

The Covington Water District has developed a water system demand forecast that includes the subarea, taking into account the projected demographic changes, historical water usage patterns, and projected changes to such patterns due to continued conservation efforts. The current Covington Water District Water System Plan (WSP) Update is dated February 2007; however, according to the District, this document is scheduled to be updated currently completing the WSP due for Department of Health approval in June 2014.

Amend pages 3-151 to 3-152 as follows to correct the likely proposed water main improvements:

Water Supply

ALTERNATIVE 1 (NO ACTION)

Under the No Action Alternative, the estimated 7,500 square foot building increase is not anticipated to result in significant additional demand on water service facilities.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE PROPOSAL)

Development of Alternative 2 is anticipated to generate additional demand for water service, proportional to the needs of the future development.

Based on preliminary evaluations completed by the Covington Water District, and discussed in a meeting held by the City of Covington on April 26, 2012, ~~water mains along the south side of SR8, in SE 248th Street, and in 208th Street SE will be required to be upgraded to 8-12 inches in diameter, with an estimated length of 1.5 miles, to supply water to the subarea. a proposed 16-inch transmission main will be required to connect the vicinity of the existing Tank 2 site from the current end of distribution at 204th Avenue to an existing main and casing under SR 18 at SE 248th Street. The alignment of this water main will most likely follow existing and proposed street networks and will be finalized at a later date pursuant to District requirements, during the development process.~~

Furthermore, the pressure zones in relation to the subarea will require additional analyses and designs prior to development, as transitions between pressure zones (such as pressure reducing stations) could be necessary.

The proposed water supply network within the subarea is estimated to range between 8 and 16-inch diameter pipes. Water utility infrastructure will be further quantified, at a later date pursuant to District requirements, during the development process.

These facilities are not shown on the Covington ~~Water District Water System Plan Update WSP~~ dated February 2007; however ~~according to,~~ the District ~~they will be included~~ is currently completing the WSP due for Department of Health approval in the Plan scheduled to be updated in June 2014 (Soos Creek Water and Sewer, 2012).

ALTERNATIVE 3 (~~MAXIMUM~~MAXIMUM URBAN VILLAGE PROPOSAL)

Development of Alternative 3 is anticipated to generate a greater demand for water service than Alternative 2; however, the facilities necessary to serve Alternative 2 also will meet the water demands of Alternative 3.

Based on preliminary evaluations completed by the Covington Water District, and discussed in a meeting held by the City of Covington on April 26, 2012, ~~water mains along the south side of SR8, in SE 248th Street, and in 208th Street SE will be required to be upgraded to 8-12 inches in diameter, with an estimated length of 1.5 miles, to supply water to the subarea. a proposed 16-inch transmission main will be required to connect the vicinity of the existing Tank 2 site from the current end of distribution at 204th Avenue to an existing main and casing under SR 18 at SE 248th Street. The alignment of this water main will most likely follow existing and proposed street networks and will be finalized at a later date pursuant to District requirements, during the development process.~~

Furthermore, the pressure zones in relation to the subarea will require additional analyses and designs prior to development, as transitions between pressure zones (such as pressure reducing stations) could be necessary.

The proposed water supply network within the subarea is estimated to range between 8 and 16-inch diameter pipes. Water utility infrastructure will be further quantified, at a later date pursuant to District requirements, during the development process.

HAWK PROPERTY PLANNED ACTION EIS | CLARIFICATIONS AND CORRECTIONS

These facilities are not shown on the Covington ~~Water District Water System Plan Update~~WSP dated February 2007; however ~~according to,~~ the District ~~they will be included~~is currently completing the WSP ~~due for Department of Health approval~~ in ~~the Plan scheduled to be updated in~~June 2014 ~~(Soos Creek Water and Sewer, 2012).~~

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4.0 RESPONSES TO COMMENTS

4.1 Introduction

This chapter of the Final Environmental Impact Statement (Final EIS) contains the written and verbal comments provided on the Draft Environmental Impact Statement (Draft EIS) during the comment period that extended from July 26 to August 26, 2013. Written comments during the 30-day comment period and verbal comments received at the Planning Commission meeting held on August 15, 2013 are included. Responses to these comments are also included in this chapter.

4.2 Public Comment Letters

During the 30-day comment period, 12 comment letters were received. A list of the commenters is provided in Exhibit 4.2-1 with agencies first followed by public and property owner letters in alphabetical order.

Exhibit 4.2-1. Letters Received During Public Comment Period

Letter Number	Author	Date
1	Brian A. Borgstadt, PE, District Engineer, Covington Water District	August 21, 2013
2	Ramin Pazooki, Washington State Department of Transportation	August 26, 2013
3	Kelly Peterson, AICP, City of Kent	August 26, 2013
4	Peter Rimbo, Greater Maple Valley Unincorporated Area Council	August 26, 2013
5	Karen Walter, Muckleshoot Indian Tribe Fisheries Division	August 26, 2013
6	Barry Anderson, Sr. BranBar, LLC	August 26, 2013
7	George H. Bennett, Bennett Consulting	August 23, 2013
8	Louise Davenport	August 26, 2013
9	Andria McKee	August 22, 2013
10	Oakpointe, Colin Lund, Re: Comments on Hawk Property Draft Subarea Plan	August 26, 2013
11	Oakpointe, Colin Lund, Re: Comments on Hawk Property Draft Planned Action Environmental Impact Statement (EIS)	August 26, 2013
12	Greg Wingard	August 26, 2013

4.3 Responses to Comment Letters

Responses to letter comments are provided in Exhibit 4.3-1. At the end of this Chapter, copies of the letters are provided; distinct comments are numbered in the margins with responses corresponding to the numbered comment. Comments that state an opinion or preference are acknowledged with a response that indicates the comment is noted and provided to the appropriate decision maker(s). Comments that ask questions, request clarifications or corrections, or are related to the Draft EIS analysis are provided a response that explains the EIS approach, offers corrections, or provides other appropriate replies.

Exhibit 4.3-1. Table of Responses to Written Comments

Author of Letter	Comment Number	Response to Comment
Brian A. Borgstadt, PE, Covington Water District	1-1	This comment has been noted. The utilities narrative has been updated to reflect the Water System Plan (WSP) due for DOH approval in June 2014. See Chapter 3 of this Final EIS.

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
	1-2	The utilities narrative has been updated to reflect information regarding Tanks. See Chapter 3 of this Final EIS.
	1-3	This comment has been noted and the utilities narrative has been updated to include the connection between the existing Tank 2 site to the existing main and casing under SR 18 at SE 248 th Street. See Chapter 3 of this Final EIS.
	1-4	This comment has been noted and provided to appropriate decision makers. The planning report is included in Appendix C of this Final EIS.
Ramin Pazooki, Washington State Department of Transportation	2-1	Roundabouts have been analyzed and added as a potential mitigation measure to address level of service impacts at the ramps. Text has been added to the “Roadway Capacity Improvements” subsection of the Transportation Mitigation section. See Chapter 3 and Appendix A of this Final EIS.
	2-2	Roundabouts were developed as a mitigation option at the SR 18/SE 256 th Street ramps; analysis showed that this option would allow the bridge to remain two lanes wide without widening. Description of the proposed configuration has been added to Exhibit 3.8-17 and accompanying text in the “Roadway Capacity Improvements” subsection of the Final EIS (see Appendix A).
	2-3	The Draft EIS does not indicate that the number of project-generated trips would have no influence on the total demand at the SR 18/SE 256 th Street ramps, but that the model analysis found that the difference was dampened because as project-generated trips decreased, non-project related trips on the 204 th Avenue SE connector road would increase. As described in the “Site Access and Circulation” subsection of the Draft EIS Chapter 3 Transportation Impact section, about 140 additional PM peak hour non-project related trips were projected by the model to travel on the 204 th Avenue SE connector with Alternative 2, than were projected with Alternative 3. This information was provided to explain why there little difference in some of the traffic movements between alternatives. The text has been modified to better clarify this point in the same section of the Final EIS (see Appendix A).
	2-4	Analysis of the SR 18/SE 256 th Street ramps has been completed and the results added to the Final EIS Transportation Impacts section as a new subsection called “SR 18/SE 256 th Street Ramp Operations” (see Final EIS Appendix A). The analysis showed that the ramps are all expected to operate at LOS C in 2035 with Alternative 3 (Maximum Village), which has the highest projected ramp volumes of the three alternative scenarios. See Chapter 3 and Appendix A of this Final EIS.
	2-5	The comment is noted. The City supports identifying solutions that would efficiently address operational issues at the SR 18/SE 256 th Street ramp intersections, without needing to build an additional bridge across SR 18.
Kelly Peterson, AICP City of Kent	3-1	Armstrong Springs and other wells down-gradient from the proposed development need to be protected. As stated in the Draft EIS, water levels and groundwater recharge to these wells is not particularly at risk from the development due to their position in the groundwater system. Enhanced stormwater treatment is expected to mitigate potential groundwater quality impacts. See the mitigation measures that would require compliance with the 2008 City of Kent Draft Water System Plan Chapter 8: Wellhead

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		Protection Program. See Final EIS Chapter 1 for the referenced mitigation measure; it is also listed in Chapter 3 of this Final EIS.
	3-2	As stated on page 3-23 of the Draft EIS, abandoned wells on the site should be decommissioned per Washington State Department of Ecology requirements. However, existing wells which are in proper working order, constructed with working sanitary seals and steel casing, may not be required for decommissioning as they pose little risk to groundwater resources. If those existing wells are abandoned as part of the future implementation of this development plan, then they should too be decommissioned in accordance with Ecology requirements.
	3-3	The project will follow the 2012 Ecology Stormwater Manual, including Low Impact Development (LID) practices. These requirements are stated on page 3-23 of the Draft EIS.
	3-4	As discussed in the Groundwater section (page 3-23), infiltration is recommended to sustain groundwater quality and quantity. Additionally, the project will follow the 2012 Ecology Stormwater Manual, including LID practices, or the manual in effect at the time of application.
	3-5	The cited text on page 3-21 describes a potential water quality impact that will be mitigated through the mitigation measures detailed on page 3-23. This project is subject to the Washington State Department of Ecology Stormwater Phase II requirement to implement LID techniques. See also the Revised Draft Planned Action Ordinance (Appendix B) which requires the potential mitigation measures listed in page 3-23 of the Draft EIS.
	3-6	The potential mitigation measures for groundwater on page 3-23 are voluntary actions that are recommended to sustain groundwater quality and quantity. The project will voluntarily comply with the pending Washington State Department of Ecology Stormwater Phase II requirement to implement Low Impact Development (LID) techniques for stormwater management. See also the Revised Draft Planned Action Ordinance (Appendix B) which requires the potential mitigation measures listed in page 3-23 of the Draft EIS.
	3-7	The use of native and drought tolerant vegetation in the development was mentioned in the Mitigation Measures discussion on page 3-23. See also the Revised Draft Planned Action Ordinance (Appendix B) which requires the potential mitigation measures listed in page 3-23 of the Draft EIS.
	3-8	As summarized on page 3-23 of the Draft EIS, a best management practices (BMPs) plan should be followed, including spill prevention/response and protecting groundwater by carefully siting any fueling areas or hazardous waste. See also the Revised Draft Planned Action Ordinance which requires the potential mitigation measures listed in page 3-23.
	3-9	<p>The following text was added to the Mitigation Measures: Other Potential Mitigation Measures on page 3-23 of the Draft EIS to address these construction related concerns and enhance Best Management Practices:</p> <p>“During site construction, equipment refueling should be located in a specific designated location and include secondary containment in the event of a spill, including spill kits and associated equipment. Fuel storage should not occur on-site</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		<p>during construction. In the event of an on-site spill, notification should be reported to Ecology, City of Covington, and City of Kent, noting that the spill area is located adjacent to an aquifer protection area.”</p> <p>See Chapter 3 of this Final EIS as well as Appendix B with the Revised Draft Planned Action Ordinance.</p>
	3-10	Please Response to Comment 3-9.
	3-11	<p>Suggested signage was added to the Groundwater “other potential mitigation measures” section:</p> <p>“To increase public awareness, signage should be posted stating, “protect groundwater, it’s the water you drink” or equivalent. These signs should be placed adjacent to any stormwater facility with infiltration or overflow to the pond or critical areas.</p> <p>See Chapter 3 of this Final EIS.</p>
Peter Rimbos, Greater Maple Valley Unincorporated Area Council	4-1	<p>The City will make necessary amendments to its Comprehensive Plan to integrate the Hawk Property Subarea Plan. See Final EIS Chapter 3 and Appendix G for a list of related consistency edits. These amendments are minor in nature and are captured by the analysis of the reclaimed mine site becoming an urban village and requiring infrastructure improvements as studied in the Draft EIS.</p> <p>The Draft EIS discusses the consistency of the proposal with the Countywide Planning Policies for King County. As described by the Washington Administrative Code rules regarding GMA Comprehensive Plans, “Adopted county-wide planning policies are designed to ensure that county and city comprehensive plans are consistent.” (WAC 365-196-510) The Proposal is consistent with Countywide Planning Policies.</p> <p>Regarding the King County Comprehensive Plan, see Responses to Comments 4-9 to 4-15 below. King County has assigned the unincorporated UGA to the City of Covington. The City may plan for this area in its Comprehensive Plan, such as through the adoption of the Subarea Plan. Until such time as the property is annexed the property will be subject to the King County Comprehensive Plan.</p> <p>GMA recognizes that designated mineral lands (such as presently considered in City and County Plans) are a temporary use:</p> <p>WAC 365-190-070 (4)(d) In designating mineral resource lands, counties and cities must also consider that mining may be a temporary use at any given mine, depending on the amount of minerals available and the consumption rate, and that other land uses can occur on the mine site after mining is completed, subject to approval.</p>
	4-2	<p>Based on coordination with the City of Covington, and a survey of the area dated 1880, the historic condition of the general Jenkins Creek area, including the property was estimated to be prairie. This is similar to the “pasture” condition used for stormwater modeling. While the property may have been forested prior to 1880, since these records exist, the prairie/pasture condition is appropriate to use as a historic, pre-European influences condition. See Appendix E.</p>
	4-3	<p>Critical Areas are commonly described as “<i>site constraints</i>.” This language is used to reflect the developer’s requirements to follow mitigation sequencing, including avoidance, in accord with the City’s Critical Areas Ordinance.</p>

Author of Letter	Comment Number	Response to Comment
		As mentioned in the response to comment 4-2 above, based on available documentation, the historic condition of prairie/pasture would be used, not the existing condition.
	4-4	Direct surface water discharge is generally avoided based on application of City regulations. However, as documented in the Surface Water section of the Draft EIS (pages 3-16 and 3-18), the Enhanced Treatment menu will be applied to both alternatives in areas where the development is more intensive such as the park and ride, commercial, and multifamily areas; or where the City deems appropriate to mitigate water quality impacts (see Chapter 3 of this Final EIS for mitigation clarifications and Appendix B with a draft Planned Action Ordinance). The enhanced treatment provides a higher rate of removal of dissolved metals than Basic Treatment facilities. The performance goal applies to the water quality design storm volume or flow rate, whichever is applicable, and on an average annual basis. The incremental portion of runoff in excess of the water quality design flow rate or volume can be routed around the facility (off-line treatment facilities), or can be passed through the facility (on-line treatment facilities) provided a net pollutant reduction is maintained. Some of the enhanced treatment requirements are: infiltration with appropriate pre-treatment, large sand filter, stormwater treatment wetland, compost amended vegetated filter strip, and two facility treatment trains.
	4-5	<p>The Tahoma/Raven Heights Communities Plan was adopted in October 1984 by King County. The community plans are no longer in effect as separately adopted plans according to the King County Comprehensive Plan. Any continuing relevant policies apply through Chapter 10 of the King County Comprehensive Plan. This would only be applicable to the portion of the Study Area that is unincorporated. Some policies indicate the importance of groundwater quality and others address regional trails. Groundwater will be protected with application of Draft EIS mitigation measures in the Groundwater Resources section (particularly the application of LID and stormwater regulations and avoidance of critical areas), and regional trails are acknowledged in the conceptual land use alternatives in Draft EIS Chapter 2 and also studied in the Draft EIS under Public Services.</p> <p>The Soos Creek Basin Plan was prepared by King County in 1990. It is referenced as an adopted functional plan in the King County Comprehensive Plan Capital Facility Technical Appendix. A Master Drainage Plan was adopted in 1991 to implement the basin plan.</p> <p>Approximately 21 years after the Soos Creek Basin Plan, the Washington State Department of Ecology has continually improved stormwater standards and has developed a 2012 manual requiring LID measures among other water quality and quantity measures. The City has adopted strict surface water regulations and promotes LID by applying the most current manuals in place now (e.g. 2012) or as they may be amended in the future, including:</p> <ul style="list-style-type: none"> • Washington State Department of Ecology Stormwater Management Manual for Western Washington; • Puget Sound Partnership Low Impact Development Technical Guidance Manual for Puget Sound. <p>The City has applied its largest buffers to fish-bearing streams such as Jenkins Creek. The City has adopted protective stormwater standards as described above, including low impact development stormwater standards – standards that were not available when the</p>

Author of Letter	Comment Number	Response to Comment
		<p>Soos Creek Basin Plan was prepared in 1990.</p> <p>By requiring buffers on streams and wetlands, following required mitigation sequencing for potential impacts to critical areas and buffers, and utilizing protective stormwater standards, development would be clustered away from critical areas.</p>
	4-6	<p>It is noted on page 3-50 of the Draft EIS that the greater Middle Green River subwatershed, including Jenkins Creek, contains some of the best remaining salmon habitat in the Duwamish-Green Water Resource Inventory Area. Impacts to water quality are noted in the discussion of Surface Water, page 3-15 and mitigation measures to address those potential impacts are discussed in Mitigation Measures starting on page 3-16 of the Draft EIS.</p> <p>The mitigation measures listed on page 3-62 already note that direct impacts to critical areas, including Jenkins Creek, wetlands, and their buffers will be avoided and minimized to the extent possible. Since the onsite segment of Jenkins Creek is encompassed by a broad wetland and wetland buffer, the effective stream buffer ranges from approximately 200 to 800 feet in width. This concept-level impact analysis assumes existing critical areas and associated buffers will be largely undisturbed.</p> <p>Text was added to the Mitigation Measures discussion on page 3-62 of the Draft EIS reiterating language from Surface Water mitigation measures which discusses the use of the 2012 Ecology Stormwater Manual and adds the Preferred Subarea Plan proposal to modify the zoning under Alternative 3 to reduce impervious surface limits:</p> <ul style="list-style-type: none"> • Implement LID practices as detailed in the 2012 Ecology Stormwater Manual (as will be required by 2016 for Western Washington Municipal Stormwater Permits); and • Modify zoning under Alternative 3 to further mitigate potential impervious surface increases (compared to Alternative 2). <p>See Chapter 3 of this Final EIS.</p>
	4-7	<p>Total Maximum Daily Load (TMDL) data for Jenkins Creek, based on an upstream monitoring station, is discussed in the Surface Water section of the Draft EIS (pages 3-11 and 3-12). The ammonia and pH at Jenkins Creek, at the upstream monitoring station, are in good condition, although it is a concern for fecal bacteria violation. However, considering the property is forested and located away from farms and downstream of the monitoring station, it is not likely that the area is contributing to the fecal bacteria violation that was documented upstream.</p> <p>The Draft EIS addresses water quality and potentially negative TMDL impacts in several ways. The plants and animals section describes the existing forested condition of the riparian corridor and notes how it will be maintained under all studied alternatives. Per the Ecology publication referenced by the commenter, keeping development away from streams banks, maintaining riparian corridors, and maintaining wetland/floodplain connections all help to sustain viable fish habitat. All studied alternatives avoid impacts to Jenkins Creek, its buffer, and the associated wetlands; where there is a potential for roads, utilities, or trails to potentially impact the buffer this is noted in the Draft EIS (e.g. pages 3-58 and 3-62), along with a discussion regarding buffer averaging or enhancement, and code provisions or mitigation sequencing that would apply. The surface water and groundwater sections recommend runoff treatment options and infiltration methods to maintain water</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		quality and quantity in Jenkins Creek. Additionally, the project will follow the 2012 Ecology Stormwater Manual, included LID practices, or the manual in effect at the time of application. Mitigation measures are modified in Chapter 3 of this Final EIS to indicate the City's ability to apply enhanced treatment to any development to minimize water quality impacts.
	4-8	As stated in the Draft EIS, Alternative 3 is projected to have more impervious surface area than Alternative 2. Cumulative impacts associated with increases in impervious will be mitigated by following the Washington State Department of Ecology guidance, using all known and reasonable technologies (AKART), and following NPDES permit conditions as they are issued. Additionally, see revisions to the subarea plan (Chapter 2); the revised preferred plan reduces maximum impervious surface standards in the Preferred Subarea Plan. The project would also adhere to standards in the 2012 Stormwater Manual, which includes LID practices. This project would comply with the Ecology Stormwater Phase II requirement to implement LID , or the manual in effect at the time of application.
	4-9	<p>The State Environmental Policy Act (SEPA) is focused on environmental impacts and does not require a fiscal or economic study (See WAC 197-11-448, -450, and -726).</p> <p>Additionally and voluntarily, the City prepared the Northern Gateway Study in fall 2012. That analysis included a market and fiscal study that reviewed the study area. The study provided an analysis of market conditions and employment and residential growth capacity for Covington as a whole and for the Hawk Property. These studies were factored into the growth estimates studied in the EIS, such as for transportation.</p>
	4-10	<p>The City's Comprehensive Plan was last updated in 2003 and is due for a major update by 2015 consistent with the Growth Management Act (GMA). In intervening years the Comprehensive Plan can be amended in a targeted way through a docket process, and selected pages may be amended. That the mine was operating in 2012 was accurate at the time the Comprehensive Plan was reviewed.</p> <p>As part of the adoption of the Subarea Plan, the City can amend the language to reflect mining reclamation status. See Appendix G.</p> <p>Last, a reclamation permit is required for each mine by the Washington State Department of Natural Resources (DNR). DNR is responsible for ensuring that reclamation follows completion of surface and underground mining. DNR has exclusive authority to regulate mine reclamation and approve reclamation plans. As a courtesy, the City has provided a copy of the permit approval in Appendix F of this Final EIS ; however, supporting documents are available for review by the commenter by contacting DNR directly:</p> <p>Surface Mining Reclamation Program Division of Geology & Earth Resources www.dnr.wa.gov</p>
	4-11	<p>The City must be consistent with GMA, which allows the City to determine its future land use pattern in its Comprehensive Plan, implemented by consistent zoning.</p> <p>The GMA based Procedural Criteria to classify mineral lands says that other land uses can occur on mine sites after mining is completed: WAC 365-190-070 (4)(d) In designating mineral resource lands, counties and cities must also consider that mining may be a</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		<p>temporary use at any given mine, depending on the amount of minerals available and the consumption rate, and that other land uses can occur on the mine site after mining is completed, subject to approval.</p> <p>The changed circumstances of the property include mine reclamation initiation. Other land uses can occur following mining.</p>
	4-12	<p>The City will establish new policies, land use designations, and regulations through the Subarea Plan. The Subarea Plan is an allowed element of a Comprehensive Plan (see RCW 36.70A.080). The City will adopt any consistency edits as part of the Subarea Plan. See Appendix G.</p>
	4-13	<p>See Responses to Comment 4-11 and 12. Also, the City has to demonstrate it has the capacity to meet its growth targets in the Countywide Planning Policies. It is not required to “cap” its growth at the growth targets. The City is not provided growth targets by VISION 2040. It will remain part of a group of small cities in that Plan. An evaluation of VISION 2040 is included in the Draft EIS Section 3.7 of the Draft EIS.</p> <p>The City is not expanding its Potential Annexation Area– it is planning for it. That the City is planning for its assigned planning area and is the logical service provider, is much encouraged by GMA, Countywide Planning Policies, and VISION 2040. The King County Comprehensive Plan will remain in effect for unincorporated areas until annexed; however, this does not preclude the City from anticipating future uses in its Potential Annexation Area.</p> <p>The City is responsible for consulting with King County and PSRC. Both agencies were provided notice of the Draft Hawk Property Subarea Plan and Draft EIS. Neither commented.</p>
	4-14	<p>See Responses to Comments 4-5 and 4-10 to 4-13.</p>
	4-15	<p>See Responses to Comments 4-5 and 4-10 to 4-13.</p>
	4-16	<p>The Draft EIS has evaluated the potential transportation impacts of the No Action and Action Alternatives and identified the projects and measures needed to support concurrency through the long-range planning year of 2035. The Planned Action Ordinance completed as part of the Final EIS (see Appendix B) identifies the mechanisms needed to ensure that transportation infrastructure would be adequate to support future planned development. This is consistent with the requirements of GMA.</p>
	4-17	<p>It is acknowledged that the City of Covington’s Comprehensive Plan (which identifies planned capital improvement projects through a long-range planning year of 2029) does not yet include the City’s planned continuation of SR 516 widening to 5 lanes east of 192nd Avenue SE. This was disclosed in Exhibit 3.8-4 of the Draft EIS, along with the City’s stated commitment to implementing this project by the long-range planning year of 2035. The SR 516 improvement project between 192nd Avenue SE and the east city limits, along with the future mitigation projects identified in Draft EIS Exhibit 3.8-17, are being added to the City’s long-range Capital Improvement Program as part of the Comprehensive Plan updates that would accompany the Planned Action Ordinance, and would extend the long-range planning year to 2035. Text has been added to Exhibits 3.8-4 and 3.8-17 in the Final EIS Transportation Mitigation section (see Appendix A) to clarify this.</p>

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		<p>New development would be expected to contribute their proportionate share to the cost of this and other future planned transportation improvements identified to support future growth. Text has been added to the “Roadway Capacity Improvements” subsection of the Transportation Mitigation section clarifying this.</p> <p>As discussed in the “Roadway Capacity Improvements” subsection of the Draft EIS Chapter 3 Transportation Mitigation section, the 2035 analysis for Alternative 1 (No Action) conditions found that even with widening to 5 lanes in Covington, if build-out of all projected future regional development growth (without the proposed Hawk Property alternatives) occurs, operation along SR 516 is projected to exceed the City’s standard of LOS D. The Draft EIS does not recommend changing LOS standards; it simply acknowledges that under this circumstance, the City would need to decide whether additional widening to 7 lanes would be warranted, or if it would be warranted to revise standards to accept a higher level of congestion along the corridor. These are policy decisions that cities and counties regularly face, as they determine the appropriate balance between the amount of infrastructure that is feasible to build and the level of congestion they are willing to accept. The feasibility of additional infrastructure depends not only on available resources, but on the desired character of the roadway and also the level of impact that additional widening would have on homes and businesses located along the roadway. Text has been added to clarify that under this circumstance, the City would need to decide on one option or the other in order to support concurrency. The Draft EIS also acknowledges that if projected 2035 volumes are realized, the City of Maple Valley could face a similar decision on whether or not to widen SR 516 to 5 lanes, as it is not currently in their plan.</p> <p>Regardless, the Draft EIS shows that these 2035 conditions are projected for the No Action Alternative; the Action Alternatives (2 and 3) would not affect the Cities’ need to make this decision, nor would they affect the decision that the Cities would ultimately make. Text has been added to the Final EIS Transportation Mitigation section (see Appendix A) to clarify this point. See Chapter 3 of this Final EIS and Appendix A.</p>
	4-18	<p>The 2035 travel demand forecasts assume build-out of regional land use plans, including build-out of future land use plans for Covington, Maple Valley, the Black Diamond Master Planned Developments (MPDs), and regional land use outside of these three cities. This results in conservative “worst case” projections that reflect cumulative traffic volumes generated by all planned future development in the region. Since the forecasts assume build-out of future planned land use and the traffic that would be generated by new development, it is appropriate to also assume implementation of the projects identified by jurisdictions in their adopted plans to support that land use. With the exception of the SR 516 widening discussed in Response 4-17, all of the projects assumed for baseline conditions (summarized in Draft EIS Exhibit 3.8-4) are included in adopted plans with funding sources identified. The Maple Valley Development Agreement is an adopted agreement, ensuring that fees to fund transportation improvement projects will be paid to the City in conjunction with development of the Black Diamond MPDs. Since the model forecasts assume build-out of the MPDs, it is appropriate to assume that all fees identified in the Development Agreement would be paid to the City. The projects listed in the Development Agreement are consistent with or functionally</p>

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		equivalent to the Capital Improvement Projects identified in the City’s Comprehensive Plan, which identifies a number of additional funding sources for future projects and is a financially balanced plan, consistent with GMA requirements.
	4-19	The EIS analysis is based upon the City of Covington’s travel demand forecasting model, as described in the “Future Travel Demand” subsection of the Draft EIS Chapter 3 Transportation Impacts section,, and does not use the Black Diamond MPD travel model or traffic assessment. Build-out of land use planned with the Black Diamond MPDs was included as a land use assumption in the City of Covington’s model, along with build-out of other planned future regional development, in order to project conservative “worst case” traffic volumes generated cumulatively by all planned future development in the region. While the travel demand forecasting process is informed by the future land use and transportation improvement plans of neighboring jurisdictions, land use decisions within the City of Covington are based upon the results of its own traffic analyses, not on the analyses of other jurisdictions.
	4-20	Because the EIS transportation analysis conservatively assumes build-out of regional 2035 land use plans, it is appropriate to assume that transportation improvements adopted by jurisdictions to support that development would be implemented as well. It is noted that the EIS analysis shows that with the exception of four intersections located near the subject site in Covington, the proposed Hawk Property alternatives are not expected to substantially affect roadway operating conditions identified under No Action in Covington and Maple Valley. Please also see Responses 4-17 through 4-19.
	4-21	The EIS transportation analysis conservatively assumes build-out of 2035 regional land use plans; this reflects “worst case” projections of cumulative traffic volumes generated by all planned future development in the region. If the Black Diamond MPDs or other future land uses do not develop at the rates projected, less traffic would be generated than the volumes reflected in the EIS projections, and some of the identified transportation improvement projects may not be required. This is why the Maple Valley Development Agreement identifies MPD development levels at which the need for each specific improvement project is triggered. Please also see Responses 4-17 through 4-20.
	4-22	Please see Response 4-19.
	4-23	The EIS analysis is based upon the City of Covington’s travel demand forecasting model, and does not use the Black Diamond model. The proposed Hawk Property alternatives are not expected to substantially affect roadway operating conditions projected to result under No Action in Maple Valley. Please also see Response 4-19.
	4-24	Please see Responses 4-17 and 4-18. New development would be required to contribute its proportionate share toward the cost of citywide transportation improvements needed to support future land use growth. Text has been added to the EIS Transportation Mitigation section to clarify this point. See Chapter 3 of this Final EIS and Appendix A.
	4-25	As described in the “Traffic Volumes” subsection of the Draft EIS Chapter 3 Transportation Affected Environment section, the growth rates applied to the Maple Valley intersections were based upon

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		Washington Department of Transportation (WSDOT) traffic counts conducted on those same facilities, and are appropriate to reflect 2 years of traffic growth. It is noted that existing traffic volumes and level of service indicate only how the study area intersections are currently operating; transportation impact analysis is based upon 2035 projections that take into account the traffic growth expected to result from planned future land use.
	4-26	As described in the “Trip Generation” subsection of the Draft EIS Chapter 3 Transportation Impacts section, calculations to estimate internal trips (trips between uses on site) are separate from the calculations applied to determine how many of the daily trips would occur during the PM peak hour, although both sets of calculations are based upon methods established by the Institute of Transportation Engineers (ITE). Although the highest proportion of daily project-generated trips would be expected to occur during the PM peak hour, trips would occur throughout the course of each day. The projected proportion of about 9% of daily trips occurring during the PM peak hour, projected using ITE methods, is within the typical range.
	4-27	The potential traffic impacts of the proposed development on the proposed local connectors are described in the “Site Access and Circulation” subsection of the Draft EIS Chapter 3 Transportation Impact section.
	4-28	Please see responses 4-18 through 4-20, and 4-23.
	4-29	Under GMA, local jurisdictions must adopt transportation level of service standards, but it is at the discretion of each local jurisdiction to determine what those standards should be. As described in the “Arterial Segments” subsection of the Draft EIS Chapter 3 Transportation Affected Environment, the area-wide average Transportation Adequacy Measure (TAM) threshold is the City’s adopted level of service standard for arterial segment operations, which is based upon King County’s adopted standards. Standards that apply average values are not uncommon; they reflect a policy decision that allows some localized facilities to operate at higher levels of congestion as long as the average overall operation is less congested. The arterial segment analysis presented in the EIS analyzes arterial segment operations according to those adopted standards.
	4-30	As described in the “Site Access and Circulation” subsection of the Draft EIS Chapter 3 Transportation Impacts section, internal roadways and non-motorized facilities would be required to be built according to City design standards, to ensure that internal mobility and safety objectives are met. With design standards met, no adverse impacts related to internal circulation are expected. A discussion of potential construction traffic impacts has been added to the Final EIS Transportation Impacts section, and identification of potential construction traffic mitigation measures has been added to the Transportation Mitigation section (see Appendix A).
	4-31	Please see Responses 4-18 and 4-21.
	4-32	Please see Response 4-17. Under GMA, local jurisdictions must adopt transportation level of service standards, but it is at the discretion of each local jurisdiction

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		to determine what those standards should be. As described in the “Intersections” subsection of the Draft EIS Chapter 3 Transportation Affected Environment, the weighted average delay threshold is the City of Maple Valley’s adopted level of service standard for its concurrency intersections. Standards that apply average values are not uncommon; they reflect a policy decision that allows some localized facilities to operate at higher levels of congestion as long as the average overall operation is less congested. The Maple Valley intersection analysis presented in the EIS analyzes operations according to the City’s adopted standards.
	4-33	The Draft EIS text does not identify potential impacts to SR 516 as significant and unavoidable. It indicates that under projected 2035 conditions with build-out of all regional land use plans, the Cities of Covington and Maple Valley would have to make a decision to either further widen SR 516, OR, revise their level of service standards to accept a higher level of congestion on SR 516, in order to maintain concurrency. The Cities would be required to choose one of those two options and with either measure in place, there would be no significant impacts. Text has been added to the Transportation Mitigation section and Transportation Significant Unavoidable Adverse Impacts sections to further clarify that point (see Final EIS Appendix A).. Please also see Response 4-17.
	4-34	Both the Cities of Covington and Maple Valley have adopted Comprehensive Plans with transportation elements that meet the requirements of GMA. Both Cities have adopted level of service standards, and transportation impact analysis was conducted according to those standards.
	4-35	The EIS identifies the actions that would be needed to support concurrency on SR 516. The SR 516 improvement project between 192 nd Avenue SE and the east city limits, along with the future mitigation projects identified in Exhibit 3.8-17, are being added to the City’s long-range Capital Improvement Program as part of the Comprehensive Plan updates accompanying the Planned Action Ordinance. Please also see Response 4-17.
	4-36	Please see Responses 4-17 and 4-35. It is noted that the Washington State Department of Transportation (WSDOT) reviewed the Draft EIS (see Comment Letter 2) and raised no issues with regard to the SR 516 analysis or conclusions. The current long-range planning year for the Washington Transportation Plan is 2026; both Cities would need to continue to coordinate with WSDOT regarding decisions about improvements on SR 169 and SR 516.
	4-37	Please see Response 4-35.
	4-38	The Cities of Covington and Maple Valley both have multi-year financing plans included in the transportation elements of their Comprehensive Plans, consistent with GMA requirements. The Draft and Final EIS analysis shows that the proposed Hawk Property Subarea Plan would not significantly affect roadway operating conditions in Maple Valley, and would not require any changes to the City of Maple Valley’s adopted long-range Transportation Improvement Program. As part of the Comprehensive Plan update accompanying the Planned Action Ordinance, the City of Covington will update its long-range Transportation Improvement Program to include the additional projects identified in the EIS.

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	4-39	Both the Cities of Covington and Maple Valley have adopted Comprehensive Plans with transportation elements that meet the requirements of GMA. Both Cities' transportation elements include discussion of contingencies in case of revenue shortfall.
	4-40	The transportation analysis presented in the EIS evaluates the potential impacts of the proposed Hawk Property against locally adopted level of service standards, taking into account its cumulative effects with other planned regional development growth, and identifies the measures needed to ensure that concurrency is maintained. Concurrency is evaluated prior to project implementation, as set forth in CMC Chapters 12.100 and 12.110. This is consistent with the requirements of GMA.
	4-41	Please see Response 4-40.
	4-42	Please see Response 4-40.
	4-43	Please see Responses 4-17, 4-24, and 4-40.
	4-44	Please see Responses 4-17 through 4-21.
	4-45	<p>Estimates of future population in the Hawk Property Subarea under each alternative were based on a combination of decennial census and American Community Survey (ACS) 5-year Estimate data from the US Census Bureau, as well as forecasts from the Puget Sound Regional Council (PSRC) 2040 household population projections. For the City of Covington, the 2007-2011 ACS 5-Year Estimates reported an overall average household size of 3.01. However, this average is skewed by the fact that the current multifamily housing stock (apartments, condominiums, townhomes) in Covington is very small compared the number of single-family homes; at present, the city contains only about 300 multifamily units. Multifamily households are generally much smaller than single family households, as shown by the ACS 5-Year estimates, which report an average single-family household size of 3.11 and an average multi-family household size of 1.25. As shown in Exhibits 2.4-1 and 2.4-3 of the Draft EIS, residential development in the Hawk Property Subarea is planned to consist of a mix of housing types, but the majority would consist of multifamily dwellings and townhomes under both alternatives. As such, applying the citywide average household size of 3.01 would not be appropriate.</p> <p>Based on the factors described above, household size assumptions were established as follows:</p> <ul style="list-style-type: none"> • Single-family: 2.6 persons per unit. While lower than the ACS 5-Year Estimate average, this number reflects the relatively high-density nature of single-family development allowed in the Hawk Property Subarea. Additionally, this assumption is in line with PSRC household size forecasts for the Covington area. PSRC forecasts estimated 2010 average household size at 2.94, with a steadily decreasing trend, reaching 2.62 by 2040. • Multifamily (apartments and condominiums): 1.6 persons per unit. This is actually slightly higher than the average multifamily household size reported by the US Census Bureau's ACS 5-Year Estimates, but consistent with the smaller households typically found in multifamily housing. • Townhomes: 2.0 persons per unit. This assumption

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		<p>reflects the status of townhomes as a “middle ground” between single-family residences and multifamily flats. Exhibits 2.4-1 and 2.4-3 have been amended to include additional information on household size assumptions. See Chapter 3 of this Final EIS.</p>
	4-46	See response to Comment 4-45.
	4-47	The City of Covington contracts with King County for police services, and the number of officers provided to the City is governed by the terms of that contract. Effective level of service for surrounding areas of unincorporated King County is controlled by the King County Sheriff’s Office.
	4-48	<p>The City of Covington pays King County for contract police services from its General Fund. As additional personnel are needed, the City can renegotiate its contract with the County to increase the number of officers assigned to Covington. The increased cost associated with additional personnel will be at least partially offset by the increased tax revenue from development of the subarea.</p> <p>The impact discussion on page 3-142 of the Draft EIS has been amended to add clarifying language. See Chapter 3 of this Final EIS.</p>
	4-49	As stated in the impact analysis on page 3-142 of the EIS, annexation of the unincorporated portion of the subarea to the City of Covington would remove this area from the jurisdiction of Maple Valley Fire and Life Safety. Future development in the subarea would be served by Kent Regional Fire Authority crews from KFD Station 78.
	4-50	<p>See response to Comment 4-49. Because the unincorporated portions of the subarea would be annexed to the City of Covington, Maple Valley Fire and Life Safety would no longer provide service to the area, and future demand would be absorbed by Kent Regional Fire Authority.</p> <p>The impact discussion on pages 3-142 and 3-143 of the Draft EIS has been amended to clarify that no impacts to MVFLS are anticipated under either of the Action alternatives. See Chapter 3 of this Final EIS.</p>
	4-51	<p>As described in the impact analysis on page 3-145 of the Draft EIS, the Kent schools serving the subarea generally have greater available capacity than their counterpart schools in the Tahoma School District. The impact analysis also states on page 3-145 of the Draft EIS that district boundary adjustments are voluntary and must be agreed to by both school district involved. Tahoma School District is not under any obligation to expand its district boundaries and is allowed to continue to serve the portion of the Hawk Property Subarea currently within its jurisdiction, which covers approximately 80 acres of the subarea. Approximately 44% of this area is developable; the remaining area is constrained by the presence of critical area buffers and steep slopes. If the entire developable area developed as single family residential, which represents the highest demand case for student generation, at an average density of 8 units per acre, Tahoma School District would only need to absorb an additional 200 students. Because the proposed zoning for the portion of the subarea in Tahoma School District jurisdiction would allow a mix of housing types, this is a conservative estimate, and the actual number of students generated would likely be lower.</p> <p>The impact analysis describes the district boundary adjustment</p>

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		<p>process on page 3-145 and states that it is a voluntary process, during which detailed studies of the fiscal and logistical implications of transferring territory are prepared. The EIS presents an order-of-magnitude estimate of the demand associated with each alternative, should one district or the other expand its boundaries to include the entire subarea, but the detailed studies are the responsibility of the individual school districts involved in a potential transfer of territory. It should also be noted that this additional demand would not be generated immediately. Rather, it would materialize gradually over time as development occurred in the subarea, which would allow the districts several years' time to decide upon any territory transfer and plan for future demand.</p> <p>It should be noted that both School Districts were provided notice of the Draft Subarea Plan and Draft EIS and neither commented.</p>
	4-52	<p>As described in the impact analysis, increased demand for additional school facilities, teachers, and other expenses would be offset by the collection of school impact fees by the City of Covington pursuant to CMC 18.120. Under State law (RCW 82.02.050), impact fees imposed on new development must be spent on system improvements that are reasonably related to and that will reasonably benefit the development. In addition, the RCW states that impact fees shall not exceed a proportionate share of the costs of any related system improvements.</p> <p>While cities collect impact fees on behalf of the school districts that serve their jurisdiction, the fees are merely a mechanism for ensuring the new development pays its fair share for public facilities. Individual school districts are responsible planning their own facilities, including deciding precisely how impact fee funds are spent within the bounds of State law, including expansions to existing facilities, land acquisition, construction of new schools, or hiring of additional staff. Other funding mechanisms employed by the school district, such as bonds, are independent of the impact fees collection process and are not controlled by the City of Covington.</p>
	4-53	<p>Page 3-145 of the impact analysis states in the Draft EIS that estimates of additional student enrollment are based on the student generation rates adopted by each school district. Each district sets its own student generation rates for use in its capital facility planning process, based historical and projected growth trends in their jurisdiction. The Kent and Tahoma school districts have adopted different generation rates based on their own analysis, and potential impacts to each district are evaluated relative to their own standards.</p> <p>Exhibits 3.9-10 and 3.9-11 have been amended to include additional information on the adopted student generation rates for each school district. See Chapter 3 of this Final EIS.</p>
	4-54	<p>Comment has been noted and provided to decision makers.</p>
	4-55	<p>This EIS has disclosed level-of-magnitude estimates of future demand for school facilities, based on projected subarea population and using student generation rates adopted by each of the affected the school districts.</p>
	4-56	<p>Both Alternative 2 and Alternative 3 include sufficient park space to meet the requirements for on-site recreation, as established in CMC 18.35.150. Neither alternative would increase the City existing deficiencies in neighborhood or community park space or trails. The</p>

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		<p>City does not currently have an adopted level of service standard for ball fields. The comment to include dedicated ball fields in the park programming for the subarea is noted and has been provided to the appropriate City decision makers.</p>
<p>Karen Walter, Muckleshoot Indian Tribe Fisheries Division</p>	<p>5-1</p>	<p>The provided publications regarding salmon and ecotoxicology, particularly regarding copper effects, were distributed following scoping and reviewed by the consultant team during development of the Draft EIS; they are included in the Final EIS Appendix D. Also note that stormwater effects including metals was described in the Surface Water Resources mitigation measures.</p> <p>The City recognizes the need to apply adequate stormwater regulations that minimize potential impacts of urban growth to natural systems. The City has a surface water management system designed to comply with the National Pollutant Discharge Elimination System (NPDES) Program and the Western Washington Phase II Stormwater Permit.</p> <p>The City also adopts the Washington State Department of Ecology Stormwater Management Manual for Western Washington (current manual and any subsequent amendments), and Puget Sound Partnership Low Impact Development (LID) Technical Guidance Manual for Puget Sound. Wherever there may be differences between the Ecology manual and the NPDES Phase II permit, the most stringent criteria applies (CMC 13.25.020). The 2012 Ecology manual has been issued and would be required to go into effect in 2016 (per NPDES requirements) – however, the City’s code requires the most current manual be applied now and the 2012 Ecology manual is now in effect.</p> <p>The Alternatives under consideration include application of stormwater standards, with the most advanced standards in place at the time of development. Additionally, based on the commenter’s concerns that the referenced scientific material appears to post-date the development of the 2012 Ecology manual, the City proposes to apply the higher enhanced treatment menu from the 2012 manual at its discretion, not only for more intense uses (e.g. commercial, mixed use) but also for other residential or lower-intensity uses. The City may not need to exercise this option frequently since the City tends to require that there be no direct surface water discharge.</p> <p>Based on this comment, the Draft EIS has been clarified to add a cross reference from the Plants and Animals “other potential mitigation measures” to the Surface Water Resources and Groundwater Resources mitigation measures, and to clarify the City’s ability to apply higher water quality standards, as follows (and as included in Chapter 3 of this Final EIS):</p> <p style="padding-left: 40px;">In addition to the mitigation measures identified here, the mitigation measures identified in the Surface Water and Groundwater sections, which start on page 3-16 and 3-23, respectively, should be implemented to avoid aquatic habitat degradation. Runoff must be captured, treated, and where feasible infiltrated to prevent poor water quality spikes.</p> <p style="padding-left: 40px;">Untreated urban runoff contains metals and polycyclic aromatic hydrocarbons (PAHs), which has been shown to adversely affect salmon, particularly Coho salmon (Feist, B. et al 2011; McIntyre, J. et al. 2012). Implementing LID stormwater practices following guidance in the 2012 Ecology Stormwater Manual (or the manual in place at the time of application) is recommended .</p>

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		<p>Additionally, based on typical City requirements, direct discharges to Jenkins Creek and any discharges up to and including a 100-year storm event would be avoided. Where applicable, since Coho salmon are particularly vulnerable to metals and PAHs in urban runoff, the City could chose to require use of the enhanced treatment menu from the 2012 manual.</p>
	5-2	<p>The Draft EIS documents salmonid presence in Jenkins Creek on page 3-55 and potential landscape-scale impacts to hydrology and habitat are noted on page 3-58.</p> <p>As stated in the Draft EIS, Alternative 3 is projected to have more impervious surface area than Alternative 2. Cumulative impacts associated with increases in impervious will be mitigated by strictly following the Washington State Department of Ecology guidance, using all known and reasonable technologies (AKART), and following NPDES permit conditions as they are issued.</p> <p>Additionally, the City is considering reducing maximum impervious surface allowances for alternatives, though the standards will still reflect urban development styles (e.g. see the description of the Preferred Subarea Plan in Chapter 2 of this Final EIS). The project would also adhere to standards in the 2012 Stormwater Manual, which includes LID practices, or the manual in effect at the time of application. This project would comply with the Ecology Stormwater Phase II requirement to implement LID. See Response to Comment 5-1.</p> <p>Regarding buffers, since the onsite segment of Jenkins Creek is encompassed by a broad wetland and wetland buffer, the effective stream buffer ranges from approximately 200 to 800 feet in width. This concept-level impact analysis assumes existing critical areas and associated buffers will be largely undisturbed.</p> <p>Further, tree retention and mitigation sequencing in critical areas and buffers is added as a policy in the Preferred Alternative Subarea Plan. See Chapter 2 of this Final EIS.</p>
	5-3	<p>The design is currently at a concept-level and as such, specific locations for trails, utilities, etc. are not known at this time; the Draft EIS impact analysis provided is commensurate with a conceptual plan. As documented in the code excerpts on pages 3-58 and 3-59 of the Draft EIS, any proposed critical area alteration, such as trails, utilities, and roads, must be designed in compliance with the City’s critical areas ordinance (CAO). Page 3-59 of the Draft EIS states: “The city’s critical areas regulations call for protecting natural areas in a comprehensive manner to afford a measure of protection for wildlife through the reduction and minimization of critical areas impacts, and mitigation for unavoidable impacts (CMC 18.65.120). Critical area regulations will help preserve the corridor along Jenkins Creek and associated wetlands, even as surrounding buildable parcels are developed.” Mitigation sequencing requires applicants to first avoid critical area (CA) impacts, if unavoidable to minimize CA impacts, and lastly to mitigate any unavoidable impacts in accord with CMC 18.65.120 and 18.65.130.</p> <p>The sewer line location shown on Figure 3.10-1 would impact forested critical area. However, in accord with mitigation sequencing (CMC 18.65.120) the sewer line should be located as feasible to avoid critical area disturbance and loss of forest, particularly mature stands of forest. Avoidance and minimization to critical areas was noted on page 3-62 of the Draft EIS. All feasible options will be evaluated for compliance with the CAO as the design</p>

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		<p>and permit process progresses.</p> <p>Also, as noted in Response to Comment 5-2, tree retention and mitigation sequencing in critical areas and buffers is added as a policy in the Preferred Alternative Subarea Plan. See Chapter 2 of this Final EIS.</p>
	5-4	<p>The future sewer alignment is shown as depicted in Figure 7-15 of the 2005 Soos Creek Water and Sewer District Comprehensive Plan, as well as shown in the GIS information received from the District. Please note that this alignment is conceptual. The sewer line location shown on Figure 3.10-1 would impact forested critical area. However, in accord with mitigation sequencing (CMC 18.65.120) the sewer line should be located as feasible to avoid critical area disturbance and loss of forest, particularly mature stands of forest. The utilities narrative has been revised to note that the sanitary sewer utility infrastructure will mostly likely follow proposed street networks, which will avoid sensitive areas whenever possible. Avoidance and minimization to critical areas was noted on page 3-62 of the Draft EIS. All feasible options will be evaluated for compliance with the Critical Areas Ordinance as the design and permit process progresses.</p> <p>See also Response to Comment 5-3.</p>
	5-5	<p>The comment is noted. TMDL data for Jenkins Creek is discussed in the Surface Water section of the Draft EIS (pages 3-11 and 3-12). It is noted on page 3-50 that the greater Middle Green River subwatershed, including Jenkins Creek, contains some of the best remaining salmon habitat in the Duwamish-Green Water Resource Inventory Area.</p> <p>As part of ongoing monitoring of water quality impacts, the City monitors all development sites during construction and during operation of each facility to enforce permit conditions, including NPDES construction and industrial permit programs administered by Ecology. Strict adherence to the 2012 Ecology Stormwater Manual, including application of LID techniques (or the manual in place at the time of application), will mitigate potential impacts to water quality. See Response to Comment 5-1.</p> <p>The City recognizes water quality standards could change and its rules will evolve and apply to development at the time of application. Further, to respond to the comment, the text in the Surface Water section, under “Applicable Regulations and Commitments” indicates that in the future, additional standards based on evolving TMDL plans and rules would apply. See Chapter 3 of this Final EIS.</p>
	5-6	<p>Salmonid use within Jenkins Creek is documented in the Draft EIS (page 3-55). As mentioned, Washington Department of Fish and Wildlife (WDFW) databases indicate salmonid use (Coho) in Jenkins Creek within the project area. Chinook salmon are mapped downstream in Jenkins Creek (presumed use), but not within the project reach. The following text is added to page 3-55 – see Chapter 3 of this Final EIS:</p> <p>“WDFW Priority Habitat and Species distribution maps also document Chinook salmon (presumed) presence in Jenkins Creek, approximately 0.5 mile downstream of the study area; Chinook salmon are not documented in the onsite stream segment (WDFW March 2013 and King County DNR February 2009).”</p>

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	5-7	<p>The Draft EIS addresses water quality and potentially negative TMDL impacts in several ways: 1) The plants and animals section describes the existing forested condition of the riparian corridor and notes how it will be maintained under all three site alternatives (per the Ecology publication referenced by the commenter, keeping development away from streams banks, maintaining riparian corridors, and maintaining wetland/floodplain connections all help to sustain viable fish habitat); 2) all three alternatives avoid impacts to Jenkins Creek, its buffer, and the associated Wetlands; and 3) the surface water and groundwater sections recommend runoff treatment options and infiltration methods to maintain water quality and quantity in Jenkins Creek. Additionally, the project will follow the 2012 Ecology Stormwater Manual, included LID practices.</p> <p>The following text was added to page 3-62 of the Draft EIS: “Keeping development away from stream banks, maintaining a riparian corridor, and maintaining wetland/floodplain connections all help to sustain viable habitat for fish, birds, reptiles, and mammals. These measures are known to reduce stressors on our urban streams (Ecology 2012).”</p> <p>See Chapter 3 of this Final EIS.</p>
	5-8	<p>The groundwater section on page 3-22 states that, “Increases in impervious surface area on the site could result in a net loss in onsite groundwater recharge if not adequately mitigated.” This section also notes that relatively good background flow conditions and the proposal to infiltrate stormwater suggest that impacts to fish habitat and flows due to reduced groundwater discharge to Jenkins Creek would be small and limited to the reach immediately downstream of the development. Additionally, avoiding impacts to the adjacent wetland will help maintain water quality and quantity. Additionally, the project will follow the 2012 Ecology Stormwater Manual, including LID practices. See Response to Comment 5-1.</p>
	5-9	<p>Please see the Responses to Comments 5-1 to 5-8. Salmonid use within Jenkins Creek is documented in the Draft EIS (page 3-55).</p> <p>The following mitigation measures were included in the Draft EIS as necessary to sustain viable fish habitat:</p> <ul style="list-style-type: none"> • Avoid direct impacts to Jenkins Creek, wetlands, and buffers to the extent feasible (page 3-62 of Draft EIS). • Implement LID practices as detailed in the 2012 Ecology Stormwater Manual (page 3-23 of Draft EIS) (as will be required by 2016 for Western Washington Municipal Stormwater Permits) <p>The following was added to the mitigation measures discussion on page 3-62 to address the Final EIS proposal to modify the zoning under Alternative 3 to reduce impervious surface limits:</p> <ul style="list-style-type: none"> • “Modify zoning under Alternative 3 to further mitigate potential impervious surface increases (compared to Alternative 2).” <p>The following text additions were made in the Final EIS Chapter 3: Page 3-62: “Keeping development away from stream banks, maintaining a riparian corridor, and maintaining wetland/floodplain connections all help to sustain viable habitat for fish, birds, reptiles, and mammals. These measures are known to reduce stressors on our urban streams (Ecology 2012).” Page 3-63: “In addition to the mitigation measures identified here,</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		<p>the mitigation measures identified in the Surface Water and Groundwater sections, which start on page 3-16 and 3-23, respectively, should be implemented to avoid aquatic habitat degradation. Runoff must be captured, treated, and where feasible infiltrated to prevent poor water quality spikes. Untreated urban runoff contains metals and PAHs, which has been shown to adversely affect salmon, particularly Coho salmon (Feist, B. et al 2011; McIntyre, J. et al. 2012). Implementing LID stormwater practices following guidance in the 2012 Ecology Stormwater Manual is recommended.”</p> <p>See Chapter 3 of this Final EIS.</p>
Barry Anderson, Sr. BranBar, LLC	6-1	The comment is noted and provided to the appropriate decision maker.
	6-2	<p>Comment noted. Section 3.1 Earth in the Draft EIS described the need to conduct site-specific design studies to address challenges related to existing and future geologic conditions. See “Other Potential Mitigation Measures” in the Draft EIS which says in part: “Site-specific studies and evaluations would be conducted in accordance with Covington Municipal Code requirements and the provisions of the 2012 (or current) IBC. Mitigation measures to limit impacts from geologic hazards and associated foundation support considerations ...”</p>
George H. Bennett, Bennett Consulting	7-1	Comment noted. See Response to Comment 6-2.
	7-2	Comment noted. See Response to Comment 6-2.
	7-3	<p>Comment noted. See Response to Comment 6-2. Regarding liquefaction, mitigation measures indicate:</p> <p>Ground improvement techniques or deep foundations could mitigate liquefaction impacts, if needed, during the design for individual future structures. Several methods of ground improvement are available, including stone columns, vibro-compaction, vibro-replacement, deep soil mixing, compaction grouting, and others. Selection of the appropriate deep foundation or ground improvement technique is location-specific at the site and would depend on a number of factors that would be considered during design and permitting of the future structures. Ground improvement and foundation support requirements should be determined as part of the design and permit approval process for each future onsite development project. Using a high quality, well-compacted crushed rock or gravel fill material during reclamation would also significantly reduce the potential for soil liquefaction.</p> <p>Mitigation measures regarding settlement include:</p> <p>Although not associated with a specific environmental hazard, structure settlement should be mitigated during the design and permitting for individual future structures. For multi-story structures, total and differential settlements could be accommodated by founding the structures on deep foundations or by implementing ground improvement techniques. Soil preloading/surcharging could likely be used to reduce total and differential settlements to within tolerable levels for utilities and single-story structures. Alternatively, lightly loaded structures could potentially be founded on mat foundations with flexible utility connections that would limit the potential adverse effect of differential settlement. Deep</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		<p>foundation options include driven piles and drilled shafts. These options should be assessed during the design phase after reclamation is complete and the actual earth conditions can be assessed. Using a high quality, well-compacted crushed rock or gravel fill material during reclamation would also significantly reduce the potential for future structure settlement. However, regardless of the quality of reclamation fill that is anticipated to be placed before site development begins, site structures will require site-specific geotechnical studies in order to design appropriate foundation systems under the City’s building permit process.</p>
Louise Davenport	8-1	The comment is noted and provided to the appropriate decision makers.
	8-2	The comment is noted and provided to the appropriate decision makers. Please note the subarea plan is intended to address a 20-year time frame.
Andria McKee	9-1	The comment is noted and provided to the appropriate decision makers.
Colin Lund, Oakpointe Communities - Comments on Hawk Property Draft Subarea Plan	10-1	<p>No change is necessary. One of the trails shown on the conceptual site plan is the currently planned alignment of the Timberline Trail, which runs along the southern property line of the Hawk Property site and is not planned to provide direct access to the central pond feature. Trail access around the pond, as well as internal pedestrian circulation, will be provided by the on-site trails shown on the site plan, which will be provided as part of development of the Hawk Property.</p> <p>The Conceptual Site Plan also contains a note in the bottom right corner that indicates that the precise extent and locations of illustrated land use and trails are yet to be determined.</p>
	10-2	<p>No change is necessary. The exhibit is a conceptual diagram of potential land uses and is not a binding site plan. The site plan contains a disclaimer in the lower right corner that the precise extent and locations of all land uses are to be determined. In addition, the proposed zoning map included on page 17 of the subarea plan includes a disclaimer that internal zoning district boundaries are approximate and will be decided as part of final site plan approval.</p>
	10-3	See response to Comments 10-1 and 10-2.
	10-4	<p>No change is necessary. While the new R-12 zone falls under the larger Urban Residential (R) zone in the City’s zoning code (CMC 18.15), and they share a common intent, each individual “R” designation has unique development standards and requirements. As such, it is appropriate to discuss them as individual zones.</p>
	10-5	<p>No change is necessary. The proposed zoning map included on page 17 of the subarea plan includes a disclaimer that internal zoning district boundaries are approximate and will be decided as part of final site plan approval.</p>
	10-6	<p>CMC 18.15.050(1)(e) has been amended to broadly discuss the intent of the MR zone to provide “a variety of housing types at a range of densities not provided by other Urban Residential zoning districts.” References to specific housing types and uses have been removed. Townhomes are an allowed use, as shown in Table</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		18.25.030. See the Preferred Subarea Plan under separate cover.
	10-7	The new MR zone is an extension of the City existing residential zoning scheme and provides a similar set of allowed uses as the other R zones. The key differentiating factor is the addition of multifamily residential and the ability to mix residential types with greater flexibility.
	10-8	CMC 18.25.030 has been amended to allow this use. See the Preferred Subarea Plan under separate cover.
	10-9	CMC 18.25.050 has been amended to allow this use, subject to development conditions. See the Preferred Subarea Plan under separate cover.
	10-10	Thank you for your comment. No change is proposed at this time. The commenter may propose these comments at legislative public hearings.
	10-11	Thank you for your comment. No change is proposed at this time. The commenter may propose these comments at legislative public hearings.
	10-12	Thank you for your comment. No change is proposed at this time. The commenter may propose these comments at legislative public hearings.
	10-13	Thank you for your comment. No change is proposed at this time. The commenter may propose these comments at legislative public hearings.
	10-14	Thank you for your comment. No change is proposed at this time. The commenter may propose these comments at legislative public hearings.
	10-15	Table 18.30.030 has been amended to apply condition 3 to minimum lot area in the R-12 zone. See the Preferred Subarea Plan under separate cover.
	10-16	Footnote 11 has been amended to include the R-12 zone. See the Preferred Subarea Plan under separate cover.
	10-17	No change is necessary. The standard only applies to building façades “ adjacent to a sidewalk, pedestrian walkway, parking lot, trail, park, plaza or other public space.” Loading docks and similar areas are not typically constructed adjacent to such features and would therefore not be subject to the requirements of this section.
	10-18	No change is necessary. The standard is specifically intended to provide the Director with discretion to deviate from the standards in light of special circumstances. However, the subarea plan must ensure that any substitute standards are similarly effective as the standards proposed in the plan. CMC 18.20.325 defines the term “Director” as, “the Director of City of Covington Department of Community Development, or his or her designee.”
	10-19	CMC 18.50.110(1)(g) has been revised to clarify the desired spatial arrangement of building façades, street frontages, and parking, including the addition of several graphics to illustrate allowed and disallowed off-street parking arrangements. See the Preferred Subarea Plan under separate cover.

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
Colin Lund, Oakpointe Communities - Comments on Hawk Property Draft Planned Action Environmental Impact Statement (EIS)	11-1	The Draft EIS indicates that a potential action is a development agreement. The Planned Action is based on development thresholds and performance standards (mitigation measures). Provided the development agreement meets the provisions of the Planned Action Ordinance, it is “covered”. Clarification is made in Section 1.2 of this Final EIS.
	11-2	No change is necessary. The Draft EIS Chapter 2 indicates under “Future Alternatives” that: “It is anticipated that following the Draft EIS comment period, the City would consider public comment and develop a Preferred Alternative for study in the Final EIS or it may choose to continue with a <i>range of possibilities</i> .” (emphasis added)
	11-3	A reference to the City’s clearing and grading regulations (CMC 14.60.120), which require use of spill prevention controls, has been inserted in Exhibit 1.7-2 under Applicable Regulations and Commitments for Surface Water Resources. The Draft EIS already includes a statement in Exhibit 1.7-2 that the City should require developers to design future buildings within the subarea to include greenhouse gas reduction measures. This statement is located under Other Potential Mitigation Measures for Air Quality (page 1-25).
	11-4	Comment noted. This change is included in Chapter 1 of this Final EIS.
	11-5	The discussion of Significant and Unavoidable Impacts under Air Quality and Plants and Animals has been updated to differentiate between the alternatives. See Chapter 1 and Chapter 3 for clarifications and corrections.
	11-6	Thank you for your comment. The wording of “intends to consider” and “may enter into” a development agreement are similar in conditional possibilities. No change is proposed.
	11-7	Thank you for the comment. The wording reflects the City’s intent and no changes are proposed. See Response to Comment 11-6.
	11-8	Thank you for the comment. The heights listed are typical for the listed uses, and are not intended to imply the zoning maximums; see the Subarea Plan for heights by zone. A note to that effect is included in Final EIS Chapter 2.
	11-9	The Alternative Conceptual Land Use Plan is exactly that – conceptual or abstract, not specific. The translation of the Conceptual Land Use Plan into zoning categories that show the range of uses is included in the Subarea Plan. Both the conceptual alternatives and the more specific zoning were studied in the Draft EIS. No additional change is proposed. As described in the Public Services analysis, City plans address the trail level of service in terms of length needed to serve future populations. Per the Preferred Subarea Plan under separate cover and the Draft Planned Action Ordinance in Final EIS Appendix B, the intent is that Planned Actions demonstrate consistency with conceptual alternatives including trails. No additional change is proposed.
	11-10	See Response to Comment 11-8.
	11-11	See Response to Comment 11-9.

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
	11-12	The Town Center zoning allows slightly greater heights than in the Hawk Property (based on the proposed subarea plan). No change is proposed.
	11-13	This correction in the first paragraph of page 3-18 is made in the Final EIS Chapter 3. “Three” was changed to “two.”
	11-14	The following text was added to page 3-23: “Following the 2012 Stormwater Manual, stormwater designs for the subarea can be optimized by separating roof runoff from other pollution-generating impervious surfaces.” See Chapter 3 of this Final EIS.
	11-15	The discussions of the acreages of removed forestland and replaced open space have been corrected. See Chapter 3 of this Final EIS for clarifications and corrections.
	11-16	The following text was added to page 3-49 in Final EIS Chapter 3: “The entire study area is in Covington; 132-acres are in current City limits and the remaining 80-acres are in a Potential Annexation Area (PAA).”
	11-17	The following text was added to page 3-65 to address the request for a clearly stated conclusion in the “Significant Unavoidable Adverse Impacts” section: “Cumulative impacts, such as increased impervious surface, increased pollutants, and habitat fragmentation, generally occur as a watershed is developed. While these impacts cannot be wholly avoided, they can be minimized and mitigated. Despite significant increases in impervious surface area, Alternatives 2 and 3 minimize adverse impacts through the following measures: 1) concentrating development in the area that is currently disturbed, 2) largely avoiding critical area impacts, 3) maintaining a native primarily forest buffer, 4) modifying site zoning to reduce impervious surface impacts, and 5) implementing LID stormwater practices.” See Chapter 3 of this Final EIS.
	11-18	Section 3.6 has been modified to reflect the proposed 3-lane, 66-foot wide configuration for the new segment of 204 th Ave S.E. See Chapter 3 of this Final EIS.
	11-19	The discussion of the traffic noise modeling assumptions was revised to include a discussion of the accuracy of the reference noise emission levels in the Traffic Noise Model (TNM). See Chapter 3 of this Final EIS.
	11-20	Section 3.6 was modified to reflect additional sensitivity analysis and mitigation measure recommendations, e.g. to provide a minimum 35-foot setback to new residential buildings along the new section of 204 th Avenue S.E. This setback would eliminate traffic noise impacts at new dwellings along that new section of roadway. See Chapter 3 of this Final EIS.
	11-21	Explanation of why AM peak hour analysis was not needed for this project has been added to the “Transportation Study Area and Study Period” subsection of the Final EIS Transportation Affected Environment section. See Chapter 3 and Appendix A of this Final EIS.
	11-22	Additional explanation of why and how the PSRC model was used has been added to the “Future Travel Demand” subsection of the Final EIS Transportation Impacts section. See Chapter 3 and

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
		Appendix A of this Final EIS.
	11-23	An explanation of the application of a peak hour factor was added to the “Level of Service Method” subsection of the Final EIS Transportation Affected Environment. Text was also added to the “Intersection Operations” subsection of the Final EIS Transportation Impact section explaining that the existing peak hour factors were applied in the level of service analysis of the projected 2035 volumes, resulting in more conservative future level of service analysis (see Final EIS Appendix A).
	11-24	More detail of the non-motorized aspects of the proposed project has been added in the “Incorporated Plan Features” subsection of the Final EIS Transportation Mitigation Measures section. See Chapter 3 and Appendix A of this Final EIS.
	11-25	“Short-term Construction Impacts” has been added to the Transportation Impact section. “Mitigation to Address Short-Term Construction Impacts” has been added as a subsection to the Transportation Mitigation Measures section. See Chapter 3 and Appendix A of this Final EIS.
	11-26	Analysis to identify roadway capacity improvement projects was conducted according to locally adopted standards and procedures, as described in the Transportation Impacts section of Draft EIS Chapter 3, and specific capacity improvement projects needed to mitigate the identified impacts are presented in Exhibit 3.8-17. At locations where lane additions or extensions are identified, the length of lane needed to accommodate vehicle queues would be determined as part of project-level design.
	11-27	Text has been added in the Final EIS Transportation Mitigation section to clarify that the four projects are identified to mitigate impacts triggered by the Action alternatives. See Chapter 3 and Appendix A of this Final EIS.
	11-28	Text has been added in the Final EIS Transportation Mitigation section to further clarify that Alternatives 2 and 3 would not trigger the need for mitigation at the locations identified with No Action, through it is acknowledged that the Action alternatives would contribute additional vehicle trips to most of the locations. See Chapter 3 and Appendix A of this Final EIS.
	11-29	Text has been added to the Final EIS Transportation Impact discussions clarifying that if build-out of all assumed future growth occurs by 2035, resulting in degradation of SR 516 to operation below current adopted level of service standards, the Cities of Covington and Maple Valley would be required to either identify additional capacity improvements or revise their level of service standards to accept a higher level of congestion along the corridor. See Chapter 3 and Appendix A of this Final EIS.
	11-30	See Response to Comment 11-1.
Greg Wingard	12-1	Based on a survey of the area dated 1880, the historic condition of the general Jenkins Creek area, including the property was estimated to be prairie. This is similar to the “pasture” condition used for stormwater modeling. While the property may have been forested prior to 1880, since these records exist, the prairie/pasture condition is appropriate to use as a historic, pre-European influences condition. See Appendix D for historic information.

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Author of Letter	Comment Number	Response to Comment
	12-2	<p>See Responses to Comments 5-1 to 5-9 above. Salmonid use within Jenkins Creek is documented in the Draft EIS (page 3-55).</p> <p>Mitigation measures to sustain water quality and quantity in Jenkins Creek are discussed in the surface water, groundwater and plants & animals sections. Mitigation measures necessary to avoid aquatic habitat degradation are summarized in the cumulative impact section of the plants and animals discussion. See also response to comment 12-2 above regarding prairie conditions.</p>
	12-3	<p>TMDL data for Jenkins Creek is discussed in the Surface Water section of the Draft EIS (pages 3-11 and 3-12). It is noted on page 3-50 that the greater Middle Green River subwatershed, including Jenkins Creek, contains some of the best remaining salmon habitat. See Responses to Comments 5-1 to 5-9 above.</p>
	12-4	<p>Cumulative impacts to surface waters of Alternatives 2 and 3, and potential mitigation measures are discussed in the Draft EIS, pages 3-15 through 3-17. Cumulative impacts associated with increases in impervious will be mitigated by following the Washington State Department of Ecology guidance, using all known and reasonable technologies (AKART), and following NPDES permit conditions as they are issued. Additionally, see revisions to the subarea plan (Chapter 1); the revised preferred plan reduces impervious surface maximums in some proposed zones. The project would also adhere to standards in the 2012 Stormwater Manual, which includes LID practices. This project would comply with the Phase II NPDES requirement to implement LID. See Responses to Comments 5-1 to 5-9 above.</p>
	12-5	<p>The Final EIS Chapter 3 provides clarifications and corrections to the Draft EIS. However, the overall conclusions of the Draft EIS continue to be valid – the proposed project is occurring on a largely disturbed site, direct impacts are avoided to critical areas, and any modifications of buffers from roads, trails or utilities would have to demonstrate mitigation sequencing and compliance with the City’s critical areas regulations, and any type of development would be required to comply with water quality and LID stormwater regulations.</p> <p>The City of Covington is a Permittee under the Phase II Western Washington Municipal Stormwater General National Pollutant Discharge Elimination System (NPDES) Permit. The Washington State Department of Ecology-required Best Management Practices for the management of stormwater will be utilized for all development activities in the Study Area, regardless of the alternative selected; this includes Best Management Practices for stormwater treatment and flow control. The city of Covington relies on the Washington State Department of Ecology (Ecology) to determine all known and reasonable technologies (AKART) based on their analysis of Best Available Science. AKART is then required through current NPDES permit conditions.</p> <p>Cumulative impacts will be mitigated by strict adherence to Ecology’s stormwater management regulations as dictated by the Phase II Municipal Stormwater Permit and Stormwater Management Manual for Western Washington. The City also participates in a regional NPDES monitoring program.</p>

4.4 Public Meeting Comments

Exhibit 4.4-1 provides a list of individuals who provided verbal comments at the August 15, 2013 Public Open House and Meeting and a summary of the public comments that were made. Comment sheets were transcribed. The commenters are presented in the order of comment.

Exhibit 4.4-1. Public Open House and Meeting Comments

Public Open House Comment Sheet 1: Jorgensen, Jack	
Comment	<p>We have 8 acres of property that has a common 650-foot border on the north side of Hawk Property. One of the display maps shows a Jenkins Creek Trail. Jenkins Creek traversed my property. Some years ago, there was a program called “Waterways 2000.” I chose not to allow a trail through my property. I assume this agreement still stands. We have lived in this area for 42 years. And still prefer a rural environment.</p> <p>I also have a concern that any of the Jenkins Creek water flow does not plan to be diverted to the planned ponds. Ponds without flow through become stagnant swamps.</p>
Response	<p>Thank you for your comment. The project does not propose the construction of any additional trails outside the Hawk Property Subarea. Other trails in the vicinity that have been planned by the City of Covington or King County will not be directly altered by adoption of the Hawk Property Subarea Plan.</p> <p>The configuration of the on-site pond is currently only conceptual. The precise location and final configuration of the pond and any drainage channels leading to or from the pond will be finalized as part of the site reclamation.</p>
Public Open House Comment Sheet 2: Loron, Wayne and Mary	
Comment	<p>We live at the northeast corner of SE 180th Ave SE (Wax Road) and SE 256th Street. At busy times, westbound traffic waiting for the signal change blocks access to both of our driveways. This intersection is getting busier, and the Hawk Development may make matters worse. Please see if there are actions that would help provide better access to our driveways. –Post sign “Not to Block Driveways” – Change signal timing. -- ? --?</p>
Response	<p>As shown in Exhibit 3.8-7, the SE 256th Street/180th Avenue SE intersection is currently operating at LOS C, which is below the City’s adopted threshold of LOS D. Exhibit 3.8-16 shows that by 2035, the intersection is projected to operate at LOS D, which is still within the standard. Traffic generated by the Hawk Property development is projected to add delay to this intersection, but it is still expected to maintain LOS D operation. The analysis does show that during the busiest time of operation, the westbound vehicle queue stopped at the traffic signal can be 7 to 10 vehicles in length, which would extend past both driveways on this property. As traffic volumes grow, it is expected that this could occur more frequently. Because both driveways are located within 150 feet of the intersection, it would not be feasible to eliminate or substantially reduce the westbound queue through signal timing changes. This intersection is located in unincorporated King County and the City does not control it.</p>
Public Meeting Comment 1: Benton, Tonya	
Comment	<p>The commenter asked that her neighborhood, Forest Creek Estates, be added to the list of property owners to receive mailing notification. Ms. Benton was asked to leave her contact information and/or contact information of the Homeowner’s Association.</p>

HAWK PROPERTY PLANNED ACTION EIS | RESPONSES TO COMMENTS

Response	Thank you for your comment. The City of Covington will publicize future public meetings and hearings regarding this project and provide written notice to affected property owners and all interested parties who have provided their contact information for such purpose.
Public Meeting Comment 2: Kellner, Matt and Elaine	
Comment	<p>Their property is adjacent to the Hawk property. They would like the city to be aware of significant motorized traffic on the unofficial trails just north of their property including motor bikes and occasionally a full size jeep. They would like to know how the city will address this problem and discourage the problem from getting worse. They are concerned about quality of life. They moved to Covington in 2006 and would like to see green belts and open spaces continue regardless of which plan is adopted. They also asked the city to maintain current buffer space on the south side of the development. They would like to see this area maintained as trees when developing the new trails. They also wanted the city to be aware of the types of wildlife in the area. They have seen rabbits, raccoons, bobcats, coyotes, eagles and hummingbirds. They would also like to know the impacts of traffic on the area. Their concern is additional access might further increase the traffic and create more of a backup.</p>
Response	<p>Trail alignment provided is only conceptual. New trails should be designed to control/limit pedestrian access, and maintain habitat functions and values of the stream, wetland, and buffer.</p> <p>Please see Section 3.4 of the Draft EIS regarding potential impacts and mitigation measures regarding fish and wildlife. Trees within steep slopes and in proximity to the streams and wetlands would be retained per critical area regulations. Tree retention in landscaped areas would need to follow city standards for tree protection. The exact location of trees to be retained in such non-critical-areas is not known at this level of planning. Your comment is noted and provided to appropriate decision makers.</p> <p>The proposed 191st Avenue SE connection is intended to serve as a local connection between the Hawk Property and the adjacent development to the south. As described in the “Incorporated Plan Features” subsection of the Transportation Mitigation section, the model analysis indicates that with adequate traffic calming in place, the majority of trips on this connection would be to and from the local residential neighborhoods that are served by this street. The City would work with the local neighborhood and the developer to ensure that adequate measures are in place to discourage cut-through traffic, and to make sure that safety objectives are met.</p>
Public Meeting Comment 3: Rogers, Michelle	
Comment	<p>Commenter is a resident of the city and would like to know if the city will require off site road improvements, such as sidewalks for the children who walk to Cedar Valley, Jenkins Creek and Covington Park. She works for another city in the transportation department and she is concerned that 191st does not have adequate stop signs, sidewalks or crosswalks. There will be a large number of children coming from this development and she would like to know how the city intends to address that. She has some ideas that she will write in to suggest including roundabouts and cross walks. She would also like to know if her road would be kept as “local” (as in emergency vehicle access only) and she wanted to know if the street would be gated or how traffic would be prevented from speeding down the street.</p>

Response	<p>Onsite, all new roads will provide sidewalks per City requirements. CMC 18.50.100 Pedestrian and bicycle circulation and access requires that there be adequate pedestrian, bicycle, and school bus access within and through the site; school district notification is also required.</p> <p>The proposed 191st Avenue SE connection is intended to serve as a local connection between the Hawk Property and the adjacent development to the south. As described in the “Incorporated Plan Features” subsection of the Transportation Mitigation section, the model analysis indicates that with adequate traffic calming in place, the majority of trips on this connection would be to and from the local residential neighborhoods that are served by this street. The City would work with the local neighborhood and the developer to ensure that adequate measures are in place to discourage cut-through traffic, and to make sure that safety objectives are met.</p>
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4.5 Marked Comments

Each written comment letter addressed in Section 4.2 follows. Comments are marked with unique identifying numbers, consistent with Section 4.2.



MEMORANDUM

DATE: August 21, 2013
FROM: Brian A. Borgstadt, PE, District Engineer
SUBJECT: City of Covington
Hawke Property Draft EIS – Planning Action

Please accept the following comment and corrections for information in the Final EIS documentation:

**Section 3.10, Page 3-149
Water Supply**

Water that would be provided to the subarea will be supplied by Covington Water District, as the area is within the District’s King County Coordinated Water System Planning service area (CWSP). The Hawke property and other property in the subarea will need to be annexed to the District’s corporate boundary before system extensions and water availability can be confirmed. However, the District is able to provide timely and reasonable service.

1-1

The District is currently completing the Water System Plan Update (WSP) due for DOH approval in June 2014. The subarea lies within the District’s Retail Service Area for growth planning.

The District no longer has two storage tanks at the Tank 2 site. Tank 2A was demolished and Tank 2B was refurbished to provide seismic stability. There is currently 4 Million gallons of storage available on site and it is available at a static hydraulic grade of 660 feet.

1-2

In addition, the District has performed a study for potential alignment of a major transmission main as part of the District’s Capital Improvement Program (CIP). The CIP project is designated M34 in the 2007 WSP. The project is needed to connect the vicinity of the existing Tank 2 site from the current end of distribution at 204th Avenue to an existing main and casing under SR 18 at SE 248th Street. This project will be necessary to serve the subarea in the future as it traverses the subarea to some extent.

1-3

The District’s planning report for the above project is provided for your use in planning for the area. Alternatives for connecting the District’s 660 pressure zone to the existing 650 pressure zone across the Jenkins Creek drainage may develop as plans for the subarea go forward. The District remains interested in close communication and cooperation as this process continues. Thank You.

1-4

From: [Pazooki, Ramin](#)
To: [Ann Mueller](#)
Cc: [Brown, Rob](#); [Bolotin, Leah](#); [Palisoc, Felixberto](#)
Subject: Comments from WSDOT on the Covington Hawk Property Planned Action Document
Date: Monday, August 26, 2013 4:29:43 PM

Hi Anne,

Below are WSDOT's comments on the Covington Hawk Property Planned Action document:

1. Page 3-127, Intersection 300 SE 256th and WB SR 18 ramps and Intersection 301 SE 256th and EB SR 18 ramps: A roundabout would be the first intersection control solution and should be included in the mitigation measure instead of a signal. 2-1
2. Page 3-127, Intersection 301 SE 256th and EB SR 18 ramps: Eliminating the bicycle lanes over SR 18 to create an additional travel lane is not acceptable. Mitigation should include widening the bridge to accommodate the future traffic. The opposing left-turn storage requirements need to be accommodated. If additional lanes (turn or through) they should be included in the provided mitigation 2-2
3. Page 3-127, Intersection 301 SE 256th and EB SR 18 ramps: We need more information on the statement that total demand is not influenced by the differences in the project-generated trips. The increase in trips to the northeast of SR 18 in Alt 3 would have different traffic patterns thought this interchange and would seem to have quite an influence on the interchange. 2-3
4. SR 18/SE 245th Interchange in general: An analysis needs to be conducted for the on- and off-ramps to ensure they are adequate for the additional traffic volumes Alts 2 and 3 will add to the interchange. Additional ramp widening at the ramp terminals for off-ramp turn lanes or dual on-ramp receiving lanes may be needed. Ramp meters may also be needed so as not to significantly degrade SR 18 operations. 2-4
5. Consider investigating a local connection across SR 18 north go SE 256th. This may reduce the need for improvements required at the SR 18 / SE 256th interaction. 2-5

Please let me know if you have any questions.

Sincerely,

Ramin Pazooki
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PUBLIC WORKS
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 Fax: 253-856-6500

PHONE: 253-856-5500

August 26, 2013

Ann Mueller, Senior Planner
 City of Covington
 16720 SE 271st Street
 Covington, WA 98042-4964

**RE: Hawk Property Planned Action
 Draft EIS Comments**

Dear Ms. Mueller:

Thank you for the opportunity to comment on the Hawk Property Planned Action Draft EIS.

The proposed Hawk Property Planned Action Area is located north of Armstrong Springs, a municipal water source for the city of Kent. The Armstrong Springs wellhead protection area extends north to the southern boundary of the proposed project. Armstrong Springs has a high susceptibility to groundwater contamination due soil permeability, geologic materials, depth to water and topography. Protecting the quality and quantity of municipal groundwater sources are critical to ensure sustainability of communities.

3-1

Potential contaminant sources include spills (during construction and from permanent land uses) pesticides, fertilizers and stormwater runoff. Appropriate measures should be implemented during design and construction of the proposed project to ensure groundwater is protected. Please take into consideration the following comments during development of the Final EIS and review of the project.

- 1) The existing well should be decommissioned in accordance with Department of Ecology standards.
- 2) Stormwater should be adequately treated prior to discharging from the site.
- 3) Page 3-21 of the DEIS states seasonal impacts to Jenkins Creek may occur as a result of the project. Presumably, the same impacts may occur to groundwater resources. Please include a description of the impacts to both the stream and groundwater resources in the Final EIS and the season in which impacts are likely to occur.

3-2

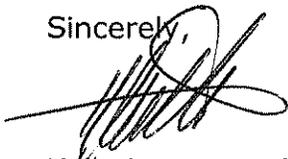
3-3

3-4

- 4) Page 3-21 states that "*stormwater management plans for the site should route runoff from impervious surfaces to permeable soils and include water treatment measures to prevent infiltration of poor quality discharge.*" This language should be required to protect water quality in Jenkins Creek and groundwater resources. 3-5
- 5) Potential mitigation measures to reduce impacts on groundwater are listed on page 3-23. These measures should be required. 3-6
- 6) All landscaping should include native and/or drought tolerant species to reduce the need for irrigation, pesticides and fertilizers. 3-7
- 7) All equipment should be in good operating condition at all times. No equipment with leaks should be permitted on the construction site. 3-8
- 8) A specific location for refueling equipment should be identified that includes secondary containment in the event of a spill including spill kits and equipment to clean up any spills. Fuel should not be permitted to be stored on-site. 3-9
- 9) Please notify the City of Kent in the event of any spills. Any spills should be reported to the City of Kent Operations at (253)856-5600 in addition to the Department of Ecology as required. In the event notification to the City of Kent is required, please state that the spill is located in a wellhead protection area. A note on the face of the construction plans with applicable contact number would be appropriate. 3-10
- 10) The geographic area of the proposed development is located within Covington Water District which receives a significant portion of its municipal water from groundwater sources. To help protect ground resources on a regional scale, promote sustainability and educate the public about the groundwater resources, all entrances to the proposed development should have signage that states, "*Protect Groundwater, it's the Water You Drink.*" 3-11

Thank you again for the opportunity to comment on the Hawk Property Planned Action Draft EIS. Please feel free to contact me at (253) 856-5547.

Sincerely,



Kelly Peterson, AICP
Environmental Conservation Supervisor

c: Michael Mactutis, P.E., Environmental Engineering Manager
Kevin Swinford, Interim Water Superintendent
File

Greater Maple Valley Unincorporated Area Council

***Comments on the
Northern Gateway Study
Hawk Property Subarea
Draft Planned Action
Environmental Impact Statement***

**Submitted to
City of Covington**

August 26, 2013

**Contact: Peter Rimbo primbos@comcast.net
Chair, Growth Management Committee
GMVUAC**

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GENERAL

SEPA AND PLANNED ACTIONS

Planned Action SEPA statements are permitted under certain prescribed and limited circumstances in accordance with the criteria set forth in [WAC 197-11-164\(1\)](#). In its March 25, 2013 Community Workshop Summary released for the Hawk Property Subarea Plan, the City of Covington stated its intention to prepare the environmental impact statement as a Planned Action EIS, the stated purpose of which is to:

“provide[a] more detailed environmental analysis during formulation of planning proposals rather than at the project permit review stage . . . [with the result that] future development proposals in the subarea consistent with the planned action ordinance and the identified performance standards/mitigation measures will not have to undergo a new environmental threshold determination and are not subject to SEPA appeals.” [City of Covington, Hawk Property Subarea Plan & Planned Action EIS, at p. 2, Project Fact Sheet, March 2013].

In other words, the development of the Hawk Property Subarea consistent with the adopted Planned Action grounded on this DEIS and the Final EIS will not be subject to any further environmental reviews or appeals (see also *DEIS, at p. 1-1 § 1.2, Planned Action*).

Fundamental to such deference is the fact that the EIS must have adequately addressed the significant environmental impacts of the proposal. [WAC 197-11-164\(1\) \(b\)](#). However, because a Planned Action encompasses legislation and other rulemaking actions necessary for project implementation, an EIS must necessarily address more than customary *environmental* impacts.

Inconsistencies with adopted Comprehensive Plans of both the City and the County must be addressed and resolved in the FEIS. If the foregoing issues cannot be adequately resolved to gain conformance with existing adopted Plans, the Hawk Property Subarea development proposal cannot proceed as a Planned Action, and likely should not be allowed to proceed at all.

4-1

SURFACE WATER (sects. 3.2 S/W Resources; 3.10 Utilities--Storm Drainage)

EXISTING CONDITIONS

There is no justification given for modeling the existing conditions as “pasture” [DEIS at p. 3-149]. This is neither the natural, nor historic condition of the site, which rather is forest, and forested scrub/shrub wetlands. The site was forest prior to the mine being located there, and it would be expected that the original mine reclamation plan called for returning the site to forest. This strongly argues for modeling conditions based on forest, not pasture

4-2

The base condition matters as it is used to determine the range of corrective action needed to mitigate development’s impacts. A forest base condition is more protective than pasture, as a forest does a far better job of controlling, filtering, and infiltrating stormwater than pasture.

In addressing existing conditions the DEIS states the site is constrained by critical areas [DEIS at p. 3-14, et.al.] including wetlands, streams and steep slopes. Instead of discussing these as constraints on development, instead they are used as rationale for a limitation on stormwater treatment capacity.

4-3

It is neither reasonable or appropriate to assume “existing” conditions which essentially limit mitigation of development impacts to stormwater.

ALTERNATIVES

Both Alternative 2 and 3 contain large impervious surfaces (Alt. 2 -- 75.8 ac, ~ 35% of the total study area, and Alt. 3 -- 99.6 ac, ~ 47% of the total study area) [DEIS at p. 1-7].

Alternative 2 contemplates complete treatment of the stormwater expected to be generated. Use of Low-Impact Development techniques, which would provide additional mitigation to stormwater impacts, are mentioned.

However, Alternative 3, which would create additional stormwater, can be anticipated to provide less adequate treatment than Alternative 2. The DEIS states with regard to cumulative impacts: “nearly 100% of the site’s runoff will receive treatment for Total Suspended Solids (TSS) ... and zinc” for both alternative 2 and 3. [DEIS at p. 3-15 & 3-22].

4-4

If less than 100% treatment of the site’s runoff is being provided, then the impacts will be greater for Alternative 3, than the lesser level of development anticipated in Alternative 2.

IMPACTS

According to work done on the Tahoma/Raven Heights community plan, the specified level of treatment will not be sufficient for build-out in this area. Impacts to water quality from the Hawk Property Subarea development, including residential/commercial/industrial zoning with related roads and parking, can be assumed to include oil and grease, polynuclear aromatic hydrocarbons, zinc, copper and lead. Also, there is a reasonable expectation of increased temperature and lower dissolved oxygen, as compared to either the actual existing condition, or a forested condition (rather than the inappropriately assumed “pasture” condition).

4-5

The Tahoma/Ravens Heights plan and the Soos Creek plan go into some level of detail on the impacts to the Jenkin's/Soos Creek basin from potential development impacts. The City should provide substantial justification for any assumptions that impacts would be less than what those studies determined would be the case.

Water quality impacts to Jenkins Creek, a salmon-bearing stream, are significant issues as the creek provides critical habitat, including for listed species, and the discharge a relatively short distance downstream impacts the Soos Creek spawning grounds and hatchery, including for listed species such as Chinook Salmon.

4-6

The DEIS underestimates and, in a number of cases, fails completely to address easily foreseeable impacts.

MITIGATION

Applicable Regulations and Commitments citations **[DEIS at p. 3-16]** are inadequate. The Soos Creek basin and the Green River, to which it discharges, are under a Federally mandated Total Maximum Daily Load (TMDL) for temperature and dissolved oxygen, as a result of significant segments of the named waterways not meeting the Washington State Water Quality Criteria numeric limits for these parameters ([WAC-173-201A-200 \(1\)\(c\)](#) and [WAC-173-201A-200 \(1\)\(d\)](#)).

While the TMDL has yet to be implemented in the Green River, including the Soos Creek basin, it can reasonably be assumed that it will be implemented within the timeframe for the proposed project. Further, the fact that a TMDL is under active adoption, including the basin the project is in, means that under any reasonable SEPA evaluation, temperature and dissolved oxygen impacts of the proposed project must be accurately assessed, reported, and mitigated.

4-7

Increasing the impervious surface in the proposed development area consistent with Alternative 3, will increase temperature and decrease dissolved oxygen for the nearby receiving waters. In spite of this the DEIS fails to divulge the pending TMDL for these

pollutants, and fails to assess the impact that the selection and build-out of Alternative 3 will have on these parameters in the receiving waters.

The proposed treatment discussed under the alternatives does not discuss any treatment for elevated temperature or lowered dissolved oxygen resulting from development with massive increases in impervious surfaces in this sub-basin.

Consideration of the impact of the development on these TMDL parameters are every bit as important as consideration of critical areas such as steep slopes, wetlands, streams and their buffers. In addition, consideration of these parameters is critical to accurately determining the range of impacts the development will have on critical areas, and development of the appropriate mitigation for these impacts. Instead, the DEIS simply pretends the issue doesn't exist to avoid dealing with the issue altogether.

4-7
cont'd

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Based on the above discussion the DEIS conclusions that "...no significant unavoidable adverse impacts are anticipated" and "The City's Stormwater standards address the drainage impacts created by the Alternatives" [**DEIS at p. 1-33, et.al.**] are both misleading and irrelevant without assessment of these specific TMDL related impacts, and consideration of critical receptors, such as the range of aquatic species that will be impacted by this proposal.

4-8

LAND-USE (sect. 3.7 Land-Use Patterns)

OMISSIONS FROM THE DEIS

The stated purpose for the “City of Covington propos[al to] adopt[. . .] the Hawk Property Subarea Plan and associated comprehensive plan, zoning, and development regulation amendments [is to] allow for future urban development in the Hawk Property Subarea of Covington’s Northern Gateway area.” **[City of Covington Cover Letter to DEIS, July 26, 2013]** (see also **DEIS, at p. II, Fact Sheet, “Proposed Action and Alternatives”**). Under the Licenses or Permits Required portion of the DEIS Fact Sheet, it is stated that “as legislative items, the Planning Commission has authority to make recommendations on comprehensive plan and development regulation amendments [, and] the City Council has authority to approve such amendments.” **DEIS, at p. III**. The Tentative Date of Implementation is stated as December 2013. **DEIS, at p. II Fact Sheet**.

The foregoing clear intent expressed by the City to undertake rulemaking¹ in the form of formally adopting/promulgating² amendments to its comprehensive plan, development regulations, and zoning falls under and is subject to the provisions of the State Economic Policy Act **[RCW 43.21H]**.

¹ A “rule” is generally defined legally as “an established standard, guide, or regulation[;] a principle or regulation set up by authority, prescribing or directing action or forbearance.” *Black’s Law Dictionary*, at p. 1195 (5th ed. 1979). A “rule” is also commonly defined as “a principle or regulation governing conduct, procedure, arrangement, etc.[;] to decide or declare judicially or authoritatively.” *Webster’s College Dictionary*, at pp. 1175-76 (Random House 1995).

² To “promulgate” is “to publish; to announce officially; to make public as important or obligatory.” *Black’s Law Dictionary*, at p. 1093.

“The purpose of this chapter is to assert that it is the intent of the legislature that economic values are given appropriate consideration along with environmental, social, health, and safety considerations in the promulgation of rules by state and local government.” [RCW 43.21H.010]

“All state agencies and local government entities with rulemaking authority under state law or local ordinance must adopt methods and procedures which will insure that economic impacts and values will be given appropriate consideration in the rulemaking process along with environmental, social, health, and safety considerations.” [RCW 43.21H.020]

Although a variety of Covington project reports discuss economic impacts of such proposals, nowhere in the Covington Municipal Code (CMC) or regulations can be found the State-required adoption of “methods and procedures which will insure that economic impacts and values will be given appropriate consideration in the rulemaking process along with environmental, social, health, and safety considerations.” Such omission from the City's substantive and procedural rules and regulations cannot be claimed by it as any legitimate reason for omitting from its DEIS an economic impact analysis of the three alternative plans, including the economic impact of the No Action proposal with the continuation of zoned, planned, and permitted mineral (sand and gravel) mining by Lakeside Industries or its successors. Not only will the proposed residential development options discussed have a clear and direct economic impact on local and regional business, infrastructure, and residents; but the economic impact of displacing and removing from production valuable mineral resources on the Hawk Property would have much more than a moderate adverse economic impact on the cost of residential and infrastructure construction in the entire region historically served by this surface mining operation.³

³ *An economic impact analysis would consider the cost increase in the supply of mineral resources to the construction industry by the removal of this particular site from the inventory of operating mining operations in King County. Future supply of resources would come from more distant mining operations, with increased transportation costs and impacts on highways and local road systems, with likely adverse impacts on the useful life of such mining sources. These economic impacts must be disclosed and discussed in the DEIS to be consistent with the mandate of State law.*

The absence of an economic impact analysis in this Planned Action DEIS is a fatal omission that must be corrected in the Final Environmental Impact Statement (FEIS) [WAC 197-11-560].

OVERSIGHTS

Although mentioned only briefly in passing, as an integral part of the Current Conditions [DEIS, at p. 2-3 § 2.2] and the No Action Alternatives Description [DEIS, at p. 2-5 § 2.4], the DEIS should have set out in the Appendix, in their entirety, copies of both the existing surface mining and reclamation permit issued by the State Department of Natural Resources (DNR Reclamation Permit No. 70-011068), as well as any King County permits issued for the existing mineral surface mining operation on and for the Hawk Property. The DEIS makes a bald assertion that “*the Hawk Property Subarea is characterized primarily by a gravel extraction operation in use through 2012, but that is now under reclamation.*” [DEIS, at p. 2-3 § 2.2, (Current Conditions)]. This statement is quite disingenuous as the City of Covington Comprehensive Plan dated August 14, 2012, states as fact the following:

4-9
cont'd

4-10

“[T]he city does contain mineral resource lands of long-term commercial significance. Mineral resource lands are usually home to an extractive industry which mines rock, gravel, fill dirt and other useful minerals important to the continued development of the region. . . . The existing mineral resource site located in the northeastern portion of Covington is Lakeside Industries, which mines sand and gravel resources and operates an asphalt batch plant. Mineral extraction activities have been performed in this area for approximately 40 years, and it is anticipated that the gravel quarry can continue for an additional 10 to 15 years.” [Covington Comprehensive Plan, Chapter 2 (Land Use Element), at p. 11 § 2.6.7]

4-10
cont'd

The omission of existing mining and reclamation permits and plans is an oversight that must be corrected in the FEIS. The inconsistency in assertions of fact regarding the useful life of the Hawk Property mineral resources that can be mined as presently zoned M within the City and that in part carries the M-P Zone designation by King County as unincorporated area included for residential development in the Planned Action DEIS must be reconciled and corrected in the FEIS for proper assessment as to the economic and environmental impacts of foreclosing further use of the Hawk Property (both its incorporated and unincorporated portions) as a mineral resource mining site.

INCONSISTENCY WITH THE LAWS OF ZONING

The DEIS is intended to support the zoning amendments necessary to accommodate the residential and commercial development of the Hawk Property Subarea from the existing M (City) and M-P (County) zoning adopted for the respective portions of the property, and each of such existing mineral zoning designations fully consistent with the existing adopted comprehensive plans of the City and the County. However, under Washington law in order to support a rezone of a specific property it is necessary for the proponent to *“show a substantial change in circumstances since the last zoning and that this change justifies a rezone for the public health, safety, morals, or general welfare.” [Henderson v. Kittitas County, 124 Wn. App. 747, 754, 100 P.3d 842 (2004), review denied, 154 Wn.2d 1028 (2005)].*

4-11

Nowhere in the DEIS is there a detailed discussion of substantial changed circumstances occurring since the last zoning undertaken by the City (see Zoning Map, November 2010 and Comprehensive Plan Update, October 2009) and by the County, and certainly no substantial support for the bald assertion made in the DEIS regarding the absence of active mineral mining on the property since 2012 in light of the statements of fact in the City's Comprehensive Plan as updated in 2012. *Supra.*, Part II

(Oversights). This inconsistency with the well-established law of zoning must be addressed and resolved in the FEIS. See also **CMC § 14.27.040(3)**.

4-11
cont'd

INCONSISTENCIES WITH VARIOUS PLANS

In general, Section 3.7 of the DEIS contains numerous inconsistencies with a variety of applicable growth management and planning documents recently adopted by City, County and Regional governmental agencies.

4-12

As a general principle, State law provides that a Planned Action must be “consistent with a comprehensive plan adopted under chapter 36.70A RCW.” **[WAC 197-11-164(1)(f)]**. See also **DEIS, at p. 1-1 § 1.2 (Planned Action)**. The Planned Actions for and related to Alternatives 2 and 3 as described and discussed in the DEIS are not “consistent with a comprehensive plan adopted under” the GMA, at both the City and County levels **[DEIS, at p. 2-5 § 2.4 (Alternative 2: Minimum Urban Village Proposal), and at p. 2-8 § 2.4 (Alternative 3: Maximum Urban Village Proposal)]**.

Under Alternative 2, a total of 1,000 new residential units would be constructed and added to the existing housing inventory of the City of Covington **[DEIS, at p. 2-4, Exhibit 2.4-1]**.

Under Alternative 3, a total of 1,500 new residential units would be constructed and added to the existing housing inventory of the City of Covington **[DEIS, at p. 2-8, Exhibit 2.4-3]**.

4-13

Accordingly, just from the Planned Action development of the Hawk Property Subarea, only a minor portion of the total area encompassed by the City of Covington,⁴ Alternatives 2 and 3 would add a minimum of 1,000 and 1,500 new residential units, respectively. However, pursuant to the Growth Targets and the Urban Growth Area, **[Technical Appendix D to the King County 2012 Comprehensive Plan (March 1, 2012)]**,⁵ which incorporated the VISION 2040 plan adopted by the Puget Sound Regional Council which “contains a Regional Growth Strategy that provides substantive guidance for planning for the roughly 1.7 million additional people and 1.2 million additional jobs expected in the region between 2000 and 2040.” **[King County Comprehensive Plan, Technical Appendix D, at p. D-8 (12/03/2012)]**.

⁴ The total area of the City of Covington is estimated to be 5.86 square miles. U.S. Census Bureau, Quick Facts (2010). The total area of the Hawk Property Subarea (both incorporated [132 acres] and unincorporated [80 acres] parcels) is estimated to be 212 acres, which is equal to 0.33 square miles -- or only 5.6% of the total land area of the City of Covington.

⁵ Attachment F to King County Ordinance 17485, dated December 3, 2012.

“The strategy retains much of the discretion that counties and cities have in setting local targets, while calling for broad shifts in where growth locates within the region. It establishes six clusters of jurisdictions called

“regional geographies” -- four types of cities defined by size and status in the region and two unincorporated types, urban and rural. in comparison to current targets and plans, the Strategy calls for:

...

Decreasing the amount of growth targeted to Urban unincorporated areas, Rural designated unincorporated areas, and to many **Small Cities.**”

[King County Comprehensive Plan, Technical Appendix D, at p. D-8 (Bold in original)]

4-13
cont'd

Under VISION 2040, the City of Covington is identified by the Puget Sound Regional Council as a **Small City [King County Comprehensive Plan, Technical Appendix D, at p. D-8 n.1]**. And under VISION 2040, as adopted by King County in its Comprehensive Plan (applicable to unincorporated areas including a portion of the Hawk Property Subarea), the Net New Housing Units targeted for the City of Covington during the period from 2006 through the year 2031 is equal to a total of only 1,470 residential units. Accordingly, Alternative 3 is inconsistent with the adopted King County Comprehensive Plan incorporation of the VISION 2040 housing goals and objectives for the City of Covington, and Alternative 2 would bring the City of Covington to within 68% of the net new housing allocation through the year 2031 -- all to occur within a minor area of the City equal to only 5.6% of the City's total land area. This is a major inconsistency with adopted comprehensive plans that must be addressed and resolved in the FEIS.

Planned Actions to be undertaken under either Alternative 2 or Alternative 3 are further inconsistent with both the City and King County Comprehensive Plans regarding and relating to Natural Resource Lands (County) and/or Mineral Land Use Elements (City).

The Current Conditions discussion in the DEIS asserts that active mineral mining on the Hawk Property ceased in 2012 **[DEIS, at p. 2-3 § 2.2]**; however, as discussed above, this bald assertion is inconsistent with the City's statement of facts set forth in its Comprehensive Plan updated in August 2012 **[City Comprehensive Plan, Chapter 2, at p. 11 § 2.6.7]**. The summary discontinuation of this property under Planned Action Alternatives 2 and 3, including that portion in the County unincorporated area, is inconsistent with the City's comprehensive planning goal set forth in Land-Use Goal 15.0 to “*facilitate the efficient utilization of mineral resources and effective site reclamation and enhancement when consistent with maintaining environmental quality and minimizing impacts.*”

4-14

The intended rezoning of the Hawk Property Subarea from its existing M and M-P designations in the City and County, respectively, to “*Regional Commercial Mixed Use*” and “*Mixed Residential*” within the City incorporated area and to “*High Density Residential - 12 du/ac*” in the unincorporated portion within King County is not substantiated by substantial changed circumstances and further is inconsistent with a number of County Comprehensive Plan elements, including the Tahoma/Raven Heights Community Plan that encompasses the entire Hawk Property.

For example, that portion of the Hawk Property located within unincorporated King County, and thus subject to King County zoning and comprehensive plan requirements, is zoned M-P (Potential Mineral Resource Site). The M-P zoning designation is assigned to property:

“[W]here King County expects some future surface mining to occur or where the owner or operator indicates an interest in future mining. . . . Identification of Potential Mineral Resources Sites satisfies the GMA requirements to not knowingly preclude opportunities for future mining and to inform nearby property owners of the potential for future mining of these areas in order to prevent or minimize conflicts.” [King County Comprehensive Plan, Chapter 3, at p. 3-66 (December 2012). See R-679, King County Comprehensive Plan, at pp. 3-66 and 3-67]

The Hawk Property is located in its entirety within the Tahoma/Raven Heights Community Planning Area, which still remains in force and effect as part of the overall King County Comprehensive Plan. See **King County Comprehensive Plan, Chapter 10, at p. 10-1 (December 2012)**. The DEIS Planned Action Alternatives 2 and 3 are inconsistent with the following adopted policies in the Tahoma/Raven Heights Community Plan:

CP-1101 Premature urban/suburban development should not be approved which forecloses the opportunity to use the resources. [T/RH-28].

4-14
cont'd

4-15

TRANSPORTATION (Sect. 3.8 Transportation)

SUMMARY

In **Exh. 3.7-3 Consistency of the Action Alternatives with Growth Management Act** the item “**Public Facilities and Services**” is identified as one of the Growth Management Act’s (GMA’s) stated policy goals:

“Ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.” [DEIS at p. 3-81]

4-16

The DEIS transportation assessment, including the mitigations identified in section **3.8 Transportation**, do not meet this goal. In fact, the entire Northern Gateway Study hawk property Subarea development relies on an incomplete assessment of Transportation impacts, inadequate proposed mitigation, and unfunded plans. Three major DEIS shortcomings exist:

1. Widening of SR-516

- Widening to 5 or more lanes is simply assumed,
- It is not even a proposed mitigation measure in the DEIS.
- There are no estimates or funding sources identified.
- It is not part of the City of Covington’s Transportation Improvement Plan (TIP) (*“this improvement is not currently programmed in the TIP” [DEIS at p. 3-92]*).
- It is not part of WSDOT’s planning. The City of Covington only has “design” monies for such a monumental project!
- If such widening doesn’t happen, the fall-back is to simply “move the goalposts” and degrade the LOS standards! Thus, if true mitigation is unaffordable or funding otherwise unattainable, the City’s fall-back position is to degrade its concurrency standards for SR-516 from LOS D to LOS E defined as: *“Unstable flow (approaching intolerable delay)” [Transportation Research Board, Highway Capacity Manual, 2010]*. This would not inadequately mitigate the impacts, but would allow Covington to approve an oversized development that its planned future improved transportation infrastructure still could not support.

4-17

Development must pay for development. The City of Covington must ensure that the Developer(s) of the Hawk Property Subarea implement all necessary traffic mitigation, including the widening of SR-516.

2. Maple Valley Transportation Improvement Plan

- It is assumed the City of Maple Valley's Transportation Improvement Plan (TIP) will be fully implemented.
- The TIP completely relies on the full build-out of the two proposed Black Diamond Master-Planned Developments (MPDs)--The Villages and Lawson Hills.
- The TIP is particularly dependent on the Maple Valley Transportation Mitigation Agreement (TMA) (***[Maple Valley Transportation Mitigation Agreement, October 6, 2010 -- later included as Black Diamond, The Villages Master Planned Development, Development Agreement, Exh. Q. -- Maple Valley Transportation Mitigation Agreement]***) with the Black Diamond MPD Master Developer, YarrowBay.
- The TIP assumes the TMA will be fully realized and all the projects listed will be completed as planned.
- Should traffic mitigation funding shortfalls occur, needed mitigation could be delayed.
- The TMA is largely based on the availability of Grant funding, which could be in very short supply for some time. Should Grant funding fall short, planned mitigations could be scaled back.
- The Master Developer's contribution to the TMA is based on percentages, not dollar levels. In many cases the Master Developer's contributions are small with more than half being less than 40%. Consequently, the City of Maple Valley must secure the remainder of funding to make most of the projects viable.

Since securing adequate funding for the full palette of proposed mitigation improvements in a timely manner to meet Transportation Concurrency requirements will be a challenge to say the least, the City of Covington, in its assessment of the Hawk Property Subarea Plan and DEIS, must take into account the high risks involved in the assumed future mitigation to actually be accomplished as conceptualized and on time. The city should not take on such a risk simply to approve a development that doesn't fully account for critical traffic mitigation to actually be in place when needed.

3. Black Diamond Master-Planned Development Traffic Assessment

- A "domino" effect causes the DEIS to rely on a transportation assessment which assumes full implementation of the projects contained within the Maple Valley TIP, which is based on the Maple Valley TMA, which itself is based on the validity of the proposed Black Diamond MPD traffic assessment.
- The Black Diamond MPD traffic assessment has been found severely wanting--a flawed traffic model, poor assumptions, and analyses that subsequently produced unreliable results. During the Black Diamond MPD FEIS Appeals Hearings outside

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Traffic Consultants and traffic experts from the City of Maple Valley and the WA State Department of Transportation all offered expert testimony on each of these aspects. The City of Black Diamond Hearing Examiner agreed when issuing his FEIS Decision and MPD Application Recommendations [***Black Diamond Hearing Examiner Final Environmental Impact Statements State Environmental Policy Act Decision, April 2010, and Black Diamond Hearing Examiner Master-Planned Development Application Recommendations, May 2010***].

- Today, more than three years after the City of Black Diamond's Hearing Examiner's FEIS Decision and MPD Application Recommendations, the two proposed Black Diamond MPDs--The Villages and Lawson Hills--remain the subject of court review.

It is highly recommended the City of Covington make any approval of the Hawk Property Subarea Plan and EIS documents fully contingent upon future traffic modeling and analyses conducted by the City of Black Diamond and on the subsequent effects on the Black Diamond MPD traffic mitigations contained in the Maple Valley TMA. This also pertains to the Covington TMA.

Clearly, a new Transportation assessment is called for, one that does not make such risky and highly questionable assumptions of future roadway projects and future, probably inadequate, mitigation. In fact, the Northern Gateway Study development should be subject to all final plat approvals of the Black Diamond MPDs and full funding--both Master Developer and grant monies--being secured.

Detailed comments by subsection follow below:

AFFECTED ENVIRONMENT

Roadway System (p. 3-89)

Future Roadway Improvements (p. 3-90)

It is assumed future roadway improvements will include all those identified in the cities of Covington and Maple Valley Transportation Improvement Plans (TIPs) out to 2035 [***DEIS at p. 3-90; Exh. 3.8-4***]. Improvements in the City of Maple Valley are based on its 2011 Comprehensive Plan. This assumes full buildout of the City of Black Diamond Master-Planned Developments (MPDs), such that the Maple Valley Transportation Mitigation Agreement (TMA) is completely fulfilled. This mitigation may be insufficient and may not be fully realized due to any future downsizing of the MPDs, or lack of grant monies.

The City of Black Diamond currently is in the process of building a new Traffic-Demand Model (as recommended by its Hearing Examiner and approved by its City Council). It will then validate the model; re-evaluate the original assumptions used; run

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the model to obtain a new traffic distribution and volume; develop a revised set of traffic impacts; and recommend potential mitigation changes. The Black Diamond MPD Ordinance's Condition of Approval (COA) 17a provides the City with flexibility as to when and how often the model should be validated to ensure it is generating information that tracks reality. This is a cyclic process in which model results are confirmed (i.e., validated) and the model's attributes and/or assumptions are adjusted (i.e., calibrated), accordingly, striving towards convergence. COA 17a provides the City of Black Diamond flexibility to conduct traffic analyses at any time following the issuance of 850 building permits for the MPDs (essentially the completion of The Villages MPD Phase 1A) [***The Villages Master-Planned Development Ordinance 10-946, September 2010***] (emphasis added):

17a. *"At the point where building permits have been issued for 850 dwelling units at the Villages and Lawson Hills together, and again at such phase or interval determined by the City Council following completion of the review called for by this condition, the City shall validate and calibrate the new transportation demand model created pursuant to Condition 11 above for the then-existing traffic from the Villages and Lawson Hills together. The calibration may include an assumption for internal trip capture rates as set forth in Condition 14 above, rather than actual internal trip capture rates, if an insufficient amount of commercial development has been constructed at the time of the validation/calibration required herein. The City shall then run the model to estimate the trip distribution percentages that will result from the next upcoming phase or interval of MPD development, and to assign the estimated trips from that phase or interval to the intersections identified in Condition 11 above."*

Below is COA 11 (referenced above in COA 17a) [***The Villages Master-Planned Development Ordinance 10-946, September 2010***] (emphasis added):

11. *"The City shall create, at the expense of the Applicant, a new transportation demand model for this project for use in validating the distribution of project traffic at the intervals specified in Condition No. 17. The new model shall incorporate, at an appropriately fine level of detail, and at a minimum, the transportation network from the northern boundary of the City of Enumclaw on SR 169 through the City of Maple Valley to the northern limits of that city. The new model shall include the intersections studied in the FEIS, together with the following additions: all existing*

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principal and minor arterials in Black Diamond, Covington and Maple Valley and the unincorporated areas between these cities and specifically including the Kent-Black Diamond Road; additional study intersections at SE 231st Street/SR 18 westbound ramps, SR 169/SE 271st Street and SR 169/SE 280th Street in Maple Valley. External trips may be captured by any valid methodology including overlaying the new model onto the existing Puget Sound Regional Council transportation model. The new model must be validated for existing traffic, based on actual traffic counts collected no more than two years prior to model creation. Key to the success of the new model is a well-coordinated effort and cooperation among the cities of Black Diamond, Maple Valley and Covington, the Applicant, King County and the Washington State Department of Transportation. Although the specific assumptions ultimately made in the model may be the subject of differences in professional judgment, the City Council's goal is that, notwithstanding these differences in judgment, the model will be comprehensive and therefore acceptable to all parties. The City Council therefore directs staff in preparing the model to work within the spirit of openness and cooperation with these other agencies and the Applicant, and similarly requests that other agencies and the Applicant join with the City of Black Diamond staff in working together in the same spirit for the common good."

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Consequently, the City of Maple Valley's 2010 TMA is based on traffic analyses the City of Black Diamond's Hearing Examiner found suspect and recommended be completely redone *prior* to approval of the MPDs (please note that Maple Valley's own traffic expert, Mr. Janarthanan, testified during the Black Diamond MPD FEIS Appeals Hearings that there were major flaws in the traffic-demand model, assumptions, and resulting analyses). So, when *new* results are generated by the City of Black Diamond through the use of the new model (when complete and validated for use) and any new re-evaluated assumptions, how will this affect the assumptions made in the Covington Northern Gateway Study DEIS traffic analyses? This problem is even more acute given the fact that the Black Diamond City Council, through COA 17a above, can conduct traffic analyses at *any* time (following the 850-permit-issuance threshold--essentially the end of The Villages MPD Phase 1A) and, thus, could determine the original mitigation contemplated is inadequate. Further, as the Black Diamond MPDs are built out, the Black Diamond City Council can call for adjustments to the model, revalidation, and new traffic analyses multiple times at its sole discretion (as noted above in COA 17a). Such

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analyses most probably will have a profound effect on the already agreed-to Maple Valley TMA intersection mitigations that are “cast in stone.”

This is a risk the City of Covington should not accept and, certainly, should not be built into its decision of Alternatives for the Northern Gateway Study development.

Because of this, it is highly recommended the City of Covington make any approval of the Hawk Property Subarea Plan and EIS documents fully contingent upon future traffic modeling and analyses conducted by the City of Black Diamond and on the subsequent effect on the Black Diamond MPD traffic mitigations contained in the Maple Valley TMA. This also pertains to the Covington TMA, which consists of specific monetary payments on a scheduled (i.e., thresholds of number of dwelling units built) basis [Covington Transportation Mitigation Agreement, December 14, 2010 -- later included as *Black Diamond, The Villages Master Planned Development, Development Agreement, Exh. R. -- Covington Transportation Mitigation Agreement*].

Another major flaw in the DEIS is the unwarranted assumption that SR-516 will be widened to 5 lanes plus turning lanes (“*this improvement is not currently programmed in Covington’s TIP*” [DEIS at p. 3-92, fn. 2. in Exh. 3.8-4. *Assumed Future Roadway Improvements in Study Area by 2035*]) or that the City of Covington simply relax, dilute, and degrade its LOS D standard. If so, why bother doing traffic analyses at all?

This SR-516 “capacity” improvement is not proposed to be a mitigation required of the Developer(s). Yet, a key study contracted by the City of Covington states that developers of this area will need to contribute to future capacity mitigation on SR-516 (aka SE 272nd St) [*Northern Gateway Study Area Report, August 2012; Appendix C: Analysis of Existing Conditions: Transportation; Heffron Transportation, Inc., August 6, 2012; Section 11.0 Transportation Opportunities and Constraints (App., p. 127)*] (emphasis added):

“...however, high levels of development that generate significant levels of additional traffic may still trigger a need for capacity improvements at some locations. Farther from the site and particularly along SE 272nd Street, far less excess capacity exists. New development that generates substantial vehicle trips through intersections operating at or below standards may need to also contribute toward future capacity improvements at these locations.”

The city must require the Developer(s) to mitigate the major congestion impacts the development will impose on SR-516.

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Traffic Volumes (p. 3-92)

Covington traffic volumes are based on 2012 data, while Maple Valley traffic volumes are based on 2010 data. Although growth rates were applied to the latter, such volumes should be reevaluated as new data becomes available, so as not to underestimate *existing* traffic volumes by using a year (2010) in which such volumes probably were reduced due to the economic downturn.

4-25

We question the number of vehicle trips and impacts on the PM peak hour:

"Alternative 3 is projected to generate approximately 36,530 (28,900, or 21% less, for Alt. 2) total daily trips, of which about 28,300 (22,000, or 22% less, for Alt. 2) are expected to be new trips on the roadway system. Of these, about 3,300 (2,600, or 21% less, for Alt. 2) are expected to occur during the PM peak hour, with about 2,600 (2,000, or 23% less, for Alt. 2) reflecting new trips on the roadway system." [DEIS at p. 1-12, Exh. 1-7

4-26

Summary Table, with more details provided in **Exh. 3.8-13. Vehicle Trip Generation Summary**]

Yet, internal trips during the PM peak hour for Alternative 2 are only 17% of the total trips and for Alternative 3 only 15.9% of the total trips [DEIS, Exh. 3.8-12. **Internal Trip Summary**]. Since the vast majority are expected to be external trips, why do only less than 10% of the total daily trips occur during the PM peak hour?

IMPACTS

Roadway System (p. 3-101)

It is agreed the two proposed "local" connectors should help *existing* traffic flow. However, either or both should be implemented without having to approve a massive development of up to 1,500 residences that will only compound traffic circulation problems going forward.

4-27

Future Travel Demand (p. 3-101)

Covington future travel demand is based on population/employment projections, while Maple Valley's demand is based on its 2011 Comprehensive Plan. Unfortunately, the latter assumes full buildout of the City of Black Diamond Master-Planned Developments (MPDs). While we applaud that analysis of future demand takes into account the MPDs; we must again emphasize that demand is understated and mis-distributed due to its dependence on a flawed traffic model, faulty assumptions, and resulting analyses which produced results questioned by the City of Black Diamond's Hearing Examiner (and by expert testimony offered during the Black Diamond MPD FEIS Appeals Hearing by outside Traffic Consultants and traffic experts from the City of Maple Valley and the WA State Department of Transportation). In his 2010 FEIS

4-28

Appeals Decision and MPD Permit Application Recommendations the City of Black Diamond's Hearing Examiner, Phil Obrechts, found (emphasis added):

"This scale of development justifies the creation of a project specific transportation demand model that accounts for all existing and planned local land uses, is validated for local traffic, contains an appropriately fine grained transportation analysis zone network, considers existing peak hour factors, considers both funded and unfunded transportation improvements that coincide with the build-out timeframe for the project, considers safety concerns, attempts to preserve the rural Heritage Corridor, provides a realistic mode split analysis for both transit and non-motorized uses and determines a reasonably accurate internal trip capture rate. Therefore, the project applicant will be required to create a new transportation model that incorporates all the controls identified above and subject that model to peer review and periodic updates." [Black Diamond Hearing Examiner Master-Planned Development Application Recommendations, May 2010, p. 124]

"16. The resulting project impacts and mitigations must be integrated into the development agreement or processed as a major amendment to the MPD prior to City approval of any implementing projects." [Black Diamond Hearing Examiner Master-Planned Development Application Recommendations, May 2010, p. 194]"

While the former Black Diamond City Council ignored its own Hearing Examiner's Recommendations by moving the starting point of such new modeling and analyses from "0" homes to "850" permits issued, such new analyses still will happen and, most assuredly have a profound affect on the mitigations required going forward.

Whatever the merits of the traffic analyses supporting the Northern Gateway Study DEIS, because it assumes the Maple Valley Transportation Mitigation Agreement (TMA) traffic projects adequately mitigate the full build-out of the Black Diamond MPDs, the entire foundation of such analyses is dubious at best and dangerously wrong at worst. The City of Covington, its residents, the residents of the surrounding cities, and the residents of the surrounding unincorporated rural areas should not have their quality of life reduced because of inadequate traffic mitigation. In fact, the City of Covington is required by the State's Growth Management Act to ensure traffic concurrency is met (see **GROWTH MANAGEMENT ACT REQUIREMENTS ASSESSMENT** below).

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Arterial Segment Operations (p. 3-116)

For new development the City of Covington uses a Transportation Adequacy Measure (TAM). The city has established a TAM threshold based on an area-wide average volume-to-capacity ratio (v/c) of 0.89, near total capacity, which is equivalent to LOS D. **[DEIS at p. 3-116]** For Alternative 2: TAM=0.75, which is <0.89 Covington threshold. For Alternative 3: TAM=0.78, which also is <0.89 Covington threshold. However, several *existing* segments already *exceed* the city's TAM threshold of 0.89, all along SR-516 **[DEIS at pp. 3-97 thru 3-98]**. The proposed Northern Gateway Study development Alternatives will only exacerbate this situation, while still "passing" based on the "area-wide-average." While this might be "standard" general practice, it doesn't address and solve the *local* issue of timely and efficient movement of people and freight along the SR-516 corridor--the lifeblood of the city and its economy.

4-29

Traffic Safety (p. 3-118)

Although "historical collision data in the site vicinity do not indicate any unusual safety concerns," that does not account for a single road weaving through the subarea development with few other ingress/egress points. There is a concern that both traffic and pedestrian safety could be compromised due to these limitations, especially with large trucks during the long construction periods and during normal operations, as well as pass-through traffic looking for shortcuts to avoid gridlock on major roads.

4-30

MITIGATION MEASURES

Other Potential Mitigation Measures (p. 3-121)

Roadway Capacity Improvements (p. 3-121)

It is assumed that all the projects listed in the Maple Valley TMA (incorporated into the Maple Valley TIP, as listed in **DEIS, Exh. 3.8-4. Assumed Future Roadway Improvements in Study Area by 2035**) will be achieved. Besides many of these projects relying on scant grant monies, several of are not scheduled until the out years of the proposed Black Diamond MPDs. Below are listed but a few including the developer's share in parentheses **[Black Diamond, The Villages Master Planned Development, Development Agreement, Exh. Q. Maple Valley Transportation Mitigation Agreement]**:

4-31

* Constructing a new 3-lane SE 271st Bypass Rd from SR 169 to SR 516 is not scheduled until the 2,035th dwelling unit (Developer's share = 6.8%).

* Adding a second northbound lane and second southbound lane to SR 169, Witte Rd SE to SE 280th St whose segments are not scheduled until the

700th, 2,280th, 3,225th, and 4,135th dwelling units (Developer’s share <62.5%).

* Adding a second southbound lane to SR 169 from SE 280th St to Maple Valley south city limits is not scheduled until the 4,802nd dwelling unit (Developer’s share = 58.4%).

* Widening SR-516 to 4/5 lanes from 216th Ave SE to Maple Valley west city limits is not scheduled until the 5,500th dwelling unit (Developer’s share = 29.9%).

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The existence of these four key projects and their dependence upon building over 2,000 dwelling units (with scant SR-516 work--the last item listed--not scheduled until 5,500 dwelling units!) presents a great risk to the City of Covington should it approve the Northern Gateway Study development based on the scant traffic mitigation called for the in DEIS.

With the exception of Alternative 1 (ID 23 noted below) for all Alternatives following proposed mitigation several key intersection delays fall within LOS E (“Unstable flow--approaching intolerable delay”) or F (“Forced flow--jammed”) [**Transportation Research Board, Highway Capacity Manual, 2010**]. The five intersections that fail--LOS F after mitigation are **bolded** below [**DEIS, Exh. 3.8-18. Future (2035) Level of Service - Mitigated, p. 3-128 thru 3-130**]:

ID 20	SE 272nd St/156th Pl SE (SB)	F
ID 21	SE 272nd St/Covington Way	F
ID-22	SE 272nd St (SR 516)/164th Ave SE	E
ID 23	SE 272nd St (SR 516)/Westbound SR 18 Ramps	F
	{ <i>note: LOS D for Alt. 1; LOS E for Alt. 2</i> }	
ID-26	SE 272nd St/168th Ave SE	E
ID-29	SE 272nd St/172nd Ave SE	E
ID 32	SE 272nd St (SR 516)/SE Wax Rd	F
ID 310	SE 231st St/SR 169⁷	F

4-32

⁷ Part of Maple Valley’s North Concurrency Intersection Group – concurrency is satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. With mitigation, the average weighted delay for this group is 50.0 (LOS D) for Alternative 1, 53.2 (LOS D) for Alternative 2, and 54.5 (LOS D) for Alternative 3. {55 sec delay is the threshold for LOS E}

ID-315 SR 516/SR 169⁵ E

⁵ Part of Maple Valley’s South Concurrency Intersection Group – concurrency is satisfied if average weighted delay of all intersections in the group is

equivalent to LOS D or better. With mitigation, the average weighted delay for this group is 42.7 (LOS D) for Alternative 1, 42.7 (LOS D) for Alternative 2, and 44.0 (LOS D) for Alternative 3.”

In fact, transportation concurrency for both SR-169 intersections (ID 310 and ID 315) listed above is considered “satisfied” only because of general methods that look at “average weighted delays” for all intersections in the area. That does not pass any muster in the real world where the purpose of adequate road infrastructure is to efficiently and expeditiously move people and freight to and from their destinations. SR-169 is the backbone of Maple Valley’s transportation infrastructure. Using an “average weighted delay” method that essentially negates LOS failures at key intersections along SR-169 does not serve the city, its residents, nor any other users.

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SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS (p. 3-130)

The DEIS poses the scenario that either SR-516 be widened to 5 lanes or more, which is unfunded and not contained in any City or State plan, or city standards be reduced from LOS D to LOS E, defined as “Unstable flow--approaching intolerable delay” [**Transportation Research Board, Highway Capacity Manual, 2010**]. If such widening doesn’t happen (and, as stated above, it is not planned or funded by the City or the State), the fall-back is to simply degrade the LOS standards (emphasis added below):

“For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. 2035 model projections indicate that with the No Action alternative, traffic volumes on the section of SE 272nd Street between 156th Place SE and SE Wax Road would be high enough that most intersections along the section would operate at LOS E or F. While some spot improvements at these locations may improve conditions slightly, they would not be sufficient to improve operation to LOS D. Improvement to LOS D or better would require widening to 6 or 7 lanes of this section of SE 272nd Street. If growth occurs to the degree reflected in the model projections, it is likely that the City of Covington would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D.” [DEIS at p. 3-125].

4-33

This is *not* an “unavoidable” impact. If transportation concurrency and the State Growth Management Act mean anything, the proposed Northern Gateway Study development should not be approved (see **GROWTH MANAGEMENT ACT REQUIREMENTS ASSESSMENT** below).

4-33
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GROWTH MANAGEMENT ACT REQUIREMENTS ASSESSMENT

To better evaluate the DEIS transportation assessment we conducted a review of the requirements called for by Washington State Growth Management Act (GMA).

The City of Covington is required to plan under the requirements of the Washington State Growth Management Act (GMA). However, the DEIS fails to adequately address some of the mandatory elements [**RCW Chapter 36.70A: Growth Management -- Planning by Selected Counties & Cities; Chapter 36.70A.070: Comprehensive plans — Mandatory elements**] (emphasis added below):

(6) A transportation element that implements, and is consistent with, the land use element.

4-34

(a) The transportation element shall include the following subelements:

(iii) Facilities and services needs, including:

(B) Level of service standards for all locally owned arterials and transit routes to serve as a gauge to judge performance of the system. These standards should be regionally coordinated;

Mandatory element (6)(a)(iii)(B) above is not met. Although the City of Covington is doing “regional coordination,” there are many concerns about the assumptions expounded in the DEIS, as enumerated herein.

(D) Specific actions and requirements for bringing into compliance locally owned transportation facilities or services that are below an established level of service standard;

4-35

Mandatory element (6)(a)(iii)(D) above is not met as SR-516 is not being brought into “compliance,” as enumerated herein.

(F) Identification of state and local system needs to meet current and future demands. Identified needs on state-owned transportation facilities must be consistent with the statewide multimodal transportation plan required under chapter 47.06 RCW;

4-36

Mandatory element (6)(a)(iii)(F) above is not met as the DEIS identifies issues with both SR-516 (no funded plan exists) and SR-169 (contingent mitigation), as enumerated herein.

(iv) Finance, including:

(A) An analysis of funding capability to judge needs against probable funding resources;

4-37

Mandatory element (6)(a)(iv)(A) above is not met as SR-516 widening to 5 or more lanes is not funded nor part of any City or State plan.

(B) A multiyear financing plan based on the needs identified in the comprehensive plan, the appropriate parts of which shall serve as the basis for the six-year street, road, or transit program required by RCW 35.77.010 for cities, RCW 36.81.121 for counties, and RCW 35.58.2795 for public transportation systems. The multiyear financing plan should be coordinated with the ten-year investment program developed by the office of financial management as required by RCW 47.05.030;

4-38

Mandatory element (6)(a)(iv)(B) above is not met as major needs identified in the Maple Valley Comprehensive Plan (on which the entire Northern Gateway Study development is based) are completely predicated on the completion of the proposed Black Diamond MPDs and other issues, as enumerated herein.

(C) If probable funding falls short of meeting identified needs, a discussion of how additional funding will be raised, or how land use assumptions will be reassessed to ensure that level of service standards will be met;

4-39

Mandatory element (6)(a)(iv)(C) above is not met as there is no evidence this has been done or will be done.

(b) After adoption of the comprehensive plan by jurisdictions required to plan or who choose to plan under RCW 36.70A.040, local jurisdictions must adopt and enforce ordinances which prohibit development approval if the development causes the level of service on a locally owned transportation facility to decline below the standards adopted in the transportation element of the comprehensive plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with the development. These strategies may include increased public transportation service, ride sharing programs, demand management, and other transportation systems management strategies. For the purposes of this subsection (6), "concurrent with the development" means that improvements or strategies are in place at the time of development, or that a financial commitment is in place to complete the improvements or strategies within six years.

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Mandatory element (6)(b) above is not met. In fact, this lack of Transportation Concurrency is the most glaring omission of the proposed Northern Gateway Study development, as enumerated herein.

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(c) The transportation element described in this subsection (6), the six-year plans required by RCW [35.77.010](#) for cities, RCW [36.81.121](#) for counties, and RCW [35.58.2795](#) for public transportation systems, and the ten-year investment program required by RCW [47.05.030](#) for the state, must be consistent."

4-41

Mandatory element (6)(c) above is not met as there is no evidence that this has been done or will be done.

CONCLUSIONS

The key to proper transportation mitigation is Concurrency testing--a mandate of the State's Growth Management Act (GMA) and part of all jurisdictional Comprehensive Plans. In general, such testing ensures transportation improvements or strategies are constructed or financed *concurrent* with development.

As part of the GMA, concurrency is one of the goals local governments must consider in land-use planning. The concurrency goal is intended to ensure public facility infrastructure and services (such as sewer, water, roads, parks and schools) are adequate to serve new development at the time of occupancy without decreasing service levels below locally established minimum standards. Consequently, Transportation Concurrency has far-reaching impact on land use. The State describes the Transportation Concurrency requirements as follows (emphasis added) [**Concurrency, Land Use, and the State Transportation System, Washington State Department of Transportation, May 2007**]:

4-42

"The GMA also defines a specific transportation concurrency requirement. First, local governments must set level of service (LOS) standards, or minimum benchmarks of performance, for transportation facilities and services. Once the LOS standard is established, the local government must adopt an ordinance to deny proposed developments if they cause the LOS on a locally-owned transportation facility to decline below the adopted standard, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with development [RCW 36.70A.070(6)]. Concurrent with development means improvements or strategies are in place at the time of development, or a financial commitment has been made to complete them within six years. Local governments may accommodate

development impacts by changing the phasing or timing of new development, improving transportation facilities or services to serve the new development, reducing the LOS standard, or revising their land use policies.”

“A common misconception is that concurrency guarantees some uniform minimum level of governmental services. The state has not specified any such minimums. Local governments have the authority and responsibility to provide acceptable levels of service for their communities resulting in a wide variety of methodologies and standards. This discretion is constrained by the growth management hearings board finding that local governments cannot avoid the concurrency requirement entirely by manipulating the standards to allow uncontrolled development despite identified deficiencies [Eugene Butler et al. v. Lewis County, 99-2-0027c, WWGMHB (June 20, 2000)]. Neither can local governments avoid the concurrency requirement by crafting exemptions of any kind [Bennett et al. v. City of Bellevue, 49852-5-I, 119 Wn. App. 405 (December 15, 2003)].”

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Consequently, the State RCWs and the courts in subsequent decision make clear the following:

1. Cities must deny proposed developments if they cause the LOS to decline below the adopted standard, unless transportation improvements to accommodate the impacts are made concurrent with development.
2. Cities cannot avoid concurrency requirements by manipulating the standards to allow development despite identified impacts.

4-43

The City, as detailed in the traffic assessment supporting the DEIS, is not meeting either of these requirements, especially as they pertain to SR-516. If SR-516 must be widened to 5 or more lanes to accommodate the proposed Northern Gateway Study development then the City must ensure the Developer(s) provide(s) sufficient funds to accomplish such mitigation.

Further, should such conditions not be placed on the Developer(s) as part of a City Ordinance and/or Development Agreement, then the City cannot simply relax (RCW language: “*manipulate*”) its LOS standards to allow the development to pass concurrency requirements.

Consequently, we call for a complete re-assessment of traffic for the Northern Gateway Study development. One that does not rely on traffic projects that:

1. Probably will not fully materialize (Maple Valley TMA-generated TIP);
2. Do not provide adequate mitigation (inadequate analyses of Black Diamond MPD traffic impacts);
3. Rely on Grant monies that either do not exist or fall far short of what is needed;
4. Are not in any plans and possess any funding (i.e., SR-516 widening); and
5. Do not meet several Concurrency requirements of the State's RCWs.

4-44

PUBLIC SERVICES (sect. 3.9 Public Services)

GENERAL--POPULATION DENSITY

Throughout the DEIS, specific growth numbers for Alternatives 2 and 3 are provided for number of additional residents. For example, Alternative 3 projects ~2,760 additional residents with 1,500 dwelling units with a mix of single-family, townhome, and multifamily residences. This assumes an average of 1.84 residents per unit, which, on first look, appears small.

Inconsistencies

Per the 2000 census (<http://www.covingtonhistory.co.uk/Washington.htm>) there were 13,783 people and 4,473 housing units, equivalent to 3.08 individuals per housing unit. Given, even in the year 2000, this is significantly greater density than the DEIS projects at 1.84.

Per the 2010 census (http://en.wikipedia.org/wiki/Covington,_Washington) there were 17,575 people with 6,081 housing units, equivalent to 2.89 individuals per housing unit. This is slightly lower than the 2000 census, but consistently above the projections in the DEIS. The projections for 2012 at that time were ~3 individuals per housing unit--again, significantly greater density than the DEIS projects at 1.84.

Recommendation

Population density projections must be based on historical reality in order to accurately assess the impacts on Public Services and critical infrastructure for the development area. If, for example, the DEIS projections are off by at least 1 individual per housing unit, that would result in an additional 1,500 to 3,000 more people for Alternatives 2 and 3, respectively. Consequently, we call for a re-evaluation of projected population densities for Alternatives 2 and 3.

POLICE PROTECTION

Current Situation

From the *DEIS at p. 3-131*:

“Police service in the Hawk Property Subarea is currently provided by two agencies. The portion of the subarea within Covington city limits is nominally served by the Covington Police Department, though all Covington police officers are King County Sheriff’s Office employees who are dedicated to Covington via contract. The portion of the subarea in unincorporated King County is served directly by the King County Sheriff’s

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4-46

Office. The Covington Police Department consists of eleven active-duty police officers, one detective, and a police chief. Neither the Covington Police Department nor the King County Sheriff's Office maintains any facilities in the immediate vicinity of the subarea. The nearest police facility is at Covington City Hall, which serves as both the headquarters for the Covington Police Department and as the headquarters for King County Sheriff's East Precinct South."

Level of Service (LOS): The Covington Police Department does not maintain an adopted level of service standard. Current level of service, based on a 2012 city population of 17,760, is approximately 1.6 officers per 1,000 residents.

The King County Sheriff coverage for the 2011 budget year was 0.65 officers per 1000 citizens. This compares to 1.5 officers per 1000 citizens in the cities within King County. (<http://www.seattlepi.com/local/article/Sheriff-County-Council-flat-wrong-about-number-817442.php>)

The City of Covington contracts with King County for police services, some as King County Sheriffs and some marked as Covington Police.

Based on the numbers, it appears that unincorporated Maple Valley area is one of the areas that is already *underserved* by Police services, compared to the surrounding incorporated cities.

Impacts

From the **DEIS at p. 1-18:**

"Alternative 1 – No added population = no added need for police protection.

Alternative 2 – 1,838 additional residents = 3 additional officers needed to maintain current LOS.

Alternative 3 – 2,760 additional residents = 4.5 additional officers needed to maintain current LOS."

Concerns/Recommendations

From the **DEIS at p. 1-30, Proposed Mitigations:**

"The City could adopt a formal LOS standard for police service and coordinate with the King County Sheriff's Office on monitoring of call responses to incidents by members of the Covington Police Department. The City should contract with the King County Sheriff's Office for the

4-47

services of additional police officers commensurate with the level of development ultimately approved for the subarea.”

The King County Sheriff's office struggles for funding every budget cycle, and for the Maple Valley area citizens, this is of extra concern as they recently closed the local precinct on SE 232nd and SR-169. If Covington will need to contract with King County to provide more officers to cover the increased population in the subarea, will all funding come from the City of Covington? Or will King County be concerned about covering any portion of this added coverage at current budget levels? These are questions that should be addressed in the planned action EIS process prior to any approval of new developments.

4-48

FIRE PROTECTION

Current Situation

From the *DEIS at p. 3-131*:

“Existing Service: Fire and emergency medical service in the Hawk Property Subarea are provided by two fire districts. The portion of the subarea within Covington city limits is served by the Kent Regional Fire Authority; the portion in unincorporated King County is served by King County Fire District 43, also known as Maple Valley Fire & Life Safety (MVFLS). Fire district boundaries are shown in Exhibit 3.9-1. The nearest Kent Regional Fire Authority facility is Fire Station 78, located approximately 0.5 mile west of the subarea at the intersection of 180th Avenue SE and SE 256th Street. The station is staffed by one fire engine with career personnel 24 hours per day. The nearest MVFLS facility is Station 81, located approximately two miles northeast of the subarea at the interchange of SR 18 and SE 232nd Street in Maple Valley. The station is manned 24 hours per day by a combination of career and volunteer resident personnel. Station 81 houses two pumper engines, one tender truck, one aid vehicle, and one brush truck.”

Maple Valley Station 81 sets a threshold for response time to 8 minutes (including a 2-min “turnout”), and it’s goal is to be able to respond to incidents within that timeframe 90% of the time. As of 2010, Station 81 was the only station in the area that was not in compliance with its response time measurements. Key factors specific to this station include the wide variety of types of homes, properties, businesses, and terrain. However, any more stress on the current system could only make this situation worse.

4-49

According to the District's Fire Chief in 2012, response times to the vicinity of the Hawk Property subarea are typically 6-7 minutes, so while current services seem to be ample for the area, future development of this subarea will ideally be served by the Kent Regional Fire Authority as a primary and not Maple Valley.

4-49
cont'd

Impacts

Paraphrasing from the *DEIS at p. 1-18*:

Alternative 1 – No added population = no added need for fire protection.

Alternative 2 – Increased residential and commercial development = 140 additional annual emergency responses from residential, and 75 additional annual emergency responses from commercial. Also would require 2 additional 24 hour staff at KFD Station 78. Added spine connector street through subarea would also improve response time from Station 78.

Alternative 3 – Increased residential and commercial development = 210 additional annual emergency responses from residential, and 92 additional annual emergency responses from commercial. Also would require 2 additional 24 hour staff at KFD Station 78. Added spine connector street through subarea would also improve response time from Station 78.

Concerns/Recommendations

Mitigation measures mentioned in the DEIS indicate that Covington should work with the Kent Regional Fire Authority for capacity, and there is no mention of working with the Maple Valley Fire Station 81. From the *DEIS at p. 1-30* (emphasis added):

"The City should require a mitigation agreement between the developer and Kent Regional Fire Authority prior to development to address the impacts identified in this Chapter. The mitigation agreement should address impacts to daily and peak hour workload at KFD Station 78 resulting from development of Alternative 2 or Alternative 3."

4-50

This statement appears inconsistent, as it seems to assume Kent Fire will absorb the additional demands caused by the new development. If in fact the responsibility for Fire Protection for the subarea will be placed on Kent Regional Fire Authority, then there may be no impact on Maple Valley Fire capacity or response times. However, a good portion of the new development area falls within the existing area covered by Maple Valley Station 81. There does not appear to be clear mention of how Station 81 will be funded or impacted for the expected increase in services needed.

Clear details should be identified *prior* to development as to which Fire authority will be responsible for this new development area and where the funding is coming from for additional responders.

4-50
cont'd

SCHOOLS

Current Situation

From the *DEIS at p. 3-135*:

“Educational services in the Hawk Property Subarea are provided by two school districts. The portion of the subarea within Covington city limits is served by the Kent School District, while the unincorporated portion of the subarea is served by the Tahoma School District. School district boundaries are illustrated in Exhibit 3.9-4. The subarea is served by three elementary schools, one middle school, one junior high school, and two senior high schools. Exhibit 3.9-3 lists the schools serving the subarea and their approximate enrollments and capacities for the 2011-2012 school year.”

Clearly, while the Kent Schools serving the area have been enjoying enrollment under capacity levels for the 2011/2012 year, Tahoma Schools serving the area all have Enrollments either nearly at or exceeding Capacity levels. This illustrates that the Tahoma schools cannot take on any additional students as a result of proposed Hawk Property Subarea development.

Per Level of Service statements in the *DEIS at p. 3-135*:

“According to the district’s 2012 Capital Facilities Plan, all three schools that serve the Hawk Property Subarea are currently over their permanent capacity and using re-locatable facilities to house classes. The district plans construction of an additional elementary school in 2015, as well as increased capacity at Lake Wilderness Elementary in 2015. Capacity is also planned to be added to Tahoma Junior High in 2016 and to Tahoma High School in 2017.”

4-51

However, such expansion has been planned by the Tahoma School District for some time to alleviate its *existing* situation, not to accommodate students from any new large developments.

Impacts

Paraphrasing from the **DEIS at p. 1-19**:

Alternative 1 – No additional population = no added demand for schools.

Alternative 2 – Population growth would increase demand on schools. Currently split between Kent School District and Tahoma Schools District, it is “likely” the entire subarea could be annexed into one or the other.

If annexed into the Kent School District, expected increase in demand = 393 elementary, 92 middle school, and 174 high school students.

If annexed into the Tahoma School District, expected increase in demand = 268 elementary, 81 middle school, and 99 high school students.

Alternative 3 – Population growth would increase demand on schools. Currently split between Kent School District and Tahoma Schools District, it is “likely” the entire subarea could be annexed into one or the other.

If annexed into the Kent School District, expected increase in demand = 590 elementary, 138 middle school, and 262 high school students.

If annexed into the Tahoma School District, expected increase in demand = 401 elementary, 122 middle school, and 149 high school students.

4-51
cont'd

Concerns/Recommendations

Under Alternatives 2 and 3, if the subarea is annexed into the Kent School district, it appears there would be no impact on the Tahoma School area residents or students regarding schools.

Under Alternatives 2 and 3, the effect on the Tahoma School District students could be significant. Classrooms are already crowded. Assumptions are made about the Tahoma schools’ ability to either absorb the additional students within *existing* classrooms, or build *new* schools. Logistics and funding issues for new schools, additional teachers, supplies, and transportation are critical factors that must be examined prior to moving forward with either Alternative 2 or 3.

From the **DEIS at p. 1-30**:

“Until annexation by the City of Covington, development in the unincorporated portions of the Hawk Property Subarea will be subject to assessment of school impact fees, as required by King County Code Chapter 27.44. After annexation by the City of Covington, development in the Hawk Property Subarea will be subject to assessment of school impact fees, as required by Covington Municipal Code Chapter 18.120.”

4-52

What will the new school impact fees cover? Assuming such fees go to the affected school district for *existing* schools, how will any *new* schools be handled? If *new* schools are contemplated, how will land acquisition and capital and maintenance bonds be handled?

4-52
cont'd

Also, to the Impacts noted above **[DEIS at p. 1-19]**:

“Population growth ... would increase demand on schools. Currently split between Kent School District and Tahoma Schools District, it is ‘likely’ the entire subarea could be annexed into one or the other.”

4-53

The DEIS offers different numbers of projected students, depending on which school district (Tahoma or Kent) ultimately would serve the Hawk subarea. No methodology is presented to support the conclusion that more students would need school space if Kent were to annex than if Tahoma were to annex. Similar to the concerns about population density expressed earlier, these numbers need to be explained and justified to truly understand the projected impacts.

Finally, while there is planned school space expansion to resolve the *existing* capacity shortfall in the Tahoma School District, it does not take into account any *new* development such as the Hawk Property Subarea. We highly recommend the Developer(s) of the Hawk Property Subarea allocate adequate land as part of the planned community to be reserved for *new* school construction to serve the development. This is the only way to ensure that *existing* school capacity shortfalls not be repeated at the completion of the *new* development.

4-54

While it is understood it is not the City of Covington’s call on how the school districts handle their boundaries, it is the City’s responsibility to determine the resulting impacts to each school district’s residents and taxpayers.

4-55

PARKS AND TRAILS

The Hawk Property Subarea does not contain any existing parks, or other recreation facilities, though there are informal trails. As of 2013 the City is deficient in neighborhood and community park space, trails, and bikeways.

Both Alternatives 2 and 3 will require increased land dedicated to Parks and Trails. As described under Affected Environment, CMC 18.35.150 requires residential and mixed-use developments to provide on-site recreation. Alternative 2 would require 3.3 acres of on-site park and recreation space. The minimum Urban Village Proposal includes 5.5 acres of park space. Alternative 2 would require 1.4 miles of trails to maintain the City’s current level of service. Alternative 3, according to the plan, includes 8.3 acres of park space and 2.1 miles of trails.

4-56

Neither alternative contemplates parks dedicated for use as ballfields of any type. This deficiency should be addressed in the Final EIS.

4-56
cont'd

From: [Karen Walter](#)
To: [Ann Mueller](#)
Subject: Hawk Property Subarea Plan, Draft Environmental Impact Statement
Date: Monday, August 26, 2013 1:05:40 PM
Attachments: [Landscape Ecotoxicology of Coho Salmon Spawner Mortality in Urban watersheds.pdf](#)
[copper toxicity visibility vulnerability juv coho salmon predation by cutthroat trout McIntyre et al 2012.pdf](#)
[Copper effects on Salmonids - Abstracts C A Woody1.pdf](#)

Ann,

The Habitat Program of the Muckleshoot Indian Tribe Fisheries Division has reviewed the Draft Environmental Impact Statement for the Hawk Property Planned Action referenced above. Previously we provided comments to the scoping notice which are shown below. With our scoping comments, we also included the attached papers regarding impacts to salmonids from metals in stormwater.

5-1

Unfortunately, the DEIS fails to address these comments and is missing any responses in Appendix A.

The FEIS should address these issues in some detail as this environmental review provides the opportunity to examine these issues programmatically and determine if any of the proposed action alternatives may have more impacts than not.

For example, Alternative 3, Maximum Village Proposal is estimated to result in 99.6 acres of impervious surfaces versus 75.8 acres under Alternative 2, Minimum Urban Village Proposal. From available scientific literature, we know that increases in impervious surfaces generally result in adverse impacts to streams, wetland and aquatic resources, including fish (i.e. Booth and Jackson, 1997; May et al 1997; Booth 2000; Morley 2000; Booth, Hartley, and Jackson 2002; etc.). There is no discussion in the DEIS about any impacts to salmonids that may occur from future development associated with the alternatives identified in the DEIS (see Section 3.5). We specifically included the attachments above so they could be used as part of Covington's assessment of alternatives for direct and indirect impacts, including potential stormwater discharges to Jenkins Creek, in the DEIS.

5-2

The FEIS should include an expanded analysis that discusses all potential impacts to salmonids from stream/wetland buffer reductions, trails and associated human/pet disturbances, stormwater impacts and baseflow reductions from all impervious surfaces. As part of this analysis, there should be further details as to how these impacts will be avoided and minimized/mitigated where they are truly unavoidable. For example, the DEIS identifies the proposed Jenkins Creek Trail near the wetland/stream buffer but fails to discuss if this trail can be relocated such to avoid impacting the Category 1 Wetland buffer and stream buffer. As this area appears to be mostly forested currently, it would be ideal to relocate the trail to avoid temporary and permanent impacts to these buffers, including the potential permanent loss of future wood recruitment necessary to create instream fish habitat.

5-3

Similarly, Figure 3.10-1 shows an proposed sewer line that looks like it will go through the regulated wetland and stream buffer parallel along Jenkins Creek throughout the subarea. In our experience, where these sewer lines are located, they preclude the permanent reestablishment of trees due to concerns with tree roots affecting the sewer line. This permanent impact should be avoided by locating the sewer line in areas that will be redeveloped outside of the regulated buffers.

5-4

There is more water quality data available for Jenkins Creek than discussed in the DEIS. King County has been conducting water quality monitoring in Jenkins Creek (and elsewhere) as part of the Total Maximum Daily Load Allocation Study for the Soos Creek Watershed (see <http://your.kingcounty.gov/dnrp/library/2009/kcr2022/SAP.pdf>) as has University of Washington.

5-5

Also within King County's Soos Creek water quality monitoring plan, there is a figure showing Chinook use of Jenkins Creek near the project area (see page 11 of KC's QAPP). Chinook salmon use in Jenkins Creek was not identified in the DEIS.

5-6

In addition to missing Chinook use data, the DEIS fails to consider how the Soos Creek TMDL implementation recommendations to ensure compliance with State Water Quality Standards will be met. For example, the initial TMDL recommendations are to protect existing riparian corridors and

5-7

reduce impervious surfaces (see <https://fortress.wa.gov/ecy/publications/publications/1210020.pdf>). As there are likely differences between the two action alternatives in meeting these recommendations, the FEIS should discuss the Soos Creek TMDL and how the proposed alternatives could affect TMDL implementation for Jenkins Creek and downstream areas. Part of this should be a more robust discussion about mitigation measures initially described in Section 3.2, including benefits to salmon from using enhanced water quality treatment methods to manage stormwater based on impacts identified in the salmon literature we provided in our scoping comments and with these DEIS comments.

5-7
cont'd

Further, a reduction in baseflows in Jenkins Creek (see page 3-22) would also likely adversely affect salmon which was not considered in the DEIS. As a result, infiltrating treated stormwater using enhanced treatment methods should be required wherever suitable soils exist. We also agree with the mitigation measure to abandon existing wells (page 3-23) and new irrigation wells should be prohibited.

5-8

In summary, the FEIS needs more details and analysis about potential impacts to salmon that may occur from each of the alternatives and how each alternative would use mitigation sequencing, starting with avoidance to avoid impacts to salmon and Jenkins Creek and its associated wetlands.

5-9

We are available to meet to discuss these issues further, please call me to set up such a meeting. We appreciate the opportunity to comment on this DEIS and look forward to the City's written responses.

Thank you,
Karen Walter
Watersheds and Land Use Team Leader

*Muckleshoot Indian Tribe Fisheries Division
Habitat Program
39015 172nd Ave SE
Auburn, WA 98092
253-876-3116*

From: Karen Walter
Sent: Friday, March 29, 2013 10:44 AM
To: Ann Mueller (amueller@covingtonwa.gov)
Subject: FW: Hawk Property Subarea Plan, Determination of Significance and Scoping Notice

Ann,

My apologies; the previous email we sent did not include the technical reports we referenced in the email below.

Karen Walter
Watersheds and Land Use Team Leader

*Muckleshoot Indian Tribe Fisheries Division
Habitat Program
39015 172nd Ave SE
Auburn, WA 98092
253-876-3116*

From: Karen Walter
Sent: Friday, March 29, 2013 10:43 AM
To: Ann Mueller (amueller@covingtonwa.gov)
Subject: Hawk Property Subarea Plan, Determination of Significance and Scoping Notice

Ann,

We have reviewed the City's Determination of Significance and Scoping Notice for the Proposed Hawk Property Subarea Plan. We offer the following comments in response to this scoping notice.

The project area/subarea includes or is adjacent to Jenkins Creek, a salmon-bearing tributary in the Soos Creek basin. We recommend that the DEIS analyze and discuss the following:

1. Details about the plans to reclaim the Lakeside gravel mine (assuming the mine will be closed to accommodate future land use) and protection/restoration of the large wetland (1D) shown in the gravel mine on King County's IMAP;
2. Details regarding how Jenkins Creek and its large associated wetland will be protected and potentially restored (where needed) as part of the subarea plan;
3. Details regarding how stormwater will be managed in the subarea, including the opportunities to fully treat and infiltrate stormwater using enhanced treatment methods that reduce or significantly limit the amount of metals and PAHs in stormwater that may be discharged to Jenkins Creek. Also, the opportunities to implement low impact development techniques and retention of trees. As part of this analysis, the DEIS should consider the available data in the attached papers regarding stormwater impacts to salmon, particularly coho, a species found in Jenkins Creek.
4. The DEIS authors should contact WDFW and the Muckleshoot Indian Tribe Fisheries Division to obtain the most current information regarding salmon populations in Jenkins Creek and the Soos Creek basin prior to completing any analysis of potential impacts.

We appreciate the opportunity to provide comments to the Scoping Notice and look forward to reviewing the DEIS that addresses our recommendations above. Please let me know if you have any questions.

Karen Walter
Watersheds and Land Use Team Leader

*Muckleshoot Indian Tribe Fisheries Division
Habitat Program
39015 172nd Ave SE
Auburn, WA 98092
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RECEIVED

AUG 26 2013

CITY OF COVINGTON



Professional Service Consultants
P.O. Box 7157, Covington, Washington 98042
18215 72nd Ave South, Suite #127 – Kent, WA 98032
(425) 656-7477, Cell (206) 371-1378
branbar.llc@gmail.com

August 26, 2013

Ann Mueller, AICP
Senior Planner
City of Covington
16720 SE 271st Street, Suite 100
Covington, WA 98042-4964

Re: Hawk Property Subarea Plan & Planned Action EIS

Dear Ms. Mueller,

BranBar, LLC has consistently supported the development of a much underutilized WA State Highway interchange at SE 256th St and SR-18 in Covington. Additionally we are on record supporting any and all roadway bypass efforts to allow more traffic through the Covington east/west corridor and off of Kent Kangley – SE 272nd St.

6-1

To this end, development of a connection off the north end of existing 204th Ave SE to the 256th/Hwy 18 interchange provides not only that function; but also allows for greater residential development to occur and enhance the interchanges use.

We do have serious concerns, pertaining to the Hawk property, as to the City of Covington's and the public's investment in roadway infrastructure on unproven, modified saturated, seismic sensitive soils.

6-2

We look forward to Covington's continued support of the commercial development BranBar, LLC/H&C Enterprises, Inc. are proposing directly attached to the NW quadrant of the interchange.

Sincerely,

A handwritten signature in blue ink, appearing to read "Barry Anderson, Sr.", is written over a blue horizontal line.

Barry Anderson, Sr
General Manager
BranBar, LLC

Bennett Consulting, PLLC
Engineering and Mining Geology

August 23, 2013

RECEIVED

Project No. GBC 11-08

AUG 26 2013

Ann Mueller, Senior Planner
City of Covington
16720 SE 271st Street
Covington, WA 98042-4964

CITY OF COVINGTON

Subject: Hawk Property Planned Action DEIS

Dear Ms. Mueller

I was asked by the Northern Gateway Alliance of Seattle to review the above referenced EIS with regard to the suitability of constructing residential and commercial developments over modified land. Specifically my concern is with the proposed plans to place occupied structures atop mine backfill soils used to reclaim the Lakeside gravel pit. I am a licensed engineering geologist in the State of Washington (License No. 550) and have more than 20-years of experience with mine reclamation of soil backfilling.

7-1

In Section 3, page 4, the last sentence of first paragraph states "*Future development on the site would therefore be constructed on modified land,*" meaning land that has been modified by mining and backfilling. On the same page, under the first paragraph of the Geologic Hazards section, in reference to mine backfill areas it is stated "*These areas may not be suited for development consistent with public health and safety concerns without conducting specific studies during the design and permitting process.*"

7-2

In Section 3, page 5, in the first paragraph of the Seismic Hazards section it is stated "*Potential seismic hazards include soil liquefaction and ground rupture.*" In the section paragraph of this section it is stated "*...reclamation backfill conditions will govern the actual hazard potential across much of the site. Consequently, the fill soils at the Hawk Property Subarea site could affect the level of earthquake ground shaking felt in the area*"

The attached aerial photograph shows the extent of the Lakeside gravel pit as it looked in 2002, with the proposed Hawk Property subarea plan as proposed in July 2013. As seen on this aerial photograph much of the proposed commercial retail and high density residential developments are planned for areas that either were, or currently are gravel pit lakes. It is my understanding that in some areas the depth of these lakes exceeds 80-feet. It is also my understanding that the soil used to backfill these lakes is undocumented and that mining and backfilling at this site has been on-going since the 1970's.

7-3

In my opinion the backfilled lakes that are proposed in this DEIS are at a high risk for liquefaction during even moderate seismic events. While it may be argued that there are engineered solutions to mitigate such hazards, in my experience such solutions would be so prohibitively expensive as to make this proposed development uneconomical. Therefore I urge you to seek a different subsequent land use for this depleted mine site, rather than commercial and residential development. Thank you.

7-3
cont'd

Sincerely,



George H. Bennett LEG

Exhibit - 1 -

Proposed Hawk Property Land Use Plan Aerial Overlay



From: [Louise Davenport](#)
To: [Ann Mueller](#)
Subject: Hawk Property
Date: Monday, August 26, 2013 3:10:25 PM

Ms. Mueller,

I am writing to express my opinion on the development of the Hawk property. I would like to see #2 as the preferred plans. Although I think I would use more apartments and less single family homes.

8-1

I do have some reservation even about doing any development at this time. The economy still is very sluggish and DC has made only token laws to rein in banks and wall street. I feel that another recession will occur in the next few years. Would it be wise to have empty store fronts and single family homes. I live in the Timberlane area and there are still many homes here that are empty.

8-2

Louise Davenport

From: [andria mckee](#)
To: [Ann Mueller](#)
Subject: Northern Gateway Study
Date: Thursday, August 22, 2013 12:58:51 PM

go for it !!! and while we are talking about new developments that are a great idea for furthering expansion, growth and more local tax dollars Covington needs to think more about hiring local police officers and fire dept. Investing in your city with better schools, etc has a positive growth side effect



August 26, 2013

VIA EMAIL

Ann Mueller, AICP
Senior Planner
City of Covington
Department of Community Development
16720 SE 271st Street
Covington, WA 98042-4964
amueller@covingtonwa.gov

RE: Comments on Hawk Property Draft Subarea Plan

Dear Ms. Mueller,

Oakpointe Holdings, LLC ("Oakpointe") appreciates the opportunity to comment on the City of Covington's Hawk Property Draft Subarea Plan. The below comments have been organized by page number for ease of reference.

Page 7 - Conceptual Site Plan Minimum Urban Village Alternative: There are two different trails shown along the southern boundary of the Hawk Property site. There will likely only be one trail in this location. Also, it should be noted that the trails shown on the site plan are only conceptual in nature and their actual locations will be determined during site plan review. It may also be helpful to graphically indicate a difference between on-site and off-site trails.

10-1

This is clearly a conceptual plan, but spatially, to achieve the Minimum Urban Village Proposal as presented in Exhibit 2.4-1 of the DEIS, more land will need to be allotted to the Multi-family area (shift the line separating Multi-family and Townhomes easterly). Likewise, the line between Townhomes and Single Family should also move easterly to provide more townhome area.

10-2

Page 8 - Conceptual Site Plan Maximum Urban Village Alternative: Same comments as on the Conceptual Site Plan Minimum Urban Village Alternative (Page 7) above with the addition of moving the separators between Multifamily and Townhomes and Townhomes and Single Family farther east than in the Minimum Urban Village Alternative.

10-3

Page 9 - Under Land Use and Zoning, the text indicates that "Three new zoning districts are being proposed..." It actually appears two new districts are being proposed and one is being amended. Page 18 provides a discussion of the "R" zone which already exists and it appears adding the R-12 would be more consistent with an amendment to the "R" district rather than creation of a new zoning district. The RCMU and RM are true new zoning districts as confirmed in the chart on page 16.

10-4

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PUYALLUP, WA 98374

WWW.OAKPOINTE.COM



Page 17 – Potential Zoning – Hawk Property Subarea: The Mixed Residential zoning boundary should be extended easterly to the easterly point of the RCMU zone.

10-5

Page 18 – 18.15.050 (1)(e): “Townhome” should be added to the list of acceptable uses.

10-6

Page 18 – 18.15.050(1)(e): This should be a new section, much like 18.15.090, providing a discussion of the new zone’s purpose, how its purpose is accomplished, and where such zoning is appropriate. This is one of the two new zoning districts and should not be captured under the Urban Residential zoning district.

10-7

Page 19 – Request that “Senior Citizen Assisted Housing” be conditionally permitted in the RCMU zone. There is an emerging trend of co-locating such facilities above or adjacent to commercial centers that have several amenities.

10-8

Page 22 – Request that “Veterinary Clinic” be permitted in the RCMU zone.

10-9

Page 23 – Request that “Specialized Instruction School” be conditionally permitted in the RCMU zone.

10-10

Page 28 – Request that “Apparel and accessory stores” be permitted in the MR zone.

10-11

Page 28 – Request that “Liquor Store” be conditionally allowed in the MR zone.

10-12

Page 28 – Request that “Photographic and electronic shop” be permitted in the MR zone.

10-13

Page 33 – Request that “College/university” be conditionally permitted in the RCMU zone.

10-14

Page 34 – A. Table: Footnote (3) reference should be added to Minimum Lot Area under the R-12 zone.

10-15

Page 36 – (11)(a): Add R-12 to the zones listed.

10-16

Page 45 – (7)(a): Provide exemptions for loading dock and areas not typically visible to a majority of the public. Also, if the parking is underground or structured, this standard could be hard to achieve. Not sure if (8) provides enough discretion to the Director to deal with special circumstances. Also, throughout the subarea plan, it would be helpful to identify or define the Director. Is this the Community Development Director?

10-17

10-18

Page 50 – (1)(g): This provision is confusing at best and actually discourages providing any parking for a park or other common areas area where no building is provided. It further discourages placing the longer façade of the building towards the street. It would seem better to discourage parking areas next to a street frontage unless separated by a landscape area sufficient to create a visual buffer between the streets and parking areas.

10-19



RE: Oakpointe's Comments on Hawk Property Draft Subarea Plan
August 26, 2013
Page 3 of 3

Please feel free to contact me at (425) 898-2100 if you have any questions or require additional information.

Sincerely,



Colin Lund
Chief Entitlement Officer
Oakpointe





August 26, 2013

VIA EMAIL

Richard Hart, AICP, SEPA Official
Community Development Director
City of Covington
Department of Community Development
16720 SE 271st Street
Covington, WA 98042-4964

Ann Mueller, AICP
Senior Planner
City of Covington
Department of Community Development
16720 SE 271st Street
Covington, WA 98042-4964
amueller@covingtonwa.gov

RE: Comments on Hawk Property Draft Planned Action Environmental Impact Statement (EIS)

To Mr. Hart and Ms. Mueller:

Thank you for the opportunity to provide comments on the Hawk Property Draft Planned Action EIS. These comments are submitted on behalf of Oakpointe Holdings, LLC ("Oakpointe"). As the future developer of the Hawk Property Subarea, Oakpointe has a vested interest in ensuring that this EIS discusses environmental impacts and identifies mitigation measures that minimize such impacts and enhance environmental quality associated with the identified action alternatives. Our comments on the Draft Hawk Property Subarea Plan are provided under separate cover.

Oakpointe's specific comments regarding the Draft EIS are as follows:

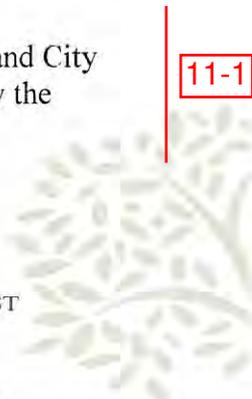
Section 1.2 State Environmental Policy Act Process:

Clarify that a potential development agreement entered into between the property owner and City governing development of the Hawk Property Subarea is also a planned action covered by the environmental analysis contained in the Draft EIS.

11-1

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PUYALLUP, WA 98374

WWW.OAKPOINTE.COM



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

Clarify that selection of a preferred alternative may include adopting both Alternatives 2 and 3 as the range of land uses within the Hawk Property Subarea, i.e., final build-out of the site would contain between 680,000 to 850,000 sf of commercial space and 1,000 to 1,500 dwelling units.

11-2

Exhibit 1.7-2 Summary of Mitigation Measures:

The table set forth in Exhibit 1.7-2 seeks to summarize the mitigation measures proposed in Chapter 3 of the Draft EIS. There are, however, several mitigation measures suggested in Chapter 3 that are not currently captured in Exhibit 1.7-2. For example, but not limited to, page 3-13 of Section 3.2 notes a Spill Prevention Plan would be developed and implemented for Alternative 2; however, there is no reference of such plan within Exhibit 1.7-2; and Exhibits 3.4-6 and 3.4-7 list potential greenhouse gas reduction mitigation measures that are not captured on Exhibit 1.7-2. The authors of each Draft EIS section should review Exhibit 1.7-2 for mitigation measure inclusiveness and revise accordingly. We also suggest adding language, parallel to the description of Exhibit 1.7-1 on page 1-5, that Exhibit 1.7-2 is not intended to be a substitute or replacement for the complete discussion of mitigation measures contained in Chapter 3.

11-3

11-4

1.8 Significant Unavoidable Adverse Impacts

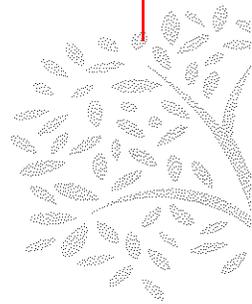
Section 1.8 seeks to summarize whether the three alternatives analyzed in the Draft EIS impose significant unavoidable adverse impacts on any environmental elements (Earth, Surface Water, Groundwater, etc.). The summaries of some elements, however, fail to provide: (i) a conclusion as to whether or not any significant adverse impact is created; and (ii) which alternative is being discussed. For example, but not limited to, the "Plants and Animals" discussion on page 1-32 fails to conclude whether or not a significant unavoidable adverse impact is expected and the "Air Quality" summary on the same page fails to discuss, or differentiate between, Alternatives 1, 2, and 3. The authors of each Draft EIS section should review Section 1.8 and revise accordingly.

11-5

2.1 Introduction

Section 2.1 provides in part: "In the future, based on the analysis of Hawk Property Subarea Plan and Planned Action EIS, the City intends to consider a development agreement with the property developer and to annex the portion of the subarea in its potential annexation area (PAA) within the King County urban growth area (UGA) presently outside current city limits." Oakpointe suggests revising this sentence as follows (as shown in blackline): "In the future, based on the analysis of the Hawk Property Subarea Plan and Planned Action EIS, the City ~~intends to consider~~ may enter into a development agreement with the property developer and ~~to~~ annex the portion of the subarea in its potential annexation area (PAA) within the King County urban growth area (UGA) presently outside current city limits."

11-6



2.3 Public Review

Section 2.3 under the "Legislative Meetings" bullet point provides: "The Planning Commission and City Council have held and will hold study sessions, hearings, and deliberations on the subarea plan development and design standards and planned action, and ultimately a development agreement." Oakpointe suggests revising this sentence as follows (as shown in blackline): "The Planning Commission and City Council have held and will hold study sessions, hearings, and deliberations on the subarea plan development and design standards and planned action, and ultimately likely a development agreement."

11-7

Exhibit 2.4-1 Minimum Urban Village Proposal

The heights listed for large format retail and iconic/local retail are inconsistent with the Draft Hawk Property Subarea Plan. They should be 60 feet (instead of 35). *See* CMC 18.30.040 on page 37 of the Draft Hawk Property Subarea Plan.

11-8

Exhibit 2.4-2 Alternative 2 Conceptual Land Use Plan

This exhibit should note that the trail locations shown are only conceptual. This exhibit should also be revised to delete the reference to a separate "townhome" use since townhomes are allowed under the "multifamily" use. In addition, this exhibit should be revised to harmonize with Exhibit 2.4-7.

11-9

Exhibit 2.4-3 Maximum Urban Village Proposal

The heights listed for large format retail and iconic/local retail are inconsistent with the Draft Hawk Property Subarea Plan. They should be 60 feet (instead of 35). *See* CMC 18.30.040 on page 37 of the Draft Hawk Property Subarea Plan.

11-10

Exhibit 2.4-5 Alternative 2 Conceptual Land Use Plan

This exhibit should note that the trail locations shown are only conceptual. This exhibit should also be revised to delete the reference to a separate "townhome" use since townhomes are allowed under the "multifamily" use. In addition, this exhibit should be revised to harmonize with Exhibit 2.4-7.

11-11

Page 2-13 – Alternatives Eliminated From Consideration

Revise the second to last paragraph of the subsection entitled "Alternatives Eliminated From Consideration" to delete the reference to "greater heights."

11-12

Section 3.3 Groundwater Resources (page 3-18)

The first paragraph of this section should be revised to clarify that the Draft EIS analyzes three alternatives; however, only two of the alternatives are scenarios for mixed use development.

11-13



Section 3.3 Groundwater Resources (page 3-21 to 3-22)

The discussion of Alternatives 2 and 3 in this Section 3.3 should be amended to include details regarding the developer's proposed strategy for handling roof runoff with respect to water quality treatment and flow control. Storm drainage facility designs for the Hawk Property Subarea can be optimized by separating roof runoff from other pollution-generating impervious surfaces. Roofs are not considered a pollution-generating surface unless they are metal or subject to capturing dust from manufacturing activities (*see* page G34 of Volume 1 of the 2012 Stormwater Management Manual for Western Washington). Since roofs are not considered pollution-generating, runoff from rooftops is not subject to water quality treatment (*see* page 4-3 of Volume 5 of the 2012 Stormwater Management Manual for Western Washington). By separating the portion of the impervious surface not considered to be a significant source of pollutants, the resulting runoff has a higher concentration of pollutants making treatment methodologies more effective. In addition, water from non-metal rooftops can be taken directly to infiltration or detention elements without treatment thus making the water quality facilities more compact and efficient. Where flow control is required, roof runoff must meet flow control design criteria (*see* pages 4-3 to 4-4 of Volume 5 of the 2012 Stormwater Management Manual for Western Washington).

11-14

Section 3.4 Air Quality (pages 3-40 and 3-41)

In the discussion of Alternatives 2 and 3, the author states that 15 acres of forest land will be permanently removed and that 20 acres of pocket parks will be added as part of development. This is incorrect. Approximately 9 acres of forest land will be permanently removed under Alternatives 2 or 3 and 5.5 acres and 8.3 acres of parks created respectively. Both the discussion and GHG emission analysis therewith needs to be revised accordingly.

11-15

Section 3.5 Plants and Animals (page 3-49)

The first paragraph under the subsection entitled Affected Environment and Methodology – Critical Areas needs to be clarified that the entire Hawk Property Subarea is located within the City of Covington but contains approximately 132 acres within the Covington city limits and the remainder in unincorporated King County. These remaining 80 acres are located in Covington's potential annexation area (PAA) and annexation is anticipated in the future.

11-16

Section 3.5 Plants and Animals (page 3-64)

In the second paragraph of the subsection entitled "Significant Unavoidable Adverse Impacts", the author should include a conclusion as to whether Alternatives 2 and 3 create any significant unavoidable adverse impacts to the plants and animals elements of the environment.

11-17



Section 3.6 Noise (pages 3-67 and 3-68)

Pages 3-67 and 3-68 of Section 3.6 provide a bullet point list of certain screening-level assumptions that were used to predict existing and future noise levels. One of these assumptions provides: "The width of the new 204th Avenue SE street segment was assumed to be the same as the width of the existing 204th Avenue SE roadway (44 feet)." In fact, the developer anticipates that the new 204th Avenue SE street segment will be approximately 66 feet wide based on the City of Covington's arterial classification standards. Given this modified assumption, the author should also confirm whether the assumption that "[f]uture distance between the center of the street and average allowable setbacks (for new developments) was assumed to be 60 feet" remains valid and evaluate whether noise level predictions need to be updated.

11-18

Oakpointe also suggests including as part of Section 3.6's screening level assumption discussion an explanation regarding the absence of field measurements for the EIS's noise analysis, including, but not limited to, confidence in reference values for modeling existing ambient noise levels. In addition, Oakpointe proposes adding a mitigation measure to Section 3.6 that requires the Hawk Property Subarea developer to perform such noise field measurements as a condition of engineering approvals once the ultimate roadway alignment, width and final grade for Alternatives 2 and 3 have been designed.

11-19

11-20

Section 3.8 Transportation

Oakpointe suggests the following additions to Section 3.8:

- While it is customary to use the PM Peak Hour (i.e., highest travel hour) for traffic analysis so mitigation is imposed for the worst-case traffic scenarios, Oakpointe suggests including an explanation in the last paragraph on page 3-87 regarding the AM Peak Hour period.
- In the Future Travel Demand subsection starting on page 3-101, include an explanation as to why the regional demand model developed by Puget Sound Regional Council (PSRC) was selected by the author and which PSRC model elements were integrated into the City's travel demand forecasting model.
- In the Intersection Operations subsection that begins on page 3-112, include a discussion regarding the peak hour factor (PHF) employed in Covington's travel demand forecasting model.
- While the non-motorized facilities discussion on page 3-119 includes pedestrian impacts, for readability add to Section 3.8 a discussion specific to pedestrian impacts and related mitigation measures.

11-21

11-22

11-23

11-24



- The last sentence of page 3-119 notes that Section 3.8's mitigation measures include mitigation for short-term construction impacts; however, this section appears to be missing a discussion regarding construction traffic impacts or measures to mitigate short-term construction impacts. Oakpointe suggests including both this impact discussion and mitigation measures in the Final EIS. 11-25
- In the Roadway Capacity Improvements discussion on page 3-121 include a discussion regarding queue length for the roadway capacity improvements and intersections identified in Exhibit 3.8-17. 11-26

Section 3.8 Transportation – Other Potential Mitigation Measures (starting on page 3-121)

Oakpointe suggests clarifying in the “Other Potential Mitigation Measures” subsection of Section 3.8 the four specific proposed mitigation measures that the author suggests to mitigate any significant adverse impacts as a result of Alternatives 2 and 3:

- SE Wax Road/SE 180th Street; 11-27
- SE 272nd Street/204th Avenue SE;
- SE 256th Street/SR 18 Westbound Ramps; and
- SE 256th Street/SR 18 Eastbound Ramps.

In addition, Oakpointe suggests including further explanation in Section 3.8 that because the need for the roadway capacity improvements identified under the No Action Alternative is triggered by the future year 2035 traffic condition without build-out of Alternatives 2 and 3, such measures are not proposed to mitigate the impacts of the action alternatives. 11-28

Section 3.8 Transportation – Significant Unavoidable Adverse Impacts (page 3-130)

Oakpointe suggests including discussion regarding the nature of the impacts, if any, associated with Alternatives 2 and 3 if the Cities of Covington and Maple Valley do not adopt the SR 516 policy changes discussed in Section 3.8. 11-29

Appendix C – Draft Planned Action Ordinance

In Section 3 of the Draft Planned Action Ordinance, Oakpointe requests that the City clarify that any future development agreement entered into by the City and developer would be considered a planned action and having had its environmental impacts evaluated in the Planned Action EIS provided it meets the criteria set forth in Section 3(D). 11-30



RE: Oakpointe's Comments on Hawk Property Draft EIS
August 26, 2013
Page 7 of 7

This concludes Oakpointe's comments on the Hawk Property Subarea Draft EIS. Please contact me if you have any questions, and thank you again for the opportunity to participate in the review of the proposed subarea plan. We would welcome an in-person meeting with City staff to discuss our comments contained in this letter.

Sincerely,



Colin Lund
Chief Entitlement Officer
Oakpointe



From: [Greg Wingard](#)
To: [Ann Mueller](#)
Subject: Hawk Property Draft Planned Action EIS
Date: Monday, August 26, 2013 2:12:53 PM

Ann:

I am submitting the following comments for this draft EIS. Due to time constraints the comments are limited.

The DEIS states that the condition for modelling existing conditions for the site is "pasture." This is not the natural, or historic condition of the site, and if used would result in mitigation, and in particular stormwater controls less protective than the condition the site should be modeled on, which is forest.

12-1

Historically this site was forest, forested wetland, scrub/shrub wetland and open water features, in particular Jenkins Creek. Jenkins Creek is one of the largest tributaries to, and a significant portion of the Soos Creek basin. Soos Creek is the most important salmon bearing creek on the Green/Duwamish River system, in particular for Chinook Salmon, an endangered species. The DEIS does not provide sufficient weight to this critical sub-basin, which the project will have substantial adverse impacts on. In addition, Jenkins Creek in its own right is also a salmon bearing creek, and provides critical habitat to salmonid species.

12-2

In addition the DEIS fails to consider that the Green River, including the Soos Creek basin currently has a significant area on the state 303(d) list under the federal Clean Water Act, and is currently subject to a Total Maximum Daily Load action for temperature and dissolved oxygen, by the federal Environmental Protection Agency, and Washington State Department of Ecology. Increased temperature, and decreased dissolved oxygen are known to be parameters adversely impacted by urban development, in particular through increased impervious surface in close proximity and discharging to receiving waters.

12-3

This is the exact condition we have with this proposed project, as the DEIS admits. The project is in close proximity to, and constrained by steep slopes, wetlands associated with Jenkins Creek, and the creek itself. Salmonids are particularly susceptible to increased water temperature, and lowered oxygen. In spite of these conditions, and the known TMDL process, which Covington is participating in, there is no mention of, or any consideration of these either known, or easily foreseen unavoidable adverse impacts from the proposed project, especially given that Covington has selected the most intensive, highest impervious surface option as the selected alternative.

The DEIS also fails to consider the full range or types of pollutants which will be generated by residential/commercial/industrial development proposed. Both of the former community plans for the area, the Tahoma-Ravens Heights plan, and the Soos Creek plan included extensive consideration of the impacts to the area creeks, including Jenkins, and Soos Creek, from build out and development. This included studies of sediment pollutants from road run-off, and in streams as well as projections of likely pollutants resulting from additional impervious surfaces and urban development of the area.

12-4

Given these studies were done some time ago, and given the intensity of

the proposed development for the DEIS area, the lack of consideration for chemicals such as metals, which have critical impacts on aquatic species such as zinc, copper and lead, as well as chemicals known to impact salmonids at very low levels, such as petroleum, and polynuclear aromatic hydrocarbons, is shocking.

12-4
cont'd

As a result, I don't believe the DEIS meets the requirements of law, and has failed to take a hard look at adverse impacts that this project is certain to have in such close proximity to Jenkins Creek and related wetlands and upland ecosystems. Further modeling conditions assumed in the DEIS are substandard, and would result in lessening the level of protection for a critical receiving water, Jenkins Creek, and its related wetlands, which are themselves also waters of the state.

12-5

Regards,

Greg

5.0 REFERENCES

In addition to the Draft EIS references, the following references have been provided.

5.1 Personal Communication

Chapter 3

City of Covington, 2013, Telephone conversation between Nelson Ogren, PE, Development Review Engineer, and Nell Lund, PWS, Ecologist, The Watershed Company, on November 12, 2013, to discuss the stormwater treatment requirements.

5.2 Printed References

Chapter 2

Puget Sound Regional Council. 2012. 2012 Land Use Forecasts – Revised Draft Public Review Version. Released December 21, 2012.

U.S. Census Bureau. 2012. American Community Survey 2007-2011 5-Year Estimates. Released December 6, 2012.

Chapter 3

Department of Ecology. “Focus on Soos Creek Watershed: Soos Creek watershed streams are too warm, have too little oxygen and aquatic habitat is degraded.” Ecology Publication Number 12-10-020. July 2012.

Department of Ecology. “Water Quality Improvement Project.”

<http://www.ecy.wa.gov/programs/wq/tmdl/SoosCrTMDL.html> Published September, 2012. Accessed April 2013.

Feist, B.E., Buhle, E.R., Arnold, P., Davis, J.W., Scholz, N.L. “Landscape Ecotoxicology of Coho Salmon Spawner Mortality in Urban Streams.” PLoS ONE 6(8): e23424. doi: 10.1371/journal.pone.0023424. August 2011.

King County DNR. “Sampling and Analysis Plan and Quality Assurance Project Plan Soos Creek, Watershed Temperature and Dissolved Oxygen Total Maximum Daily Load Study Areas.” February 2009.

McIntyre, J.K., Baldwin, D.H., Beauchamp, D.A., Scholz, N.L. “Low-level copper exposures increase visibility and vulnerability of juvenile coho salmon to cutthroat trout predators.” *Ecological Applications*, 22(5): 1460-1471. July 2012.

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6.0 DISTRIBUTION LIST

The following agencies, organizations, and individuals received a notice of availability for the Draft and Final EIS. Digital copies of the documents were also provided to agencies with jurisdiction, local service providers, and other interested parties upon request.

6.1 Federal Agencies

US Army Corp. of Engineers, Seattle Dist.
Attn: Sarah Rahman
OD-RG
P.O. Box 3755
Seattle, WA 98124-3755

Kent Post Office
Postmaster
10612 SE 240th Street
Kent, WA 98031-9998

United States Fish & Wildlife Service
Attn: Ken Berg, Manager
Washington Fish and Wildlife Office
510 Desmond Drive SE, Suite 102
Lacey, WA 98503

United States Geological Survey
Western Regional Office
909 1st Avenue, 8th Floor
Seattle, WA 98104

United States Postal Service
Don Bartley
Growth Management Coordinator
10612 SE 240th St
Kent, WA 98031-9998

6.2 Tribes

Muckleshoot Indian Tribe
Fisheries Division
Attn: Karen Walter
39015 172nd Ave SE
Auburn, WA 98092

6.3 State and Regional Agencies

Puget Sound Clean Air Agency
Attn: SEPA Review
1904 3rd Ave, Ste 105
Seattle, WA 98101-3317

Puget Sound Partnership
326 East D Street
Tacoma, WA 98421

Puget Sound Regional Council
Attn: SEPA Review
1011 Western Avenue, Suite 500
Seattle, WA 98104

Seattle/King County Public Health
Lee Dorigan
401 5th Ave, Ste 1100
Seattle, WA 98104

Washington State Department of Commerce
Growth Management Services
Attn: Review Team
PO Box 42525
Olympia, WA 98504-2525

Washington Department of Corrections
P.O. Box 41100, Mail Stop 41100
Olympia, WA 98504-1100

Washington State Department of Ecology
SEPA Unit
PO Box 47703
Olympia, WA 98504-7703

Washington State Department of Fish & Wildlife
Attn: Larry Fisher, Area Habitat Biologist
1775 12th Avenue NW
Issaquah, WA 98027

Washington State Department of Health
Environmental Public Health Division
P.O. Box 47820
Olympia, WA 98504-7820

HAWK PROPERTY PLANNED ACTION EIS | DISTRIBUTION LIST

Washington State Department of Natural Resources
Resource Protection Division
1111 Washington Street SE
PO Box 47037
Olympia, WA 98504-7037

Washington State Department of Social and Health Services
Constituent Services
P.O. Box 45130
Olympia, WA 98504-5130

Washington State Department of Transportation
John LeFotu
Po Box 330310 MS 240
Seattle, WA 98133-9710

6.4 Services, Utilities, and Transit

Bonneville Power Administration
Covington Substation
28401 Covington Way SE
Covington, WA 98042

BNSF Railway Company
Mike Cowles, Manager Public Projects
2454 Occidental Ave S., Suite 1A
Seattle, WA 98134

Comcast of Washington IV
410 Valley Ave NW, Suite12
Puyallup, WA 98371-3317

Cascade Water Alliance
Michael Gagliardo
520 112th Ave Ne Suite 400
Bellevue, WA 98004

Covington Water District
Gwenn Maxfield, General Manager
18631 SE 300th Place
Kent, WA 98042

Kent Regional Fire Authority
24611 116th Ave SE
Kent, WA 98030

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Kent School District Finance and Planning
Ms. Gwenn Escher-Derdowski
12033 SE 256th Street, Ste A-600
Kent, WA 98030

Kent School Dist. Transportation
Richard LaBoyne
25211 104th Ave SE
Kent, WA 98030

Maple Valley Fire and Life Safety
Scott Webster
23775 SE 264th Street
Maple Valley, WA 98038

Puget Sound Energy
Jim Kennedy
PO Box 90868, EST9W
Bellevue, WA 98009-0868

Qwest Communications
Jennifer Gorman
23315 66th South
Kent, WA 98032

Republic Services
Jeff Wagner
22010 76TH Ave S.
Kent, WA 98032

Soos Creek Sewer and Water District
Darci McConnell
PO Box 58039
Renton, WA 9808-1039

Tahoma School District
Attn: Lori Cloud, Director of Financial Services
25720 Maple Valley-Black Diamond Rd SE
Maple Valley, WA 98038

Water District 111
Sharon Goble
27224 144th Avenue SE
Kent, WA 98042

6.5 Community Organizations

Crest Air Park
Rikki Birge
29300 179th Pl SE
Kent, WA 98042

Middle Green River Coalition
PO Box 921
Enumclaw, WA 98022

Timberland Homes Association
C/O: Chantelle Mitchell
Community Association Manager
WPM South LLC
15215 SE 272nd St #204
Kent WA 98042

6.6 Adjacent Jurisdictions

City of Black Diamond
Planning Director
PO Box 599
Black Diamond, WA 98010

City of Kent
Kelly B. Peterson, Wellhead Protection Engineer
220 4th Ave South
Kent WA 98032-5895

City of Kent Planning Department
Planning Director
220 4th Ave South
Kent, WA 98032-5895

City of Maple Valley
Planning Director
P. O. Box 320
Maple Valley, WA 98038

HAWK PROPERTY PLANNED ACTION EIS | DISTRIBUTION LIST

King County Department of Natural Resources and Parks
Parks and Recreation Division
201 S Jackson Street, Room 700
Seattle, WA 98104-3855

King Co. Dept of Permitting and Environmental Review
35030 SE Douglas St, Ste 210
Snoqualmie, WA 98065-9266

King County Dept. of Transportation
Linda Dougherty, Div. Director Road Services
201 S. Jackson St., KSC-TR-0313
Seattle, WA. 98104-3856

King County Metro Transit Division
Gary Kriedt
201 S. Jackson St., MS-KSC-TR-0431
Seattle, WA 98104

6.7 Draft EIS Commenters

Agencies and persons who commented on the Draft EIS (see Chapter 4) have been provided a Notice of Availability of the Final EIS.

Appendix A: TRANSPORTATION ANALYSIS

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3.0 AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION MEASURES

3.8 Transportation

This chapter describes the existing transportation system in the vicinity of the subarea and the future transportation conditions that are expected with and without the proposed project.

Affected Environment

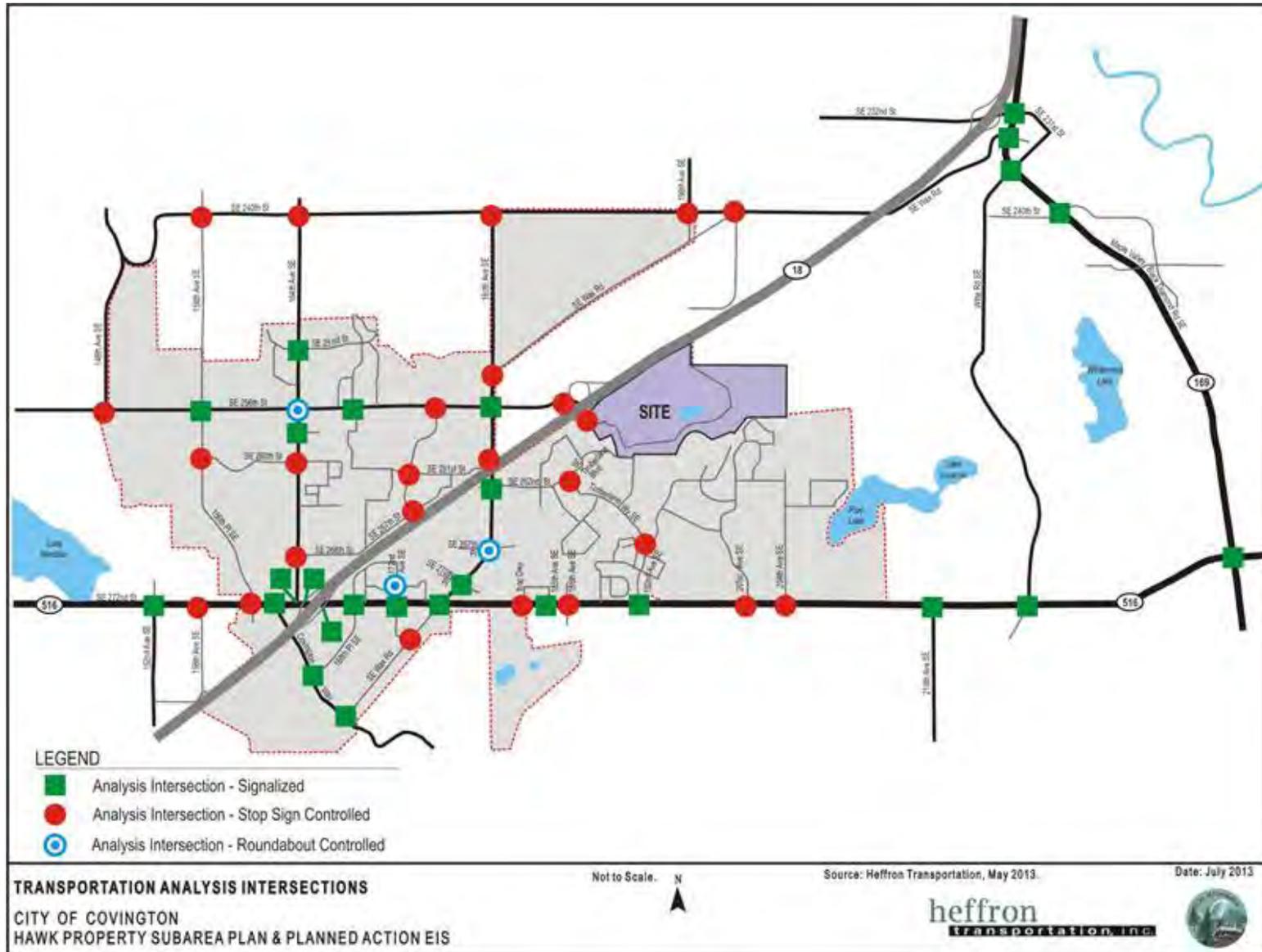
This section describes the study area considered for transportation analysis and presents existing transportation conditions within that area, including traffic volumes, roadway operations, safety conditions, transit facilities and operations, non-motorized facilities, and freight conditions.

Transportation Study Area and Study Period

The transportation study area includes all roadways and intersections that the City of Covington has defined for its Concurrency Management Program, which is the program by which cities identify infrastructure needed to support existing and future land use. Intersections that the City of Maple Valley has designated for its Concurrency Management Program have also been included in the study area. Exhibit 3.8-1 shows the analysis intersections included in the transportation study area, along with their existing traffic control. The transportation study area includes transit service located within one mile of the subarea, and existing and planned future non-motorized facilities located within one-quarter mile of the site.

Analysis is provided for the weekday PM peak hour condition (the highest volume one-hour period between 4:00 and 6:00 P.M.), which reflects the most congested hour of a typical week, and is the analysis period on which both Covington's and Maple Valley's concurrency management programs are based. The City can choose to additionally analyze AM peak hour conditions, when appropriate. However, the proposed project is expected to generate the highest number of trips during the PM peak hour. Since the PM peak hour reflects the most congested cumulative conditions (highest level of background traffic combined with the highest level of project-generated traffic), AM peak hour analysis was determined not to be needed for the EIS analysis. Future conditions are evaluated for year 2035, which is the City of Covington's long-range planning year.

Exhibit 3.8-1. Transportation Analysis Intersections



Roadway System

EXISTING NETWORK

The City of Covington designates streets according to functional classifications that define the street’s function in the roadway network. The classifications are summarized in Exhibit 3.8-2.

Exhibit 3.8-2. City of Covington Roadway Functional Classifications

Classification	Primary Function
Principal Arterial	Provides for movement across and between large subareas of an urban region and serves predominantly "through traffic" with minimum direct service to abutting land uses. This category includes the freeways and major highways (SR 18 and SR 516) under the jurisdiction of the Washington State Department of Transportation (WSDOT).
Minor Arterial	Provides for movement within the larger subareas bound by principal arterials. A minor arterial may also serve "through traffic" but provides more direct access to abutting land uses than does a principal arterial.
Collector	Provides for movement within smaller areas which are often definable neighborhoods, and which may be bound by arterials with higher classifications. Collectors serve very little "through traffic" and serve a high proportion of local traffic requiring direct access to abutting properties. Collector arterials provide the link between local neighborhood streets (i.e. non-arterials) and larger arterials.
Local Access	Provides access to the roadway network for abutting residential and commercial development. All roadways not designated as principal arterials, minor arterials, or collectors are local access streets.

Source: City of Covington 2009a.

Regional access is provided by State Route (SR) 18, which is a limited access freeway that connects the study area to Interstate-90 (I-90), SR 169, SR 167, and I-5, with direct connections between Covington and the cities of Auburn and Federal Way to the southwest. The City’s Comprehensive Plan states that SR 18 is also considered a principal arterial (City of Covington 2009a). SR 18 has an existing full access interchange near the Hawk Property site, located at SE 256th Street. The other SR 18 interchange within Covington is located at SE 272nd Street (SR 516), about one and a half miles to the southwest of the subarea. Through Covington, SR 18 has two general purpose travel lanes in each direction. SR 18 is designated as a Highway of Statewide Significance, which is codified in the Revised Code of Washington (RCW) 47.06.140. Highways of Statewide Significance are those highways and other transportation facilities needed to promote and maintain significant statewide travel and economic linkages in Washington State; the legislation emphasizes that these significant facilities should be planned from a statewide perspective. Standards for Highways of Statewide Significance are defined by the Washington State Department of Transportation (WSDOT). SR 169 in Maple Valley is also designated as a Highway of Statewide Significance (WSDOT 2007).

Access to the existing mine on the Hawk Property site is provided via SE 256th Street, just east of the SR 18/SE 256th Street interchange. Exhibit 3.8-3 summarizes functional classifications and other features of key roadways located in the project study area.

Exhibit 3.8-3. Key Study Area Roadways

Roadway	Functional Classification ¹	Speed Limit (mph)	Lanes	Transit, Non-Motorized and Parking Facilities
SE 240 th Street	Minor Arterial	35-40 ²	2	Intermittent sidewalks. No on-street parking. No bus stops.
SE 256 th Street	Minor Arterial	35-40	2-5	Sidewalks and bicycle lanes on both sides between 180 th Avenue SE and the SR 18 interchange. No on-street parking. No bus stops.
SR 516 (SE 272 nd Street, SE Kent-Kangley Road)	Principal Arterial to the west of SR 18; Minor Arterial to the east.	35-45	2-5	Sidewalks adjacent to commercial areas; shoulder where sidewalks are not present. Bus stops are located at about one-quarter to one mile spacing along the entire length. No on-street parking.
SE Wax Road ³	Minor Arterial to the north of SE 256 th Street; Collector to the south.	35	2-3	Sidewalks and bicycle lanes on both sides of the street, south of SE 256 th Street. To the east of 180 th Avenue SE, shoulder on both sides. Bus stops located at SE 267 th Place and SE 270 th Street. No on-street parking.
180 th Avenue SE ³	Minor Arterial to the north of SE 256 th Street; Collector to the south.	35	2-3	Sidewalks and bicycle lanes on both sides of the street, south of SE 256 th Street. To the north of SE 256 th Street, primarily shoulder on both sides, with intermittent sidewalks. Bus stops located at SE 267 th Place and SE 270 th Street. No on-street parking.
204 th Avenue SE	Local Access	25	2	No sidewalks or shoulders. No on-street parking. No bus stops.
SR 169 (Maple Valley-Black Diamond Road SE)	Arterial ⁴	35-50	2-5	Sidewalks on both sides adjacent to commercial development near SR 516 and near the SR 18 interchange; primarily shoulder on both sides in-between these two areas. Bus stops are located at about one-quarter to one-half mile spacing along the entire length. No on-street parking.

1. Source: City of Covington 2009a.

2. Near Tahoma High School at 180th Avenue SE, there is a school speed limit of 20 mph when children are present.

3. SE Wax Road and 180th Avenue SE share the same roadway along the section between the SE Wax Road/180th Avenue SE intersection and SE 272nd Street.

4. Source: City of Maple Valley 2011.

FUTURE ROADWAY IMPROVEMENTS

Exhibit 3.8-4 summarizes future roadway projects that have been planned in the study area. Based on existing Transportation Improvement Programs (TIPs) and other plans and programs developed by the Cities of Covington and Maple Valley, there is reasonable certainty that the projects listed would be completed by 2035 if build-out of planned regional land use, as well as planned land use within the Cities of Covington and Maple Valley, occurs by that year. Assumed future improvements in Maple Valley include mitigation projects that have been identified in a development agreement to address impacts of the planned The Villages and Lawson Hills Master Planned Developments (MPDs) in the City of Black Diamond. These improvements were included because the planned new developments are expected to be complete and fully occupied prior to 2035.

Exhibit 3.8-4. Assumed Future Roadway Improvements in Study Area by 2035

Location	Planned Improvement	Source
SE 272 nd Street, between Jenkins Creek and 192 nd Avenue	Widen roadway to 5 lanes, including curb and gutter, sidewalks, access control features, landscaping, and provisions for U-turns.	Covington 2013-2018 TIP, #CIP 1127 and #CIP 1128 ¹
SE 272 nd Street, between 160 th Avenue SE and 164 th Avenue SE	Add turn lanes, channelization, and signal modifications.	Covington 2013-2018 TIP, #CIP 1063 ¹
SE 272 nd Street, between 192 nd Avenue SE Covington east city limits	Widen roadway to 5 lanes, including curb and gutter, sidewalks, access control features, landscaping, and provisions for U-turns.	(2)
185 th Place Extension, from Wax Road/180 th Street to SE 272 nd Street	Construct new 3-lane urban arterial, with curb and gutter, sidewalks, and landscaping.	Covington 2013-2018 TIP, #CIP 1124 ¹
SE 256 th Street, between 172 nd Avenue SE and 180 th Avenue SE; 180 th Avenue SE, between SE 256 th Street and SE Wax Road	Provide improvements adjacent to the new fire station at SE 256 th Street/180 th Avenue SE; widen the north side of SE 256 th Street from 176 th Avenue SE to 180 th Avenue SE.	Covington 2013-2018 TIP, #CIP 1056 and #CIP 1149 ¹
SR 169, Witte Road SE to SE 244 th Street	Widen to 5 lanes and add southbound right-turn access lane	Maple Valley 2013-2018 TIP, #T-7, #T-36 and #T-39 ³
SR 169, SE 260 th Street to SE 264 th Street	Widen roadway to 5 lanes.	Maple Valley 2013-2018 TIP, #T-31a ³
SR 169 / SE 244 th Street	Add traffic signal.	Maple Valley 2013-2018 TIP, #T-34 ³
SR 169 / SE 271 st Place	Widen roadway to 5 lanes and add traffic signal.	Maple Valley 2013-2018 TIP, #T-37 ³
216 th Avenue SE, SR 516 to Maple Valley south city limits	Widen to 3 lanes.	Maple Valley 2013-2018 TIP, #T-38 ³
SE 231 st Street Connection, Witte Road to SE 240 th Street	Construct new 3-lane roadway, including curb and gutter, bicycle lanes, and sidewalks.	Maple Valley Comprehensive Plan ⁴
SR 169 / SE Wax Road	Add southbound through-lane on SR 169, from SE 231 st Street to Witte Road. Add second eastbound to southbound right-turn lane. Modify signal to allow eastbound right-turn overlap with northbound left-turn phase.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project A ⁵
SR 169 / Witte Road SE	Add southbound through lane.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project B ⁵
SR 169 / SE 240 th Street	Add second northbound to westbound left turn lane. Add second westbound to southbound left turn lane. Add westbound through lane.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project C ⁵
SR 169, Witte Road SE to SE 280 th Street	Add second northbound lane and second southbound lane. Add traffic signal at SR 169 / Witte Road SE	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Projects E, F, G, H, and J ⁵
SR 169 intersections with SE 264 th Street, SR 516, and SE 271 st Street	Coordinate signals and set cycle length to 140 seconds.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project I ⁵

Location	Planned Improvement	Source
SR 169, SE 280 th Street to Maple Valley south city limits	Add second southbound lane.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project K ⁵
SE 271 st Bypass Road from SR 169 to SR 516	Construct new 3-lane street.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project L ⁵
SR 516, 216 th Avenue SE to Maple Valley west city limits.	Widen to 4/5 lanes, with curb, gutter and sidewalk. At the 216 th Avenue SE intersection, restripe the northbound approach to one left-turn lane and one left- and right-turn shared lane. Increase the left lane pocket length to 270 feet. Modify signal to accommodate eastbound right-turn overlap with northbound phase.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Projects W and X ⁵
SE 240 th Street, SR 169 to Witte Road	Add second westbound lane.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project Y ⁵
SE 240 th Street Extension	Construct a new 3-lane extension of SE 240 th Street between SE Wax Road and Witte Road SE.	Maple Valley Development Agreement for The Villages and Lawson Hills MPDs, Project Z ⁵

1. Source: City of Covington, 2012.

2. Source: City of Covington, 2013. Although this improvement is not currently programmed in the TIP, the City of Covington is committed to continuing the widening projects currently underway east to the city limits, and have reasonable certainty that this will be complete by 2035. [This project is being added to the City's 2035 Capital Improvement Program as part of the Comprehensive Plan update accompanying the Planned Action Ordinance.](#)

3. City of Maple Valley 2012.

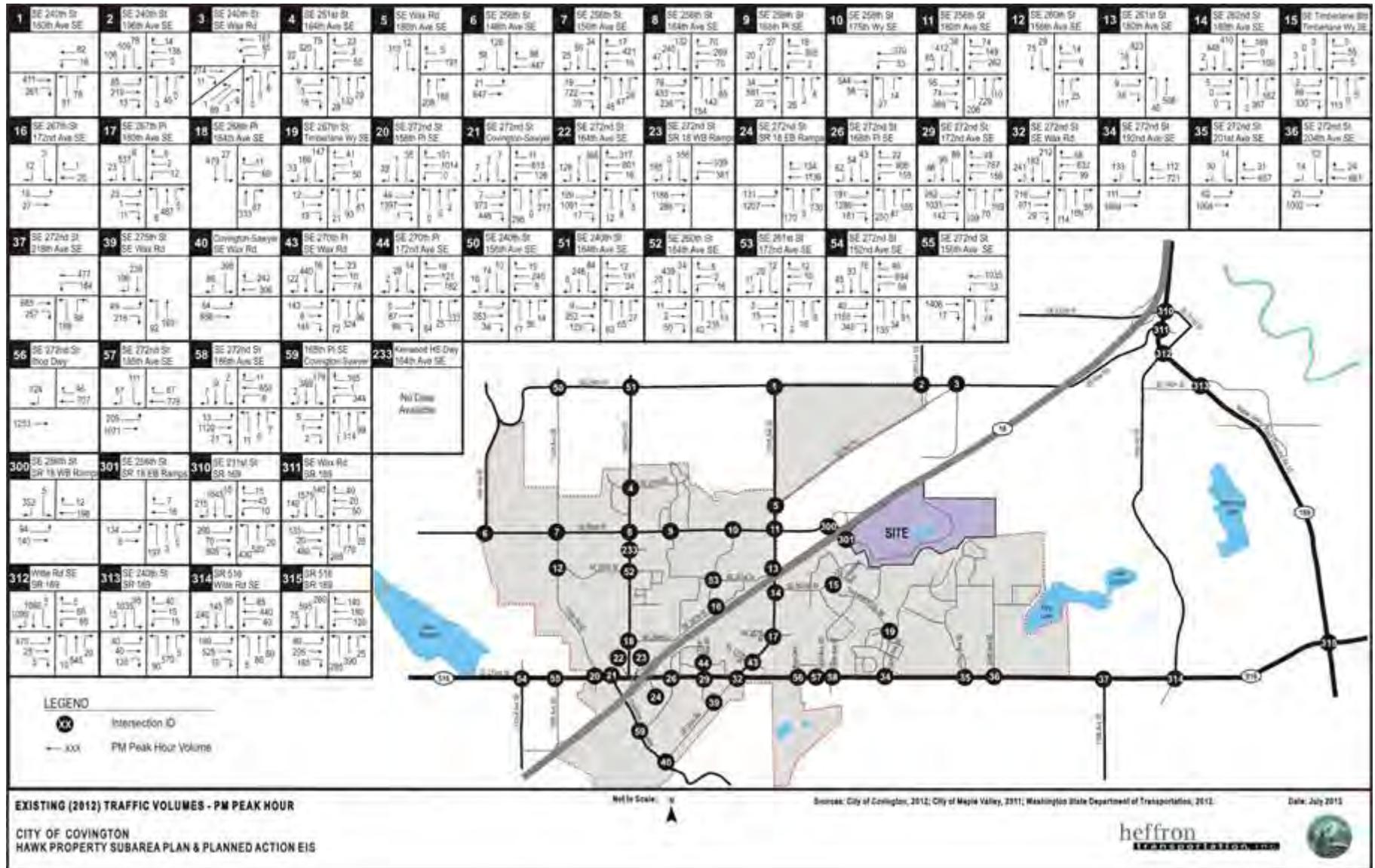
4. City of Maple Valley 2011.

5. City of Maple Valley 2010.

Traffic Volumes

Existing weekday intersection traffic volumes were obtained from PM peak period turning movement counts conducted at the study area intersections. Counts within the City of Covington were conducted in 2012 and counts within the City of Maple Valley were conducted in 2010. Average annual growth rates were applied to the 2010 volumes to estimate the 2012 volumes for the Maple Valley intersections. The growth rates were derived by comparing 2010 and 2012 volumes on SR 169 and SR 516 in Maple Valley, obtained from the *Annual Traffic Report* (WSDOT 2012). Based upon the changes in volume reflected by the WSDOT counts, an average annual growth rate of 2.25% was applied to 2010 counts along SR 169, and an annual rate of 4% was applied to 2010 counts along SR 516. Exhibit 3.8-5 shows the 2012 PM peak hour intersection volumes for the transportation analysis intersections.

Exhibit 3.8-5. Existing (2012) Intersection Volumes – PM Peak Hour



Traffic Operations

Traffic operational analysis methods and existing conditions for intersections and arterial segments are described in the following sections.

INTERSECTIONS

Level of Service Method

Level of service (LOS) analysis was performed at the study area intersections for the PM peak hour. Level of service is a qualitative measure used to characterize traffic operating conditions. Six letter designations, “A” through “F,” are used to define level of service. LOS A and B represent conditions with the lowest amounts of delay, and LOS C and D represent intermediate traffic flow with some delay. LOS E indicates that traffic conditions are at or approaching congested conditions and LOS F indicates that traffic volumes are at a high level of congestion with unstable traffic flow.

Levels of service for the study area intersections were analyzed using methodologies presented in the *Highway Capacity Manual* (HCM) (Transportation Research Board 2000). All level of service calculations were performed with Trafficware’s *Synchro 7.0* analysis software. Intersection analysis was completed using the HCM Signalized and Unsignalized modules, consistent with the methods applied in both Covington’s and Maple Valley’s current comprehensive plans. Operations at roundabouts were evaluated using *SIDRA* analysis software.

As described previously, the weekday PM peak hour is analyzed because it reflects the most congested hour of a typical week. HCM methods include application of a peak hour factor (PHF), which additionally assumes that peak 15-minute flow rate within the hour occurs over the entire hour. This results in a more conservative estimation of traffic volumes for the purpose of level of service analysis.

Level of service for intersections is defined in terms of average delay per vehicle in seconds. For a signalized intersection, all-way stop-controlled intersection, or roundabout intersections, level of service is based upon average delay for all vehicles traveling through the intersection. The level of service for a one- or two-way stop-controlled intersection is determined by the average delay for the most congested movement through the intersection. Delay is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. Exhibit 3.8-6 shows the level of service criteria for signalized and unsignalized intersections, as defined in the *Highway Capacity Manual*. Unsignalized intersections have different level of service threshold values than signalized intersections, primarily because drivers expect different levels of performance from different types of transportation facilities. In general, unsignalized intersections are expected to carry lower volumes of traffic than signalized intersections. Therefore, for the same level of service, a smaller amount of delay is acceptable at unsignalized intersections than for signalized intersections.

Exhibit 3.8-6. Level of Service Criteria

Level of Service (LOS)	Average Delay Per Vehicle	
	Signalized	Unsignalized
A	≤ 10.0 seconds	≤ 10.0 seconds
B	10.1 – 20.0 seconds	10.1 – 15.0 seconds
C	20.1 – 35.0 seconds	15.1 – 25.0 seconds
D	35.1 – 55.0 seconds	25.1 – 35.0 seconds
E	55.1 – 80.0 seconds	35.1 – 50.0 seconds
F	> 80.0 seconds	> 50.0 seconds

Source: Transportation Research Board, 2000.

Intersection Level of Service Standards

CITY COVINGTON

To evaluate the potential transportation impacts of new development, the City of Covington has adopted an intersection standard of LOS D. Levels of service for traffic movements from unsignalized non-arterial side streets may be allowed to operate at LOS E or F, if the City Engineer determines that no significant operational or safety hazards will result (City of Covington, 2009a).

CITY OF MAPLE VALLEY

The City of Maple Valley has also adopted a standard of LOS D for its seven concurrency intersections, which are all signalized. However, this standard is based upon the weighted average delay per vehicle (based upon the number of total entering vehicles at each intersection), for north and south groups of intersections that have been defined by the City. The north concurrency group consists of the intersections of SR 169/SE 231st Street, SR 169/SE Wax Road, SR 169/ Witte Road SE, SR 169/SE 240th Street. The south concurrency group consists of the intersections of SR 516/SE 216th Avenue, SR 516/Witte Road SE, and SR 516/SR 169. The weighted average is computed according to the methodology outlined in the City’s Comprehensive Plan. The use of the weighted average delay for each of these groups of intersections allow one or more of the intersections to operate below LOS D, while still maintaining an overall average of LOS D or better (City of Maple Valley 2011).

Existing Intersection Level of Service

Exhibit 3.8-7 summarizes the existing levels of service for the study area intersections. As shown, all intersections except the following (shaded in the table) are currently operating at LOS D or better.

Signalized

- 21 – SE 272nd Street/Covington Way (LOS E)
- 32 – SE 272nd Street / SE Wax Road (LOS E)

All-Way Stop-Controlled

- 51 – SE 240th Street/164th Avenue SE (LOS E)

One-Way Stop Controlled

- 6 – SE 256th Street/148th Avenue SE (LOS F)
- 35 – SE 272nd Street/201st Avenue SE (LOS E)
- 36 – SE 272nd Street/204th Avenue SE (LOS E)

Exhibit 3.8-7. Existing (2012) Level of Service

ID	Intersection	LOS ¹	Delay ²
Signalized			
4	SE 251 st St/164 th Ave SE	A	6.7
7	SE 256 th St/156 th Ave SE	A	9.5
9	SE 256 th St/168 th PI SE	A	8.3
11	SE 256 th St/ SE 180 th St	C	32.5
14	SE 262 nd St/180 th Ave SE	B	13.7
21	SE 272 nd St/Covington Way	E	56.3
22	SE 272 nd St (SR 516)/164 th Ave SE	D	37.3

HAWK PROPERTY PLANNED ACTION EIS | AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION

ID	Intersection	LOS ¹	Delay ²
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	C	29.6
24	SE 272 nd St (SR 516)/Eastbound SR 18 Ramps	D	37.2
26	SE 272 nd St/168 th Ave SE	D	41.3
29	SE 272 nd St/172 nd Ave SE	D	48.3
32	SE 272 nd St (SR 516)/SE Wax Rd	E	56.1
34	SE 272 nd St/192 nd Ave SE	B	11.6
37	SE 272 nd St/216 th Ave SE	C	24.6
40	Covington Way/SE Wax Rd	C	21.0
43	SE 270 th Pl/SE Wax Rd	B	16.6
54	SE 272 nd St/152 nd Ave SE	B	12.8
57	SE 272 nd St/185 th Ave SE	C	29.8
59	165 th Pl SE/Covington Way	C	27.9
233	Kenwood HS Access/164 th Ave SE	(3)	(3)
310	SE 231 st St/SR 169	D	39.6
311	SE Wax Rd/SR 169	D	40.9
312	Witte Rd SE/SR 169	D	41.3
313	SE 240 th St/SR 169	C	24.2
314	SR 516/Witte Rd SE	C	34.0
315	SR 516/SR 169	D	41.2
Roundabout			
8	SE 256 th St/164 th Ave SE	B	40.9 10.3
17	SE 267 th Place/SE Wax Rd/180 th Ave SE	A	7.4 6.5
44	SE 246th -270 th Place/172 nd Ave SE	A	5.8 6.2
All-Way Stop-Control			
2	SE 240 th St/196 th Ave SE	B	12.7
5	SE Wax Rd/SE 180 th St	B	13.4
15	SE Timberlane Boulevard/Timberlane Way SE	B	10.4
19	SE 267 th St/Timberlane Way SE	B	10.7
51	SE 240 th St/164 th Ave SE	E	39.7
One- or Two-Way Stop Control⁴			
1	SE 240 th St/180 th Ave SE (NB)	C	22.6
3	SE 240 th St/SE Wax Rd/200 th Ave SE	(3)	(3)
6	SE 256 th St/148 th Ave SE (SB)	F	169.3
10	SE 256 th St/175 th Way SE (NB)	B	14.6
12	SE 260 th St/156 th Ave SE (WB)	A	9.6
13	SE 261 st St/180 th Ave SE (EB)	C	17.0
16	SE 267 th St/172 nd Ave SE (SB)	A	8.6

ID	Intersection	LOS ¹	Delay ²
18	SE 268 th Place/164th Ave SE (WB)	D	27.3
20	SE 272nd St/156th Pl SE (SB)	C	23.0
35	SE 272nd St/201st Ave SE (SB)	E	38.2
36	SE 272nd St/204th Ave SE (SB)	E	37.9
39	SE 275th St/SE Wax Rd (EB)	C	16.2
50	SE 240th St/156 th Ave SE (SB)	C	24.3
52	SE 260th St/164th Ave S (WB)	C	15.1
53	SE 261st St/172nd Ave SE (EB)	A	9.8
55	SE 272nd St/156th Ave SE (WBL)	B	12.4
56	SE 272nd St/IHOP Driveway (SB)	C	17.3
58	SE 272nd St/186th Ave SE (NB)	D	33.1
300	SE 256th St/Westbound SR 18 Ramps (SB)	B	13.7
301	SE 256th St/Eastbound SR 18 Ramps (NB)	C	17.8

Source for Covington intersections: David Evans and Associates, 2012.

Source for Maple Valley intersections: Heffron Transportation, May 2013.

1. LOS = level of service

2. Delay = average delay per vehicle in seconds

3. Not available.

4. For one- and two-way stop-controlled intersections, the most congested movement (shown in parentheses) is reported.

ARTERIAL SEGMENTS

Arterial Level of Service Method

The City of Covington has adopted King County’s standards for arterials which apply Transportation Adequacy Measures (TAMs). The TAM process is very complex and involves use of a detailed traffic-forecasting model to evaluate the impacts of project-generated trips. This process establishes an area-wide average volume-to-capacity ratio (v/c) of 0.89 which relates to LOS D or better. This standard applies to most new developments within the city, although the County system does provide for some exemptions.

The TAM process also involves evaluation of possible Unfunded Critical Links (UCLs). The list of UCLs consists of arterial corridors that the County has identified as being important for countywide mobility, forecasted to have a high traffic congestion level, and having unfunded improvements within the 6-year time frame of the most recent Capital Improvement Program (CIP). These links are monitored and used in the level of service analysis of the TAM for testing concurrency. If links exceed the critical link threshold with a volume-to-capacity ratio (v/c) of 1.10 or greater and the link is impacted by 50 percent of a development’s peak hour traffic then the development must be denied concurrency.

The unfunded critical link test applies within Covington since SR 516 (from 104th Avenue SE to SR 169) is included on the County’s list of links to be monitored. The City applies the unfunded critical link test only to the section of SR 516 within the city limits.

In order for new development to receive a concurrency certificate and permit approval, both the TAM area-wide average v/c ratio and unfunded critical link test standard need to be met.

Existing Arterial Level of Service

The City of Covington monitors v/c in each direction along 40 arterial segments within the city limits. Under existing conditions, all segments except the following four have a PM peak hour v/c of 0.89 or less.

- SE 272nd Street, east of SR 18 eastbound ramp, v/c = 0.92 in eastbound direction
- SE 272nd Street, east of SE Wax Road, v/c = 1.29 in eastbound direction
- SE 272nd Street, west of 192nd Avenue SE, v/c = 1.03 in eastbound direction
- SE 272nd Street, east of 204th Avenue SE, v/c = 0.98 in eastbound direction

The area-wide average v/c is well below 0.89 under existing conditions.

Safety Conditions

Collision data obtained from WSDOT for the site vicinity were assessed to determine the existing traffic safety conditions in the study area. Exhibit 3.8-8 summarizes the most recent data available, recorded from January 1, 2009 through September 30, 2012.

Exhibit 3.8-8. Historical Collision Summary in Project Study Area

Intersection	Collision Type								Total - 3.8 Yrs	Avg/ Year	Rate/ MEV ¹
	Head- On	Rear- End	Side- Swipe	Right Turn	Left Turn	Right Angle	Ped/ Cycle	Other			
180 th Ave/ 240 th St	0	0	0	0	1	0	0	2	3	0.8	0.2
196 th Ave/ 240 th St	0	0	0	0	0	0	0	1	1	0.3	0.1
240 th St/200 th Ave/Wax Rd	0	1	0	0	4	1	0	0	6	1.6	0.7
180 th Ave/ Wax Rd	0	1	0	0	4	1	0	2	8	2.1	0.6
256 th St/ 164 th Ave	1	5	2	2	1	5	2	7	25	6.7	0.9
180 th Ave/ 256 th St	0	3	0	2	7	3	1	1	17	4.5	0.6
Wax Rd (180 th Ave)/ 267 th Pl	0	1	0	0	0	0	0	2	3	0.8	0.2
272 nd St / Wax Rd	0	15	7	5	11	0	1	2	41	10.9	1.0
272 nd St (SR 516)/ 192 nd Ave	0	13	0	0	2	0	1	2	18	4.8	0.6
272 nd St (SR 516)/204 th Ave	0	2	0	1	0	1	0	0	4	1.1	0.2

Segment	Collision Type								Total - 3.8 Yrs	Avg/ Year	Rate/ MVM ²
	Head- On	Rear- End	Side- Swipe	Right Turn	Left Turn	Right Angle	Ped/ Cycle	Other			
240 th St, 180 th - 196 th Ave	0	15	0	0	4	1	0	7	27	7.2	3.4
180 th Ave, 240 th - Wax Rd	1	2	0	0	0	0	0	3	6	1.6	1.1
180 th Ave, Wax Rd - 256 th St	0	0	0	0	0	0	0	0	0	0.0	0.0
180 th Ave, 256 th - 267 th Pl	0	4	1	1	2	0	1	5	14	3.7	1.1
Wax Rd, 267 th Pl - 272 nd (SR 516)	0	2	0	0	2	0	1	0	5	1.3	1.0
256 th St, 164 th Av - Wax Rd (180 th Ave)	0	8	1	0	0	1	1	9	20	5.3	1.5
256 th St, Wax Rd (180 th) - SR 18	0	0	0	0	0	0	0	0	0	0.0	0.0
272 nd (SR 516), SE Wax Rd - 192 nd Ave	0	78	6	0	7	0	0	7	118	31.5	3.6
272 nd (SR 516), 192 nd Ave - 204 th Ave	0	19	0	0	1	0	0	5	25	6.7	1.4

Source: Washington Department of Transportation, Data provided for the period from January 1, 2009 through September 30, 2012, April 2013. Compiled by Heffron Transportation, May 2013.

1. MEV = million entering vehicles, calculated at study area intersections where collisions have been reported.
2. MVM = million vehicle miles traveled.

The intersections with the highest recorded collision rates are SE 256th Street/164th Avenue and SE 272nd Street/SE Wax Road, with average rates of 0.9 and 1.0 collision per million entering vehicles (MEV), respectively. The average rates at the other study area intersections are all well below 1.0 per MEV. Typically, collision rates higher than 1.0 per MEV are considered to indicate potential safety issues. Therefore, the historical collision data do not indicate unusual safety conditions at study area intersections.

For the roadway segments, the collision rates are shown in terms of million vehicle miles (MVM) traveled. The highest rates occurred on SE 240th Street between 180th Avenue SE and 196th Avenue SE (3.4 per MVM) and on SE 272nd Street between SE Wax Road and 192nd Avenue NE (3.6 per MVM). According to the *Washington State Collision Data Summary*, minor arterials in the Northwest Region (state routes) had average collision rates of 1.07 in rural areas and 2.98 in urban area (WSDOT 2011). The rates for the two segments are comparable to the average rate for urban areas. The collisions recorded along these roadways primarily occurred at intersections with driveways or local access streets at subdivisions. The collisions were spread out along the corridors, which are each about 1 mile in length, and are typical of the types of collisions that occur at intersections with driveways and local access streets. All other roadway segments had lower rates that were comparable to the rates found on roadways in rural areas. Therefore, the historical collision data do not indicate unusual safety conditions along study area roadway segments.

Transit

Bus service in Covington is provided by King County Metro (Metro) Routes 159, 168, and 912.

Metro Route 159 provides weekday commuter service from Covington to Kent and downtown Seattle in the morning and to back to Covington from downtown Seattle and Kent in the evening. The bus stop nearest the Hawk Property site served by this route is located at the SE 261st Street/ SE 180th Street intersection, about one-half mile south of the western edge of the study area.

Metro Route 168 provides daily local bus service between Covington and Kent. The bus stop nearest the Hawk Property site served by this route is also located at the SE 261st Street/ SE 180th Street intersection. This route stops at the Kent Transit Center, where riders can transfer to buses that serve other regional destinations.

Metro Route 912 provides limited weekday service between Covington, Black Diamond, and Enumclaw. The bus stop nearest the Hawk Property site served by this route is located on SE 272nd Street, more than a mile to the south of the Hawk Property site.

Non-Motorized Transportation

As described previously, SE 256th Street has continuous sidewalks and bicycle lanes between 180th Avenue SE and the SR 18 interchange. SE Wax Road (180th Avenue SE) has sidewalks and bicycle lanes to the south of SE 256th Street. No other bicycle lanes are present within the study area. Sidewalks are provided intermittently, primarily where they have been built as frontage improvements for newer developments, but the majority of roadways within the site vicinity do not have sidewalks. When new developments occur, the City requires frontage improvements, dedication of rights-of-way and construction of sidewalks to meet City standards. This provides for evolving improvement of non-motorized facilities along city roadways, but can also result in intermittent improvement of roadway segments with substantial gaps. Most roadways do have paved or unpaved shoulders of varying widths that are used by pedestrians. The following non-motorized traffic generators are located within the vicinity of the Hawk Property site:

- Crestwood Elementary School is located at the 180th Avenue SE/SE Wax Road intersection, west of the study area. There is also an unnamed green space located between the school and SE 256th Street.
- Jenkins Creek Trail is located south of SR 18 and east of SE Wax Road (180th Avenue SE), directly south of the study area.

While these facilities do not typically generate non-motorized traffic to or from the Hawk Property site, they do generate pedestrian and bicycle traffic along the major roadways that provide access to the area.

[Draft EIS](#) Exhibit 3.9-6 and Exhibit 3.9-7 (in Section 3.9 – Public Services) show the trails and bikeways that have been planned in Covington by King County. As shown, the planned Timberline Trail would be located along the south edge of the subarea, the planned SR 18 Trail would be located along the north edge of the subarea, the planned Jenkins Creek Trail would traverse the northeast corner of the site, and the planned Pipeline Trail would traverse the southeast corner.

The King County bicycle map identifies portions of study area roadways as part of the regional bicycle network. In addition to the bicycle lanes on SR 256th Street and SE Wax Road (180th Avenue SE), 180th Avenue SE (north of SE Wax Road), 196th Avenue SE (north of SE 240th Street) and SE 240th Street (west of 180th Avenue SE and east of 196th Avenue SE) are identified as shared roadways in the county-wide bicycle network (King County 2012).

Freight Mobility and Access

The City of Covington does not currently have a formal adopted truck route ordinance. In lieu of a formal truck route, the City assumes all arterial roadways are acceptable for truck traffic. These roadways provide access to the major commercial activity centers in the city while minimizing the impacts on residential neighborhoods (City of Covington, 2009a).

Freeways, arterials, and local roadways carry freight near the study area. The *Washington State Freight and Goods Transportation System* (FGTS) classifies highways, county roads, and city streets according to the average annual gross truck tonnage they carry. Classifications range from T-1, which includes roadways that carry over 10 million tons per year, to T-5, which includes roadways that carry over 20,000 tons in 60 days. Within Covington, SR 516 is classified as T-2; SR 169 in Maple Valley is classified as T-2 between SR 516 and Cedar Grove Road and as T-3 between SR 516 and SR 164. Several Covington roadways are classified as T-3 (300,000 to 4 million tons per year) in this system including 164th Avenue SE, 165th Place SE, 180th Avenue SE, Covington Way SE, SE 256th Street, and SE Wax Road. Two Maple Valley roadways are classified as T-3—216th Avenue SE and Witte Road SE. (WSDOT 2011)

Impacts

This section describes the conditions that would exist with each of the DEIS alternatives at build-out in the year 2035. It includes detailed trip generation estimates for each alternative, and assesses how increased vehicular traffic, transit ridership, and pedestrian traffic would affect the transportation system.

Roadway System

ALTERNATIVE 1 (NO ACTION)

With Alternative 1, no changes to the roadway system would occur. Access to and from the subarea would continue to be provided only at SE 256th Street.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

With Alternatives 2 and 3, the following new roadway connections are proposed:

- **204th Avenue SE Connector** – A new roadway connection is proposed between the east terminus of SE 256th Street and the north terminus of 204th Avenue SE. This roadway would be a 2- to 3-lane arterial (one general purpose lane in each direction and a center two-way left-turn lane where needed), and could potentially also have parking lanes on each side. The existing section of 204th Avenue SE between its north terminus and NE 272nd Street would also be improved to this standard, providing a continuous connection between SE 256th Street and SE 272nd Street. The 204th Avenue SE Connector would serve as the spine of the site's internal roadway circulation system, and would provide a second major roadway connection to the site from the east.
- **191st Avenue SE Local Connector** – A local roadway connection is proposed between 191st Avenue SE, and the local internal roadway system at the south end of the site. The purpose of this roadway would be to provide a direct connection between the site and residential development located to the south. This connection would not be intended to serve trips generated outside of the local neighborhood and would require appropriate traffic calming measures to limit access to the local neighborhood and discourage cut-through traffic (described later in this section under Mitigation Measures).

In addition to serving general vehicle trips that would be generated by the proposed alternatives, these connections would also provide additional access points for emergency vehicles. Since both roadways are proposed as part of Alternatives 2 and 3, they are assumed to be in place in the future transportation analyses for each of these alternatives and would be required to be built if the proposed redevelopment of the Hawk Property occurs.

Future Travel Demand

Future 2035 travel demand was projected using the City of Covington's travel demand forecasting model, which is a traffic analysis tool used for forecasting future traffic volumes based on existing traffic patterns and forecasted land use growth. It provides future traffic volumes for development review and comprehensive planning. The model forecasts the traffic distribution of proposed future development for traffic impact analysis related to development review. The City's model includes each jurisdiction's planned land use in the analysis area. The

model integrates elements of the regional model developed by the Puget Sound Regional Council (PSRC), including the modeled roadway network and regional land use projections outside of Covington. Within Covington and Maple Valley, the modeled roadway network is consistent with the PSRC model network, but is more detailed. The PSRC model is used as the basis for these elements because it is the most reliable source for regional land use forecasts and roadway network characteristics, and ensures consistency of the City's travel demand forecasts with regional planning efforts.

The Covington travel demand model employs the traditional travel demand forecast modeling process, which includes the following key components.

- **Transportation Network and Zone Development.** The roadway network is represented as a series of links (roadway segments) and nodes (intersections). Characteristics such as capacity, length, speed, and turning restrictions at intersections are coded into the network. The model area is divided into Transportation Analysis Zones (TAZs) that have similar land use characteristics.
- **Existing Land Use Assessment.** Existing land use is quantified within each TAZ. Land use characteristics in Covington and Maple Valley were estimated based on existing land use data. For the model area outside the two cities, land use was based on regional population and employment inventory provided by the PSRC.
- **Trip Generation.** The trip generation step estimates the total number of trips produced by and attracted to each TAZ in the model area, based on the land use within the TAZ. The trips are estimated using statistical data on population and household characteristics, employment, economic output, and land uses. The trip generation model estimates the number of trips generated per household for residential uses, and based on building area (square feet) for non-residential uses. The output is expressed as the total number of trips produced in each TAZ and the total number of trips attracted to each TAZ, categorized by trip purpose.
- **Trip Distribution.** The trip distribution step allocates vehicle trips estimated by the trip generation model to create a specific zonal origin and destination for each trip. This is accomplished using a gravity model, which distributes trips according to two basic assumptions: (1) more trips will be attracted to larger zones (the size of a zone is defined by the number of attractions estimated in the trip generation phase, not the geographical size), and (2) more trip interchanges will take place between zones that are closer together than the number that will take place between zones that are farther apart. The result is a trip matrix that estimates how many trips occur from each zone (origin) to every other zone (destination). The trips are often referred to as trip interchanges.
- **Network Assignment.** The roadway network is represented as a series of links (roadway segments) and nodes (intersections). Each roadway link and intersection node is assigned a functional classification, with associated characteristics of length, capacity, and speed. This information is used to determine the optimum path between all the zones based on travel time and distance. The trips are distributed from each of the zones to the roadway network using an assignment process that takes into account the effect of increasing traffic on travel times. The result is a roadway network with traffic volumes calculated for each segment of roadway. The model reflects the influence of traffic congestion on the roadway network.
- **Model Validation.** The model output, which consists of estimated traffic volumes on each roadway segment, is compared to existing traffic counts. Adjustments are made to the model inputs until the modeled existing conditions replicate actual existing conditions, within accepted parameters. Once the model is validated for existing conditions, it can be used as the basis for analyzing future traffic conditions that result from proposed land use, and for evaluating the effectiveness of potential improvements to the roadway network.

To project future 2035 travel demand under the three alternatives, the following assumptions were applied in the model:

- Future land use within Covington, but outside of the subarea, was projected based upon the City's future population and employment projections, and market demand analysis,

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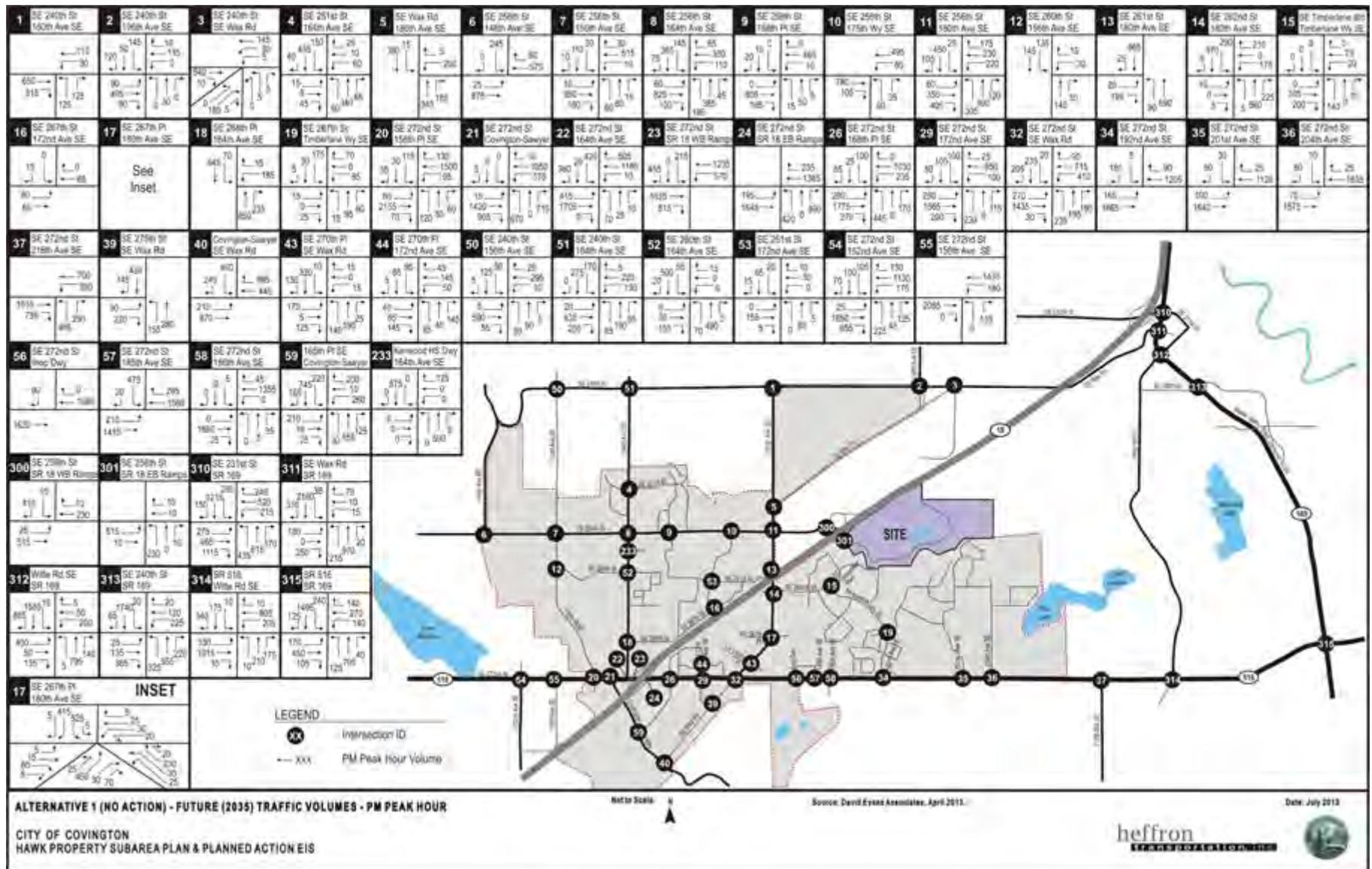
- Future land use within the City of Maple Valley was based upon build-out of the City's future land use plan, as defined in the current Comprehensive Plan (City of Maple Valley 2011),
- Future land use outside of the Covington and Maple Valley was based upon projections developed by the PSRC (completion of The Villages and Lawson Hills MPDs in Black Diamond was additionally assumed), and
- The planned future roadway improvements previously summarized in Exhibit 3.8-4 were assumed to be in place.

The land use and trip generation assumptions within the project varied by alternative, and are described in the following sections.

ALTERNATIVE 1 (NO ACTION)

The No Action alternative assumes that mining reclamation operation on the Hawk Property site continues and that the asphalt batch plant would continue with slight increases in employment. The projected 2035 PM peak hour intersection volumes are shown on Exhibit 3.8-9.

Exhibit 3.8-9. Future (2035 Traffic Volumes – Alternative 1 (No Action))



ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

To evaluate the potential effects of the proposed action alternatives on future roadway operations, the estimated changes in vehicle trips generated by each alternative were estimated, as described in the following sections.

Trip Generation

This section presents the estimates of vehicle trips projected to result from the proposed development scenarios for each of the Action alternatives. The methodology also accounts for the mixed-use character of the proposed development alternatives that would allow some trips to be made internal to the site, as well trips that would be drawn from traffic already traveling on SR 18 and diverted to the site.

PROPOSED PROGRAM

Exhibit 3.8-10 summarizes the land use elements assumed for the two Action alternatives. The projections assume build-out of the proposed land use concepts by 2035.

Exhibit 3.8-10. Proposed Land Use for the Action Alternatives

Land Use Type	Unit	Alternative 2	Alternative 3
		Minimum Urban Village	Maximum Urban Village
Residential			
Single Family Detached	Dwelling units	130	200
Townhomes	Dwelling units	270	400
Multifamily	Dwelling units	600	900
Commercial			
Large Format Retail	Square feet	600,000	708,940
Iconic/Local Retail	Square feet	80,000	141,060
Park & Ride Lot	Parking spaces	0	125

Source: BERK 2013.

SUMMARY OF TRIP GENERATION METHODOLOGY

Trip generation for new projects is typically determined using rates and equations in the *Trip Generation Manual* (Institute of Transportation Engineers [ITE] 2012). This reference manual summarizes the results of numerous traffic studies throughout the country for a variety of land-use types. The *Trip Generation User’s Guide* states on page 1:

“The average trip generation rates in this report represent weighted averages of studies conducted throughout the United States and Canada since the 1960s. Data were primarily collected at suburban locations having little or no transit service, nearby pedestrian amenities, or travel demand management (TDM) programs. At specific sites, the user may wish to modify trip generation rates presented in this document to reflect the presence of public transportation services, ridesharing, or other TDM measures, enhanced pedestrian and bicycle trip-making opportunities, or other special characteristics of the site or surrounding area.”

As recommended in *Trip Generation Manual*, the ITE trip generation estimates were adjusted to account for internal trips between the site’s proposed mix of land uses. However, because Covington is a suburban area and the majority of projected retail at the site is anticipated to be large format type development that would be expected to generate a relatively high proportion of automobile trips, no additional adjustments or reductions were made to reflect higher levels of transit or non-motorized modes of travel for project-related trips generated outside of the site.

The following methodology was used to adjust the trip generation estimates to account for internal trips among uses at the site, and also to account for vehicle trips generated by the site that would already be traveling on the surrounding roadway network.

1. The total number of vehicle trips generated by each major land use category (residential, retail and park & ride) was determined using equations published in ITE’s *Trip Generation Manual*.
2. Internal trips between on-site uses were estimated using the methodology presented in the *Trip Generation Handbook* (ITE 2004). A resident who makes a trip, by vehicle, bike or on foot to an on-site retail shop is an example of an internal trip.
3. Total vehicle trips were separated into “diverted linked” trips (trips already on the roadway network but would require a diversion to access the site) and “primary” trips (new trips generated by the site), utilizing procedures in the *Trip Generation Handbook*.

The following sections provide more details about each of these steps.

TRIP GENERATION EQUATIONS

Exhibit 3.8-11 summarizes the vehicle trip equations published by ITE and applied for each Action alternative land use category.

Exhibit 3.8-11. ITE Trip Generation Equations

ITE Code	Land Use Type	Daily	PM Peak Hour		
		Vehicle Trip equation	Vehicle Trip Equation	% Inbound	% Outbound
210	Single Family Residential ¹	$\text{Ln}(T) = 0.92\text{Ln}(X) + 2.72$	$\text{Ln}(T) = 0.90\text{Ln}(X) + 0.51$	63%	37%
220	Multifamily Residential ¹	$T = 6.06(X) + 123.56$	$T = 0.55(X) + 17.65$	65%	35%
230	Townhome ¹	$\text{Ln}(T) = 0.87\text{Ln}(X) + 2.46$	$\text{Ln}(T) = 0.82\text{Ln}(X) + 0.32$	67%	33%
820	Shopping Center (Retail) ²	$\text{Ln}(T) = 0.65\text{Ln}(X) + 5.83$	$\text{Ln}(T) = 0.67\text{Ln}(X) + 3.31$	48%	52%
090	Park & Ride Lot ³	$T = 4.04(X) + 117.33$	$T = 0.62(X) + 1.35$	25%	75%

Source: Institute of Transportation Engineers, *Trip Generation*, 9th Edition, 2012.

1. T = number of vehicle trips; Ln = natural logarithm; X = number of dwelling units
2. T = number of vehicle trips; Ln = natural logarithm; X = 1,000 square feet
3. T = number of vehicle trips; X = number of parking spaces.

For the proposed retail uses, the Shopping Center equations (ITE land use code [LU] 820) were applied for both the Large Format retail and the Local/Iconic retail uses. The ITE shopping center land use category is described as “...an integrated group of commercial establishments that is planned, developed, owned and managed as a unit.” The data on which the equations are based reflect a wide variety of components that can be included in retail shopping centers such as stores, restaurants, bank branches, and health and recreation facilities. Because the Hawk Property site would be designed and developed in an integrated manner and since the exact mix of retail is unknown at this time, it is appropriate to treat the retail uses as a shopping center. Also, while ITE provides average trip rates and equations for a variety of types of “superstores” that would be considered typical of large format retail development, the average rates vary greatly, from about 1.5 to 5.0 trips per 1,000 square feet for the PM peak hour. The average PM peak hour rate for the shopping center category is 3.71 trips per 1,000 square feet, which is within the upper portion of the range for large format retail stores. Since this is a planning level analysis with no development proposals from specific retailers, the shopping center rates were determined to represent reasonably conservative average rates that could likely result from two to four different types of large format retail stores at the site.

INTERNAL TRIPS

The total number of trips generated by a mixed-use development typically includes “internal trips,” or trips made between uses on the site by car or by non-motorized means. Chapter 7 of the *Trip Generation Handbook* is dedicated to estimating trip generation for multi-use developments, and provides a methodology to estimate the number of internal trips that can be expected at specific types of sites. This method is based on the types and sizes of various land uses. The more balanced the mix of uses, the higher the percentage of internal trips. Developments with a predominance of one type of use (e.g., mostly retail, or mostly residential) typically have few or no internal trips.

ITE’s methodology to determine internal trips has four steps:

1. Determine the number of trips generated by each land use as if each was on a separate site,
2. Determine the number of internal trips from capture rates provided in the *Trip Generation Handbook* for each land use category pairing,
3. Balance the number of internal trips to and from all land uses at the site, and
4. Subtract internal trips based on the percentages determined.

The *Trip Generation Handbook* provides typical percentages of internal trips between retail and residential uses, which were applied for the trip calculations. Because these trips would occur entirely on-site (either by walking, bicycling, or driving) they would not reflect new trips on the surrounding roadway system.

No adjustments were made for retail-to-retail trips because the ITE “Shopping Center” trip generation equations already take into account the internal trips that occur between retail uses on the same site. In addition, trip estimates for this DEIS analysis conservatively assume no internal trip reduction related to the park & ride lot included with Alternative 3. While it is reasonable to expect that some users of the park & ride lot could walk to and from the retail uses on-site, there is little documented evidence that this regularly occurs at other locations.

Exhibit 3.8-12 summarizes the resulting total internal trips calculated for each alternative development scenario.

Exhibit 3.8-12. Internal Trip Summary

Land Use Type	Alternative 2 – Minimum Urban Village		Alternative 3 – Maximum Urban Village	
	Daily	PM Peak Hour	Daily	PM Peak Hour
Internal Trips	5,320	530	6,560	630
Percent of Total Trips	15.5%	17.0%	15.2%	15.9%

Source: Derived by Heffron Transportation using data in ITE’s *Trip Generation Handbook*, April 2013.

TRIP COMPONENTS

It is important to recognize that a portion of the site’s vehicular driveway trips would not be new to the local area roadway network. For the retail uses, the external trips can consist of three different types—pass-by, diverted-linked, and primary trips—that would affect local roadways differently. Each of these trip types is described as follows:

- **Pass-by Trips** are attracted from roadways immediately adjacent to the site. Pass-by trips would affect driveway volumes at the specific site access points, but do not represent new trips on the overall roadway network.
- **Diverted-linked Trips** are attracted from roadways within the project vicinity but require a diversion to gain access to the site. Diverted-linked trips add traffic to streets and intersections immediately adjacent to the site, but are not be a new trip to the overall roadway network.

- **Primary Trips** are single-purpose new trips generated by the site. Primary trips are generally assumed to begin and end at home, although some new trips could originate at work, school, or other locations.

Although SR 18 is located adjacent to the subarea, it is a limited access highway and drivers on SR 18 would need to travel through the SE 256th Street interchange to gain access to the site. Development-generated trips drawn from traffic already on SR 18 were therefore considered to be diverted-linked trips.

The average diverted-linked trip percentage of 28% determined from data published in Table 5.6 of the *Trip Generation Handbook for Shopping Centers (LU 820)* was applied to the projected retail development trip estimates (ITE 2004). The remaining retail trips (72%) were considered to be primary trips, which would be new to study area roadways and intersections. The residential and park & ride uses were assumed to generate only primary trips new to the local transportation network.

VEHICLE TRIP SUMMARY

All of the steps described above were applied to estimate the number of vehicle trips that would result from the proposed Action alternatives. Exhibit 3.8-13 summarizes the total vehicle driveway trip estimates for Alternatives 2 and 3.

Exhibit 3.8-13. Vehicle Trip Generation Summary

Land Use	Alternative 2 – Minimum Urban Village				Alternative 3 – Maximum Urban Village			
	Daily	PM Peak Hour			Daily	PM Peak Hour		
		In	Out	Total		In	Out	Total
Single Family Residential								
Primary Trips	800	51	24	75	1,320	84	43	127
Diverted-Linked Trips	0	0	0	0	0	0	0	0
Subtotal	800	51	24	75	1,320	84	43	127
Townhome Residential								
Primary Trips	910	56	22	78	1,420	85	37	122
Diverted-Linked Trips	0	0	0	0	0	0	0	0
Subtotal	910	56	22	78	1,420	85	37	122
Multifamily Residential								
Primary Trips	2,260	138	61	199	3,690	226	106	332
Diverted-Linked Trips	0	0	0	0	0	0	0	0
Subtotal	2,260	138	61	199	3,690	226	106	332
Local/Iconic Retail								
Primary Trips	3,810	161	171	332	5,500	235	251	486
Diverted-Linked Trips	1,480	65	65	130	2,140	94	94	188
Subtotal	5,290	226	236	462	7,640	329	345	674
Large Format Retail								
Primary Trips	14,170	619	662	1,281	15,720	693	739	1,432
Diverted-Linked Trips	5,510	249	249	498	6,120	279	279	558
Subtotal	19,680	868	911	1,779	21,840	972	1,018	1,990

Land Use	Alternative 2 – Minimum Urban Village				Alternative 3 – Maximum Urban Village			
	PM Peak Hour				PM Peak Hour			
	Daily	In	Out	Total	Daily	In	Out	Total
Park & Ride Lot								
Primary Trips	0	0	0	0	620	20	59	79
Diverted-Linked Trips	0	0	0	0	0	0	0	0
Subtotal	0	0	0	0	620	20	59	79
TOTAL EXTERNAL TRIP GENERATION								
Primary Trips	21,950	1,025	940	1,965	28,270	1,343	1,235	2,578
Diverted-Linked Trips	6,990	314	314	628	8,260	373	373	746
TOTAL EXTERNAL TRIPS	28,940	1,339	1,254	2,593	36,530	1,716	1,608	3,324

Source: Heffron Transportation, April 2013.

FUTURE TRAVEL DEMAND

The net new trips projected to result from Alternatives 2 and 3, as summarized in Exhibit 3.8-13, were input into the Covington travel demand forecasting model, which was then used to project the total trips that would result on the study area roadways. Exhibit 3.8-14 shows the projected 2035 intersection volumes with Alternative 2 (Minimum Urban Village) and Exhibit 3.8-15 shows the projected 2035 intersection volumes with Alternative 3 (Maximum Urban Village).

Exhibit 3.8-14. Future (2035) Traffic Volumes – Alternative 2 (Minimum Urban Village)

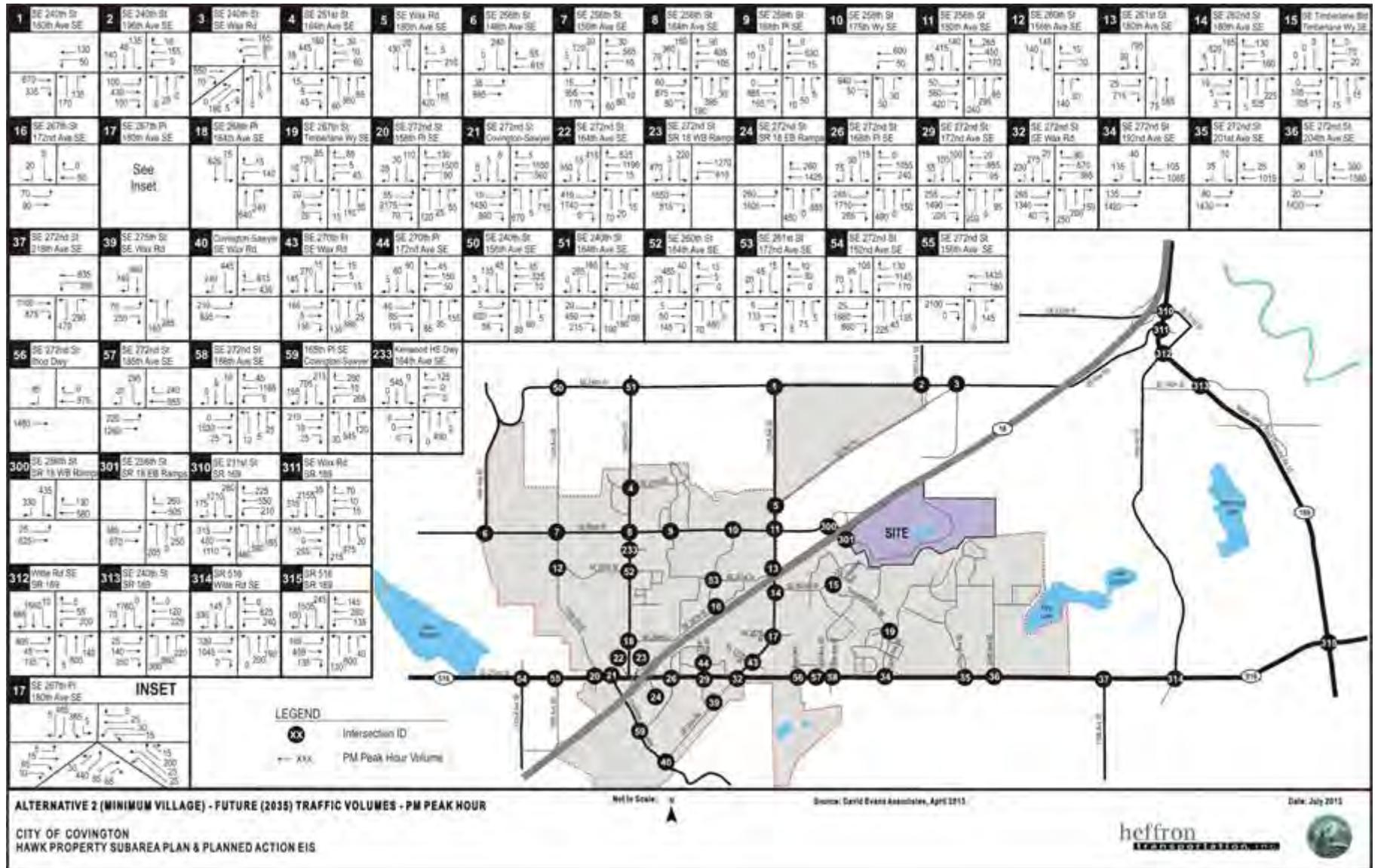
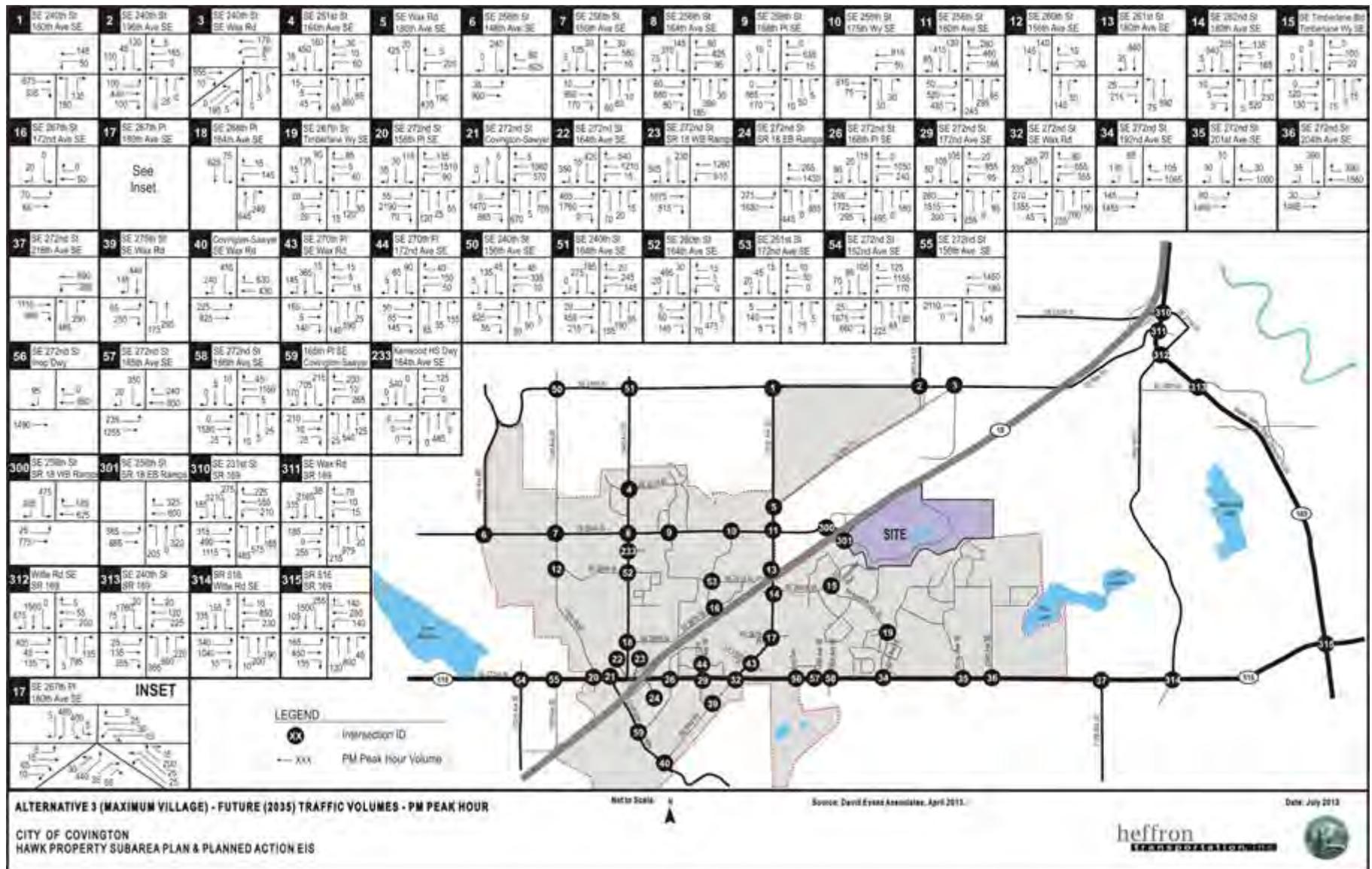


Exhibit 3.8-15. Future (2035 Traffic Volumes – Alternative 3 (Maximum Urban Village))



Intersection Operations

Intersection level of service analysis was conducted for the three future alternatives, using the same methodology previously described for existing conditions. Exhibit 3.8-16 summarizes the projected levels of service if no additional mitigation measures are implemented.

Exhibit 3.8-16. Future (2035) Level of Service - Unmitigated

ID	Intersection	Alternative 1 No Action		Alternative 2 Minimum Action		Alternative 3 Maximum Action	
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay
Signalized							
4	SE 251 st St/164 th Ave SE	A	6.4	A	7.3	A	7.3
7	SE 256 th St/156 th Ave SE	C	23.3	C	23.1	C	23.0
9	SE 256 th St/168 th PI SE	A	8.8	A	9.6	A	9.3
11	SE 256 th St /SE 180 th St	D	40.7	D	54.6	D	52.8
14	SE 262 nd St/180 th Ave SE	C	24.9	B	19.4	C	20.3
21	SE 272 nd St/Covington Way	F	>200	F	>200	F	>200
22	SE 272 nd St (SR 516)/164 th Ave SE	E	72.7	E	73.9	E	79.7
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	D	51.5	E	57.7	E	63.0
24	SE 272 nd St (SR 516)/Eastbound SR 18 Ramps	D	37.0	D	44.7	D	43.7
26	SE 272 nd St/168 th Ave SE	E	55.9	E	58.1	E	57.1
29	SE 272 nd St/172 nd Ave SE	E	69.7	E	66.9	E	70.6
32	SE 272 nd St (SR 516)/SE Wax Rd	F	115.8	F	99.8	F	99.6
34	SE 272 nd St/192 nd Ave SE	B	12.3	B	11.1	B	11.8
37	SE 272 nd St/216 th Ave SE ³	E	71.6	E	79.5	E	79.4
40	Covington Way/SE Wax Rd	D	43.8	D	45.5	D	46.2
43	SE 270 th PI/SE Wax Rd	B	13.5	B	14.0	B	13.9
54	SE 272 nd St/152 nd Ave SE	C	25.5	C	24.7	C	24.9
57	SE 272 nd St/185 th Ave SE	D	47.2	C	25.0	C	29.2
59	165 th PI SE/Covington Way	D	36.0	D	34.2	D	34.2
233	Kenwood HS Access/164 th Ave SE	A	7.4	A	7.3	A	7.2
310	SE 231 st St/SR 169 ⁴	F	133.3	F	145.0	F	145.7
311	SE Wax Rd/SR 169 ⁴	C	27.9	C	28.1	C	28.1
312	Witte Rd SE/SR 169 ⁴	C	19.7	C	19.5	C	19.6
313	SE 240 th St/SR 169 ⁴	E	79.3	F	84.0	F	86.4
314	SR 516/Witte Rd SE ³	F	159.4	F	165.8	F	171.9
315	SR 516/SR 169 ³	E	56.3	E	57.3	E	57.7

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Roundabout							
8	SE 256 th St/164 th Ave SE	FC	107.0 24.8	FC	124.5 27.3	FC	120.9 26.0
17	SE 267 th Place/SE Wax Rd/180 th Ave SE	FB	70.6 14.2	DA	34.8 10.0	EB	40.8 10.6
44	SE 240th -270 th Place/172 nd Ave SE	A	6.96.3	A	6.96.2	A	7.06.3
All-Way Stop-Control							
2	SE 240 th St/196 th Ave SE	E	36.6	F	50.2	F	51.4
5	SE Wax Rd/SE 180 th St	C	21.6	E	36.9	E	40.1
15	SE Timberlane Boulevard/Timberlane Way SE	A	9.7	A	8.4	A	8.8
19	SE 267 th St/Timberlane Way SE	A	9.6	A	9.3	A	9.5
51	SE 240 th St/164 th Ave SE	F	>200	F	>200	F	>200
One- or Two-Way Stop Control ⁵							
1	SE 240 th St/180 th Ave SE (NB)	F	192.0	F	>200	F	>200
3	SE 240 th St/SE Wax Rd/200 th Ave SE (EB)	F	53.9	F	64.2	F	68.1
6	SE 256 th St/148 th Ave SE (SB)	F	ECL ⁶	F	ECL ⁶	F	ECL ⁶
10	SE 256 th St/175 th Way SE (NB)	D	26.5	D	31.9	D	30.8
12	SE 260 th St/156 th Ave SE (WB)	B	13.3	B	13.5	B	13.4
13	SE 261 st St/180 th Ave SE (EB)	F	67.1	E	43.8	F	52.3
16	SE 267 th St/172 nd Ave SE (SB)	A	9.0	A	8.7	A	8.7
18	SE 268 th Place/164 th Ave SE (WB)	F	ECL ⁶	F	>200	F	>200
20	SE 272 nd St/156 th Pl SE (NB)	F	ECL ⁶	F	ECL ⁶	F	ECL ⁶
35	SE 272 nd St/201 st Ave SE (SB)	D	25.9	C	16.5	C	16.7
36	SE 272 nd St/204 th Ave SE (SB)	D	31.2	F	ECL	F	ECL
39	SE 275 th St/SE Wax Rd (EB)	F	177.2	F	156.5	F	156.6
50	SE 240 th St/156 th Ave SE (NB)	F	>200	F	ECL ⁶	F	ECL ⁶
52	SE 260 th St/164 th Ave S (EB)	C	19.5	C	22.2	C	22.1
53	SE 261 st St/172 nd Ave SE (EB)	B	14.0	B	13.1	B	13.2
55	SE 272 nd St/156 th Ave SE (WBL)	F	58.3	F	62.8	F	65.9
56	SE 272 nd St/IHOP Driveway (SB)	B	11.5	B	10.6	B	10.7
58	SE 272 nd St/186 th Ave SE (SB)	E	37.0	D	34.8	D	34.6
300	SE 256 th St/Westbound SR 18 Ramps (SB)	C	17.2	F	ECL ⁶	F	ECL ⁶
301	SE 256 th St/Eastbound SR 18 Ramps (NB)	F	ECL ⁶	F	ECL ⁶	F	ECL ⁶

Source: Heffron Transportation, ~~May~~ November 2013.

1. LOS = level of service
2. Delay = average delay per vehicle in seconds
3. Part of Maple Valley's South Concurrency Intersection Group – standards are satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. Without mitigation, the average weighted delay for this group is 92.4 (LOS F) for Alternative 1, 96.6 (LOS F) for Alternative 2, and 98.7 (LOS F) for Alternative 3.
4. Part of Maple Valley's North Concurrency Intersection Group – standards are satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. Without mitigation, the average weighted delay for this group is 70.3 (LOS E) for Alternative 1, 75.4 (LOS E) for Alternative 2, and 76.3 (LOS E) for Alternative 3.

5. For one- and two-way stop-controlled intersections, the most congested movement is reported. The direction of the most congested movement is shown in parentheses.
6. ECL = Exceeds calculable limit.

It is noted that the existing peak hour factors (PHF) were applied to the projected 2035 intersection volumes for future level of service analysis. This typically results in more conservative estimates of future levels of service because as traffic volumes grow, the variations in peak 15-minute flows within the peak hour tend to decrease (e.g. increasing hourly volumes tend to become more evenly distributed throughout the hour).

Summary of Intersection Impacts

ALTERNATIVE 1 (NO ACTION)

The following intersections are projected to operate at LOS E or LOS F with the No Action alternative, if no additional capacity improvements are made.

Signalized

- 21 – SE 272nd Street/Covington Way
- 22 – SE 272nd Street/164th Avenue SE
- 26 – SE 272nd Street/168th Avenue SE
- 29 – SE 272nd Street/172nd Avenue SE
- 32 – SE 272nd Street/SE Wax Road
- 37 – SE 272nd Street/216th Avenue SE
- 310 – SE 231st Street/SR 169
- 313 – SE 240th Street/SR 169
- 314 – SR 516/Witte Road SE
- 315 – SR 516/SR 169

Roundabout-Controlled

- ~~8 – SE 256th Street/164th Avenue SE~~
- ~~17 – SE 267th Place/SE Wax Road/180th Avenue SE~~

Stop-Controlled

- 1 – SE 240th Street/180th Avenue SE
- 2 – SE 240th Street/196th Avenue SE
- 3 – SE 240th Street/SE Wax Road/200th Avenue SE
- 6 – SE 256th Street/148th Avenue SE
- 13 – SE 261st Street/180th Avenue SE
- 18 – SE 268th Place/164th Avenue SE
- 20 – SE 272nd Street/156th Place SE)
- 39 – SE 275th Street/SE Wax Road
- 50 – SE 240th Street/156th Avenue SE

- 51 – SE 240th Street/164th Avenue SE
- 55 – SE 272nd Street/156th Avenue SE
- 58 – SE 272nd Street/186th Avenue SE
- 301 – SE 256th Street/Eastbound SR 18 Ramps

Notes 3 and 4 of Exhibit 3.8-16 also show that for the Maple Valley concurrency intersections, the weighted averages for the North and South concurrency groups are projected to exceed the City's LOS D threshold by 2035, if no additional capacity improvements are made.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

At the following intersections projected to operate at LOS E or LOS F with the No Action alternative, both Action alternatives are projected to add delay.

Signalized

- 21 – SE 272nd Street/Covington Way
- 22 – SE 272nd Street/164th Avenue SE
- 26 – SE 272nd Street/168th Avenue SE
- 37 – SE 272nd Street/216th Avenue SE
- 310 – SE 231st Street/SR 160
- 313 – SE 240th Street/SR 169
- 314 – SR 516/Witte Road SE
- 315 – SR 516/SR 169

Roundabout Controlled

- ~~8 – SE 256th Street/164th Avenue SE~~

Stop-Controlled

- 1 – SE 240th Street/180th Avenue SE
- 2 – SE 240th Street/196th Avenue SE
- 3 – SE 240th Street/SE Wax Road/200th Avenue SE
- 6 – SE 256th Street/148th Avenue SE
- 20 – SE 272nd Street/156th Place SE
- 50 – SE 240th Street/156th Avenue SE
- 51 – SE 240th Street/164th Avenue SE
- 55 – SE 272nd Street/156th Avenue SE
- 301 – SE 256th Street/Eastbound SR 18 Ramps

Both Alternatives 2 and 3 are projected to add a small amount of delay to the Maple Valley concurrency intersections, compared to the No Action alternative, both to the individual intersections and to the weighted averages for the North and South concurrency groups.

At the following intersections projected to operate at LOS E or LOS F with the No Action alternative, both Action alternatives are projected to reduce trips and/or average delay. The projected improvement in operations at these locations is due to shifts in citywide traffic patterns expected to primarily result from the proposed 204th Avenue SE connector street. At ~~intersections 17 (Alternative 2 only) and intersection~~ 58 (Alternatives 2 and 3), operations are projected to improve to LOS D, eliminating the need for mitigation. At the other intersections, mitigation would still be needed to meet the City's LOS standard.

Signalized

- 29 – SE 272nd Street/172nd Avenue SE
- 32 – SE 272nd Street/SE Wax Road

~~Roundabout-Controlled~~

- ~~• 17 – SE 267th Place/SE Wax Road/180th Avenue SE~~

Stop-Controlled

- 13 – SE 261st Street/180th Avenue SE
- 18 – SE 268th Place/164th Avenue SE
- 39 – SE 275th Street/SE Wax Road
- 58 – SE 272nd Street/186th Avenue SE

The following intersections are projected to operate at LOS D or better with the No Action alternative. Both Action alternatives are expected to degrade operations to LOS E or LOS F.

Signalized

- 23 – SE 272nd Street (SR 516)/Westbound SR 18 Ramps

Stop-Controlled

- 5 – SE Wax Road/180th Avenue SE
- 36 – SE 272nd Street/204th Avenue SE
- 300 – SE 256th Street/Westbound SR 18 Ramps

SR 18/SE 256th Street Ramp Operations

Additional level of service analysis was completed for the operation of the ramp-freeway junctions at the SR 18/SE 256th Street ramps. Analysis was completed for Alternative 3 (Maximum Village) because it would result in the highest 2035 ramp volumes. The analysis was performed according to methods established in the Highway Capacity Manual (Transportation Research Board 2000), using Highway Capacity Software (HCS). The level of service of on-ramp merge operations and off-ramp diverge operations is determined by the vehicle density within the merge/diverge areas, measured in passenger cars per mile per lane (pc/mi/ln). The level of service criteria for ramp operations is as follows:

- LOS A – vehicle density of 10 or lower pc/mi/ln
- LOS B – vehicle density of 10 to 20 pc/mi/ln
- LOS C – vehicle density of 20 to 28 pc/mi/ln
- LOS D – vehicle density of 28 to 35 pc/mi/ln
- LOS E – vehicle density greater than 35 pc/mi/ln

- LOS F – demand exceeds capacity

(Transportation Research Board 2000)

The PM peak hour levels of service of the SR 18/SE 256th ramps were calculated as follows for 2035 Alternative 3 (Maximum Village) conditions:

- SR 18 Westbound On-Ramp – LOS C (density = 20.5 pc/mi/ln)
- SR 18 Westbound Off-Ramp – LOS C (density = 27.0 pc/mi/ln)
- SR 18 Eastbound On-Ramp – LOS C (density = 22.9 pc/mi/ln)
- SR 18 Eastbound Off-Ramp – LOS C (density = 22.5 pc/mi/ln)

Since all ramps are projected to operate at LOS C under the “worst case” alternative, no adverse operational impacts to ramp operations are identified.

Arterial Segment Operations

ALTERNATIVE 1 (NO ACTION)

The City’s Transportation Adequacy Measure (TAM) thresholds are only applied to proposed new developments. If the existing asphalt batch plant were to expand, it would be subject to City concurrency regulations, but would be expected to generate a negligible number of PM peak hour trips on citywide arterial segments. Therefore, under the No Action alternative, no impacts related to arterial segments are identified.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

The 2035 TAM values calculated through the modeling process are projected to be 0.75 for Alternative 2 (Minimum Urban Village) and 0.78 for Alternative 3 (Maximum Urban Village). Both are below the City’s 0.89 threshold, so no impacts related to arterial segments are identified for either action alternative.

Site Access and Circulation

ALTERNATIVE 1 (NO ACTION)

No new site access points would be constructed for the No Action alternative, and a low volume of traffic generated by continuing operation of the asphalt pavement plant would continue to access the site via SE 256th Street. No adverse impact related to site access and circulation is expected to result from this alternative.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

204th Avenue SE Connector

A new roadway connection is proposed between the east terminus of SE 256th Street and the north terminus of 204th Avenue SE. This roadway would be a 2-to-3-lane arterial (one general purpose lane in each direction and a center two-way left-turn lane where needed), and through the city’s street standard deviation process (CMC 12.60) could potentially also have parking lanes on each side. The existing section of 204th Avenue SE between its north terminus and NE 272nd Street would also be improved to this standard, providing a continuous connection between SE 256th Street and SE 272nd Street. The 204th Avenue SE Connector would serve as the spine of the site’s internal roadway circulation system, and would provide a second major roadway connection to the site from the east. It would also provide an additional emergency vehicle access point.

With Alternative 2 (Minimum Urban Village), this roadway is forecast to carry about 820 project-generated PM peak hour trips (about 31% of total). With Alternative 3 (Maximum Urban Village), it is forecast to carry about 1,070 project-generated PM peak hour trips (about 32% of total). However, with both alternatives, the travel demand forecasting model shows that this new roadway would also attract additional vehicle trips not related to the proposed project, traveling between SE 272nd Street (east of 204th Avenue SE) and the SR 18/SE 256th Street

interchange. With both alternatives, this would result in a reduction of trips using SE 272nd Street between 204th Avenue SE and SE Wax Road, and also using SE Wax Road/180th Avenue SE between SE 272nd Street and SE 256th Street.

This connection is also expected to attract trips currently cutting through residential neighborhoods (e.g. via Timberlane Way SE) to access the SE 256th Street/SR 18 ramps while avoiding the SE 272nd Street/SE Wax Road intersection, reducing volumes on those neighborhood roadways. The analysis indicates that total trips through the SE 272nd Avenue/192nd Avenue SE intersection, which is where cut-through traffic would typically access the local neighborhood, would decrease by about 13% with Alternative 2 and 12% with Alternative 3. As shown in Exhibit 3.8-16, both Action alternatives are expected to result in a slight decrease in average delay at this intersection.

The model analysis shows that, as project-generated trips decrease on the 204th Avenue SE connection, non-project trips would be expected to increase. About 140 more non-project related trips are projected to travel on the 204th Avenue SE connection with the Minimum Urban Village alternative (Alternative 2), than are projected for the Maximum Urban Village alternative (Alternative 3).

For both alternatives, the additional trips generated on 204th Avenue SE would degrade the stop-controlled intersection at SE 272nd Street to LOS F. However, if mitigation is provided at this intersection, the new roadway connection is expected to result in an overall benefit to the citywide street system, by providing more options for vehicles traveling between SE 272nd Street and SR 18.

191st Avenue SE Local Connector

A local roadway connection is proposed between 191st Avenue SE, and the local internal roadway system at the south end of the subarea. The purpose of this roadway would be to provide a direct connection between the subarea and residential development located to the south. It would also provide an additional emergency vehicle access point. This connection would not be intended to serve trips generated outside of the local neighborhood.

The model analysis showed that roadway capacity constraints imposed through traffic calming measures and local access roadway design treatments would minimize the amount of cut-through traffic with either Alternative 2 or Alternative 3. The 191st Avenue SE local connection is projected to carry about 520 PM peak hour trips with Alternative 2, and about 620 PM peak hour trips with Alternative 3. The model analysis indicates that the majority of these trips would be to and from the residential neighborhoods that are served by this local access street. As described above, a net reduction in trips of 12% to 13% is projected to result from either Action alternative at the SE 272nd Avenue/192nd Avenue SE intersection, which is where cut-through traffic would be expected to access the roadway. This is due to the proposed 204th Avenue SE Connector providing a more attractive route for vehicles accessing the SE 256th Street/SR 18 ramps to and from the east.

The 191st Avenue SE connector is expected to have a beneficial effect on city-wide roadway operations because it would allow direct access between the subarea and adjacent residential development. Without this connection, trips generated to and from these neighborhoods would need to use SE 272nd Street and access the site via SE 256th Street or 204th Avenue SE. This would increase overall vehicle miles traveled on the roadway system, and would also increase traffic volumes along these alternate routes. With traffic calming measures such as on-street parking, landscaping, and/or devices such as traffic circles in place to discourage cut-through traffic, no adverse transportation impacts are expected to result from this connection.

Internal Circulation

The internal roadway and walkway system within the subarea would be subject to City design standards provided in the *Covington Design Guidelines* (City of Covington 2005) and Covington Municipal Code (CMC) *Chapter 18.50 Development Standards – Parking and Circulation*, to ensure that internal mobility and safety objectives are met. With City design standards incorporated into site design, no adverse internal circulation impacts are expected to result from Alternatives 2 or 3.

Traffic Safety

ALL ALTERNATIVES

Historical collision data in the site vicinity do not indicate any unusual safety concerns and the addition of future projected traffic is not expected to substantially change overall safety conditions. For all three alternatives, projected increases in vehicle traffic on the study area street network resulting from regional land use growth could increase the potential for vehicle conflicts. Alternatives 2 and 3 would add more trips to the roadway system, compared to Alternative 1. High average delays at stop-controlled intersections projected to operate at LOS E or F with all three alternatives could also result in drivers on the stop-controlled approaches taking shorter gaps to cross or enter the major street, which could increase the potential for vehicle conflicts. However, mitigation identified to address operational impacts would also address potential safety issues at these locations. None of the three alternatives are expected to result in significant adverse impact to traffic safety.

Transit

ALTERNATIVE 1 (NO ACTION)

No residential or retail land uses would be constructed with this alternative, and no transit demand is expected to occur at the site.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE)

Although the traffic analysis conducted for this DEIS conservatively assumes that all external project-generated trips would occur by vehicle, the project could generate some transit trips. The area is served by two bus routes with stops located within one-half mile of the site. The decision to extend transit service to the site would be at the discretion of King County Metro and/or Sound Transit and could be dependent on funding availability. However, higher density residential and commercial development could encourage extension of transit routes to directly serve the site. Additionally, higher density could potentially also encourage private transit services (such as Microsoft's Connector buses) to stop at the site. No adverse impacts to transit are expected to result from Alternative 2.

ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

The potential effects on transit due to Alternative 3 would be similar to those described for Alternative 2. However, the proposed park & ride lot with this alternative, as well as higher density residential and commercial development compared to Alternative 2, would increase the likelihood that public or private transit service would be extended to directly serve the site. No adverse impacts to transit are expected to result from Alternative 3.

Non-Motorized Facilities

ALTERNATIVE 1 (NO ACTION)

No residential or retail land uses would be constructed with this alternative, and no non-motorized demand is expected to occur at the site.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

Although the analysis conducted for this DEIS conservatively assumes that all external project-generated trips would occur by vehicle, the both alternatives could generate some non-motorized trips. Both alternatives propose connections to the planned future trails that would be located adjacent to the site, which would encourage non-motorized travel to and from the site. (See Section 3.9 Public Services for a discussion of parks and recreational facilities.) Both major roadways providing access to the subarea (existing SE 256th Street and proposed 204th Avenue SE connector) would have sidewalks that would allow non-motorized traffic to be separated from vehicular traffic. No adverse impacts to non-motorized facilities are expected to result from Alternatives 2 or 3.

Parking

ALTERNATIVE 1 (NO ACTION)

No residential or retail land uses would be constructed with this alternative, and no parking demand beyond what is needed to support continued operation of the asphalt plant is expected to occur at the site.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

The parking supply within the subarea would be subject to City code requirements (*CMC Chapter 18.50 Development Standards – Parking and Circulation*) to ensure that adequate parking supply is provided to meet demand. With City parking code requirements incorporated into site design, no adverse parking impacts are expected to result from Alternatives 2 or 3.

Freight Mobility and Access

ALTERNATIVE 1 (NO ACTION)

No substantial increase in truck traffic is anticipated with the No Action alternative and no adverse impact to freight mobility or access is expected to occur.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

Both Alternatives 2 and 3 would generate delivery trucks typical of retail development, but increases are not anticipated to substantially change the overall percentage of trucks within the project study area. Both alternatives would increase traffic volumes on roadways that also carry freight and some additional delays are expected. However, both alternatives would also include the two roadway connectors that are expected to have beneficial effect on citywide roadway operations. New development within the subarea would be subject to City code requirements for loading spaces (*CMC Chapter 18.50.070*). With City loading space requirements incorporated into site design and mitigation in place to address identified traffic operational impacts, no adverse impacts to freight mobility or access are expected to result from Alternatives 2 or 3.

Short-term Construction Impacts

ALTERNATIVE 1 (NO ACTION)

The No Action alternative is not expected to generate a substantial amount of truck traffic, although addition of building square footage at the existing mine site would generate some construction vehicle trips.

ALTERNATIVE 2 (MINIMUM URBAN VILLAGE) AND ALTERNATIVE 3 (MAXIMUM URBAN VILLAGE)

During development of the Hawk Property site with Alternatives 2 and 3, construction activities would generate truck and construction worker commute trips that could potentially disrupt vehicular and non-motorized traffic. Activities that typically generate the largest construction traffic volumes are earth excavation and concrete pours.

Improvement of the existing segment of SE 204th Avenue could also be disruptive to existing residences located along the roadway. In addition to truck and worker commute trips generated by construction activities, construction in the roadway right-of-way could require temporary lane narrowings or closures. Access to adjacent properties would need to be maintained at all times.

Mitigation Measures

This section presents potential measures to mitigate the transportation-related impacts of the project alternatives, including measures to mitigate short-term construction impacts as well as long-term impacts to all modes of travel.

Incorporated Plan Features**204TH AVENUE SE ROADWAY CONNECTION**

Alternatives 2 and 3 propose to provide a new 2-to-3-lane arterial between SE 256th Street and SE 272nd Street. The 204th Avenue SE Connector would serve as the spine of the site's internal roadway circulation system, would provide a second major roadway connection to the site from the east, and would also provide an additional emergency vehicle access point. Since this roadway is proposed as part of Alternatives 2 and 3, it is assumed to be in place in the future transportation analyses for each of these alternatives, and would be required to be built as part of the redevelopment of the Hawk Property. If the developer desired not to implement this connection, or to delay or reduce its extent, the City would first require supplemental transportation analysis to be completed showing that no adverse transportation impacts would result.

With both alternatives, this roadway would reduce trips using SE 272nd Street between 204th Avenue and SE Wax Road, and also using SE Wax Road/180th Avenue SE between SE 272nd Street and SE 256th Street. The model analysis shows that, as project-generated trips decrease on the 204th Avenue SE connection, non-project trips would be expected to increase. With mitigation provided at the SE 272nd Street/204th Avenue SE intersection, the new roadway connection is expected to provide an overall benefit to the citywide street system, by providing more options for vehicles traveling between SE 272nd Street and SR 18.

191ST AVENUE SE LOCAL ACCESS STREET CONNECTION AND TRAFFIC CALMING

Alternatives 2 and 3 propose to provide a local roadway connection between 191st Avenue SE and the local internal roadway system at the south end of the subarea. The purpose of this roadway would be to provide a direct connection between the subarea and residential development located to the south, and to provide an additional emergency vehicle access point. This connection would not be intended to serve trips generated outside of the local neighborhood. Since this local connection is proposed as part of Alternatives 2 and 3, it is assumed to be in place in the future transportation analyses for each of these alternatives, and would be required to be built as part of the redevelopment of the Hawk Property. If the developer desired not to implement this local connection, the City would first require supplemental transportation analysis to be completed showing that no adverse transportation impacts would result.

The model analysis indicates that the majority of trips generated at this connection would be to and from the residential neighborhoods that are served by this local access street. The 191st Avenue SE connector is expected to have a beneficial effect on city-wide roadway operations because it would allow direct access between the subarea and adjacent residential development. Without this connection, trips generated to and from these neighborhoods would need to use SE 272nd Street and access the site via SE 256th Street or 204th Avenue SE. This would increase overall vehicle miles traveled on the roadway system, and would also increase traffic volumes along these alternate routes. The local access connection should be designed with traffic calming measures such as on-street parking, landscaping, and/or devices such as traffic circles to limit access to the local neighborhood and discourage cut-through traffic.

NON-MOTORIZED CONNECTIONS

Alternatives 2 and 3 propose to provide connections to existing and planned future non-motorized facilities adjacent to the subarea (see Section 3.9 Public Services). As described previously, both alternatives propose connections to the planned future trails that would be located adjacent to the site, which would encourage non-motorized travel to and from the site. Both major roadways providing access to the subarea (existing SE 256th Street and proposed 204th Avenue SE connector) would have sidewalks that would allow non-motorized traffic to be separated from vehicular traffic. These connections could encourage higher use of non-motorized modes for trips generated by the site, and would improve safety and mobility for pedestrians and bicyclists entering and exiting the site.

PARK & RIDE LOT

Alternative 3 proposes to provide a park & ride lot at the subarea. This would increase the likelihood that transit service would be extended to directly serve the site.

Applicable Regulations and Commitments

CITY OF COVINGTON DESIGN STANDARDS

For Alternatives 2 and 3, internal roadways, and non-motorized facilities are subject to design standards presented in *Covington Design Guidelines* (City of Covington 2005) and *CMC Chapter 18.50 - Development Standards – Parking and Circulation*. The proposed new roadway connections would be subject to the City’s *Design and Construction Standards* for roadways. (City of Covington 2009)

CITY OF COVINGTON PARKING CODE

For Alternatives 2 and 3, the amount of parking supply provided as the subarea develops would be subject to parking requirements defined in *CMC Chapter 18.50 - Development Standards – Parking and Circulation*.

Other Potential Mitigation Measures

ROADWAY CAPACITY IMPROVEMENTS

Exhibit 3.8-17 summarizes the roadway capacity improvements that have been identified to mitigate intersection operation impacts of all three alternatives. For each intersection location, an “X” indicates whether the identified measure would be required for each alternative. For Alternatives 2 and 3, the table also summarizes the share of total PM peak hour trips through each intersection that build-out of the proposed project is expected to contribute. With these alternatives, the developer would need to pay a proportionate share of the costs of the projects needed to support concurrency. The projects listed in Exhibit 3.8-17 are being added to the City’s Capital Facilities Plan as part of the Comprehensive Plan update accompanying this Planned Action Ordinance.

Exhibit 3.8-17. Roadway Capacity Improvements and Action Alternative Proportional Trip Shares

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
Signalized								
21	SE 272 nd St/Covington Way	None Identified ⁽²⁾	Covington, WSDOT	X	X	<1%	X	1%
22	SE 272 nd St (SR 516)/164 th Ave SE	None Identified ⁽²⁾	Covington, WSDOT	X	X	1%	X	2%
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	None Identified ⁽²⁾	Covington, WSDOT		X	3%	X	4%
26	SE 272 nd St/168 th Ave SE	None Identified ⁽²⁾	Covington, WSDOT	X	X	<1%	X	1%
29	SE 272 nd St/172 nd Ave SE	None Identified ⁽²⁾	Covington, WSDOT	X	X	-2%	X	-1%
32	SE 272 nd St (SR 516)/SE Wax Rd	None Identified ⁽²⁾	Covington, WSDOT	X	X	-4%	X	-4%
37	SE 272 nd St/216 th Ave SE	Add eastbound through lane, add eastbound receiving lane. (from Maple Valley Comprehensive Plan) ⁽⁹⁾⁽⁹⁾	Maple Valley, WSDOT	X	X	10%	X	12%
310	SE 231 st St/SR 169	Add westbound through lane (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	X	X	1%	X	2%
313	SE 240 th St/SR 169	Add eastbound right-turn lane (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	X	X	1%	X	2%
314	SR 516/Witte Rd SE	Add eastbound through lane, convert westbound right-turn lane to right-though, add northbound right-turn lane, add eastbound and westbound receiving lane. ⁽³⁾	Maple Valley, WSDOT	X	X	1%	X	2%
315	SR 516/SR 169	Convert westbound right-turn lane to right-though, add westbound receiving lane. ⁽³⁾	Maple Valley, WSDOT	X	X	1%	X	1%

HAWK PROPERTY PLANNED ACTION EIS | AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
Roundabout								
8	SE 256 th St/164 th Ave SE	Widen northbound and southbound approaches to two lanes; widen east and west sides of circulating street to two lanes.	Covington	X	X	2%	X	3%
17	SE 267 th Place/SE Wax Rd/180 th Ave SE	Widen southbound approach to two lanes; widen west side of circulating street to two lanes.	Covington	X		-7%	X	-6%
All-Way Stop-Control								
2	SE 240 th St/196 th Ave SE	Add eastbound left-turn lane.	Covington	X	X	6%	X	7%
5	SE Wax Rd/SE 180 th St	Add northbound right-turn lane, or add traffic signal. ⁽⁴⁾	Covington		X	11%	X	12%
51	SE 240 th St/164 th Ave SE	Add eastbound left-turn lane, add westbound left-turn lane, add traffic signal.	Covington, King County ⁽⁵⁾	X	X	4%	X	6%
One- or Two-Way Stop Control								
1	SE 240 th St/180 th Ave SE	Add traffic signal.	Covington	X	X	9%	X	11%
3	SE 240 th St/SE Wax Rd/200 th Ave SE	Add traffic signal.	Covington, King County ⁽⁵⁾	X	X	6%	X	7%
6	SE 256 th St/148 th Ave SE	Add westbound right-turn lane and eastbound left-turn lane (CIP #1041), add traffic signal.	Covington	X	X	4%	X	5%
13	SE 261 st St/180 th Ave SE	Add traffic signal.	Covington	X			X	-12%
		Add eastbound left-turn lane.	Covington		X	-15%		
18	SE 268 th Place/164 th Ave SE	Add traffic signal.	Covington	X	X	-4%	X	-3%
20	SE 272 nd St/156 th PI SE	Add westbound left-turn lane, add traffic signal. ⁽⁶⁾	Covington, WSDOT	X	X	<1%	X	1%

HAWK PROPERTY PLANNED ACTION EIS | AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share	Project % Share	Project % Share	Project % Share
36	SE 272 nd St/204 th Ave SE	Add southbound left-turn lane, add traffic signal.	Covington, WSDOT		X	10%	X	13%
39	SE 275 th St/SE Wax Rd	Add traffic signal.	Covington	X	X	2%	X	3%
50	SE 240 th St/156 th Ave SE	Add traffic signal.	Covington, King County ⁽⁵⁾	X	X	6%	X	7%
55	SE 272 nd St/156 th Ave SE	Add traffic signal. ⁽⁷⁾	Kent, Covington ⁽⁸⁾	X	X	1%	X	1%
58	SE 272 nd St/186 th Ave SE	Restrict northbound and southbound movements to right-turn-in, right-turn-out	Covington	X		-17%		-16%
300	SE 256 th St/Westbound SR 18 Ramps	Option A Add traffic signal. Add eastbound left-turn lane. Coordinate signal timing/phasing with new signal at the northbound SR 18 ramp intersection.	Covington, <u>King County, WSDOT</u> ⁽⁵⁾		X	49%		
		Add traffic signal. Add eastbound and southbound left-turn lanes. Coordinate signal timing/phasing with new signal at the northbound SR 18 ramp intersection.	Covington, <u>King County, WSDOT</u> ⁽⁵⁾				X	50%
		Option B <u>Add a roundabout with one lane on the north side and two lanes on the south side. Add a second eastbound approach lane, and a right turn lane on the southbound approach.</u>	<u>Covington, King County, WSDOT</u> ⁽⁵⁾		X	49%	X	50%
301	SE 256 th St/Eastbound SR 18 Ramps	Option A Add traffic signal.	Covington, <u>King County, WSDOT</u> ⁽⁵⁾	X				

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
					Project % Share		Project % Share	
		Add traffic signal. Remove bike lanes across SR 18 overpass, restripe to add eastbound left-turn lane and to channelize bicycles to use sidewalk across the overpass. Add westbound right-turn lane. Coordinate signal timing/phasing with new signal at the westbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾		X	69%		
		Add traffic signal. Remove bike lanes across SR 18 overpass, restripe to add eastbound left-turn lane and to channelize bicycles to use sidewalk across the overpass. Add westbound and northbound right-turn lane. Coordinate signal timing/phasing with new signal at the westbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾				X	72%
		Option B Add a one-lane roundabout. Add right-turn lanes on the northbound and westbound approaches.	Covington, King County, WSDOT ⁽⁵⁾		<u>X</u>	<u>69%</u>	<u>X</u>	<u>72%</u>

Source: Heffron Transportation, [David Evans & Associates](#), ~~May~~ [November](#) 2013.

- The roadway improvement measures that have been identified would improve operation to meet local level of service standards under projected 2035 conditions with build-out of local and regional land use plans, with the three alternatives. [Projects located at Covington concurrency intersections are being added to the City's 2035 Capital Improvement Program as part of the Comprehensive Plan update accompanying the Planned Action Ordinance. However, if](#) regional development growth occurs to the extent projected, it is possible that other measures could be identified to address the impact at the time the need for improvement is triggered.
- No mitigation measures have been identified at these intersections. For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. If growth occurs to the degree reflected in the model projections, it is likely that the City of Covington would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. The two Action alternatives do not significantly affect this outcome.
- Analysis indicates that with projected 2035 volumes and any of the three alternatives, SR 516 would need to be widened to 5 lanes between 216th Avenue SE and SR 169 in order to meet City of Maple Valley concurrency standards. If growth occurs to the degree reflected in the model projections, it is likely that the City of Maple Valley would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. [This issue is identified for the 2035 No Action alternative, and](#) ~~F~~ the two Action alternatives do not significantly affect this outcome.

4. Analysis indicates that addition of a northbound right-turn lane would address the level of service impact for both Action alternatives. However, addition of an additional lane may not be feasible due to space constraints at this location, in which case addition of a traffic signal would also address the impact.
5. While this intersection is located outside of the Covington city limits in King County, the City of Covington monitors operations at this location, ~~and it is included as an analysis intersection in the City's Concurrency Management Program.~~
6. While addition of a traffic signal would greatly improve safety and operations at this location, projected signalized operation at this location is LOS F with all three alternatives. Improvement to LOS D or better would require widening of this section of SE 272nd Street. See Note 1.
7. Alternatively, turn movements could be restricted to right-turns only at this intersection. In this case, it is assumed that the projected westbound left-turn movement (180 vehicles in each alternative) would instead turn at 152nd Avenue SE. Phasing changes could be made to allow SE 256th Street/152nd Avenue SE to operate at LOS E in this circumstance, but additional capacity improvements would be needed to improve operation to LOS D.
8. This intersection is located outside of the Covington city limits in the City of Kent. However, Covington monitors operations at this location as part of its Concurrency Management Program.
9. This project is included in the City of Maple Valley's long-range Transportation Improvement Program provided in the City Comprehensive Plan (City of Maple Valley 2011). The City's planned improvements would address level of service issues with all three alternatives, and no additional improvements would be needed.

It should be noted that the traffic impacts and recommended mitigation are identified for 2035 conditions that reflect build-out of both Covington's and Maple Valley's future land use plans outside of the subarea, growth in regional development growth outside of the two cities, and full build-out of each respective alternative. As described previously in this section under *Affected Environment*, all except six of the 54 analysis intersections are currently operating at LOS D or better. If full build-out of regional land use does not occur to the extent projected by 2035, it is possible that the need for some of the improvements may not be triggered by that year. Each jurisdiction continuously monitors operations of its roadways, and identifies appropriate policies and/or capacity improvements to address traffic operational issues as they emerge. Additionally, it is possible that measures other than those described in the table could be identified to address an impact, at the time the need for improvement is triggered.

Alternative 1 (No Action) Mitigation Measures

For the No Action alternative, roadway capacity improvements are identified at [15-13](#) locations in Covington, and at five locations in Maple Valley.

As described previously and shown in Exhibit 3.8-4, the 2035 analysis assumed that the City of Covington would continue its 5-lane widening of SE 272nd Street to include the segment between 192nd Avenue SE and the east city limits. This segment of the project is not currently included in the City's Capital Improvement Program. This project, along with the projects identified in Exhibit 3.8-17 to address impacts resulting from the No Action Alternative, will need to be added to the City's Capital Improvement Program as part of its next Comprehensive Plan update. Additionally, the City's Traffic Impact Fee Program will need to be updated to include these additional projects.

The mitigation measures summarized in Exhibit 3.8-17 are expected to address all roadway operational impacts in Covington identified to result from the No Action alternative, with the exception of impacts at intersections located along SE 272nd Street. No mitigation measures have been identified at these intersections. For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. 2035 model projections indicate that with the No Action alternative, traffic volumes on the section of SE 272nd Street between 156th Place SE and SE Wax Road would be high enough that most intersections along the section would operate at LOS E or F. While some spot improvements at these locations may improve conditions slightly, they would not be sufficient to improve operation to LOS D. Improvement to LOS D or better would require widening to 6 or 7 lanes of this section of SE 272nd Street. If growth occurs to the degree reflected in the model projections, it is likely that the City of Covington would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. Under these circumstances, the City would be required to decide upon one of these options—additional capacity improvement or a level of service policy change—in order to support concurrency.

For Maple Valley intersections in the North Concurrency Group (located along SR 169), mitigation measures reflect future recommended capacity improvements identified in the City's *Comprehensive Plan* (Maple Valley 2011). For Maple Valley intersections in the South Concurrency Group (located along SR 516), analysis indicates that with the projected 2035 volumes, SR 516 would need to be widened to five lanes between 216th Avenue SE and SR 169 in order to meet City of Maple Valley level of service standards. WSDOT, in cooperation with local jurisdictions, recently completed a corridor study for SR 516, which evaluated traffic conditions along the roadway through the year 2030 (WSDOT 2013). This report did not recommend widening of the portion of SR 516 east of 216th Avenue SE. It is noted that recommendations in the WSDOT report reflect a lower standard than both Covington's and Maple Valley's standards, with improvements identified only to address operations projected at LOS F. Also, the long range planning year evaluated for this *Draft* EIS is 2035, reflecting five years of additional regional growth; Covington model projections along SR 516 were higher than those reflected in the WSDOT report. If regional land

use growth occurs at the rate reflected in the Covington model assumptions through 2035, it is likely that the City of Maple Valley would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D.

Under these circumstances, the City would be required to decide upon one of these options—capacity improvement or a level of service policy change—in order to support concurrency.

Alternative 2 (Minimum Urban Village) and Alternative 3 (Maximum Urban Village) Mitigation Measures

COVINGTON

The roadway capacity improvements identified for Alternative 1 (No Action) are expected to also address impacts identified for both Alternatives 2 and 3 at the following locations.

- 1 – SE 240th Street/180th Avenue SE
- 2 – SE 240th Street/196th Avenue SE
- 3 – SE 240th Street/SE Wax Road/200th Avenue SE
- 6 – SE 256th Street/148th Avenue SE
- ~~8 – SE 256th Street/164th Avenue SE~~
- 13 – SE 261st Street/180th Avenue SE *(Needed for Alternative 3 only, which is projected to reduce average delay as compared to No Action, but would still require mitigation. Alternative 2 is also projected to reduce average delay and would require a lower level of mitigation, as described below.)*
- ~~17 – SE 267th Place/SE Wax Road/180th Avenue SE *(Needed for Alternative 3 only, which is projected to reduce average delay as compared to No Action, but would still require mitigation. Alternative 2 is also projected to reduce average delay and would eliminate the need for mitigation, as described below.)*~~
- 18 – SE 268th Place/164th Avenue SE *(Alternatives 2 and 3 projected to reduce average delay, as compared to No Action, but mitigation would still be required.)*
- 20 – SE 272nd Street/156th Place SE
- 39 – SE 275th Street/SE Wax Road *(Alternatives 2 and 3 projected to reduce average delay, as compared to No Action, but mitigation would still be required.)*
- 50 – SE 240th Street/156th Avenue SE
- 51 – SE 240th Street/164th Avenue SE
- 55 – SE 272nd Street/156th Avenue SE

It should be noted that Alternatives 2 and 3 do not trigger the need for improvements at these locations, though as shown in Exhibit 3.8-17, they are expected to contribute vehicle trips that vary between 0% and 12% of total trips through the intersection, depending on the intersection. At three intersections noted below, Alternatives 2 and 3 are projected to reduce the number of vehicle trips.

In addition, the same potential operational issues are identified on SE 272nd Street between 156th Place SE and SE Wax Road, as described for the No Action alternative. While both Alternative 2 and Alternative 3 would be expected to add trips to some locations, the proportional share would be relatively small (4% or less). Alternatives 2 and 3 are also projected to improve conditions at other locations along the corridor, such as the SE 272nd St (SR 516)/SE Wax Rd (180th Ave SE) intersection, due to changes in citywide traffic patterns resulting from the proposed 204th Avenue SE Connector; however, the reduction in delay is not projected to improve operation to LOS D or better. Overall, the trips generated by these alternatives do not affect the overall outcome described for No Action, which would require the Cities to decide upon either capacity improvement or a level of service policy

change. Alternatives 2 and 3 would not affect the need to make this decision, nor would they affect the decision that the City would ultimately make. If by 2035, regional growth occurs at the rate reflected in the model projections, any capacity improvement or policy solution identified by the City to address operational issues for the No Action alternative would also be expected to address Alternatives 2 or 3 without the need for additional measures.

In addition, both Alternatives 2 and 3 are expected to reduce delay and eliminate the need for left-turn restrictions at intersection 58–SE 272nd Street/186th Avenue SE that are recommended for No Action. As described above, delay reductions anticipated from Alternative 2 would also allow for less mitigation at two locations. At intersection 13 – SE 261st Street/180th Avenue NE, mitigation would not need to include signalization, but could be limited to addition of an eastbound left-turn lane. At intersection 17–SE 267th Place/SE Wax Road (180th Avenue SE), delay reduction expected to result from Alternative 2 would eliminate the need for mitigation.

The following additional roadway capacity improvements are identified to address impacts triggered by Alternatives 2 and 3.

- **5 – SE Wax Road/SE 180th Street:** Increased traffic volumes resulting from Alternative 2 or 3 would require additional capacity improvement at this location. Analysis indicates that addition of a northbound right-turn lane would allow the intersection to operate at LOS D or better through 2035. However, space at this location is constrained by a retaining wall located along the east side of the roadway. If it is not feasible to widen the roadway at this location, installation of a traffic signal would also address the impact.
- **36 – SE 272nd Street/204th Avenue SE:** Increased traffic volumes resulting from the 204th Avenue SE Connector Roadway, would require that this intersection be signalized. The planned three-lane section would also need to be extended to this intersection, providing a southbound left-turn lane.

- **300 – SE 256th Street/SR 18 Westbound Ramps:**

Option A (Signal): Both Alternative 2 and Alternative 3 would trigger the need to signalize this intersection and add an eastbound left-turn lane. Alternative 3 would additionally need to add a southbound left-turn lane on the ramp.

Option B (Roundabout): Alternatively, for Alternative 2 or 3, level of service impacts could be mitigated by construction of a roundabout that has one lane on the north side and two lanes on the south side. A second eastbound approach lane and a right-turn lane on the southbound approach would also need to be added.

- **301 – SE 256th Street/SR 18 Eastbound Ramps:**

Option A (Signal): Addition of a traffic signal at this location would be triggered with the No Action alternative, but additional capacity improvements would be needed to accommodate traffic volumes generated by Alternatives 2 and 3. In order for the intersection to operate at LOS D or better with both alternatives, it will be necessary to add an eastbound left-turn lane on the existing SR 18 overpass. The width of the west leg of this intersection is constrained by the bridge structure; however, it appears there may be adequate curb-to-curb width to accommodate three travel lanes. The addition of a center left-turn lane would require that the existing bicycle lane striping be removed, and bicyclists instead be directed to use the sidewalk to cross SR 18. As described previously, with additional trips attracted to this interchange viaas project-generated trips decrease on the 204th Avenue SE Connector, model projections indicate that total demand for the interchange is not substantially influenced by differences in non--project-generated trips would increase. As a result, there is very little difference in the projected eastbound traffic volumes between the two Action alternatives at this location. In addition to the eastbound left-turn lane, a westbound right-turn lane would be needed with both Alternative 2 and Alternative 3. Alternative 3 would also need

to add a northbound right-turn lane on the ramp. Construction of this project would require retaining walls to be built on the east side of the intersection.

Option B (Roundabout): Alternatively for Alternative 2 or 3, level of service impacts could be mitigated by construction of a one-lane roundabout, with right-turn lanes added on the northbound and westbound approaches. Similar to the signal option, construction of this option would require retaining walls to be constructed on the east side of the intersection, but no additional vehicle lanes would be needed across the bridge structure.

Note, with Alternative 2 or 3, for the SE 256th Street/SR 18 ramp intersections, the same improvement option (Option A – signal, or Option B – roundabout) would need to be chosen for both intersections. Although the City monitors operations at these intersections, they are located outside the city limits and are under the jurisdiction of King County and WSDOT. The City and developer would need to coordinate with both jurisdictions to implement capacity improvements at the SE 256th Street/SR 18 ramp intersections.

The need for improvement at these four locations would be triggered by the proposed development at the Hawk Property. The expected timing is as follows:

- At SE Wax Road/SE 180th Street, it is estimated that the need for improvement would be triggered when trips generated by the development reach about 92% of the total estimated for the Maximum Village, approximately 2,370 net new primary trips.
- The other three locations requiring improvement would become the endpoints of the proposed new 204th Avenue SE Connector, once it is constructed. Therefore, it is expected that the improved traffic control would be installed at the time that the new roadway is constructed. If it were desired to phase in the intersection improvements at a later date, the developer would need to submit a detailed traffic analysis showing that concurrency would still be met.

MAPLE VALLEY

The roadway capacity improvements identified for Alternative 1 (No Action) are expected to address all impacts identified for Alternatives 2 and 3 at all Maple Valley intersections. As shown in Exhibit 3.8-17, trips generated by the Action alternative are projected to contribute 10% to 12% of 2035 volumes at SE 272nd Street/216th Avenue SE, and 1% or less at the other Maple Valley intersections.

Exhibit 3.8-18 summarizes the project level of service at the study area intersections with mitigation in place. Locations where mitigation would not achieve the LOS standard are highlighted.

Exhibit 3.8-18. Future (2035) Level of Service - Mitigated

ID	Intersection	Alternative 1 No Action		Alternative 2 Minimum Action		Alternative 3 Maximum Action	
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay
Signalized							
1	SE 240th St/180th Ave SE	C	23.9	D	35.7	D	38.7
3	SE 240 th St/SE Wax Rd/200 th Ave SE	C	29.2	C	31.3	C	32.1
4	SE 251 st St/164 th Ave SE	A	6.4	A	7.3	A	7.3
6	SE 256 th St/148 th Ave SE	B	16.0	B	17.9	B	18.2
7	SE 256 th St/156 th Ave SE	C	23.3	C	23.1	C	23.0
9	SE 256 th St/168 th PI SE	A	8.8	A	9.6	A	9.3

HAWK PROPERTY PLANNED ACTION EIS | AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION

ID	Intersection	Alternative 1 No Action		Alternative 2 Minimum Action		Alternative 3 Maximum Action	
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay
11	SE 256 th St/SE Wax Rd/SE 180 th St	D	40.7	D	54.6	D	52.8
13	SE 261 st St/180 th Ave SE	A	10.0		(3)	A	9.5
14	SE 262 nd St/180 th Ave SE	C	24.9	B	18.9	C	20.3
18	SE 268 th Place/164 th Ave SE	B	18.3	B	13.7	B	14.4
20	SE 272 nd St/156 th Pl SE (SB)	F	118.4	F	108.5	F	119.6
21	SE 272 nd St/Covington Way	F	>200	F	>200	F	>200
22	SE 272 nd St (SR 516)/164 th Ave SE	E	68.2	E	69.0	E	68.3
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	D	51.2	E	57.3	F	65.6
24	SE 272 nd St (SR 516)/Eastbound SR 18 Ramps	D	36.0	D	44.5	E	46.2
26	SE 272 nd St/168 th Ave SE	E	54.6	E	57.5	E	57.7
29	SE 272 nd St/172 nd Ave SE	E	68.7	E	60.7	E	65.8
32	SE 272 nd St (SR 516)/SE Wax Rd	F	115.8	F	100.3	F	99.7
34	SE 272 nd St/192 nd Ave SE	B	12.3	B	11.1	B	11.8
36	SE 272 nd St/204 th Ave SE		(4)	D	45.0	D	46.3
37	SE 272 nd St/216 th Ave SE ⁵	C	26.9	C	27.8	C	29.1
39	SE 275 th St/SE Wax Rd	B	17.6	B	16.6	B	16.5
40	Covington-Sawyer Rd/SE Wax Rd	D	43.8	D	45.5	D	46.2
43	SE 270 th Pl/SE Wax Rd	B	13.5	B	14.0	B	13.9
50	SE 240 th St/156 th Ave SE	B	10.3	B	10.7	B	10.7
51	SE 240 th St/164 th Ave SE	D	41.9	D	51.7	D	55.0
54	SE 272 nd St/152 nd Ave SE	C	25.5	C	24.7	C	24.9
55	SE 272 nd St/156 th Ave SE (WBL)	C	20.2	C	22.3	C	22.8
57	SE 272 nd St/185 th Ave SE	D	47.2	C	25.0	C	29.2
59	165 th Pl SE/Covington-Sawyer Rd	D	36.0	C	34.2	C	34.2
233	Kenwood HS Access/164 th Ave SE	A	7.4	A	7.3	A	7.2
300	SE 256 th St/Westbound SR 18 Ramps (Option A)		(6)	D	54.5	C	21.2
301	SE 256 th St/Eastbound SR 18 Ramps (Option A)	B	19.3	C	36.8	C	30.3
310	SE 231 st St/SR 169 ⁷	F	94.9	F	103.2	F	105.1
311	SE Wax Rd/SR 169 ⁷	C	25.6	C	26.3	C	26.0
312	Witte Rd SE/SR 169 ⁷	C	20.6	C	20.0	C	20.1
313	SE 240 th St/SR 169 ⁷	D	43.3	D	44.9	D	47.9
314	SR 516/Witte Rd SE ⁵	D	45.2	D	44.6	D	47.6
315	SR 516/SR 169 ⁵	E	54.2	E	55.1	E	55.3
Roundabout							
8	SE 256 th St/164 th Ave SE	DC	26.524. <u>8</u>	DC	34.527. <u>3</u>	DC	33.526. <u>0</u>

ID	Intersection	Alternative 1 No Action		Alternative 2 Minimum Action		Alternative 3 Maximum Action	
		LOS ¹	Delay ²	LOS	Delay	LOS	Delay
17	SE 267th Place/SE Wax Rd (180th Ave SE)	DB	34.914 <u>2</u>	DA	34.810 <u>0</u>	CB	21.010 <u>6</u>
44	SE 240th-270th Place/172 nd Ave SE	A	6.96.3	A	6.96.2	A	7.06.3
<u>300</u>	<u>SE 256th St/Westbound SR 18 Ramps (Option B)</u>		(6)		(9)	<u>A</u>	<u>9.4</u>
<u>301</u>	<u>SE 256th St/Eastbound SR 18 Ramps (Option B)</u>		(6)		(9)	<u>B</u>	<u>14.9</u>
All-Way Stop-Control							
2	SE 240th St/196th Ave SE	D	25.8	D	34.0	D	34.8
5	SE Wax Rd/SE 180th St	C	21.6	C	21.3	C	21.6
15	SE Timberlane Boulevard/Timberlane Way SE	A	9.7	A	8.4	A	8.8
19	SE 267th St/Timberlane Way SE	A	9.6	A	9.3	A	9.5
One- or Two-Way Stop Control⁸							
10	SE 256 th St/175 th Way SE (NB)	D	26.5	D	31.9	D	30.8
12	SE 260 th St/156 th Ave SE (WB)	B	13.3	B	13.5	B	13.4
13	SE 261 st St/180 th Ave SE (EB) ⁸		⁽³⁾	D	32.3		⁽³⁾
16	SE 267 th St/172 nd Ave SE (SB)	A	9.0	A	8.7	A	8.7
35	SE 272 nd St/201 st Ave SE (SB)	D	25.9	C	16.5	C	16.7
36	SE 272 nd St/204 th Ave SE (SB)	D	31.2		⁽⁴⁾		⁽⁴⁾
52	SE 260 th St/164 th Ave S (EB)	C	19.5	C	22.2	C	22.1
53	SE 261 st St/172 nd Ave SE (EB)	B	14.0	B	13.1	B	13.2
56	SE 272 nd St/IHOP Driveway (SB)	B	11.5	B	10.6	B	10.7
58	SE 272 nd St/186 th Ave SE (NB)	C	16.7	D	34.8	D	34.6
300	SE 256 th St/Westbound SR 18 Ramps (SB)	C	17.2		⁽⁶⁾		⁽⁶⁾

Source: Heffron Transportation, [David Evans and Associates, November-May 2013](#).

1. LOS = level of service
2. Delay = average delay per vehicle in seconds
3. Intersection #13 is signalized with Alternatives 1 and 3, and eastbound stop-controlled with Alternative 2.
4. Intersection #36 is southbound stop-controlled with Alternative 1, and signalized with Alternatives 2 and 3.
5. Part of Maple Valley’s South Concurrency Intersection Group – concurrency is satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. With mitigation, the average weighted delay for this group is 42.7 (LOS D) for Alternative 1, 42.7 (LOS D) for Alternative 2, and 44.0 (LOS D) for Alternative 3.
6. Intersection #300 is westbound stop-controlled with Alternative 1, and signalized [or has roundabout](#) with Alternatives 2 and 3.
7. Part of Maple Valley’s North Concurrency Intersection Group – concurrency is satisfied if average weighted delay of all intersections in the group is equivalent to LOS D or better. With mitigation, the average weighted delay for this group is 50.0 (LOS D) for Alternative 1, 53.2 (LOS D) for Alternative 2, and 54.5 (LOS D) for Alternative 3.
8. For one- and two-way stop-controlled intersections, the most congested movement is reported. The direction of the most congested movement is shown in parentheses.
9. [Level of service analysis was completed only for Alternative 3 \(Maximum Village\) because it reflects the upper range of the Final EIS Preferred Alternative, and has the highest projected traffic volumes at the SE 256th Street/SR 18 Ramp intersections. Since the Alternative 2 \(Minimum Village\) traffic volumes are lower, it is expected that with roundabouts in place, the SE 256th Street/SR 18 Westbound Ramps would also operate at LOS A, and the SE 256th Street/SR 18 Eastbound Ramps would operate at LOS B or better.](#)

MITIGATION TO ADDRESS SHORT-TERM CONSTRUCTION IMPACTS

In order to minimize the potential short-term traffic impacts resulting from construction of the alternatives, a Traffic Control Plan would need to be prepared in accordance with City guidelines. All Building Permits would be reviewed and conditioned to mitigate construction traffic impacts. The types of transportation-related measures that could be considered would depend on the type and size of the phase under construction. The Traffic Control Plan could potentially include, but would not be excluded to, the following provisions.

- Truck haul-routes to and from the site.
- Peak hour restrictions for construction truck traffic and how those restrictions would be communicated and enforced.
- Truck staging areas (e.g., locations where empty or full dump trucks would wait or stage prior to and during loading or unloading.)
- Measures to reduce construction worker trips such as rideshare or shuttles.
- Provision of on-site or nearby parking for construction workers.
- Road, lane, sidewalk, or bike lane closures that may be needed during utility, street or building construction. A plan detailing temporary traffic control, channelization, and signage measures should be provided for affected facilities.
- Plan to maintain access to residences and businesses at all times.
- Provision of flaggers to direct traffic when appropriate.
- Restoration or repair of the pavement in the road right-of-way to its original condition or better upon completion of the work.
- Other elements or details may be required in the Traffic Control Plan as required by the City of Covington. The project developer/owner and the contractor would be required to incorporate other City requirements into an overall plan, if applicable.

MITIGATION TO ADDRESS CONCURRENCY ON SR 516

As described in the impact analysis, projected year 2035 conditions with Alternative 1 (No Action) indicated that, with build-out of regional land plans, traffic volumes on the section of SR 516 (SE 272nd Street) between 156th Place SE and SE Wax Road would be high enough that most concurrency intersections along this segment would operate at LOS E or F. Concurrency could be addressed either by widening the roadway or amending level of service standards to allow the roadway to operate at a lower level of service after it has been improved to an ultimate capacity. The City should adopt comprehensive plan policies stating that the City of Covington will plan cooperatively with WSDOT and neighboring cities to define the ultimate capacity for this roadway.

Significant Unavoidable Adverse Impacts

The projected year 2035 conditions with Alternative 1 (No Action) indicate that traffic volumes on the section of SR 516 (SE 272nd Street) between 156th Place SE and SE Wax Road, and also between 216th Avenue SE and SR 169, would be high enough that most intersections along these sections would operate at LOS E or F. While some spot improvements at these locations may improve conditions slightly, they would not be sufficient to improve operation to meet current level of service standards defined by the Cities of Covington and Maple Valley. Improvement to LOS D or better would require widening of the roadway under projected conditions. If 2035 growth occurs to the degree reflected in the Covington model projections, it is likely that both Cities would reevaluate their long-term plans for the corridor, and determine if major widening is warranted, or if it would be warranted to reexamine level of service standards and allow the roadway to operate at a lower level of service. Under these circumstances, the Cities would be required to decide upon one of these options—capacity

improvement or a level of service policy change—in order to support concurrency and comply with the Growth Management Act. With either measure in place, no significant adverse impacts would result from the No Action alternative.

These 2035 conditions are projected for the No Action alternative; Alternatives 2 and 3 would not affect the need to make this decision, nor would they affect the decision that the Cities would ultimately make. While Alternatives 2 and 3 are projected to add trips to some intersections along SR 516, any capacity improvement or policy solution identified by the Cities to address operational issues for the No Action alternative would also be expected to address Alternatives 2 or 3 without the need for additional measures. Therefore, with recommended mitigation in place at all other locations, no additional significant adverse unavoidable transportation impacts are expected to result from Alternatives 2 or 3.

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Appendix B: REVISED DRAFT PLANNED ACTION ORDINANCE

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ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF COVINGTON, WASHINGTON,
ESTABLISHING A PLANNED ACTION FOR THE HAWK PROPERTY
PURSUANT TO THE STATE ENVIRONMENTAL POLICY ACT.

WHEREAS, the State Environmental Policy Act (SEPA) and its implementing regulations provide for the integration of environmental review with land use planning and project review through the designation of planned actions by jurisdictions planning under the Growth Management Act (GMA), such as the City of Covington (“City”); and

WHEREAS, Section 43.21C.440 of the Revised Code of Washington (RCW), Sections 197-11-164 through 172 of the Washington Administrative Code (WAC), and Section 16.10.180 of the Covington Municipal Code (CMC) allow for and govern the adoption and application of a planned action designation under SEPA; and

WHEREAS, the State Department of Commerce (DOC) has studied planned actions in various communities throughout the state and found that predefined mitigation as allowed under a planned action ordinance has resulted in increased certainty and predictability for development, time and cost savings for development project proponents and cities, and increased revenues for cities when used with other economic development tools; and

WHEREAS, the designation of a planned action expedites the permitting process for projects of which the impacts have been previously addressed in an environmental impact statement (EIS); and

WHEREAS, a subarea of the City commonly referred to as the “Hawk Property”, as depicted on the map attached hereto as Exhibit A and incorporated herein by this reference, has been identified as a planned action area for future redevelopment from a reclaimed mine and asphalt batch plant to an urban village (“Planned Action Area”); and

WHEREAS, the City has developed and adopted a subarea plan complying with the GMA (RCW 36.70A), dated XXXXX XX, 2014, to guide the redevelopment of the Planned Action Area (“Hawk Property Subarea Plan”); and

WHEREAS, after extensive public participation and coordination with all affected parties, the City, as lead SEPA agency, issued the Hawk Property Planned Action Final Environmental Impact Statement (“FEIS”) dated November 14, 2013, which identifies the impacts and mitigation measures associated with planned development in the Planned Action Area as identified in the Hawk Property Subarea Plan; the FEIS includes by incorporation the Hawk Property Planned Action Draft Environmental Impact Statement issued on July 26, 2013 (collectively referred to herein as the “Planned Action EIS”); and

WHEREAS, the City desires to designate a planned action under SEPA for the Hawk Property (“Planned Action”); and

WHEREAS, adopting a Planned Action for the Hawk Property with appropriate standards and procedures will help achieve efficient permit processing and promote environmental quality protection; and

WHEREAS, the City has adopted development regulations and ordinances that will help protect the environment and will adopt regulations to guide the allocation, form, and quality of development on the Hawk Property; and

WHEREAS, the City Council finds that adopting this Ordinance is in the public interest and will advance the public health, safety, and welfare;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF COVINGTON, WASHINGTON DOES HEREBY ORDAIN AS FOLLOWS:

Section I. Purpose. The purpose of this Ordinance is to:

- A.** Combine environmental analysis, land use plans, development regulations, and City codes and ordinances together with the mitigation measures in the Planned Action EIS to mitigate environmental impacts and process Planned Action development applications in the Planned Action Area;
- B.** Designate the Hawk Property subarea shown in Exhibit A as a Planned Action Area for purposes of environmental review and permitting of designated Planned Action Projects pursuant RCW 43.21C.440;
- C.** Determine that the Planned Action EIS meets the requirements of a planned action EIS pursuant to SEPA;
- D.** Establish criteria and procedures for the designation of certain projects within the Planned Action Area as “Planned Action Projects” consistent with RCW 43.21C.440;
- E.** Provide clear definition as to what constitutes a Planned Action Project within the Planned Action Area, the criteria for Planned Action Project approval, and how development project applications that qualify as Planned Action Projects will be processed by the City;
- F.** Streamline and expedite the land use permit review process by relying on the Planned Action EIS; and
- G.** Apply applicable regulations within the City’s development regulations and the mitigation framework contained in this Ordinance for the processing of Planned Action Project applications and to incorporate the applicable mitigation measures into the underlying project permit conditions in order to address the impacts of future development contemplated by this Ordinance.

Section II. Findings. The City Council finds as follows:

- A.** The Recitals above are adopted herein as Findings of the City Council.
- B.** The City is subject to the requirements of the GMA.
- C.** The City has adopted a Comprehensive Plan complying with the GMA and is amending the Comprehensive Plan to incorporate text and policies specific to the Hawk Property Subarea.
- D.** The City is adopting zoning and development regulations concurrent with the Hawk Property Subarea Plan to implement said Plan, including this Ordinance.
- E.** The Planned Action EIS adequately identifies and addresses the probable significant environmental impacts associated with the type and amount of development planned to occur in the designated Planned Action Area.
- F.** The mitigation measures identified in the Planned Action EIS, attached to this Ordinance as Exhibit B and incorporated herein by reference, together with adopted City development regulations are adequate to mitigate significant adverse impacts from development within the Planned Action Area.
- G.** The Hawk Property Subarea Plan and Planned Action EIS identify the location, type, and amount of development that is contemplated by the Planned Action.
- H.** Future projects that are implemented consistent with the Planned Action will protect the environment, benefit the public, and enhance economic development.
- I.** The City provided several opportunities for meaningful public involvement and review in the Hawk Property Subarea Plan and Planned Action EIS processes, including a community meeting consistent with RCW 43.21C.440; has considered all comments received; and, as appropriate, has modified the proposal or mitigation measures in response to comments.

J. Essential public facilities as defined in RCW 36.70A.200 are excluded from the Planned Action as designated herein and are not eligible for review or permitting as Planned Action Projects unless they are accessory to or part of a project that otherwise qualifies as a Planned Action Project.

K. The designated Planned Action Area is located entirely within a UGA.

L. Implementation of the mitigation measures identified in the Planned Action EIS will provide for adequate public services and facilities to serve the proposed Planned Action Area.

Section III. Procedures and Criteria for Evaluating and Determining Planned Action Projects within the Planned Action Area.

A. Planned Action Area. This “Planned Action” designation shall apply to the area shown in Exhibit A of this Ordinance.

B. Environmental Document. A Planned Action Project determination for a site-specific project application within the Planned Action Area shall be based on the environmental analysis contained in the Planned Action EIS. The mitigation measures contained in Exhibit B of this Ordinance are based upon the findings of the Planned Action EIS and shall, along with adopted City regulations, provide the framework the City will use to apply appropriate conditions on qualifying Planned Action Projects within the Planned Action Area.

C. Planned Action Project Designated. Land uses and activities described in the Planned Action EIS, subject to the thresholds described in Subsection III.D of this Ordinance and the mitigation measures contained in Exhibit B of this Ordinance, are designated “Planned Action Projects” pursuant to RCW 43.21C.440. A development application for a site-specific project located within the Planned Action Area shall be designated a Planned Action Project if it meets the criteria set forth in Subsection III.D of this Ordinance and all other applicable laws, codes, development regulations, and standards of the City, including this Ordinance, are met.

D. Planned Action Qualifications. The following thresholds shall be used to determine if a site-specific development proposed within the Planned Action Area was contemplated as a Planned Action Project and has had its environmental impacts evaluated in the Planned Action EIS:

(1) Qualifying Land Uses.

(a) **Planned Action Categories:** The following general categories/types of land uses are defined in the Hawk Property Subarea Plan and can qualify as Planned Actions:

- i. Single Family dwelling units
- ii. Townhome dwelling units
- iii. Multi-family dwelling units
- iv. Commercial
- v. Large Format Retail
- vi. Iconic/Local Retail
- vii. Open Space, Parks, Plazas, Trails, Gathering Spaces
- viii. Park and Ride

(b) **Planned Action Project Land Uses:** A primary land use can qualify as a Planned Action Project land use when:

- i. it is within the Planned Action Area as shown in Exhibit A of this Ordinance;
- ii. it is within one or more of the land use categories described in Subsection III.D(1)(a) above; and

- iii. it is listed in development regulations applicable to the zoning classifications applied to properties within the Planned Action Area.

A Planned Action Project may be a single Planned Action land use or a combination of Planned Action land uses together in a mixed-use development. Planned Action land uses may include accessory uses.

- (c) Public Services: The following public services, infrastructure, and utilities can also qualify as Planned Actions: onsite roads, utilities, parks, trails, and similar facilities developed consistent with the Planned Action EIS mitigation measures, City and special district design standards, critical area regulations, and the Covington Municipal Code.

(2) Development Thresholds:

- (a) Land Use: The following thresholds of new land uses are contemplated by the Planned Action:

Feature	Minimum Urban Village Proposal	Maximum Urban Village Proposal
Residential Dwellings (units)	1,000	1,500
Commercial Square Feet	680,000	850,000

- (b) Shifting development amounts between land uses in identified in Subsection III.D(2)(a) may be permitted when the total build-out is less than the aggregate amount of development reviewed in the Planned Action EIS; the traffic trips for the preferred alternative are not exceeded; and, the development impacts identified in the Planned Action EIS are mitigated consistent with Exhibit B of this Ordinance.
- (c) Further environmental review may be required pursuant to WAC 197-11-172, if any individual Planned Action Project or combination of Planned Action Projects exceeds the development thresholds specified in this Ordinance and/or alter the assumptions and analysis in the Planned Action EIS.

(3) Transportation Thresholds:

- (a) Trip Ranges & Thresholds. The number of new PM peak hour trips anticipated in the Planned Action Area and reviewed in the Planned Action EIS for 2035 is as follows:

	PM PEAK HOUR TRIPS							
	Alternative 2 – Minimum Urban Village				Alternative 3 – Maximum Urban Village			
	PM Peak Hour				PM Peak Hour			
	Daily	In	Out	Total	Daily	In	Out	Total
Primary Trips	21,950	1,025	940	1,965	28,270	1,343	1,235	2,578

Source: Heffron Transportation, April 2013.

- (b) Concurrency. All Planned Action Projects shall meet the transportation concurrency requirements and the Level of Service (LOS) thresholds established in Chapter 12.100 CMC, Transportation Concurrency Management, and Chapter 12.110, Intersection Standards.
- (c) Traffic Impact Mitigation. Traffic impact fees shall be paid consistent with Chapter 12.105 CMC. Transportation mitigation shall also be provided consistent with mitigation measures in Exhibit B, Attachment B-1 of this Ordinance and the calculation of additional transportation mitigation fees per PM peak hour trip in Exhibit D of this Ordinance, attached hereto and incorporated by this reference.

(d) The responsible City official shall require documentation by Planned Action Project applicants demonstrating that the total trips identified in Subsection III.D(3)(a) are not exceeded, that the project meets the concurrency and intersection standards of Subsection III.D(3)(b), and that the project has mitigated impacts consistent with Subsection III.D (3)(c).

(e) Discretion.

i. The responsible City official shall have discretion to determine incremental and total trip generation, consistent with the Institute of Traffic Engineers (ITE) Trip Generation Manual (latest edition) or an alternative manual accepted by the City's Public Works Director at his or her sole discretion, for each project permit application proposed under this Planned Action.

ii. The responsible City official shall have discretion to condition Planned Action Project applications to meet the provisions of this Planned Action Ordinance and the Covington Municipal Code.

iii. The responsible City official shall have the discretion to adjust the allocation of responsibility for required improvements between individual Planned Action Projects based upon their identified impacts.

(4) Elements of the Environment and Degree of Impacts. A proposed project that would result in a significant change in the type or degree of adverse impacts to any element(s) of the environment analyzed in the Planned Action EIS would not qualify as a Planned Action Project.

(5) Changed Conditions. Should environmental conditions change significantly from those analyzed in the Planned Action EIS, the City's SEPA Responsible Official may determine that the Planned Action Project designation is no longer applicable until supplemental environmental review is conducted.

E. Planned Action Project Review Criteria.

(1) The City's SEPA Responsible Official, or authorized representative, may designate as a Planned Action Project, pursuant to RCW 43.21C.440, a project application that meets all of the following conditions:

- (a) the project is located within the Planned Action Area identified in Exhibit A of this Ordinance;
- (b) the proposed uses and activities are consistent with those described in the Planned Action EIS and Subsection III.D of this Ordinance;
- (c) the project is within the Planned Action thresholds and other criteria of Subsection III.D of this Ordinance;
- (d) the project is consistent with the Covington Comprehensive Plan including the policies of the Hawk Property Subarea Plan incorporated into the Comprehensive Plan and the regulations of the Hawk Property Subarea Plan integrated into the Covington Municipal Code;
- (e) the project's significant adverse environmental impacts have been identified in the Planned Action EIS;
- (f) the project's significant impacts have been mitigated by application of the measures identified in Exhibit B of this Ordinance and other applicable City regulations, together with any conditions, modifications, variances, or special permits that may be required;
- (g) the project complies with all applicable local, state and/or federal laws and regulations and the SEPA Responsible Official determines that these constitute adequate mitigation; and
- (h) the project is not an essential public facility as defined by RCW 36.70A.200, unless the essential public facility is accessory to or part of a development that is designated as a Planned Action Project under this Ordinance.

- (2) The City shall base its decision to qualify a project as a Planned Action Project on review of the Subarea SEPA Checklist form included in Exhibit B to this Ordinance and review of the Planned Action Project submittal and supporting documentation, provided on City required forms.

F. Effect of Planned Action Designation.

- (1) Designation as a Planned Action Project by the City's SEPA Responsible Official means that a qualifying project application has been reviewed in accordance with this Ordinance and found to be consistent with the development parameters and thresholds established herein and with the environmental analysis contained in the Planned Action EIS.
- (2) Upon determination by the City's SEPA Responsible Official that the project application meets the criteria of Subsection III.D and qualifies as a Planned Action Project, the project shall not require a SEPA threshold determination, preparation of an EIS, or be subject to further review pursuant to SEPA. Planned Action Projects will still be subject to all other applicable City, state, and federal regulatory requirements. The Planned Action Project designation shall not excuse a project from meeting the City's code and ordinance requirements apart from the SEPA process.

G. Planned Action Project Permit Process. Applications submitted for qualification as a Planned Action Project shall be reviewed pursuant to the following process:

- (1) Development applications shall meet all applicable requirements of the Covington Municipal Code and this Ordinance in place at the time of the Planned Action Project application. Planned Action Projects shall not vest to regulations required to protect public health and safety.
- (2) Applications for Planned Action Projects shall:
 - (a) be made on forms provided by the City;
 - (b) include the Subarea SEPA checklist included in Exhibit B of this Ordinance;
 - (c) include a conceptual site plan pursuant to Subsection III.G(3) of this Ordinance; and
 - (d) meet all applicable requirements of the Covington Municipal Code and this Ordinance.
- (3) A conceptual site plan shall be submitted for proposed Planned Action Projects. The purpose of the conceptual site plan process is to assess overall project concepts and phasing as well as to review how the major project elements work together to implement requirements of this Ordinance, the consistency of the Planned Action Project application with Planned Action EIS alternative concept plans included in Exhibit E of this Ordinance attached hereto and incorporated by this reference, the Covington Comprehensive Plan, the Hawk Property Subarea Plan, the Covington Municipal Code, and the City of Covington Design and Construction standards. The conceptual site plan shall contain and/or identify:
 - (a) Name of proposed project;
 - (b) Date, scale, and north arrow oriented to the top of the paper/plan sheet;
 - (c) Drawing of the subject property with all property lines dimensioned and names of adjacent streets;
 - (d) A legend listing all of the following information on one of the sheets:
 - Total square footage of the site
 - Square footage of each individual building and/or use
 - Total estimated square footage of all buildings (including footprint of each building)
 - Percentage estimate of the total lot covered by buildings and by total impervious area
 - Square footage estimate of all landscaping (total and parking lots)

- Allowable and proposed building height
- Building setbacks proposed and required by the CMC
- Parking analysis, including estimated number, size, and type of stalls required, by use; and number of stalls provided by use;

(e) Phasing of development;

(f) Major access points and access to public streets, vehicle and pedestrian circulation, public transit stops;

(g) Critical areas;

(h) Focal points within the project (e.g., public plazas, art work, wayfinding signage, gateways both into the site and into the city, etc.);

(i) Private and public open space provisions and recreation areas; and

(j) Written summary of how the conceptual site plan meets the requirements of this Ordinance and the Hawk Property Subarea Plan as well as relevant Covington Municipal Code requirements. The written summary shall also identify the consistency of the Planned Action Project application with Planned Action EIS alternative concept plans included in Exhibit E of this Ordinance.

(4) The City's SEPA Responsible Official shall determine whether the application is complete and shall review the application to determine if it is consistent with and meets all of the criteria for qualification as a Planned Action Project as set forth in this Ordinance.

(5) (a) If the City's SEPA Responsible Official determines that a proposed project qualifies as a Planned Action Project, he/she shall issue a "Determination of Consistency" and shall mail or otherwise verifiably deliver said Determination to the applicant; the owner of the property as listed on the application; and federally recognized tribal governments and agencies with jurisdiction over the Planned Action Project, pursuant to Chapter 1, Laws of 2012 (Engrossed Substitute Senate Bill (ESSB) 6406).

(b) Upon issuance of the Determination of Consistency, the review of the underlying project permit(s) shall proceed in accordance with the applicable permit review procedures specified in Title 14 CMC, except that no SEPA threshold determination, EIS, or additional SEPA review shall be required.

(c) The Determination of Consistency shall remain valid and in effect as long as the underlying project application approval is also in effect.

(d) Public notice and review for qualified Planned Action Projects shall be tied to the underlying project permit(s). If notice is otherwise required for the underlying permit(s), the notice shall state that the project qualifies as a Planned Action Project. If notice is not otherwise required for the underlying project permit(s), no special notice is required by this Ordinance.

(6) (a) If the City's SEPA Responsible Official determines that a proposed project does not qualify as a Planned Action Project, he/she shall issue a "Determination of Inconsistency" and shall mail or otherwise verifiably deliver said Determination to the applicant; the owner of the property as listed on the application; and federally recognized tribal governments and agencies with jurisdiction over the Planned Action Project, pursuant to Chapter 1, Laws of 2012 (Engrossed Substitute Senate Bill (ESSB) 6406).

(b) The Determination of Inconsistency shall describe the elements of the Planned Action Project application that result in failure to qualify as a Planned Action Project.

(c) Upon issuance of the Determination of Inconsistency, the City's SEPA Responsible Official shall prescribe a SEPA review procedure for the non-qualifying project that is consistent with the City's SEPA regulations and the requirements of state law.

- (d) A project that fails to qualify as a Planned Action Project may incorporate or otherwise use relevant elements of the Planned Action EIS, as well as other relevant SEPA documents, to meet the non-qualifying project's SEPA requirements. The City's SEPA Responsible Official may limit the scope of SEPA review for the non-qualifying project to those issues and environmental impacts not previously addressed in the Planned Action EIS.
- (7) To provide additional certainty about applicable requirements, the City or applicant may request consideration and execution of a development agreement for a Planned Action Project, consistent with RCW 36.70B.170 et seq. and CMC Chapter 18.114, Development Agreements.
- (8) A Determination of Consistency or Inconsistency is a Type 1 land use decision and may be appealed pursuant to the procedures established in Title 14 CMC. An appeal of a Determination of Consistency shall be consolidation with any pre-decision or appeal hearing on the underlying project application.

Section IV. Monitoring and Review.

A. The City should monitor the progress of development in the designated Planned Action area as deemed appropriate to ensure that it is consistent with the assumptions of this Ordinance and the Planned Action EIS regarding the type and amount of development and associated impacts and with the mitigation measures and improvements planned for the Planned Action Area.

B. This Planned Action Ordinance shall be reviewed by the SEPA Responsible Official no later than five (5) years from its effective date in conjunction with the City's regular Comprehensive Plan review cycle, as applicable. The timing of subsequent reviews after the first review shall be determined with the completion of the first review. The review shall determine the continuing relevance of the Planned Action assumptions and findings with respect to environmental conditions in the Planned Action Area, the impacts of development, and required mitigation measures (Exhibit B) and Public Agency Actions and Commitments (Exhibit C). Based upon this review, the City may propose amendments to this Ordinance or may supplement or revise the Planned Action EIS.

Section V. Conflict. In the event of a conflict between this Ordinance or any mitigation measures imposed thereto, and any ordinance or regulation of the City, the provisions of this Ordinance shall control.

Section VI. Severability. If any one or more sections, subsections, or sentences of this Ordinance are held to be unconstitutional or invalid such decision shall not affect the validity of the remaining portions of this Ordinance and the same shall remain in full force and effect.

Section VII. Effective Date. This Ordinance shall take effect and be in force ten (10) days after publication as provided by law.

Passed by the City Council of the City of Covington the ____ day of XXX, 2014.

[Signatures]



Exhibit B

Hawk Property Subarea SEPA Checklist and Mitigation Document

INTRODUCTION

The State Environmental Policy Act (SEPA) requires environmental review for project and non-project proposals that are likely to have adverse impacts upon the environment. In order to meet SEPA requirements, the City of Covington issued the Planned Action EIS for the Hawk Property, as defined in this Hawk Property Planned Action Ordinance ("Ordinance") in which this Exhibit is attached. The Planned Action EIS has identified significant beneficial and adverse impacts that are anticipated to occur with the future development of the Planned Action Area, together with a number of possible measures to mitigate those significant adverse impacts.

The City of Covington has established a Planned Action designation for the Hawk Property Subarea based on the Planned Action EIS (see **Exhibit A**). SEPA Rules indicate review of a Planned Action Project is intended to be simpler and more focused than for other projects (WAC 197-11-172). This **Exhibit B** provides a modified checklist form for Planned Action Project applicants to complete, as provided pursuant to RCW 43.21C.440.

MITIGATION DOCUMENT

A Mitigation Document is provided in **Attachment B-1** to this Exhibit B, and is also summarized in the environmental checklist. **Attachment B-1** establishes specific mitigation measures, based upon significant adverse impacts identified in the Planned Action EIS. These mitigation measures shall apply to future development proposals which are found consistent with the Planned Action thresholds in Subsection III.D of this Ordinance and the conceptual plans in Exhibit E of this Ordinance, and which are located within the Planned Action Area (see **Exhibit A**).

APPLICABLE PLANS AND REGULATIONS

The Planned Action EIS identifies specific regulations that act as mitigation measures. These are summarized by EIS topic in **Attachment B-2** to this Exhibit B and are advisory to applicants. All applicable federal, state, and local regulations shall apply to Planned Action Projects, including the regulations that are adopted with the Hawk Property Subarea Plan. Planned Action Project applicants shall comply with all adopted regulations where applicable, including those listed in the Planned Action EIS and those not included in the Planned Action EIS.

INSTRUCTIONS TO APPLICANTS

This environmental checklist below asks you to describe some basic information about your proposal. The City will use this checklist to determine whether the project is consistent with the analysis in the Hawk Property Planned Action EIS and qualifies as a Planned Action Project, or would otherwise require additional environmental review under SEPA. Answer the questions briefly, with the most precise information known, or give the best description you can. You must answer each question accurately and carefully, to the best of your knowledge. The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The City may ask you to explain your answers or provide additional information.

A. PROPOSAL DESCRIPTION

Date:			
Applicant:	Name/Company:	Phone #:	Cell #:
	Mailing Address:	Email Address:	
Property Owner:	Name/Company:	Phone #:	Cell #:
	Mailing Address:	Email Address:	
Property Address	Street:	City, State, Zip Code:	
Parcel Information	Assessor Parcel Number:	Property Size in Acres:	
Give a brief, complete description of your proposal.			

Property Zoning	District Name: _____		Building Type: _____	
Permits Requested (list all that apply)	<input type="checkbox"/> Land Use: _____		<input type="checkbox"/> Engineering: _____	
	<input type="checkbox"/> Building: _____		<input type="checkbox"/> Other: _____	
	All Applications Deemed Complete? Yes ___ No ___ Explain: _____			
Are there pending governmental approvals of other proposals directly affecting the property covered by your proposal? Yes ___ No ___ Explain: _____				
Existing Land Use	Describe Existing Uses on the Site: _____			
Proposed Land Use – Check and Circle All That Apply	<input type="checkbox"/> Single Family dwelling units <input type="checkbox"/> Townhome dwelling units <input type="checkbox"/> Multi-family dwelling units <input type="checkbox"/> Commercial		<input type="checkbox"/> Large Format Retail <input type="checkbox"/> Iconic/Local Retail <input type="checkbox"/> Open Space, Parks, Plazas, Trails, Gathering Spaces <input type="checkbox"/> Park and Ride	
Dwellings	# Existing Dwelling Units: # ___ Dwelling Type _____ # ___ Dwelling Type _____		# Proposed Dwelling Units: # ___ Type _____ # ___ Type _____	
	Dwelling Threshold Total in Ordinance: 1,000 to 1,500		Proposed Density (du/ac): _____ Dwelling Bank Remainder as of _____20___ _____ dwellings	
Non-residential Uses: Building Square Feet	Existing Square Feet: Employment Square Feet in Ordinance: 680,000 to 850,000 square feet Type of Employment: <input type="checkbox"/> Large Format Retail Square Feet _____ SF <input type="checkbox"/> Iconic/Local Retail _____ SF <input type="checkbox"/> Commercial Office _____ SF <input type="checkbox"/> Other (describe): _____ SF		Proposed Square Feet: Square Feet Remainder as of _____20___ _____ square feet	
	Building Height Existing Stories: Existing Height in feet: _____		Proposed Stories: Proposed Height in feet: _____	
Parking Spaces	Existing: _____		Proposed: _____	
PM Peak Hour Weekday Vehicle Trips	Existing Estimated Trips Total: _____		Future Estimated Trips Total: _____	
	Maximum net new primary PM peak hour trips in Ordinance: 1,965 to 2,578		Net New Trips: _____ Trip Bank Remainder as of _____20___ _____ dwellings	
	Source of Trip Rate: ITE Manual ___ Other ___		Transportation Impacts Determined Consistent with Ordinance Subsection III.D(3): Yes ___ No ___	

Impervious Surfaces	Existing Square Feet or Acres:	Proposed Square Feet or Acres:
Proposed timing or schedule (including phasing).		
Describe plans for future additions, expansion, or further activity related to this proposal.		
List any available or pending environmental information directly related to this proposal.		

B. ENVIRONMENTAL CHECKLIST AND MITIGATION MEASURES

Earth Checklist and Mitigation Measures	
<p>1. Description of Conditions</p> <p>A. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____</p> <p>B. What is the steepest slope on the site (approximate percent slope)? _____</p> <p>C. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? _____</p> <hr/> <p>2. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.</p> <hr/> <p>3. Has any part of the site been classified as a "geologically hazardous" area? (Check all that apply)</p> <p><input type="checkbox"/> Landslide Hazards</p> <p><input type="checkbox"/> Erosion Hazards</p> <p><input type="checkbox"/> Seismic Hazards</p> <p><input type="checkbox"/> Liquefaction Hazards</p> <p><input type="checkbox"/> Other: _____</p> <p>Describe: _____</p>	<p>STAFF COMMENTS:</p>

<p>4. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.</p>	
<p>5. Proposed Measures to control impacts to earth, soils, and geologic hazardous areas:</p> <p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Site Specific Study <input type="checkbox"/> Ground improvement and foundation support requirements <input type="checkbox"/> Temporary Erosion and Sedimentation Control (TESC) measures and Best Management Practices to control erosion as required under the NPDES construction permit <input type="checkbox"/> Other: _____ 	

Surface Water and Groundwater Resources Checklist	
<p>6. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)?</p> <p>If yes, describe type of surface water body, including their name(s), stream classification, and whether there is a 100-year floodplain.</p> <p>If appropriate, state what stream or river the surface water body flows into.</p>	<p>STAFF COMMENTS:</p>
<p>7. Will the proposal require or result in (check all that apply and describe below):</p> <ul style="list-style-type: none"> <input type="checkbox"/> any work over, in, or adjacent to (within 200 feet) the described waters? <input type="checkbox"/> fill and dredge material that would be placed in or removed from surface water or wetlands? <input type="checkbox"/> surface water withdrawals or diversions? <input type="checkbox"/> discharges of waste materials to surface waters? <input type="checkbox"/> groundwater withdrawal or discharge? <input type="checkbox"/> waste materials entering ground or surface waters? <p>Describe:</p>	
<p>8. Describe the source of runoff (including storm water) and method of collection, treatment, and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.</p>	

<p>9. Is the area designated a critical aquifer recharge area? If so, please describe:</p>	
<p>10. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?</p>	
<p>11. What measures are proposed to reduce or control water resources/stormwater impacts?</p> <p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Low Impact Development (LID) techniques <input type="checkbox"/> Stormwater Manual Basic Water Quality menu <input type="checkbox"/> Stormwater Manual Enhanced Basic Water Quality menu <input type="checkbox"/> Stormwater Infiltration and pretreatment <input type="checkbox"/> Construction refueling containment measures <input type="checkbox"/> Wells decommissioned or property constructed <input type="checkbox"/> Best Management Practices (BMP) Plan <input type="checkbox"/> Native species landscaping <input type="checkbox"/> Demonstrate compliance with the 2008 City of Kent Draft Water System Plan Chapter 8: Wellhead Protection Program <p>Other: _____</p>	

Air Quality/GHG Checklist and Mitigation Measures	
<p>12. What types of emissions to the air would result from the proposal a) during construction and b) when the project is completed? Please describe and give quantities if known.</p>	STAFF COMMENTS:
<p>13. What measures are proposed to reduce or control air emissions?</p> <p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Air Quality Control Plans <input type="checkbox"/> Puget Sound Clean Air Agency Approval of Burning Slash <input type="checkbox"/> Greenhouse Gas Reduction Measures <input type="checkbox"/> Other: _____ <p>Explain how additional mitigation and Greenhouse Gas Reduction Measures are incorporated into the project, and which measures are not incorporated and why they are infeasible:</p>	

Plants and Animals Checklist and Mitigation Measures	
Plants and Habitat Checklist	STAFF COMMENTS:
14. Check or circle types of vegetation found on the site: <input type="checkbox"/> Deciduous tree: Alder, maple, aspen, other _____ <input type="checkbox"/> Evergreen tree: Fir, cedar, pine, other _____ <input type="checkbox"/> Shrubs <input type="checkbox"/> Grass <input type="checkbox"/> Pasture <input type="checkbox"/> Crop or grain <input type="checkbox"/> Wet soil plants: Cattail, buttercup, bullrush, skunk cabbage, other _____ <input type="checkbox"/> Water plants: Water lily, eelgrass, milfoil, other _____ <input type="checkbox"/> Other types of vegetation: _____	
15. Are there wetlands on the property? Please describe their acreage and classification.	
16. Is there riparian habitat on the property?	
17. What kind and amount of vegetation will be removed or altered?	
18. List threatened or endangered species known to be on or near the site.	
19. Is the proposal consistent with critical area regulations? Please describe.	

Noise Checklist and Mitigation Measures	
25. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?	STAFF COMMENTS:
26. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.	
<p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chapter 8.20 of the Covington Municipal Code, Noise Control <input type="checkbox"/> Washington State Noise Control Act of 1974 (WAC 173-60) <input type="checkbox"/> Noise control plans <input type="checkbox"/> Construction noise reduction measures <input type="checkbox"/> Noise field measurements <input type="checkbox"/> Appropriate site design. For example, based on the Planned Action EIS analysis, with a 35-foot minimum setback to residential buildings or residential outdoor use areas, the modeled traffic noise levels at new dwellings would be less than the impact criteria. <input type="checkbox"/> Building materials and design (e.g. double pane windows) if exterior noise levels exceed local, state, or federal thresholds as studied in the Planned Action EIS. <input type="checkbox"/> Other: _____ Describe: _____	

Land Use Checklist	
27. What is the current use of the site and adjacent properties? (Add more explanation as needed beyond description in Part A.)	STAFF COMMENTS:
28. Describe any structures on the site. Will any structures be demolished? If so, what type, dwelling units, square feet?	
29. What is the current comprehensive plan designation of the site?	
30. What is the current zoning classification of the site?	
31. If applicable, what is the current shoreline master program designation of the site?	
32. What is the planned use of the site? List type of use, number of dwelling units and building square feet.	
33. What is the tallest height of any proposed structure(s)?	
34. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any. THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY): <input type="checkbox"/> Consistency with Hawk Property Subarea Plan as described below <input type="checkbox"/> Other: _____ Describe these measures and how they are incorporated into the development:	

Transportation Checklist	
<p>35. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.</p>	<p>STAFF COMMENTS:</p> <p>Verify that:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The Planned Action Project applicant has submitted documentation of the trips, required improvements, impact fees and other mitigation in comparison to the Planned Action EIS and the Planned Action Ordinance. <input type="checkbox"/> The City has verified incremental and total trip generation.
<p>36. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?</p>	
<p>37. How many parking spaces would the completed project have? How many would the project eliminate?</p>	
<p>38. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).</p>	
<p>39. How many PM peak hour vehicular trips per day would be generated by the completed project? Attach appropriate documentation.</p>	
<p>40. Proposed measures to reduce or control transportation impacts, if any:</p> <p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Trips in Ordinance Subsection III.D(3)(a) are not exceeded, the project meets the Concurrency and Intersection Standards of Subsection III.D(3)(b), and that the project has mitigated impacts consistent with Subsection III.D (3)(c). <input type="checkbox"/> Installation of required improvements necessitated by development or that are part of Planned Action (e.g. spine road and associated intersection improvements). <input type="checkbox"/> Fair share contribution to improvements at City concurrency intersections and roads. <input type="checkbox"/> Other measures to reduce or control transportation impacts: _____ <p>Describe:</p>	

Public Services and Utilities Checklist	
41. Police Protection: Would the project increase demand for police services? Can City levels of service be met?	STAFF COMMENTS:
42. Fire and Emergency Services: Would the project increase demand for fire and/or emergency services? Can levels of services be met?	
43. Schools: Would the project result in an increase in demand for school services? Can levels of services be met? Is an impact fee required?	
44. Parks and Recreation: Would the project require an increase in demand for parks and recreation? Can levels of services be met? Are parks and trails provided consistent with the Planned Action EIS Alternatives? Is an impact fee required?	
45. Water Supply: Would the project result in an increased need for water supply or fire flow pressure? Can levels of service be met?	
46. Wastewater: Would the project result in an increased need for wastewater services? Can levels of service be met?	
47. Other Public Services and Utilities: Would the project require an increase in demand for other services and utilities? Can levels of services be met?	
<p>48. Proposed measures to reduce or control direct impacts on public services.</p> <p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Police Services: Adequate levels of service available to serve development (verified by levels of service studied in the Planned Action EIS and City contract with King County Sheriff Office). <input type="checkbox"/> Fire Services: Mitigation agreement between the developer and Kent Regional Fire Authority. <input type="checkbox"/> Parks and Recreation: Park space and trails are provided to be consistent with both the LOS standards of the Parks and Recreation Element of the Comprehensive Plan and with the requirements of CMC 18.35.150 and this Planned Action Ordinance. <input type="checkbox"/> Water and Wastewater: Adequate service at the time of development. <input type="checkbox"/> Other Measures to reduce or control public services and utilities impacts: _____ <p>Describe:</p>	

ADDITIONAL ENVIRONMENTAL TOPICS

Historic and Cultural Preservation	
49. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.	STAFF COMMENTS:
50. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.	
<p>51. Proposed measures to reduce or control impacts to historic or cultural resources, if any:</p> <p>THE APPLICATION INCLUDES MITIGATION MEASURES AS REQUIRED IN ATTACHMENT B-1 MITIGATION REQUIRED FOR DEVELOPMENT APPLICATIONS, AND ATTACHMENT B-2 APPLICABLE REGULATIONS AND COMMITMENTS, INCLUDING ALL RELEVANT CITY PLANS AND CODES IN EFFECT AT THE TIME OF APPLICATION (CHECK ALL THAT APPLY):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Condition to stop construction if remains of historic or archeological significance are found. <input type="checkbox"/> Consultation with the Washington State Department of Archaeology and Historic Preservation. <input type="checkbox"/> Where project is proposed on or immediately surrounding a site containing an archaeological resource a study is conducted by a qualified professional archaeologist <p>Describe:</p>	

C. APPLICANT SIGNATURE

I DECLARE UNDER PENALTY OF THE PERJURY LAWS THAT THE INFORMATION I HAVE PROVIDED ON THIS FORM/APPLICATION IS TRUE CORRECT AND COMPLETE. I UNDERSTAND THAT THE LEAD AGENCY IS RELYING ON THEM TO MAKE ITS DECISION.

Signature:	
Date:	

D. REVIEW CRITERIA

Review Criteria

The City’s SEPA Responsible Official may designate Planned Action Projects consistent with Subsection III.E of this Ordinance, if all of the following criteria are met.

Criteria	Describe how your application and proposed development meets the criteria.
(a) The proposal is located within the Planned Action area identified in Exhibit A.	
(b) The proposed uses and densities are consistent with those described in the Planned Action EIS and Subsection III.D of this Ordinance.	
(c) The proposal is within the Planned Action thresholds and other criteria of Subsection III.D of this Ordinance.	
(d) The proposal is consistent with the Hawk Property Subarea Plan and the Covington Comprehensive Plan.	
(e) The proposal’s significant adverse environmental impacts were identified in the Planned Action EIS.	
(f) The proposal’s significant adverse impacts have been mitigated by the application of the measures identified in this Exhibit B, Subsection III.D of this Ordinance, and other applicable city regulations, together with any modifications or variances or special permits that may be required.	
(g) The proposal complies with all applicable local, state, and/or federal laws and regulations and the SEPA Responsible Official determines that these constitute adequate mitigation.	

Criteria	Describe how your application and proposed development meets the criteria.
(h) The proposal is not an essential public facility as defined by RCW 36.70A.200(1) unless an essential public facility is accessory to or part of a development that is designated a Planned Action Project under Subsection III.E of this Ordinance.	

Determination Criteria

Applications for Planned Actions Projects shall be reviewed pursuant to the process in Subsection III.G of this Ordinance.

Requirement	Staff Comments
Applications for Planned Action Projects shall be made on forms provided by the City and shall include the Subarea SEPA checklist included in this Exhibit B.	
A conceptual site plan consistent with Subsection III.G(3) of this Ordinance demonstrates how the Planned Action Project is consistent with the overall site plan and Planned Action EIS conceptual alternatives in Exhibit E of this Ordinance.	
The application has been deemed complete in accordance with Title 14 CMC, Planning and Development.	
The application is for a project within the Planned Action Area defined in Exhibit A of this Ordinance.	
The proposed use(s) are listed in Subsection III.D of this Ordinance and qualify as a Planned Action.	

E. SEPA RESPONSIBLE OFFICIAL DETERMINATION

A. Determination of Consistency - Qualifies as a Planned Action Project: The application is consistent with the criteria set forth in this Hawk Property Planned Action Ordinance and has been determined to qualify as a Planned Action Project.

The project and underlying permit(s) review shall proceed in accordance with the applicable permit review procedures specified within Title 14 CMC, Planning and Development, except that no SEPA threshold determination, EIS, or additional SEPA review shall be required.

Notice of the Planned Action Determination of Consistency shall be made according to the notice requirements of the underlying project permit(s) pursuant to Title 14 CMC, Planning and Development. If notice is not otherwise required for the underlying project permit(s), no special notice is required.

SEPA Responsible Official Signature:	
Date:	

B. Determination of Inconsistency - Does not Qualify as Planned Action Project: The application is not consistent with the criteria set forth in this Hawk Property Planned Action Ordinance and has been determined to not qualify as a Planned Action Project for the following reasons:

Projects that fail to qualify as Planned Action Projects may incorporate or otherwise use relevant elements of the Planned Action EIS, as well as other relevant SEPA documents, to meet their SEPA requirements. The SEPA Responsible Official may limit the scope of SEPA review for the non-qualifying project to those issues and environmental impacts not previously addressed in the Planned Action EIS.

SEPA Process Prescribed: _____

SEPA Responsible Official Signature:	
Date:	

ATTACHMENT B-1

Mitigation Required for Development Applications

INTRODUCTION

The Planned Action EIS has identified significant beneficial and adverse impacts that are anticipated to occur with the future development of the Planned Action Area, together with a number of possible measures to mitigate those significant adverse impacts. Please see Final EIS Chapter 1 Summary for a description of impacts, mitigation measures, and significant unavoidable adverse impacts.

A Mitigation Document is provided in this **Attachment B-1** to establish specific mitigation measures based upon significant adverse impacts identified in the Planned Action EIS. The mitigation measures in this **Attachment B-1** shall apply to Planned Action Project applications that are consistent with the Preferred Alternative range reviewed in the Planned Action EIS and which are located within the Planned Action Area (see **Exhibit A**).

Where a mitigation measure includes the words “shall” or “will,” inclusion of that measure in Planned Action Project application plans is mandatory in order to qualify as a Planned Action Project. Where “should” or “would” appear, the mitigation measure may be considered by the project applicant as a source of additional mitigation, as feasible or necessary, to ensure that a project qualifies as a Planned Action Project. Unless stated specifically otherwise, the mitigation measures that require preparation of plans, conduct of studies, construction of improvements, conduct of maintenance activities, etc., are the responsibility of the applicant or designee to fund and/or perform.

Any and all references to decisions to be made or actions to be taken by the City’s SEPA Responsible Official may also be performed by the City’s SEPA Responsible Official’s authorized designee.

Note: The following mitigation measures are taken from the Planned Action EIS, particularly the “potential mitigation measures”, as amended to be more actionable or implementable, such as by specifying the responsible party or changing “should” to “shall”. Mitigation measures also reflect clarifications and amendments in response to public comments on the Hawk Property Planned Action Draft EIS.

MITIGATION MEASURES

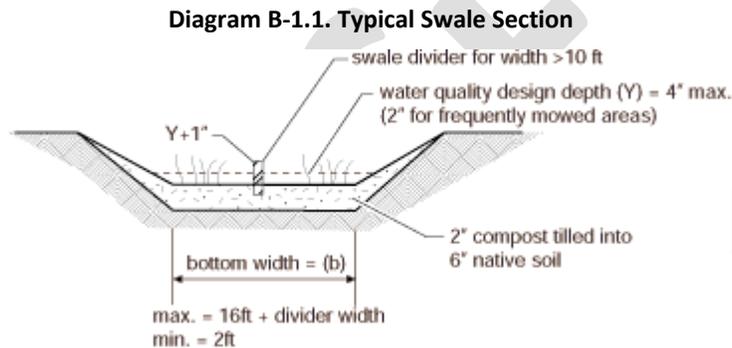
No.	Topic and Mitigation Measure
	Earth
1.	<p>GEOLOGIC HAZARDS</p> <p>The City shall condition Planned Action Projects to be consistent with City codes and to limit impacts from geologic hazards and provide sufficient foundation support.</p> <ul style="list-style-type: none">• Specific foundation support systems to be used for onsite improvements will be determined as part of the specific design and permitting of infrastructure and individual buildings associated with future site development.• Site-specific studies and evaluations shall be conducted in accordance with Covington Municipal Code requirements and the provisions of the 2012 International Building Code (IBC) or current version in

No.	Topic and Mitigation Measure
	<p>effect at the time of development application.</p> <ul style="list-style-type: none"> Mitigation measures to limit impacts from geologic hazards and associated foundation support considerations shall be identified in the site-specific study.
2.	<p>STEEP SLOPES / LANDSLIDES</p> <p>The City shall condition Planned Action Projects to be consistent with City codes and to limit impacts regarding slope stability.</p> <ul style="list-style-type: none"> Development adjacent to steep slopes shall require site-specific slope stability analyses prior to construction (CMC, Sections 18.65.280 and 18.65.310). If post reclamation slopes are assessed and found to require stabilization near any future structure, action shall be taken to mitigate slope instability concerns during the design and permitting for those structures. Mitigation measures shall be incorporated based on the findings of the site-specific slope stability analyses, and may include but are not limited to retaining walls, structure setbacks, buttresses, and cutting and filling to establish flatter grades.
3.	<p>EROSION</p> <p>The City shall condition Planned Action Projects to be consistent with City codes and to limit erosion impacts.</p> <ul style="list-style-type: none"> During construction, contractors shall employ Temporary Erosion and Sedimentation Control (TESC) measures and Best Management Practices (BMPs) to control erosion as required under the National Pollutant Discharge Elimination System (NPDES) construction permit. These measures shall be consistent with the City of Covington critical area and grading regulations (CMC, Chapter 18.60 and Section 18.65.220). City conditions on Planned Action Projects to limit erosion impacts may include, but are not limited to, the following: <ul style="list-style-type: none"> Minimize areas of exposure. Schedule earthwork during drier times of the year (May 1st to September 30th). Retain vegetation where possible. Seed or plant appropriate vegetation on exposed areas as soon as earthwork is completed. Route surface water through temporary drainage channels around and away from disturbed soils or exposed slopes. Use silt fences, temporary sedimentation ponds, or other suitable sedimentation control devices to collect and retain possible eroded material. Cover exposed soil stockpiles with plastic sheeting and exposed slopes with mulching, blankets, or plastic sheeting, as appropriate. Intercept and drain water from any surface seeps, if encountered. Incorporate contract provisions allowing temporary cessation of work under certain, limited circumstances, if weather conditions warrant.

No.	Topic and Mitigation Measure
4.	<p>LIQUEFACTION</p> <p>The City shall condition Planned Action Projects to be consistent with City codes and to limit potential liquefaction impacts.</p> <ul style="list-style-type: none"> At the time of application, Planned Action Projects shall demonstrate the completed reclamation has implemented high quality, well-compacted crushed rock or gravel fill material during reclamation to significantly reduce the potential for soil liquefaction. Ground improvement and foundation support requirements shall be determined as part of the design and permit approval process for each future onsite development project. The site specific evaluation by a licensed geotechnical engineer shall identify additional techniques to reduce liquefaction impacts. Several methods of ground improvement are available, including stone columns, vibro-compaction, vibro-replacement, deep soil mixing, compaction grouting, and others. Selection of the appropriate deep foundation or ground improvement technique is location-specific at the site and would depend on a number of factors that would be considered during design and permitting of the future structures.
5.	<p>STRUCTURE SETTLEMENT UNDER STATIC LOADS</p> <p>At the time of application, Planned Action Projects shall demonstrate to the City's SEPA Responsible Official's satisfaction that the completed reclamation has implemented high quality, well-compacted crushed rock or gravel fill material to reduce the potential for future structure settlement.</p> <ul style="list-style-type: none"> Site structures will require site-specific geotechnical studies by a licensed geotechnical engineer in order to design appropriate foundation systems under the City's building permit process. Although not associated with a specific environmental hazard, structure settlement shall be mitigated during the design and permitting for individual future structures. For multi-story structures, total and differential settlements could be accommodated by founding the structures on deep foundations or by implementing ground improvement techniques. Soil preloading/surcharging could likely be used to reduce total and differential settlements to within tolerable levels for utilities and single-story structures. Alternatively, lightly loaded structures could potentially be founded on mat foundations with flexible utility connections that would limit the potential adverse effect of differential settlement. Deep foundation options include driven piles and drilled shafts.
Surface Water Resources	
6.	<p>STORMWATER QUALITY: BASIC WATER QUALITY MENU</p> <p>Planned Action Projects shall avoid or minimize direct discharge to surface water bodies as required by the City's SEPA Responsible Official.</p> <ul style="list-style-type: none"> As required, Planned Action Projects shall accomplish, at a minimum, water quality treatment using the Basic Water Quality menu from 2012 Stormwater Management Manual for Western Washington, or the manual in effect at the time of development applications; at the City's SEPA Responsible Official's discretion, the Enhanced Water Quality menu in Mitigation Measure 7 herein may instead be employed to minimize potential water quality impacts of Planned Action development. The goal of this treatment is to remove 80% of total suspended solids (TSS) for influent concentrations that are greater than 100 mg/l, but less than 200 mg/l. Ecology encourages the design and operation of treatment facilities that engage a bypass at flow rates higher than the water quality design flow rate as long as the reduction in TSS loading exceeds that achieved with initiating bypass at the water quality design flow rate. There are several options for the basic water quality menu, and a biofiltration swale is

No. Topic and Mitigation Measure

the most likely option to be implemented due to its cost effectiveness and aesthetics to satisfy the basic water quality protection requirement. Biofilters are vegetated treatment systems (typically grass) that remove pollutants by means of sedimentation, filtration, soil absorption, and/or plant uptake. They are typically configured as swales or flat filter strips and designed to remove low concentrations and quantities of TSS, heavy metals, petroleum hydrocarbons, and/or nutrients from stormwater (SMMWW 2012). A biofilter can be used as a basic treatment BMP for contaminated stormwater runoff from roadways, driveways, parking lots, and highly impervious ultra-urban areas, or as the first stage of a treatment train. In cases where hydrocarbons, high TSS, or debris would be present in the runoff, such as high-use sites, a pretreatment system for those components would be necessary. Diagram B-1.1. below shows the typical swale section (SMMWW 2012).



7. STORMWATER QUALITY: ENHANCED BASIC WATER QUALITY MENU

Consistent with the 2012 Stormwater Management Manual for Western Washington, or the manual in effect at the time of development applications, where the development is more intensive, such as a park and ride, commercial, and multifamily areas, or when required by the City’s SEPA Responsible Official to reduce water quality impacts of any type of Planned Action Project pursuant to Mitigation Measure 6 herein, the Enhanced Basic Water Quality menu shall be applied to this project site, where an enhanced level of treatment is required for those development sites or portions thereof that generate the highest concentrations of metals in stormwater runoff.

- Based on a review of dissolved metals removal of basic treatment options, a “higher rate of removal” is currently defined as greater than 30% dissolved copper removal and greater than 60% dissolved zinc removal. For the enhanced treatment menu, there are a couple options that will satisfy the enhanced treatment requirements, such as: infiltration, large sand filter, stormwater treatment wetland, compost-amended vegetated filter strip, two facility treatment trains, bioretention, media filter drain, and emerging stormwater treatment technologies.

Groundwater Resources

8. REFUELING AND SECONDARY CONTAINMENT

During site construction, equipment refueling shall be located in a specific designated location and include secondary containment in the event of a spill, including spill kits and associated equipment.

- Fuel storage shall not occur on-site during construction.
- In the event of an on-site spill, contractors shall provide notification to the Washington State Department of Ecology, the City of Covington, and City of Kent, identifying that the spill area is located adjacent to an aquifer protection area.

No.	Topic and Mitigation Measure
9.	<p>INFILTRATION</p> <p>Potential impacts due to reduced recharge shall be mitigated by stormwater detention and infiltration design and construction considerations per Surface Water Resources Mitigation Measures 6 and 7 herein.</p> <ul style="list-style-type: none"> • Site soils are well drained and suitable for infiltration; infiltration shall be required with pretreatment of stormwater inflows. • Given the potential creation of impervious area on the site, natural recharge from critical areas and the pond shall be protected, such as through the use of stormwater infiltration methods, which could significantly reduce potential impacts due to loss of groundwater recharge. • Following the 2012 Stormwater Manual, or the manual in effect at the time of development application, stormwater designs for the sub-area shall be optimized by separating roof runoff from other pollution-generating impervious surfaces.
10.	<p>SIGNAGE</p> <p>To increase public awareness, the applicant shall post signage in appropriate locations in the development stating, “protect groundwater, it’s the water you drink,” or equivalent language. These signs should be placed adjacent to any stormwater facility with infiltration or overflow to the pond or critical areas.</p>
11.	<p>WELL DECOMMISSIONING</p> <p>Any abandoned wells on the site shall be decommissioned consistent with requirements from the Washington State Department of Ecology. If retained, Planned Action Projects shall demonstrate that existing wells, properly constructed with sanitary seals and steel casing, would not pose significant adverse risks to groundwater resources.</p>
12.	<p>AUTO RELATED USES AND BMP PLAN</p> <p>A Best Management Practices (BMPs) Plan shall be developed for the entire property by the Planned Action Project applicant, especially addressing planned fueling areas, gas stations, and any associated automotive services, to protect groundwater resources.</p>
13.	<p>NO NET LOSS OF RECHARGE</p> <p>Stormwater management facilities shall be designed by the Planned Action Project applicant to maintain a no net loss of recharge to the aquifer. All stormwater shall be treated appropriately to the satisfaction of the City’s SEPA Responsible Official to avoid any potential degradation to groundwater resources.</p>
14.	<p>LANDSCAPE MANAGEMENT AND WATER CONSERVATION</p> <p>Any landscaping associated with Planned Action Projects shall consist of native species to reduce the potential use of pesticide/fertilizer application. Native vegetation shall be incorporated to promote water conservation, as these species require less irrigation.</p>
15.	<p>CONSULTATION – WELLHEAD PROTECTION</p> <p>Planned Action Project applicants shall demonstrate that the applicant has consulted with the City of Kent regarding compliance with the 2008 City of Kent Draft Water System Plan Chapter 8: Wellhead Protection Program, as it applies to a portion of the Hawk Property Subarea, to the satisfaction of the City’s SEPA Responsible Official.</p>
Air Quality	
16.	<p>CONSTRUCTION EMISSION CONTROL</p> <p>The City shall require all Planned Action Project construction contractors to implement air quality control plans</p>

No.	Topic and Mitigation Measure						
	<p>for construction activities in the Planned Action Area.</p> <ul style="list-style-type: none"> • The air quality control plans, specific to dust control, shall commit the Planned Action Project construction crews to implement all reasonable control measures described in the <i>Associated General Contractors of Washington's Guide to Handling Fugitive Dust from Construction Projects</i>. Copies of that guidance document are distributed by the Puget Sound Clean Air Agency (PSCAA). • The air quality control plans shall include the following BMPs to control fugitive dust and odors emitted by diesel construction equipment. <ul style="list-style-type: none"> ○ Use water sprays or other non-toxic dust control methods on unpaved roadways. ○ Minimize vehicle speed while traveling on unpaved surfaces. ○ Prevent track-out of mud onto public streets. ○ Cover soil piles when practical. ○ Minimize work during periods of high winds when practical. 						
17.	<p>CONSTRUCTION TAILPIPE EMISSIONS</p> <p>The following mitigation measures shall be used by Planned Action Project construction contractors to minimize air quality and odor issues caused by tailpipe emissions:</p> <ul style="list-style-type: none"> • Maintain the engines of construction equipment according to manufacturers' specifications. • Minimize idling of equipment while the equipment is not in use. 						
18.	<p>HAUL TRAFFIC SCHEDULING</p> <p>If there is heavy traffic during some periods of the day, Planned Action Project construction contractors shall schedule haul traffic during off-peak times that would have the least effect on traffic and would minimize indirect increases in traffic related emissions.</p>						
19.	<p>SLASH OR DEMOLITION DEBRIS</p> <p>Burning of slash or demolition debris shall not be permitted by Planned Action Project construction contractors without express approval from PSCAA.</p>						
20.	<p>GREENHOUSE GAS REDUCTION MEASURES</p> <p>The City shall require Planned Action Project applicants to implement additional trip-reduction measures and energy conservation measures in Planned Action Projects to reduce greenhouse gas (GHG) emissions. The City shall require Planned Action Project applicants to evaluate the GHG reduction measures shown in Table B-1.1 below for their projects and to document, to the satisfaction of the City's SEPA Responsible Official, which measures are incorporated and which measures are infeasible and not incorporated.</p> <p>Table B-1.1 below lists a variety of mitigation measures that could reduce GHG emissions caused by transportation facilities, building construction, space heating, and electricity usage (Ecology 2008b) and where the emission reductions might occur.</p>						
<p>Table B-1.1. Potential Greenhouse Gas Reduction Mitigation Measures</p>							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Reduction Measures</th> <th style="text-align: left;">Comments</th> </tr> </thead> <tbody> <tr> <td colspan="2">Site Design</td> </tr> <tr> <td>Retain and enhance vegetated open spaces.</td> <td>Retains or increases sequestration by plants.</td> </tr> </tbody> </table>		Reduction Measures	Comments	Site Design		Retain and enhance vegetated open spaces.	Retains or increases sequestration by plants.
Reduction Measures	Comments						
Site Design							
Retain and enhance vegetated open spaces.	Retains or increases sequestration by plants.						

No.	Topic and Mitigation Measure	
	Plant trees and vegetation near structures to shade buildings.	Reduces on-site fuel combustion emissions and purchased electricity, and enhances carbon sinks.
	Minimize building footprint.	Reduces on-site fuel combustion emissions and purchased electricity consumption, materials used, maintenance, land disturbance, and direct construction emissions.
	Design water efficient landscaping.	Minimizes water consumption, purchased energy, and upstream emissions from water management.
	Minimize energy use through building orientation.	Reduces on-site fuel combustion emissions and purchased electricity consumption.
<hr/>		
Building Design and Operations		
	Apply LEED standards (or equivalent) for design and operations.	Reduces on-site fuel combustion emissions and off-site/indirect purchased electricity, water use, waste disposal.
	Purchase Energy Star equipment and appliances for public agency use.	Reduces on-site fuel combustion emissions and purchased electricity consumption.
	Incorporate on-site renewable energy production, including installation of photovoltaic cells or other solar options.	Reduces on-site fuel combustion emissions and purchased electricity consumption.
	Design street lights to use energy-efficient bulbs and fixtures.	Reduces purchased electricity.
	Construct "green roofs" and use high-albedo roofing materials.	Reduces on-site fuel combustion emissions and purchased electricity consumption.
	Install high-efficiency HVAC systems.	Minimizes fuel combustion and purchased electricity consumption.
	Eliminate or reduce use of refrigerants in HVAC systems.	Reduces fugitive emissions. Compare refrigerant usage before/after to determine GHG reduction.
	Maximize interior day lighting through floor plates, increased building perimeter and use of skylights, celestories, and light wells.	Increases natural/day lighting initiatives and reduces purchased electrical energy consumption.
	Incorporate energy efficiency technology such as super insulation motion sensors for lighting and climate-control-efficient, directed exterior lighting.	Reduces fuel combustion and purchased electricity consumption.
	Use water-conserving fixtures that surpass building code requirements.	Reduces water consumption.
	Reuse gray water and/or collect and reuse rainwater.	Reduces water consumption with its indirect upstream electricity requirements.
	Use recycled building materials and products.	Reduces extraction of purchased materials, possibly reduces transportation of materials, encourages recycling and reduction of solid waste disposal.
	Use building materials that are extracted and/or manufactured within the region.	Reduces transportation of purchased materials.
	Use rapidly renewable building materials.	Reduces emissions from extraction of purchased materials.
	Conduct third-party building commissioning to ensure energy performance.	Reduces fuel combustion and purchased electricity consumption.
	Track energy performance of building and develop strategy to maintain efficiency.	Reduces fuel combustion and purchased electricity consumption.
<hr/>		
Transportation		

No.	Topic and Mitigation Measure																										
	Size parking capacity to not exceed local parking requirements and, where possible, seek reductions in parking supply through special permits or waivers.	Reduced parking discourages auto-dependent travel, encouraging alternative modes such as transit, walking, and biking. Reduces direct and indirect VMT.																									
	Develop and implement a marketing/information program that includes posting and distribution of ridesharing/transit information.	Reduces direct and indirect VMT.																									
	Subsidize transit passes. Reduce employee trips during peak periods through alternative work schedules, telecommuting, and/or flex time. Provide a guaranteed-ride-home program.	Reduces employee VMT.																									
	Provide bicycle storage and showers/changing rooms.	Reduces employee VMT.																									
	Use traffic signalization and coordination to improve traffic flow and support pedestrian and bicycle safety.	Reduces transportation emissions and VMT.																									
	Apply advanced technology systems and management strategies to improve operational efficiency of local streets.	Reduces emissions from transportation by minimizing idling and maximizing transportation routes/systems for fuel efficiency.																									
	Develop shuttle systems around business district parking garages to reduce congestion and create shorter commutes.	Reduces idling fuel emissions and direct and indirect VMT.																									
	Source: Ecology 2008b LEED = Leadership in Energy and Environmental Design; HVAC = heating, ventilation, and air-conditioning																										
21.	ADDITIONAL GREENHOUSE GAS REDUCTION MEASURES																										
	The City shall require Planned Action Project applicants to evaluate the reduction measures shown in Table B-1.2 below for their projects and to document, to the satisfaction of the City's SEPA Responsible official, which measures are incorporated and which measures are infeasible and not incorporated.																										
	Table B-1.2 lists the emission reduction measures developed by Sacramento Metropolitan Air Quality Management District (SMAQMD 2010). The Table lists SMAQMD's estimated "mitigation points" value, where each point value corresponds to the percent reduction in emissions. For example, a mitigation point value of 1.0 corresponds to a 1% reduction in land-use-related emissions. SMAQMD developed this Table to quantify reductions in criteria pollutant emissions, but the listed measures would also generally reduce GHG emissions. These mitigation points are for informational purposes only to demonstrate to the applicant and the City's SEPA Responsible Official which measures have the potential to reduce emissions more than other measures.																										
	Table B-1.2 SMAQMD Recommended Measures for Land Use Emission Reductions																										
	<table border="1"> <thead> <tr> <th>Measure Number</th> <th>Title</th> <th>Description</th> <th>Mitigation Points (% Reduction in Emissions)</th> </tr> </thead> <tbody> <tr> <td colspan="4">Bicycle/Pedestrian/Transit Measures</td> </tr> <tr> <td>a.</td> <td>Bike parking</td> <td>Non-residential projects provide plentiful short-term and long-term bicycle parking facilities to meet peak season maximum demand.</td> <td>0.625</td> </tr> <tr> <td>b.</td> <td>End of trip facilities</td> <td>Non-residential projects provide "end-of-trip" facilities including showers, lockers, and changing space.</td> <td>0.625</td> </tr> <tr> <td>c.</td> <td>Bike parking at multi-unit residential</td> <td>Long-term bicycle parking is provided at apartment complexes or condominiums without garages.</td> <td>0.625</td> </tr> <tr> <td>d.</td> <td>Proximity to bike path/bike lanes</td> <td>Entire project is located within 1/2 mile of an existing bike lane and project design includes a comparable network that connects the project uses to the existing offsite facility.</td> <td>0.625</td> </tr> </tbody> </table>			Measure Number	Title	Description	Mitigation Points (% Reduction in Emissions)	Bicycle/Pedestrian/Transit Measures				a.	Bike parking	Non-residential projects provide plentiful short-term and long-term bicycle parking facilities to meet peak season maximum demand.	0.625	b.	End of trip facilities	Non-residential projects provide "end-of-trip" facilities including showers, lockers, and changing space.	0.625	c.	Bike parking at multi-unit residential	Long-term bicycle parking is provided at apartment complexes or condominiums without garages.	0.625	d.	Proximity to bike path/bike lanes	Entire project is located within 1/2 mile of an existing bike lane and project design includes a comparable network that connects the project uses to the existing offsite facility.	0.625
Measure Number	Title	Description	Mitigation Points (% Reduction in Emissions)																								
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No.	Topic and Mitigation Measure		
e.	Pedestrian network	The project provides a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the subarea.	1.0
f.	Pedestrian barriers minimized	Site design and building placement minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and non-residential uses that impede bicycle or pedestrian circulation are eliminated.	1.0
g.	Bus shelter for existing transit service	Bus or Streetcar service provides headways of one hour or less for stops within 1/4 mile; project provides safe and convenient bicycle/pedestrian access to transit stop(s) and provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting).	0.25-1.0
h.	Bus shelter for planned transit service	Project provides transit stops with safe and convenient bicycle/pedestrian access. Project provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting) in anticipation of future transit service.	0.25
i.	Traffic calming	Project design includes pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways are designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming features.	0.25-1.0
Parking Measures			
j.	Paid parking	Employee and/or customer paid parking system	1.0-7.2
k.	Parking cash out	Employer provides employees with a choice of forgoing subsidized parking for a cash payment equivalent to the cost of the parking space to the employer.	0.6-4.5
l.	Minimum parking	Provide minimum amount of parking required. Special review of parking required.	0.1-6.0
m.	Parking reduction beyond code	Provide parking reduction less than code. Special review of parking required. Recommend a Shared Parking strategy.	0.1-12
n.	Pedestrian pathway through parking	Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances.	0.5
o.	Off street parking	Parking facilities are not adjacent to street frontage.	0.1-1.5
Site Design Measures			
p.	Office/Mixed-use density	Project provides high density office or mixed-use proximate to transit.	0.1-2.0
q.	Orientation to existing transit, bikeway, or pedestrian corridor	Project is oriented towards existing transit, bicycle, or pedestrian corridor. Setback distance is minimized.	0.5
r.	Orientation toward planned transit, bikeway, or pedestrian corridor	Project is oriented towards planned transit, bicycle, or pedestrian corridor. Setback distance is minimized.	0.25
s.	Residential density	Project provides high-density residential development.	1.0-12

No.	Topic and Mitigation Measure		
t.	Street grid	Multiple and direct street routing (grid style).	1.0
u.	Neighborhood electric vehicle access	Make physical development consistent with requirements for neighborhood electric vehicles.	0.5-1.5
v.	Affordable housing component	Residential development projects of 5 or more dwelling units provide a deed-restricted low-income housing component on-site.	0.6-4.0
Mixed-use Measures			
w.	Urban mixed-use	Development of projects predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site in an integrated development project with functional interrelationships and a coherent physical design.	3.0-9.0
x.	Suburban mixed-use	Have at least three of the following on site and/or offsite within ¼ mile: Residential Development, Retail Development, Park, Open Space, or Office.	3.0
y.	Other mixed-use	All residential units are within ¼ mile of parks, schools or other civic uses.	1.0
Building Component Measures			
z.	No fireplace	Project does not feature fireplaces or wood burning stoves.	1.0
aa.	Reserved for future measure		
bb.	Energy Star roof	Install Energy Star labeled roof materials.	0.5-1.0
cc.	Onsite renewable energy system	Project provides onsite renewable energy system(s).	1.0-3.0
dd.	Solar orientation	Orient 75 or more percent of homes and/or buildings to face either north or south (within 30 degrees of N/S).	0.5
ee.	Non-roof surfaces	Provide shade (within 5 years) and/or use light-colored/high-albedo materials (reflectance of at least 0.3) and/or open grid pavement for at least 30% of the site's non-roof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the parking lot area. Unshaded parking lot areas, driveways, fire lanes, and other paved areas have a minimum albedo of .3 or greater.	1.0
ff.	Green roof	Install a vegetated roof that covers at least 50% of roof area.	0.5
TDM and Miscellaneous Measures			
gg.	Transportation Management Association membership	Include permanent TMA membership and funding requirement. Funding to be provided by non-revocable funding mechanism.	5.0

No.	Topic and Mitigation Measure		
hh.	Electric lawnmower	Provide a complimentary electric lawnmower to each residential buyer.	1.0
ii.	Other	Other proposed strategies, in consultation City of Covington and other agencies with expertise.	To Be Determined
Source: SMAQMD, 2010			
Plants and Animals			
22.	<p>WATER QUALITY AND BASE FLOW</p> <p>In addition to the mitigation measures identified in the Surface Water and Groundwater sections herein, Planned Action Projects shall be implement the following to avoid aquatic habitat degradation:</p> <ul style="list-style-type: none"> • Runoff shall be captured, treated, and, where feasible, infiltrated to prevent poor water quality spikes. Untreated urban runoff contains metals and polycyclic aromatic hydrocarbons (PAHs), which has been shown to adversely affect salmon, particularly Coho salmon (Feist, B. et al 2011; McIntyre, J. et al. 2012). • To further reduce impacts to base flow and salmonids, the City shall limit impervious surface increases based on zoning standards. • Planned Action Projects shall follow the 2012 Ecology Stormwater Manual, including LID practices, or successor manual in effect at the time of the development application. 		
23.	<p>CRITICAL AREAS—RIPARIAN CORRIDOR/WETLAND</p> <p>Consistent with Planned Action EIS Alternatives illustrated in Exhibit E of this Ordinance, Planned Action Project applicants shall demonstrate that the riparian corridor, including Jenkins Creek and associated wetlands, are retained and, where appropriate, enhanced and that the Planned Action Project is consistent with adopted critical area regulations.</p> <ul style="list-style-type: none"> • To further protect the wetland/riparian corridor, critical areas shall be put under a protective easement or non-buildable tract, dedicated to the City or a conservation organization approved by the City. • Planned Action Project applicants shall demonstrate consistency with Hawk Property Subarea Plan policies to minimize tree removal in critical areas and their buffers for the purposes of trails, utility corridors, and similar infrastructure through application of mitigation sequencing and consistency with critical area regulation standards. New utilities shall follow the 204th Avenue SE Connector road alignment to the extent feasible. • Once the baseline impacts necessary for construction of the arterial street, trails, and other infrastructure, such as utilities, are determined, the modified buffer shall be placed in an easement or a non-buildable tract, dedicated to the City or a conservation organization approved by the City, to effectively protect it in perpetuity and to prevent future incremental impacts as adjacent land is developed. The non-buildable tract shall be recorded with King County and dedicated to the City of Covington or an approved conservation group. Additional buffer protection shall be provided by applying the wider King County buffer to Wetland A (which is contiguous with Jenkins Creek) following annexation. 		

No.	Topic and Mitigation Measure
24.	<p>STEWARDSHIP PROGRAM</p> <p>A stewardship program for natural open spaces and critical areas shall be created by Planned Action Project applicants at the time easements or tracts are approved for the site and prior to development occurring within 500 feet of the onsite critical areas.</p> <ul style="list-style-type: none"><li>• The stewardship program shall set forth five-year goals and requirements to be implemented by the Planned Action Project developer and long-term goals for the agency assuming responsibility for the protective easement or non-buildable tracts required in Mitigation Measure 23 herein. Elements such as removing non-native and invasive plants, native revegetation, removing garbage, and trail maintenance shall be included.<li>• The stewardship program shall include stewardship goals and objectives for the care of the Jenkins Creek natural corridor as well as five-year and overall, long-term goals for the ecological health and habitat value of Jenkins Creek and associated wetland and buffer areas. Long-term goals and allowed maintenance practices for critical areas/non-buildable tract(s) shall be incorporated into a vegetation management plan (CMC 18.65.150).
25.	<p>PLANTS</p> <p>A. Upland vegetation removed during construction shall be replaced to the extent possible by Planned Action Project applicants and contractors to the satisfaction of the City's SEPA Responsible Official.</p> <p>B. Public landscaped areas, stormwater bioswales, and other green space areas provided with redevelopment shall be planted by Planned Action Project applicants and contractors with native grasses, groundcovers, trees and shrubs wherever possible to maximize wildlife habitat and minimize needed maintenance, to the satisfaction of the City of Covington SEPA Responsible Official.</p>
26.	<p>STEEP SLOPES AND WETLAND IMPACTS</p> <p>To avoid impacts to steep slopes and wetlands:</p> <p>A. All clearing and grading construction by Planned Action Project contractors shall be in accordance with specific permit conditions, codes, ordinances, and standards applied by the City of Covington or other agencies with jurisdiction.</p> <ul style="list-style-type: none"><li>• Temporary sedimentation control measures such as silt fencing shall be installed by Planned Action Project contractors as needed and disturbed soils should be covered with straw, hydroseeded, or otherwise revegetated with sod or native plants as soon after construction as possible. <p>B. As part of any platting or subdivision, or prior to the start of construction, a wetland and stream delineation is required to be prepared by Planned Action Project applicants to the satisfaction of the City's SEPA Responsible Official to precisely map the critical area and quantify any impacts.</p> <ul style="list-style-type: none"><li>• This level of detail will be needed to prepare a compensatory mitigation plan.<li>• Based on existing site conditions and current plans, there appears to be more than enough intact forest continuous with the standard buffer that could be expanded as necessary to off-set any buffer losses.

No.	Topic and Mitigation Measure
27.	<p>WILDLIFE</p> <p>To avoid impacts identified wildlife, Planned Action Projects shall avoid critical areas and buffers through mitigation sequencing, and Planned Action Project applicants shall place buffers in a protected easement or non-buildable tract, dedicated to the City or a conservation organization approved by the City.</p> <ul style="list-style-type: none"> <li>• The new 204th Avenue SE Connector shall be planned to bisect as little of the vegetated areas as is practicable. <li>• One ponded mining area will be preserved as an open water feature consistent with conceptual plans in Exhibit E of this Ordinance. Planting native vegetation and installing snags and other habitat features on the pond fringe shall be considered in Planned Action Project landscape plans to enhance the pond area for wildlife. Construction timing restrictions shall be implemented as needed and required to protect priority species. Landscaping and park spaces may incorporate native planting, snags, logs, and other special habitat features to improve habitat functions and values. Preserving and establishing native trees, shrubs, and groundcovers around the perimeter of the open water feature would improve the habitat value of this feature by creating refuge, foraging, and nesting opportunities for wildlife.
28.	<p>INTERPRETIVE SIGNAGE & PET WASTE</p> <p>A. At the time of development, Planned Action Project applicants and contractors shall place interpretive signage along proposed trails and/or within park spaces. Signage shall be designed and installed to educate the public about the functions and values of critical areas and urban habitats.</p> <p>B. Pet waste bags and trash cans shall be installed to help limit water quality impacts. Public park rules or homeowner association rules shall establish leash rules to limit wildlife disturbances.</p>
29.	<p>WILDLIFE CROSSING</p> <p>To reduce habitat fragmentation between the Jenkins Creek corridor and habitat patches to the south and west, a wildlife crossing shall be incorporated into the new arterial street design by Planned Action Project applicants to the satisfaction of the City's SEPA Responsible Official.</p> <ul style="list-style-type: none"> <li>• A crossing could potentially be established in the southeast corner of the Planned Action Area, approaching the connection with 204th Avenue. <li>• In addition to providing safe crossing for elk, a wildlife corridor could also benefit invertebrates and small mammals that are likely to access the open water feature (Hansen et al. 2005). Even mobile species, such as songbirds, exhibit a preference for travel through wooded corridors compared to open gaps (Desrochers and Hannon 1997).
30.	<p>RECLAMATION COMPLIANCE</p> <p>Prior to completion of reclamation and upon any amendment to the current reclamation permit (e.g. to resize the lake), Planned Action Project applicants shall consult with the lead federal agency regarding compliance with state and federal laws--including the State Hydraulic Code, Sections 401 and 404 of the Clean Water Act, and Section 7 of the Endangered Species Act--and provide documentation of the consultation to the satisfaction of the City's SEPA Responsible Official.</p>
Noise	
31.	<p>CONSTRUCTION NOISE ABATEMENT</p> <p>Based on site-specific considerations at the time of construction permit review, the City shall require all Planned Action Project construction contractors to implement noise control plans for daytime construction activities in the study area. See CMC 8.20.020(2)(i). Nighttime construction activities shall not be allowed without a waiver</p>

No.	Topic and Mitigation Measure
	from the City Manager, pursuant to the CMC.
32.	<p>CONSTRUCTION NOISE REDUCTION</p> <p>A. Construction noise shall be reduced by Planned Action Project construction contractors by using enclosures or walls to surround noisy stationary equipment, installing mufflers on engines, substituting quieter equipment or construction methods, minimizing time of operation, and locating equipment as far as practical from sensitive receivers.</p> <p>B. To reduce construction noise at nearby receivers, the following mitigation measures shall be incorporated into construction plans and contractor specifications to the satisfaction of the City’s SEPA Responsible Official:</p> <ul style="list-style-type: none"> • Locate stationary equipment away from receiving properties. • Erect portable noise barriers around loud stationary equipment located near sensitive receivers. • Limit construction activities to between 7:00 a.m. and 8:00 p.m. on weekdays and between 9:00 a.m. and 6:00 p.m. on weekends and holidays to avoid sensitive nighttime hours. • Turn off idling construction equipment. • Require contractors to rigorously maintain all equipment. • Train construction crews to avoid unnecessarily loud actions (e.g., dropping bundles of rebar onto the ground or dragging steel plates across pavement) near noise-sensitive areas (e.g. critical areas, open spaces, residences).
33.	<p>TRAFFIC NOISE MITIGATION</p> <p>The City shall require Planned Action Projects to install noise control measures at the new dwellings along the proposed new section of 204th Avenue SE within the development. The Planned Action EIS screening-level traffic noise study indicated the potential for traffic noise impacts at future dwellings to be constructed adjacent to the proposed new section of 204th Avenue SE within the Planned Action Area. Noise mitigation measures shall include:</p> <ul style="list-style-type: none"> • Requiring developers to perform noise field measurements as a condition of engineering approvals once the ultimate roadway alignment, width, and final grade has been designed. • Require developers to conduct site-specific traffic noise studies to confirm the number and location of dwellings that would be impacted by traffic noise. • Appropriate site design, based on the noise study and specific alignment. For example, with a 35-foot minimum setback, the modeled traffic noise levels at new dwellings would be less than the WSDOT’s noise guidelines applied as Planned Action EIS impact criteria. • Double-pane glass windows or other building insulation measures designed in accordance with the Washington State Energy Code (4-5-040). These would reduce indoor noise levels, but would not reduce exterior noise at outdoor use areas. • Installation of noise barrier walls to shield outdoor use areas facing the street.
Transportation	
34.	<p>PROJECTS INCLUDED IN PLANNED ACTION</p> <p>A. Planned Action Projects shall demonstrate consistency with Planned Action EIS Alternatives 2 and 3 that include a new 2-to-3-lane arterial between SE 256th Street and SE 272nd Street.</p> <ul style="list-style-type: none"> • The 204th Avenue SE Connector is required to be built as part of the redevelopment of the Hawk Property. The 204th Avenue SE Connector will serve as the spine of the site’s internal roadway circulation system, will provide a second major roadway connection to the site from the east, and will also provide an additional emergency vehicle access point. This roadway was included as part of Alternatives 2 and 3 and it was assumed in the Planned Action EIS analysis to be in place in the future

No.	Topic and Mitigation Measure
	<p>transportation analyses for each of these alternatives.</p> <ul style="list-style-type: none"> If the Planned Action Project applicant proposes to not implement this connection, or to delay or reduce its extent, the City shall require a supplemental transportation analysis to be completed demonstrating to the City's SEPA Responsible Official's satisfaction that no adverse transportation impacts will result and that all City transportation standards shall be met. <p>B. Planned Action Projects shall demonstrate consistency with Planned Action EIS Alternatives 2 and 3 that include a local roadway connection between 191st Avenue SE and the local internal roadway system at the south end of the Planned Action Area. The local access connection shall be designed with traffic calming measures such as on-street parking, landscaping, and/or devices such as traffic circles to limit access to the local neighborhood and discourage cut-through traffic.</p> <ul style="list-style-type: none"> The local roadway connection between 191st Avenue SE is required to be built as part of the redevelopment of the Hawk Property. This local connection was included as part of Alternatives 2 and 3, and it is assumed to be in place in the future transportation analyses for each of these alternatives. The purpose of this roadway is to provide a direct connection between the Planned Action Area and residential development located to the south and to provide an additional emergency vehicle access point. This connection is not intended to serve trips generated outside of the local neighborhood. If the Planned Action Project applicant proposes to not implement this local connection, the City shall require a supplemental transportation analysis to be completed demonstrating to the City's SEPA Responsible Official's satisfaction that no adverse transportation impacts will result and that all City transportation standards shall be met.
35.	<p>OTHER ROADWAY CAPACITY IMPROVEMENTS</p> <p>A. The City's SEPA Responsible Official shall require that Planned Action Projects mitigate transportation impacts by implementing Roadway Capacity Improvements consistent with the Planned Action EIS and this Ordinance. Table B-1.3 below summarizes the roadway capacity improvements that have been identified to mitigate intersection operation impacts of Planned Action EIS Alternatives 2 and 3, along with planning-level estimates of each project's cost.</p> <ul style="list-style-type: none"> For projects that include new lanes or turn-pockets, planning level cost-estimates take into account the length of lane that would be needed to accommodate typical vehicle queues that would occur during the PM peak hour (typically the most congested time of day) under projected future conditions. For each intersection location, an "X" indicates whether the identified measure would be required for each alternative. For Planned Action EIS Alternatives 2 and 3, Table B-1.3 also summarizes the proportionate share of total PM peak hour trips through each intersection that build-out of the proposed project is expected to contribute.

No. Topic and Mitigation Measure

Table B-1.3. Roadway Capacity Improvements and Action Alternative Proportional Trip Shares¹

ID	Intersection	Measure ⁽¹⁾	Jurisdiction	Estimated Cost	Alt 1 No Action	Alt 2 Min Village		Alt 3 Max Village	
						Project % Share	Project % Share	Project % Share	Project % Share
Signalized									
21	SE 272 nd St/Covington Way	None Identified ⁽²⁾	Covington, WSDOT	⁽²⁾	X	X	<1%	X	1%
22	SE 272 nd St (SR 516)/164 th Ave SE	None Identified ⁽²⁾	Covington, WSDOT	⁽²⁾	X	X	1%	X	2%
23	SE 272 nd St (SR 516)/Westbound SR 18 Ramps	None Identified ⁽²⁾	Covington, WSDOT	⁽²⁾		X	3%	X	4%
26	SE 272 nd St/168 th Ave SE	None Identified ⁽²⁾	Covington, WSDOT	⁽²⁾	X	X	<1%	X	1%
29	SE 272 nd St/172 nd Ave SE	None Identified ⁽²⁾	Covington, WSDOT	⁽²⁾	X	X	-2%	X	-1%
32	SE 272 nd St (SR 516)/SE Wax Rd	None Identified ⁽²⁾	Covington, WSDOT	⁽²⁾	X	X	-4%	X	-4%
37	SE 272 nd St/216 th Ave SE	Add eastbound through lane, add eastbound receiving lane. (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	⁽⁹⁾	X	X	10%	X	12%
310	SE 231 st St/SR 169	Add westbound through lane (from Maple Valley Comprehensive Plan) ⁽⁹⁾	Maple Valley, WSDOT	⁽⁹⁾	X	X	1%	X	2%
313	SE 240 th St/SR 169	Add eastbound right-turn lane (from Maple Valley Comprehensive Plan)	Maple Valley, WSDOT	⁽⁹⁾	X	X	1%	X	2%
314	SR 516/Witte Rd SE	Add eastbound through lane, convert westbound right-turn lane to right-through, add northbound right-turn lane, add eastbound and westbound receiving lane. ⁽³⁾	Maple Valley, WSDOT	⁽³⁾	X	X	1%	X	2%

¹ This table excludes locations 8 and 17 regarding Roundabouts at SE 256th St/164th Ave SE and SE 267th Place/SE Wax Rd/180th Ave SE. In the roundabout analyses presented in the Draft EIS, coding errors were discovered in the analysis files that resulted in overestimation of delay. With correction made to the coding, all three roundabouts are projected to operate well within City level of service standards through 2035, and no future impacts are expected to result under any of the alternatives.

**ATTACHMENT B-1 TO EXHIBIT B
HAWK PROPERTY PLANNED ACTION ORDINANCE**

No.	Topic and Mitigation Measure									
315	SR 516/SR 169	Convert westbound right-turn lane to right-though, add westbound receiving lane. ⁽³⁾	Maple Valley, WSDOT	⁽³⁾	X	X	1%	X	1%	
All-Way Stop-Control										
2	SE 240 th St/196 th Ave SE	Add eastbound left-turn lane.	Covington	\$900,000	X	X	6%	X	7%	
5	SE Wax Rd/ 180 th Ave SE	In traffic impact fee program, CIP 1149 ⁽⁴⁾	Covington	In traffic impact fee program, #1149		X	11%	X	12%	
51	SE 240 th St/164 th Ave SE	Add eastbound left-turn lane, add westbound left-turn lane, add traffic signal.	Covington, King County ⁽⁵⁾	\$1,850,000	X	X	4%	X	6%	
One- or Two-Way Stop Control										
1	SE 240 th St/180 th Ave SE	Add traffic signal.	Covington	\$650,000	X	X	9%	X	11%	
3	SE 240 th St/SE Wax Rd/200 th Ave SE	Add traffic signal.	Covington, King County ⁽⁵⁾	\$300,000	X	X	6%	X	7%	
6	SE 256 th St/148 th Ave SE	Add westbound right-turn lane and eastbound left-turn lane (CIP #1041), add traffic signal.	Covington	In traffic impact fee program, CIP #1041	X	X	4%	X	5%	
13	SE 261 st St/180 th Ave SE	Add traffic signal.	Covington	\$450,000	X			X	-12%	
		Add eastbound left-turn lane.	Covington	\$1,650,000		X	-15%			
18	SE 268 th Place/164 th Ave SE	Add traffic signal.	Covington	\$450,000	X	X	-4%	X	-3%	
20	SE 272 nd St/156 th Pl SE	In traffic impact fee program, CIP 1063 ⁽⁶⁾	Covington, WSDOT	In traffic impact fee program, # 1063	X	X	<1%	X	1%	
36	SE 272 nd St/204 th Ave SE	Add southbound left-turn lane, add traffic signal.	Covington, WSDOT	\$1,350,000		X	10%	X	13%	
39	SE 275 th St/SE Wax Rd	In traffic impact fee program, CIP 1085	Covington	In traffic impact fee program, # 1085	X	X	2%	X	3%	
50	SE 240 th St/156 th Ave SE	Add traffic signal.	Covington, King County ⁽⁵⁾	\$750,000	X	X	6%	X	7%	
55	SE 272 nd St/156 th Ave SE	Add traffic signal. ⁽⁷⁾	Kent, Covington ⁽⁸⁾	\$450,000	X	X	1%	X	1%	
58	SE 272 nd St/186 th Ave SE	In traffic impact fee program, CIP 1128	Covington	In traffic impact fee program, # 1128	X		-17%		-16%	

**ATTACHMENT B-1 TO EXHIBIT B
HAWK PROPERTY PLANNED ACTION ORDINANCE**

No.	Topic and Mitigation Measure							
300	SE 256 th St/Westbound SR 18 Ramps	Option A Add traffic signal. Add eastbound left-turn lane. Coordinate signal timing/phasing with new signal at the northbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾	\$1,050,000		X	49%	
		Add traffic signal. Add eastbound and southbound left-turn lanes. Coordinate signal timing/phasing with new signal at the northbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾	\$1,650,000				X 50%
		Option B Add a roundabout with one lane on the north side and two lanes on the south side. Add a second eastbound approach lane, and a right turn lane on the southbound approach.	Covington, King County, WSDOT ⁽⁵⁾	\$2,250,000		X	49%	X 50%
301	SE 256 th St/Eastbound SR 18 Ramps	Option A Add traffic signal.	Covington, King County, WSDOT ⁽⁵⁾	\$450,000	X			
		Add traffic signal. Remove bike lanes across SR 18 overpass, restripe to add eastbound left-turn lane and to channelize bicycles to use sidewalk across the overpass. Add westbound right-turn lane. Coordinate signal timing/phasing with new signal at the westbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾	\$670,000		X	69%	
		Add traffic signal. Remove bike lanes across SR 18 overpass, restripe to add eastbound left-turn lane and to channelize bicycles to use sidewalk across the overpass. Add westbound and northbound right-turn lane. Coordinate signal timing/phasing with new signal at the westbound SR 18 ramp intersection.	Covington, King County, WSDOT ⁽⁵⁾	\$2,370,000				X 72%

No.	Topic and Mitigation Measure	Covington, King County, WSDOT ⁽⁵⁾	\$3,350,000	X 69%	X 72%
	<p>Option B Add a one-lane roundabout. Add right-turn lanes on the northbound and westbound approaches.</p>				
Source: Heffron Transportation, David Evans & Associates, November 2013.					
<p>1. The roadway improvement measures that have been identified would improve operation to meet local level of service standards under projected 2035 conditions with build-out of local and regional land use plans, with the three alternatives. Projects located at Covington concurrency intersections are being added to the City's 2035 Capital Improvement Program as part of the Comprehensive Plan update. However, if regional development growth occurs to the extent projected, it is possible that other measures could be identified to address the impact at the time the need for improvement is triggered.</p> <p>2. No mitigation measures have been identified at these intersections. For projected 2035 conditions, SE 272nd Street is assumed to be a five-lane section throughout Covington, with additional turn-lanes at high volume intersections. If growth occurs to the degree reflected in the model projections, it is likely that the City of Covington would reevaluate its long-term plan for the corridor, and determine if widening is warranted, or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. The two Action alternatives do not significantly affect this outcome.</p> <p>3. Analysis indicates that with projected 2035 volumes and any of the three alternatives, SR 516 would need to be widened to 5 lanes between 216th Avenue SE and SR 169 in order to meet City of Maple Valley concurrency standards. If growth occurs to the degree reflected in the model projections, it is likely that the City of Maple Valley would reevaluate its long-term plan for the corridor and determine if widening is warranted or if it would be warranted to reexamine level of service standards and allow this section to operate lower than LOS D. This issue is identified for the 2035 No Action alternative, and the two Action alternatives do not significantly affect this outcome.</p> <p>4. See traffic impact fee program, project CIP 1149 for the improvement.</p> <p>5. While this intersection is located outside of the Covington city limits in King County, the City of Covington monitors operations at this location.</p> <p>6. Improvement at this location is assumed in the City's current traffic impact fee program, in project CIP 1063. See also Note 1.</p> <p>7. Alternatively, turn movements could be restricted to right-turns only at this intersection. In this case, it is assumed that the projected westbound left-turn movement (180 vehicles in each alternative) would instead turn at 152nd Avenue SE. Phasing changes could be made to allow SE 256th Street/152nd Avenue SE to operate at LOS E in this circumstance, but additional capacity improvements would be needed to improve operation to LOS D.</p> <p>8. This intersection is located outside of the Covington city limits in the City of Kent. However, Covington monitors operations at this location.</p> <p>9. This project is included in the City of Maple Valley's long-range Transportation Improvement Program provided in the City Comprehensive Plan (City of Maple Valley 2011). The City of Maple Valley's planned improvements would address level of service issues with all three alternatives and no additional improvements would be needed.</p>					
<p>B. Consideration of Alternative Mitigation Measures. Upon request by a Planned Action Project applicant, or by an agency, the City may consider mitigation measures other than those described in Table B-1.3 to address an impact at the time the need for improvement is triggered, provided City concurrency and level of service standards are met as well as the provisions of this Ordinance. Planned Action Projects at locations 5, 36, 300 and 301 shall be implemented based on Mitigation Measure 36 herein.</p>					
<p>C. Impact and Mitigation Fees / In-City Improvements. Planned Action Project applicants shall pay a proportionate share of the costs of the projects needed to support concurrency. For projects within the City limits, the fee per peak hour trip rate shall be \$167.38 consistent with Exhibit D of this Ordinance and shall be paid in addition to the City's standard impact fee in place as of 2013. The projects listed in Table B-1.3 are included in the City's Capital Facilities Plan amendments as part of the Comprehensive Plan update. Once the City's impact fee is amended to address improvements identified in the Planned Action and not previously included in the 2013 impact fee, Planned Action Project applicants shall provide an impact fee consistent with the City's ordinances in effect at the time of application.</p>					
36.	ROADWAY CAPACITY PROJECTS REQUIRED CONCURRENT WITH DEVELOPMENT				
<p>A. The following additional roadway capacity improvements shall be implemented by Planned Action Projects. Where options for improvements are provided, Planned Action applicants shall obtain approval for the selected alternative from the responsible agency specified below.</p>					

No. Topic and Mitigation Measure

- 5 – SE Wax Road/SE 180th Street: Increased traffic volumes resulting from Alternative 2 or 3 require additional capacity improvement at this location. Analysis indicates that addition of a northbound right-turn lane would allow the intersection to operate at LOS D or better through 2035. However, space at this location is constrained by a retaining wall located along the east side of the roadway. If it is not feasible to widen the roadway at this location, installation of a traffic signal would also address the impact. This improvement is addressed in the City's transportation impact fees as of 2013. This City-required improvement is required to be installed concurrent with development consistent with Mitigation Measure 36 herein.
- 36 – SE 272nd Street/204th Avenue SE: Increased traffic volumes resulting from the 204th Avenue SE Connector Roadway require that this intersection be signalized under Alternative 2 or 3. The planned three-lane section will also need to be extended to this intersection, providing a southbound left-turn lane. This City-required improvement is accounted in the mitigation fee in Mitigation Measure 35C herein and is required to be installed concurrent with development consistent with Mitigation Measure 36 herein.
- 300 – SE 256th Street/SR 18 Westbound Ramps:
 - Option A (Signal): Both Alternative 2 and Alternative 3 trigger the need to signalize this intersection and add an eastbound left-turn lane. Alternative 3 also requires the addition of a southbound left-turn lane on the ramp.
 - Option B (Roundabout): Alternatively, for Alternative 2 or 3, level of service impacts can be mitigated by construction of a roundabout that has one lane on the north side and two lanes on the south side. A second eastbound approach lane and a right-turn lane on the southbound approach also need to be added.

B. Planned Action Projects shall implement Project 300 in consultation with Washington State Department of Transportation and King County as appropriate. The planning level cost estimates for the improvements in Mitigation Measure 35 herein depend on the improvement required by agencies with jurisdiction.

- 301 – SE 256th Street/SR 18 Eastbound Ramps:
 - Option A (Signal): Addition of a traffic signal at this location is triggered with the No Action alternative, but additional capacity improvements are needed to accommodate traffic volumes generated by Alternatives 2 and 3. In order for the intersection to operate at LOS D or better with both alternatives, it is necessary to add an eastbound left-turn lane on the existing SR 18 overpass. The width of the west leg of this intersection is constrained by the bridge structure; however, it appears there may be adequate curb-to-curb width to accommodate three travel lanes. The addition of a center left-turn lane would require that the existing bicycle lane striping be removed, and bicyclists to be directed to use the sidewalk to cross SR 18. As project-generated trips decrease on the 204th Avenue SE Connector, model projections in the Planned Action EIS indicate that non-project-generated trips would increase. As a result, there is very little difference in the projected eastbound traffic volumes between the two Action alternatives at this location. In addition to the eastbound left-turn lane, a westbound right-turn lane is needed with both Alternative 2 and Alternative 3. Alternative 3 would also need to add a northbound right-turn lane on the ramp. Construction of this improvement would likely require retaining walls to be built on the east side of the intersection.
 - Option B (Roundabout): Alternatively for Alternative 2 or 3, level of service impacts could be

No.	Topic and Mitigation Measure
	<p>mitigated by construction of a one-lane roundabout, with right-turn lanes added on the northbound and westbound approaches. Similar to the signal option, construction of this option would require retaining walls to be constructed on the east side of the intersection, but no additional vehicle lanes would be needed across the bridge structure.</p> <ul style="list-style-type: none"> ○ Note: with Alternative 2 or 3, for the SE 256th Street/SR 18 ramp intersections, the same improvement option (Option A – signal, or Option B – roundabout) would need to be chosen for both intersections. <p>C. Planned Action Projects shall implement Project 301 in consultation with Washington State Department of Transportation and King County as appropriate. The planning level cost estimates for the improvements in Mitigation Measure 35 herein depend on the improvement required by agencies with jurisdiction.</p> <p>D. Phasing or Timing. The City shall condition Planned Action Projects to provide required roadway capacity projects concurrent with development. Improvement at the four locations in Paragraph A is triggered by the Hawk Property Planned Action as analyzed in the Planned Action EIS. The expected timing is as follows:</p> <ul style="list-style-type: none"> ● At SE Wax Road/SE 180th Street (5), it is estimated that the need for improvement would be triggered when trips generated by the development reach about 92% of the total estimated for the Maximum Village, approximately 2,370 net new primary trips. ● The other three locations (36, 300, and 301) requiring improvement would become the endpoints of the proposed new 204th Avenue SE Connector, once it is constructed. Therefore, improved traffic control shall be installed at the time that the new roadway is constructed. ● If it were desired to phase in the intersection improvements at a later date, the Planned Action Project developer shall submit to the City and agencies with jurisdiction a detailed traffic analysis showing that City concurrency standards would still be met. <p>E. Latecomers Agreements. Planned Action Project applicants may request City approval of a Latecomer’s Agreement subject to CMC Chapter 13.45, Latecomer’s Agreements.</p>
37.	<p>MITIGATION TO ADDRESS SHORT-TERM CONSTRUCTION IMPACTS</p> <p>To minimize the potential short-term traffic impacts resulting from construction of the alternatives, a Traffic Control Plan shall be prepared by Planned Action Project applicants to the satisfaction of the City’s SEPA Responsible Official in accordance with City guidelines.</p> <ul style="list-style-type: none"> ● All building and construction permits shall be reviewed and conditioned to mitigate construction traffic impacts. ● The types of transportation-related measures that could be considered would depend on the type and size of the phase under construction. The Traffic Control Plan shall consider the inclusion of the following measures where applicable: <ul style="list-style-type: none"> ○ Truck haul-routes to and from the site. ○ Peak hour restrictions for construction truck traffic and how those restrictions would be communicated and enforced. ○ Truck staging areas (e.g., locations where empty or full trucks would wait or stage prior to and during loading or unloading.) ○ Measures to reduce construction worker trips such as rideshare or shuttles. ○ Provision of on-site or nearby parking for construction workers. ○ Road, lane, sidewalk, or bike lane closures that may be needed during utility, street or building construction. A plan detailing temporary traffic control, channelization, flagging, and signage

No.	Topic and Mitigation Measure
	<p>measures, and possible detour routes, should be provided for affected facilities.</p> <ul style="list-style-type: none"> ○ Plan to maintain access to residences and businesses at all times. ○ Restoration or repair of the pavement in the road right-of-way in accordance with City standards upon completion of the work. ○ Other elements or details may be required in the Traffic Control Plan as required by the City of Covington. The project developer/owner and the contractor shall be required to incorporate other City requirements into an overall plan, if applicable.
Public Services	
38.	<p style="text-align: center;">FIRE MITIGATION</p> <p>The City shall require a mitigation agreement between the Planned Action Project developer and Kent Regional Fire Authority prior to development to address the impacts identified in the Planned Action EIS.</p> <ul style="list-style-type: none"> • The mitigation agreement should address impacts to daily and peak hour workload at KFD Station 78 resulting from Planned Action Project development. • If the mitigation agreement is superseded by an impact fee, Planned Action Projects shall comply with the impact fee requirements and other applicable regulations in place at the time of the application.
39.	<p style="text-align: center;">PARKS AND TRAILS</p> <p>At the time of Planned Action Project application, the City shall review submitted conceptual and detailed site plans to ensure that sufficient park space and trails are provided to be consistent with both the LOS standards of the Parks and Recreation Element of the Comprehensive Plan and with the requirements of CMC 18.35.150.</p> <ul style="list-style-type: none"> • Planned Action Project applications shall demonstrate a consistent and compatible network of parks and trails throughout the site similar to Planned Action EIS Alternatives. Pursuant to the requirement to prepare a conceptual site plan with phasing in Subsection III.G(3) of this Ordinance, the Planned Action Project applicant shall identify on-site parks and trails, including trail connections to adjacent sites, to promote the goals and policies of the Hawk Property Subarea Plan regarding walkability, connectivity, and reducing trips. • Public open space shall be provided consistent with City level of service standards adopted in the Comprehensive Plan. • Private open space shall be required and installed consistent with the requirements of CMC 18.35.150 to 190. • Planned Action Project applicants shall provide parks and trail facilities prior to or concurrent with the development. The City may require such facilities to be dedicated to the City. • At the request of Planned Action Project Applicants, the City may accept fees in lieu of parks and trails facilities where the City anticipates that coordinated implementation of public parks and trails is desired. The fee-in-lieu agreements shall address the responsibility and cost for operation and maintenance of said parks and trails facilities. The fee-in-lieu agreement shall be in a form acceptable to the City and may be developed as a voluntary agreement under RCW 82.02.020.

No.	Topic and Mitigation Measure
Cultural Resources	
40.	<p>The City shall condition Planned Action Projects to protect any currently undiscovered historic or archaeological resources in the study area as follows:</p> <ul style="list-style-type: none">• If construction activities uncover any remains of historic or archaeological significance, construction shall immediately be stopped and all appropriate state and local agencies notified.• Projects that entail substantial excavation must enter consultation with DAHP to determine the likelihood of inadvertent discovery of archaeological resources and to establish mitigation procedures. Archaeological surveys and testing may be necessary prior to excavation. The Department of Archaeology and Historic Preservation (DAHP) may recommend archaeological monitoring of construction activities in areas deemed to have a high likelihood of discovery.• In the event of an archaeological discovery, future development on property surrounding the archaeological site shall analyze the potential for adverse impacts to the archaeological resource, and, if necessary, engage a qualified professional archaeologist to determine whether the proposed development would negatively affect the archaeological resource.

ATTACHMENT B-2

Advisory Notes to Applicants: Applicable Regulations and Commitments

The Planned Action EIS identifies specific regulations that act as mitigation measures. These are summarized in **Table B-2.1** by EIS topic. All applicable federal, state, and local regulations shall apply to Planned Action Projects. Planned Action Project applicants shall comply with all adopted regulations where applicable including those listed in the Planned Action EIS and those not included in the Planned Action EIS.

Table B-2.1. Applicable Regulations and Commitments

Topic	Regulation/Commitment
Earth	<ul style="list-style-type: none"> • The federal government provides seismic information and standards. The 2012 IBC has adopted the seismic recommendations developed by the National Earthquake Hazards Reduction Program (NEHRP) (Federal Emergency Management Agency 2009) using the 2008 probabilistic seismic hazard maps developed by the U.S. Geological Survey for a seismic event with a recurrence interval of 5,000 years. The American Association of State Highway and Transportation Officials (AASHTO) standards rely on the 2002 U.S. Geological Survey probabilistic hazard mapping; however, AASHTO (2012) uses a seismic event with a recurrence interval of 1,000 years as the basis for design. • The State of Washington adopted the 2012 edition of the International Building Code (ICC 2012) on July 1, 2013. The IBC applies to the design of continuously occupied buildings, so would apply to residences and most commercial buildings. The types of buildings that would be developed at the Planned Action Area will most likely be designed in accordance with the 2012 IBC or the version of the manual in effect at the time of the development application. • State highway projects in Washington are typically designed in accordance with the Washington State Department of Transportation Design Manual (2010) or current version at the time of the permit application, which generally adopts AASHTO standards, with certain additional requirements or guidance. • Washington State Department of Ecology implements the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit system, which requires construction contractors to implement erosion and sedimentation control systems at all major construction sites. • The City uses the IBC as adopted by the State of Washington and amended by the City of Covington in the Covington Municipal Code. The only critical areas mapped inside the study area (City of Covington 2003) are wetlands along Jenkins Creek, which are discussed in Planned Action EIS Section 3.4. The City also adopted critical areas regulations in the Covington Municipal Code (Chapter 18.65). These regulations do not preclude development within critical areas, but do require permitting and special design and review to show that the proposed development minimizes impacts to critical areas to a satisfactory degree and manages hazards appropriately.
Surface Water Resources	<p>Regulations adopted at the time development permits are submitted will be applicable, such as:</p> <ul style="list-style-type: none"> • Department of Ecology, Stormwater Manual for Western Washington • City of Covington Surface Water Management Program, CMC 13.25 • City of Covington Clearing and Grading Regulations, CMC 14.60.120, which require spill prevention and control measures for the maintenance, fueling, and repair of heavy equipment on a construction site • City of Covington Design and Construction Standards • Low Impact Technical Guidance Manual for Puget Sound • Washington State Statutes • US Environmental Protection Agency, Clean Water Act

Topic	Regulation/Commitment
Groundwater Resources	<p>The Planned Action Area is near, but not within, the Armstrong Springs Aquifer Protection Area, which is documented as Zone 1 in the City of Kent Wellhead Protection Program (Aspect 2008). Critical Aquifer Recharge Areas (CARAs) regulations are intended to protect groundwater; those regulations focus on underground storage tanks, abandoned wells, and stormwater infiltration. Based on geologic mapping the site is primarily characterized as a groundwater discharge site. However, given site proximity to CARAs and the onsite well, the following regulations, in current or amended form, could apply to site development activities.</p> <ul style="list-style-type: none"> • 2012 Stormwater Management Manual for Western Washington • City of Covington Standard Plan Notes and Covington Municipal Code, Chapter 13.37 • Low impact development measures are based on the current version of Washington State Department of Ecology’s stormwater manual; the manual in effect at the time of development applications would apply • 2012 Stormwater Management Manual for Western Washington Chapter 2.5.2 Element 13: Minimum Requirements for New Development and Redevelopment – Protect Low Impact Development BMPs.
Air Quality	<ul style="list-style-type: none"> • National Ambient Air Quality Standards (NAAQS): The US EPA establishes NAAQS and specifies future dates for states to develop and implement plans to achieve these standards. • State Ambient Air Quality Standards: The Washington State Department of Ecology establishes state ambient air quality standards for the same six pollutants that are at least as stringent as the national standards; in the case of SO₂, state standards are more stringent. • Outdoor Burning: Burning yard waste and land-clearing debris is not allowed at any time in areas of King County. PSCAA enforces state outdoor burning regulations required by RCW 70.94.743. • Puget Sound Clean Air Agency Regulations: All construction sites in the Puget Sound region are required to implement rigorous emission controls to minimize fugitive dust and odors during construction, as required by PSCAA Regulation 1, Section 9.15, Fugitive Dust Control Measures. All industrial and commercial air pollutant sources in the Puget Sound region are required to register with PSCAA. Facilities with substantial emissions are required to obtain a Notice of Construction air quality permit before construction is allowed to begin. • State of Washington GHG Laws: The Washington Legislature enacted RCW 70.235, Limiting Greenhouse Gas Emissions, into state law. The law sets the following standards: <ul style="list-style-type: none"> ○ Reduce emissions to 1990 levels by 2020, 25% below 1990 levels by 2035, and 50% below 1990 levels by 2050. ○ Reduce expenditures on fuel imported into Washington State by 20% by 2020. ○ Decrease the annual per capita vehicle miles traveled 18% by 2020, 30% by 2035, and 50% by 2050. <p>The state law applies only to actions taken by Washington State agencies and local governments. State regulations on GHG emissions include prerequisites for distribution of capital funds for infrastructure and economic development projects, where projects receiving funding must be evaluated for consistency with state and federal GHG limits and state VMT goals (RCW 20.235.070).</p>
Plants and Animals	<p>Current local, state, and federal regulations protecting plants and animals include:</p> <ul style="list-style-type: none"> • CMC 18.65, Critical Areas; • King County Zoning Code (KCC) 21A.24, Critical Areas (only applicable until annexation is complete); • US Army Corps of Engineers (Corps) regulate wetlands under section 404 of the Clean Water Act; • Washington State Department of Ecology may require an individual 401 Water Quality Certification and Coastal Zone Management Consistency determination for Corps permits; • U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, for federally permitted actions that could affect endangered species (i.e. salmon or bull trout); and • No State or federally listed threatened or endangered plant or animal species have been observed on or adjacent to the site. The site does contain habitat that could be used by such species. See mitigation measures for an evaluation and consultation regarding compliance with state and federal laws, including the State Hydraulic Code, Sections 401 and 404 of the Clean Water Act, and Section 7 of the Endangered Species Act. • Critical area impacts will be avoided and minimized to the extent possible. Any impacts would be fully mitigated as required by the Covington’s critical areas regulations. Temporary critical area impacts, such as disturbance and possible erosion/sedimentation would be addressed by

Topic	Regulation/Commitment																		
	<p>restoring the affected areas to the same or an improved condition, as required by Covington’s critical area regulations and other applicable state and federal regulations.</p> <ul style="list-style-type: none"> Erosion control measures would be implemented prior to construction as detailed in the Earth and Water Resource sections. 																		
Noise	<p>LOCAL: CITY OF COVINGTON NOISE REGULATIONS</p> <p>CMC 8.20 establishes regulations to minimize the exposure of citizens to excessive noise. The CMC clearly states the hours during which certain noisy activities are prohibited but does not specify numerical limits for permissible noise levels. The City’s code references state noise regulations.</p> <p>The CMC prohibits sounds originating from construction activity between the hours of 8:00 p.m. and 7:00 a.m. on weekdays and 6:00 p.m. and 9:00 a.m. on Saturdays, Sundays, or Federal holidays. However, prohibitions on construction activities may be waived or modified for work involving public utilities within the public right-of-way if approved by the City Manager or his/her designee.</p> <p>FEDERAL: FEDERAL HIGHWAY ADMINISTRATION (FHWA) TRAFFIC NOISE REGULATIONS</p> <p>Federal FHWA funding, distributed WSDOT, may be used for street improvements associated with this project, and as such, the noise criteria established in Title 23, Part 772 of the Code of Federal Regulations (CFR) may apply. The FHWA Noise Abatement Criteria (NAC) are summarized in Table B-2.2.</p> <p align="center">Table B-2.2. Federal Highway Administration Noise Abatement Criteria</p> <table border="1"> <thead> <tr> <th>Activity Category</th> <th>Criterion (dBA Leq)</th> <th>Description of Activity Category</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>57 (exterior)</td> <td>Lands where serenity and quiet are of extraordinary significance and that serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.</td> </tr> <tr> <td>B</td> <td>67 (exterior)</td> <td>Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.</td> </tr> <tr> <td>C</td> <td>72 (exterior)</td> <td>Developed lands, properties, or activities not included in Categories A or B above.</td> </tr> <tr> <td>D</td> <td>--</td> <td>Undeveloped lands.</td> </tr> <tr> <td>E</td> <td>152 (interior)</td> <td>Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.</td> </tr> </tbody> </table> <p>Source: FHWA, CFR, 2013</p> <p>STATE: NOISE CONTROL ACT OF 1974 (WAC 173-60)</p> <p>WAC 173-60-040 establishes maximum permissible noise levels for various environments, and construction activities under all alternatives would be subject to these provisions.</p> <p>STATE: WASHINGTON DEPARTMENT OF TRANSPORTATION TRAFFIC NOISE REGULATIONS</p> <p>WSDOT has adopted the FHWA NAC for evaluating noise impacts and for determining if such impacts are sufficient to justify funding of noise abatement for new roadway construction and roadway widening projects with state funding. The WSDOT traffic noise policy described below meets the federal requirements of 23 CFR 772 described above, so compliance with the WSDOT traffic noise policy will meet FHWA noise requirements. For WSDOT-funded roadway projects, a noise impact occurs when a predicted traffic noise level under the design year conditions approaches within 1 dBA of the FHWA NAC (for example, WSDOT defines a traffic noise impact at a dwelling to be 66 dBA or higher). In addition, WSDOT defines a traffic noise impact to occur when the predicted traffic noise level substantially exceeds the existing noise level. A 10-dBA increase over existing noise levels is considered a substantial increase.</p>	Activity Category	Criterion (dBA Leq)	Description of Activity Category	A	57 (exterior)	Lands where serenity and quiet are of extraordinary significance and that serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.	B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.	C	72 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.	D	--	Undeveloped lands.	E	152 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.
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Land Use Patterns/Plans and Policies	<ul style="list-style-type: none"> Prior to annexation to the City of Covington, the unincorporated portion of the subarea would be subject to the provisions of King County Code Title 21, including the following Chapters: <ul style="list-style-type: none"> 21A.08: Permitted Uses 21A.12: Development Standards – Density and Dimensions 																		

Topic	Regulation/Commitment
	<ul style="list-style-type: none"> ○ 21A.14: Development Standards – Design Requirements ○ 21A.16: Development Standards – Landscaping and Water Use ○ 21A.18: Development Standards – Parking and Circulation ○ 21A.20: Development Standards – Signs ○ 21A.22: Development Standards – Mineral Extraction ○ 21A.24: Critical Areas ● After annexation into the City of Covington, all development in the Planned Action Area will be subject to the provisions of CMC Title 18 – Zoning, including the following Chapters: <ul style="list-style-type: none"> ○ 18.25: Permitted Uses ○ 18.30: Development Standards – Density and Dimensions ○ 18.35: Development Standards – Design Requirements ○ 18.40: Development Standards – Landscaping ○ 18.50: Development Standards – Parking and Circulation ○ 18.55: Development Standards – Signs ○ 18.65: Critical Areas
Transportation	<p>CITY OF COVINGTON DESIGN STANDARDS</p> <p>For Alternatives 2 and 3, internal roadways, and non-motorized facilities are subject to design standards presented in Covington Design Guidelines (City of Covington 2005) and CMC Chapter 18.50 - Development Standards – Parking and Circulation. The proposed new roadway connections would be subject to the City's Design and Construction Standards for roadways. (City of Covington 2009)</p> <p>CITY OF COVINGTON PARKING CODE</p> <p>For Alternatives 2 and 3, the amount of parking supply provided as the subarea develops would be subject to parking requirements defined in CMC Chapter 18.50 - Development Standards – Parking and Circulation.</p>
Public Services	<p>FIRE</p> <p>Implement the City's adopted fire code at CMC 15.20 Fire Code.</p> <p>SCHOOLS</p> <ul style="list-style-type: none"> ● Until annexation by the City of Covington, development in the unincorporated portions of the Planned Action Area will be subject to assessment of school impact fees as required by King County Code Chapter 27.44. ● After annexation by the City of Covington, development in the Planned Action Area will be subject to assessment of school impact fees as required by Covington Municipal Code Chapter 18.120.
Utilities	<p>Plans and regulations adopted at the time Planned Action Project development permits are submitted will be applicable, such as:</p> <ul style="list-style-type: none"> ● Department of Ecology, Stormwater Manual for Western Washington ● City of Covington Surface Water Management Program, CMC 13.25 ● CMC Title 13 Public Utilities ● Soos Creek Water and Sewer District Comprehensive Plan ● Covington Water District Water System Plan

EXHIBIT C

Public Agency Actions and Commitments

INTRODUCTION

Under some elements of the Planned Action EIS, specific City or other agency actions are identified. Generally, incorporation of these actions is intended to provide for consistency within the City's Comprehensive Plan, Hawk Property Subarea Plan, or between the Hawk Property Subarea Plan and implementing regulations; to document pending City actions; to establish a protocol for long-term measures to provide for coordination with other agencies; or to identify optional actions that the City may take to reduce impacts. These actions are listed below in Table C.1.

Actions identified as "Proposed Concurrent Actions" refer to legislative actions proposed for adoption together with the Preferred Alternative CIP. Actions identified as short term are currently underway or expected to be completed in time for the next major Comprehensive Plan review. Longer term and other agency actions will occur in the future, depending on need. The projected timeframe and responsible departments are identified and will be used in monitoring the implementation of this Ordinance.

This Exhibit C will be used in the monitoring process established in Section IV of this Ordinance.

HAWK PROPERTY PLANNED ACTION ORDINANCE

**Table C.1
Public Agency Mitigation Measures**

Mitigation Measures	Proposed Synchronous Amendments	Short Term: Next Comp Plan Amendment Cycle or within 5 years	Long Term	Other Agency	Estimated Year of Implementation and Responsible Department
The City could provide neighboring property owners with educational resources to encourage native plant use and backyard habitat projects.			X		Community Development Department Year: To be determined by City based on available resources. This could be a partnership opportunity such as with a conservation district.
As part of integrating the Hawk Property Subarea Plan into the Comprehensive Plan, the City should amend land use designations, goals, policies, and capital facility improvements supporting the anticipated growth of the urban village. In addition, the City should make associated housekeeping amendments to update the status of the reclaimed mine site as transforming to an urban village.	X				Community Development / Public Works / Parks Departments 2014
The City would continue its 5-lane widening of SE 272 nd Street to include the segment between 192 nd Avenue SE and the east city limits. The estimated cost for widening SE 272 nd Street to 5 lanes between 192 nd Avenue SE and the east city limits is \$40.2 to \$55.9 million. This segment of the project should be included in the City's Capital Improvement Program.	X				Community Development / Public Works Departments 2014
Transportation projects studied in the Planned Action EIS will need to be added to the City's Capital Improvement Program as part of its next Comprehensive Plan update. Additionally, the City's Traffic Impact Fee Program will need to be updated to include these additional projects.	X Add to CFP	X Traffic Impact Fee Program			CFP: Community Development Department 2014 Traffic Impact Fee: Public Works 2015

EXHIBIT C
HAWK PROPERTY PLANNED ACTION ORDINANCE

Mitigation Measures	Proposed Synchronous Amendments	Short Term: Next Comp Plan Amendment Cycle or within 5 years	Long Term	Other Agency	Estimated Year of Implementation and Responsible Department
If growth occurs to the degree reflected in the model projections, it is likely that the City will reevaluate its long-term plan for the for the SE 272 nd corridor, and determine if widening is warranted, or if it is warranted to reexamine level of service standards and allow this section to operate lower than LOS D. Under these circumstances, the City would be required to decide upon one of these options—additional capacity improvements or a level of service policy change—in order to support concurrency.			X		Public Works Ongoing
If regional land use growth occurs at the rate reflected in the Covington model assumptions through 2035, it is likely that the City of Maple Valley will reevaluate its long-term plan for the for the SE 272 nd corridor, and determine if widening is warranted, or if it is warranted to reexamine level of service standards and allow this section to operate lower than LOS D. Under these circumstances, the City of Maple Valley would be required to decide upon one of these options—capacity improvements or a level of service policy change—in order to support concurrency.			X	X	City of Maple Valley Ongoing
The City should adopt comprehensive plan policies stating that the City will plan cooperatively with WSDOT and neighboring cities to define the ultimate capacity for the SE 272 nd Street roadway.		X			Community Development Department/Public Works 2015
The City could adopt a formal LOS standard for police service and coordinate with the King County Sheriff's Office on monitoring of call responses to incidents by members of the Covington Police Department.		X			Community Development Department/Police Department 2015
The City should contract with the King County Sheriff's Office for the services of additional police officers commensurate with the level of development ultimately approved for the subarea.				X	Police Department Determine through development phasing Ongoing

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Exhibit D. Transportation Cost Estimates

Draft

Exhibit E. Planned Action EIS Conceptual Alternatives

Draft

Alternative 2 Conceptual Land Use Plan



Alternative 2, Minimum Subarea Proposal, Conceptual Illustrative Plan

Note: The size, shape, and location of all land uses, trails, and road alignments depicted are conceptual. Final locations and extents will be determined as part of final site plan approval.
 Source: Communita, 2013

Alternative 3 Conceptual Land Use Plan



Note: The size, shape, and location of all land uses, trails, and road alignments depicted are conceptual. Final locations and extents will be determined as part of final site plan approval.

Source: Communita, 2013

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**Appendix C: COVINGTON WATER DISTRICT TECHNICAL
MEMORANDUM NO. 2**

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COVINGTON WATER DISTRICT
M-34 204TH AVE SE 660 TO 650 ZONE PROJECT
TECHNICAL MEMORANDUM NO. 2
ALTERNATIVES ANALYSIS
FINAL DRAFT
July 2010

COVINGTON WATER DISTRICT
M-34 204TH AVE SE 660 TO 650 ZONE PROJECT

PLANNING EVALUATION

**TECHNICAL MEMORANDUM
NO. 2**

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1.0 BACKGROUND AND PURPOSE

The Covington Water District (District) proposed the M-34 204th Ave SE 650 to 600 Zone Project to connect the existing 660 pressure zone to the 650 pressure zone allowing a more reliable, redundant water supply to the 650 zone. In the initial planning evaluation, summarized in Technical Memorandum No. 1 – Planning Evaluation (TM1), the project goals and design criteria were established, and preliminary environmental and geotechnical information was gathered in proximity to the proposed transmission main that would connect the two zones. Additionally, it was determined that it is hydraulically feasible to meet level of service and design criteria with a 16-inch main connecting storage Tanks 2A and 2B to the existing 12-inch stub out near State Route 18 (SR 18) and then connecting to the current distribution piping in the 650 zone.

On March 23, 2010, Workshop No. 2 – Alternatives Selection was held to choose three specific transmission main route alternatives using the preliminary planning data. The purpose of this technical memorandum (TM) is to provide detailed analysis of the selected alternatives based on the project goals and criteria previously established. Ultimately the findings in this analysis will be used to score the alternatives and select the preferred route at Workshop No. 3 – Alternative Selection.

2.0 SELECTED ALTERNATIVES

Three alternatives were selected at Workshop No. 2 based on the design criteria and project goals outlined in TM1. A fourth alternative was added by the consulting team after the workshop to address potential constructability and permitting concerns with the two previously proposed transmission main alternatives. The four alternatives are presented in Figure 1 and described in detail below.

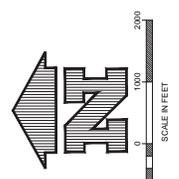
2.1.1 Alternative 1 – West Alignment

2.1.1.1 *Brief Description*

Alternative 1 connects the 660 zone to the 650 zone through a 16-inch transmission main running from the existing piping in the subdivision west of storage Tanks 2A and 2B to the 12-inch stub out located at SR 18. The transmission main would connect into the 660 zone near the intersection of 201st Ave SE and 258th PL, cross the gas pipeline right-of-way (ROW), head north east just outside the western border of the natural gas ROW, break north into the Johnson property and existing access easement, and finally and finally west along SE 248th to the connection at SR 18.

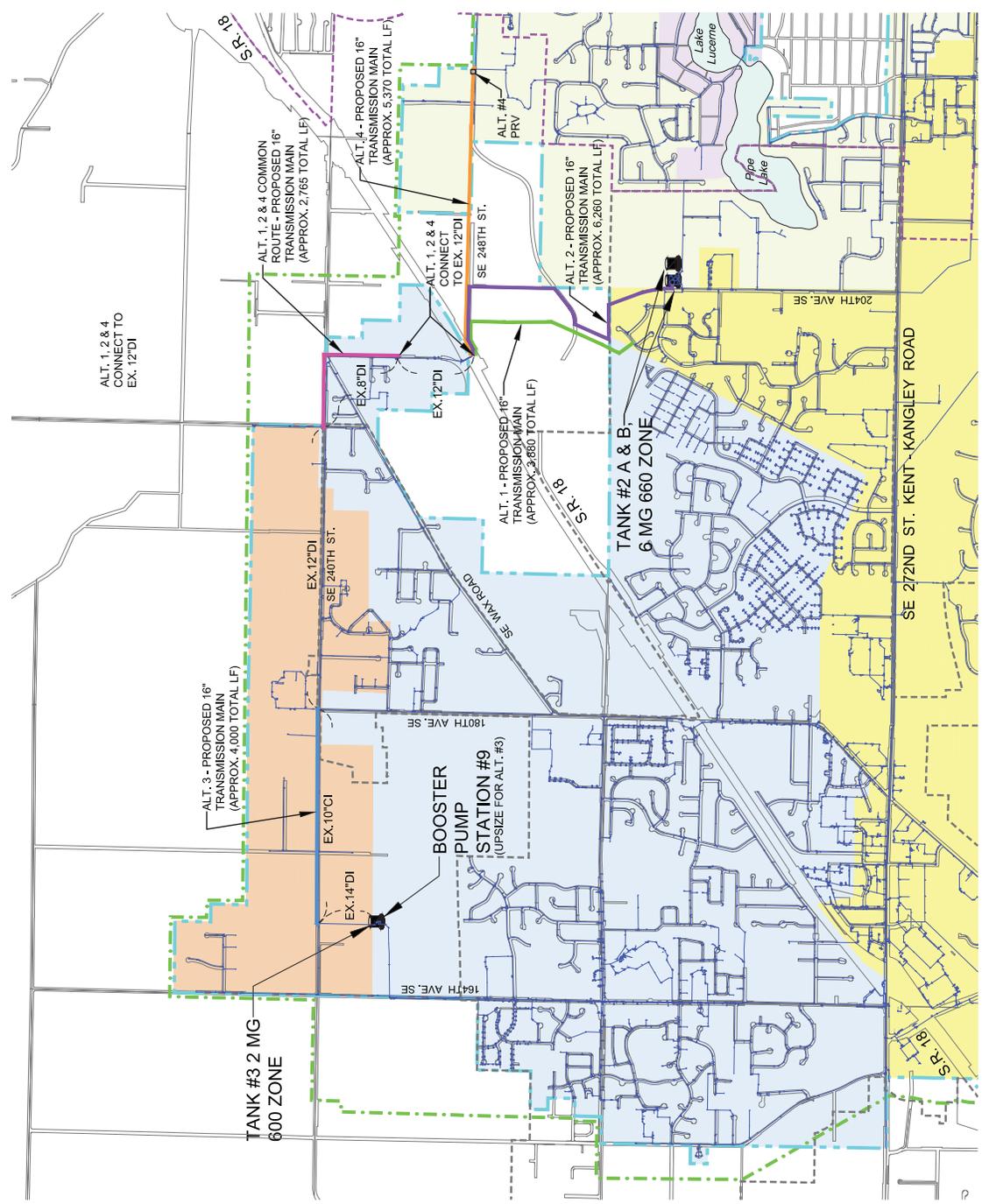
COVINGTON WATER DISTRICT

M-34 TRANSMISSION MAIN PRESSURE ZONES AND ALTERNATIVES



LEGEND

- ALTERNATIVE #1
- ALTERNATIVE #2
- ALTERNATIVE #3
- ALTERNATIVE #4
- ALT. 1, 2 & 4 COMMON ROUTE
- EXISTING WATERMAIN & SIZE
- MAPLE VALLEY CITY LIMITS
- COVINGTON CITY LIMITS
- COORDINATED WATER SYSTEM PLAN (CWSP) SERVICE AREA
- CWD CORPORATE BOUNDARY
- WATER STORAGE TANK
- 600 PRESSURE ZONE
- 625 PRESSURE ZONE
- 650 PRESSURE ZONE
- 660 PRESSURE ZONE
- 770 PRESSURE ZONE



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FIGURE NO. 1

2.1.1.2 Current Land Use

This alignment encounters a wide variety of land uses. The southerly end of the transmission main begins in a dense residential neighborhood inside the Urban Growth Boundary. The alignment continues to the west into a utility corridor with two large natural gas mains with a fenced pipeline facility, although the surface of this area is used as a public trail. On the west side of the gas mains, the land is used as a gravel mine with a concrete and asphalt production facility. Further north, the alignment enters residential property but at a much lower density. The northerly portion of this alignment is within improved King County and Washington State Department of Transportation (WSDOT) ROW.

2.1.1.3 Zoning

There are four different zoning classifications along this alignment, within two different land use agency jurisdictions. The City of Covington drainage parcel, the Northwest Pipeline parcel, and the southerly Hawk parcel lie within the City of Covington. The City and Northwest Pipeline parcels are zoned *Medium Density Residential* and the Hawk parcel is zoned *Mineral*.

The northerly Hawk parcel and the Johnson parcel are within King County jurisdiction. The Hawk parcel is zoned *Mining* and the Johnson parcel is zoned *Rural Residential RA-5*, which means a minimum 5-acre lot size for newly developed lots.

2.1.2 Alternative 2 – East Alignment

2.1.2.1 Brief Description

Alternative 2 connects the 660 zone to the 650 zone through a 16-inch transmission main running from storage tanks 2A and 2B to the 12-inch stub out located at SR 18. The proposed alignment would connect directly in to the storage tanks, head northwest through the broadleaf parcel, west along the southern edge of the Johnson property, northerly just outside the eastern border of the natural gas ROW, easterly along Lund road, north along the extension of 204th Ave SE to SE 248th Street, and finally west along SE 248th to the connection at SR 18.

2.1.2.2 Current Land Use

The proposed Broadleaf plat is currently vacant land awaiting development. The Hawk parcel is used as a gravel mine on the west side of the gas mains and is vacant land with some steep slopes on the east side of the gas mains. The Lund Road is a semi-developed road that appears to be primarily used by ATV users and hikers. It is not maintained by King County as a public road.

2.1.2.3 Zoning

The proposed Plat of Broadleaf lies within the City of Covington and is zoned *Low Density Residential*. The Hawk parcel lies within King County jurisdiction and is zoned *Mining*.

2.1.3 Alternative 3 – New Pump Station

This alternative envisions building a new pump station or expanding the existing pump station on the District's own parcel. The parcel is owned by the District. Zoning is similarly not a concern because the site already contains utility facilities and is therefore not restricted from this type of expansion.

Meeting the District's level of service criteria in the 650 zone will require upsizing the Tank 3 BPS to 3,200 gpm at 40-foot total dynamic head (TDH). In addition, excessive velocity in the 10-inch line in SE 240th Street requires increasing the line size to 16-inch (velocities are still greater than 8 feet per second (ft/sec) using a 12-inch line).

2.1.4 Alternative 4 – 770 Zone Connection

2.1.4.1 *Brief Description*

Alternative 4 would connect the 770 zone on the east side of the District to the 12-inch stub out located at SR 18 through a new 16-inch transmission main along SE 248th. This route begins at the intersection of SE 248th Street and 216th Avenue SE. The new transmission main follows the alignment of the extension of SE 248th Street westward across developed public right of way, private road, and private property, then back into the public ROW at 208th Avenue SE. From this point, the main continues west on SE 248th Street to the point of the common alignments near SR 18, then follows that common route.

2.1.4.2 *Current Land Use*

The Alternative 4 alignment is either on public ROW or private residential land. Where the use is private, the alignment is along property lines. A portion of SE 248th Street west of 214th Avenue SE is signed as "End County Road" although the Assessor's Map shows the platted road continuing to the west. This is not unusual where the County chooses to end their maintenance.

2.1.4.3 *Zoning*

Zoning in this area is RA-5 and is within King County jurisdiction.

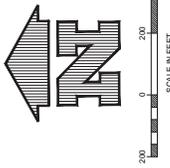
3.0 ALTERNATIVES ANALYSIS

3.1 Alternative 1

An aerial view of the proposed transmission main route unique to Alternative 1 is presented in Figure 2. A close-up of the piping modifications common to Alternatives 1, 2, and 4, and adjacent to the 600 zone, is presented in Figure 3.

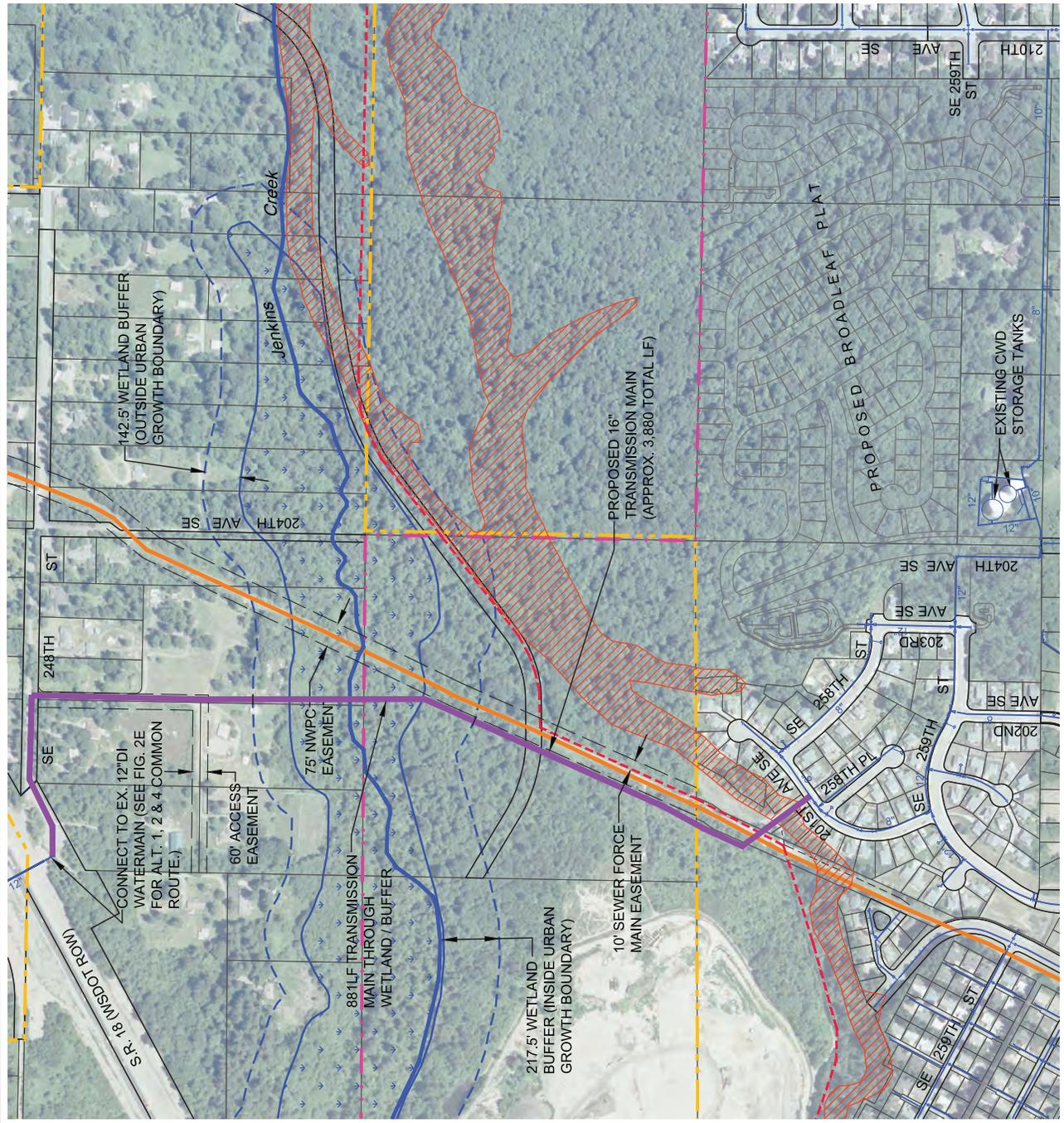
COVINGTON WATER DISTRICT

M-34 TRANSMISSION MAIN ALTERNATIVE 1 WEST ALIGNMENT



LEGEND

- PROPOSED WATERMAIN
- GAS PIPELINE
- CWD CORPORATE BOUNDARY
- EXISTING WATERMAIN
- URBAN GROWTH BOUNDARY
- ABANDONED FORCE MAIN
- APPROXIMATE WETLAND BOUNDARY
- APPROXIMATE STEEP SLOPE AREA



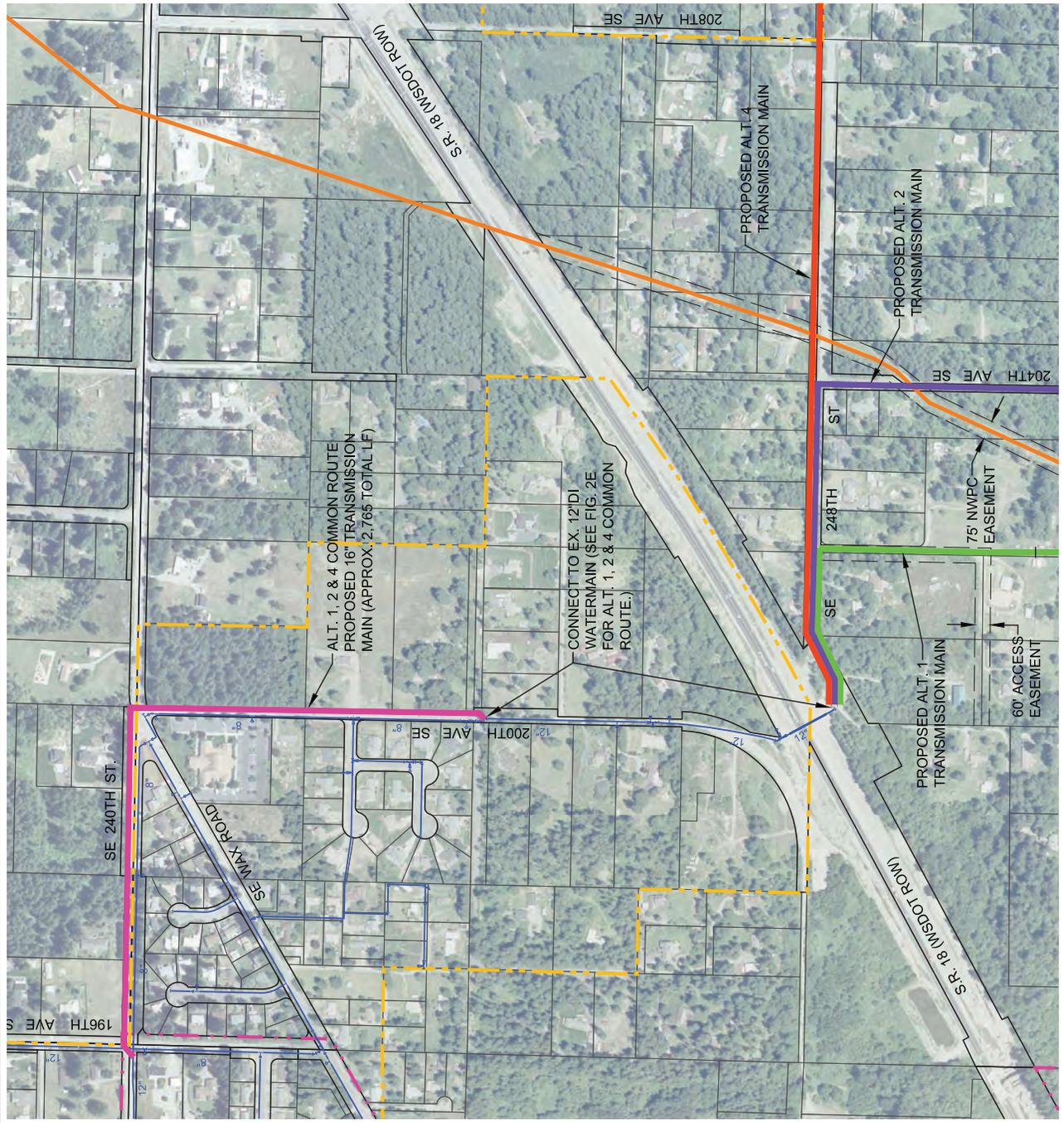
COVINGTON WATER DISTRICT

M-34 TRANSMISSION MAIN ALTERNATIVES 1, 2 & 4 COMMON ROUTE



LEGEND

- ALT. 1, 2 & 4 COMMON ROUTE
- ALT. 1 PROPOSED ROUTE
- ALT. 2 PROPOSED ROUTE
- ALT. 4 PROPOSED ROUTE
- GAS PIPELINE
- CWD CORPORATE BOUNDARY
- EXISTING WATERMAIN
- URBAN GROWTH BOUNDARY



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**FIGURE
NO.
3**

3.1.1 Environmental Impact

3.1.1.1 *Rural Areas and Steep Slopes*

There are no steep slopes along Alternative 1; however, sections of Alternative 1 run through rural forested areas that will require restoration. Required surface restoration in these areas will be simple shrubs and groundcovers, with new trees planted in cleared areas except for the 10 feet centered on the transmission main. In a 30-foot clearing, 20 feet of tree re-vegetation would be required and the remainder would be shrubs and groundcover. All restoration will likely have 3 to 5 year inspection and replacement requirements for survival.

3.1.1.2 *Covington Streams and Wetlands*

Both Alternative Route 1 and Alternative Route 2 will pass through Jenkins Creek and an associated wetland midway along the alignments.

Based on Washington State Department of Ecology (Ecology) Salmon Stock Inventory maps, Jenkins Creek is a salmon-bearing stream. Under King County Code, Jenkins Creek would be regulated as a Type F stream because fish are present and because the stream is not listed as a shoreline of the state. King County Code requires a 165-foot protective buffer around Jenkins Creek.

Based on the U.S. Fish and Wildlife Service National Wetland Inventory map for the project area, the wetland associated with Jenkins Creek is a palustrine forested, seasonally flooded wetland. King County (the County) categorizes wetlands using the Ecology Wetland Rating System for Western Washington. Based on this rating system, the wetland associated with Jenkins Creek is a Category I wetland with a habitat functions score of 29.

King County Code requires varying buffer widths depending on whether the wetland is located within the Urban Growth Boundary and on the intensity of the proposed land use. The Urban Growth Boundary bisects the wetland as presented in Figure 4. Assuming that the water line would be considered a low-intensity land use, King County Code would require a 217.5-foot protective buffer around the Category I wetland inside the Urban Growth Boundary (on the south side of the wetland) and a 142.5-foot buffer around the wetland outside the Urban Growth Boundary (on the north side of the wetland). King County was not able to verify the land intensity of a water line corridor. If King County considers the water line a moderate- or high-intensity land use, wider buffers would be required.

3.1.1.2.1 Impacts

Both route alternatives for the proposed M-34 water supply line pass through Jenkins Creek and a Category I wetland. If the water line is installed through open-cut trenching, impacts will occur to Jenkins Creek, the Category I wetland, and their buffers. Approximate impact quantities are summarized in Table 1. These impact quantities were based on a 30-foot-wide area for clearing and grading along both route alternatives.

COVINGTON WATER DISTRICT M-34 TRANSMISSION MAIN WETLAND AREAS



LEGEND

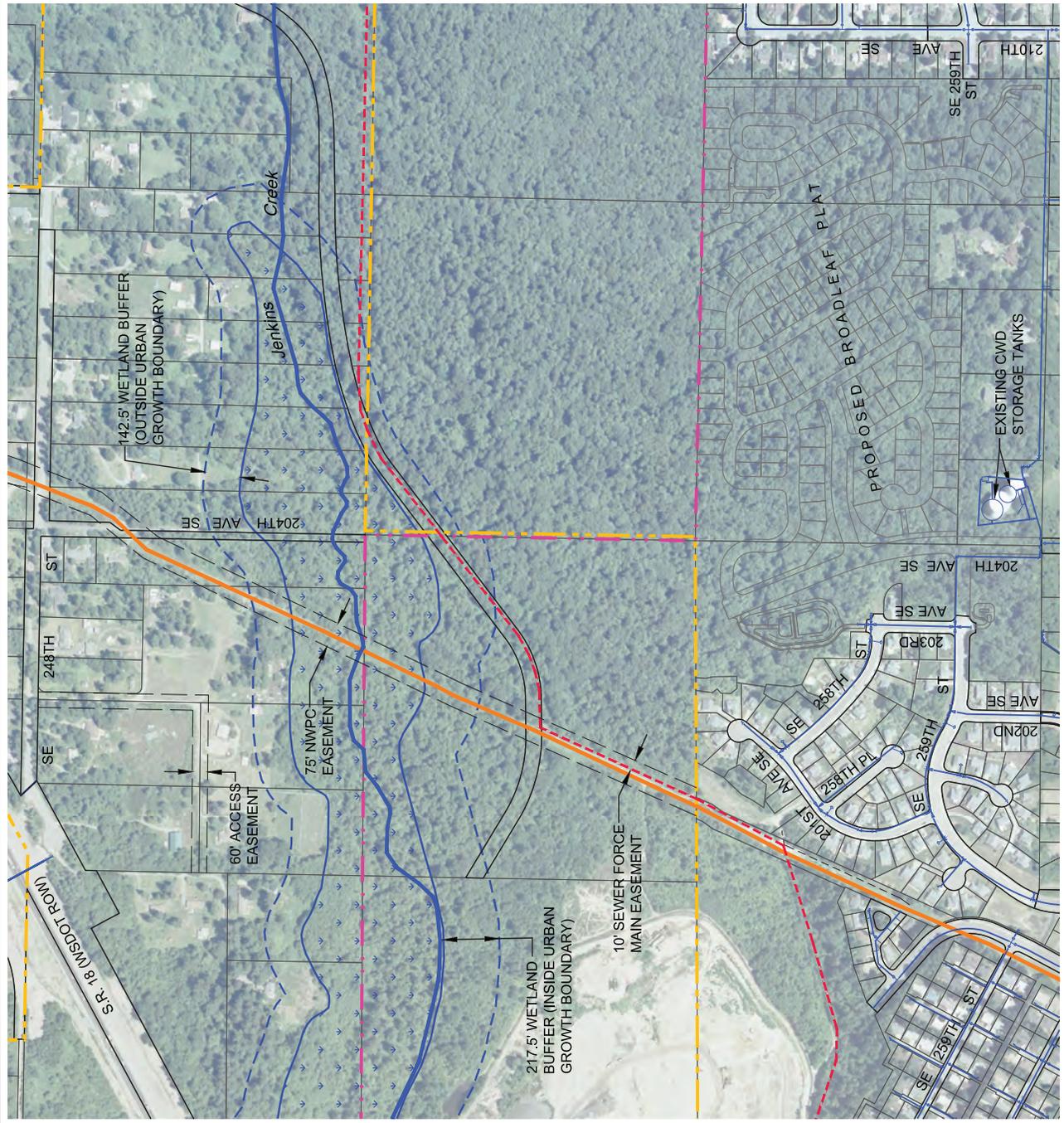
- GAS PIPELINE
- CWD CORPORATE BOUNDARY
- EXISTING WATERMAIN
- URBAN GROWTH BOUNDARY
- ABANDONED FORCE MAIN
- APPROXIMATE WETLAND BOUNDARY

NOTES:

1. 165' STREAM BUFFER NOT SHOWN SINCE IT IS ENTIRELY ENCOMPASSED BY THE SITE WETLAND AND ITS BUFFER.
2. WETLAND BOUNDARY WAS ESTIMATED BASED ON SITE OBSERVATIONS ALONG PROPOSED ALTERNATIVE ROUTES, KING COUNTY IMAP INFORMATION AND AERIAL PHOTOGRAPH INTERPRETATION.

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FIGURE NO. **4**



These estimated impact quantities do not include any additional impacts that may occur associated with construction access or staging areas. If directional drilling is determined to be a viable option, it is possible that wetland, stream, and buffer impacts may be avoided.

Table 1 Estimated Wetland, Stream, and Buffer Impacts – Alternative 1 Alternatives Analysis Covington Water District			
Alternative	Wetland Impact (square feet)	Stream Impacts (square feet)	Buffer Impacts (square feet)
Alternative 1	12,000	300	11,000

3.1.1.2.2 Mitigation

King County will likely require mitigation for any impacts to wetlands, stream, or their buffers. Mitigation requirements for stream impacts include replacing an amount of biological functions equal to or greater than the amount impacted by construction, which must be created in the same aquatic area reach at a 1:1 ratio, or in the same drainage sub-basin at a 3:1 ratio if on-site mitigation is not possible. For the proposed water supply line project, mitigation would likely include restoring the stream channel and placing large woody debris in and adjacent to the channel.

Because the proposed project is an underground utility corridor instead of an impervious building or parking lot, the County may not require the standard wetland mitigation ratios found in the King County code. A pre-application meeting with the County would determine the County’s wetland mitigation expectations. Wetland mitigation requirements could range from restoring the impacted wetlands after construction (by replacing native soil with the topsoil on top and replanting the area with native species) to creating new wetlands on an adjacent parcel of land.

Because no wetland mitigation banks are available for the site vicinity, the County would require that wetland impacts be mitigated on site if possible. The County’s standard wetland mitigation requirements (in accordance with King County Code) vary depending on whether wetland reestablishment, rehabilitation, replacement/recreation, and/or enhancement is proposed (see the County Standard Wetland Mitigation Ratios Table 2). Wetland reestablishment is restoring wetland functions in an upland area that was formerly a wetland. Wetland rehabilitation means restoring wetland functions in a degraded wetland. Wetland replacement/recreation is creating a new wetland in an upland area where a wetland did not previously exist. Wetland enhancement includes such activities as planting native species, removing invasive species, or minor site grading to improve an existing wetland. Because the Category I wetland is relatively undisturbed, wetland rehabilitation and enhancement are not likely valid mitigation options for this project.

Table 2 King County Standard Wetland Mitigation Ratios Alternatives Analysis Covington Water District				
Category	Reestablishment	Rehabilitation	1:1 Replacement or recreation (R/C) and enhancement (E)	Enhancement Only
Category I Wetland (score based on functions)	4:1	8:1	1:1 R/C and 6:1 E	Case-by-case

No set standards for wetland and stream buffer mitigation are given in the King County code. At a minimum, buffer mitigation typically includes replanting the impacted buffer. Often, agencies also require planting native woody vegetation in other parts of the buffer and/or installing habitat features (e.g., snags, downed logs, nesting platforms, and/or duck boxes) in the buffer.

3.1.2 Property Acquisition

This section describes current property ownership, easement, and ROW consideration associated with Alternative 1.

3.1.2.1 Current Property Owners

3.1.2.1.1 City of Covington – (parcel # 776040-1060)

The City of Covington is listed as the owner of the drainage parcel within the Plat of Shire Hills Div. No. 1 across which the transmission will be placed. The portion of this tract would cross is the access point from 201st Avenue SE into the tract. Because this is a publicly-owned parcel right of entry has not been pursued. This parcel contains a small sewage lift station located directly in the middle of the access alignment (see Figure 5).

3.1.2.1.2 Northwest Pipeline Corporation – (parcel # 292206-9127)

The District acquired a right of entry that specified their easement across the Hawk parcel but did not mention this parcel. Unlike the easement across the Hawk parcel to the north of Shire Hills, they own this property as a separate parcel so an easement is required.

3.1.2.1.3 Jim Hawk – (parcel # 292206-9162 (South), # 202206-9012 (North))

Mr. Hawk owns several very large adjacent parcels that are collectively leased to the operator of a gravel mine, Lakeside Industries. This alignment proposes to cross two of those parcels. The District acquired an earlier right of entry from Mr. Hawk that did not specify the southerly parcel to the west of Shire Hills but did include the parcel north of Shire Hills. Mr. Hawk previously directed the District to contact the gravel mine operator for site access.

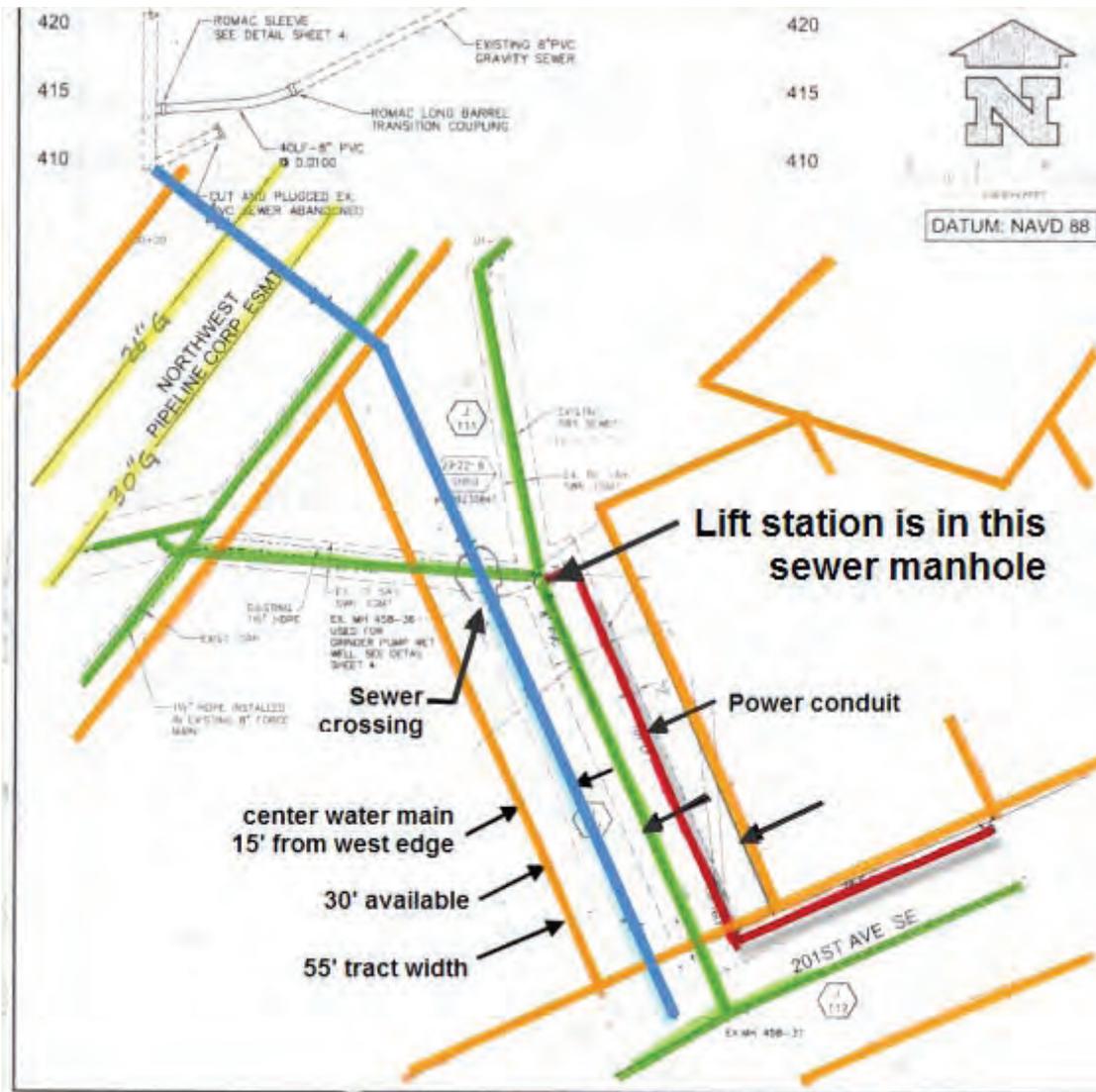


Figure 5 City of Covington Parcel

3.1.2.1.4 Jennifer Johnson – (parcel # 202206-9040)

Scott Wilke, who represents himself as the son of Jennifer Johnson and the resident on the parcel has been contacted several times. Each time he has stated that he represents her interests and has agreed to sign the right of entry agreement. There is no confirmation that he is actually her representative and an easement will require legal review.

Public records indicate that Scott and Dorene Wilke purchased the property in 1993 and it was foreclosed on in 2001 then purchased by Jennifer Johnson three months later. This series of ownership transfers supports Mr. Wilke’s assertion because it appears his mother bought the property so he could stay in the house.

3.1.2.2 Easements

There are several relevant easements on the Johnson parcel:

1. The 75-foot-wide gas main easement recorded in 1956.
2. Ingress, easement, and utilities easement along the driveway, recorded as part of the short plat in 1985.
3. Water use and maintenance agreement, share allocation and easement for the small water system serving the 5-lot plat recorded in 1985 which means there could be a small Group B water system, with a well and associated pipes, on this or one of the other parcels in this short plat, all of which lie to the west of the Johnson parcel.
4. Puget Sound Power and Light easement recorded in 1994.

The northerly Hawk parcel includes the 75-foot gas main easement.

Soos Creek Water and Sewer District (SCWSD) owns an easement along the east edge of the Northwest Pipeline parcel for a sewer force main. This easement also includes an abandoned 10-inch ductile iron sewer force main that runs off to the west near the Plat of Shire Hills.

3.1.2.2.1 Restrictions

The water system agreement mentioned on the Johnson deed was not able to be located. There is a well with a protective radius on Lot 2, along with piping and wiring for a small Group B water system. If this alignment is selected the locations of any such facilities will be located during detailed design. Scott Wilke said the well for this water system is located on Lot 2 of the short plat, to the north of the Johnson parcel. Lot 2 is currently owned by Joseph and Caroline Hicks and is the center of the three lots to the north of the Johnson parcel.

Earlier correspondence with Northwest Pipeline indicates that the crossing of the natural gas mains is likely to be best accomplished with a perpendicular crossing. The pipeline is likely to apply specific conditions on design review, site restoration, and construction inspection for the crossing.

SCWSD's Lift Station No. 41 on the City of Covington parcel in Shire Hills poses some potential limitations on construction and alignment. The lift station is small and consists of a simple grinder pump set inside a manhole. The pump power is supplied through a conduit buried on the east side of the access area. There is approximately 30 feet available for a water main alignment on the west side of the sewer line (for reference see Figure 5).

3.1.2.2.2 Requirements

Easements may vary in width, clearing and restoration requirements, and length of time required for construction within the easement and the temporary construction permit area depending on surface conditions, topography, planned type of construction, and proximity of improvements.

The space obtained for permanent easements is typically less than that needed during construction so the two instruments were indentified separately. The requirements for temporary construction easements are presented later in this report. Permanent easements for the constructed transmission main can likely be limited to 10 feet in width in all areas. Because these easements restrict surface uses, they are most often placed in areas where other uses are either already restricted or unlikely, such as along property lines.

3.1.2.3 Right of Way

There are two separate ROW jurisdictions associated with this alignment.

1. The City of Covington governs the ROW within 201st Avenue SE.
2. King County governs SE 248th Street including where it turns to the south at the west end.

The ROW widths and jurisdiction in this area are presented in Figure 6.



Figure 6 Right-of-Way and Easement Widths

3.1.2.3.1 Conditions and Restoration

The City of Covington ROW is fully improved, with curb, gutter, and sidewalk. The power and other utilities are all underground. Care must be taken during design to identify these utilities and avoid them during construction. Restoration will match typical city requirements and will likely consist of a simple asphalt patch in the area of the water main connection.

The King County ROW is paved with asphalt but does not have any surface paint marking indicating centerline or fogline. Wire utilities are located on poles along the south edge of the asphalt. Large trees are located in the shoulder on the south side very close to the edge of the asphalt in the line of the utility poles. The water main may fit within the gravel shoulder immediately adjacent to the north edge of the asphalt. The asphalt is in good condition and if the main is placed within the asphalt surface, King County may require a full-width overlay if the asphalt is cut inside the fogline. The absence of a painted fogline makes this questionable.

3.1.3 Permitting

The following section describes anticipated permitting requirements for this alignment. The project lies within two land use jurisdictions and three ROW jurisdictions.

3.1.3.1 SEPA

The pipe size and alignment through critical areas will require preparation of a SEPA Environmental Checklist and a SEPA Determination by the District. This is a typical process and no special concerns are anticipated during the SEPA process.

3.1.3.2 Permit Type, Fee, Effort to Prepare, and Schedule

Anticipated permits are shown in Table 3. ROW permits typically have fixed fees, while some permit fees, such as those for grading permits, vary as a result of impacted area. Other permits have no submittal fee.

3.1.3.3 Supporting Studies Required

Work within critical areas is likely to require specific critical areas studies, including wetlands/streams and geological studies. These specialties are already included on the project team and will be tasked with preparing supporting studies. Studies will include Critical Areas Reports for Geotechnical and Environmental aspects, as well as a Biological Evaluation to support wetland and stream crossing.

3.1.3.4 Permit Conditions

Permit conditions are either prescriptive or applied by the permit reviewer, or both. Conditions usually refer to construction timing to reduce traffic or environmental impacts, or to restoration requirements. No unusual permit conditions are anticipated. The conditions expected include:

- Schedule restrictions on the Jenkins Creek crossing

- Dewatering water quality monitoring requirements
- Flagging or fencing of clearing limits
- Asphalt restoration within roadways
- Surface restoration outside of roadways including location-specific hydroseeding and buffer restoration planting
- 3 to 5 years of restoration planting survival monitoring and removal of invasive species in restoration area

Agency	Permit Type	Permit Fee	Effort to Prepare	Schedule	Notes
City of Covington	ROW	\$300 - City usually bills utilities directly	Easy	3 weeks	Traffic Control Plan required with permit submittal
City of Covington	Grading	Approx. \$2400 for Critical Areas Exception review plus approx \$700 for grading permit	Easy	3 weeks	Based on 520 lf trench 4' wide and 4' deep- Project may apply for Critical Areas Exception for required utility line activities
King County	ROW	\$300 - County usually bills utilities directly	Easy	3 weeks	
King County	Clearing and grading permit	Approx. \$5500	Moderate	1-2 months	Based on 2700 lf cleared 30' wide and trench 4' deep and 4' wide with 5 hrs of DDES field inspection
Washington Department of Fish and Wildlife	Hydraulic Project Approval	None	Difficult due to quality of wetland	1-2 months	Could be a fish window limiting work to dry conditions
US Army Corps of Engineers	Nationwide Permit 12 for Utility Line Activities	None	Moderate to difficult due to quality of wetland	6-9 months	Federal nexus means delay due to ESA Section 7 consultation
Department of Ecology	Federal Permit 401 for wetland mitigation	None	Moderate to difficult due to quality of wetland	Issued concurrently with Corps Permit 12	Can be issued up to 180 days after Permit 12, but usually issued concurrently
WSDOT	Franchise Amendment	\$500	Fairly easy	3 months	Required for changing size of main inside existing casing

3.1.4 Operations & Maintenance

The majority of the Alternative 1 alignment will be located in or near improved ROW or access easements for ease of operation and maintenance. The southern portion of Alternative 1, as shown in Figure 2, can be accessed from the development to the west of the Tank 2 site as it runs parallel to the Williams gas pipeline alignment. The alignment can be easily accessed from the Williams gas easement until the proposed line turns north on the Johnson property into the existing wetland.

Once the line is within the existing wetland, it will be very difficult to access and maintain if required. Depending on the method of construction used to build the proposed water line across the wetland, it may be impossible to access the line. If the line is constructed using horizontal directional drilling (HDD), the line will be installed at a depth which will make it impossible to access the line. If the line is constructed using open trench construction, there may be opportunity to access the line if required.

The northern portion of Alignment 1 between the existing wetland and the crossing of SR 18 can be accessed from the driveway to the Johnson property. The access driveway is graveled and can be easily traversed for maintenance of the proposed water line.

3.1.5 Constructability/Risk

3.1.5.1 *General Subsurface Conditions*

Geological subsurface conditions were assessed at the Lakeridge Gravel Pit in lieu of performing borings along the potential transmission main route. It was determined that the information available at this nearby location would be sufficient to aid planning level analysis for potential routes. Lakeside Industries' Covington Pit is located about 400 feet west of Alternative 1, as shown in Figure 7. This borrow pit and the potential water main alignments are located in the Jenkins Creek floodplain, which is a remnant of a glacial outwash plain formed during the recession of the last glacial ice in the Puget Lowland.

Although some areas in the southeastern corner of the borrow pit (closest to the M-34 project corridor) were ambiguous because they may have been covered by regrading strippings, it appears that a very coarse deposit of gravel and cobbles with little to no fine matrix only occurs in the upper 10 feet. Below that, the soil is still coarse, but appears to have a sandy or silty matrix down to about 25 feet deep. At a depth of about 25 feet below the ground surface, although the primary constituents are gravel and scattered cobbles, the matrix is comprised of clay and silt in the southeastern corner of the pit. To the west of the exposures mentioned above, there are exposures as high as 50 feet of stratified sand, sand and gravel, and coarse open-work gravel and cobbles. Photographs of the observed subsurface condition and where in the pit these conditions were observed are presented in Figure 7. As indicated by the pit operator, the soil conditions are quite variable laterally.

**COVINGTON WATER DISTRICT
M-34 TRANSMISSION MAIN**

LOCATIONS OF PHOTOGRAPHS OF GEOLOGIC
CONDITIONS IN SE CORNER OF LAKESIDE PIT,
COVINGTON, WA.



CLOSEUP OF TILL-LIKE LAYER; GRAVEL AND
COBBLES IN A FINE-GRAINED MATRIX



UPPER 10 FEET OF SANDY GRAVEL WITH SCATTERED
COBBLES IN SE CORNER OF LAKESIDE PIT



TILL-LIKE LAYER FROM ABOUT 25 TO 50 FEET
BELOW GROUND SURFACE



40- TO 50- FOOT HIGH EXPOSURE OF STRATIFIED SAND AND
GRAVEL IN CENTRAL PART OF LAKESIDE PIT

**FIGURE
NO. 7**

ROTHHILL
Roth Hill, LLC Tel: 425.869.9448 www.rothhill.com
11130 NE 33rd Place, Suite 200 Bellevue, WA 98004

3.1.5.1.1 Planned Construction within Easements

This alignment primarily assumes open-cut trench construction, which requires side-casting excavated material, laying the pipe, then backfilling the trench. For relatively shallow depth construction, as envisioned here, the excavated material does not require a large area. Space is required for entering the easement area, stockpiling pipe and any imported backfill materials such as pipe bedding, and room to work for construction of thrust blocks, bore pits or other construction. The project requires relatively simple linear construction at shallow depths so the easement requirements are also relatively simple.

However, it is possible that bearing soil in the wetland areas may be deeper than the bottom of the trench, requiring either over-excavation and structural backfill or possibly pile-supported construction. Either of these options requires considerably more expense and construction time.

The gas main crossing and the stream crossing each present the possibility for requiring wider easement areas, as described below, to allow construction other than simple open cut methods.

3.1.5.2 Easement Surface Conditions and Proximity of Improvements

Most of the easement areas are not maintained to a high level, such as manicured lawns and gardens. Within the City of Covington parcel and across the Northwest Pipeline parcel, simple gravel or crushed surfacing may suffice. The easement across both Hawk parcels may be as simple as hydroseeding. If the wetlands or their buffers are entered, expect to provide a fully designed and maintained restoration planting as a permit condition, as described earlier in this report. If an open-cut on Jenkins Creek, the creek bed restoration will likely consist of a designed mixture of gravels. Because the Jonson parcel is mostly open, hydroseeding may suffice except for the driveway surface where crushed rock may suffice.

3.1.5.2.1 City of Covington Parcel

There are homes on both sides of the City of Covington drainage tract that will require careful attention to construction methods and impacts to minimize the District's risk of exposure to construction-based claims.

The two large gas mains (26-inch and 30-inch) are located on the west side of the Northwest Pipeline parcel. SCWSD construction record drawings from 1975 sewer construction indicate the 26-inch gas main is centered 20 feet from the west edge and the 30-inch gas main is centered 40 feet from the west edge. Field verification is necessary.

SCWSD's Lift Station No. 41 sits in the middle of the access portion of the City of Covington parcel. There are various electrical conduits and sewer lines leading to and from the station (for reference see Figure 5). The tract is 55 feet wide in the area and the sewer mains run nearly up the center. There power conduit for the lift station lies on the north side but the south side is relatively open with about 30 feet of clear space. There are many buried

utilities in this area but none that appear to restrict construction of a 16-inch water main. There are trees and shrubs on the City parcel, but none of them appear significant (Figure 8, detail 1).

3.1.5.2.2 Northwest Pipeline Parcel

Further north along the gas main alignment, but still within the Northwest Pipeline property and still south of the Hawk parcel, there is a fenced gas facility. However, the proposed alignment to the west side of the pipeline property (Figure 8, detail 2) suggests there will be no conflict with this facility.

The gas pipeline easement is kept generally clear of trees and is graded relatively smooth. While the "trail" is maintained by a group known as Friends of the Trail, Northwest Pipeline does not consider their property a trail.

3.1.5.2.3 Hawk and Johnson Parcels

There is second growth forest on both sides of the easement, with alder, fir, maple, vine maple, and understory shrubs (Figure 8, detail 3). Further west, the gravel pit is still active so alignment of the water main should be adjacent to the gas easement.

Traveling north, the proposed alignment diverges from the gas easement and heads straight north toward the west line of the Johnson parcel. The surface cover is forest and then wetlands associated with Jenkins Creek.

The alignment crosses Jenkins Creek at approximately the south line of the Johnson parcel (Figure 8, detail 6). During the February 18, 2010 site visit the creek was running full and was fairly wide and shallow (Figure 8, details 4 and 5). During the April 15, 2010 site visit along the proposed alignment, the creek was higher and wider than in February. The wetland is very densely vegetated and muddy. There are several very large trees (greater than 36-inch diameter) along the alignment.

The surface of the potential alignment on the Johnson parcel is mostly clear and undeveloped north of the wetland boundary. However, within the wetland area adjacent to the Hawk parcel, the surface is densely vegetated and contains many large trees. The stream has many shallow side channels and the ground is very muddy through the wetland. A person walking begins to sink after a short time standing in one location. While there is some debris such as tires that seem to have been washed into the area, the surface is relatively pristine and undisturbed. Permitting agencies are likely to look unfavorably on any proposals to clear vegetation along this alignment, even with a high quality restoration plan.

The shared access driveway appears to be centered on the 60 foot access easement so the property lines in Figure 6 appear reasonably representative. The main would be best aligned along the east edge of this driveway to reduce clearing and restoration requirements and should be located on a single parcel (Johnson) to reduce complexity and number of required easements.

At the north end of the Johnson parcel, along the entry driveway, there is an adjacent house to the east that may not be aware of the actual property lines (Figure 8, detail 7). While the house is plenty far away from the potential pipe alignment, the surface is maintained by that land owner (Caroline and Joseph Hicks).

SE 248th Street west to the SR 18 connection poses no concerns for structures or improvements. There are utility poles along the edge of the south side and trees near the edge of both sides of the asphalt, so the main will likely have to go in the roadway (for reference see Figure 10, detail 7). The road is not painted so there is not technically a fogline to stay outside of to avoid overlaying the road. This issue could be negotiated with the King County RWO inspector.

3.1.5.3 Construction Impact

3.1.5.3.1 Open Trench Construction

There are no conditions along Alternative 1 that would preclude the use of open-trench construction. However, seasonal variations in Jenkins Creek stream levels will affect construction conditions. When the water level is high sidewall caving will occur and dewatering will be necessary. It is reported that the creek dries during the summer time and construction at that time would be prudent.

3.1.5.3.2 Horizontal Directional Drill (HDD)

The most significant challenge to HDD will be the recessional outwash that is particularly coarse in this locality. As described in the general subsurface conditions above, gravel, cobbles, and boulders are the norm, and open-work, nested particles are not uncommon. If conditions at the selected pipeline crossing are consistent with those exposed in the Lakeside Pit, the upper very coarse layer (Figure 7, lower right) could be cased and then the drill could be advanced through the sandy gravel and then the till-like layer (Figures 7 and 4) with a clayey/silty matrix that underlie the very coarse surficial stratum. Although the till-like layer contains gravel and scattered cobbles, the matrix of the formation is likely to stay open and not collapse during drilling and back-reaming. The biggest risk (as exposed in the central part of the Lakeside Pit) is the next lower layer, which does not have a fine-grained matrix and has zones of open-work gravel and cobbles (Figure 5). Such conditions, if they exist in the potential pipeline alignments, could pose difficulties for advancing the drill, keeping the drill hole open, and maintaining fluid circulation. While it is impossible to ascertain the subsurface conditions on the alignment several hundred east of the borrow pit, **in the opinion the geotechnical engineer the chance of success would be about 50 percent**, if conditions are similar to those in the Lakeside Pit.

If HDD methods are to be used on parts of this project, they should be undertaken only after thorough subsurface explorations. It is recommend that a sonic core boring be advanced to a depth of about 80 feet approximately in the middle of the Jenkins Creek floodplain, where the depth of the HDD would be greatest. This could be accomplished with relatively little disturbance to the environment if it was located in or adjacent to the Williams

pipeline corridor. This boring would provide information regarding feasibility of the HDD concept for this project. Eventually, borings should also be drilled on both edges of the floodplain to further characterize the subsurface conditions.

3.1.5.3.3 Easement Width

The space obtained for permanent easements is typically less than that needed during construction so two instruments are separately identified. Permanent easement requirements are discussed in the section on property acquisition. Temporary construction permits are “easements” that expire after a specified time and are therefore not really easements. Widths vary depending on topography, planned depth of construction, need for staging areas and vehicle movement, along with other construction factors. Simple linear construction of a 16-inch transmission across a relatively flat and clear area can typically occur within a 30 foot wide permit area.

City of Covington Parcel

This area is limited by the existing infrastructure and the temporary construction permit can likely be 30 feet wide.

Northwest Pipeline Parcel

It is likely that no excavation will be allowed so a bore and jacked casing should be expected. To cross under the gas mains a fairly deep casing may be necessary. Bore launching and receiving pits would be required.

Hawk Parcels

A bore pit with staging area may be required on the southerly Hawk parcel across from the City of Covington parcel, therefore a rectangle of approximately 40 feet by 15 feet may be required. The temporary construction permit for the main along the west side of the gas easement can likely be 30 feet wide. An additional similarly-sized bore pit area may be required if Jenkins Creek is not crossed by open cut methods.

Johnson Parcel

A 30 foot wide temporary construction permit should suffice. Because of the potential for impact on the shared driveway there is a chance that the other users of the driveway could require temporary construction permits or possibly compensation for inconvenience.

3.1.6 Level of Service

The level of service outlined in TM1 cannot be maintained with the piping configuration proposed for Alternative 1. The required 20 pounds per square inch (psi) residual pressure required during fire flows cannot be met at Tahoma High School. The existing piping within the residential area at the south end of the proposed alignment just west of Tanks A and B appears to be the limiting source of headloss. The pressures are still not met even with

upsizing a lengthy section of 12-inch pipe that runs through the corner of the 600 zone at the North end of the alignment.

3.1.7 Schedule

3.1.7.1 *Survey/Geotechnical Schedule*

Once the Basis of Design Report (BODR) has been completed and approved by the District and a scope and budget for design has been approved, effort can immediately begin work on the surveying and geotechnical investigations of the selected alternative. The level of effort required for the geotechnical investigation will be dependent on the type of construction proposed as greater geotechnical detail is required for an HDD project.

3.1.7.2 *Easement Acquisition Schedule*

The level of effort required for easement acquisition is dependent on the willingness of the property owner to work with the District. If the property owner is willing to grant an easement the entire process can be accomplished in a couple of weeks. If the property owner is not willing, it may take longer to negotiate for the easement or possibly go through the condemnation process. It is expected that the easement process could be completed in a two month time period during the design phase.

3.1.7.3 *Design Schedule*

A three step process has been identified for the design phase of the project. First, a 60% design will be submitted for review by the District. Revisions will be incorporated and refined for a 90% submittal before the Final design is submitted. A five month process for the design phase of the project is identified.

3.1.7.4 *Permitting Schedule*

The major factor affecting the project schedule for Alternative 1 will be the need to obtain a Corps of Engineers permit for the crossing of Jenkins Creek. It is likely that a Corps permit will be required whether the line is constructed using open trench construction or by horizontal directional drilling. It is possible that it will take less time to obtain the permit if the line is constructed using HDD. In an attempt to reduce the overall project schedule, it is recommended that permits are submitted based on the 60% design. Based on an estimate of 6 to 9 months to acquire a Corps permit, a 7 month permit process is proposed. This will be more than enough time to acquire the additional permits required beyond the Corps permit.

3.1.7.5 *Construction Schedule*

This project should be constructed in the summer when the water in Jenkins Creek and associated tributary's are at their lowest. Based on a 2009 site visit, the water in Jenkins Creek dries up in the summer, although it is not known at what depth the groundwater shows up. The following (Table 4) schedule summarizes the anticipated time for each of the

items listed above along with a proposed construction schedule showing the construction in the wetland occurring in the summer months.

Table 4 Alternative 1 Schedule Alternatives Analysis Covington Water District		
	2010	2011
	J J A S O N D	J F M A M J J A S O N D
Design		
Predesign	■	
Survey/Geotech	■	
Final Design	■	
Easement Acquisition	■	
Permitting	■	
Construction	■	
Transmission Main Online	◆	

3.1.8 Cost

3.1.8.1 *Mitigation Costs*

Mitigation costs for this project are difficult to accurately estimate, particularly because the mitigation requirements may be different than the standard mitigation ratios in the King County Code. In addition, mitigation costs can vary from \$2 to \$100 per square foot depending on the complexity of the project design and construction requirements. To give a general mitigation cost estimate range, Shannon & Wilson estimated: (1) the cost of restoring the stream channel, wetland, and buffers after construction is complete; and (2) the cost of restoring the stream channel and buffers and mitigating the wetland impacts at a 4:1 ratio. For the second cost estimate, the following assumptions were made:

- Wetland mitigation would be limited to excavating and disposing of 1 to 3 feet of soil, planting native vegetation, installing a temporary irrigation system, and monitoring for five years.
- Stream mitigation would be limited to placing large woody debris in or near reconstructed stream channel.
- Buffer mitigation would be limited to planting native species in disturbed buffer areas.
- No irrigation water costs were included.
- No property or easement purchase costs were included.

The general estimated cost for restoration only is \$107,000. For restoration plus 4:1 wetland mitigation the cost ranges is estimated at \$240,000 to \$300,000.

3.1.8.2 Easement Valuation

Roth Hill uses a standard industry easement valuation formula to determine recommended payments for permanent easements and temporary construction permits. The formula uses the County Assessor's property valuation and lot square footage to determine a per-square-foot valuation and applies a 25% increase in value to adjust for market value typically being higher than the assessed value. This per-foot value is then adjusted down as a function of the land owner's ability to use the easement area for other purposes. For example, if the easement runs under power lines or within a wetland setback, it has less (if any) development potential for the land owner and might offer as little as 10% of the market value for a pipeline easement. If the easement bisects a parcel so as to limit future development potential, the value of the easement, in terms of the owner's opportunity cost, would be much higher. A typical 10 foot easement along a property line, within typical building setbacks, is valued at 25% of the market value. The resulting value is referred to as the "easement fee" and is determined by multiplying the easement square footage by the square foot fee value.

For temporary use of property, referred to as a temporary construction permit, a factor is added to discount for temporary impacts and multiplied on a per-month basis. The formula looks like this:

Assessed lot value x 1.25 = **Market value**

Market value x 0.25 = **Fee value** (use a lower factor like 0.10 for areas the land owner can not develop, eg. sensitive areas)

Fee value/parcel size x easement area = **Easement fee**

Market value/parcel size x 0.01 x No. of months x permit area = **Permit fee** (where No. of months = construction time)

3.1.8.2.1 Time Assumed for Temporary Construction Permit Valuation

This alignment assumes typical open-cut trench construction for the majority of the construction. With typical production rates of approximately 200 feet per day, including final surface restoration, the range of construction times on the parcels from as little as one week to as much as 4 months. The methods selected for crossing the gas pipeline and Jenkins Creek pose a potential for slower per-day production in these limited areas. The time for each parcel is included in the individual parcel calculation.

3.1.8.2.2 Easement and Permit Values

This alignment requires easements and temporary construction permits from the following land owners, with the fees calculated in Table 5. These calculations are based on

preliminary easement sizing, which would change slightly during final design. It is not recommend paying for an easement from the City of Covington due to the low land value and in the interest of interagency cooperation. A lower fee and market values for the City of Covington, Northwest Pipeline, northerly Hawk, and Johnson parcels was applied due to current uses, use restrictions, and lack of other potential uses.

Table 5 Easement and Permit Values – Alternative 1 Alternatives Analysis Covington Water District					
Parcel Number	Owner	Easement Size (ft²)	Easement Fee (\$)	Temp. Permit Size (ft²)	Temp. Permit Fee (\$)
776040-1060	City of Covington	2,000	\$4	6,000	\$5
292206-9127	Northwest Pipeline	800	\$13	2,400	\$16
292206-9012	Jim Hawk	13,400	\$848	40,200	\$1,017
202206-9162	Jim Hawk	2,330	\$368	6,990	\$177
202206-9040	Jennifer Johnson	12,700	\$1,155	38,100	\$1,386
Totals			\$2,388		\$2,601

3.1.8.3 Infrastructure Improvements

The infrastructure improvement costs have been broken into several areas depending on the type of construction being proposed. Costs have been estimated depending on whether the proposed 16-inch transmission main is being constructed in an existing ROW, easement, wetland buffer, the wetland itself, or down a steep slope. The costs include construction of the proposed improvements from the Tank 2 site through the crossing of SR 18 and all the way to the intertie at SE 240th Street and 196th Avenue SE. Table 6 summarizes the location of the proposed construction including lengths and the estimated cost for the infrastructure improvements for Alternative 1.

In an attempt to compare open trench construction with the construction of the proposed line using a trenchless technology such as HDD, a second cost estimate for Alternative 1 using HDD was developed. It should be noted that this is a very rough estimation of potential costs and should not be used in determining the recommended alternative. The potential use of HDD should be reviewed and analyzed further during the design phase of the project if a pipeline construction alternative is selected. This recommendation is based on the amount of potential risk involved with this type of construction and the need for extensive geotechnical investigations. While cost of the infrastructure improvements may be higher for a HDD project, it has the potential to reduce the wetland mitigation costs and the length of time required for permitting. Table 7 summarizes the estimated costs associated with HDD construction.

Table 6 Infrastructure Improvements - Alternative 1 Open Trench Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	670	LF	\$175	\$117,250
2	16-inch DI Water in Easement	2,150	LF	\$150	\$322,500
3	16-inch DI Water in Wetland Buffer	365	LF	\$175	\$63,875
4	16-inch DI Water in Wetland Open Trench on Piles	520	LF	\$1,050	\$546,000
5	16-inch DI Water on Steep Slope	130	LF	\$500	\$65,000
6	Gas Main Crossing	1	LS	\$25,000	\$25,000
7	16-inch DI Water in ROW (north of SR 18)	2,700	LF	\$175	\$472,500
				Subtotal	\$1,612,125
				Tax (8.6%)	\$138,643
				TOTAL	\$1,750,768

Table 7 Infrastructure Improvements - Alternative 1 HDD Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	670	LF	\$175	\$117,250
2	16-inch DI Water in Easement	2,150	LF	\$150	\$322,500
3	16-inch DI Water in Wetland Buffer Directional Drill	365	LF	\$800	\$292,000
4	16-inch DI Water in Wetland Directional Drill	520	LF	\$800	\$416,000
5	16-inch DI Water on Steep Slope	130	LF	\$500	\$65,000
6	Gas Main Crossing	1	LS	\$25,000	\$25,000
7	16-inch DI Water in ROW (north of SR 18)	2,700	LF	\$175	\$472,500
				Subtotal	\$1,710,250
				Tax (8.6%)	\$147,082
				TOTAL	\$1,857,332

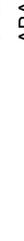
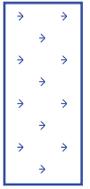
As noted in Section 3.1.6 Level of Service, Alternative 1 as shown in Figure 2 cannot meet the needs of the District with regard to fire flow and residual pressure due to the headloss associated with connecting the new transmission main to the existing subdivision piping. Based on that information, a separate cost estimate was generated to evaluate new transmission main from the existing Tank 2 site to an intersection point with Alternative 1 by going through the Broadleaf development. In essence, this constitutes the first 1,560 feet of Alternative 2 as seen in Figure 9.

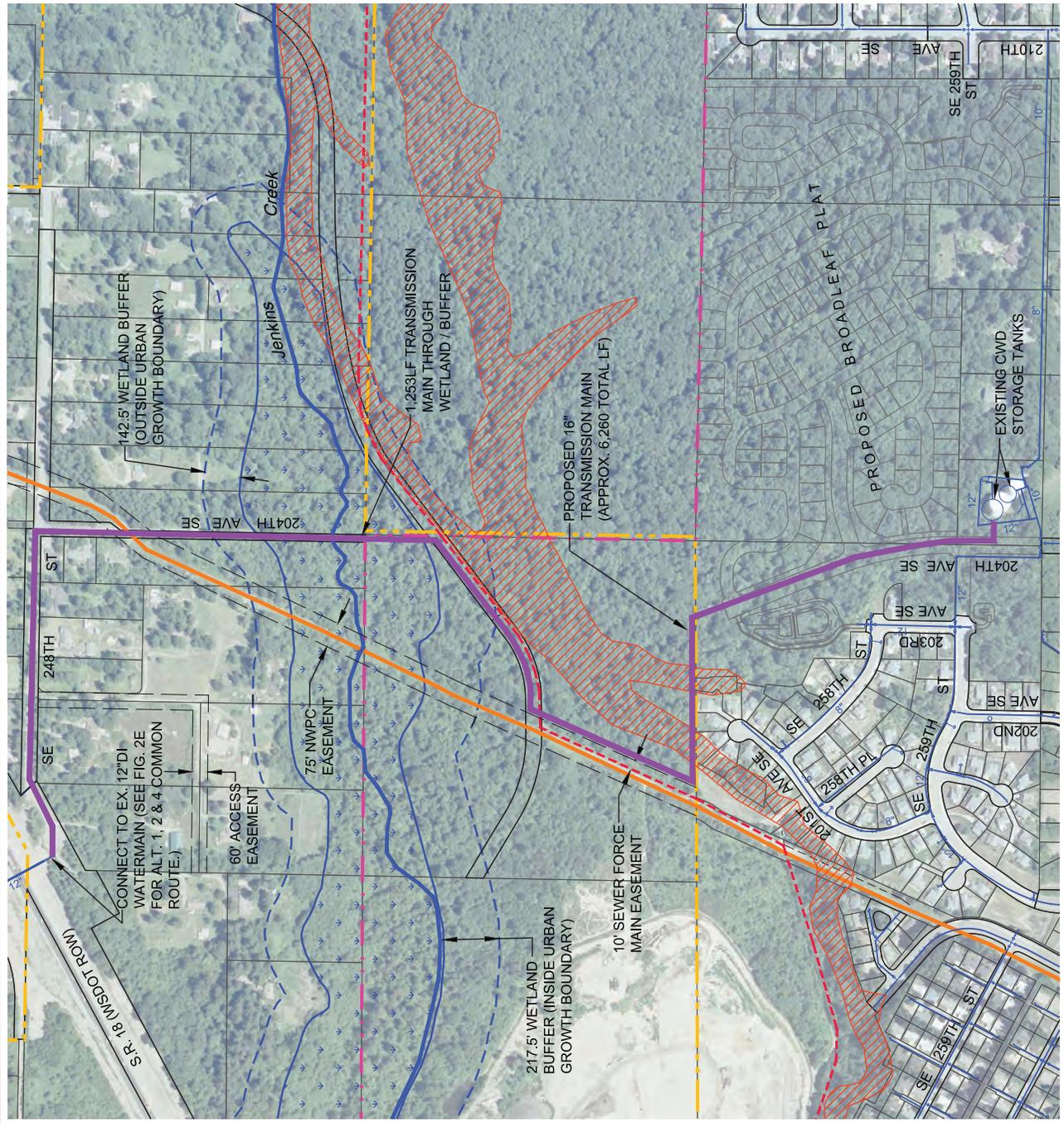
COVINGTON WATER DISTRICT

M-34 TRANSMISSION MAIN ALTERNATIVE 2 EAST ALIGNMENT



LEGEND

-  PROPOSED WATERMAIN
-  GAS PIPELINE
-  CWD CORPORATE BOUNDARY
-  EXISTING WATERMAIN
-  URBAN GROWTH BOUNDARY
-  ABANDONED FORCE MAIN
-  APPROXIMATE WETLAND BOUNDARY
-  APPROXIMATE STEEP SLOPE AREA



The cost to connect directly to the tank can be found in Table 8 and would need to be added to either of the tables above to make Alternative 1 viable.

Table 8 Infrastructure Improvements - Alternative 1 Modification Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	1,090	LF	\$175	190,750
2	16-inch DI Water in Easement	220	LF	\$150	33,000
3	16-inch DI Water on Steep Slope	250	LF	\$500	125,000
				Subtotal	\$348,750
				Tax (8.6%)	\$29,993
				TOTAL	\$378,743

3.1.8.4 Summary

Table 9 summarizes all of the anticipated costs associated with Alternative 1. The table includes costs for permit fees, wetland mitigation, engineering (design, permitting, and construction), easement acquisition, District fees, and construction costs. The engineering costs are based on 25% of the anticipated construction cost before tax and the District fees are based on 7% of the construction cost before tax. A 20 percent contingency factor was applied to account for additional project uncertainties.

Table 9 Total Project Cost - Alternative 1 Alternatives Analysis Covington Water District		
Description	Costs for Open Trench Construction	Costs for HDD Construction
Construction Cost w/WSST	\$2,129,511	\$2,236,075
Engineering (Design, Permitting & Construction)	\$490,219	\$514,750
Permit Fees	\$9,700	\$9,700
Easement Costs/Temporary Construction Permits	\$4,989	\$4,989
District Legal & Administration	\$137,261	\$144,130
Wetland Restoration & Mitigation	\$300,000	\$0
Subtotal	\$3,071,680	\$2,909,646
Contingency (20% rounded)	\$614,000	\$582,000
TOTAL	\$3,685,680	\$3,491,646

3.2 Alternative 2

An aerial view of the proposed transmission main route unique to Alternative 1 is presented in Figure 9. A close-up of the piping modifications common to Alternatives 1, 2, and 4, and adjacent to the 600 zone, is presented in Figure 3.

3.2.1 Environmental Impact

3.2.1.1 *Rural Areas and Steep Slopes*

There are moderate steep slopes along Alternative 2; however the slopes are not steep enough to require any special construction or mitigation requirements beyond that for normal open-trench construction through a rural forested area. Required surface restoration in these areas will be equivalent to those of Alternative 1.

3.2.1.2 *Covington Streams and Wetlands*

As mentioned previously, both Alternative Route 1 and Alternative Route 2 will pass through Jenkins Creek and an associated wetland midway along the alignments.

3.2.1.2.1 Impacts

Approximate impact quantities for Alternative 2 are summarized in Table 10. The impact quantities were based on a 30-foot-wide area for clearing and grading along the route alternatives. These estimated impact quantities do not include any additional impacts that may occur associated with construction access or staging areas. As with Alternative 1, if directional drilling is determined to be a viable option, it is possible that wetland, stream, and buffer impacts may be avoided.

Table 10 Estimated Wetland, Stream, and Buffer Impacts – Alternative 2 Alternatives Analysis Covington Water District			
Alternative	Wetland Impact (square feet)	Stream Impacts (square feet)	Buffer Impacts (square feet)
Alternative 2	18,000	300	13,000

3.2.1.2.2 Mitigation

Mitigation requirements will be nearly identical for Alternatives 1 and 2. See Alternative 1 for a detailed description of requirements.

3.2.2 Property Acquisition

3.2.2.1 *Current Property Owners*

3.2.2.1.1 *ECL Investors, LLC – (parcel # 776040-1070)*

This company owns the proposed Broadleaf plat and is well known to the District. The Broadleaf plat design includes a water main along this proposed route, although the pipe size will be increased to 16-inch by this project.

3.2.2.1.2 Jim Hawk – (parcel # 202206-9012)

Mr. Hawk owns several very large adjacent parcels that are collectively leased to the operator of a gravel mine, Lakeside Industries. This alignment proposes to cross one of those parcels. The District acquired an earlier right of entry from Mr. Hawk for this parcel. Mr. Hawk previously directed the District to contact the gravel mine operator for site access.

3.2.2.2 Easements

The Hawk parcel includes the 75-foot gas main easement.

SCWSD owns an easement along the east edge of the Northwest Pipeline parcel for a sewer force main. This easement also includes an abandoned 10-inch ductile iron sewer force main that runs off to the west near the Plat of Shire Hills.

The City of Covington is potentially interested in co-locating a trail over the water main easement.

3.2.2.2.1 Restrictions

Crossing the Broadleaf Plat will require coordination as to construction timing with the developer. The planned road along the proposed alignment requires significant cut and fill sections if constructed prior to the plat work.

This alignment does not propose to cross the large gas mains.

3.2.2.2.2 Requirements

Easements may vary in width, clearing and restoration requirements, and length of time required for construction within the easement and the temporary construction permit area depending on surface conditions, topography, planned type of construction, and proximity of improvements.

Permanent easements for the constructed transmission main can likely be limited to 10 feet in width in all areas. Because these easements restrict surface uses, they are most often placed in areas where other uses are either already restricted or unlikely, such as along property lines.

3.2.2.3 Right of Way

There are two separate ROW jurisdictions associated with this alignment.

1. The City of Covington governs the ROW within 204th Avenue SE, in case any work needs to happen here.
2. King County governs the semi-improved Lund Road and also SE 248th Street including where it turns to the south at the west end.

ROW locations and widths are shown previously in Figure 6.

3.2.2.3.1 Conditions and Restoration

The ROW of 204th Avenue SE south of the District's tanks is fully improved with curb, gutter and sidewalk to the north edge of the plat served by SE 262nd Street. The utilities are underground and the water valves are well-marked. Disturbance of the asphalt seems unlikely but would be minimal if required. Restoration would likely consist of simply patching. The proposed alignment runs across easements (Figure 10, detail 4) until it enters the semi-improved Lund Road, which is a dirt (no gravel) road with deep ruts and potholes (Figure 10, detail 1). Although shown as King County ROW, this road is not maintained by King County. Construction within this ROW should be permitted and restoration is likely to consist of compaction, grading to drain, and crushed rock surfacing to reduce erosion.

From Lund Road, this alignment turns north and crosses more of the Jim Hawk parcel, which includes wetlands and Jenkins Creek (conditions are similar to Figure 10, details 2 and 3). The alignment enters the ROW of 204th Avenue SE again in the vicinity of Jenkins Creek. It is approximately 540 feet from Lund Road to Jenkins Creek and approximately 310 feet from the north edge of Jenkins Creek to the south end of the improved portion of 204th Ave SE on the north side of the creek. The ROW is 30 foot wide south of the gas main crossing and 60 foot wide north of the gas mains (see Figure 6 for reference). The ROW is 60 feet wide on 204th Avenue SE north of the gas mains but the improvements are the same throughout. The road is patched and generally in fair condition (Figure 10, details 5 and 6). It seems likely King County and the local residents using this as their sole access road would desire a full overlay for restoration. Once the alignment reaches SE 248th Street, the conditions are the same as described above for Alternative 2 (Figure 10, detail 7).

3.2.3 Permitting

The following section describes anticipated permitting requirements for this alignment. The project lies within two land use jurisdictions and two ROW jurisdictions.

3.2.3.1 SEPA

The pipe size and alignment through critical areas will require preparation of a SEPA Environmental Checklist and a SEPA Determination by the District. This is a typical process and no special concerns are anticipated during the SEPA process.

3.2.3.2 Permit Type, Fee, Effort to Prepare, and Schedule

Anticipated permits are shown in Table 11. ROW permits typically have fixed fees, while some permit fees, such as those for grading permits, vary as a result of impacted area. Other permits have no submittal fee.

Table 11 Permitting Requirements – Alternative 2 Alternatives Analysis Covington Water District					
Agency	Permit Type	Permit Fee	Effort to Prepare	Schedule	Notes
City of Covington	ROW	\$300 - City usually bills utilities directly	Easy	3 weeks	Traffic Control Plan required with permit submittal
City of Covington	Grading	Approx. \$2400 for Critical Areas Exception review plus approx \$700 for grading permit	Easy	3 weeks	Based on 520 lf trench 4 ' wide and 4' deep- Project may apply for Critical Areas Exception for required utility line activities
King County	ROW	\$300 – County usually bills utilities directly	Easy	3 weeks	
King County	Clearing and grading permit	Approx. \$5500	Moderate	1-2 months	Based on 2700 lf cleared 30' wide and trench 4' deep and 4' wide with 5 hrs of DDES field inspection
Washington Department of Fish and Wildlife	Hydraulic Project Approval	None	Difficult	1-2 months	Could be a fish window limiting work to dry conditions
US Army Corps of Engineers	Nationwide Permit 12 for Utility Line Activities	None	Difficult	6-9 months	Federal nexus means delay due to ESA Section 7 consultation
Department of Ecology	Federal Permit 401 for wetland mitigation	None	Moderate to difficult due to quality of wetland	Issued concurrently with Corps Permit 12	Can be issued up to 180 days after Permit 12, but usually issued concurrently
WSDOT	Franchise Amendment	\$500	Fairly easy	3 months	Required for changing size of main inside existing casing

3.2.3.3 Supporting Studies Required

Work within critical areas is likely to require specific critical area studies, including wetlands/streams and geological studies. These specialties are already included on the project team and will be tasked with preparing supporting studies. Studies will include Critical Areas Reports for Geotechnical and Environmental aspects, as well as a Biological Evaluation to support wetland and stream crossing.

3.2.3.4 Permit Conditions

Permit conditions are either prescriptive or applied by the permit reviewer, or both. Conditions usually refer to construction timing to reduce traffic or environmental impacts, or to restoration requirements. No unusual permit conditions are anticipated. The conditions expected include:

- Schedule restrictions on the Jenkins Creek crossing
- Dewatering water quality monitoring requirements
- Flagging or fencing of clearing limits
- Asphalt restoration within roadways
- Surface restoration outside of roadways including location-specific hydroseeding and buffer restoration planting
- 3 to 5 years of restoration planting survival monitoring and removal of invasive species in restoration area

3.2.4 Operations & Maintenance

Similar to Alternative 1, the majority of the Alternative 2 alignment will be located in or near improved ROW or access easements for ease of operation and maintenance. The southern portion of Alternative 2, as shown in Figure 9, will eventually be accessed from the Broadleaf development to the west of the Tank 2 site. Once through the Broadleaf development, the line will turn west down the steep slope to the east side of the existing gas alignment. The line will be difficult to maintain on the steep slope. The alignment can be easily accessed from the Williams gas easement until the proposed line turns east on the Lund Road ROW. The Lund Road ROW is currently poorly maintained and is generally wet and muddy. The road is also blocked off at the gas alignment. The proposed line would be difficult to maintain both with the Lund Road ROW and into the well developed wetland.

Once the line is within the existing wetland, it will be very difficult to access and maintain if required. Depending on the method of construction used to build the proposed water line across the wetland, it may be impossible to access the line. If the line is constructed using HDD, the line will be installed at a depth which will make it impossible to access the line. If the line is constructed using open trench construction, there may be opportunity to access the line if required.

The northern portion of Alignment 1 between the existing wetland and the crossing of SR 18 can be accessed from the existing 204th Avenue SE ROW. The existing road is paved up to a point approximately 310 feet north of the existing wetland. While the paved surface is narrow, it would be easy to maintain the proposed water line from this point to the SR 18 crossing.

3.2.5 Constructability/Risk

3.2.5.1 *General Subsurface Conditions*

The general subsurface conditions for Alternative 2 are anticipated to be identical to those identified for Alternative 1.

3.2.5.2 *Planned Construction within Easements*

As with Alignment 1, Alignment 2 primarily assumes open-cut trench construction. Requirements are nearly identical to those outlined for Alternative 1. The stream crossing presents the possibility for requiring wider easement areas, as described below, to allow construction other than simple open cut methods.

3.2.5.3 *Easement Surface Conditions and Proximity of Improvements*

Most of the easement areas are not maintained to a high level, such as manicured lawns and gardens. The easement across the Hawk parcel may be as simple as hydroseeding. If the wetlands or their buffers are entered, it can expect to provide a fully designed and maintained restoration planting as a permit condition. If an open-cut Jenkins Creek, the creek bed restoration will likely consist of a designed mixture of gravels.

Generally, this alignment offers relatively low costs for easement surface restoration.

3.2.5.3.1 Broadleaf Plat

Restoration on the Broadleaf parcel is going to be a negotiated item between the District and the developer and may include minimal restoration depending on timing of the plat construction.

3.2.5.3.2 Hawk Parcel

There is second growth forest on both sides of the gas main easement, with alder, fir, maple, vine maple, and understory shrubs (for reference see Figure 10, detail 4). Further west, the gravel pit is still active so alignment of the water main should be adjacent to the gas easement. The alignment enters the Lund Road ROW and follows that to the east property line before re-entering easement area and heading north along the east line of the parcel. The surface cover is forest and then wetlands associated with Jenkins Creek.

The wetland begins at the base of the slope immediately adjacent to the north edge of Lund Road and continues to a point 310 feet south of the improved road on 204th Avenue SE north of the creek. There is standing and running water throughout this area of the wetland

and many large trees. Permit agencies would look unfavorably on any proposal to clear vegetation along this alignment.

3.2.5.4 Construction Impact

3.2.5.4.1 Open Trench Construction

There are no conditions along Alternative 2 that would preclude the use of open-trench construction. There are moderately steep slopes along the south property line of the Lakeside Asphalt property, but these slopes are not steep enough to require any type of special excavation equipment. The seasonal variations in Jenkins Creek stream levels apply to Alternative 2 as well, and again, construction during the summer months to avoid trench wall instability and dewatering would be prudent.

3.2.5.4.2 Horizontal Directional Drill (HDD)

The challenges presented for HDD are the same for both Alternatives 1 and 2. Again, soils in the area have a layer open-work gravel and cobbles that make HDD risky. The opinion represented in the geotechnical briefing estimates the probability of success at 50%.

3.2.5.4.3 Easement Width

The space obtained for permanent easements is typically less than that needed during construction so the two documents have been identified separately. Permanent easements required for Alternative 2 are described earlier in the Property Acquisition section. Temporary construction permits are “easements” that expire after a specified time and are therefore not really easements. Widths vary depending on topography, planned depth of construction, need for staging areas and vehicle movement, along with other construction factors. Simple linear construction of a 16-inch transmission across a relatively flat and clear area can typically occur within a 30 foot wide permit area.

Broadleaf Parcel

A 30 foot wide temporary construction permit should suffice. More width may be necessary but seems unlikely.

Hawk Parcel

A bore pit with staging area may be required on the Hawk parcel if Jenkins Creek is not crossed by open cut methods, therefore a rectangle of approximately 40 feet by 15 feet may be required. The temporary construction permit for the main along the east side of the gas easement can likely be 30 feet wide.

3.2.6 Level of Service

The level of service outlined in TM1 can be maintained with the piping configuration proposed for Alternative 2. As with Alternative 1, the required minimum residual pressure during fire flows is the criterion most difficult to meet. In order to meet the desired level of

service, an additional section of 16-inch piping will need to be added at the north end of the alignment adjacent to the 600 zone. Opening the three check valves connecting the 600 to the 650 zone during a fire will be required to meet minimum residual pressures. The pipe flows for this configuration are presented in Figure 11. The piping configuration in this area, which is common to Alternatives 1, 2, and 4, is shown in Figure 3.

The common route will use the existing 12-inch line running along 200th Ave SE beginning at the SR 18 stub-out to the intersection with 244th St. At the intersection with 244th St. a new 16 inch line will be installed parallel to the existing 12-inch line. The new pipe will run north along 200th Ave SE, head west at SE 240th St, and end at the intersection with 196th PI SE, where it will tie into the 12-inch line connected to the 650 zone along SE 240th St. The existing 12-inch pipe adjacent to the 600 zone will be closed off from the new transmission main. Only 3 customers served on the existing 12 inch line along 200th Ave SE will be rezoned to the new 660, while the remaining 600 customers will not be rezoned. The existing customers in the 650 zone will become 660 with the new 16 inch pipeline.

3.2.7 Schedule

The anticipated schedule for Alternative 2 is identical to Alternative 1 because all of the same permits and design requirements are the same for each alternative. The schedule issues are restated below.

3.2.7.1 *Survey/Geotechnical Schedule*

Once the BODR has been completed and approved by the District and a scope and budget for design has been approved, effort on the surveying and geotechnical investigations of the selected alternative will immediately begin. The level of effort required for the geotechnical investigation will be dependent on the type of construction proposed as greater geotechnical detail is required for an HDD project.

3.2.7.2 *Easement Acquisition Schedule*

The level of effort required for easement acquisition is dependent on the willingness of the property owner to work with the District. If the property owner is willing to grant an easement the entire process can be accomplished in a couple of weeks. If the property owner is not willing, it may take longer to negotiate for the easement or possibly go through the condemnation process. It is expected that the easement process could be completed in a two month time period during the design phase.

3.2.7.3 *Design Schedule*

A three step process has been identified for the design phase of the project. First, a 60% design will be submitted for review by the District. Revisions will be incorporated and refined for a 90% submittal before the Final design is submitted. A five month process for the design phase of the project is identified.

Covington Water District M-34 Project
 Alternative 2 Junction Pressure & Pipe Flow
 3000 gpm Fire Flow at Tahoma High School
 BHC 04-29-10 Working Map

- Junction PRESSURE**
- Less than 20
 - 20-25
 - Greater than 25
- Pipe FLOW**
- Less than 5
 - 5-25
 - 25-100
 - 100-500
 - 500-1000
 - Greater than 1000

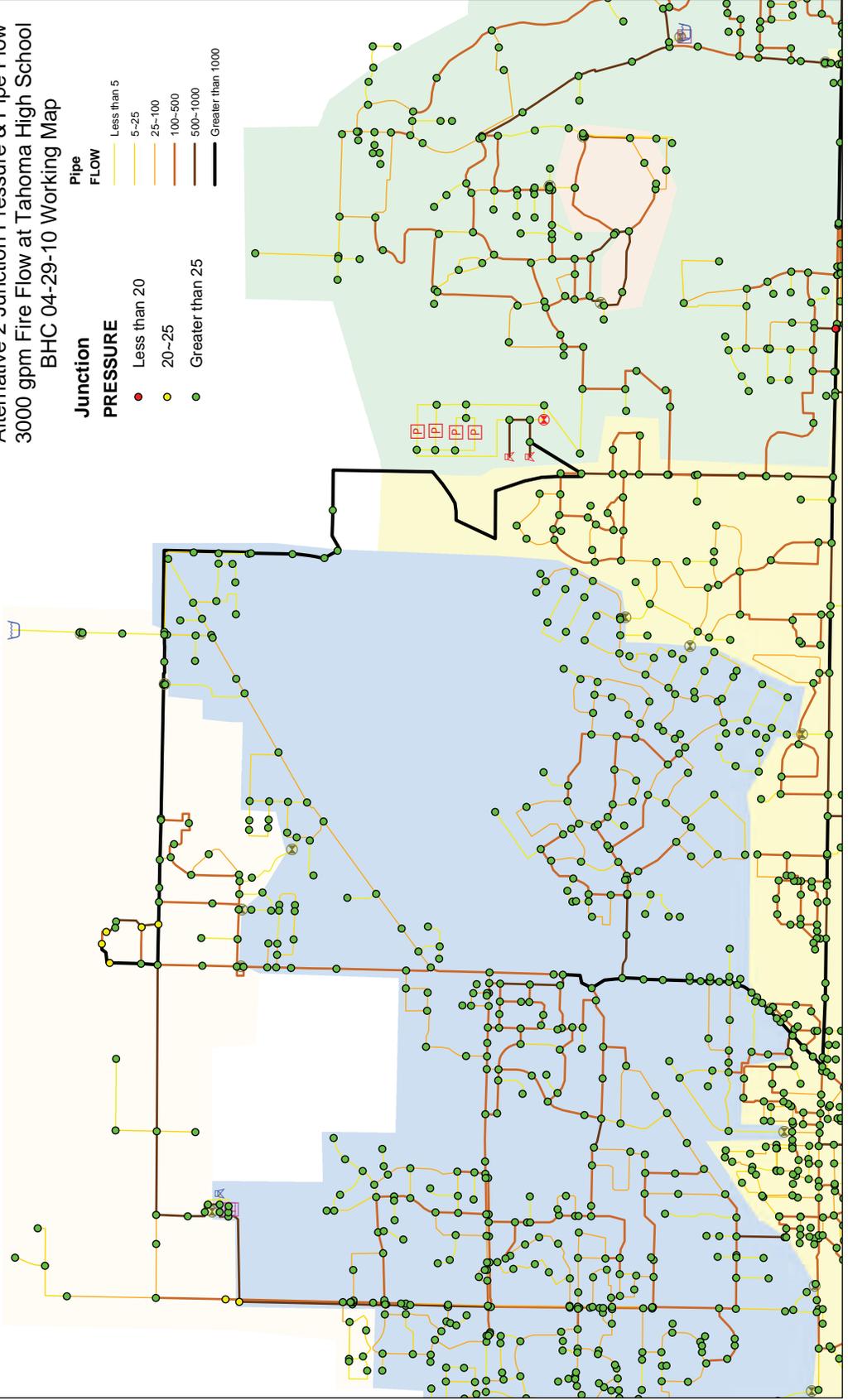


FIGURE NO. 11

ROTHHILL
 Roth Hill, LLC Tel 425.969.9448 www.rothhill.com
 11130 NE 33rd Place, Suite 200 Bellevue, WA 98004

3.2.7.4 Permitting Schedule

The major factor affecting the project schedule for Alternative 2 will be the need to obtain a Corps of Engineers permit for the crossing of Jenkins creek. It is likely that a Corps permit will be required whether the line is constructed using open trench construction or by horizontal directional drilling. It is possible that it will take less time to obtain the permit if the line is constructed using HDD. In an attempt to reduce the overall project schedule, it is recommended that permits are submitted based on the 60% design. Based on an estimate of 6 to 9 months to acquire a Corps permit, a 7 month permit process is shown. This will be more than enough time to acquire the additional permits required beyond the Corps permit.

3.2.7.5 Construction Schedule

Ideally, this project should be constructed in the summer when the water in Jenkins Creek and associated tributary's are at their lowest. Based on a 2009 site visit, there is evidence that the water in Jenkins Creek dries up in the summer although it is not known at what depth the groundwater shows up. Table 12 summarizes the anticipated time for each of the items listed above along with a proposed construction schedule showing the construction in the wetland occurring in the summer months.

Table 12 Alternative 2 Schedule Alternatives Analysis Covington Water District		2010							2011											
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
		Design																		
Predesign	■																			
Survey/Geotech		■																		
Final Design			■																	
Easement Acquisition				■																
Permitting						■														
Construction														■						
Transmission Main Online																				◆

3.2.8 Cost

3.2.8.1 Wetland Mitigation

Assumptions for the basis of cost for Alternative 2 wetland mitigation are the same as those outline for Alternative 1. The general estimated cost for restoration only is \$124,000. For restoration plus 4:1 wetland mitigation the cost ranges is estimated at \$380,000 to \$440,000.

3.2.8.2 Easement Valuation Formula

The easement valuation formula is described earlier in this report.

3.2.8.2.1 Time Assumed for Temporary Construction Permit Valuation

This alignment assumes typical open-cut trench construction for the majority of the construction. With typical production rates of approximately 200 feet per day, including final surface restoration, construction time is expected to run for approximately 4 months. The method selected for crossing Jenkins Creek poses a potential for slower per-day production in this limited area. The time for each parcel is included in the individual parcel calculation.

3.2.8.2.2 Easement and Permit Values

This alignment requires easements and temporary construction permits from the following land owners, with the fees calculated and shown per the standard formulas (Table 13). These calculations are based on preliminary easement sizing, which would change slightly during final design. It is not recommend paying ECL Investors for an easement but instead coordinating construction of the main as part of the plat development. For the Hawk easement, the fee value was reduced to a 0.1 multiplier due to the severely limited potential use of this area by the owner.

Table 13 Easement and Permit Values - Alternative 2 Alternatives Analysis Covington Water District					
Parcel Number	Owner	Easement Size (ft²)	Easement Fee (\$)	Temp. Permit Size (ft²)	Temp. Permit Fee (\$)
776040-1070	ECL Investors, LLC	10,670	\$8,815 ⁽¹⁾	32,010	\$4,231 ⁽¹⁾
292206-9012	Jim Hawk	15,500	\$980	46,500	\$1,176
Totals			\$9,795		\$5,407
Notes:					
(1) It is not recommended paying ECL Investors for an easement but instead coordinating construction of the main as part of the plat development.					

3.2.8.3 Infrastructure Improvements

The infrastructure improvement costs have been broken into several areas depending on the type of construction being proposed. Costs have been estimated depending on whether the proposed 16-inch transmission main is being constructed in an existing ROW, easement, wetland buffer, the wetland itself, or down a steep slope. The costs include construction of the proposed improvements from the Tank 2 site through the crossing of SR 18 and all the way to the intertie at SE 240th Street and 196th Avenue SE. Table 14 summarizes the location of the proposed construction including lengths and the estimated cost for the infrastructure improvements for Alternative 2.

Table 14 Infrastructure Improvements - Alternative 2 Open Trench Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	2,740	LF	\$175	\$479,500
2	16-inch DI Water in Easement	1,880	LF	\$150	\$282,000
3	16-inch DI Water in Wetland Buffer	615	LF	\$175	\$107,625
4	16-inch DI Water in Wetland Open Trench on Piles	640	LF	\$1,050	\$672,000
5	16-inch DI Water on Steep Slope	380	LF	\$500	\$190,000
6	Gas Main Crossing	1	LS	\$25,000	\$25,000
7	16-inch DI Water in ROW (north of SR 18)	2,700	LF	\$175	\$472,500
				Subtotal	\$2,228,625
				Tax (8.6%)	\$191,622
				TOTAL	\$2,420,247

In an attempt to compare open trench construction with the construction of the proposed line using a trenchless technology such as horizontal directional drilling, a second cost estimate is for Alternative 2 using HDD. It should be noted that this is a very rough estimation of potential costs and should not be used in determining the recommended alternative. It is recommended that the potential use of HDD be reviewed and analyzed further during the design phase of the project if a pipeline construction alternative is selected. The recommendation is based on the amount of potential risk involved with this type of construction and the need for extensive geotechnical investigations. While cost of the infrastructure improvements may be higher for a HDD project, it has the potential to reduce the wetland mitigation costs and the length of time required for permitting. Table 15 summarizes the estimated costs associated with HDD construction.

3.2.8.4 Summary

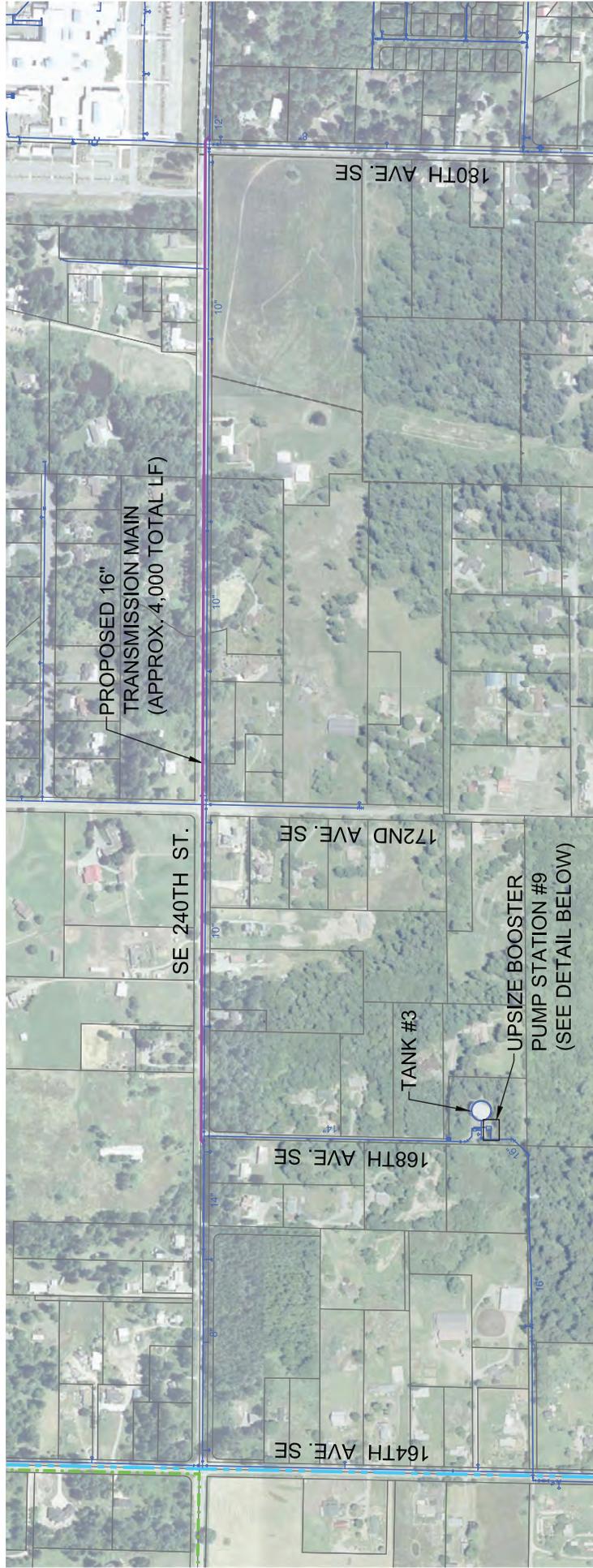
Table 16 summarizes all of the anticipated costs associated with Alternative 2. The table includes costs for permit fees, wetland mitigation, engineering (design, permitting, and construction), easement costs, and construction costs. The engineering costs are based on 25% of the anticipated construction cost without sales tax and the District legal and administration costs are 7% of the construction cost without sales tax. A 20 percent contingency factor is included to account for additional project uncertainties.

Table 15 Infrastructure Improvements - Alternative 2 HDD Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	2,740	LF	\$175	\$479,500
2	16-inch DI Water in Easement	1,880	LF	\$150	\$282,000
3	16-inch DI Water in Wetland Buffer Directional Drill	615	LF	\$800	\$492,000
4	16-inch DI Water in Wetland Directional Drill	640	LF	\$800	\$512,000
5	16-inch DI Water on Steep Slope	380	LF	\$500	\$190,000
6	Gas Main Crossing	1	LS	\$25,000	\$25,000
7	16-inch DI Water in ROW (north of SR 18)	2,700	LF	\$175	\$472,500
				Subtotal	\$2,453,000
				Tax (8.6%)	\$210,958
				TOTAL	\$2,663,958

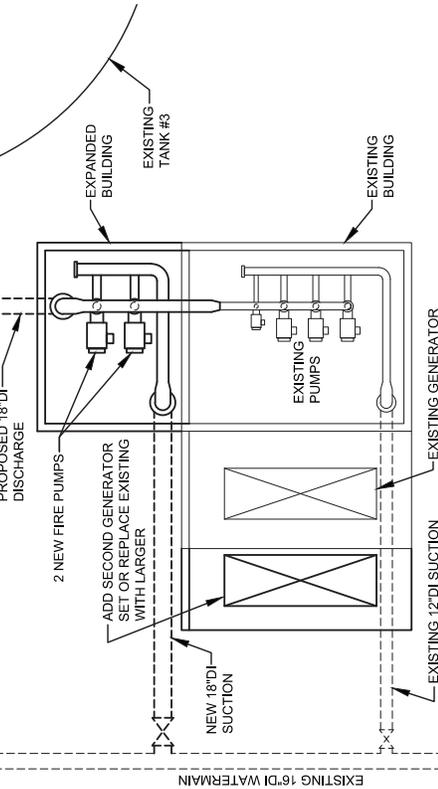
Table 16 Total Project Cost - Alternative 2 Alternatives Analysis Covington Water District		
Description	Costs for Open Trench Construction	Costs for HDD Construction
Construction Cost w/WSST	\$2,420,247	\$2,663,958
Engineering (Design, Permitting & Construction)	\$557,156	\$613,250
Permit Fees	\$9,700	\$9,700
Easement Costs/Temporary Construction Permits	\$15,200	\$15,200
District Legal & Administration	\$156,004	\$171,710
Wetland Restoration & Mitigation	\$440,000	\$0
Subtotal	\$3,598,307	\$3,473,818
Contingency (20% rounded)	\$720,000	\$695,000
TOTAL	\$4,318,307	\$4,168,818

3.3 Alternative 3

An aerial view of the proposed transmission main route unique to Alternative 1 is presented in Figure 9. A close-up of the piping modifications common to Alternatives 1, 2, and 4, and adjacent to the 600 zone, is presented in Figure 12.



SCALE IN FEET



BOOSTER PUMP STATION #9 DETAIL
NOT TO SCALE

LEGEND

- COVINGTON CITY LIMITS
- .-.- COORDINATED WATER SYSTEM PLAN (CWSP) SERVICE AREA
- CWD CORPORATE BOUNDARY
- EXISTING WATERMAIN
- PROPOSED WATERMAIN

**COVINGTON
WATER DISTRICT**
**M-34 TRANSMISSION MAIN
ALTERNATIVE 3
UPSIZED BOOSTER
STATION #9**

ROTHHILL
Roth Hill, LLC Tel: 425.869.9448 www.rothhill.com
11130 NE 33rd Place, Suite 200 Bellevue, WA 98004

FIGURE NO. 12

3.3.1 Environmental Impact

There will be minimal environmental impacts associated with Alternative 3. The pump station expansion will occur on District owned property and will not require any additional land for the new pump station. The proposed piping improvements will be constructed within the existing road prism of SE 240 Street.

3.3.2 Property Acquisition

3.3.2.1 *Easement Requirements*

This alternative will construct improvements entirely within District property and public ROW so easements are not required. The Contractor may need to acquire temporary staging areas but the District does not necessarily need to acquire these ahead of time.

3.3.2.2 *Right of Way*

This alternative lies within King County jurisdiction from the existing tank/pump station site to the centerline of 180th Avenue SE, where it enters City of Covington jurisdiction. SE 240th Street lies within City of Covington jurisdiction to the east margin of 196th Avenue SE, where it re-enters King County jurisdiction.

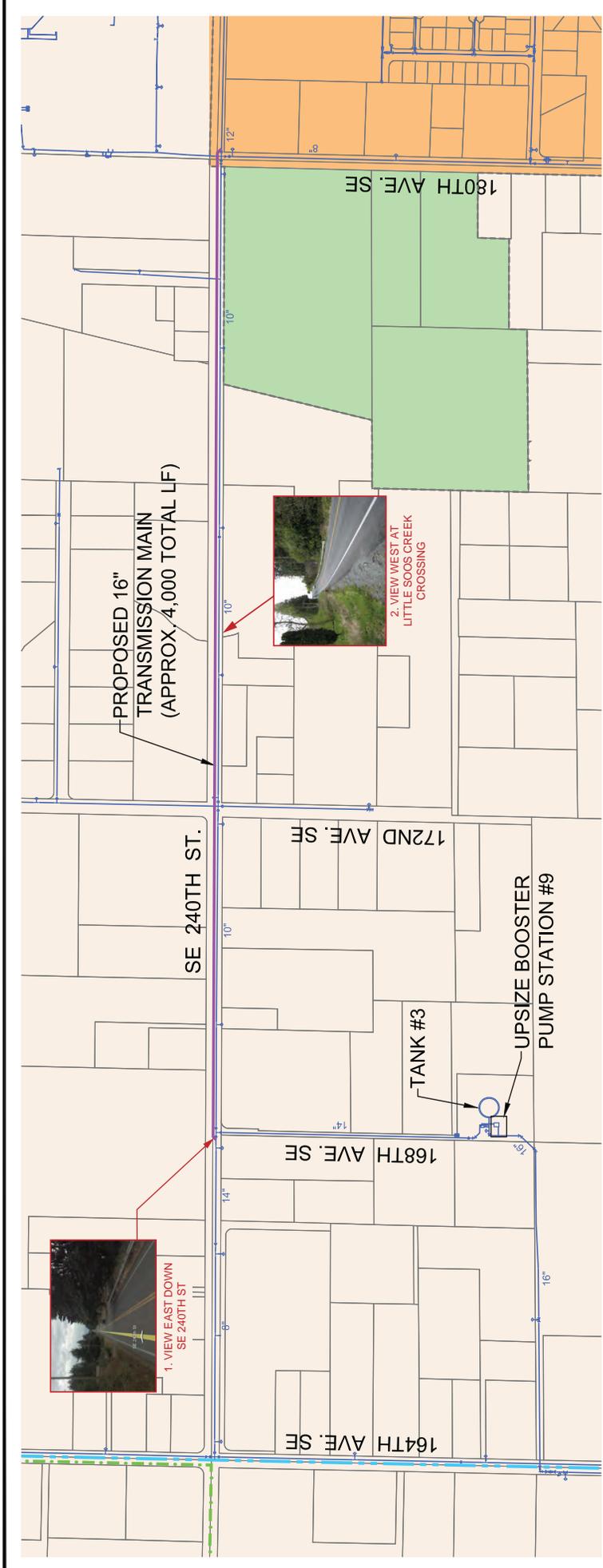
168th Avenue SE is a small private road leading to several homes and the District's reservoir and pump station site. A small stream crosses under this road near SE 240th Street. The new main will need to cross over the stream but that should not pose a problem. Temporary impacts to the neighbors pose the greatest issue on this road.

SE 240th Street is a busy arterial with heavy traffic in a fairly narrow roadway. It is a two-lane road with gravel shoulders. The road surface is in excellent condition with a full-width asphalt overlay sometime in the last 2 – 3 years. Any cutting of this road inside the fogline will require a full-width overlay. A large pipe is likely to lead to this requirement. The location of the high school and the fact this road provides a crossing under SR 18 into Maple Valley mean this road will be heavily travelled throughout the day and traffic control will be a major concern.

Detour options are poor, with through streets on approximately a one mile grid. Closing even one lane of this road would have major traffic impacts. Night work would help reduce the traffic impact and may be required by the two raid jurisdictions.

3.3.2.2.1 Other Utilities in ROW

Aerial utilities are located on both the north and south sides of SE 240th Street. The road shoulders vary in width and function, with ditches in some sections. King County considers ditches to be functional parts of the drainage utility and discourages utility construction in ditches or in the shoulder adjacent to ditches. In some areas the shoulder narrows considerably and there are guard rails above slopes (Figure 13, detail 1).



LEGEND

- COVINGTON CITY LIMITS
- COORDINATED WATER SYSTEM PLAN (CWSP) SERVICE AREA
- CWD CORPORATE BOUNDARY
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- KING COUNTY - RURAL RES.
- COVINGTON - MED. DENSITY RES.
- COVINGTON - PARKS

**COVINGTON
WATER DISTRICT**

**M-34 TRANSMISSION MAIN
ALTERNATIVE 3
DETAIL MAP**

FIGURE NO. 13



The most significant restriction along this roadway is the crossing of Little Soos Creek at approximately 174th Avenue SE (Figure 13, detail 2). The shoulders narrow to nearly nothing and the road drops off steeply on both sides. The pipe would have to cross over the stream culvert to avoid a very deep and expensive crossing under the creek.

3.3.3 Permitting

In addition to ROW permits from King County and the City of Covington, Washington Department of Fish and Wildlife Hydraulic Project Approval (HPA) permits will likely be required for the stream crossings on both 168th Avenue SE and SE 240th Street, although neither is likely to be difficult or include significant restrictions because the proposed construction is unlikely to have any effect on the streams.

3.3.3.1 *SEPA*

The pipe size and alignment through critical areas will require preparation of a SEPA Environmental Checklist and a SEPA Determination by the District. This is a typical process and no special concerns are anticipated with the SEPA process.

3.3.3.2 *Permit Type, Fee, Effort to Prepare, and Schedule*

Anticipated permits are shown in Table 17. ROW permits typically have fixed fees, while some permit fees, such as those for grading permits, vary as a result of impacted area. Other permits have no submittal fee.

Table 17 Permitting Requirements – Alternative 3 Alternatives Analysis Covington Water District					
Agency	Permit Type	Permit Fee	Effort to Prepare	Schedule	Notes
City of Covington	ROW	\$300 - City usually bills utilities directly	Easy	3 weeks	Traffic Control Plan required with permit submittal
King County	ROW	\$300 - City usually bills utilities directly	Easy	3 weeks	Traffic control will be a major concern
WDFW	HPA	none	Easy	2 months	Restrictions unlikely
King County	Building permit	up to \$15,000 – based on project value and anything they can squeeze out of you	Unnecessarily difficult	6 months	Pre-submittal conference helps considerably in easing this process

3.3.3.3 *Schedule Implications*

The primary potential for delay lies with King County building permitting and their history of noncommittal communication and changing requirements. The actual submittal requirements are relatively clear but individual reviewers often interpret these in different ways. A pre-submittal conference at King County DDES will help clarify requirements. Starting this early in the process will allow for significant overlap in the design and permitting schedules to keep the project on the original schedule.

3.3.4 Operations & Maintenance

The operation and maintenance of Alternative 3 will not increase over what is currently being done by the District. The District already maintains the existing pumps in the pump station. This alternative would replace the pumps with ones that can provide the fire flow to the 650 zone. Likewise, the District already maintains the existing 10-inch diameter water line in SE 240th Street. This alternative would only replace that existing 10-inch diameter water line with a 16-inch water line.

3.3.5 Constructability/Risk

Constructability of the proposed improvements required for Alternative 3 is relatively easy. There is adequate access and room for construction of the new pump station expansion at the Tank 3 site. The only risk for construction of Alternative 3 will be the construction of the new 16-inch diameter transmission line in SE 240th Street, specifically at the creek crossing. SE 240th Street dips between where the existing line from the pump station ties into SE 240th Street and the end of the proposed improvements at 180th Avenue SE. There is an existing creek crossing in a culvert at the low point. The District has attempted to replace the existing water line in the past and has had opposition to disturbing the existing culvert. It is possible that the creek crossing could be constructed using a trenchless technology, such as bore and jack, but it would require additional study during the design phase if this alternative is selected.

3.3.6 Level of Service

Meeting the District's level of service criteria in the 650 zone will require upsizing the Tank 3 BPS to 3,200 gpm at 40-foot TDH. In addition, excessive velocity in the 10-inch line in SE 240th St requires increasing the line size to 16-inch (velocities are still greater than 8 ft/s using a 12-inch line). Figure 14 illustrates pipe flow and residual pressures for this scenario. Unlike Alternative 2, the check valves are not required to open to meet residual pressure requirements.

Covington Water District M-34 Project
 Upgrade Tank 3 BPS
 3000 gpm Fire Flow at Tahoma High School
 BHC 04-29-10 Working Map

- Junction PRESSURE**
- Less than 20
 - 20-25
 - Greater than 25
- Pipe FLOW**
- Less than 5
 - 5-25
 - 25-100
 - 100-500
 - 500-1000
 - Greater than 1000

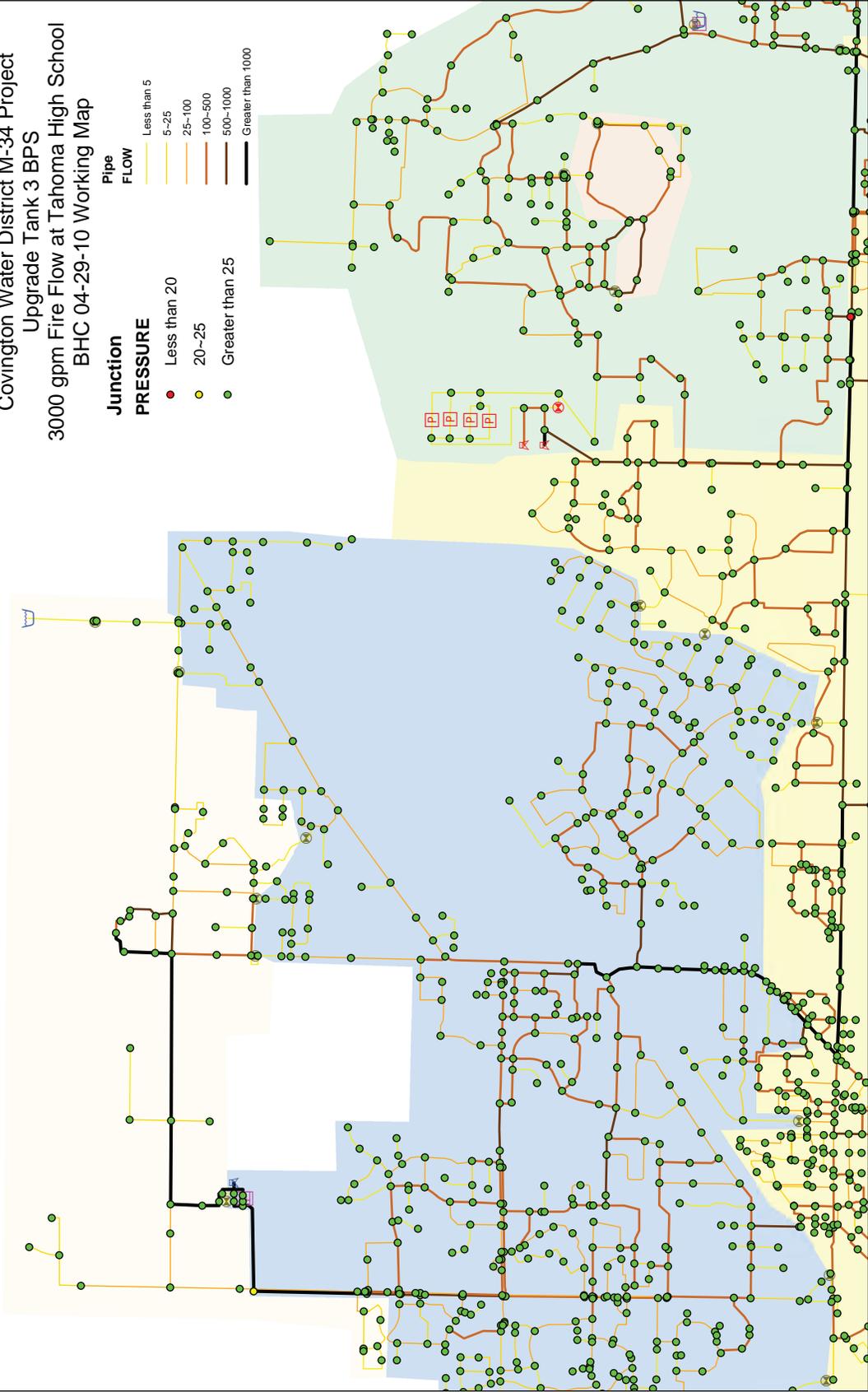


FIGURE NO. 14

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The existing pump station was also modeled to see if the current pumping configuration would be able to meet the old commercial fire flow criteria of 2,000 gpm for 2 hours. The model results indicate the existing BPS may just barely have the capacity to supply 2,000 gpm and meet residual pressure requirements. The manufacturer's pump curves are in the modeled pump station, however the results are so close to meeting the requirement that it may come down to pump station losses or impeller wear. The check valves open to provide additional flow for this scenario.

3.3.7 Schedule

While this alternative would not require a Corps of engineers permit like Alternatives 1 and 2, Alternative 3 would require a King County Building permit for the expansion of the existing pump station. Based on past experience, obtaining a King County Building permit can take as long as getting a Corps permit. It is possible that it will take less time to obtain the permit since the existing structure will be expanded and not a new one. Similar to a Corps permit, and in an attempt to reduce the overall project schedule, it is recommended that permits are submitted based on the 60% design. The 60% design should be completed in early November 2010, at which time the permits should be submitted. Based on an estimate of 6 months to acquire a King County building permit, the final design will be completed around May of 2011 so that the project can be bid once permits have been obtained. Table 18 shows the Alternative 3 schedule.

Table 18 Alternative 3 Schedule Alternatives Analysis Covington Water District		2010							2011											
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Design																				
Predesign		■																		
Survey/Geotech			■																	
Final Design				■																
Easement Acquisition				■																
Permitting					■															
Construction												■								
Pump Station Online																				◆

3.3.8 Cost

3.3.8.1 *Infrastructure Improvements*

Table 19 summarizes the estimated cost for the infrastructure improvements for Alternative 3.

Table 19 Infrastructure Improvements - Alternative 3 Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	3,920	LF	\$175	\$686,000
2	Site Piping	1	LS	\$25,000	\$25,000
3	Expand Building	1	LS	\$60,000	\$60,000
4	Pumps and Equipment	1	LS	\$45,000	\$45,000
5	Electrical Equipment	1	LS	\$80,000	\$80,000
6	Telemetry /Programming/ Controls	1	LS	\$10,000	\$10,000
7	Generator Set	1	EA	\$60,000	\$60,000
8	Site Improvements	1	LS	\$25,000	\$25,000
				Subtotal	\$991,000
				Tax (8.6%)	\$85,226
				TOTAL	\$1,076,226

3.3.8.2 Summary

Table 20 summarizes all of the anticipated costs associated with Alternative 3. The table includes costs for permit fees, engineering (design, permitting, and construction), District legal and administration, and construction costs. The engineering costs are based on a percentage of the anticipated construction cost. For the design of a building expansion, a percentage of 30% for engineering was applied and the same 7% for District legal and administration. A 20% contingency factor is applied to account for additional project uncertainties.

Table 20 Total Project Cost - Alternative 3 Alternatives Analysis Covington Water District	
Description	Costs for Construction
Construction Cost w/WSST	\$1,076,226
Engineering (Design, Permitting & Construction)	\$297,300
Permit Fees	\$21,000
Easement Costs/Temporary Construction Permits	\$0
District Legal & Administration	\$69,370
Wetland Restoration & Mitigation	\$0
Subtotal	\$1,463,896
Contingency (20% rounded)	\$293,000
TOTAL	\$1,756,896

3.4 Alternative 4

Alternative 4 was added to this evaluation by the consulting team after the initial geotechnical and environmental impacts had been completed. A separate site visit was conducted on June, 2010 to adequately describe the alternative. An aerial view of the proposed transmission main route unique to Alternative 4 is presented in Figure 15. A close-up of the piping modifications common to Alternatives 1, 2, and 4, and adjacent to the 600 zone, is presented in Figure 3.

3.4.1 Environmental Impact

3.4.1.1 *Covington Streams and Wetlands*

Alternative 4 will pass through a tributary to Jenkins Creek and an associated wetland midway along the alignment. The stream is likely a fish bearing stream (Type F stream), since no fish barrier between the tributary and Jenkins Creek is known. Although the area alignment passes through is not officially designated a wetland on the National Wetland Inventory Map, it was clear from walking the site the area would be classified as a wetland when examined for permitting. The wetland is likely an extension of the Category I wetland identified and discussed in the Alternative 1 section.

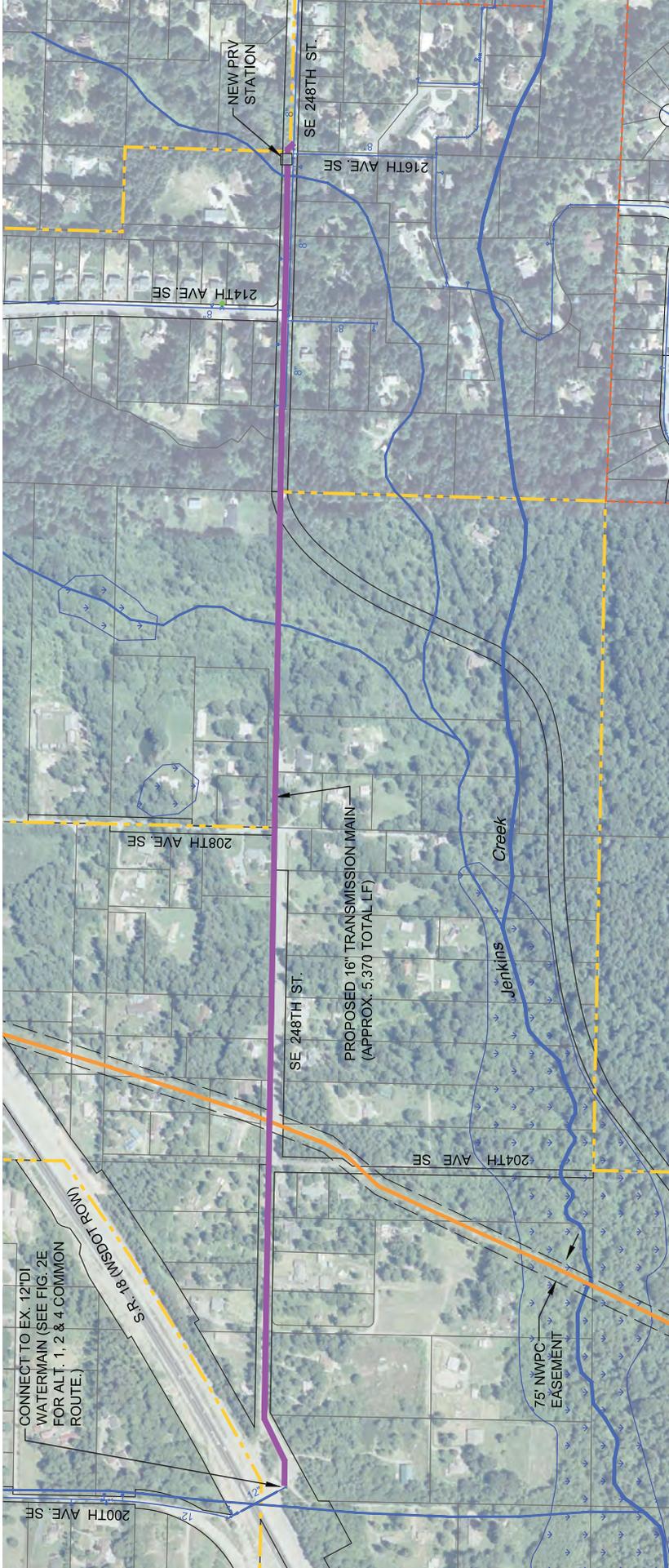
3.4.1.1.1 Impacts

Approximate impact quantities for Alternative 4 are summarized in Table 20. The impact quantities were based on a 30-foot-wide area for clearing and grading along the route alternatives. These estimated impact quantities do not include any additional impacts that may occur associated with construction access or staging areas. As with Alternative 1, if directional drilling is determined to be a viable option, it is possible that wetland, stream, and buffer impacts may be avoided.

Table 20 Estimated Wetland, Stream, and Buffer Impacts – Alternative 4 Alternatives Analysis Covington Water District			
Alternative	Wetland Impact (square feet)	Stream Impacts (square feet)	Buffer Impacts (square feet)
Alternative 1	21,500	300	7,500

3.4.1.1.2 Mitigation

Mitigation requirements will be nearly identical for Alternative 1. See Section 3.1.1.2.1 for a detailed description of requirements.



COVINGTON WATER DISTRICT

M-34 TRANSMISSION MAIN ALTERNATIVE 4

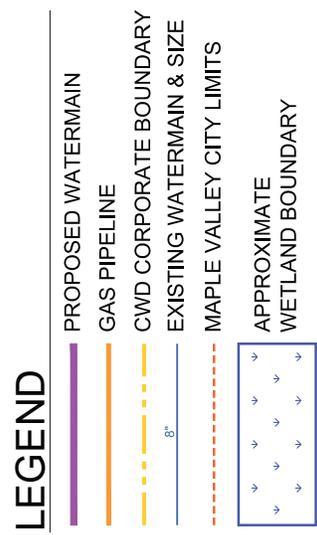


FIGURE
NO.
15



3.4.2 Property Acquisition

3.4.2.1 *Current Property Owners*

This alignment minimizes the number of required easements, while maximizing use of platted ROW. The alignment can potentially be built on as few as two parcels.

3.4.2.1.1 Timothy and Donna Bartholomew (parcel # 202206-9038)

This property is located at the end of the gravel road extension of SE 248th Street and provides the majority of the easement that would be necessary. SE 248th Street is public ROW to the edge of this parcel. This parcel extends nearly all the way west to 208th Avenue SE, with much of this within a 30-foot-wide panhandle. This panhandle includes a developed driveway that appears to serve the Warnat parcel.

The Bartholomew parcel is clear and open for approximately the easterly 200 feet, although this appears to be imported fill bordered by a pond constructed since the 2007 King County aerial photos were taken. There were ducks swimming in this pond at the time the site visit and the south edge of this parcel was inundated with standing water extending onto the City of Covington parcel (Cedar Creek Park) to the south of the Bartholomew parcel. There is running and standing water on both sides of SE 248th Street from about 213th Avenue west to the Bartholomew parcel.

The westerly approximately 315 feet of the Bartholomew parcel is used as a driveway which appears to serve the Warnat parcel.

3.4.2.1.2 Stanley Bales (parcel # 202206-9023)

An interesting property anomaly is the ownership of the Bales parcel (see Figure 16) which was originally larger and has been divided over time. Visualize extending the purple boundary lines shown in Figure 16 to a single rectangular parcel to identify the original shape. Where other properties have had to dedicate ROW, this parcel has not, so the small square by itself is still actually part of the larger parcel.

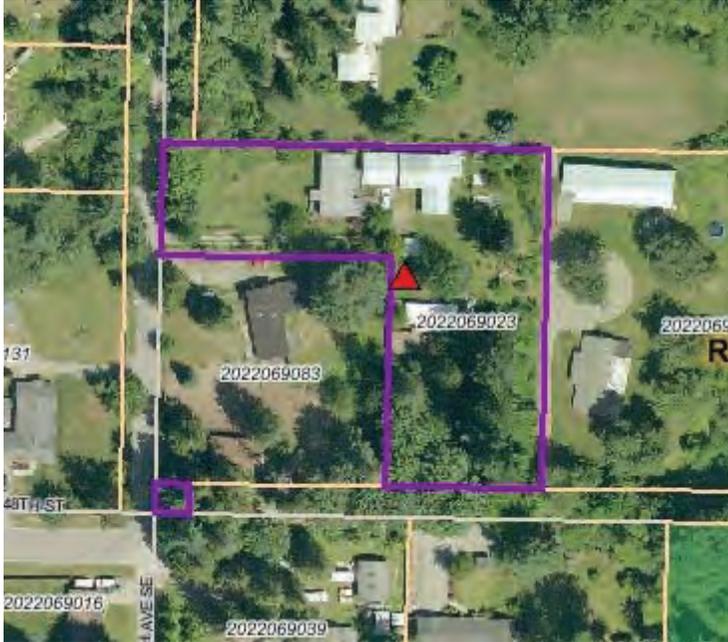


Figure 16 Bales Parcel

3.4.2.1.3 Diane Willis (parcel # 202206-9016)

The paved road within the boundary of the Willis parcel is shown by the purple parcel outlined in Figure 17. The road continues across the parcel even though the platted right of way ends. This pavement across the Willis parcel provides access to 208th Avenue SE and several homes in this area. The legal description for this parcel says “less state highway” and SE 248th Street was originally a state highway. The Assessor’s Map does not depict this exclusion but it is likely this portion of the road is actually public ROW.

3.4.2.2 Easements

The Bartholomew parcel contains a well covenant for the private well located near the pond near the south edge of the property but transmission main construction should have no effect on this well or be restrained by the covenant.

The westerly 660 feet of the south 30 feet of Bartholomew’s parcel is covered by an easement, likely for ingress, egress, and utilities. The easement was not obtained on the King County Recorder’s Office website and requires further investigation should this alignment be preferred.



Figure 17 Willis Parcel

3.4.2.2.1 Restrictions

Crossing the stream on the Bartholomew parcel will require easements, closer examination of the vegetation and soil conditions, as well as the stream itself. Timing restrictions limiting construction to dry summer weather are likely. King County will be interested in maintaining access to the Warnat parcel during any construction on their driveway, particularly for fire protection.

3.4.2.2.2 Requirements

Easements may vary in width, clearing and restoration requirements, and length of time required for construction within the easement and the temporary construction permit area depending on surface conditions, topography, planned type of construction, and proximity of improvements.

Permanent easements for the constructed transmission main can likely be limited to 10 feet in width in all areas. Because these easements restrict surface uses, they are most often placed in areas where other uses are either already restricted or unlikely, such as along property lines.

3.4.2.3 Right of Way

There are two separate ROW jurisdictions associated with this alignment.

1. King County governs the semi-improved Lund Road and also SE 248th Street including where it turns to the south at the west end.
2. WSDOT for the SR 18 crossing.

ROW locations and widths are shown earlier in Figure 6.

3.4.2.3.1 Conditions and Restoration

The ROW of SE 248th is asphalt pavement from 216th Avenue SE to 214th Avenue SE at which point it turns to a narrow gravel road to the east edge of the Bartholomew parcel. The road is narrow and there is a stream on the north side. A parallel stream crosses under 216th Avenue SE on the south side SE 248th Street and enters the front yard on the southwest corner of the intersection. The valve cluster is north of this culvert so we would avoid crossing this stream. Full-width pavement replacement will be required from 216th Avenue SE to 214th Avenue SE. SE 248th Street becomes a gravel road at 214th Avenue SE and is the only access for parcels down this road (Figure 18, detail 1).

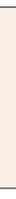
From 208th Avenue SE west to SR 18 the road is wide and the asphalt pavement is in good condition. There are shallow ditches on both shoulders (Figure 18, detail 2). West of SR 18, King County iMap indicates the presence of a stream along the edge of 200th Avenue SE and the north side of SE 240th Street. iMap also shows an intermittent stream running south to the west of 200th Avenue SE.

However, closer examination of the available data, as well as a site visit (Figure 18, detail 3), indicate that there is no stream of concern from a permitting or sensitive areas point of view. They may be referencing the very shallow roadside swale, which would be outside of our construction area.

The primary issues with this alignment for permitting are crossing the small intermittent branch of Jenkins Creek, road surface restoration throughout the alignment, and revising the WSDOT franchise for the SR 18 crossing.



LEGEND

-  PROPOSED WATERMAIN
-  GAS PIPELINE
-  CWD CORPORATE BOUNDARY
-  EXISTING WATERMAIN & SIZE
-  MAPLE VALLEY CITY LIMITS
-  KING COUNTY - RURAL RES.
-  KING COUNTY - MINING
-  KING COUNTY PARKS
-  APPROXIMATE WETLAND BOUNDARY

**COVINGTON
WATER DISTRICT
M-34 TRANSMISSION
MAIN ALTERNATIVE 4
DETAIL MAP**

FIGURE NO. 18



3.4.3 Permitting

The following section describes anticipated permitting requirements for this alignment. The project lies within two land use jurisdictions and two ROW jurisdictions.

3.4.3.1 *SEPA*

The pipe size and alignment through critical areas will require preparation of a SEPA Environmental Checklist and a SEPA Determination by the District. This is a typical process and no special concerns are anticipated.

3.4.3.2 *Permit Type, Fee, Effort to Prepare, and Schedule*

Anticipated permits are shown in Table 21. ROW permits typically have fixed fees, while some permit fees, such as those for grading permits, vary as a result of impacted area. Other permits have no submittal fee.

Table 21 Permitting Requirements – Alternative 4 Alternatives Analysis Covington Water District					
Agency	Permit Type	Permit Fee	Effort to Prepare	Schedule	Notes
King County	Right of way	\$600 – for two separate permit areas - County usually bills utilities directly	Easy	3 weeks	
King County	Clearing and grading permit	Approx. \$3500	Moderate	1-2 months	Based on clearing 30' wide and trench 4' deep and 4' wide with 5 hrs of DDES field inspection
Washington Department of Fish and Wildlife	Hydraulic Project Approval	None	Moderate	1-2 months	Could be a fish window limiting work to dry conditions
US Army Corps of Engineers	Nationwide Permit 12 for Utility Line Activities	None	Moderate	6-9 months	Federal nexus means delay due to ESA Section 7 consultation
Department of Ecology	Federal Permit 401 for wetland mitigation	None	Moderate to difficult due to quality of wetland	Issued concurrently with Corps Permit 12	Can be issued up to 180 days after Permit 12, but usually issued concurrently

3.4.3.3 *Supporting Studies Required*

Work within critical areas is likely to require specific critical areas studies, including wetlands/streams and geological studies. These specialties are already included on the project team and will be tasked with preparing supporting studies. Studies will include Critical Areas Reports for Geotechnical and Environmental aspects, as well as a Biological Evaluation to support wetland and stream crossing.

3.4.3.4 Permit Conditions

Permit conditions are either prescriptive or applied by the permit reviewer, or both. Conditions usually refer to construction timing to reduce traffic or environmental impacts, or to restoration requirements. We do not anticipate any unusual permit conditions. The conditions expected include:

- Schedule restrictions on the Jenkins Creek crossing
- Dewatering water quality monitoring requirements
- Flagging or fencing of clearing limits
- Asphalt restoration within roadways
- Surface restoration outside of roadways including location-specific hydroseeding and buffer restoration planting
- 3 to 5 years of restoration planting survival monitoring and removal of invasive species in restoration area

Operations and Maintenance

Similar to Alternative 1 and 2, the majority of the Alternative 4 alignment will be located in or near improved ROW or access easements for ease of operation and maintenance. The eastern portion of Alternative 2, as shown in Figure 15, can be accessed from Witte Road along SE 248th Street, which is paved until it reaches the exiting forested area.

Once the line within the forested area reaches the existing wetland, it will be very difficult to access and maintain if required.

The western portion of Alignment 4 between the existing wetland and the crossing of SR 18 can be accessed from 208th Avenue SE. While part of the paved surface of SE 248th Street is narrow, it would be easy to maintain the proposed water line from this point to the SR 18 crossing. The District will also have to maintain a new PRV vault required to step down the pressure between the 770 and 650 zones.

3.4.4 Constructability/Risk

The subsurface conditions related to construction of the pipeline are relatively simple and straightforward from the eastern end of the alignment at 216th Avenue SE westward about 1,300 feet to the end of paved SE 248th Street. The eastern half of this segment is a terrace comprised of coarse glacial outwash that is about 17 feet higher than the Jenkins Creek tributary plain. This portion of the alignment is likely to be above the water table for the proposed water pipeline excavation. When the alignment drops down to the level of the Jenkins Creek tributary, the groundwater level is at or very near the ground surface. For the remainder of the alignment westward, the upper few feet is silty fine sand and fine sandy silt. Below that, the subsurface conditions are likely to be similar to those described above

in the Lakeside Gravel Pit (Section 3.1.5.1). The impact of those geologic conditions on construction on this alignment is likely to be similar to those described in Section 3.1.5.3.2, as the two areas are about a mile apart and the geologic formation is mapped as the same.

3.4.5 Level of Service

The level of service outlined in TM1 can be maintained with the piping configuration proposed for Alternative 4. As with the previous alternatives, the required minimum residual pressure during fire flows is the criterion most difficult to meet. In order to meet the desired level of service, the same additional section of 16-inch piping described in detail for Alternative 2 will need to be added at the north end of the alignment adjacent to the 600 zone (for reference see Figure 3). In addition, upsizing some of the existing 770 piping on the east side of the transmission main is required. A PRV valve will be required to step the service down from 770 to the desired 650 HGL. This prevents any customers aside from the 3 customers affected by the piping change on 200th Ave SE from being affected by a rezone. The pipe flows for this configuration are presented in Figure 19.

3.4.6 Schedule

The anticipated schedule for Alternative 4 is identical to Alternative 1 and 2 because all of the same permits and design requirements are the same for each alternative. The schedule issues are restated below.

3.4.6.1 *Survey/Geotechnical Schedule*

Once the BORD has been completed and approved by the District and a scope and budget for design has been approved, work can begin on the surveying and geotechnical investigations of the selected alternative. The level of effort required for the geotechnical investigation will be dependent on the type of construction proposed as greater geotechnical detail is required for an HDD project than open trench construction.

3.4.6.2 *Easement Acquisition Schedule*

The level of effort required for easement acquisition is dependent on the willingness of the property owner to work with the District. If the property owner is willing to grant an easement the entire process can be accomplished in a couple of weeks. If the property owner is not willing, it may take longer to negotiate for the easement or possibly go through the condemnation process. It is expected that the easement process could be completed in a two month time period during the design phase.

Covington Water District M-34 Project
 770 Zone Supply Along SE 248th Street
 3000 gpm Fire Flow at Tahoma High School
 BHC 04-29-10 Working Map

- Junction PRESSURE**
- Less than 20
 - 20-25
 - Greater than 25
- Pipe FLOW**
- Less than 5
 - 5-25
 - 25-100
 - 100-500
 - 500-1000
 - Greater than 1000

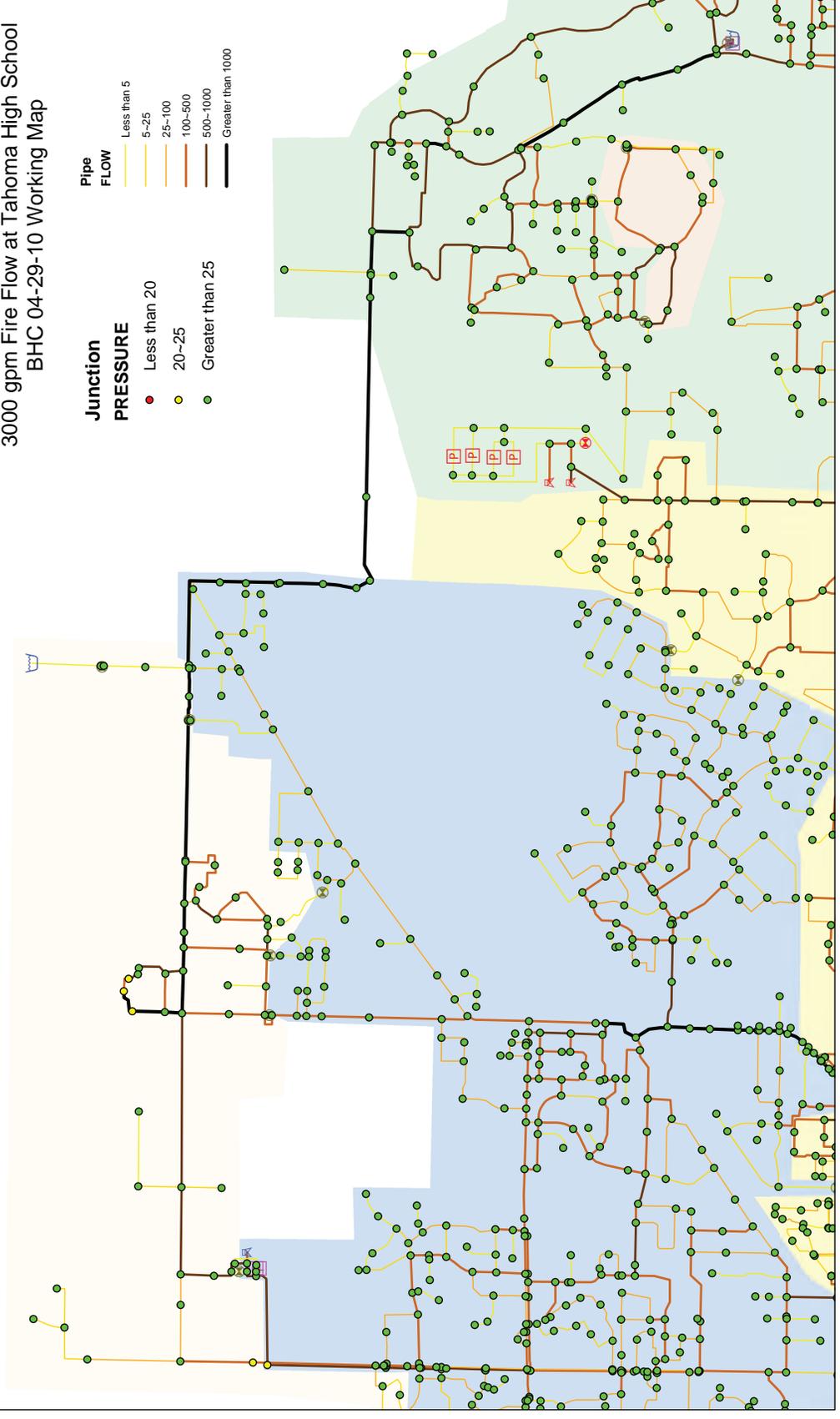


FIGURE NO. 19

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3.4.6.3 Design Schedule

A three step process has been identified for the design phase of the project. First, a 60% design will be submitted for review by the District. Revisions will be incorporated and refined for a 90% submittal before the Final design is submitted. A five month process for the design phase of the project is identified.

3.4.6.4 Permitting Schedule

The major factor affecting the project schedule for Alternative 4 will be the need to obtain a Corps of Engineers permit for the crossing of the tributary of Jenkins Creek. It is likely that a Corps permit will be required whether the line is constructed using open trench construction or by horizontal directional drilling. It is possible that it will take less time to obtain the permit if the line is constructed using HDD. In an attempt to reduce the overall project schedule, it is recommended that permits are submitted based on the 60% design. Based on an estimate of 6 to 9 months to acquire a Corps permit, 6 months was used to estimate the length of the permit process for Alternative 4. This is different than Alternative 1 and 2, as it is generally easier to cross a tributary than a salmon bearing stream in the eyes of the Corps. This will still be more than enough time to acquire the additional permits required beyond the Corps permit.

3.4.6.5 Construction Schedule

Ideally, this project should be constructed in the summer when the water in Jenkins Creek and associated tributary's are at their lowest. Based on 2009 site visits, there is evidence that the water in Jenkins Creek dries up in the summer, although it is not known at what depth the groundwater shows up. Table 22 summarizes the anticipated time for each of the items listed above along with a proposed construction schedule showing the construction in the wetland occurring in the summer months.

Table 22 Alternative 4 Schedule Alternatives Analysis Covington Water District		2010							2011											
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Design																				
Predesign	█																			
Survey/Geotech		█																		
Final Design				█																
Easement Acquisition					█															
Permitting							█													
Construction																				
Transmission Main Online																				◆

3.4.7 Cost

3.4.7.1 *Wetland Mitigation*

Assumptions for the basis of cost for Alternative 4 wetland mitigation are the same as those outlined for Alternative 1. The general estimated cost for restoration is \$120,000. For restoration plus 4:1 wetland mitigation the cost range is estimated at \$380,000 to \$440,000.

3.4.7.2 *Easement Valuation Formula*

The easement valuation formula is described earlier in this report.

3.4.7.2.1 *Time Assumed for Temporary Construction Permit Valuation*

This alignment assumes typical open-cut trench construction for the majority of the construction. With typical production rates of approximately 200 feet per day, including final surface restoration, it is expected that construction will run for approximately 4 months. The method selected for crossing the tributary to Jenkins Creek poses a potential for slower per-day production in this limited area. The time for each parcel is included in the individual parcel calculation.

3.4.7.2.2 *Easement and Permit Values*

This alignment requires easements and temporary construction permits from the following land owners, with the fees calculated and shown per the standard formulas. These calculations are based on preliminary easement sizing, which would change slightly during final design (Table 23). For all three of these easements, the fee value was reduced to a 0.1 multiplier due to the severely limited potential use of the easement area by the owners.

Table 23 Easement and Permit Fees – Alternative 4 Alternatives Analysis Covington Water District					
Parcel Number	Owner	Easement Size (ft²)	Easement Fee (\$)	Temp. Permit Size (ft²)	Temp. Permit Fee (\$)
202206-9038	Bartholomew	6,600	\$1,125	19,800	\$270
202206-9023	Jim Hawk	300	\$200	900	\$48
Totals			\$1,325		\$318

3.4.7.3 *Infrastructure Improvements*

The infrastructure improvement costs have been broken into several areas depending on the type of construction being proposed. Costs have been estimated depending on whether the proposed 16-inch transmission main is being constructed in an existing ROW, easement, wetland, or stream crossing. The costs include construction of the proposed improvements from the 770 zone, through the crossing of SR 18, all the way to the intertie at SE 240th Street and 196th Avenue SE.

Table 24 summarizes the location of the proposed construction including lengths and the estimated cost for the infrastructure improvements for Alternative 4.

Table 24 Infrastructure Improvements – Alternative 4 Alternatives Analysis Covington Water District					
Item	Description	Quantity	Unit	Unit Cost	Total Cost
1	16-inch DI Water in ROW	3,950	LF	\$175	\$691,250
2	16-inch DI Water in Easement	1,190	LF	\$150	\$178,500
3	16-inch DI Water in Wetland Open Trench	200	LF	\$300	\$60,000
4	Stream Crossing (in ROW)	1	LS	\$25,000	\$25,000
5	PRV Station	1	LS	\$100,000	\$100,000
6	16-inch DI Water in ROW (north of SR 18)	2,700	LF	\$175	\$472,500
				Subtotal	\$1,527,250
				Tax (8.6%)	\$131,344
				TOTAL	\$1,658,594

Due to the likelihood of the tributary of Jenkins Creek being dry during the summer months, we did not evaluate this alternative using HDD construction methods. However, horizontal directional drilling may be considered for Alternative 4 during the design phase of the project. If so, Alternative 4 will have similar risks and cost benefits to the other alternatives when considering trenchless construction methods.

3.4.7.4 Summary

Table 25 summarizes all of the anticipated costs associated with Alternative 4. The table includes costs for permit fees, wetland mitigation, engineering (design, permitting, and construction), easement costs, and construction costs. The engineering costs are based on 25% of the anticipated construction cost without sales tax and the District legal and administration costs are 7% of the construction cost without sales tax. We have also included a 20% contingency factor to account for additional project uncertainties.

Table 25 Total Project Cost – Alternative 4 Alternatives Analysis Covington Water District	
Description	Costs for Open Trench Construction
Construction Cost w/WSST	\$1,658,594
Engineering (Design, Permitting & Construction)	\$381,813
Permit Fees	\$4,600
Easement Costs/Temporary Construction Permits	\$1,643
District Legal & Administration	\$106,908
Wetland Restoration & Mitigation	\$440,000
Subtotal	\$2,593,557
Contingency (20% rounded)	\$519,000
TOTAL	\$3,112,557

4.0 SUMMARY

A brief discussion comparing Alternatives 1 through 4 within the Project Goals identified at Workshop No. 1 is presented in the sections below.

4.1 Cost

A summary of the total estimated project costs for each alternative is presented in Table 26. Alternative 3, upsizing the existing booster pump station, is the lowest cost alternative overall, and Alternative 4 provides the lowest cost option amongst the alternatives containing a new transmission main.

Table 26 Project Cost Summary Alternatives Analysis Covington Water District	
Alternative	Costs for Open Trench Construction
Alternative 1 (Modified) – Open Trench	\$3,685,680
Alternative 1 (Modified) - HDD	\$3,491,646
Alternative 2 – Open Trench	\$4,318,307
Alternative 2 – HDD	\$4,168,818
Alternative 3	\$1,756,896
Alternative 4	\$3,112,557

4.2 Schedule

The estimated time when the new transmission main or booster pump comes online is nearly identical for all alternatives. Alternatives 1 and 2 have an anticipated completion date of Early November 2011. Alternatives 3 and 4 have anticipated completion dates of Early October 2011. It is possible Alternative 3 could have a shorter time frame if the King County building permit can be obtained faster than the 6 months anticipated. Level of Service

Modified Alternative 1 and Alternatives 2 through 4 all meet the District's design criteria for delivery pressure and fire flow requirements. Alternatives 1 and 2 still require the use of reverse check valves in order to meet required design criteria. Alternative 3 also results in a level of service not ideal to the District. Upsizing the booster pump station means the 650 zone is still reliant on a pump station connected to a lower HGL for water service, whereas Alternative 1, 2, and 4 provide a passive connection to a pressure zone located at a higher HGL.

4.3 Property Acquisition

The alternatives have varying levels of complexity when considering property acquisition and of course it is very difficult to determine how property owners will respond to easement requests. Alternative 3 requires no permanent easements, and Alternative 4 minimizes the number of required permanent easements while maximizing the use of the platted ROW.

4.4 Environmental Impact

Alternative 3 will have minimal environmental impact compared to the other alternatives. The pump station expansion will occur on City property and not disturb any new land. Other piping improvements occur within existing road prisms, with the exception of a single small stream crossing. Alternatives 1, 2, and 4 pass through designated wetland areas, which will require more stringent mitigation and restoration requirements.

4.5 Permitting

The length of time required for permitting each of the alternatives is approximately 6-7 months. The key permit for Alternatives 1, 2, and 4 is the Army Corps of Engineers permit required for creek crossings. The key permit for Alternative 3 the King County building permit required for the pump station expansion. The level of effort required to prepare the permits varies widely amongst the alternatives. The ROW and clearing and grading permits needed for every alternative the City of Covington and/or King County are considered easy or only moderately difficult to prepare. The HPA permits required from Washington Department of Fish and Wildlife are expected to be difficult for Alternative 1 and 2 due to the wetland quality, moderate for 4, and relatively easy for Alternative 3. The Corps permits should have levels of preparation difficulty similar to those required for the HPA permits, though no Corps permit is required for Alternative 3. The permitting process for obtaining

the King County building permit required for Alternative 3 can be unnecessarily difficult, but can be eased somewhat through the use of pre-submittal conferences with the County.

4.6 Operations and Maintenance

Alternative 3 will have little or no impact to operations and maintenance procedures beyond what is currently required for the booster pump station currently serving the 650 zone. However, this alternative will still rely on generators for any power outages or emergency supply conditions. The remaining alternatives have the majority of the alignment located in or near improved ROW or access easements, providing ease of operations and maintenance. The challenges arise when the lines leave the easily accessible areas into heavily forested land or wetlands. In these areas access would be difficult but possible if construction is done using open-trench methods, and nearly impossible for portions constructed using HDD due to the depth required for traversing slopes and streams. The length of the alignment with difficult access is the shortest for Alternative 4, followed by Alternative 2, with Alternative 1 being the longest.

4.7 Constructability/Risk

Construction of Alternative 3 is low risk and relatively easy, as there is adequate access and room for construction at the existing pump station site. The only portion of construction that may prove moderately risky or difficult is the creek crossing for the section of transmission main replacement. Alternatives 1, 2, and 4 all have higher levels of risk associated with stream and wetland crossings, though the risk is anticipated to be lower with Alternative 4, as the creek is expected to dry up almost entirely during the summer. The high water table in the areas surrounding the creek crossing will likely require dewatering for all three alternatives. If HDD is to be considered to help ease the relatively significant environmental impacts for Alternatives 1, 2, and 4, further geotechnical exploration is required as the current probability of success is estimated at 50%.

4.8 Summary Table

The level of impact and issue for each project goal is summarized in Table 27. This table was refined at Workshop #3 – Alternative Selection. The designations for the symbols in the table are as follows:

- High Impact
- Medium Impact
- Low Impact

5.0 RECOMMENDATION

The District prioritized three goals as critical to alternative selection: keeping project cost down, expediting the project schedule, and meeting the District's level of service criteria. Examination of Table 27 reveals Alternative 3 would be the clear choice based on cost and several other decision criteria; however, it would not meet the District's level of service goal as it depends on pumping infrastructure. Of the remaining three alternatives that can meet the District's level of service criteria, Alternative 4 is favored over Alternatives 1 and 2 for Cost and Property Acquisition. The remaining criteria were neutral amongst the other alternatives having no net impact on alternative selection. Therefore, based on the available data and alternatives presented for this analysis, Alternative 4 is the preferred choice moving forward.

Table 27 Alternatives Comparison Summary Alternatives Analysis Covington Water District									
	Cost (Relative)	Schedule	Level of Service	Property Acquisition	Environmental Impact	Permitting	Operations & Maintenance	Constructability & Risk	
Alternative 1 (Modified)	●	●	●	●	●	●	●	●	
Alternative 2	●	●	●	●	●	●	●	●	
Alternative 3	●	●	●	●	●	●	●	●	
Alternative 4	● ●	●	●	●	●	●	●	●	

**Appendix D: SCIENTIFIC PAPERS SUBMITTED BY THE
MUCKLESHOOT TRIBE**

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Low-level copper exposures increase visibility and vulnerability of juvenile coho salmon to cutthroat trout predators

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Abstract. Copper contamination in surface waters is common in watersheds with mining activities or agricultural, industrial, commercial, and residential human land uses. This widespread pollutant is neurotoxic to the chemosensory systems of fish and other aquatic species. Among Pacific salmonids (*Oncorhynchus* spp.), copper-induced olfactory impairment has previously been shown to disrupt behaviors reliant on a functioning sense of smell. For juvenile coho salmon (*O. kisutch*), this includes predator avoidance behaviors triggered by a chemical alarm cue (conspecific skin extract). However, the survival consequences of this sublethal neurobehavioral toxicity have not been explored. In the present study juvenile coho were exposed to low levels of dissolved copper (5–20 µg/L for 3 h) and then presented with cues signaling the proximity of a predator. Unexposed coho showed a sharp reduction in swimming activity in response to both conspecific skin extract and the upstream presence of a cutthroat trout predator (*O. clarki clarki*) previously fed juvenile coho. This alarm response was absent in prey fish that were exposed to copper. Moreover, cutthroat trout were more effective predators on copper-exposed coho during predation trials, as measured by attack latency, survival time, and capture success rate. The shift in predator–prey dynamics was similar when predators and prey were co-exposed to copper. Overall, we show that copper-exposed coho are unresponsive to their chemosensory environment, unprepared to evade nearby predators, and significantly less likely to survive an attack sequence. Our findings contribute to a growing understanding of how common environmental contaminants alter the chemical ecology of aquatic communities.

Key words: alarm behavior; coho salmon; copper; cutthroat trout; olfaction; predation; skin extract; sublethal; survival.

INTRODUCTION

Various forms of water pollution are known to interfere with chemical communication in aquatic habitats (Sutterlin 1974). There are senders and receivers of chemical signals both within and among species in aquatic communities, and certain contaminants are directly toxic to the olfactory, mechanosensory, or gustatory sensory neurons of receivers. This form of sublethal ecotoxicity has been termed info-disruption (Lurling and Scheffer 2007) because it diminishes or distorts the sensory inputs that convey important information about an animal's surrounding environment. Contaminant-exposed receivers thereby respond inappropriately (or not at all) to cues that signal the proximity and status of predators, mates, food, and other factors that can influence growth, survival, distribution, or reproduction.

One of the most extensively studied examples of info-disruption is the neurotoxicity of dissolved copper to the peripheral olfactory system of fish (Tierney et al. 2010). Olfactory receptor neurons are located in the epithelium of the olfactory rosette, within the nasal cavity. Cilia containing odor receptors extend from the apical surfaces of olfactory neurons into the nasal cavity, separated from ambient waters by a thin layer of mucous. Olfactory receptor neurons are continuously exposed to ambient waters and are therefore highly vulnerable to dissolved toxicants in aquatic habitats.

Copper is a widely occurring pollutant in association with diverse human activities, including agricultural, industrial, commercial, and residential land uses. For example, copper is used in various agriculture and homeowner pesticide formulations, in building materials, as an antifoulant in hull paints for vessels, and in motor vehicle friction materials (i.e., brake pads). As a consequence, copper is commonly transported to aquatic systems in land-based stormwater runoff (Davis et al. 2001). Copper contamination is also associated with hard rock mining and municipal wastewater discharges.

Similar to fish mechanosensory receptor neurons (i.e., lateral line; Linbo et al. 2006), olfactory receptor

Manuscript received 7 November 2011; revised 26 March 2012; accepted 29 March 2012. Corresponding Editor: K. Tierney.

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neurons undergo cell death in response to dissolved copper concentrations above approximately 20 $\mu\text{g/L}$ (Julliard et al. 1996, Hansen et al. 1999). At lower concentrations in the 2–20 $\mu\text{g/L}$ range, dissolved copper reversibly inhibits the physiological responsiveness of olfactory receptor neurons in a concentration-dependent manner (Baldwin et al. 2003, Sandahl et al. 2004). The loss of sensory function occurs rapidly, within the first few minutes of copper exposure (Baldwin et al. 2003). In most fish species that have been studied to date, peripheral sensory neurons do not acclimate to copper during exposures lasting days (Julliard et al. 1996, Linbo et al. 2006) or weeks (Saucier et al. 1991, Saucier and Astic 1995).

Chemical signals of predation risk are an ecologically important category of olfactory information for fish (Wisenden 2000, Ferrari et al. 2010). For many species (Chivers and Smith 1998), including juvenile salmonids, an olfactory alarm cue released via mechanical tearing of the skin (e.g., during a predation event) triggers predator avoidance behaviors by nearby conspecifics. Juvenile salmon and trout, for example, become motionless in response to the alarm cue (Brown and Smith 1997, Berejikian et al. 1999, Scholz et al. 2000). This reduces their visibility and corresponding vulnerability to attack by motion-sensitive predators such as piscivorous fishes and birds (Webb 1986, Martel and Dill 1995). Numerous studies have demonstrated a survival benefit for alarm-cue-responsive prey (Mirza and Chivers 2001, 2003, Chivers et al. 2002).

Previous studies have shown that peripheral olfactory toxicity and diminished sensory responsiveness correspond to a disruption in alarm behaviors in copper-exposed fish (Beyers and Farmer 2001, Sandahl et al. 2007). For individual juvenile coho salmon (*Oncorhynchus kisutch*), loss of alarm behavior triggered by an ecologically relevant olfactory alarm cue is directly correlated with loss of olfactory function at copper exposures ranging from 2 to 20 $\mu\text{g/L}$ (Sandahl et al. 2007).

Copper's effect on chemical communication in aquatic systems has broad implications for the chemical ecology and conservation of aquatic species and communities. In the case of salmon, subtle but important impacts on sensory physiology and behavior at the juvenile life stage could increase predation mortality and thus increase losses from wild salmon populations, many of which remain at historic lows in large river basins throughout the western United States (Good et al. 2005). Conversely, improving water quality conditions (i.e., by reducing copper loading) could potentially improve juvenile survival and abundance, thereby enhancing ongoing efforts to recover depressed stocks. However, the cascading effects of copper across biological scales, from salmon physiology and behavior to predator-prey interactions and survival, have not been empirically determined.

Here we explored the influence of environmentally relevant copper exposures on juvenile coho salmon (see Plate 1) predator avoidance and survival during encounters with coastal cutthroat trout (*O. clarki clarki*). Cutthroat trout are visual foragers (Henderson and Northcote 1985, Mazur and Beauchamp 2003) that commonly prey on juvenile salmon in stream, lake, and nearshore marine habitats (Nowak et al. 2004, Duffy and Beauchamp 2008). We used a range of sublethal copper exposures (5–20 $\mu\text{g/L}$) and a duration (3 h) previously shown to impair both peripheral olfaction and alarm behavior in juvenile coho (Sandahl et al. 2007). In a subset of trials, predators were also exposed to dissolved copper (10 $\mu\text{g/L}$ for 3 h).

METHODS AND MATERIALS

Animals

Juvenile coho.—

1. *Behavior experiments.*—In 2007, wild juvenile coho salmon were collected as needed by seining a side channel of Big Beef Creek at the University of Washington's Big Beef Creek Research Station (Seabeck, Washington, USA). Coho were maintained on well water (Table 1) in indoor raceways under natural light regime and fed pellets daily (1–2 mm extruded; Silver Cup Fish Feed, Murray, Utah, USA). Coho grew slightly throughout the experimental period, from April–May (39–49 mm total length [TL], \bar{x} = 42.8, SD = 3.3, n = 13) to June–July (36–60 mm TL, \bar{x} = 48.7, SD = 5.6, n = 79).

2. *Predation experiments.*—In 2008, juvenile coho were produced from eggs fertilized at the Big Beef Creek Research Station. Hatchlings were maintained outdoors in 1-m³ net pens suspended in a 5 m diameter circular tank continuously supplied with well water. One net pen of juveniles (approximately 1000 fish) provided the experimental prey. Coho were fed pellets daily. Coho grew slightly throughout the experimental period; random samples in April–May were 30–40 mm TL (\bar{x} = 36.2, SD = 2.5, n = 24) and in June–July were 35–46 mm TL (\bar{x} = 41.3, SD = 2.7, n = 64). During predation trials, there was a significantly higher attack rate on the larger coho in June–July compared to those used in April–May (t_{29} = -2.136, P = 0.041), likely related to the slightly larger size and therefore visibility of coho in the second set of predation trials. Other predator prey metrics were not affected (P = 0.084–0.625).

Cutthroat trout.—

1. *Behavior experiments (response to upstream predator).*—During April 2007, wild cutthroat trout (sizes 178–245 mm TL, \bar{x} = 205, SD = 18, n = 16) for use as predators were obtained from Big Beef Creek in smolt traps at a weir operated by Washington Department of Fish and Wildlife. Predators were maintained outdoors in flow-through circular holding tanks supplied with well water. On experimental days, predators were fed one juvenile coho each. Other days, predators were fed one fish each every other day. Predators were divided

TABLE 1. Conventional water chemistry characteristics, including total organic carbon (TOC), for source (well) water at the Big Beef Creek Research Station (Seabeck, Washington, USA).

Parameter	Units	D.L.	N	Mean	SE
pH			11	7.5	0.3
Alkalinity	mg/L CaCO ₃	1.0	11	46.7	0.7
Hardness	mg/L CaCO ₃	1.0	11	56.0	0.0
Bicarbonate	mg/L	1.0	11	46.7	0.7
Calcium	mg/L	0.05	11	18.00	0.00
Potassium	mg/L	0.10	11	0.50	0
Magnesium	mg/L	0.05	11	2.67	0.03
Sodium	mg/L	0.05	11	11.00	0.00
Chloride	mg/L	1.0	11	15.7	0.3
Sulfate	mg/L	1.0	11	2.0	0
TOC	mg/L	0.1	7	0.07†	0.01
0 Cu	µg/L	0.04	6	0.16	0.04
5 Cu	µg/L	0.04	2	4.54	0.07
10 Cu	µg/L	0.04	6	9.21	0.13
10 Cu‡	µg/L	0.04	8	8.94	0.54
10 Cu§	µg/L	0.04	4	8.06	0.34
20 Cu	µg/L	0.04	2	17.25	0.55

Notes: Also shown are measured copper concentrations for the different exposures; copper measurements are for exposure aquaria unless otherwise noted. D.L. stands for instrument detection limit.

† An eighth sample had anomalously high TOC (0.68 mg/L) and was excluded

‡ Experimental arenas for predator + prey trials.

§ Predator holding tanks for predator + prey trials.

randomly into four groups of four. On experimental days, predators within a group were randomly assigned to one of four arenas. Groups were rotated such that each predator was exposed to each treatment.

2. *Predation experiments.*—During April 2008, wild cutthroat trout for use as predators (sizes 150–215 mm TL, \bar{x} = 183, SD = 18, n = 32) were again obtained from Big Beef Creek and divided into three groups: groups 1 and 2 contained 8 predators each and were used in predation trials, while group 3, containing 16 predators, was held in reserve. Between the first set of predation trials (15–30 May) and the second set (25 June–3 July), predators in groups 1 and 2 were replaced with inexperienced fish from group 3. On experimental days, predators in Group 1 and Group 2 were fed one juvenile coho each during the predation trial. On other days, fish in all three groups were fed one fish each, every other day. For six days prior to collecting experimental data, predators were trained daily by simulating the experimental sequence. Trout were acclimated in the tank behind the divider for 1 h. The divider was then lifted, allowing the predators to locate, attack, and consume up to two prey fish.

Experimental arenas and alarm cue delivery

Behavior experiments with upstream predator.—Outdoor raceways (0.84 m width) were divided into segments (1.2 m long) with steel mesh barriers to create one experimental arena per raceway. A PVC sheet (1/16 inch [\sim 0.16 cm]; Calsak Plastics, Kent, Washington, USA) subdivided by gridlines (5 cm²) was placed at the bottom of each arena. Well water flowed into the raceway (2 L/s) from an underwater pipe upstream of the arena. A standpipe downstream of the arena maintained a water depth of 25 cm. Dividers partitioned

each arena into an upstream predator-containing compartment (46 × 84 cm) and an adjacent downstream compartment containing prey (76 × 84 cm). Dividers were frames (13 cm wide) constructed from PVC sheets (1/16 inch) and covered with window screen.

Well water or skin extract was delivered to the prey compartment through evenly spaced holes in a tube (Tygon tubing, 1/4 inch outer diameter [\sim 0.63 cm]) crossing the upstream divider, approximately 5 cm below the surface. Even dispersion was confirmed visually by dye tests. A three-way valve connected to a syringe allowed for injection of water or water plus alarm odor from outside the visual field of the fish.

Predation experiments.—Circular fiberglass tanks (bottom diameter = 130 cm, height = 90 cm) were used as experimental arenas. Gridlines were drawn at 5-cm intervals on the tank bottom to track fish location via video. An external standpipe maintained water depth (30 cm, 400 L). A sheet of PVC (90 × 60 cm) suspended vertically was used to divide cutthroat trout predators into a small sub-area (34 L) of the arena during acclimation. Juvenile coho prey were introduced into the arena and allowed to acclimate within a clear acrylic cylinder (25 cm inner diameter, 38 cm tall; U.S. Plastic Corp, Lima, Ohio, USA). The acclimation chamber was placed in one of the quadrants opposite the predator divider, within 15 cm from the tank edge. Predator dividers and acclimation chambers were attached by rope to overhead pulleys so they could be gently raised without the observer coming into view of the fish.

Skin extract was introduced to the prey acclimation chamber via Tygon® tubing just below the water surface connected to a three-way valve fitted with two syringes outside the tank. The skin extract solution was immediately flushed from the line with well water (60 mL).

Skin extract alarm cue

An alarm cue-containing skin extract from juvenile coho was prepared as previously described (Sandahl et al. 2007).

Behavior experiments with upstream predator.—In each flow-through arena, 1 mL of concentrated skin extract (160 cm² juvenile coho skin/L) was diluted in 50 mL of well water to a final concentration of 2 cm²/L. This solution was introduced over 60 s into an average flow of 2 L/s for an exposure of approximately 1 × 10⁻³ cm²·L⁻¹·s⁻¹. Pilot trials confirmed a behavioral reaction to the alarm cue at this diluted concentration (\bar{x} activity reduction = 51%, SD = 15%, $n = 8$).

Predation experiments.—Initial range-finding tests indicated that 2 × 10⁻⁵ cm² of homogenized skin extract per liter of water was the minimum concentration to evoke an alarm response (\bar{x} activity reduction = 77%, SD = 24%, $n = 4$). This agrees closely with previously published thresholds for conspecific skin extract evoking predator avoidance behavior in salmonids (1.85 × 10⁻⁵ cm²/L in *O. mykiss* [Mirza and Chivers 2003]; 2 × 10⁻⁵ cm²/L in *O. kisutch* [Sandahl et al. 2007]). In static arenas, diluted skin extract (1 cm²/L) was prepared daily from a frozen aliquot of concentrated skin extract (22 cm²/L). At the end of the 15-min prey acclimation, 257 µL of diluted skin extract in 50 mL of well water was injected into the prey acclimation chamber (12.9 L) for a final skin concentration of 2 × 10⁻⁵ cm²/L. Dye tests indicated that injected water did not diffuse from the acclimation chamber prior to the chamber being lifted from the experimental arena.

Copper exposures

Juvenile coho were exposed to dissolved copper prior to experimental trials. Exposures took place in 30-L glass aquaria wrapped in black plastic and supplied with an airstone. Aquaria were filled with 15 L of well water (controls) or well water containing varying copper concentrations (conventional water quality parameters shown in Table 1). Copper was added to the aquaria just prior to the onset of the 3-h exposures. Copper chloride stock solution (0.15 g Cu/L) was diluted to achieve nominal concentrations of 0, 5, 10, or 20 µg/L.

Experimental sequence

Behavior experiments with upstream predator.—Individual predators were placed in the predator compartment of each arena, upstream of the prey compartment, the evening before a trial and allowed to acclimate (>13 h). The following morning, juvenile coho (1 prey/predator) were exposed to either well water or well water containing 20 µg/L copper for 3 h. They were then transferred to the prey compartment of the experimental arena (one prey per arena) and allowed to acclimate for 30 min prior to the injection of stimulus solutions (water or water plus skin extract).

Predation experiments.—The timeline for predation trials is delineated in Table 2. For trials in which only

TABLE 2. Predation trial timeline.

Timeline	Duration	Event
-3 h 15min	3 h	prey exposure
-1 h 0 min	1 h	predator acclimation
-15 min	15 min	prey acclimation
0 min	10 s	skin extract injected
30 s	10 s	prey released
50 s	5 s	predators released

juvenile coho prey were exposed to copper, predators (two per arena) were acclimated behind the divider during the last hour of the 3-h prey exposure interval. Exposed prey were then transferred to the acrylic chamber (two fish per arena) for 15 min, an interval brief enough to minimize olfactory recovery in clean water and yet long enough to produce reliably robust control activity (swimming speed ~5 cm/s). Filming began at the time of prey transfer. Following prey acclimation, skin extract was administered and given 30 s to disperse (verified with dye tests) before the chamber was gently lifted and removed from the experimental arena. Thereafter, predators were released from their enclosure. Two consecutive sets of trials using a different group of predators were run each day, and the arenas were drained and filled between sets.

For trials in which both prey and predators were exposed to copper, both exposures were for 3 h, including acclimation time in the experimental arena. Predators were exposed to copper for 2 h in their holding tanks followed by a 1-h exposure in the experimental arena. Prey were exposed to copper in the exposure aquarium for 2.75 h. This was followed by 15 min in the acclimation chamber of the experimental arena.

Water chemistry analyses

Conventional water quality parameters and total organic carbon (TOC) were measured in water samples collected in 2008 between 20 May and 3 July. This interval spans most of the experimental period (16 May–3 July). Concurrently, dissolved copper (DCu) concentrations were measured in 28 samples that were representative of the different copper exposures. For conventional parameters, samples were stored at 4°C in polyethylene bottles until analysis by standard methods at an EPA-certified laboratory (AmTest Laboratories; Redmond, Washington, USA). Samples for TOC were stored in glass vials at -20°C until analysis by combustion catalytic oxidation/NIDR method with a Shimadzu TOC-VCSH (University of Washington, Oceanography Technical Services, Seattle, Washington, USA). Samples for dissolved copper were stored at 4°C for up to 72 h prior to analysis by inductively coupled plasma mass spectrometry (Frontier Global Sciences, Seattle, Washington, USA).

The well water at BBC used in all experiments had low ion and organic carbon content (Table 1), which is similar to Pacific Northwest streams west of the

Cascades (e.g., Fig. 2 in McIntyre et al. 2008). The background copper concentration was very low (mean of 0.16 $\mu\text{g/L}$) and samples from copper exposures were 81–91% of nominal concentrations.

Video data acquisition

The four experimental arenas were sheltered outdoors beneath a wooden scaffolding to which cameras and pulleys were attached. The stand was covered by blue tarps to prevent direct lighting. Prey acclimation and predation trials were filmed with digital video cameras (SONY Exwave HAD SSC-M383) fitted with auto-iris lenses (2M-2812A, F1.4 DC AutoIris, 1/3" varifocal 28–12 mm, angle of view 95.6–22.1 degrees; Sony, Tokyo, Japan) mounted over each arena. Video footage for the four concurrent trials were recorded on a digital video recorder (Pro 8-CH DVR; SecurityCameraWorld.com, Cooper City, Florida, USA) at 30 frames per second (FPS).

Data analysis

Coho activity.—

1. *Behavior experiments.*—Following the 30-min acclimation, the activity of juvenile coho was quantified for 5 min by measuring swimming speed, approximated by the sum of vertical and horizontal line crossings on the 5-cm² grid of the prey compartment.

2. *Predation experiments.*—We quantified prey activity after coho were released from the acclimation chamber, during the 10 s prior to releasing the predators. Average swimming speed across the 10-s period was determined by tracking each prey fish in two-dimensional space with image analysis software. Using Quicktime Pro (version 7.6; Apple, Cupertino, California, USA), video was exported as an image sequence at 1 frame per second. In Image J, the position (x, y) of each prey fish was tracked between images, converting changes in position into swimming speed (cm/s) by standardizing the pixels to the bottom tank dimensions (software available online).⁴ We assumed that movement between frames was linear.

For most prey pairs (69/76), the two fish were equally active, and we averaged the swimming speed of the two prey each second. In the remaining 10% of cases, one prey was significantly more active (Kolmogorov-Smirnov distribution test, $P < 0.05$), and the more active prey was attacked first in seven of the eight cases. For these pairings, we used only the activity record for the more active prey in calculating prey activity.

Predation trial metrics.—Predator–prey interactions were analyzed from video recordings of each predation trial. Only attacks and captures of the first prey of the prey pair were quantified. Metrics were time to first attack (δA), time to capture (δC), time between first attack and capture ($\delta C - \delta A$), number of attacks (A),

and attack frequency (attacks per second during attack period; $A/[\delta C - \delta A]$). For each copper concentration and predator exposure combination, 16 predation trials were conducted for a total of 112 data trials. Not all metrics could be quantified for all trials.

Statistical analyses

Coho prey activity.—For the experiments in 2007, a two-factor ANOVA was used to explore whether copper exposure (0 vs. 20 $\mu\text{g/L}$) affected the behavioral response (activity level) to predation risk (no risk, upstream predator, upstream predator plus skin extract). Simple main effects analysis used a Bonferroni adjustment for multiple comparisons. For 2008, single-factor ANOVA was used to test the effect of the various copper treatments on prey activity in the combined presence of predators and skin extract. Dunnett's post-hoc was used to compare activity in the copper treatments to the control treatment. Statistical analyses were conducted in SPSS 16.0 for MacIntosh (IBM, Armonk, New York, USA).

Predator–prey interactions.—Data for predator–prey interactions were not normally distributed and were positively skewed, being bounded by zero. Log-transformation resulted in normally distributed δA , δC , and A , which were analyzed by ANOVA followed by Dunnett's post-hoc for comparing copper treatments to controls. Log-transformation did not normalize $\delta C - \delta A$ and attack frequency. Differences in central tendency of $\delta C - \delta A$ and attack frequency were tested by Kruskal-Wallis nonparametric multiple comparison. For the separate set of predation trials in which predators were also exposed to copper, Tukey's post-hoc test was used following the ANOVA to compare among the three treatments (controls, prey exposed to 10 $\mu\text{g/L}$ copper, predator + prey exposed to 10 $\mu\text{g/L}$ copper).

The relationship between capture success probability (capture on first attack) and copper treatment was tested by linear regression of the natural log of the odds ratio for capture success weighted by sample size. This method transforms curvilinear data in a probability distribution to a linear function of the independent variable. We transformed capture success probability at each copper concentration to the \log_e odds ratio (OR) as follows:

$$\log_e(\text{OR}) = \ln\left(\frac{\text{CSR}}{1 - \text{CSR}}\right) \quad (1)$$

where CSR is the capture success ratio across trials within each copper concentration.

Survival curves.—Time to capture of the first prey fish for each trial was used to assess differences in the distribution of survival times (δC) among treatments. Within each treatment, survival time was ranked across trials and each trial was assigned a decreasing proportion of the total survival of the first prey as per Vilhunen (2006). For example, the first prey captured among control trials had a survival time of 6 seconds. Up to 6 s,

⁴ <http://rsbweb.nih.gov/ij/>

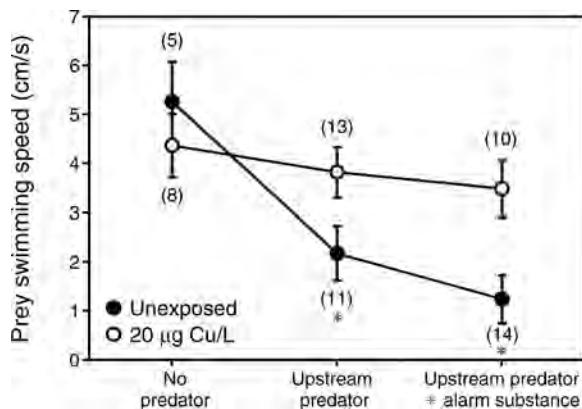


FIG. 1. Activity levels for control (unexposed) and copper-exposed (20 µg Cu/L for 3 h) juvenile coho downstream from one of three levels of predation risk; a compartment with a predator absent, a cutthroat trout predator present, and predator present plus the addition of juvenile coho skin extract. Swimming speed was recorded over 5 min at the end of the 30-min prey acclimation period. Significant differences ($P < 0.05$) from unexposed control are marked with an asterisk. Numbers by each symbol are the sample sizes. Error bars indicate \pm SE.

prey survival was 100%. At 6 s, survival across control trials dropped to 15/16, or 93.75%.

For each treatment, the proportion surviving was analyzed as a function of survival time by non-linear regression using the following sigmoid equation:

$$P(T) = \frac{1}{1 + e^{k(T - ST50)}} \quad (2)$$

where k was the slope of the linear portion of the curve, indicating how quickly survival declined with time, T was time in \log_{10} (number of seconds), and $ST50$ was the midpoint of the curve, the \log_{10} survival time for 50% of trials—analogue to the median survival time. For significantly different distributions, a t test assessed differences in the slope and midpoint among treatments. The benefit of using this method over simply comparing the central tendency of survival time among treatments was that we could compare not only the median survival time, but also the shape of the relationship between survival and time.

To calculate survival probabilities for copper treatments relative to the control treatment, we solved Eq. 2 for survival time, T , using the control slope (k) and midpoint ($ST50$) from Table 4:

$$T = k^{-1} \times \ln\left(\frac{1}{P} - 1\right) + ST50. \quad (3)$$

For given control survival probabilities (0.95 and 0.5), we used Eq. 3 to calculate the associated prey survival time. These times were then used in Eq. 2 with the respective slopes and midpoints for various copper exposures to estimate the related survival probability at that time for coho in each copper exposure.

RESULTS

Copper-exposed coho prey are behaviorally unresponsive to alarm cues.—We found a significant interaction between copper exposure and upstream predator cues with respect to their effect on coho activity ($F_{2,55} = 6.083$, $P = 0.054$; Fig. 1). In the absence of proximal predator cues, i.e., no upstream predator or conspecific skin extract, coho swam at an average speed of 5.2 cm/s (control condition; Fig. 1). A significant alarm response (tendency toward motionlessness) was elicited by the presence of a predator (2.1 cm/s; $F_{1,55} = 4.813$, $P = 0.032$) and a predator together with an upstream introduction of skin extract (1.2 cm/s; $F_{1,55} = 8.738$, $P = 0.005$). When the prey was exposed to copper, upstream predator cues had no effect on activity (combined 3.9 cm/s; $F_{2,55} = 0.518$, $P = 0.599$). Exposure to copper (20 µg/L) alone did not significantly affect baseline swimming activity (predator absent; 4.3 cm/s, $F_{1,55} = 0.734$, $P = 0.395$). Based on previous work (Baldwin et al. 2003), juvenile coho would be expected to recover ~20% of lost olfactory function during the 30 min acclimation interval in clean water used in these behavioral experiments. Nevertheless, copper-exposed fish were still unresponsive to chemical predator cues.

Similar to flow-through trials, control coho in static trials showed a strong alarm response to skin extract, as indicated by a reduction in swimming speed to 1.0 cm/s (Fig. 2). The magnitude of this alarm response decreased with increasing copper exposure. The average swimming speed of coho exposed to copper at 20 µg Cu/L was 4.9 cm/s and comparable to the baseline swimming speed of unexposed control fish in the flow-through trials (5.2 cm/s; Fig. 1). The loss of the alarm response was

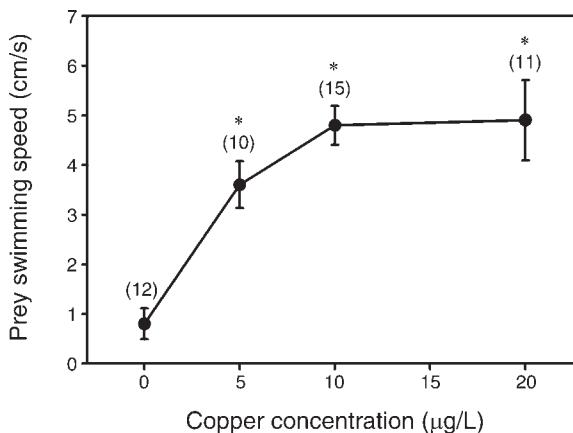


FIG. 2. Alarm behavior in juvenile coho prey at the outset of predation trials. Predators were located within the trial arena behind an opaque divider. Prey swimming speed was recorded at the end of the 15-min prey acclimation, after the presentation of conspecific skin extract. An asterisk indicates that juvenile coho unexposed to copper (0 µg/L) were significantly less active (i.e., were alarmed) relative to copper-exposed coho at all copper exposure concentrations ($P < 0.05$). Error bars indicate \pm SE.

TABLE 3. Median values (min, max) for time to first attack (δA), time to first capture (δC), time between δA and δC , number of attacks to δC (A), and frequency of attacks.

[Cu] [‡] ($\mu\text{g/L}$)	δA (s)	δC (s)	$\delta C - \delta A$ (s)	A	Attack frequency (s^{-1}) [§]
May					
0	29.4 (4.2, 218.4)	41.7 (6, 256.8)	3.3 (0, 106.2)	2 (1, 5)	0.75 (0.029, 16.67) [¶]
5	8.4 (0, 102)*	13.2 (3, 175.8) [†]	3 (0, 73.8)	3 (1, 7)	1.11 (0.054, 16.67)
10	6 (1.8, 97.2) [†]	9.3 (3, 422.4)*	2.7 (0, 422.47)	2 (1, 6)	1.25 (0.007, 16.67)
20	4.5 (0.6, 426.6)*	9.6 (1.2, 426.6)*	3 (0, 6)	3 (1, 6)	1.15 (0.667, 16.67)
June					
0	22.2 (4.2, 156)	23.4 (5.4, 159)	1.8 (0, 7.2)	3 (1, 6)	1.67 (0.555, 16.67)
10	3 (0, 114)*	6.9 (0.6, 124.8)*	3 (0, 12)	3 (1, 6)	1.5 (0.222, 16.67)
10#	5.4 (1.2, 27)*	9 (1.2, 34.8)*	2.1 (0, 28.8)	3 (1, 10)	1.57 (0.347, 16.67)

* $P < 0.05$; $\dagger P < 0.1$.

[‡] Copper exposures for 3 h prior to predation trial.

[§] $A/(\delta C - \delta A)$.

[¶] To calculate attack frequency for $\delta C - \delta A = 0$, number of attacks was divided by 0.06 s.

Predators also exposed to copper.

significant among copper-exposed coho relative to controls ($F_{3,44} = 14.27, P < 0.001$; Dunnett's post hoc test, $P \leq 0.001$).

Copper-exposed coho are more vulnerable to predation.—Prior copper exposure significantly affected time to first attack (ANOVA, $F_{3,58} = 3.550, P = 0.020$) and time to first capture ($F_{3,58} = 4.33, P = 0.008$) of juvenile coho by predators (Table 3). Time to attack (δA) and time to capture (δC) were reduced for all copper treatments compared to controls (Dunnett's post hoc test (0 vs. 5, 10, 20 $\mu\text{g/L}$): $P_{\delta A} = 0.031, 0.069, 0.014$; $P_{\delta C} = 0.062, 0.020, 0.004$). Other predator-prey interactions were unaffected by copper exposure (Table 3), including time between first attack and capture (Kruskal-Wallis $\chi^2_{3,63} = 2.43, P = 0.488$), number of attacks ($F_{3,58} = 0.624, P = 0.602$), and attack frequency ($\chi^2_{3,63} = 6.00, P = 0.111$).

Time to attack and time to capture were positively correlated because time to capture includes time to first attack ($\delta C = \delta A + [\delta C - \delta A]$). The correlation between time to attack and time to capture was very strong ($r_S = 0.959, n = 63, P < 0.001$). When log-transformed to allow calculation of a coefficient of determination, time to attack explained nearly all the variation in time to capture ($r^2 = 0.912$). Capture-attack interval ($\delta C - \delta A$) was not significantly different among treatments ($\chi^2_{3,63} = 2.43, P = 0.488$, median = 3 s), and was not correlated with δA ($r_S = 0.094, n = 63, P = 0.470$), suggesting that the primary component of the predation sequence affected by copper was prey detection leading to attack (δA).

Although the number of attacks to capture (A) was not different among treatments (Table 3), the capture success rate (probability of capturing prey on the first attack) increased with copper concentration (Fig. 3). Capture success rate was significantly correlated with increasing copper exposure concentration ($F_{1,3} = 60.060, P = 0.016, r^2 = 0.968$) following the equation $\log_e(\text{OR}) = 0.062[\text{Cu}] - 2.039$, where $[\text{Cu}]$ is dissolved copper concentration in $\mu\text{g/L}$. Standard error for the slope was 0.008 and was 0.092 for the intercept.

Exposing predators to copper does not improve the evasion success of prey.—In a separate set of predation trials, we determined the effect of co-exposing predators and prey to copper at 10 $\mu\text{g/L}$ (Table 3). Similar to the first set of predation trials, copper exposure affected time to attack ($F_{2,42} = 8.639, P = 0.001$) and time to capture ($F_{2,42} = 6.368, P = 0.004$). However, these metrics were not significantly different from experiments in which prey alone were exposed (Tukey's post hoc, $\delta A, P = 0.340$; $\delta C, P = 0.715$). Number of attacks ($F_{2,42} = 1.429, P = 0.251$), time between first attack and capture ($\chi^2_{2,45} = 0.732, P = 0.693$), and attack frequency ($\chi^2_{2,45} = 0.318, P = 0.853$) were not affected by copper exposure (prey exposed and predators plus prey exposed were similar to controls). In addition, exposing predators to copper did not change the likelihood of capturing prey on the first attack (25% for exposed prey only vs. 31% for co-exposed predators and prey; $\chi^2_1 = 0.643, P = 0.423$).

Copper exposure reduces prey survival.—Survival curves for each treatment were constructed from the

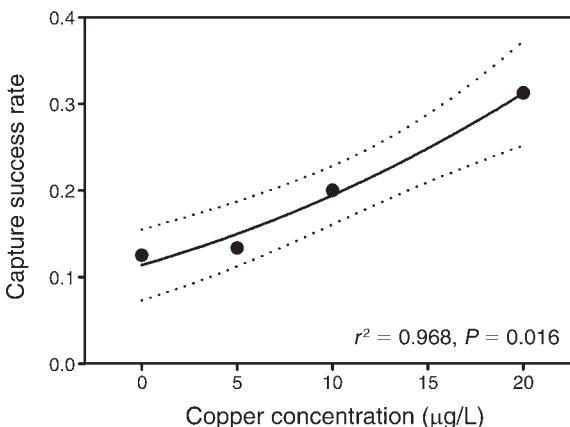


FIG. 3. Proportion of trials for which prey were captured on the first attack (capture success rate). Dashed lines are 95% confidence bands for the logistic regression. Capture success rate is described by the equation $e^F/(1 + e^F)$, where $F = 0.062[\text{Cu}] - 2.039$ (see Results for associated statistics).

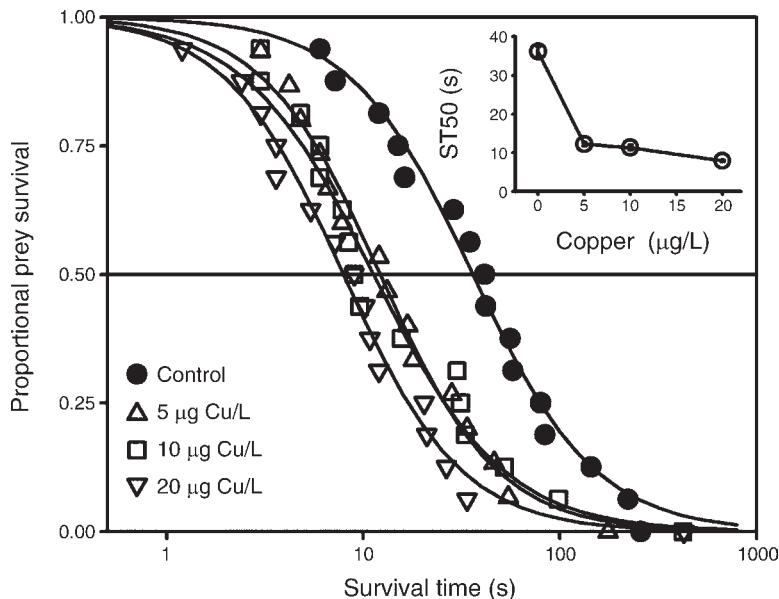


FIG. 4. Survival curves for control and copper-exposed coho in predation trials. Each point represents one predation trial, and survival times are based on the first prey fish consumed. The inset shows the midpoints of each curve, representing median survival time (ST50) for each treatment as a function of copper exposure.

time to first capture among trials (Figs. 4 and 5). Slopes, midpoints, and coefficients of determination for these curves are presented in Table 4.

Survival curves for copper treatments (Fig. 4) were significantly different from the control curve (*F* test, all *P* < 0.001). This was due to differences in midpoint (*t*

test, all *P* < 0.001), as slope between survival and time for each copper treatment was similar to the slope of the control curve (*t* test, all *P* > 0.480). Among copper treatments, 5 µg/L and 10 µg/L produced similar survival curves (*F*_{2,27} = 2.222, *P* = 0.128), with similar slopes (*t*₂₇, *P* = 0.314) and midpoints (*t*₂₇, *P* = 0.274),

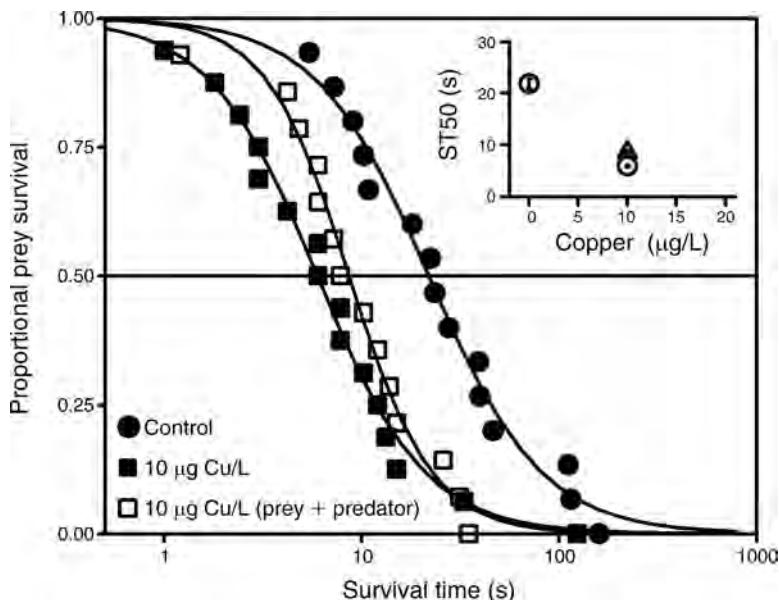


FIG. 5. Survival curves for predation trials in which prey alone or predators and prey were both exposed to copper (10 µg/L). Each point represents one trial, and survival times are based on the first prey fish consumed. Insets show the midpoints of each curve, representing median survival time (ST50) for each treatment as a function of copper exposure. The triangle symbol in the inset represents the ST50 for trials in which both predator and prey were exposed to copper.

TABLE 4. Sigmoid regression parameters for the survival curves.

[Cu] ($\mu\text{g/L}$)	r^2	ST50†	SE	$K‡$	SE	N
May						
0	0.984	1.557	0.016	3.219	0.186	16
5	0.988	1.085	0.014	3.36	0.166	15
10	0.965	1.052	0.026	3.042	0.262	16
20	0.987	0.898	0.014	3.333	0.17	16
June						
0	0.983	1.338	0.016	3.493	0.213	15
10	0.985	0.774	0.014	3.659	0.203	16
10§	0.985	0.935	0.012	4.768	0.302	14

Note: All $P < 0.001$.

† Log of time to 50% survival across trials, midpoint of curve, measured in seconds.

‡ Slope of the sigmoid regression curve.

§ Predators and prey both exposed to copper.

whereas these curves had significantly different midpoints (Table 4) than the curve for 20 $\mu\text{g/L}$ (both $P < 0.004$).

For the predation trials in which both predators and prey were exposed (Fig. 4), survival curves for copper treatments (10 $\mu\text{g/L}$) were again different from the control curve (F test, both $P < 0.001$). Prey alone exposed to 10 $\mu\text{g/L}$ resulted in a survival curve that had a similar slope (t_{27} , $P = 0.577$), but different midpoint (t_{27} , $P < 0.001$) than the control curve. Exposing predators and coho to 10 $\mu\text{g/L}$ affected both the slope (t_{25} , $P = 0.002$) and the midpoint (t_{25} , $P < 0.001$) of the survival curve compared to the control curve. The predator + prey copper curve also had a different slope (t_{26} , $P = 0.005$) and midpoint (t_{26} , $P < 0.001$) compared to the prey-only copper exposures. Therefore, exposing predators to copper resulted in a subtle change in the shape of the survival curve, although it was not strong enough to alter predator-prey metrics (see *Exposing predators to copper does not improve the evasion success of prey*).

We calculated survival probabilities for copper exposures relative to controls using Eqs. 1 and 2. At 4.4 s, 95% of control coho were alive. Relative survival probabilities for copper-exposed coho were 82% for 5 $\mu\text{g/L}$, 78% for 10 $\mu\text{g/L}$, and 70% for 20 $\mu\text{g/L}$. The median survival time for controls was 36.1 s (50% survival; Table 4). Corresponding survival probabilities for copper exposures were 17%, 18%, and 10% for 5 $\mu\text{g/L}$, 10 $\mu\text{g/L}$, and 20 $\mu\text{g/L}$ treatments, respectively.

DISCUSSION

We have evaluated the effects of copper exposure on juvenile coho predator avoidance behaviors and the related consequences for coho survival during encounters with predatory wild cutthroat trout. We find that relatively brief (3 h) exposures to copper at 5–20 $\mu\text{g/L}$ eliminated the behavioral alarm response in coho prey, leading in turn to increased detection, reduced evasion, and reduced survival during predation trials.

The magnitude of the coho alarm response was greatest when the presence of an upstream predator was paired with skin extract, consistent with previous studies (e.g.,

Lautala and Hirvonen 2008). Our results showing a copper-induced loss of antipredator behavior reinforces and extends previous observations for juvenile coho. Sandahl et al. (2007) found that hatchery-raised coho become motionless (freeze) following presentation of a conspecific skin extract, and that this alarm response is reduced or abolished by copper exposure (3h; 2–20 $\mu\text{g/L}$). We have extended this behavioral toxicity to wild coho, and shown that copper also renders coho unresponsive to possibly distinct chemical cues emanating from a proximal upstream predator. This is consistent with copper's broad neurotoxicity across non-overlapping olfactory receptor neuron populations in the salmon olfactory epithelium (Baldwin et al. 2003).

Copper-exposed prey were easier for predators to identify, attack, and capture. This was due primarily to higher activity than alarmed controls, leading to a more rapid detection by cutthroat trout. For juvenile salmon, activity critically determines the likelihood of detection by visually guided predators such as larger salmonids, piscivorous birds, and river otters. For example, in predation trials with Mergansers, attacks on active juvenile coho were 15 times more frequent than attacks on inactive coho (Martel and Dill 1995). In the current study, copper also negatively influenced evasion of a predator once an attack was initiated, i.e., it became increasingly likely that prey would be captured on the first attack at higher copper exposure concentrations. Evasion success depends in part on whether the prey fish is aware of proximal danger (Lima and Dill 1990). In the current study the threat awareness of unexposed controls was heightened via the introduction of conspecific skin extract prior to the onset of the trial. By comparison, copper-exposed coho were unresponsive to the chemical alarm cue, thus unaware of the impending threat, and less prepared to evade once an attack sequence was initiated.

Copper toxicity to the coho lateral line mechanosensory system may have contributed to the observed reduction in evasion success. As with olfactory receptor neurons, copper is toxic to lateral line neurons that are directly exposed to contaminated waters (Linbo et al.



PLATE 1. Juvenile coho salmon are sensitive to olfactory alarm cues. Photo credit: Morgan Bond.

2006). The lateral line system in salmon and other fish responds to water displaced by an approaching predator and triggers a well-studied sequence of evasive behaviors (the C-type startle reflex: reviewed by Bleckmann 1993). Conversely, predators can capture prey without a functioning lateral line system. For predatory bass (*Micropterus salmoides*) and muskellunge (*Esox masquinongy*), prey capture success rate was unaffected by cobalt exposures at concentrations toxic to the lateral line (New 2002). Despite similar prey capture success, some aspects of the attack sequence were altered in cobalt-exposed predators relative to controls, including shorter distance to strike (both predators) and mean angular approach (muskellunge). We found a subtle shift in the midpoint and slope of the prey survival curve when predators were co-exposed to copper, possibly due to copper neurotoxic effects on the lateral line of cutthroat trout predators. Additional behavioral studies with a focus on lateral line function are warranted, particularly for predator-prey encounters under low visibility conditions.

Prey may make compensatory behavioral changes to improve their likelihood of surviving an attack (Lima

and Dill 1990, Lind and Cresswell 2005); however, we saw no evidence of this among copper-exposed coho. Also, co-exposing predators and prey to copper did not eliminate the reduced survival time of prey relative to exposing prey alone. This indicates that sublethal copper toxicity will have a disproportionate impact on prey in predator-prey dynamics, irrespective of whether the visually guided predators occupy the same contaminated surface waters (e.g., cutthroat trout and other piscivorous fish) or attack from the air above (e.g., Kingfishers and other birds).

The arena used for the predation trials lacked substrate, making it easier for cutthroat trout to detect and successfully capture alarmed coho relative to an encounter under natural conditions. Substrate complexity improves juvenile coho crypsis (Donnelly and Dill 1984) and provides refuge. Turbidity in streams can further constrain visual detection (Mazur and Beauchamp 2003). Thus, our observed differences in predation vulnerability between copper-exposed and unexposed prey would likely be magnified in natural stream habitats where survival rates for alarmed (predator aware) coho are higher.

Our findings likely extend to other fish species. For example, Baldwin et al. (2011) recently showed that the olfactory toxicity of copper is comparable in coho and steelhead, and also comparable among fish raised in hatchery and natural environments. Numerous other studies have demonstrated the olfactory-mediated neurobehavioral toxicity of copper for alarm behavior (reviewed by Tierney et al. 2010) in both controlled laboratory settings (e.g., Beyers and Farmer 2001, Jaansson and Olsen 2010) and in situ in copper-contaminated habitats (McPherson et al. 2004, Mirza et al. 2009). Copper impacts on chemosensory function also extends to other taxa; for example, disruption of the kairomone-mediated morphological predation defense of zooplankton (*Daphnia pulex*) and altered olfactory-based feeding behaviors of leeches (*Nepheleopsis obscura*; Pyle and Mirza 2007) have similar toxicity thresholds (~5 µg/L).

The toxic effects of copper have been remarkably consistent in coho salmon across biological scales, from the functional responsiveness of receptor neurons in the olfactory epithelium (Baldwin et al. 2003, Sandahl et al. 2004, 2007, McIntyre et al. 2008, Baldwin et al. 2011) to the olfactory-mediated behavior of individual animals (Sandahl et al. 2007; this study) to coho survival in predator-prey interactions (this study). Across these studies, the thresholds for neurobehavioral toxicity have been in the range of 2–5 µg/L (although this will shift upward in waters with relatively high dissolved organic carbon content: McIntyre et al. 2008). Notably, this is very close to the toxicity threshold reported for rainbow trout olfaction more than 35 years ago (7 µg/L; Hara et al. 1976). Olfactory disruption as measured at the olfactory epithelium is therefore a reliable proxy for behavioral impairment and reduced survival.

In conclusion, our findings are an example of how chemical habitat degradation in the form of water pollution can have nuanced but important impacts on the behavioral ecology of salmon. The effects of copper on coho survival are context-dependent and likely to go unnoticed in conventional field surveys of juvenile salmon abundance, habitat use patterns, and physical habitat quality. New biological indicators of copper toxicity, including diagnostic changes in gene expression within the salmon olfactory epithelium (e.g., Tilton et al. 2008), may eventually reveal the extent of sensory isolation in wild salmon under natural exposure regimes. In the interim, copper control strategies will likely improve juvenile salmon survival and minimize the disruption of a range of chemosensory-dependent behaviors. This includes, for example, legislation recently enacted in Washington State (SB6557) and California (SB346) to phase out the use of copper and other metals in motor vehicle brake pads.

ACKNOWLEDGMENTS

The authors thank J. Martin Grassley, Chris Tatara, Barry Berejikian, Dave Rose, Matt Gilman, Sarah McCarthy, and Evan Malczyk for technical assistance during this project. Coho

during 2008 were donated by E. McClelland and K. Naish (University of Washington School of Aquatic and Fishery Sciences, Seattle, Washington, USA). This research was supported by the NOAA Coastal Storms Program and a grant to Jenifer McIntyre from the U.S. Environmental Protection Agency's Science to Achieve Results (STAR) program. Although the research described in the article has been funded in part by the U.S. Environmental Protection Agency's STAR program (grant FP91656301), it has not been subjected to any EPA review and therefore does not necessarily reflect the views of the Agency, and no official endorsement should be inferred.

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Copper: Adverse Effects on Salmonids

Scientific Abstracts and References

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The following information was collected from recent peer reviewed scientific publications. The full text of each article is available from the journal and publisher cited. Cu = copper. * Indicates annotations by C. Woody for clarification or explanation. Questions or comments or criticisms greatly appreciated. For information on the importance of olfaction to fish see the Salmon Ecology 101 Fact Sheet.

Pyle, GG, and RS Mirza. 2007. Copper-impaired chemosensory function and behavior in aquatic animals. Human and Ecological Risk Assessment. 13 (3): 492 – 505.

Abstract: Chemosensation is one of the oldest and most important sensory modalities utilized by aquatic animals to provide information about the location of predators, location of prey, sexual status of potential mates, genetic relatedness of kin, and migratory routes, among many other essential processes. The impressive sophistication of chemical communication systems among aquatic animals probably evolved because of the selective pressures exerted by water as a "universal solvent." Impairment of chemosensation by toxicants at the molecular or cellular level can potentially lead to major perturbations at higher levels of biological organization. We have examined the consequences of metal-impaired chemosensory function in a range of aquatic animals that represents several levels of a typical aquatic ecosystem. In each case, low, environmentally relevant metal concentrations were sufficient to cause chemosensory dysfunction. Because the underlying molecular signal transduction machinery of chemosensory systems demonstrates a high degree of phylogenetic conservation, we speculate that metal-impaired chemosensation among phylogenetically disparate animal groups probably results from a common mechanism of impairment. We propose developing a chronic chemosensory-based biotic ligand model (BLM) that maintains the advantages of the current BLM approach, while simultaneously overcoming known difficulties of the current gill-based approach and increasing the ecological relevance of current BLM predictions.

**'Safe' heavy metals hit fish senses. 18:16 09 April 2007.
NewScientist.com news service. Aria Pearson**

Pollution far below the level seen as dangerous for aquatic life has nevertheless dramatically altered animal behaviour in North American lakes. Heavy metals are knocking out the sense of smell in organisms from bacteria to fish. Even we may not be immune.

Nathaniel Scholz, at the Northwest Fisheries Science Center in Seattle, Washington, and colleagues found that salmon lose their sense of smell if there are even low levels of copper in the water they are swimming

in. The fish could die as a result, because they cannot smell chemicals that would warn of a nearby predator.

All over the world, storm water run-off shuttles heavy metals such as copper and zinc from industry, mines and built-up areas into natural water courses. The concentrations are generally low - too low for polluters to bother about, or so many of them seem to have thought. "Now we're going after [this] 'So what?' question," says Scholz.

Scholz's team kept young coho salmon in tanks with different concentrations of copper for 3 hours, then measured their movements when a drop of salmon skin extract was added to the water. In the wild, the skin would be a cue that a predator may have injured a fish nearby.

Unexposed salmon stopped swimming, sank to the bottom of the tank and kept still - typical tactics for avoiding predators. But fish exposed to concentrations of copper as low as 2 parts per billion (ppb) just stopped for a few seconds, or merely slowed down, while fish exposed to 10 or more ppb didn't notice the cue at all (*Environmental Science and Technology*, DOI: 10.1021/es062287r).

The US Environmental Protection Agency has set the maximum safe level of copper for aquatic life at 13 parts per billion, well above that needed to wipe out the salmon's ability to sense chemical cues. Yet Greg Pyle, at Nipissing University in North Bay, Ontario, Canada, has found chemosensory problems at three levels of the food chain at or below 5 ppb, the limit set by Ontario's water quality standards. "The phenomenon is ubiquitous," he says.

Leeches lost their ability to smell food, zooplankton were unable to evade predators, and fathead minnows couldn't recognize their eggs: the fish ate them instead of protecting them. The contamination in these lakes is much too weak to kill these organisms outright, Pyle says, yet their populations are suffering.

Metals may have the same effect in humans. The makers of the cold remedy Zicam, which contains zinc, recently settled out of court for \$12 million with people who reported losing their sense of smell after spraying the product into their noses. The company maintains the remedy is safe. Studies have not been conducted to test whether zinc destroys human sensory abilities, but given what's happening in aquatic ecosystems, Pyle believes it could. "Don't squirt metals up your nose," he says. "That would be my advice".

Sandahl, JF, DH Baldwin, JJ Jenkins and NL Schlotz. 2007. A sensory system at the interface between urban stormwater runoff and salmon survival. *Environ. Sci. Technol.* 41:2998-3004.

Abstract: Motor vehicles are a major source of toxic contaminants such as copper, a metal that originates from vehicle exhaust and brake pad wear. Copper and other pollutants are deposited on roads and other impervious surfaces and then transported to aquatic habitats via stormwater runoff. In the western United States, exposure to non-point source pollutants such as copper is an emerging concern for many populations of threatened and endangered Pacific salmon (*Oncorhynchus spp.*) that spawn and rear in coastal watersheds and estuaries. To address this concern, we used conventional neurophysiological recordings to investigate the impact of ecologically relevant copper exposures (0-20 µg/L for 3 h) on the olfactory system of juvenile coho salmon (*O. kisutch*). These recordings were combined with computer-assisted video analyses of behavior to evaluate the sensitivity and responsiveness of copper-exposed coho to a chemical predation cue (conspecific alarm pheromone). The sensory physiology and predator avoidance behaviors of juvenile coho were both significantly impaired by copper at concentrations as low as 2 µg/L. Therefore, copper-containing stormwater runoff from urban landscapes has the potential to cause chemosensory deprivation and increased predation mortality in exposed salmon.

Baldwin, DH, JF Sandahl, JS Labenia, and NL Schloz. 2003. Sublethal effects of copper on coho salmon: impacts on nonoverlapping

receptor pathways in the peripheral olfactory nervous system. Environmental Toxicology and Chemistry. 10:2266–2274.

Abstract: The sublethal effects of copper on the sensory physiology of juvenile coho salmon (*Oncorhynchus kisutch*) were evaluated. In vivo field potential recordings from the olfactory epithelium (electro-olfactograms) were used to measure the impacts of copper on the responses of olfactory receptor neurons to natural odorants (L-serine and taurocholic acid) and an odorant mixture (L-arginine, L-aspartic acid, L-leucine, and L-serine) over a range of stimulus concentrations. Increases in copper impaired the neurophysiological response to all odorants within 10 min of exposure. The inhibitory effects of copper (1.0–20.0 mg/L) were dose dependent and they were not influenced by water hardness. Toxicity thresholds for the different receptor pathways were determined by using the benchmark dose method and found to be similar (a 2.3–3.0 mg/L increase in total dissolved copper over background). Collectively, examination of these data indicates that copper is broadly toxic to the salmon olfactory nervous system. Consequently, short-term influxes of copper to surface waters may interfere with olfactory-mediated behaviors that are critical for the survival and migratory success of wild salmonids.

Hansen, JA, JD Rose, RA Jenkins, KG Gerow, HL Bergman. 1999. Chinook salmon (*Oncorhynchus tshawytscha*) and rainbow trout (*Oncorhynchus mykiss*) exposed to copper: neurophysiological and histological effects on the olfactory system. Environmental Toxicology and Chemistry. 9:1979-1991.

Abstract: Olfactory epithelial structure and olfactory bulb neurophysiological responses were measured in chinook salmon and rainbow trout in response to 25 to 300 µg copper (Cu)/L. Using confocal laser scanning microscopy, the number of olfactory receptors was significantly reduced in chinook salmon exposed to greater than or equal to 50 µg Cu/L and in rainbow trout exposed to greater than or equal to 200 µg Cu/L for 1 h. The number of receptors was significantly reduced in both species following exposure to 25 µg Cu/L for 4 h. Transmission electron microscopy of olfactory epithelial tissue indicated that the loss of receptors was from cellular necrosis. Olfactory bulb electroencephalogram (EEG) responses to 10(-3) M L-serine were initially reduced by all Cu concentrations but were virtually eliminated in chinook salmon exposed to greater than or equal to 50 µg Cu/L and in rainbow trout exposed to greater than or equal to 200 µg Cu/L within 1 h of exposure. Following Cu exposure, EEG response recovery rates were slower in fish exposed to higher Cu concentrations. The higher sensitivity of the chinook salmon Olfactory system to Cu-induced histological damage and neurophysiological impairment parallels the relative species sensitivity observed in behavioral avoidance experiments. This difference in species sensitivity may reduce the survival and reproductive potential of chinook salmon compared with that of rainbow trout in Cu-contaminated waters.

Dethloff, GM, D Schlenk, JT Hamm, and HC Bailey. 1999. Alterations in physiological parameters of rainbow trout (*Oncorhynchus mykiss*) with exposure to copper and copper/zinc mixtures. Ecotoxicology and Environmental Safety. 42(3):253-264.

Abstract: Rainbow trout (*Oncorhynchus mykiss*) were exposed to sublethal concentrations of copper (Cu, 14 µg/liter or parts per billion) and zinc (Zn, 57 and 81 µg/liter or ppb) for a 21-day period. The four treatments included a control, a Cu control, a Cu and low-Zn treatment and a Cu and high-Zn treatment. Selected parameters [e.g., hemoglobin (Hb), hematocrit (Hct), plasma glucose, lactate and cortisol, differential leukocyte count, respiratory burst, tissue metal concentrations, hepatic metallothionein (MT), brain acetylcholinesterase (AChE)] were evaluated at 2, 7, 14, and 21 days of exposure. Whole blood and

plasma parameters were not altered by exposure to metals. The percentage of lymphocytes was consistently decreased in the three metal treatments, while percentages of neutrophils and monocytes were increased. Respiratory burst activity was elevated in all metal treatments. Gill Zn concentration was highly variable, with no significant alterations occurring. Gill Cu concentration was elevated above control levels in all metal treatments, Gill Cu concentration in the two Cu/Zn treatments was also elevated above levels in the Cu control. Hepatic metal concentrations and MT levels were not altered from control values. Measurements of brain AChE indicated an elevation in this parameter across metal treatments. In general, alterations in physiological parameters appeared to be due to Cu, with Zn having no interactive effect.

Hansen JA, Lipton J, Welsh PG. 2002. Environmental toxicology and chemistry. 21 (3): 633-639.

Abstract: Bull trout (*Salvelinus confluentus*) were recently listed as threatened in the United States under the federal Endangered Species Act. Past and present habitat for this species includes waterways contaminated with heavy metals released from mining activities. Because the sensitivity of this species to copper was previously unknown, we conducted acute copper toxicity tests with bull (*bull trout are an endangered type of charr like Dolly Varden) and rainbow trout (*Oncorhynchus mykiss*) in side-by-side comparison tests. Bioassays were conducted using water at two temperatures (8 degrees C and 16 degrees C) and two hardness levels (100 and 220 mg/L as CaCO₃). At a water hardness of 100 mg/L both species were less sensitive to copper when tested at 16 degrees C compared to 8 degrees C. The two species had similar sensitivity to copper in 100-mg/L hardness water, but bull trout were 2.5 to 4 times less sensitive than rainbow trout in 220-mg/L hardness water. However, when our results were viewed in the context of the broader literature on rainbow trout sensitivity to copper, the sensitivities of the two species appeared similar. This suggests that adoption of toxicity thresholds that are protective of rainbow trout would be protective of bull trout; however, an additional safety factor may be warranted because of the additional level of protection necessary for this federally threatened species.

Brix KV, DeForest DK, Adams WJ. 2001. Assessing acute and chronic copper risks to freshwater aquatic life using species sensitivity distributions for different taxonomic groups. Environmental Toxicology and Chemistry. 20 (8): 1846-1856.

Abstract: Using copper as an example, we present a method for assessing chemical risks to an aquatic community using species sensitivity distributions (SSDs) for different taxonomic groups. This method fits probability models to chemical exposure and effects data to estimate the percentage of aquatic species potentially at risk and expands on existing probabilistic risk assessment methodologies. Due to a paucity of chronic toxicity data for many chemicals, this methodology typically uses an acute-chronic ratio (ACR) to estimate the chronic effects distribution from the acute effects distribution. We expanded on existing methods in two ways. First, copper SSDs were developed for different organism groups (e.g., insects, fish) that share similar sensitivities or ecological functions. Integration of exposure and effects distributions provides an estimate of which organism groups may be at risk. These results were then compared with a site-specific food web, allowing an estimation of whether key food web components are potentially at risk and whether the overall aquatic community may be at risk from the perspective of ecosystem function. Second, chronic SSDs were estimated using the relationship between copper ACRs and acute toxicity (i.e., the less acutely sensitive a species, the larger the ACR). This correction in the ACR removes concerns previously identified with use of the ACR and allows evaluation of a significantly expanded chronic data set with the same approach as that for assessing acute risks.

Goldstein, JN, DF Woodward, and AM Farag. 1999. Movement of adult Chinook salmon during spawning migration in a metals-contaminated system, Coeur d'Alene River, Idaho. *Transactions of the American Fisheries Society* 128:121–129.

Abstract: Spawning migration of adult male chinook salmon *Oncorhynchus tshawytscha* was monitored by radio telemetry to determine their response to the presence of metals contamination in the South Fork of the Coeur d'Alene River, Idaho. The North Fork of the Coeur d'Alene River is relatively free of metals contamination and was used as a control. In all, 45 chinook salmon were transported from their natal stream, Wolf Lodge Creek, tagged with radio transmitters, and released in the Coeur d'Alene River 2 km downstream of the confluence of the South Fork and the North Fork of the Coeur d'Alene River. Fixed telemetry receivers were used to monitor the upstream movement of the tagged chinook salmon through the confluence area for 3 weeks after release. During this period, general water quality and metals concentrations were monitored in the study area. Of the 23 chinook salmon observed to move upstream from the release site and through the confluence area, the majority (16 fish, 70%) moved up the North Fork, and moved up the North Fork, and only 7 fish (30%) moved up the South Fork, where greater metals concentrations were observed. Our results agree with laboratory findings and suggest that natural fish populations will avoid tributaries with high metals contamination.

Dethloff, GM, and HC Bailey. 1998. Effects of Copper on Immune System Parameters of Rainbow Trout (*Oncorhynchus mykiss*). *Environmental Toxicology and Chemistry*. 17(9):1807-1814.

Abstract: Agricultural, urban, industrial, and mining sources release metals into waterways. The effects of sublethal concentrations of metals on integrated physiological processes in fish, such as immunocompetency, are not well understood. The objective of this study was to determine the physiological effects of a range of sublethal copper concentrations (6.4, 16.0, and 26.9 $\mu\text{g Cu/L}$) on Shasta-strain rainbow trout (*Oncorhynchus mykiss*) exposed in soft water. Trout were sampled after 3, 7, 14, and 21 d of exposure to copper. The percentage of monocytes was consistently elevated at 26.9 $\mu\text{g Cu/L}$, and the percentage of lymphocytes was decreased. A consistent increase in the percentage of neutrophils occurred at 26.9 and 6.4 $\mu\text{g Cu/L}$. Respiratory burst activity was decreased for all concentrations at all sampling days, but a significant reduction occurred only at 14 and 21 d of exposure to copper. B-like cell proliferation was decreased (In short, all this means that the immune system of fish was affected by Cu exposure. Woody) by exposure to the higher copper concentrations. Proliferation results, however, had high variability. T-like cell proliferation and phagocytosis were not altered. Hepatic copper concentration was consistently elevated in trout exposed to 26.9 $\mu\text{g Cu/L}$; no correlation was found between hepatic copper concentration and the immune system responses investigated. Consistent alterations in immunological parameters suggest that these parameters could serve as indicators of chronic metal toxicity in natural systems.

Buhl, KJ and SJ Hamilton. 1991. Relative sensitivity of early life stages of arctic grayling, coho salmon, and rainbow trout to nine inorganics. *Ecotoxicology and Environmental Safety*. 2:184-197.

Abstract: The acute toxicity of nine inorganics associated with placer mining sediments to early life stages of Arctic grayling (*Thymallus arcticus*), coho salmon (*Oncorhynchus kisutch*), and rainbow trout (*O. mykiss*) was determined in soft water (hardness, 41 $\text{mg liter}^{-1} \text{CaCO}_3$) at 12°C. The relative toxicities of the inorganics varied by four orders of magnitude; from most toxic to least toxic, the rank order was cadmium,

silver, mercury, nickel, gold, arsenite, selenite, selenate, and hexavalent chromium. In general, juvenile life stages of the three species tested were more sensitive to these inorganics than the alevin life stage. Among juveniles, no single species was consistently more sensitive to the inorganics than another; among alevins, Arctic grayling were generally more sensitive than coho salmon and rainbow trout. Based on the results of the present study, estimated no-effect concentrations of arsenic and mercury, but not cadmium, chromium, gold, nickel, selenium, or silver, are close to their concentrations reported in streams with active placer mines in Alaska. Thus, arsenic (as arsenite(III)) and mercury may pose a hazard to Arctic grayling and coho salmon in Alaskan streams with active placer mines.

Saiki, MK, DT Castleberry, TW May, BA Martin, and FN Bullard. 1995. Copper, cadmium, and zinc concentrations in aquatic food-chains from the upper Sacramento River (California) and selected tributaries. Archives of Environmental Contamination and Toxicology. 29(4):484-491.

Abstract: Metals enter the Upper Sacramento River above Redding, California, primarily through Spring Creek, a tributary that receives acid-mine drainage from a US EPA Super-fund site known locally as Iron Mountain Mine. Waterweed (*Elodea canadensis*) and aquatic insects (midge larvae, Chironomidae; and mayfly nymphs, *Ephemeroptera*) from the Sacramento River downstream from Spring Creek contained much higher concentrations of copper (Cu), cadmium (Cd), and zinc (Zn) than did similar taxa from nearby reference tributaries not exposed to acid-mine drainage. Aquatic insects from the Sacramento River contained especially high maximum concentrations of Cu (200 mg/kg dry weight in midge larvae), Cd (23 mg/kg dry weight in mayfly nymphs), and Zn (1,700 mg/kg dry weight in mayfly nymphs). Although not always statistically significant, whole-body concentrations of Cu, Cd, and Zn in fishes (threespine stickleback, *Gasterosteus aculeatus*; Sacramento sucker, *Catostomus occidentalis*; Sacramento squawfish, *Ptychocheilus grandis*; and chinook salmon, *Oncorhynchus tshawytscha*) from the Sacramento River were generally higher than in fishes from the reference tributaries.

Baatrup, E. Structural and Functional-Effects of Heavy-Metals on the Nervous-System, Including Sense-Organs, of Fish. Comparative Biochemistry and Physiology C-Pharmacology Toxicology & Endocrinology. 1991; 100(1-2):253-257.

Abstract: Today, fish in the environment are inevitably exposed to chemical pollution. Although most hazardous substances are present at concentrations far below the lethal level, they may still cause serious damage to the life processes of these animals. Fish depend on an intact nervous system, including their sense organs, for mediating relevant behavior such as food search, predator recognition, communication and orientation. Unfortunately, the nervous system is most vulnerable and injuries to its elements may dramatically change the behavior and consequently the survival of fish.

Heavy metals are well known pollutants in the aquatic environment. Their interaction with relevant chemical stimuli may interfere with the communication between fish and environment. The affinity for a number of ligands and macromolecules makes heavy metals most potent neurotoxins. The present Mini-Review highlights some aspects of how trace concentrations of mercury, copper and lead affect the integrity of the fish nervous system; structurally, physiologically and biochemically.

Oregon study shows copper from brake pads affects salmon

CORVALLIS, Ore., Oregon State University issued the following news release:

Copper deposited on roads by the wearing of brake pads is transported in runoff to streams and rivers, where it may play a key role in increasing predation of threatened and endangered salmon throughout California and the Pacific Northwest. According to a study released this week in Environmental Science and Technology, levels of copper as low as 2 parts per billion have a direct impact on the sensory systems of juvenile coho salmon. The skin of juvenile salmon is equipped with a special kind of warning system, said Nat Scholz, a researcher at the Northwest Fisheries Science Center, a branch of the National Oceanic and Atmospheric Association (NOAA) Fisheries Service. When a salmon is attacked by a predator, a chemical cue is released from the skin that signals danger to nearby fish. These fish smell the predation cue and take behavioral measures to avoid being eaten.

Oregon State University researchers working with scientists from NOAA Fisheries, found that fish exposed to low, environmentally realistic levels of copper had an impaired sense of smell and were less responsive to the chemical alarm signal. At elevated concentrations of copper, these predator avoidance behaviors were largely abolished.

Copper naturally occurs in aquatic environments at trace amounts as a background element. However, fluctuations due to run-off from storm events can increase the level of copper in the water from close to zero to more than 60 parts per billion in some instances, said Jason Sandahl, who co-authored the study while working as an OSU doctoral research assistant at the NOAA research laboratory.

'There is a fine line between active copper uptake and copper toxicity,' said Sandahl. 'We see problems when copper is pulsed into the water, temporarily elevating the copper higher than the natural background level. The olfactory, or scent, neurons are not able to maintain the normal regulation of copper, and the neurons are either disrupted or killed.' Salmon are known to avoid environmental gradients of copper, such as those created by point-source discharges. However, copper in stormwater is a diffuse form of non-point source pollution, and it is unlikely that juvenile fish could reduce their exposure through avoidance behaviors, said the researchers.

As a result of automobile braking and exhaust, higher levels of copper contamination have been observed in streams close to roads and highways. Building materials and certain pesticide formulations are also important sources of copper in western landscapes, said Scholz.

Recent monitoring of northern California streams following storm events found dissolved copper levels averaging 15.8 parts per billion per liter of water. Salmon exposed to copper at concentrations well below this average showed significant impairment to both their sensory physiology and predator avoidance behavior, said Sandahl, whose work on the study was funded in part by a National Institute of Environmental Health Sciences grant to OSU. The work was also supported by NOAA's national Coastal Storms Program.

Since the duration of storm events that cause elevated levels of copper in streams can be relatively short, investigators exposed juvenile coho salmon to copper for only a few hours. In earlier studies they found the onset of copper neurotoxicity to salmon olfactory systems occurs within a matter of minutes. Loss of sensory function is likely reversible, but may take hours or days of the fish being in clean water, said the researchers. If copper exposures are high enough to cause the death of olfactory sensory neurons, it will take several weeks to months for the fish to regenerate new neurons and recover.

The levels of copper contaminant used in the study were at or below current federal regulatory guidelines for heavy metals, said Jeff Jenkins, an environmental toxicologist in OSU's College of Agricultural Sciences. 'It's just like they were poisoned,' said Jenkins. 'Of all the chemicals we have looked at, this effect was clearly happening at levels well below the current copper standards for water quality. It raises the question of whether the current standards are as protective as we thought.'

The current study is an example of how contaminants can disrupt the chemical ecology of aquatic organisms. In the case of salmon, a sublethal loss of sensory function may increase predation mortality in urbanizing watersheds. The influence of copper on predator-prey interactions is the focus of ongoing research, with the eventual aim of linking individual survival to the productivity of wild salmon populations, said Scholz.

Though the study was conducted on juvenile salmon, the results are applicable to fish species in urban watersheds worldwide, said the researchers. Dissolved copper has been shown to affect the olfactory systems of chinook salmon, rainbow trout, brown trout, fathead minnow, Colorado pikeminnow and tilapia.

Barry, KL, JA Grout, CD Levings, BH Nidle, and GE Piercy. 2000. Impacts of acid mine drainage on juvenile salmonids in an estuary near Britannia Beach in Howe Sound, British Columbia. Can. J. Fish. Aquat. Sci. 57: 2032–2043.

Abstract: The abandoned copper mine at Britannia Beach, British Columbia, has been releasing acid mine drainage (AMD) into Howe Sound for many years. To assess the impacts of AMD on juvenile salmonids in the Britannia Creek estuary, we compared fish abundance, distribution, and survival at contaminated sites near the creek with uncontaminated areas in Howe Sound. Water quality near Britannia Creek was poor, particularly in spring when dissolved Cu exceeded $1.0 \text{ mg}\cdot\text{L}^{-1}$ and pH was less than 6. Beach seine surveys conducted during April–August 1997 and March–May 1998 showed that chum salmon (*Oncorhynchus keta*) fry abundance was significantly lower near Britannia Creek mouth ($0\text{--}1.2\cdot 100 \text{ m}^{-2}$) than in reference areas ($11.5\text{--}31.4\cdot 100 \text{ m}^{-2}$). Laboratory bioassays confirmed that AMD from Britannia Mine was toxic to juvenile chinook (*Oncorhynchus tshawytscha*) and chum salmon (96-h $\text{LC}_{50} = 0.7\text{--}29.7\%$ in freshwater and $12.6\text{--}62.2\%$ in 10 ppt water). Chinook salmon smolts transplanted to surface cages near Britannia Creek experienced 100% mortality within 2 days. These results demonstrated that juvenile salmonids are vulnerable to AMD from Britannia Creek: their abundance peaks during spring when Cu concentrations are highest and toxicity is greatest in surface freshwater, which matches their preferred vertical distribution.

**Eisler, R. COPPER HAZARDS TO FISH, WILDLIFE, AND INVERTEBRATES:
A SYNOPTIC REVIEW. U.S. Geological Survey, Laurel, MD 20708**

Excerpt specific to fish:

Fishes Adverse sublethal effects of copper on behavior, growth, migration, and metabolism occur in representative species of fishes at nominal water concentrations between 4 and 10 µg/L. In sensitive species of teleosts, copper adversely affects reproduction and survival from 10-20 µg Cu/L (Hodson et al. 1979; Table 5). Copper exerts a wide range of physiological effects in fishes, including increased metallothionein synthesis in hepatocytes, altered blood chemistry, and histopathology of gills and skin (Iger et al. 1994). At environmentally realistic concentrations, free copper adversely affects resistance of fishes to bacterial diseases; disrupts migration (that is, fishes avoid copper-contaminated spawning grounds); alters locomotion through hyperactivity; impairs respiration; disrupts osmoregulation through inhibition of gill Na⁺-K⁺-activated ATPase; is associated with tissue structure and pathology of kidneys, liver, gills, and other hematopoietic tissues; impacts mechanoreceptors of lateral line canals; impairs functions of olfactory organs and brain; and is associated with changes in blood chemistry, enzyme activities, and corticosteroid metabolism (Hodson et al. 1979).

Copper-induced cellular changes or lesions occur in kidneys, lateral line, and livers of several species of marine fishes (Gardner and LaRoche 1973). Copper-induced mortality in teleosts is reduced in waters with high concentrations of organic sequestering agents and in genetically resistant species (Hodson et al. 1979). At pH values less than 4.9 (that is, at pH values associated with increased aluminum solubility and toxicity), copper may contribute to the demise of acid-sensitive fishes (Hickie et al. 1993). Copper affects plasma Na⁺ and gill phospholipid activity; these effects are modified by water temperature and hardness (Hansen et al. 1993). In red drum, copper toxicity is higher at comparatively elevated temperatures and reduced salinities (Peppard et al. 1991). Copper is acutely toxic to freshwater teleosts in soft water at concentrations between 10 and 20 µg/L (NAS 1977). In rainbow trout, copper toxicity is markedly lower at high salinities (Wilson and Taylor 1993). Comparatively elevated temperatures and copper loadings in the medium cause locomotor disorientation of tested species (Kleerekoper 1973). Copper may affect reproductive success of fish through disruption of hatch coordination with food availability or through adverse effects on larval fishes (Ellenberger et al. 1994). Chronic exposure of representative species of teleosts to low concentrations (5 to 40 µg/L) of copper in water containing low concentrations of organic materials adversely affects survival, growth, and spawning; this range is 66 to 120 µg Cu/L when test waters contain enriched loadings of organic materials (Hodson et al. 1979). Larval and early juvenile stages of eight species of freshwater fishes are more sensitive to copper than embryos (McKim et al. 1978) or adults (Hodson et al. 1979). But larvae of topsmelt (*Atherinops affinis*) are increasingly sensitive to copper with increasing age. Topsmelt sensitivity is associated with increasing respiratory surface area and increasing cutaneous and branchial uptake of copper (McNulty et al. 1994). Sublethal exposure of fishes to copper suppresses resistance to viral and bacterial pathogens (Rougier et al. 1994) and, in the case of the air-breathing catfish (*Saccobranchus fossilis*), affects humoral and cell-mediated immunity, the skin, and respiratory surfaces (Khangarot and

Tripathi 1991). Rainbow trout exposed to 50 µg Cu/L for 24 h—a sublethal concentration—show degeneration of olfactory receptors that may cause difficulties in olfactory-mediated behaviors such as migration (Klima and Applehans 1990). The primary site of sublethal copper toxicity in rainbow trout is the ion transport system of the gills (Hansen et al. 1993). Dietary copper is more important than waterborne copper in reducing survival and growth of larvae of rainbow trout (Woodward et al. 1994). Simultaneous exposure of rainbow trout to dietary and waterborne copper results in significant copper assimilation. Diet is the main source of tissue copper; however, the contribution of waterborne copper to tissue burdens increases as water concentrations rise (Miller et al. 1993). Rate and extent of copper accumulations in fish tissues are extremely variable between species and are further modified by abiotic and biological variables. Copper accumulations in fish gills increase with increasing concentrations of free copper in solution, increasing dissolved organic carbon (DOC), and decreasing pH and alkalinity (Playle et al. 1993a, 1993b). Starved Mozambique tilapia accumulate significantly more copper from the medium in 96 h than did tilapia fed a diet containing 5.9 mg Cu/kg DW ration (Pelgrom et al. 1994). The bioconcentration factor for whole larvae of the fathead minnow was 290 after exposure for 30 h, but only 0.1 in muscle of bluegills after 660 h (USEPA 1980). Prior exposure of brown bullheads (*Ictalurus nebulosus*) to 83 sublethal copper concentrations for 20 days before exposure to lethal copper concentrations produces higher copper concentrations in tissues of dead bullheads than in those not previously exposed; however, the use of tissue residues is not an acceptable autopsy procedure for copper (Brungs et al. 1973). Rising copper concentrations in blood plasma of catfish (*Heteropneustes fossilis*) seem to reflect copper stress, although the catfish appear outwardly normal. Plasma copper concentrations of catfish increase from 290 µg Cu/L in controls at start to 380 µg Cu/L in survivors at 72 h (50% dead); a plasma copper concentration of 1,060 µg Cu/L at 6 h is associated with 50% mortality (Banerjee and Homechaudhuri 1990). In rainbow trout, copper is rapidly eliminated from plasma; the half-time persistence is 7 min for the short-lived component and 196 min for the long-lived component (Carbonell and Tarazona 1994). Attraction to waters containing low (11 to 17 µg/L) concentrations of copper occurs in several species of freshwater teleosts, including goldfish (*Carassius auratus*) and green sunfish (*Lepomis cyanellus*); however, other species, including white suckers (*Catostomus commersonii*), avoid these waters (Kleerekoper 1973). In avoidance/attraction tests, juvenile rainbow trout avoided waters containing 70 µg Cu/L but were significantly attracted to water containing 4,560 µg Cu/L; a similar pattern was observed in tadpoles of the American toad, *Bufo americanus* (Birge et al. 1993). Copper concentrations in the range of 18 to 28 µg/L interfere with bluegill growth and prey choice (Sandheinrich and Atchison 1989). Copper interferes with the ability of fish to respond positively to L-alanine, an important constituent of prey odors; concentrations as low as 1 µg Cu/L inhibit this attraction response in some species (Steele et al. 1990). Increased tolerance to copper was observed in fathead minnows after prolonged exposure to sublethal concentrations, but tolerance was not sustained on removal to clean water. Copper tolerance in fathead minnows is attributed to increased production of metallothioneins (Benson and Birge 1985). Copper tolerance in rainbow trout seems dependent on changes in sodium transport and permeability (Lauren and McDonald 1987a).

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Landscape Ecotoxicology of Coho Salmon Spawner Mortality in Urban Streams

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Abstract

In the Pacific Northwest of the United States, adult coho salmon (*Oncorhynchus kisutch*) returning from the ocean to spawn in urban basins of the Puget Sound region have been prematurely dying at high rates (up to 90% of the total runs) for more than a decade. The current weight of evidence indicates that coho deaths are caused by toxic chemical contaminants in land-based runoff to urban streams during the fall spawning season. Non-point source pollution in urban landscapes typically originates from discrete urban and residential land use activities. In the present study we conducted a series of spatial analyses to identify correlations between land use and land cover (roadways, impervious surfaces, forests, etc.) and the magnitude of coho mortality in six streams with different drainage basin characteristics. We found that spawner mortality was most closely and positively correlated with the relative proportion of local roads, impervious surfaces, and commercial property within a basin. These and other correlated variables were used to identify unmonitored basins in the greater Seattle metropolitan area where recurrent coho spawner die-offs may be likely. This predictive map indicates a substantial geographic area of vulnerability for the Puget Sound coho population segment, a species of concern under the U.S. Endangered Species Act. Our spatial risk representation has numerous applications for urban growth management, coho conservation, and basin restoration (e.g., avoiding the unintentional creation of ecological traps). Moreover, the approach and tools are transferable to areas supporting coho throughout western North America.

Citation: Feist BE, Buhle ER, Arnold P, Davis JW, Scholz NL (2011) Landscape Ecotoxicology of Coho Salmon Spawner Mortality in Urban Streams. PLoS ONE 6(8): e23424. doi:10.1371/journal.pone.0023424

Editor: Howard Browman, Institute of Marine Research, Norway

Received: January 31, 2011; **Accepted:** July 17, 2011; **Published:** August 17, 2011

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Funding: This work was supported by the National Oceanic and Atmospheric Administration - Coastal Storms Program; U.S. Fish and Wildlife Service - National Contaminants Program; City of Seattle (Seattle Public Utilities); and the U.S. Environmental Protection Agency - Region 10. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

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Introduction

In recent decades, human population growth and development have continued to increase along the coastal margins of North America [1]. The associated changes in land cover and human land use have elevated land-based sources of pollution, and toxic stormwater runoff in particular, to become one of the most important threats to the biological integrity of basins, lakes, estuaries, and nearshore marine environments [2]. In the United States, concerns related to non-point source pollution have gained momentum over the past decade (e.g., [3,4]). This has culminated most recently in the designation of “water quality and sustainable practices on land” as one of nine National Priority Objectives for the newly established National Ocean Council, together with ecosystem-based management, marine spatial planning, climate change and ocean acidification, and changing conditions in the Arctic [2]. For toxic runoff, however, the connections between unsustainable practices on land and the decline of ecological resilience in aquatic habits remain poorly understood.

In western North America, semelparous anadromous salmonids (*Oncorhynchus* spp.) typically migrate thousands of kilometers in their lifetimes. They hatch and rear in freshwater, migrate seaward to capitalize on the productivity of the oceans to grow rapidly and reach sexual maturity, and then return to their natal streams to spawn and die. Certain salmonids, including pink (*O. gorbuscha*) and

chum (*O. keta*) migrate to the ocean relatively soon after hatching. Others, however, such as Chinook (*O. tshawytscha*), steelhead, (*O. mykiss*), sockeye (*O. nerka*), and coho (*O. kisutch*) may spend one or more years in freshwater lakes, rivers and streams. Because of this extended freshwater residency, juveniles of these species are potentially more vulnerable to anthropogenic modifications of freshwater habitat quality [5].

In contrast to the high mortality experienced by juvenile salmonids, mortality at the adult spawner life stage is relatively low. Familiar natural causes of mortality include predation, disease [6,7,8,9], stranding (following high flows), elevated stream temperatures, and competition – e.g., in habitats with abundant salmon returns and limited spawning substrate. Various human activities such as recreational and commercial fishing, stream dewatering, and the placement of migration barriers can also increase salmon spawner mortality. In general, however, salmon spawner mortality has not been attributed to toxic chemical contaminants in stormwater runoff – a data gap that may be due, in part, to 1) the relative rarity of salmon spawners in urban basins with poor water quality, and 2) the logistical difficulty of implementing toxicity studies on migratory, seawater-to-freshwater transitional adults.

The exception is a recently documented phenomenon of returning adult coho salmon dying at high rates in urban and urbanizing streams in lowland Puget Sound region, which includes

the greater Seattle metropolitan area [10]. Coho return to small coastal stream networks to spawn each fall. Entry into freshwater is triggered by early autumn rainfall and rising stream flows. Since there had been extensive habitat degradation and loss in these lowlands, many basins were targeted for stream restoration projects in the 1990s. Subsequent surveys to evaluate project effectiveness discovered that many coho salmon were dying in newly-accessible stream reaches before they were able to spawn – i.e., female carcasses were found in good condition (ocean bright colors) with skeins (membrane or sac that contains the eggs within the fish) filled with unspawned eggs [10]. In addition, affected coho from several different urban basins showed a similar progression of symptoms leading up to death, including disorientation, lethargy, loss of equilibrium, mouth gaping, and fin splaying. Systematic daily spawner surveys in recent years (2002–2009) have shown that adult mortality rates in urban streams are consistently high (relative to spawning coho salmon in more pristine areas), ranging from ~25–90% of the total fall runs [10]. Mortality rates of this magnitude likely have important negative consequences for maintaining viable coho populations [11]. Consistent with this, most coho mortalities observed over the past decade were spawners that strayed (did not home to their natal stream reaches) into these restored urban freshwater habitats.

The precise underlying cause of recurrent coho die-offs remains under investigation. An initial weight-of-evidence forensic study has systematically ruled out stream temperature, dissolved oxygen, poor overall spawner condition, tissue pathology (e.g., gill), pathogen prevalence or disease, and other factors commonly associated with fish kills in freshwater habitats (Scholz et al., unpublished data). These findings, together with the rapid onset of the syndrome, the nature of the symptoms (e.g., gaping and disequilibrium), and the consistent re-occurrence within and between urban basins over many years together point to toxic stormwater runoff from urban landscapes as the likely cause of coho spawner mortality. Urban runoff and stormwater-influenced combined sewer overflows (CSOs) contain an exceptionally complex mixture of chemical contaminants. Specifically, urban streams are receiving waters for runoff and discharges containing pesticides [12], metals [13], petroleum hydrocarbons [14], plasticizers, flame-retardants, pharmaceuticals, and many other potentially toxic chemicals. The list of possible causal agents is therefore long.

The above chemical complexity notwithstanding, there are several reasons to suspect motor vehicles as sources of toxics that are killing returning coho. Vehicles deposit many compounds on road surfaces via exhaust emissions, leaking fluids, and the wearing of tires, brake pads and other friction materials [15]. Emissions contain nitrogen and sulfur dioxide, benzene, formaldehyde, and a large number of polycyclic aromatic hydrocarbons (PAHs). Fluids, including antifreeze and motor oil, contain ethylene and propylene glycol and PAHs. Tire wear releases zinc, lead, and PAHs onto road surfaces [16], and brake pad wear is a major source of copper, zinc, nickel, and chromium [16,17]. Collectively, these contaminants accumulate on streets and other impervious surfaces until they are mobilized by rainfall and transported to aquatic habitats via runoff. Polycyclic aromatic hydrocarbons and metals such as copper are known to be toxic to fish, although acute lethality usually occurs at exposure concentrations that are higher (by orders of magnitude) than those typically detected in urban streams. It is likely that fall stormwater pulses contain higher concentrations than winter and spring due to the potential buildup of contaminants during the relatively dry summer months.

Although the adult die-off phenomenon has been observed in all Seattle-area urban streams where coho salmon occur, the overall

rate of mortality has varied among basins. In qualitative terms, a higher proportion of returning animals have survived to spawn in basins that have more open space (e.g., parks and woodlands). Conversely, mortality rates have been consistently higher in basins with proportionately greater “urban” land cover and land uses. This raises the possibility of a quantitative relationship between discrete basin characteristics and coho survival and spawning success. Such a relationship would be important for several reasons. First, if coho mortality is significantly correlated with one or more land cover or land use variables, the latter could be used to identify unmonitored lowland basins where coho populations are at greatest risk. Second, it could provide a means to evaluate how future human population growth and development might impact wild coho populations in Puget Sound (and elsewhere) that are currently healthy. Finally, it could narrow the list of potentially causative pollution sources in urban basins, thereby focusing future toxicological studies to identify the specific contaminants involved.

In this study we performed a spatial analysis to identify landscape variables that correlate most closely with surveyed rates of coho spawner mortality across six different basins in Puget Sound. The variables included land use and land cover, tax parcel types, roadways, and impervious surfaces. We then used the information from these correlations to generate spatially explicit predictions of recurrent spawner losses in unmonitored basins throughout the four most densely populated counties in the greater Seattle metropolitan area.

Materials and Methods

Study Sites

We characterized habitat conditions within the drainage basins from streams at six sites in the Puget Sound lowlands (Figure 1). We chose these sites because coho spawner mortality has been monitored at these locations for several years (2000–2009; [10]). The sites represent a wide range of anthropogenic alteration, from highly urbanized (e.g., Longfellow Creek) to relatively undisturbed (e.g., Fortson Creek). Fortson Creek is considered a non-urban site, whereas the other five sites are urban streams and have varying degrees of development. The urban streams have all been a focus of varying restoration project efforts aimed at enhancing habitat quality for anadromous Pacific salmon. With the exception of the relatively unaltered Fortson Creek site, all site basins had impervious surface proportions well above the levels (5–10%) commonly associated with the decline of biological integrity in streams [18,19].

Confirmed observation of the coho spawner mortality syndrome (see below) within a stream system was a key factor in study site selection. Importantly, natural production of coho in Seattle-area urban streams is very low. Not unexpectedly, recent modeling has shown that local coho population abundance declines precipitously at rates of spawner mortality documented for these drainages [11]. The adult returns to these streams are thus likely to be animals straying into sink or attractive nuisance habitats. Conversely, the syndrome has not been documented in streams where coho are relatively abundant – i.e., non-urban basins, as confirmed by a full season of daily stream surveys on Fortson Creek. Therefore, to evaluate the phenomenon in relation to land cover, we were constrained to streams where coho are affected, even if adult returns to these basins were low in certain years. Lastly, there is no evidence that the mortality syndrome is related to the origin of the spawners (i.e., hatchery vs. wild fish). For example, artificially propagated coho that return as adults to regional hatchery facilities in non-urban basins are unaffected.

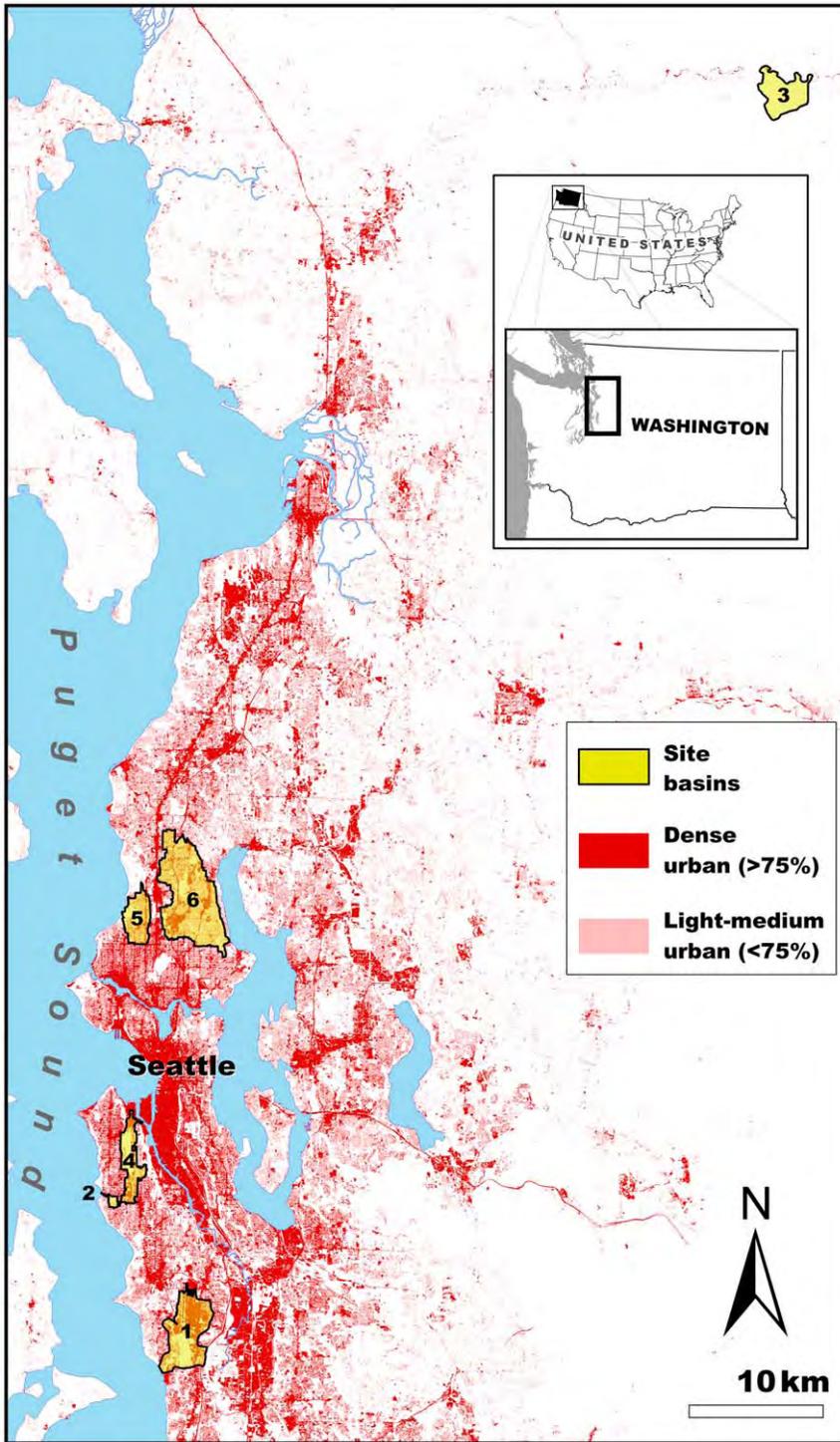


Figure 1. Six study sites where coho spawner mortality was monitored and landscape conditions were quantified. Main map depicts the Greater Seattle Metropolitan Area in Washington State, which is within the Puget Sound/Georgia Basin of the Pacific Northwest, United States of America (USA). Inset map illustrates location of the study sites within Washington State and the location of Washington State within the USA. For reference, red shading on main map represents the relative intensity of urbanization (light-medium and dense urban [23,24]). Drainage basins depicted in yellow shaded polygons represent the total basin flowing into a given stream reach site. Key for site numbers: 1=Des Moines; 2=Fauntleroy; 3=Fortson; 4=Longfellow; 5=Piper's; and, 6=Thornton Creek.
doi:10.1371/journal.pone.0023424.g001

Study Subjects

Coho salmon in this study were all within the Puget Sound/Strait of Georgia Evolutionarily Significant Unit (ESU). An ESU is

defined as a group of populations that 1) are substantially reproductively isolated from conspecific populations and 2) collectively represent an important component in the evolutionary

legacy of the species [20]. Currently, Puget Sound/Strait of Georgia coho are designated a “species of concern” under the U.S. Endangered Species Act [21].

Coho typically spawn in small (lower order) streams in the Puget Sound lowlands in late fall and early winter and their fry emerge from stream substrates from March to May. Fry reside in riverine habitats for 14–18 months, smolt, migrate to marine environments where they grow rapidly and mature (16–20 months), and finally migrate to their natal basins where they spawn and die [22]. The adult spawners from the six study basins were both marked (adipose fin clipped) and unmarked, suggesting a mix of hatchery and wild origins.

Coho Spawner Mortality

We used existing monitoring data collected as part of daily and weekly spawner surveys in each of the six study locations (Table 1). Data were collected during the fall spawning season from 2000–2009 by Seattle Public Utilities (SPU), the Wild Fish Conservancy, and the Northwest Fisheries Science Center (NWFSC). Streams were checked every few days in the early fall (usually the first or second week in October, depending on rainfall) until the first adult coho was observed. The streams were then surveyed daily for the duration of the fall run, until the last carcass was documented, typically in the first or second week of December. For several years, biologists working for the City of Seattle (Wild Fish Conservancy) also surveyed many of the same urban streams for coho spawner mortality on a weekly basis. Side-by-side comparisons of daily and weekly survey data (e.g., for Longfellow Creek in 2005 and 2007) revealed practically no loss of carcasses to scavengers. Accordingly, we included the weekly survey data in our analyses.

The entirety of the available spawning habitat within a given urban drainage was surveyed for premature adult coho mortality. For some streams, including Longfellow Creek, mid-stream barriers to upstream migration confined adults to the lower portions of the drainage. This made it possible, in the course of a few hours as part of a daily survey, to inspect all sections of the stream that 1) had a gravel substrate suitable for redds (spawning “nests” built by females), and 2) were focal areas for repeated (year-to-year) redd building during successive spawner runs.

Monitoring data were not collected at all sites for all years (Table 1). Mortality among returning coho was quantified only for females on the basis of egg retention – i.e., the number of partially spawned or unspawned female carcasses observed in streams over an entire spawning season. Notably, the total number of returning adults was low for some years and some basins (Table 1). Nevertheless, the aggregate spawner survey data used in this analysis are the most comprehensive currently available.

Geospatial Datalayers

We used existing geospatial datalayers as our source of potential predictor variables and as a proxy for habitat type and condition. The datalayers were generated by a variety of organizations for planning and analytical purposes, making them suitable for running spatial analyses on habitat. They were also available over the entire spatial domain of our predictive model. We used four geospatial datalayers: Land-cover of the Greater Puget Sound Region [23,24]; impervious and impacted surfaces [25]; property type (compiled from King [26], Kitsap [27], Pierce [28] and Snohomish county [29] tax parcel databases), and roadways (Puget Sound Regional Council; PSRC [30]).

The Land-cover of Puget Sound datalayer is the highest quality and most accurate depiction of land use and land cover in the Puget Sound lowlands. The datalayer used 30 m gridded LANDSAT TM imagery from 2002, which was extensively analyzed and corrected to produce an accurate (83% overall accuracy, [24]) depiction of land use and land cover conditions. To reduce the total number of potential predictor variables, we only used the dense urban (>75%); light to medium urban (<75%); and grass, crops and/or shrubs categories. We also combined the mixed and deciduous forest with the coniferous forest category and named it forests.

The impervious and impacted surfaces datalayer was derived from a 2001 LANDSAT TM image with 30 m pixels and an accuracy of 83–91% [25]. This datalayer depicts high to completely impermeable surfaces such as building roofs; concrete or asphalt roads and parking lots; concrete, asphalt or brick sidewalks, pedestrian walkways, and malls; etc.

One of the limitations of these two datalayers was that the pixel size of the source LANDSAT TM imagery is 30 m, so smaller

Table 1. Coho spawner mortality proportion and cumulative number of female carcasses enumerated (in parentheses) by site (columns) and year (rows).

	Des Moines	Fautleroy	Fortson ¹	Longfellow	Piper’s	Thornton
2000	-	0.25 (12)	-	0.74 (135)	0.18 (17)	0.88 (33)
2001	-	0.22 (9)	-	0.61 (111)	0.70 (37)	0.82 (11)
2002	-	0.00 (1)	0.01 (114) ^a	0.86 (57) ^a	0.60 (10)	0.80 (5)
2003	-	(0)	-	0.67 (18) ^a	0.00 (1)	1.00 (2)
2004	0.63 (30) ^a	(0)	-	0.89 (9) ^a	0.33 (3)	1.00 (1)
2005	-	0.75 (4)	-	0.72 (75) ^a	0.75 (4)	0.50 (8)
2006	-	(0)	-	1.00 (4) ^a	1.00 (9) ^a	1.00 (4)
2007	-	0.75 (4)	-	0.73 (41) ^a	0.20 (5)	0.80 (5)
2008	-	-	-	0.67 (12) ^a	-	1.00 (2)
2009	-	-	-	0.78 (36) ^a	-	-
Overall	0.63 (30)	0.37 (30)	0.01 (114)	0.72 (498)	0.57 (86)	0.83 (71)

A dash (-) indicates survey was not conducted for that year/site.

^aNorthwest Fisheries Science Center (NWFSC) daily surveys, all others were weekly and collected by Seattle Public Utilities (SPU) or the Wild Fish Conservancy [51,52].

¹Non-urban site.

doi:10.1371/journal.pone.0023424.t001

features, such as roads and precise land cover boundaries, were not adequately captured. In order to address this deficiency, we analyzed property types and roadways, as they are represented as precise polyline and polygon delineations of the corresponding land cover variables. The boundaries in these geospatial datalayers were derived from precise survey data from major metropolitan areas, collected over many years by King, Kitsap, Pierce and Snohomish Counties.

The property types (parcels) datalayer was based on ground surveyed delineations of property, which are used for taxation purposes, with positional accuracy of ± 12 m or less [26,27,28,29]. The original number of parcel types described by each county was between 103 and 292. Using the descriptions in the documentation that accompanied the datalayers, we were able to place each of the original parcel types into one of the five following categories: apartments and condominiums; commercial; industrial; parks and open space; and, residential.

The roadways datalayer was based on ground surveyed road and street centerlines. Each segment had a corresponding functional classification (FC###) code and width, as defined by the Federal Highway Administration [31] Highway Performance Monitoring System, and the Puget Sound Regional Council [30], respectively. We reduced the original nine functional classification types down to two categories: 1) heavily used roads (rural minor collector [FC08]; urban principal arterial - interstate [FC11]; urban principal arterial - other freeways and expressways [FC12]; urban principal arterial - other [FC14]; urban or rural minor arterial [FC16 or FC06]; urban collector [FC17]); and, 2) urban or rural local access roads (FC09 or FC19). We then calculated the total area (total length of given street centerline segment multiplied by its width) of each street functional classification for each corresponding site basin.

Spatial Analyses

We defined the area of influence of the surrounding landscape for each site as the total area draining into that site (basin). Drainage basins for each site were generated using the 'flowaccumulation' command in Environmental Systems Research Institute (ESRI) ArcGIS (v. 9.3). We used a United States Geological Survey (USGS) 10 m digital elevation model (DEM) as the underlying terrain for generating basins. We then intersected the corresponding basin boundary for each of the six sites with each of the geospatial datalayers and their associated categories using ArcGIS. We quantified each geospatial datalayer and its associated category in a given basin as the fraction or proportion of the total area of the basin occupied by that geospatial datalayer or category. Longfellow Creek stood apart from the other sites in terms of the accuracy of the flow accumulation model because an unknown fraction of stormwater runoff in this drainage is diverted into the municipal sewer system. Therefore, the theoretical basin area, based on the terrain represented in the DEM, was not as representative of the true basin area compared with the other five sites.

Statistical Analyses

We used generalized linear mixed-effects models (GLMMs; [32,33]) to test the relationships between geospatial variables and coho spawner mortality. The response was binomial (observed number of female spawner mortalities each year, given the total number of female coho that returned to each site) and the models used a logit link function. All models included a random effect of site on the intercept, which accounts for nonindependence of the repeated samples taken at each site. We constructed a set of 139 candidate models by considering all combinations of the 12

predictors taken one, two, three or four at a time, with the restriction that a model could include at most one predictor from each of the four geospatial datalayers (land cover, impervious surfaces, property types, and roadways). We also excluded combinations of predictors that had a pairwise Spearman rank correlation exceeding 0.9 in absolute value. The candidate set included an intercept-only model as a no-effect baseline against which we could assess the predictive power of the geospatial variables.

We fitted the models using the Laplace approximation to the marginal likelihood [32] in the lme4 package in R [34,35]. We then used Akaike's information criterion, corrected for sample size (AIC_c) to rank the strength of evidence for each candidate model based on the data. Akaike's information criterion is a weight-of-evidence measure that reflects the balance between a model's goodness-of-fit to the data and its parsimony (i.e., number of parameters). Lower AIC_c values indicate greater support, and are reported as differences (ΔAIC_c) relative to the best (smallest) value in the candidate set. We computed Akaike weights [36], which represent the relative support for each model, normalized so the weights sum to unity across the candidate set. We used these weights to compute model-averaged estimates and unconditional standard errors (SEs) for the fixed regression coefficients, and we quantified the relative importance of each predictor using variable weights (i.e., the summed Akaike weights of all models that included that predictor; [36]). These model averaging calculations were based on the 95% confidence set of models (i.e., the top-ranked models whose cumulative Akaike weight is 0.95), after re-normalizing the weights.

Mapping coho spawner mortality

Using the fitted models, we built a map of predicted coho spawner mortality throughout the four counties (King, Kitsap, Pierce and Snohomish) representing much of the Puget Sound lowlands, by applying the GLMM equations to geospatial data from unmonitored basins. We used basins delineated in the National Hydrography Dataset Plus [37] as the underlying mapping unit (300 ha mean, 466 ha SD) and intersected the NHDPlus datalayer with each of the geospatial datalayers used in the statistical analyses. Within the four-county region, we only made spawner mortality predictions in basins where coho salmon presence has been documented, based on current geospatial datalayers generated by the Washington Department of Fish and Wildlife [38]. We then calculated the proportion of each basin that was covered by the selected landscape feature. We generated predicted values of the proportion of mortalities from each model in the 95% confidence set and then model-averaged these values using the normalized Akaike weights [36]. These predictions apply to the average basin in the Puget Sound coho ESU with some given set of habitat conditions, in the sense that the random effect of site was set to zero. To be conservative in representing the precision of the predicted values, we divided the calculated rates of likely coho spawner mortality into three bins: <10%, 10–50%, and >50%. These break points were chosen somewhat arbitrarily to represent low, medium and high spawner mortality rates.

Results

We found strong associations between land use and land cover attributes and rates of coho spawner mortality. Across the 95% confidence set of fitted models, three variables were particularly important for predicting mortality based on high variable weights: impervious surfaces, local roads, and commercial property type (Table 2 and Figure 2). There was substantial model selection

Table 2. AIC weights, model averaged parameter estimates and unconditional confidence intervals for each variable, ranked by AIC_c weight.

Datalayer	Variable	AIC _c weight	Model	
			Averaged coefficient	Unconditional SE
Impervious	Impervious surfaces	0.7158	16.8425	14.5376
Roadways	Local roads	0.5647	-15.6199	68.3331
Property type	Commercial	0.5107	7.9375	8.2616
Land cover	Dense urban	0.3865	-7.7776	16.1614
Property type	Apartments & condominiums	0.2409	-9.5330	31.1917
Roadways	Heavily used roads	0.2019	5.3445	31.5073
Land cover	Forest	0.1163	-0.7793	6.2249
Land cover	Light to medium urban	0.1149	0.3250	2.9751
Land cover	Grass, shrubs & crops	0.0993	0.1664	5.4517
Property type	Residential	0.0975	0.0738	16.8920
Property type	Industrial	0.0547	-0.2475	4.7008
Property type	Parks & open space	0.0000	0.0000	0.0000

doi:10.1371/journal.pone.0023424.t002

uncertainty, reflected in a large 95% confidence set and large number of models with $\Delta\text{AIC}_c < 2.0$ (37 and 8 of 139 candidate models, respectively; Table 3). In addition, although we excluded highly multicollinear combinations of variables ($|r| > 0.9$), many variables were still strongly correlated, resulting in unstable parameter estimates and large unconditional SE estimates (Table 2). Nonetheless, predictive models that included land use and land cover attributes as predictors were clearly superior to the intercept-only model ($\Delta\text{AIC}_c = 20.4$; Table 3), supporting the association of these variables with coho mortality.

While the multicollinearity among potential predictors made causal interpretation of the models difficult, it did not preclude predictions of where coho salmon are likely to be affected along an urbanization gradient. Not surprisingly, the highest predicted mortality rates were clustered around the major metropolitan areas of eastern Puget Sound, contained within Snohomish, King, Kitsap, and Pierce counties (Figure 3). In addition, there is a significantly sized area in Eastern Puget Sound that has considerable proportions of the variables (local roads, impervious surface and commercial parcels) most correlated with substantial mortality rates. It is important to note that these predicted values have substantial associated uncertainty and should therefore be interpreted cautiously; however, it is reasonable to use them for assigning the break points for the low, medium, and high mortality rate categories represented on the map.

Discussion

Overall, we have used conventional tools in landscape ecology to shed light on an unusually complex ecotoxicological challenge. Our analyses strongly suggest that specific characteristics of basins in the Puget Sound lowlands are linked to the die-offs of coho spawners that have been widely observed in recent years. Across basins, the strength of the association is greatest for impervious surfaces, local roads, and commercial property. We did not evaluate hydrologic or geomorphic basin characteristics as part of our analysis. Nevertheless, our findings support the hypothesis that coho are being killed by as-yet unidentified toxic chemical contaminants that originate from these types of surfaces

and are transported to salmon spawning habitats via stormwater runoff.

Our results extend a large body of scientific information linking urbanization (broadly defined) and degraded water quality to a loss of biological integrity (*sensu* Karr [39]) and productivity in freshwater stream networks [18,40,41]. Previous studies have generally related land use and land cover variables to macroinvertebrate assemblages in streams [42], or to the relative abundance of salmon and other fish (e.g., [22,43,44]). The present analysis is novel because it relates basin characteristics directly to salmon health and survival, versus species presence or absence. Moreover, it offers new insights on the water quality aspects of urban runoff. The focus of most salmon restoration projects is physical characteristics of spawning and rearing habitat [45]. Most salmon specific restoration projects are deemed successful if they simply restore the physical habitat to a suitable state for a given species [46]. Our study suggests that suitable spawning and rearing habitat may not be supportive of coho salmon persistence when the surrounding landscape is urbanized. The linkages between increased impervious coverage within a basin, increased stormwater runoff, altered hydrologic processes, and ecological decline are well established (e.g., [18]). However, stormwater impacts encompass both physical and chemical drivers of decline, and it can be difficult to distinguish between these via *in situ* assessments because stream invertebrate communities integrate both stressor categories. Coho salmon spawners, by contrast, appear to be promising and specific sentinels for the degraded water quality aspect of urban runoff. Compared to macroinvertebrate sampling and taxa identification, the coho mortality syndrome is relatively easy and inexpensive for non-specialists to monitor in the form of digital video recordings of symptomatic fish, or the presence of unspawned female carcasses in streams.

Interestingly, the mortality syndrome appears to be specific to coho salmon. For example, there were temporally overlapping runs of coho and chum salmon (*O. keta*) in Piper's Creek in the fall of 2006. Whereas all of the adult coho succumbed to the mortality syndrome, the chum were unaffected, with nearly all surviving to spawn (130 of 135 spawned out female carcasses; Scholz et al., unpublished data). Consistent with this, the survey

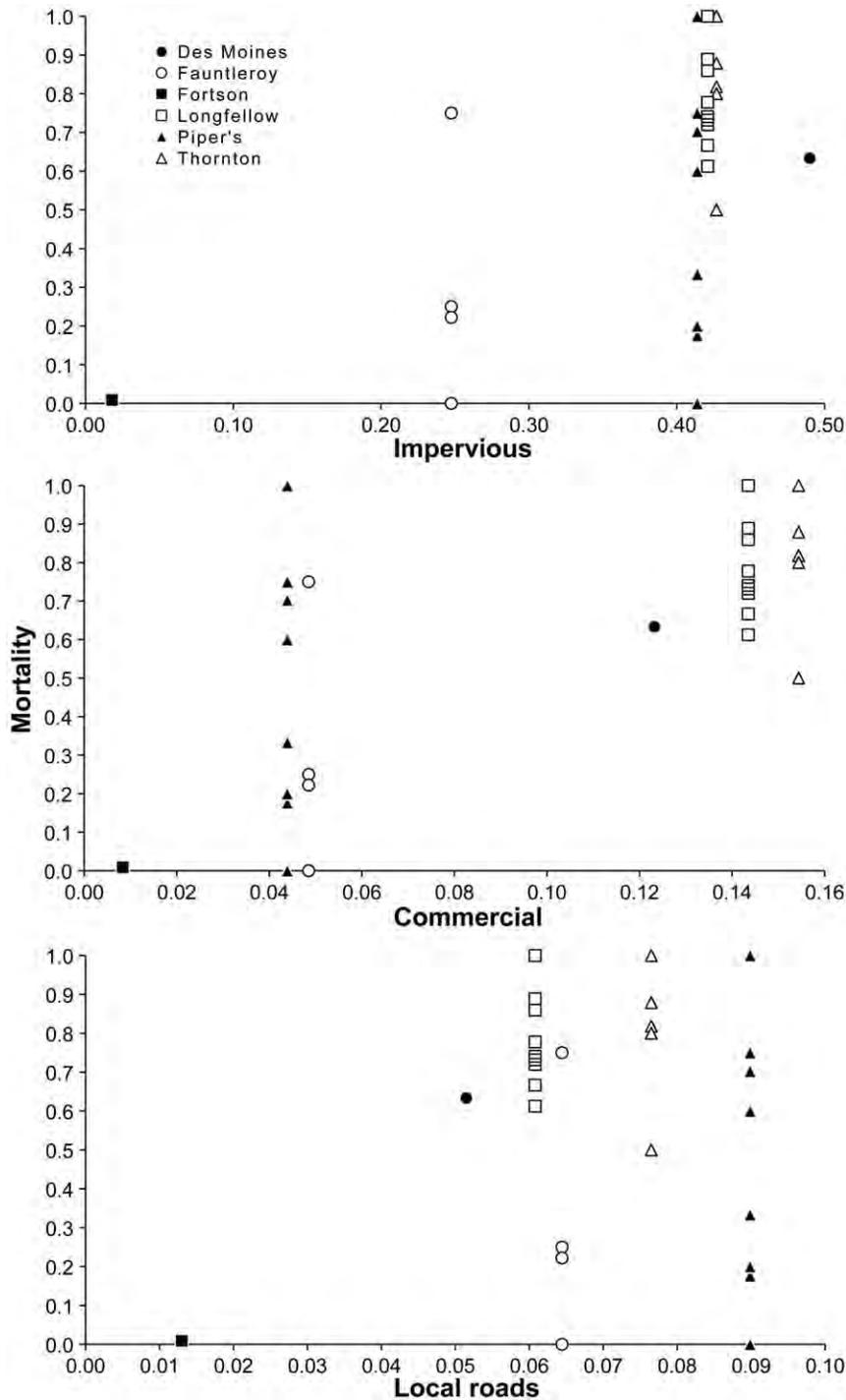


Figure 2. Female coho spawner mortality as a function of the proportion of each of the top three predictors in a given site basin, at the six study sites. Individual points correspond to specific years for each site. Mortality expressed as proportion of all returning females that died in a given year. Solid circle = Des Moines; hollow circle = Fauntleroy; solid square = Fortson; hollow square = Longfellow; solid triangle = Piper's; hollow triangle = Thornton Creek.

doi:10.1371/journal.pone.0023424.g002

teams have not observed the characteristic symptoms (e.g., surface swimming, gaping) among other fish species that inhabit urban streams such as sticklebacks and cutthroat trout. Not only are coho unusual in this respect, the phenomenon appears to be restricted to the adult life stage. In the fall of 2003, surface flows from Longfellow Creek were diverted through streamside sheds

housing aquaria that contained individual juvenile coho from the NWFSC hatchery. The juveniles (n = 20) were maintained and observed daily throughout the fall spawner run. Overall juvenile survival was 100%, and the juveniles behaved normally, even on days when symptomatic adults were observed in the nearby stream (Scholz et al., unpublished data). The underlying reasons

Table 3. Summary of the 95% confidence set (37 of a total of 139 candidate models) of candidate models used to generate map of mortality rates, showing intercepts, estimated coefficients, ΔAIC_c and w_{AIC_c} . Intercept only model included at bottom for reference.

Model	Equation	ΔAIC_c	w_{AIC_c}
a+b	-4.5664+19.76(a)+44.41(b)	0.000	0.0933
c+d+b	-3.9215 - 109.56(b)+48.75(c) - 29.98(d)	0.046	0.0912
c+e+f	-3.9355+12.94(c)-40.15(e)+38.61(f)	0.372	0.0775
c+d+a	-4.4921+12.61(a)+14.03(c) - 7.54(d)	0.579	0.0698
c+g+a	-4.4858+14.31(a)+5.23(c)+3.62(g)	0.669	0.0668
h+a+b	-2.6065+15.89(a)+30.87(b) - 2.38(h)	1.150	0.0525
c+a+b	-4.6629+16.37(a)+35.26(b)+2.70(c)	1.357	0.0473
d+a+b	-4.7001+17.52(a)+43.83(b)+1.62(d)	1.576	0.0424
c+e	-4.5943+19.70(c) - 53.28(e)	2.425	0.0277
c+d+i+b	-3.0628 - 83.44(b)+56.38(c) - 40.28(d) - 7.82(i)	2.485	0.0269
c+j+i+b	-7.3055 - 130.72(b)+21.23(c)+19.12(i)+10.65(j)	2.543	0.0262
c+d+k+b	-3.9266 - 94.52(b)+43.32(c) - 25.00(d) - 1.60(k)	2.613	0.0253
j+a+b	-4.5174+20.03(a)+43.79(b) - 0.52(j)	2.752	0.0236
c+d+a+b	-4.0864+3.99(a) - 76.44(b)+38.23(c) - 23.27(d)	2.885	0.0221
c+d+a+f	-4.7368+15.57(a)+16.88(c) - 9.22(d) - 22.10(f)	2.925	0.0216
c+d+e+b	-3.9607 - 100.49(b)+46.40(c) - 27.43(d) - 5.54(e)	2.954	0.0213
c+d+e+f	-3.8347+12.37(c)+0.49(d) - 40.69(e)+39.28(f)	3.280	0.0181
c+g+e+f	-3.8534+12.93(c) - 40.45(e)+38.73(f) - 0.18(g)	3.294	0.0180
c+j+e+f	-3.9360+12.94(c) - 40.28(e)+39.36(f) - 0.31(j)	3.326	0.0177
c+g+a+f	-4.6143+16.25(a)+5.79(c) - 13.40(f)+4.06(g)	3.378	0.0172
c+d+i	-1.1996+64.26(c) - 55.97(d) - 24.83(i)	3.423	0.0168
h+i+b	9.3911 - 153.97(b) - 17.49(h)+15.89(i)	3.858	0.0136
h+e+f	2.2747 - 27.99(e)+47.38(f) - 7.31(h)	3.931	0.0131
h+a	1.2512+8.63(a) - 6.13(h)	4.028	0.0124
c+j+a+b	-4.5887+16.71(a)+34.25(b)+2.72(c) - 0.75(j)	4.299	0.0109
h+k+b	5.8364 - 27.35(b) - 11.39(h) - 5.97(k)	4.837	0.0083
c+j+e	-4.4356+18.70(c) - 50.31(e)+1.33(j)	4.915	0.0080
c+j+k+b	-2.4511 - 52.30(b)+20.45(c) - 13.34(j) - 10.60(k)	4.937	0.0079
c+d+e	-4.7362+20.37(c) - 0.45(d) - 53.43(e)	5.141	0.0071
c+e+b	-4.4680 - 1.36(b)+19.52(c) - 52.48(e)	5.158	0.0071
c+g+e	-4.5797+19.68(c) - 53.23(e) - 0.02(g)	5.188	0.0070
h+e+b	8.1285 - 20.52(b) - 45.07(e) - 14.67(h)	5.509	0.0059
c+k	-4.3426+13.30(c) - 5.31(k)	5.649	0.0055
c+i+b	-5.6775 - 141.73(b)+22.77(c)+17.24(i)	5.821	0.0051
c+k+b	-3.9708 - 12.84(b)+14.63(c) - 6.46(k)	5.896	0.0049
h+a+f	0.4930+6.87(a)+19.67(f) - 5.22(h)	6.083	0.0045
c+d+i+f	-1.0499+68.65(c) - 59.91(d) - 6.04(f) - 26.58(i)	6.343	0.0039
Intercept only	N/A	20.428	0

Model weights shown here are re-normalized for the set of 37 top-ranked models shown. a = commercial; b = local roads; c = impervious; d = dense urban; e = apartments and condominiums; f = heavily used roads; g = light to medium urban; h = forest; i = residential; j = grass, crops and/or shrubs; and, k = industrial. doi:10.1371/journal.pone.0023424.t003

for the syndrome’s surprising uniqueness to adult coho are not yet known.

Daily or weekly stream surveys are labor intensive, and for this reason only a subset of urban drainages in Puget Sound have been

monitored to date. The GIS-based mapping tool developed for this study can be used to focus future monitoring efforts on basins with a higher likelihood of coho die-offs based on land cover attributes. In addition to the basins we have identified within the range of the Puget Sound/Georgia Basin ESU, this approach could be extrapolated to other geographic areas where coho return to spawn along a gradient of urban growth and development. This includes, for example, coho from the Lower Columbia River ESU, a threatened population segment with a spawner range encompassing the greater metropolitan area of Portland, Oregon. Overall, future surveys will ground-truth initial model outputs and provide additional data that can be used to improve the predictive accuracy of the mapping tool.

Our findings have two near-term applications. First, they identify likely “hotspots” for coho spawner mortality throughout central Puget Sound. Given that recurring adult losses at a rate greater than approximately 10% are likely to substantially reduce local population abundances, the high mortality basins in Figure 3 (10–50% and >50% predicted mortality categories) may represent sink habitats for the Puget Sound/Georgia Basin ESU. This is an important consideration for coho recovery planning at the local, county, and regional scales. Second, our results indicate areas where toxic runoff could potentially undermine stream restoration efforts - specifically, strategies that improve physical and biological habitat conditions (flow, connectivity, channel complexity, riparian function, etc.) as a means to boost coho population productivity.

The potential influence of rainfall, including timing, frequency, and individual storm intensity, remains an area of active investigation. Throughout the years of stream surveys, it has been qualitatively evident that rainfall influences the mortality syndrome. For example, salmon that arrive and enter a stream during an extended dry interval (a week or more) often survive and then become symptomatic and die when it next rains (Scholz et al., unpublished data). One of our aims in surveying Longfellow Creek (the stream with the most abundant overall returns) for more than a decade was to evaluate inter-annual variation in coho spawner mortality in relation to rainfall. However, a quantitative analysis has proven problematic due to highly variable rainfall patterns in combination with low adult returns in some years. It is clear, however, that the syndrome is not a simple first-flush phenomenon. In most years, both egg retaining and spawned out carcasses were observed across the 8–10 week fall run, irrespective of the number and size of rain events over that interval.

Over the longer term, an approach similar to the one developed here could be used to forecast the likely impacts of future human population growth and development on Puget Sound coho populations that are currently healthy. For example, the expansion of local road networks is a core focus for urban growth planning, and these projections could serve as a basis for evaluating how and where coho spawner mortality will increase under different growth management scenarios. This, in turn, would inform strategies to reduce or mitigate toxic runoff in highly productive basins, in advance of expanding transportation infrastructure - i.e., prevention vs. costly retrofits to the built environment. Also, our modeling approach could be expanded to include the timing and intensity of rainfall as potential drivers for coho spawner mortality. Rainfall patterns may be a key determinant of stormwater quality, although more work in this area is needed. Climate change is expected to shift regional rainfall patterns, and it should be possible to explore how this will interact with changing land cover (urbanization) to influence stormwater quality and toxic runoff to coho spawning habitats.

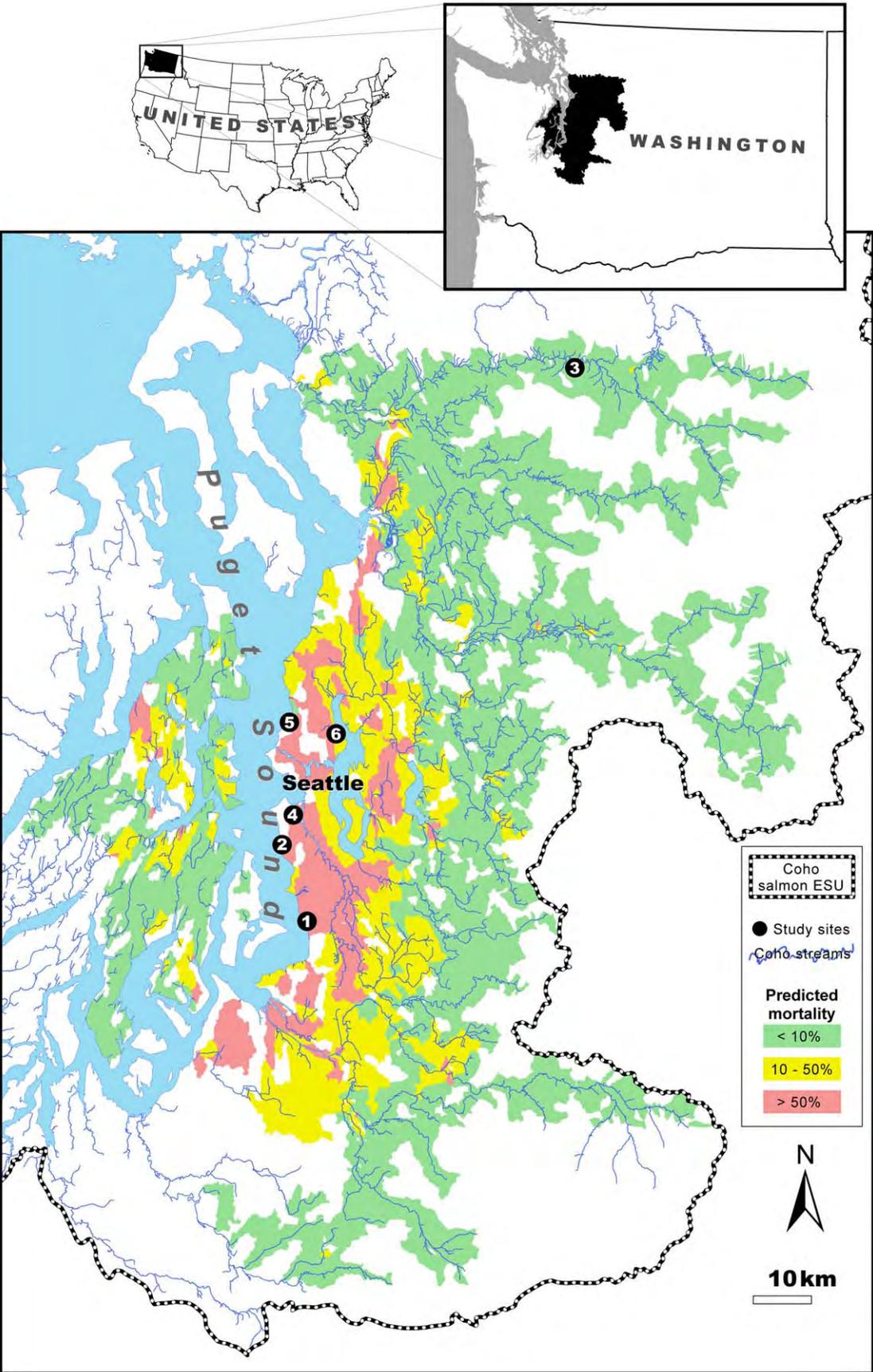


Figure 3. Predictive map of modeled coho spawner mortality rates within the Puget Sound lowlands. Mortality rates are a function of the proportion of key landscape variables within a given basin. Green, yellow and red areas indicate basins with predicted rates of spawner mortality (as a percentage of total fall runs) of <10%, 10–50%, and >50%, respectively. Black dots denote locations of the six study sites that were the basis for this analysis. Thick dashed black line depicts the southern boundary of the coho salmon Puget Sound/Georgia Basin Evolutionarily Significant Unit (ESU). Basins that do not have documented presence of coho salmon [38] are not represented on the map, even if they have landscape conditions associated with coho spawner mortality. Key for site numbers: 1=Des Moines; 2=Fautleroy; 3=Fortson; 4=Longfellow; 5=Piper's; and, 6=Thornton Creek.
doi:10.1371/journal.pone.0023424.g003

While not definitive, our results reinforce the parsimonious explanation that coho deaths are caused by one or more contaminants originating from motor vehicles. As noted earlier, this is important because it narrows the list of candidate toxics in complex urban landscapes. Future toxicological studies should focus on two ubiquitous urban runoff contaminant classes in particular. The first are metals in brake pads and other vehicle friction materials. Copper, zinc, and other metals are known to specifically target the fish gill, thereby disrupting respiration and osmoregulation [47]. The second, PAHs, [14,48,49] are taken up across the fish gill, and can impair cardiac function and respiration [50]. The symptoms displayed by affected coho (surface swimming, gaping, loss of equilibrium, etc.) are consistent with a disruption of respiration, osmoregulation, or circulation, or some combination of these.

Notably, PAHs and metals usually cause the above toxicological effects at concentrations well above those typically detected in urban streams. However, the majority of conventional toxicology studies using salmonids focus on freshwater species (e.g., rainbow trout) or the freshwater life stages of juvenile anadromous species. There are practically no toxicity data for coho salmon at the adult spawner stage. Many important osmoregulatory changes take

place during the transition from seawater prior to spawning, and these may render adult coho more vulnerable to metals and PAHs than freshwater-resident salmonids. Adding to this complexity is the possibility of interactive toxicity (e.g., synergism) among contaminant mixtures. Studies that experimentally reproduce the familiar symptomatology and mortality in adult coho, under controlled exposure conditions with environmentally realistic mixtures of metals and PAHs, will likely be necessary to definitively implicate motor vehicles.

Acknowledgments

We thank John Williams and an anonymous reviewer for significantly improving previous drafts of this manuscript. Disclaimer: the findings, conclusions and views expressed herein are those of the authors and do not necessarily represent those of the National Oceanic and Atmospheric Administration or the U.S. Fish and Wildlife Service.

Author Contributions

Conceived and designed the experiments: BEF JWD NLS. Performed the experiments: BEF ERB PA. Analyzed the data: BEF ERB PA. Wrote the paper: BEF ERB NLS.

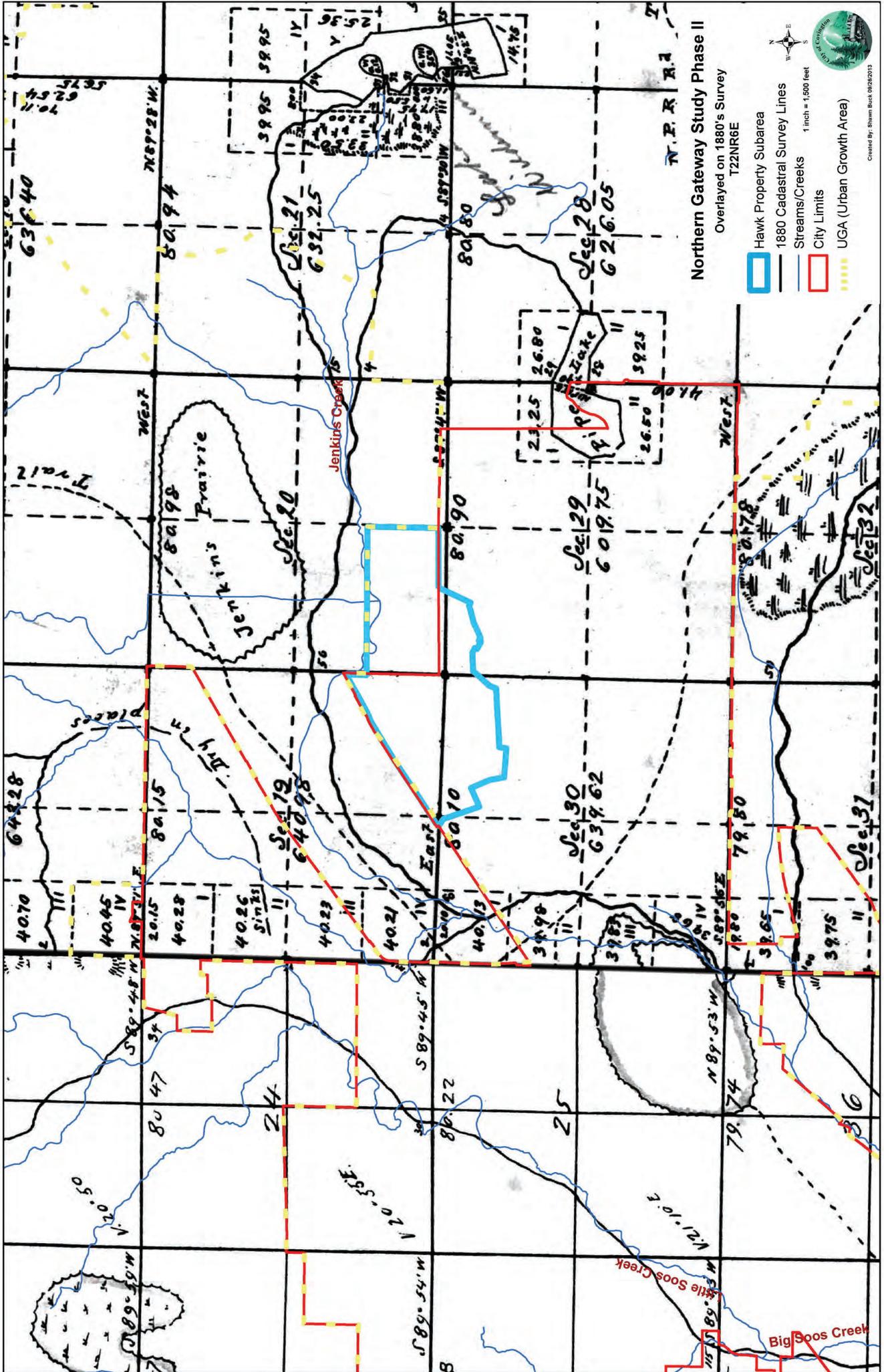
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52. Wild Fish Conservancy (2008) Spawning Survey Findings from Seattle's Thornton, Piper's, Longfellow, Fauntleroy and Taylor Creeks. Seattle, Washington, USA: Seattle Public Utilities.

Appendix E: HISTORIC PHOTOS – PRAIRIE CONDITIONS

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Northern Gateway Study Phase II
 Overlaid on 1880's Survey
 T22NR6E

- Hawk Property Subarea
- 1880 Cadastral Survey Lines
- Streams/Creeks
- City Limits
- UGA (Urban Growth Area)

1 inch = 1,000 feet



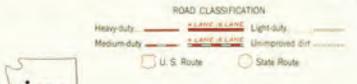
Created By: Shawn Buck 09/20/2013



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TOPOGRAPHIC DIVISION

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Mapped by the Army Map Service
Published for civil use by the Geological Survey
Control by USGS, USC&GS, and USCE
Topography from aerial photographs by multistep methods
Aerial photographs taken 1943. Field check 1949
Projection: 1927 North American datum
10,000-foot grid based on Washington coordinate system,
north zone
No distinction is made between dwellings, barns,
commercial and industrial buildings
Unchecked elevations are shown in brown
Dashed lines indicate approximate locations
APPROXIMATE HEAVY
DECLINATION, 1949



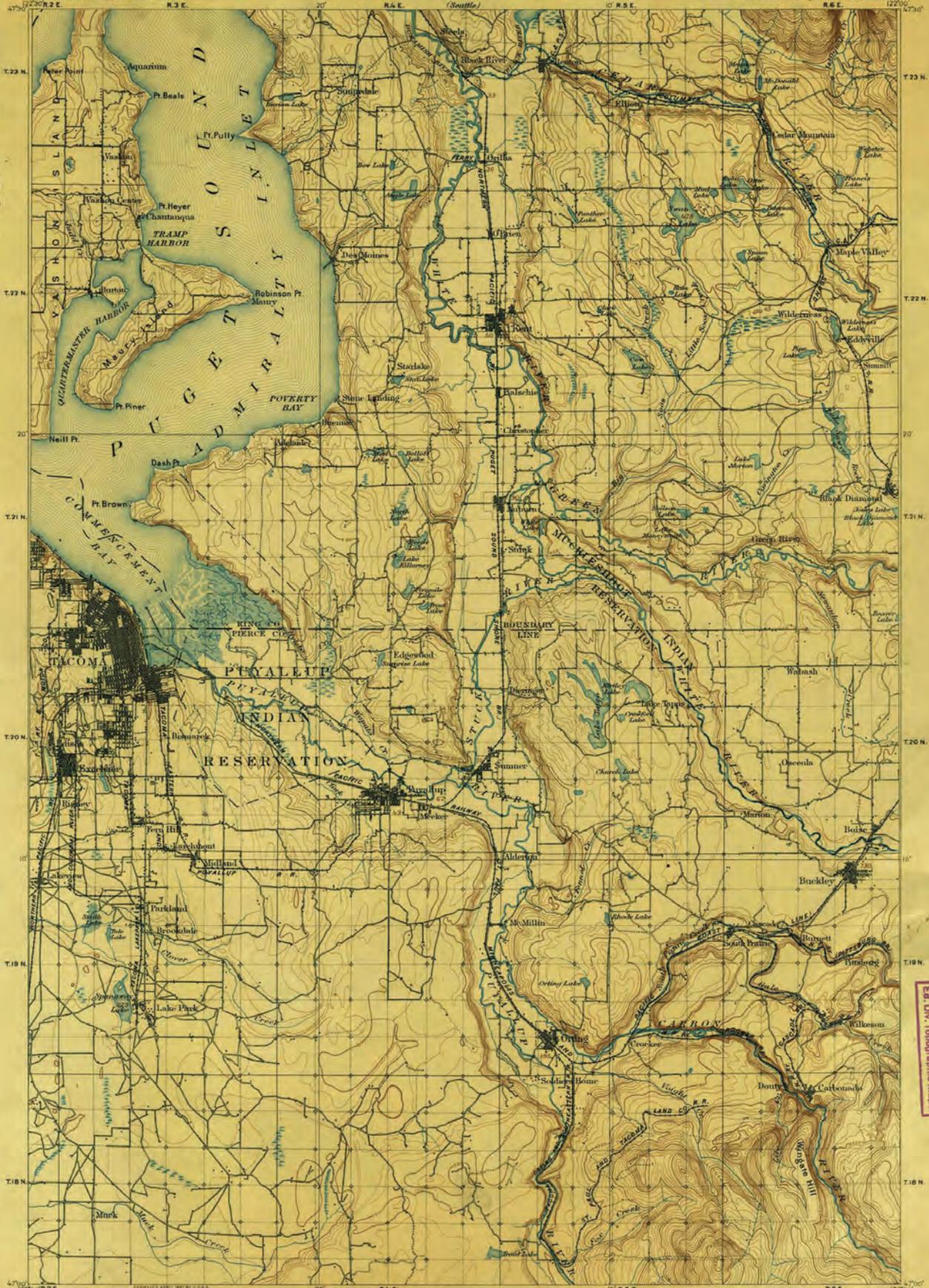
BLACK DIAMOND, WASH.
N4715—W12200/7.5

THIS MAP COMPLETES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

1949
National File
Topographic Division

NOV 2 1956

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Ed. Div. Topographic Maps

Henry Gannett Chief Topographer.
R. U. Gode, Geographer in charge.
Control by W. T. Griswold and U.S. Coast and Geodetic Survey.
Topography by G. E. Hyde and R. H. McFee.
Surveyed in 1894-95.

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FILE COPY
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Scale 1:50,000
Contour interval 50 feet
Distances in meters and feet

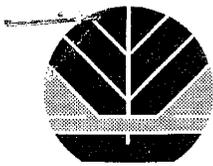
U.S. Geological Survey,
Recd. APR 12 1900 2/05.
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USGS
Historical File
Topographic Division

Tacoma

Appendix F: MINE RECLAMATION PERMIT

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SURFACE MINING RECLAMATION PERMIT (Form SM-9)

name change transfer revision

Permit holder: Lakeside Industries Inc.

Mailing address: PO Box 7016, Issaquah, WA 98027

Pursuant to RCW 78.44, a Reclamation Permit is hereby granted to the above-named permit holder to engage in surface mining on the property described in the application and material on file under this permit. The total area to be disturbed by surface mining, including the deposition of surface-mining refuse, shall be in accordance with the reclamation plan filed with and approved by the Department of Natural Resources under this permit, and in accordance with the conditions and descriptions set forth in Exhibit "A" attached hereto and made a part hereof, and RCW 78.44.

TERM OF PERMIT

This permit shall be in effect from the date of issuance and shall remain in effect so long thereafter as the permit holder pays the annual basic fee for each site, complies with the Surface Mining Act and the rules promulgated thereunder, complies with the reclamation plan, and maintains a performance security as required by the Act.

CHANGE OR MODIFICATION OF RECLAMATION PLAN

The permit holder shall obtain written approval from the Department prior to any change or departure from the approved reclamation plan.

PERFORMANCE SECURITY

A performance security shall be submitted to and approved by the Department prior to commencement of surface mining. The permit holder may submit a cash deposit, assignment of a savings account or certificate of deposit, bank letter of credit, negotiable securities, assignments of interest in real property within the state, or a corporate surety bond in the amount specified. The amount of the performance security shall be subject to adjustment according to RCW 78.44.

TRANSFER OF PERMIT

The transfer of this permit to another permit holder shall not be made unless approved in writing by the Department. A transfer shall not be approved unless the successor permit holder assumes all duties of the former permit holder to complete the reclamation of the land and the Department approves the successor permit holder's performance security.

PENALTIES

The Department may suspend surface mining or impose civil penalties if the permit holder conducts surface mining in any manner not authorized by RCW 78.44, the rules adopted thereunder, the approved reclamation plan, or this permit.

Permitted this 8th day of April, 1974 Revised this 11th day of December, 2009

Signature  1/4 Sec 19, T 22 N, R 06E

Name (type or print) Tommy Duerr 1/4 Sec 20, T 22 N, R 06E

Title Natural Resource Specialist 1 / Land Manager 1/4 Sec 29, T 22 N, R 06E

Division of Geology and Earth Resources 1/4 Sec _____, T _____ N, R _____

TOTAL ACREAGE AND DEPTH OF PERMIT AREA (Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) (See SM-8A.)

Total area disturbed will be 215 acres.

Maximum vertical depth below pre-mining topographic grade is 100 feet

Maximum depth of excavated mine floor is _____ feet relative to mean sea level

DNR Reclamation Permit No.
70-011068

Surface Mine Reclamation Permit No. 70-011068

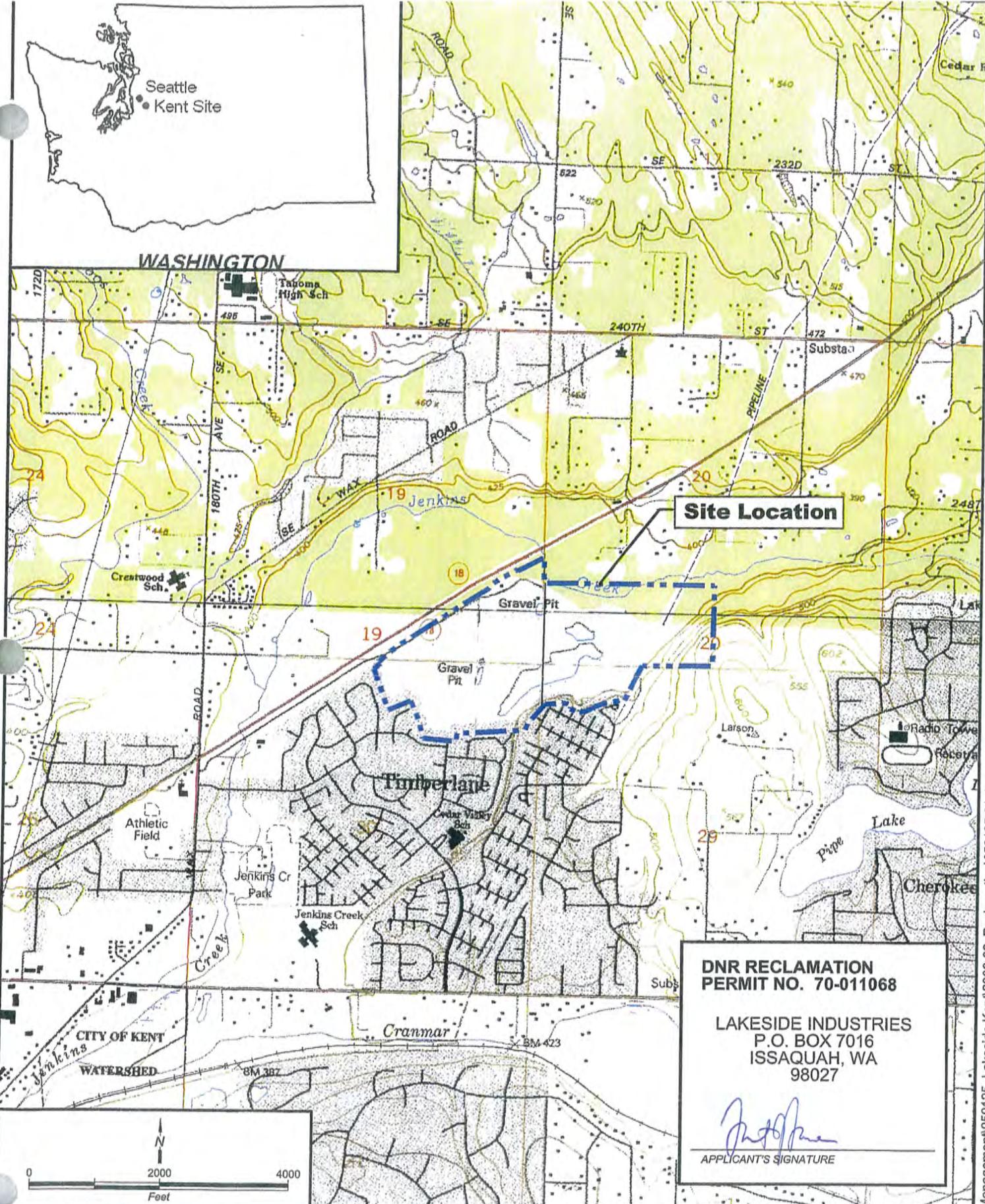
EXHIBIT "A"

ADDITIONAL CONDITIONS OF THE PERMIT

- (1) This Surface Mine Reclamation Permit applies to the following property:
A 215 acre portion in parts of Sections 19, 20, 29 & 30,
Township 22 North, Range 6 East, W. M., King County, Washington.
- (2) Natural screens are to be maintained within the setback. No stockpiling will be allowed around the base of trees forming screens.
- (3) In no event shall stagnant water be allowed to collect or remain on the surface excavation area. Suitable drainage systems shall be constructed or installed to avoid such conditions if natural drainage is not possible.
- (4) Reclamation activities shall, to the extent feasible, be conducted simultaneously with the surface mining and in any case shall be initiated at the earliest possible time after completion of mining.
- (5) Permanent field reference markings of permitted area property lines, set back, etc., are to be installed prior to commencing operations to enable operator, permittee, and the Department of Natural Resources to monitor the progress of mining and reclamation.
- (6) Compliance with this permit does not ensure compliance with the Endangered Species Act, other federal, state or local laws.
- (7) The reclamation plan by B.I. Larsen, sheet 1 3/21/77 (updated 6/27/84) and sheets 1 through 3, dated 3/21/77, is approved for this permit. Backfilling has not been approved for this site, therefore, the horizontal and vertical limits illustrated on the Reclamation Plan are the limits to which the site may be mined. Any modification or revision requires written approval from the Department of Natural Resources. Any modification or revision requires written approval from the Department of Natural Resources.


Bonnie B. Bunning
Region Manager
South Puget Sound Region Office

6/29/95
Date

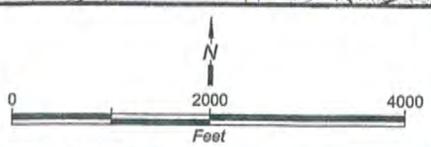


Site Location

**DNR RECLAMATION
PERMIT NO. 70-011068**

LAKESIDE INDUSTRIES
P.O. BOX 7016
ISSAQUAH, WA
98027

[Signature]
APPLICANT'S SIGNATURE



Site Location Map

Lakeside - Kent Site
City of Covington, Washington

Aspect consulting
IN-DEPTH PERSPECTIVE

179 Madrone Lane North
Bainbridge Island, WA 98110
(206) 780-9370

811 First Avenue #480
Seattle, WA 98104
(206) 328-7443

DATE: February 2006	PROJECT NO. 050125
DESIGNED BY: JWC	FIGURE NO. 1
DRAWN BY: JRS	
REVISED BY:	

C:\Hansen Project Management\050125 Lakeside Kent\2006-02 Reclamation\050125_01.dwg





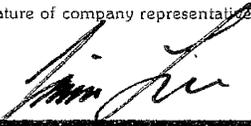
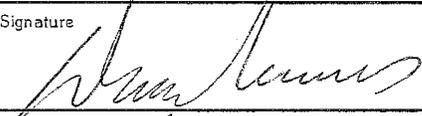




WASHINGTON STATE DEPARTMENT OF
Natural Resources

**COUNTY OR MUNICIPALITY
APPROVAL FOR
SURFACE MINING**
(Form SM-6)

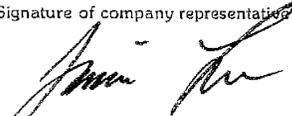
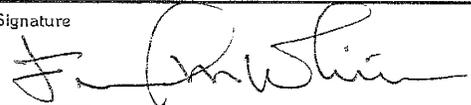


NAME OF COMPANY OR INDIVIDUAL APPLICANT(S) Same as name of the exploration permit holder. (Type or print in ink.) Lakeside Industries, Inc		TOTAL ACREAGE AND DEPTH OF PERMIT AREA (Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) (See SM-8A.) Total area disturbed will be <u>129</u> acres Maximum vertical depth below pre-mining topographic grade is <u>70</u> feet Maximum depth of excavated mine floor is <u>330</u> feet relative to mean sea level																											
MAILING ADDRESS PO Box 7016 Issaquah, WA 98027 Telephone 425-313-2600		COUNTY <u>King</u> No attachments will be accepted. Legal description of permit area: <table border="1"> <thead> <tr> <th>1/4</th> <th>1/4</th> <th>Section</th> <th>Township</th> <th>Range</th> </tr> </thead> <tbody> <tr> <td></td> <td>S 1/2</td> <td>19</td> <td>22N</td> <td>6E</td> </tr> <tr> <td></td> <td>S 1/2</td> <td>20</td> <td>22N</td> <td>6E</td> </tr> <tr> <td>N 1/2</td> <td>NW 1/4</td> <td>29</td> <td>22N</td> <td>6E</td> </tr> <tr> <td></td> <td>N 1/2</td> <td>30</td> <td>22N</td> <td>6E</td> </tr> </tbody> </table>			1/4	1/4	Section	Township	Range		S 1/2	19	22N	6E		S 1/2	20	22N	6E	N 1/2	NW 1/4	29	22N	6E		N 1/2	30	22N	6E
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Proposed subsequent use of site upon completion of reclamation Mixed-Use Development																													
Signature of company representative or individual applicant(s) 		Name and title of company representative (please print) Jaime Lee Assistant Environmental Director		Date signed 9/9/09																									
TO BE COMPLETED BY THE APPROPRIATE COUNTY OR MUNICIPALITY:																													
Please answer the following questions 'yes' or 'no'. 1. Has the proposed surface mine been approved under local zoning and land-use regulations? 2. Is the proposed subsequent use of the land after reclamation consistent with the local land-use plan/designation?				<table border="1"> <thead> <tr> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> </tbody> </table>	Yes	No	X		X																				
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When complete, return this form to the appropriate Department of Natural Resources regional office.																													
Name of planning director or administrative official (please print) DAVID S. NEMENS		Address City of Covington 16720 SE 271st Street, Suite 100 Covington, WA 98042																											
Signature 																													
Title (please print) Community Development Director																													
Telephone 253-638-1110 x2249	Date 09-03-09	FOR DEPARTMENT USE ONLY:		DNR Reclamation Permit No. 11068																									



WASHINGTON STATE DEPARTMENT OF
Natural Resources

COUNTY OR MUNICIPALITY
**APPROVAL FOR
SURFACE MINING
(Form SM-6)**

NAME OF COMPANY OR INDIVIDUAL APPLICANT(S) Same as name of the exploration permit holder. (Type or print in ink.) Lakeside Industries		TOTAL ACREAGE AND DEPTH OF PERMIT AREA (Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) (See SM-8A.) Total area disturbed will be <u>129</u> acres Maximum vertical depth below pre-mining topographic grade is <u>70</u> feet Maximum depth of excavated mine floor is <u>330</u> feet relative to mean sea level																											
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	N 1/2		30	22N																									
Proposed subsequent use of site upon completion of reclamation Mixed-Use Development																													
Signature of company representative or individual applicant(s) 		Name and title of company representative (please print) Asst. Environmental Director		Date signed 10/30/09																									
TO BE COMPLETED BY THE APPROPRIATE COUNTY OR MUNICIPALITY:																													
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When complete, return this form to the appropriate Department of Natural Resources regional office.																													
Name of planning director or administrative official (please print) Fred M White		Address King County DDES 900 Oakesdale Ave SW Renton, WA 98057-5212																											
Signature 																													
Title (please print) Site Development Specialist																													
Telephone 206 296 6783	Date 10/19/09	FOR DEPARTMENT USE ONLY:		DNR Reclamation Permit No. 11068																									



**APPLICATION FOR RECLAMATION PERMIT
FORM SM-8A**

Check appropriate box(es): new permit revision of existing permit transfer of permit expansion

NOTE: Do not attempt to complete this form until you have carefully read the accompanying instruction document (SM8AINST.PDF). Do not attempt to use this form as an MS Word Template unless you are familiar with the use of templates in MS Word.

1. NAME OF APPLICANT/PERMIT HOLDER(S) Lakeside Industries, Inc.			12. Are all of these mines now in compliance with RCW 78.44, WAC 332-18, and conditions of the permits? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no																										
2. MAILING ADDRESS PO Box 7016 Issaquah, WA 98027			13. Have you ever had a surface mine operating or reclamation permit revoked? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Have you ever had a reclamation security forfeited? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no If you answered yes to either of the above, list the permit number(s):																										
3. Telephone 425-313-2656 UBI No. 601 106 847			14. Type of proposed or existing mine: <input checked="" type="checkbox"/> pit <input type="checkbox"/> quarry Material(s) to be mined: <input checked="" type="checkbox"/> sand and gravel <input type="checkbox"/> rock or stone <input type="checkbox"/> clay <input type="checkbox"/> metal <input type="checkbox"/> limestone <input type="checkbox"/> silica <input type="checkbox"/> other _____ Deposit type: <input checked="" type="checkbox"/> glacial <input type="checkbox"/> river floodplain (alluvial) <input type="checkbox"/> river channel deposits <input type="checkbox"/> talus <input type="checkbox"/> bedrock <input type="checkbox"/> lode <input type="checkbox"/> unknown <input type="checkbox"/> other _____																										
4. NAME OF MINE Lakeside Industries Kent			15. Total Acreage and Depth of Permit Area: (Include all acreage to be disturbed by mining, setbacks, buffers, and associated activities during the life of the mine.) (See Form SM-6.) Total area disturbed will be <u>129</u> acres. Area to be disturbed in next 36 months will be <u>100+/-</u> acres. Maximum vertical depth below pre-mining topographic grade is <u>70</u> feet. Maximum depth of excavated mine floor is <u>330</u> feet relative to mean sea level																										
5. Street address and milepost of surface mine 19401 Frontage Road Covington, WA 98042 SR-18 and 256 th Street			16. Expected start date of mining Mining started in 1970s																										
6. Distance (miles) 2			17. Estimated number of years 5																										
7. Direction from NE	8. Nearest community Covington	18. Total quantity to be mined over life of mine (estimated): 1.5 million +/- <input checked="" type="checkbox"/> tons, or <input type="checkbox"/> cu yds	19. Estimated annual production: 200,000 - 500,000 +/- <input checked="" type="checkbox"/> tons, or <input type="checkbox"/> cu yds																										
9. COUNTY King No attachments will be accepted. Legal Description of permit area: <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>1/4</th> <th>1/4</th> <th>Section</th> <th>Township</th> <th>Range</th> </tr> </thead> <tbody> <tr> <td></td> <td>S 1/2</td> <td>19</td> <td>22N</td> <td>6E</td> </tr> <tr> <td></td> <td>S 1/2</td> <td>20</td> <td>22N</td> <td>6E</td> </tr> <tr> <td>N 1/2</td> <td>NW 1/4</td> <td>29</td> <td>22N</td> <td>6E</td> </tr> <tr> <td></td> <td>N 1/2</td> <td>30</td> <td>22N</td> <td>6E</td> </tr> </tbody> </table>			1/4	1/4	Section	Township	Range		S 1/2	19	22N	6E		S 1/2	20	22N	6E	N 1/2	NW 1/4	29	22N	6E		N 1/2	30	22N	6E	20. Subsequent land use: <input type="checkbox"/> industrial <input type="checkbox"/> commercial <input checked="" type="checkbox"/> residential <input type="checkbox"/> agricultural <input type="checkbox"/> forestry <input type="checkbox"/> wetlands and lakes <input type="checkbox"/> Other _____ Reclaimed elevation of floor of mine: <u>varies</u> feet relative to mean sea level Reclaimed elevation is shown on cross sections? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no Subsequent land use is compatible with County or Municipal comprehensive plan? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no County or Municipality Approval for Surface Mining (Form SM-6) attached? Revision only <input checked="" type="checkbox"/> yes <input type="checkbox"/> no SEPA Checklist required? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
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10. TOTAL ACREAGE OF PERMIT AREA APPLIED FOR (include all acreage to be disturbed by mining, setbacks, buffers, and associated activities during the life of the mine.) <u>129</u> acres			21. Application fee for a new reclamation permit is herewith attached? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no																										
11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no If you answered yes to the above, please list:			If any answers are no, explain: <u>This SM8 is for a permit revision to 70-011068 and does not require additional local government approval.</u>																										
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Permit Number</th> <th colspan="2">Active Operation?</th> <th colspan="2">Reclamation current/complete?</th> </tr> <tr> <th>Yes</th> <th>No</th> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>70-10113</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>70-11962</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>70-10411</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>			Permit Number	Active Operation?		Reclamation current/complete?		Yes	No	Yes	No	70-10113	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	70-11962	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	70-10411	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
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70-10411	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																									

CHECKLIST OF RECLAMATION STANDARDS

22. SEGMENTAL RECLAMATION	
Permit area has been divided into segments for mining and a mining schedule has been developed? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Permit area has been divided into segments for reclamation and a reclamation schedule has been developed? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23. SITE PREPARATION	
23A. Permit and Disturbed Area Boundaries	
Boundary of the permit area has been marked on the ground with permanent boundary markers? Explain boundary markers: The active mining area is surrounded by a perimeter road.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23B. Saving Topsoil, Subsoil, and Overburden for Reclamation - Please see Attached Narrative	
Thickness of topsoil is <u>already stripped</u> feet Thickness of subsoil is <u>already stripped</u> feet Depth to bedrock is <u>unknown</u> feet Total volume of topsoil is <u>9,000</u> cubic yards Total volume of subsoil is <u>0</u> cubic yards Volume of stored topsoil/subsoil is <u>9,000</u> cubic yards and will require <u><2</u> acres for storage.	
Storage areas are shown on maps and have been marked on the ground with permanent boundary markers?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Topsoil will be salvaged? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil and overburden will be moved to reclaim an adjacent depleted segment? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Before materials are moved, vegetation will be cleared and drainage planned for soil storage areas? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Soil storage areas will be stabilized with vegetation to prevent erosion if materials will be stored for more than one season? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23C. Setbacks and Screens	
Maximum depth of the mine will be <u>70</u> feet from <u>400</u> feet (<i>highest</i>) to <u>330</u> feet (<i>lowest</i>) elevation relative to mean sea level.	
The setback for this site will be _____ feet wide. – setbacks vary throughout the site – please see attached drawings for details	
Is a permanent, undisturbed buffer planned for this site? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Setbacks are shown on maps and have been marked on the ground with permanent boundary markers? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

CHECKLIST OF RECLAMATION STANDARDS

Does this site have a backfilling plan that addresses the protection of adjacent property and how the final, stable slopes are to be achieved? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23D. Buffers to Protect Streams and Flood Plains N/A	
<i>If yes, see "Additional Information Requirements for Flood Plain Mines." This document is included in the SM8AINST.PDF file.</i>	
A stream buffer of at least 200 feet has been marked on the ground with permanent boundary markers?	<input type="checkbox"/> yes <input type="checkbox"/> no
A buffer of at least 200 feet from the 100-year flood plain has been marked on the ground with permanent boundary markers?	<input type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Copy of Shoreline Permit from local government or the Dept of Ecology is attached?	<input type="checkbox"/> yes <input type="checkbox"/> no
Hydraulic Project Approval from the Department of Fish and Wildlife is attached?	<input type="checkbox"/> yes <input type="checkbox"/> no
23E. Conservation Buffers N/A	
Conservation buffers will be established for the following purpose(s): <i>(Check all that apply)</i> <input type="checkbox"/> unstable slopes <input type="checkbox"/> wildlife habitat <input type="checkbox"/> water quality <input type="checkbox"/> other _____	
Describe the nature and configuration of the conservation buffer(s):	
Conservation setbacks are shown on maps and have been marked on the ground with permanent boundary markers?	<input type="checkbox"/> yes <input type="checkbox"/> no
23F. Ground Water	
High water table depth is <u>378</u> feet <input checked="" type="checkbox"/> relative to mean sea level, <input type="checkbox"/> below original surface, or <input type="checkbox"/> unknown.	
Low water table depth is <u>375</u> feet <input checked="" type="checkbox"/> relative to mean sea level, <input type="checkbox"/> below original surface, or <input type="checkbox"/> unknown.	
Annual fluctuation of water table is from <u>375</u> feet on <u>seasonally</u> to <u>378</u> feet on <u>seasonally</u> . This groundwater table is estimated.	
Direction of ground water flow: <u>SW</u>	
Are well logs attached?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Is the aquifer perched?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Is the shallowest aquifer: <input type="checkbox"/> confined <input checked="" type="checkbox"/> unconfined	
The site will be mined: <input type="checkbox"/> wet <input type="checkbox"/> dry <input checked="" type="checkbox"/> both – site will be mined dry but reclaimed as a partial wet site.	
Describe mining method: frontloader	
The site is in a:	
<input type="checkbox"/> critical aquifer recharge area <input type="checkbox"/> sole source aquifer <input type="checkbox"/> public water supply watershed	
<input type="checkbox"/> wellhead protection area <input type="checkbox"/> special protection area <input type="checkbox"/> designated aquifer protection area	
Ground water study attached?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
<i>If yes, see "Additional Information Requirements for Hydrologically Sensitive Areas." This document is included in the SM8AINST.PDF file.</i>	
If no, explain: <u>N/A</u>	
23G. Archeology	
Are archeological/cultural resource sites present?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If yes, describe how you will protect these resources:	

CHECKLIST OF RECLAMATION STANDARDS

24. MINING PRACTICES TO FACILITATE RECLAMATION	
24A. Soil Replacement	
Topsoil will be saved? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Up to 4 feet of topsoil and (or) subsoil will be restored? If no, explain: Please see attached narrative	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be restored and seedbeds prepared as necessary to promote effective revegetation and to stabilize slopes and mine floor? If "yes" give details, if "no", explain: Please see attached narrative	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Subsoil will be replaced to an approximate depth of <u>0</u> feet on the pit floor and a depth of <u>0</u> feet on slopes. Topsoil will be replaced to an approximate depth of <u>0</u> feet on the pit floor and a depth of <u>0.5</u> feet on slopes. Please see attached narrative	
Topsoil will be distributed evenly over the site? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If topsoil is in short supply, it will be strategically placed in depressions and low areas in adequate thickness to conserve moisture and promote revegetation? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be moved when conditions are not overly wet or dry? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be imported? If yes, describe source. If no, explain: Please see attached narrative	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Synthetic topsoil made from compost, biosolids, or other amendments will be used and (or) made on site to supplement existing topsoil? If yes, explain: Please see attached narrative- Some washplant fines may be used to make or supplement topsoil	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Materials such as till, loess, and (or) silt are available on site that could be used to supplement topsoil for reclamation. If yes, explain: Please see attached narrative- Some washplant fines may be used to make or supplement topsoil	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Silt from settling ponds or a filter press will be used for reclamation? If yes, explain: Please see attached narrative- Some washplant fines may be used to make or supplement topsoil	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

CHECKLIST OF RECLAMATION STANDARDS

Settling pond clay slurries will be pumped or hauled to other segments for reclamation? If yes, explain: Please see attached narrative- Some washplant fines may be used to make or supplement topsoil	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping, or crusting? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil stockpile areas are shown on maps and will be marked on the ground with permanent boundary markers to protect from loss? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Segmental topsoil removal and replacement is shown on maps? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil salvage and replacement plan included? If no, explain: Please refer to attached backfill plan	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
24B. Removal of Vegetation	
Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments? If yes, give details. If no, explain: Where possible. This site does not contain much large vegetation.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Wood and other organic debris will be: <input type="checkbox"/> recycled <input type="checkbox"/> removed from site <input checked="" type="checkbox"/> chipped <input type="checkbox"/> burned <input type="checkbox"/> buried <input type="checkbox"/> used to synthesize topsoil or mulch <input checked="" type="checkbox"/> other (<i>explain</i>) No organic debris remains on the site – any found will be chipped. Solid waste disposal, burning, and land use permits are attached?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Some coarse wood (logs, stumps) and other large debris will be salvaged for fish and wildlife habitats? If yes, give details. If no, explain: If any becomes available on site or as an import opportunity, it will be saved and used to enhance aquatic/shoreline reclamation.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
24C. Erosion control for Reclamation	
Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage? If yes, give details. If no, explain: All fill and soil will be graded towards the pond or used in island creation.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

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Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion? If yes, give details. If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Water control systems used for erosion control during segmental reclamation will:	
Divert clean water around pit?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Trap sediment-laden runoff before it enters a stream?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Result in essentially natural conditions of volume, velocity, and turbidity?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Handle a 25-year, 24-hour peak event? (Have you attached calculation?)	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Be removed or reclaimed?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If any answers are no, explain: The site is being mined and reclaimed as a closed depression/pond. Un-mined uplands areas will be reclaimed at grade.	
Will any water control systems be removed upon final reclamation? If yes, explain: Please see attached narrative.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Water control measure will be established to prevent erosion of setbacks and neighboring properties? If yes, give details. If no, explain: Please see attached narrative.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Storm-water conveyance ditches and channels will be lined with vegetation or riprap? If yes, give details. If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

25. RECLAMATION TOPOGRAPHY	
25A. Final Slopes	
Final slopes will be created using the cut-and-fill method? Explain procedure to be used: Please see attached narrative.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Slopes will be created by mining to the final slope using the cut method? Explain procedure to be used: Please see attached narrative.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Slopes will vary in steepness? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

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Slopes will have a sinuous appearance in both profile and plan view? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Large rectilinear (that is, right angle, or straight, planar) areas will be eliminated? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Where reasonable, tracks of the final equipment pass will be preserved and oriented to trap moisture, soil, and seeds, and to inhibit erosion? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
25B. Slope Requirements for Pits and Overburden/Waste Rock Dumps (non-saleable products)	
<i>If the mine is a quarry or in hard rock, skip to Quarry section(25C).</i>	
Slopes will vary between 2 and 3 feet horizontal to 1 foot vertical or flatter, except in limited areas where steeper slopes are necessary to create sinuous topography and control drainage? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
For pits, slopes will not exceed 2 feet horizontal to 1 foot vertical except as necessary to blend with adjacent natural slopes? Give details: Yes- there are no steep slopes in the area and pond reclamation will blend with topography of existing site.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Slope stability analysis required? <i>If yes, see "Additional Information Requirements for Mines with Potentially Unstable or Steep Slopes." This document is included in the SM8AINST.PDF file.</i> Slope stability analysis provided by _____	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
25C. Slope Requirements for Quarries and Hardrock Metal Mines	
<i>If mine is a pit in unconsolidated materials covered by Section 25B, go to Section 25D</i>	
Check the appropriate box(es) <input type="checkbox"/> Slopes will not exceed 2 feet horizontal to 1 foot vertical. <input type="checkbox"/> Slopes steeper than 1 foot horizontal to 1 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6. <input type="checkbox"/> Hazardous slopes or cliffs are indigenous to the immediate area and already present a potential threat to human life. Photo and maps attached to document presence of cliffs. <input type="checkbox"/> Geologic or topographic characteristics of the site preclude slopes being reclaimed at a flatter angle and are an acceptable subsequent land use as confirmed on Form SM-6.	
Slope stability analysis required? <i>If yes, see "Additional Information Requirements for Mines with Potentially Unstable or Steep Slopes." This document is included in the SM8AINST.PDF file.</i> Slope stability analysis provided by _____	<input type="checkbox"/> yes <input type="checkbox"/> no
Measures will be taken to limit access to the top and bottom of hazardous slopes? Describe measures, or if no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Selective blasting will be used to remove benches and walls and to create chutes, buttresses, spurs, scree slopes, and rough cliff faces that appear natural? Describe procedures, or if no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Reclamation blasting will be used to reduce the entire highwall to a scree or rubble slope less than 2 feet horizontal to 1 foot vertical?	<input type="checkbox"/> yes <input type="checkbox"/> no

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Blasting plan is attached? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Access to benches will be maintained for reclamation blasting? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds?	<input type="checkbox"/> yes <input type="checkbox"/> no
25D. Backfilling	
Slopes will require backfilling? Depth of backfilling is 50 feet. Slope stability compaction analysis required? Compaction analysis provided by	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Backfilling plan and (or) permits are attached? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Backfilling will be done with overburden material after topsoil has been separated? If no, describe composition and source of backfill material: Explain method of placement of fill: Please see attached Backfill Plan.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Locations of stockpiles are shown on maps and will be marked on the ground with permanent boundary markers?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Will backfill be imported? If yes, give volumes needed to meet reclamation plan: Volume needed to complete reclamation has already been obtained. Additional fill volumes will only enhance reclamation and shoreline habitat.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Areas to be backfilled are shown on maps? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
All grading/backfilling will be done with clean, inert, non-organic solids? If yes, give details. If no, explain: Please see attached Backfill Plan	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Backfilled slopes will be compacted? If yes, give details. If no, explain: Please see attached Backfill Plan	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Will you be backfilling into water? Yes and NO- see below If yes, is slope stability analysis attached? If yes, describe method: Some backfill will be placed along pond edge and sloped as part of shoreline reclamation.	<input checked="" type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
25E. Mine Floors	
Flat areas will be formed into gently rolling mounds? If yes, give details. If no, Explain: Pond and site will have topography that is consistent with shoreline reclamation.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

CHECKLIST OF RECLAMATION STANDARDS

Mine floor will be gently graded into sinuous drainage channels to preclude sheetwash erosion during intense precipitation? If yes, give details. If no, explain: Mine floor will become a series of ponds once mining and reclamation are complete.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Mine floor and other compacted areas will be bulldozed, plowed, ripped, or blasted to foster revegetation? If yes, give details. If no, explain: Mine floor will become a series of ponds once mining and reclamation are complete.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
25F. Lakes, Ponds, and Wetlands	
Is water currently present in the area or will the mining penetrate the water table? <i>If no, go to Section 25G.</i>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Reclaimed areas below the permanent low water table in soil, sand, gravel, and other unconsolidated material will have a slope no steeper than 1.5 feet horizontal to 1 foot vertical? If yes, give details. If no, explain: Final mine slopes will be between the mine floor 330' and 370' and will be below the permanent water table. Cut slopes will be no steeper than 1.5:1 H:V	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation? If yes, give details. If no, explain: Reclaimed mine areas targeted for revegetation will be built with backfill materials imported to the site. Typically, backfill materials will consist of topsoil, silts and other clay bearing material.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Some parts of pond and lake banks will be shaped so that a person can escape from the water? If yes, give details. If no, explain: Final reclaimed side slopes between 370' and 380' will be variable between 2:1 and 5:1 or flatter.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes? If yes, give details. If no, explain: The final mine reclamation plan is to create an approximately 52 acre lake in a closed depression. The lake level will be regulated by fluctuations in the local groundwater table. No undesirable overflow or seepage is anticipated. Current operations pad area will be left unmined and reclaimed as uplands area.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Wildlife habitat will be developed, incorporating such measures as: Sinuous and irregular shorelines? Varied water depths? Shallow areas less than 18 inches deep? Islands and peninsulas? Give details: Please see attached narrative.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Ponds or basins will: Be located in stable areas? Have sufficient volume for expected runoff? Have an emergency overflow spillway? Spillways and outfalls will be protected (for example, rock armor) to prevent failure and erosion? If any answers are no, explain: The final mine reclamation plan is to create an approximately 52 acre lake in a closed depression. The lake level will be regulated by fluctuations in the local groundwater table. No undesirable overflow or seepage is anticipated.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Proper measures will be taken to prevent seepage from water impoundments that could cause flooding outside the permitted area or adversely affect the stability of impoundment dams or adjacent slopes?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

CHECKLIST OF RECLAMATION STANDARDS

If yes, give details. If no, explain: **The final mine reclamation plan is to create an approximately 52 acre lake in a closed depression. The lake level will be regulated by fluctuations in the local groundwater table. No undesirable overflow or seepage is anticipated.**

Written approval from other agencies with jurisdiction to regulate impoundment of water is attached? yes no
 If no, explain: **None are required for this design.**

25G. FINAL DRAINAGE CONFIGURATION

Drainage will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event (*Data are available at DNR Region offices*) yes no
 If yes, are calculations attached? yes no
 If yes, give details. If no, explain: **The site is being mined and reclaimed as a closed depression/pond. Current operations pad area will be left un-mined and reclaimed as uplands area.**

Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation? yes no
 Clean runoff is directed to a safe outlet? yes no
 If either yes, give details. If no, explain: **Please see attached narrative.**

Are these shown on maps? yes no

The grade of ditches and channels will be constructed to limit erosion and siltation? yes no
 If yes, give details. If no, explain: **Please see attached narrative.**

Natural-appearing drainage channels will be established upon reclamation? yes no
 If yes, give details. If no, explain: **Please see attached narrative.**

26. SITE CLEANUP AND PREPARATION FOR REVEGETATION

26A. Dealing with Hazardous Materials

Hazardous materials are present at the mine site? yes no

If no, go to Section 26B

The final ground surface drains away from any hazardous natural materials? yes no
 If yes, give details. If no, explain:

Plan for handling hazardous mineral wastes indigenous to the site is attached? yes no

If no, written approval from all appropriate solid waste regulatory agencies attached? yes no

26B. Removal of Debris

All debris (garbage, 'bone piles', treated wood, old mining equipment, etc.) will be removed from the mine site? yes no

All sheds, scale houses, and other structures will be removed from the site? yes no

If either answer is yes, give details. If no, explain: **Current operations pad area will be left un-mined and reclaimed as uplands area. All operations equipment will be removed from the site, soil ripped, topsoil added and site revegetated.**

27. REVEGETATION

The mine site is in: eastern Washington
 western Washington

The mine site is: wet dry? – through pumping. Reclamation will be

CHECKLIST OF RECLAMATION STANDARDS

partially wet.	
The average precipitation is 57 inches per year.	
Revegetation will start during the first proper growing season (fall for grasses and legumes, fall or late winter for trees and shrubs) following restoration of slopes? If yes, give details. If no, explain: Please see attached narrative.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Test plots will be used to determine optimum vegetation plans?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
The site will not be revegetated because:	
<input type="checkbox"/> It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR). <input type="checkbox"/> Demonstration plots and areas will be used to show that active revegetation is not necessary. <input type="checkbox"/> Revegetation is inappropriate for the approved subsequent use of this surface mine.	
Explain:	
Documentation is attached?	
<input type="checkbox"/> yes <input type="checkbox"/> no	
27A. Recommended Pioneer Species	
In the Sections below, check the species that will be planted at your mine site: <i>* indicates nitrogen-fixing species</i>	
Western Washington Dry Areas	
<input type="checkbox"/> alfalfa* <input type="checkbox"/> cereal rye <input type="checkbox"/> creeping red fescue <input type="checkbox"/> ground cover	<input checked="" type="checkbox"/> Lupine* <input type="checkbox"/> perennial rye <input type="checkbox"/> red alder* <input type="checkbox"/> shrubs
<input checked="" type="checkbox"/> clover* <input type="checkbox"/> colonial bent grass <input type="checkbox"/> Douglas fir <input checked="" type="checkbox"/> other Please see attached narrative	
<input type="checkbox"/> orchard grass <input type="checkbox"/> ponderosa pine <input type="checkbox"/> shore pine	
Western Washington Wet Areas	
<input type="checkbox"/> birdsfoot trefoil <input checked="" type="checkbox"/> cottonwood <input type="checkbox"/> red alder*	<input type="checkbox"/> sedges <input checked="" type="checkbox"/> wetland grasses <input checked="" type="checkbox"/> other Please see attached narrative
<input type="checkbox"/> cedar <input type="checkbox"/> creeping red fescue	
<input type="checkbox"/> tubers <input type="checkbox"/> willow	
Eastern Washington Dry Areas	
<input type="checkbox"/> alder* <input type="checkbox"/> black locust <input type="checkbox"/> deciduous trees <input type="checkbox"/> diverse evergreens	<input type="checkbox"/> grasses <input type="checkbox"/> lodgepole pine <input type="checkbox"/> ponderosa pine <input type="checkbox"/> other
<input type="checkbox"/> alfalfa* <input type="checkbox"/> clover <input type="checkbox"/> shrubs	
<input type="checkbox"/> juniper <input type="checkbox"/> lupine* <input type="checkbox"/> deep-rooted ground cover	
Eastern Washington Wet Areas	
<input type="checkbox"/> alder* <input type="checkbox"/> serviceberry <input type="checkbox"/> other	<input type="checkbox"/> cottonwood <input type="checkbox"/> tubers
<input type="checkbox"/> poplar <input type="checkbox"/> willow	
<input type="checkbox"/> sedges	
Give planting details (stems/acres of trees and shrubs, see Forest Practices manual; lbs/acre of grass, legume, or forb mixture): Please see attached narrative	
Describe weed control plan: Please see attached narrative	

CHECKLIST OF RECLAMATION STANDARDS

27B. Planting Techniques

Revegetation at this site will require:

- | | | | | |
|--|-------------------------------------|-----|-------------------------------------|----|
| Ripping and tilling? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| Blasting to create permeability? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| Mulching? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Irrigation? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| Fertilization? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| Importation of clay- or humus-bearing soils? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Other soil conditioners or amendments? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
- Give details: **Please see attached narrative**

Trees and shrubs will be planted in topsoil or in subsoil amended with generous amounts of organic matter? yes no
 If yes, give details. If no, explain: **Please see attached narrative**

- | | | | | |
|---|-------------------------------------|-----|--------------------------|----|
| Mulch will be piled around the base of trees and shrubs? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| High quality stock will be used? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Trees and shrubs will be planted while they are dormant? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Stock will be properly handled, kept cool and moist, and planted as soon as possible? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Seeds will be covered with topsoil or mulch no deeper than one-half inch? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
- If any answers are no, explain:

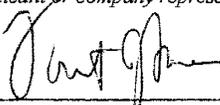
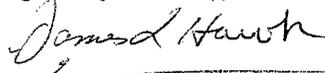
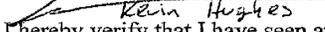
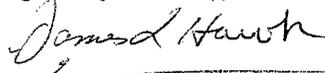
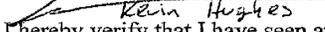
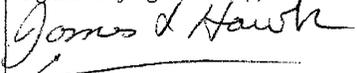
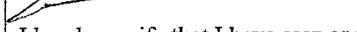
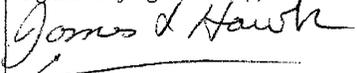
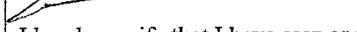
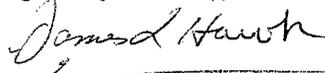
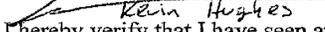
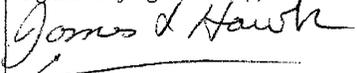
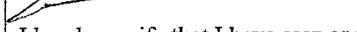
28. FINAL CHECKLIST

- | | | | | |
|---|-------------------------------------|-----|-------------------------------------|----|
| All required maps are attached (<i>See Instructions for detailed requirements</i>)? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| All required cross-sections are attached (<i>See Instructions for detailed requirements</i>)? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Geologic map attached (if required)? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| All documents submitted have the date, the name and address of the permit holder, and the application number on every page of the material? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| The plan contains predominantly relevant information? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Have you completed the SM-6 and has it been signed by the local jurisdiction? As part of past application | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Have you provided the SEPA checklist? | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| Have you provided a copy of the SEPA Determination (DNS, MDNS, or DS)? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Have you attached photographs? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| Are additional supplemental studies included? | <input type="checkbox"/> | yes | <input type="checkbox"/> | no |
- If yes, check the appropriate box(es) below:
- | | | | |
|--|--|--|--|
| <input type="checkbox"/> Archeological | <input type="checkbox"/> Geohydrologic | <input checked="" type="checkbox"/> Backfill | <input type="checkbox"/> Slope stability |
| <input type="checkbox"/> Topsoil | <input type="checkbox"/> Flood plain | <input type="checkbox"/> Conservational | <input type="checkbox"/> Vegetation |
| <input type="checkbox"/> Other | | | |

- | | | | | |
|-------------------------|-------------------------------------|-----|--------------------------|----|
| Other permits required? | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
|-------------------------|-------------------------------------|-----|--------------------------|----|
- If yes, check the appropriate box(es) below:
- | | | |
|---|---|---|
| <input type="checkbox"/> Shoreline permit | <input type="checkbox"/> Water Discharge Permit | <input type="checkbox"/> Solid Waste Permit |
| <input checked="" type="checkbox"/> Air Quality Permit | <input checked="" type="checkbox"/> NPDS or General Discharge Permit | <input type="checkbox"/> Hydraulic Project Approval |
| <input checked="" type="checkbox"/> Special or Conditional Use Permit | <input checked="" type="checkbox"/> Other CITY OF COVINGTON GRADING PERMIT | |

CHECKLIST OF RECLAMATION STANDARDS

When signed by the applicant and approved by the Department of Natural Resources, this document and the associated maps, cross sections, reclamation narrative, and other attachments will be the approved reclamation plan for this permit that the permit holder must follow. Significant variations from the approved reclamation plan may require that a new plan be submitted to the Department for approval.

The applicant shall be considered as the permit holder for this surface mine and shall be responsible for compliance with Chapter 78.44 RCW, Chapter 332-18 WAC, the approved reclamation plan and attachments, and the conditions of the permit if issued by the Department of Natural Resources.									
I hereby agree to comply with this plan. <i>Signature of applicant or company representative</i> 	Name and Title of Company Representative Forest Lane Environmental Manager	Date signed 17 November 2008							
SURFACE OWNERSHIP Give names, addresses, and signatures of all individuals with possessory interest in land. (attach signed copies of this page if more than one) I verify that the applicant has my permission to mine from my land. <i>Signature of landowner(s)</i>	OWNERSHIP OF RIGHTS TO REMOVE MINERALS BY SURFACE MINING Give names, addresses, and signatures of all individuals with rights. (attach signed copies of this page if more than one) I verify that the applicant has my permission to mine this land. <i>Signature of rights owner(s)</i>								
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"></td> <td style="width: 50%; border: none; text-align: right;"><i>Date Signed</i> 11-17-08</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none; text-align: right;"><i>Date Signed</i> 11-17-08</td> </tr> </table> I hereby verify that I have seen and approved this plan. <i>Signature of landowner(s)</i>		<i>Date Signed</i> 11-17-08		<i>Date Signed</i> 11-17-08	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"></td> <td style="width: 50%; border: none; text-align: right;"><i>Date Signed</i> 11-17-08</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none; text-align: right;"><i>Date Signed</i> 11-17-08</td> </tr> </table> I hereby verify that I have seen and approved this plan. <i>Signature of rights owner(s)</i>		<i>Date Signed</i> 11-17-08		<i>Date Signed</i> 11-17-08
	<i>Date Signed</i> 11-17-08								
	<i>Date Signed</i> 11-17-08								
	<i>Date Signed</i> 11-17-08								
	<i>Date Signed</i> 11-17-08								
FOR DEPARTMENTAL USE ONLY									
Date accepted	Accepted by:	Title:	Reclamation Permit No.						
Comments by Department:									

Property Owner: James Hawk
 33327 188th Ave. S.E.
 Auburn, WA 98002

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 NOV 21 2008
 Geology and Earth

RECEIVED
NOV 02 2009
Geology and Earth

WAC 197-11-960 Environmental checklist.

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:

Kent Gravel Pit (also historically known as Black River Gravel Pit)

2. Name of applicant:

Lakeside Industries, Inc.

3. Address and phone number of applicant and contact person:

Karen Garnes – Environmental Program Director 425-313-2660
P.O. Box 7016
Issaquah, Washington 98027

4. Date checklist prepared: 10/27/09

5. Agency requesting checklist: Washington State Department of Natural Resources

6. Proposed timing or schedule (including phasing, if applicable):

This ECL is being prepared as part of a Reclamation Plan that has been submitted for an existing, operating mine. The mining will occur in phases as shown in the Reclamation application.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

N/A.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No

10. List any government approvals or permits that will be needed for your proposal, if known.

NPDES Sand & Gravel General Permit –Lakeside has a valid NPDES Permit.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Lakeside proposes to update the Reclamation Plan (DNR SM-8a form) to replace the existing Operating Permit. This is will bring us into compliance with the 1993 standards. As a part of this update, new maps have been created with more details and information.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

S1/2 Section 19, S1/2 Section 20, N1/2 of the NW1/4 Section 29, N1/2 Section 30, of Township 22N, RANGE 6E

Entrance to the Pit is the end of 256th street on the south side of Hwy 18 in Covington.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other

The site was relatively flat, but has been mined. Unmined areas remain flat. There are detention ponds in the south ends of the site.

b. What is the steepest slope on the site (approximate percent slope)?

The steepest area on the site is approximately 100%. This is the mining face. Upon completion of mining, no slope will be steeper than 50%.

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The site is comprised mostly of sand and gravel. Some areas of the site have topsoil piled into storage berms.

- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Not that we are aware of.

- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Filling is proposed for reclamation of the central area of the site as well as one area of the south slope that is currently too steep and does not meet DNR standards for reclamation. Fill quantities are approximated to be about 2.5 million yards. Lakeside has a grading permit for filling activities issued by King County under permit number L72G1461. Please refer to the Revised Reclamation Plan for more details regarding fill.

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Erosion could occur on the working face of the mine, but water settles in infiltration ponds. No offsite erosion can occur as the site is a closed depression.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

No additional impervious surfaces proposed.

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Lakeside will continue to limit erosion to the slopes on the interior of the site. No erosion will occur off-site. Lakeside will continue to use appropriate BMPs.

2. Air

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

No additional emissions are proposed.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Emissions will remain in compliance with Washington State Air Quality Standards.

3. Water

a. Surface:

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

To the north of the Site is Jenkins Creek.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Discharged treated mine dewatering water and treated stormwater runoff is pumped into a discharge pond which connects to Jenkins Creek. No new practices are proposed.

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

N/A.

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

Mining areas are dewatered. No new practices are proposed.

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

N/A

c. Water runoff (including stormwater):

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Water is collected in a series of treatment ponds. After treatment, water is discharged to Jenkins Creek. No changes are proposed.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

No new measures are proposed or required.

4. Plants

a. Check or circle types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other

evergreen tree: fir, cedar, pine, other

shrubs

grass

pasture

crop or grain

wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

water plants: water lily, eelgrass, milfoil, other

other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Trees, grasses, and shrubs will be removed in areas where mining will occur next. Previously mined areas in return will be planted.

c. List threatened or endangered species known to be on or near the site.

None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The site will be reclaimed by seeding with grasses and clovers.

5. Animals

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other:

mammals: deer, bear, elk, beaver, other:

fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

None known.

c. Is the site part of a migration route? If so, explain.

Unknown.

- d. Proposed measures to preserve or enhance wildlife, if any:

None

6. Energy and natural resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The site currently has electric and natural gas hookups.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

N/A

7. Environmental health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

No.

- 1) Describe special emergency services that might be required.

N/A

- 2) Proposed measures to reduce or control environmental health hazards, if any:

N/A

b. Noise

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Noise in the vicinity will not affect this project.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

No new noise will be created by this proposal. Heavy equipment is used in the mining process.

3) Proposed measures to reduce or control noise impacts, if any:

The mine is not active 24/7. Normal daily operating hours and seasonal work limits noise impacts.

8. Land and shoreline use

a. What is the current use of the site and adjacent properties?

The site is currently used as a surface mine. Additional site activities include the manufacturing of gravel, concrete, and asphalt, maintenance facilities, and offices. Adjacent properties include HWY 18 to the north and east, and residential uses to the south and west.

b. Has the site been used for agriculture? If so, describe.

We are not aware of previous agricultural use.

c. Describe any structures on the site.

Buildings include two maintenance facilities, two offices, one concrete plant, one asphalt plant, one rock crusher, and one wash plant.

d. Will any structures be demolished? If so, what?

None proposed at this time.

e. What is the current zoning classification of the site?

The Site lies within two jurisdictions:
City of Covington – Mineral
King County – M (Mineral)

f. What is the current comprehensive plan designation of the site?

Unknown.

g. If applicable, what is the current shoreline master program designation of the site?

N/A.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

No.

i. Approximately how many people would reside or work in the completed project?

None will reside. Approximately 25 +/- workers work on the site currently. It is unknown how many will work on site when the project is completed.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

N/A

1. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

None.

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

N/A

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

- c. Proposed measures to reduce or control housing impacts, if any:

N/A

10. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No new proposed structures.

- b. What views in the immediate vicinity would be altered or obstructed?

None.

- c. Proposed measures to reduce or control aesthetic impacts, if any:

We will follow DNR guidelines to create variable slopes along mine edges during reclamation.

11. Light and glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

N/A

- c. What existing off-site sources of light or glare may affect your proposal?

None.

- d. Proposed measures to reduce or control light and glare impacts, if any:

None.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?

None

- b. Would the proposed project displace any existing recreational uses? If so, describe.

No

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

N/A

13. Historic and cultural preservation

- a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No.

- b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

None known on or next to the site.

- c. Proposed measures to reduce or control impacts, if any:

N/A

14. Transportation

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

The site is served by and immediately adjacent to Hwy 18 via the 256th street exit.

- b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

No. Unknown.

- c. How many parking spaces would the completed project have? How many would the project eliminate?

N/A.

- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No.

- e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

NARRATIVE for DNR FORM SM-8A
Lakeside – Kent Site
Permit number: 70-011068

This narrative has been prepared to supplement the responses on the Department of Natural Resources Surface Mining Form SM-8A. This information is provided by Lakeside for the Kent site located in the City of Covington, Washington.

The site will be mined only in a limited area. The current operations pad area (21 acres) will not be mined but left at its current grade. The remainder of the site will be mined to a maximum 330MSL in depth. Some excavated areas will be partially filled with imported backfill material¹. Other areas of the site will not be filled and once excavated they will be allowed to fill up with water to create ponds, shorelines and islands. The total area of open water left on the site will be approximately 52 acres.

Saving Topsoil and Overburden for Reclamation

The major action of the proposal is the eventual creation of some pond and shoreline area and some uplands un-mined areas. Topsoil needs are limited to pond shoreline, islands and created uplands. This site has limited native topsoil as much was cleared in the process of initial site preparation many years ago. Current areas of proposed mining contain some native peat. Generally, the peat on the site is estimated at about 400' x 200' x 3' deep. Existing and future reclamation activities will utilize imported topsoil for reclamation of pond shorelines and top dressing for uplands areas. Fill areas will be placed, compacted and top dressed with onsite or imported topsoil. Imported topsoil will be utilized at the time of delivery or stockpiled immediately adjacent to the area to be reclaimed. Topsoil stockpiles will be utilized within one growth season or stabilized with erosion control planting.

Groundwater

The final mine reclamation plan is to create an approximately 52 acre lake in a closed depression and maintain approximately 77 acres at upland grades. The lake level will be regulated by fluctuations in the local groundwater table. No undesirable overflow or seepage is anticipated. The highest measured groundwater level is 378 feet to mean sea level. The reclamation design of the pond and shoreline are based on this groundwater level. This reclamation plan is adaptable and should a higher groundwater level be observed, the reclamation design will be modified accordingly.

Soil Replacement

A percentage of the site will become pond surface. The remaining areas to be revegetated include the upland areas, pond shoreline and created islands. The upland areas will be ripped, dressed with topsoil and replanted. The pond shoreline and islands will be

¹ Please see the City of Covington Grading Permit and associated documents regarding the site filling process. These documents can be found in the tab labeled Local Approvals.

created utilizing fines from the process area and clean, inert, non-organic back haul from off-site sources. Saved peat/topsoil (estimated at about 8-10,000 yards) will be replaced in upland and non-aquatic areas of the site.

The sequence of mining, fill placement, topsoil storage and reclamation are presented on Figures 4, 5 and 6.

Backfilling

Backfilling has been included to accomplish reclamation goals. Back filling is proposed to greatly enhance the variation and composition of the shoreline habitat and to expand dry upland areas on the site. The applicant has proposed with this application revision to create a more varied shoreline, more shallows, water channels, and greater site elevation variation than previously proposed. Upland areas will be created by placing imported fill on the excavated areas in lifts. These lifts will then be compacted and top dressed with salvaged or imported topsoil. The lower pit area is dewatered so that placement of fill into water is limited to filling into the former treatment ponds. With a fill depth of approximately 75ft, the small amount of material placed in water will be weighted by the dry and well-compacted material above.

Please refer to the attached backfill plan for more information.

Lakes, Ponds, and Wetlands

The final mine reclamation plan creates an approximately 52 acre lake with a sinuous and irregular shoreline. The reclamation plan creates variable water depths. The reclamation plan includes islands intended to provide water fowl nesting sites. All islands are separated from the shoreline by a predator trench at least 7 feet wide (usually much greater) and greater than 4 feet deep. After mining is complete, water will be allowed to fill certain areas of the site in order to create this shoreline environment. Water is lower at the site as it is pumped to ensure that mining can occur without causing turbidity. Once this pumping ceases, unfilled excavated areas will become ponds – upland mine areas will become islands and shorelines.

Reclamation efforts are segregated into the following areas of activity:

- Import of fill material
- Topsoil placement and seeding of un-mined operations area.
- Enhancement of the islands and shallows.
- Enhancement of pond shorelines.
- Enhancement of uplands areas.

Pond areas would be created with the existing landforms and revegetated with native grasses, shrubs, and trees. The intent of reclamation plantings is to provide forage, nesting sites, and cover for wildlife.

Creation of Islands and Shallows

The final configuration of the shoreline and islands within a completed segment will be constructed after final resource excavation. As clean backfill material becomes available the creation of additional islands and shallows will proceed.

The creation of islands and shallows in the main pond will provide many benefits, including:

- Shallow habitat,
- Habitat for birds,
- Shallow vegetated quiet water environment for suspended sediment removal during mining and after flooding.

Generally, island and shallows landform creation will be conducted in stages. The first stage 1) is resource removal to final depth; 2) placement of the fill material to approximate average grade; 3) excavation of deep channel and shallow areas, utilizing excavated material to create irregular island topography; 4) topsoil replacement on islands and peninsulas; 5) revegetation.

The fill method employed will focus on creation of safe, stable, erosion resistant forms. Methods may include employment of silt fences to limit suspended sediment transport, compaction to reduce erosion and settling and/or armoring with rock, organic debris or other appropriate inert material (excluding exposed broken concrete). Placement of the fill in the final stages shall work towards creation of an irregular shoreline configuration and variable water depths.

Shoreline Creation

Simple procedures can greatly enhance and protect islands and shoreline habitat. Such procedures include:

- Irregular shaped shoreline
- Placement of erosion control materials to the windward and flood directions
- Create a variety of water depths and islands.

Varying pond shoreline slopes between 2H:1V and 3H:1V will be prepared for safe egress. Placement of large rocks or woody debris at varying depths will reduce potential erosion and enhance wildlife values.

The pond perimeter will be revegetated as mining segments are completed. A multi-tiered complex of vegetation will be planted in these areas to provide for enhanced biodiversity. Large woody debris, large rocks and soils can also be utilized to enhance aquatic habitat. Vegetation in the near shore will continue to supply large woody debris as species mature.

Planting Program

The applicant proposes to utilize native species for the revegetative program of the disturbed areas. Typical native shrubs for pond shoreline planting include Hookers willow, Red-osier dogwood and salmonberry. These shrubs would be planted in the correct season as fresh cuttings or rooted sprigs. Proposed emergent vegetation to be planted includes sawbeak sedge, tufted hair grass and meadow foxtail and common velvet grass. These emergent species not naturally introduced can be applied as bare root sprigs or applied in a hydro seed mixture. The application rates will be consistent with individual seed recommendations but will generally be:

- Fescues and grasses – 6 pounds of seed per acre
- Clovers – 6 pounds of seed per acre
- Hooker Willow *Salix hookeriana* 10-26 inch bare root plants – fast-growing and will be used for pond bank stabilization planted 3 – 5 feet apart.
- Red Osier Dogwood *Cornus stolonifera* start from cuttings- used throughout site at a spacing of 4 feet.
- Salmonberry *Rubus spectabilis* Vine- start from cuttings or seedlings- spacing of about 4 feet.

Disturbed upland segments would be revegetated with shrub and tree species. Proposed upland shrubs include salmonberry, cascara, and red elderberry. Native trees to be utilized include: red alder, western red cedar, black cottonwood and Hookers willow. Tree species can be planted as root-cuttings, bare root trees, container plants, or best is transplanted from areas to be disturbed. A conscious planting effort can provide a multi-tiered complex of wildlife habitat in a minimum amount of time. It is still uncertain what the final use of these uplands areas will be. However, native vegetation will help provide a varied and successful site for almost any future use.

Backfill Plan for Lakeside Kent Site

This plan has been prepared for Lakeside Industries as information and general guidelines for operations when accepting and placing site fill material. The Kent Mining Operation in Covington, Washington is currently accepting back fill onto its site. This material is intended to be used as fill but will also be used to facilitate reclamation activities. The goal of fill import and on-site placement is to enhance reclamation features by utilizing clean inert materials to create sinuous and varied site elevations and shoreline features. The overall result will be higher quality reclamation.

Material Quality

Material excepted onto the site will be of known origin and should not require environmental testing. Lakeside has full knowledge of the source of its fill materials and assures that only clean inert native soils are accepted onto the site from off site sources. Clean is defined as not containing any construction debris, no asphalt or concrete waste and no contaminated soils. Should any suspect material arrive at the site, Lakeside maintains an ongoing relationship with several testing labs and will be able to verify the material quality before reclamation placement. All contractors that bring material to the Site shall sign a verification certificate in adherence with Lakeside's Clean Material Acceptance Policy.

Material Placement

All fill material brought onto the site, as well as all native top soils, will be placed in the following manner:

- Material will be visually examined to assure it is free of unwanted debris or contaminants.**
- Material will be placed in the reclamation/fill area in machine compacted layers of approximately 12 inches.**
- Material will be compacted by the subsequent lift and the walking of the dozer over the fill area. A testing schedule is not proposed as the site will be evaluated prior to any building activities.**
- Material lifts will be used as staging areas for subsequent fill placement, therefore receiving additional compaction.**

In this manner all materials will be adequately handled for both the dry land areas and the shoreline/pond areas.

Location of Material Placement

As part of the site's on going reclamation, the backfill imported to the site will be placed in areas of priority. These areas will ensure that imported material is placed in a way to best enhance overall site reclamation. Please refer to Figure 6 for fill placement.

The low areas of the site are dewatered so that backfilling will achieve a higher compaction density. Although dewatering occurs, former water treatment ponds exist in the backfill placement area. The depth of water in the ponds is no more than 10-15feet at deepest. Because the entire fill depth is 75 feet, a small amount of fill into the water in the first few lifts will have negligible effects in the entire fill operation.

Subsequent Uses

Prior to any on-site building in the backfilled areas, a geotechnical analysis will be performed to analyze the suitability of the fill area for construction.

**Appendix G: MEMORANDUM ON SUBAREA PLAN ADOPTION
AND SUBSEQUENT COMPREHENSIVE PLAN AMENDMENTS**

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MEMORANDUM

DATE: November 1, 2013

TO: Ann Mueller, AICP
Senior Planner, City of Covington

FROM: Kevin Gifford, AICP
Associate, BERK Consulting

RE: Hawk Property Subarea Plan Adoption and Subsequent Comprehensive Plan & Code Amendments

If the Hawk Property Subarea Plan is approved, it will amend the city's comprehensive plan and municipal code to include new goals and policies, accommodate changes to the types of land uses allowed in the subarea and include new development standards necessary to achieve the vision of the subarea plan. In addition, a number of minor amendments to the city's comprehensive plan and municipal code will be necessary to maintain internal consistency and ensure that the plan accurately reflects current conditions. Longer term amendments are also described below which should be addressed in future comprehensive plan docket cycles or major plan updates as development occurs in the subarea. These amendments are summarized below.

Potential Comprehensive Plan Updates

Land Use Element

- Update Figure 2.1 – City of Covington Future Land Use Map to reflect the new designation of the Hawk Property as “Hawk Property Subarea.” This amendment is identified in the Preferred Hawk Property Subarea Plan.
- Update Table 2.1 on page 3 as development occurs to ensure that land in the Hawk Property Subarea is characterized as “Reclaimed Mining/Quarry and Batch Plant.”
- Upon adoption of the Hawk Property Subarea Plan, update Section 2.6.7 on page 11 to reflect that the Lakeside gravel mine is no longer active and that reclamation is underway. When reclamation of the site is complete and development occurs, revisit this section, as well as Sections 2.6.1 – 2.6.3, and update to reflect emerging development conditions.
- Update Table 2.5 on page 12 to remove the Hawk Property Subarea from the Mineral category.
- Update Table 2.6 on page 13 to add the Hawk Property Subarea future land use designation, as well as the implementing zones from the Subarea Plan.

Transportation Element

- Amend Table 5.2 – 20 Year Capital Improvement Program 2010-2029 – Associated Costs to add the transportation improvements identified as mitigation measures in the EIS. These improvements should also be added to the City's Transportation Improvement Program.

Capital Facilities Plan Element

- Update Section 10.9, specifically Table 10.5, to include the transportation improvements identified as mitigation measures in the EIS.
- Update Section 10.9, specifically Table 10.3, to include the parks and trails improvements identified for Alternatives 2 and 3 in Chapter 2 of the EIS, including cost estimates.

Potential Covington Municipal Code – Coordinating Amendment

- Add Planned Action determinations in Chapter 14.30 Permit Decision Types.

Long-Term Comprehensive Plan Updates

Land Use Element

- After annexation, update Figure 2.2 – Adjacent Areas of Concern and Potential Annexation Areas to reflect that PAA 1 will have been added to the City.
- Over time, when development occurs amend Table 2.1 with the urban village mixed uses.
- Update Table 2.4 on page 6 as development occurs to reflect increased employment in the Hawk Property Subarea in retail sector and reduced employment in the Mining sector.

Housing Element

- As development occurs, update Section 3.3.2 on page 7 to reflect the increased proportion of multifamily and townhome development in the city's housing stock.

Transportation Element

- When the central spine road through the subarea is complete, update Figure 5.2A to reflect the functional classification applied to that road.
- With build-out of regional land plans, traffic volumes on the section of SR 516 (SE 272nd Street) between 156th Place SE and SE Wax Road would be high enough that most concurrency intersections along this segment would operate at LOS E or F. Concurrency could be addressed either by widening the roadway or amending level of service standards to allow the roadway to operate at a lower level of service after it has been improved to an ultimate capacity. The City should adopt comprehensive plan policies stating that the City of Covington will plan cooperatively with WSDOT and neighboring cities to define the ultimate capacity for this roadway.

Parks and Recreation Element

- As parks and trails described in the Hawk Property Subarea Plan are completed, update Figure 6.1 and Figure 6.2 to show these facilities.
- As parks and trails described in the Hawk Property Subarea Plan are completed, update the Inventory and Needs Assessment discussions in Section 6.4 and 6.5.

Economic Development Element

- Upon annexation, update Section 12.2.4 – Potential Future Annexations to remove discussion of PAA 1.
- As development occurs, update Section 12.2 – Economic Profile to reflect the changing employment and household mix resulting from development in the Hawk Property Subarea.

Capital Facilities Plan Element

- As described in the Hawk Property Planned Action EIS, the City could adopt a formal LOS standard for police service and coordinate with the King County Sheriff's Office on monitoring of call responses to incidents by members of the Covington Police Department.

