

## 10.0 Indirect Effects

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## 10.0 Indirect Effects

### Chapter Summary

Indirect effects are those caused by or resulting from the proposed action and are later in time but are still reasonably certain to occur [50 CFR 402.02].

Three examples of indirect effects are:

1. Changes to ecological systems resulting in altered predator/prey relationships
2. Changes to ecological systems resulting in long-term habitat alteration
3. Anticipated changes in human activities, including changes in land use

### 10.1 General Considerations

Indirect effects are those impacts that are caused by the action and occur later in time (after the action is completed) but are still reasonably certain to occur. The geographic extent of indirect effects of a proposed action and any interrelated or interdependent activities is one component defining the project action area. An interrelated action is an action that is part of a larger action and depends on the larger action for its justification. An interdependent action is defined as an action having no independent utility apart from the proposed action. Interrelated and interdependent activities are discussed in more detail in Part 1 of this training manual (Chapter 3 Components of a Biological Assessment).

This section provides general guidance and includes three examples of indirect effects: changes to ecological systems resulting in altered predator/prey relationships, changes to ecological systems resulting in long-term habitat alteration, and anticipated changes in human activities, including changes in land use. Because of the complex nature of an indirect effect analysis for land use, WSDOT has prepared specific guidance for BA authors (see Section 10.2 WSDOT Guidance—ESA, Transportation, and Development: Assessing Indirect Effects). Section 10.2 includes a 10-step approach for analyzing potential land use indirect effects approved in May 2009 by FHWA, NMFS, USFWS and WSDOT; throughout this section the text from the interagency guidance is provided in shaded text boxes. The 10-step approach is required for WSDOT projects, as well as local agency projects receiving federal funding from FHWA. WSDOT guidance on how to implement the 10-step approach is provided, outside of the shaded text boxes. The following discussion characterizes the three examples of indirect effects associated with transportation projects:

#### 1. Changes to ecological systems resulting in altered predator/-prey relationships

If a project significantly affects the prey species of a listed species, the impact is considered an indirect effect on the listed species. The analysis of the extent of this indirect effect should

evaluate the impact of the project on the *population* of the prey species. For example, if a project significantly affects the health or viability of a population of coho salmon in a stream within a watershed identified by USFWS as a bull trout spawning subwatershed, and the impact on coho would be expected to affect bull trout, it would constitute an indirect effect on bull trout in the subwatershed.

## **2. Changes to ecological systems resulting in long-term habitat alteration**

A project can have long-term effects upon the habitat of a listed species. For example, a project that permanently removes riparian vegetation providing habitat functions could have an indirect effect on the species. If a project will increase ambient sound levels in the vicinity of the project, habitat that was once suitable for listed species may become less suitable. If a project changes the hydrology of wetlands that sustain essential prey or forage species or provide suitable habitat or important habitat features for a listed species, the wetland habitat may be altered to the point that it no longer sustains the species. After comparing the potential effects of the habitat alteration to baseline conditions, including consideration of conservation measures, the assessment would then determine if the effects are significant or discountable.

## **3. Anticipated changes in human activities including changes in land use**

This indirect effect occurs when development of undeveloped areas is caused by the action or can reasonably be expected to result from the action. Section 10.2 describes a 10-step approach for analyzing potential land use indirect effects on WSDOT projects and local agency projects receiving federal funds from FHWA. Table 10-1 shows the level of analysis of potential land use indirect effects needed for some common project types. For many projects (e.g., a paving overlay) analyses will be limited to providing brief responses to the questions in steps 1 and 2. For more complex projects (e.g., a new road through an undeveloped area) it may be necessary to provide responses to the questions in steps 1 through 10. More complex analyses will require the involvement of staff with expertise in surface water, traffic patterns, local land development, traffic engineering, transportation, and land use planning.

# **10.2 WSDOT Guidance—ESA, Transportation, and Development: Assessing Indirect Effects**

## **10.2.1 Introduction**

Analyzing land use indirect effects can be very challenging and subject to different interpretations. In May 2009, FHWA NMFS, USFWS and WSDOT published inter-agency guidance on addressing land use indirect effects to assist BA authors with the preparation of these analyses. This guidance appears in the shaded text boxes below. Section 10.2 expands on the interagency guidance by providing more detailed instructions on how to apply the guidance to a range of project types. These instructions are provided for each step under the subheading **BA Task**.

Under Section 7 of the Endangered Species Act (ESA), the Federal Highway Administration (FHWA), and other federal action agencies, must consult with the National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) to determine the effects of their proposed project actions on threatened and endangered species. The Washington State Department of Transportation (WSDOT) is designated to consult on behalf of the FHWA for informal consultations. The consultation process includes an analysis of direct and indirect effects of the action as well as the effects of any interrelated or interdependent activities on listed species. During the Section 7 consultation, questions may arise regarding the relationship of a transportation project to development in adjacent or nearby areas and whether such development is considered an “indirect effect” as defined under the ESA. This document provides general guidance for reviewing and analyzing *only* the indirect effects relationship between transportation and land use development during the consultation process.

This document has resulted from discussions between the USFWS, NMFS, FHWA, Washington state agencies, including WSDOT with input from local agencies and stakeholder groups in 1999 and 2000. This document was updated as a result of coordination with NMFS, USFWS, FHWA, and WSDOT in 2003 and again in 2008. It is assumed that any project undergoing Section 7 consultation would also be evaluated for direct, other indirect and cumulative effects using ESA regulations and other guidance. General guidance on indirect effects and ESA consultation are also found in *ESA Section 7 Consultation Handbook*, March 1998, p 4-27 to 4-29. This document is not intended for NEPA cumulative effects analysis. While there are overlaps, with ESA consultation there are important distinctions between the two regulatory processes. Although this document is created for use in Washington State and focuses on areas covered by the Growth Management Act (GMA), the principles and analyses described below to determine linkages between land uses and transportation facilities will still apply to areas outside the State and outside the jurisdiction of the GMA.

Within the state of Washington, development is managed through the Growth Management Act (GMA). Cities and counties planning under the GMA are required to develop transportation-related plans, as specified in RCW 36.70A.070 (6). The text of RCW 36.70A.070 (6) can be found at the end of this chapter.

### 10.2.2 Preparing Land Use Indirect Effects Analysis for Biological Assessments

This document describes a step-by-step approach to assess indirect effects by posing a series of questions about the project being reviewed (Section 4.2.3). Figure 10-1 shows this approach in a flow chart. It is recommended that the BA writer work closely with the Services’ biologists from the beginning of the consultation to help clarify whether indirect land use effects to listed species will occur as a result of the proposed action.

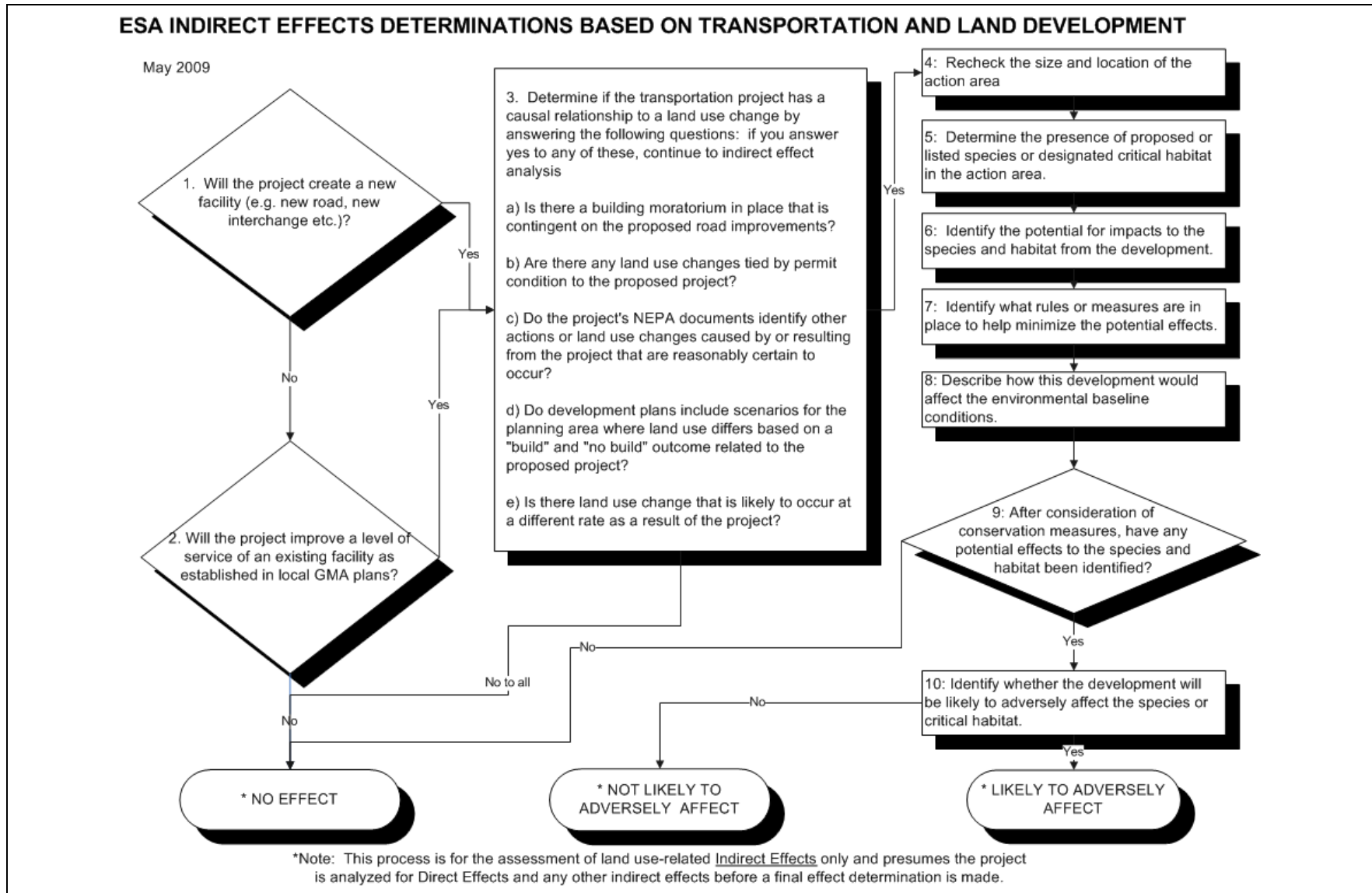


Figure 10-1. Flow chart.

### 10.2.3 Definitions

**The Action:** Analysis for ESA consultation must address the proposed action including any interrelated and interdependent actions. Interrelated actions are those that are part of the larger action and dependent on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

**The Effect:** According to ESA rules and regulations, direct effects occur at or very close to the time of the action itself. Examples could include construction noise disturbance, loss of habitat, or sedimentation that results from construction activity. Indirect effects are those that are caused by or result from the proposed action and are later in time but are still reasonably certain to occur [50 CFR 402.02]. Examples include changes to ecological systems such as predator/prey relationships, long-term habitat changes, or anticipated changes in human activities including changes in land use. Indirect effects may occur outside of the area directly affected by the action. The geographic extent of these effects is the *action area*, defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”

Indirect effects from transportation projects can include the development or redevelopment of either undeveloped or developed areas when that change is induced by the action or can reasonably be expected to result from the action which is the subject of consultation.

### 10.2.4 Land Use Indirect Effect Evaluation Process

This section provides instructions on how to apply the guidance for assessing land use indirect effects issued in May 2009 by FHWA, NMFS, USFWS, and WSDOT. This guidance asks a series of questions in 10 steps. Each step is followed by a **BA Task** subheading, which provides instructions on how to document responses in BAs and No Effect letters.

Answers to the questions in steps 1 and 2 must be provided for all projects. The answers to the questions in Step 3 are only required for those projects that warrant a “Yes” answer to a question in either step 1 or 2. Steps 4 through 10 apply only to those projects that warrant a “Yes” answer to one or more of the questions in Step 3.

The first steps in the process are to determine whether the proposed project has a potential land use indirect effect.

**Step 1. Will the project create a new facility (e.g., new road, new interchange etc.)? If the answer to this question is yes, go to Step 3.**

To answer this question, it is helpful to understand the type of development.

New facilities have the potential to generate indirect effects that affect listed species and their habitat, because these facilities can potentially cause changes in land development by altering the access to land or significantly changing capacity. Examples of new facilities that could affect capacity or access include the addition of lanes to a roadway, or the creation of new intersections or interchanges from an existing road. New interchanges on limited access roads where access does not exist may also lead to changes in land development.

**BA Task**

- If the project does not create a new facility, the BA author should concisely state this in the BA indirect effects section. The BA author must also answer the question in Step 2.
- If the project creates a new facility, the BA author should state this in the indirect effects section of the BA; the BA author must also answer the questions in Step 3.
- If the project will create new land access via a new road, new interchange or other new facility, the BA author should state this in the indirect effects section of the BA; the BA author must also answer the questions in Step 3.
- See Table 10-1 for the level of analysis required for some common types of projects.

**Table 10–1. Level of analysis of potential land use indirect effects required for some common project types.**

Project Type	Project Description	Potential to Cause Land Use Changes?	Analysis Needed
Design standard upgrades that do <u>not</u> improve Level of Service (LOS).	Improve roadway design to engineering standards in terms of lane width, curb, gutter and sidewalk, and other geometrics.	Unlikely	Answer questions in Steps 1 and 2.
Operations and safety improvements that do not improve LOS.	Improvements to enhance traffic operations and safety that include: signalization, traffic control, channelization, median treatments, turn pockets/lanes, and other benefits to traffic flow that do <u>not</u> improve LOS.	Unlikely	Answer questions in Steps 1 and 2.
Pavers.	Repaving is not providing an increase in capacity.	Unlikely	Answer questions in Steps 1 and 2.
Bridge replacements that do not improve LOS.	Replacing bridges without providing an increase in capacity.	Unlikely	Answer questions in Steps 1 and 2.
Increased lane capacity, and improvements to existing interchanges or bridges that increase capacity.	Add physical through-lane capacity to an existing roadway or bridge.	Yes	Answer questions in steps 1 through 3. Steps 4 through 10 are completed only for projects that receive a “Yes” to a question in Step 3.
Roadway extension, new roadway, new interchange, new bridge.	Construct extension of roadway, new roadway on new alignment, new interchange or new bridge.	Yes	Answer questions in steps 1 through 3. Steps 4 through 10 are completed only for projects that receive a “Yes” to a question in Step 3.

**Step 2. Will the project improve a level of service of an existing facility as established in local comprehensive plans?** If the answer to this question is yes, go to Step 3.

To answer this question, it is helpful to refer to the project’s Purpose and Need statement and consult the project design office to determine what changes in Level of Service (LOS) the project is expected to provide.

LOS standards are adopted by local or state government, depending on who owns the facility. The standards (from A being the best traffic flow, to F being the worst) can be found in the transportation element of the comprehensive plan for local governments and in the state transportation plan for WSDOT/FHWA facilities.

Projects that improve the operation of the transportation system will either maintain or improve the LOS for that facility. This in turn, could allow further development or redevelopment to occur as identified in the local comprehensive plan. For these types of projects, the indirect effects analysis needed to adequately document this may be brief, but it is important to consider the specific facts of the project being evaluated. Improving or maintaining LOS does not necessarily mean that land use change will result. To help determine whether a LOS change will result in an indirect effect related to land use, go to Step 3.

### **BA Task**

This question requires considering a project’s purpose and need. In general, stand-alone safety and preservation projects (Table 10-1, project types A through C) do not affect traffic capacity and do not improve a level of service (LOS). Traffic mobility and capacity improvements (Table 10-1, project category E), however, typically will improve a LOS. For simple safety and preservation projects (e.g., a paving overlay), it is sufficient to include a brief statement such as “This preservation project will not affect the LOS.”

For more complex operation and safety improvement projects (e.g., changing a lighted intersection to a roundabout) and preservation projects (e.g., a bridge replacement), and all mobility projects, the response to this question must state whether or not the LOS will be improved as well as identify the information source(s) used to arrive at the conclusion. The response will necessitate consulting one or more of the following information sources:

- Personal communication with the local jurisdiction planning department staff
- Traffic study/discipline report (if available)
- Transportation and capital facilities sections of the local jurisdiction’s Comprehensive Plan

Projects that are determined to improve the LOS need to answer the questions in Step 3. Projects that document “No” responses to the questions in steps 1 and 2 do not need to continue with the remaining steps.

**Step 3. Determine if the transportation project has a causal relationship to a land use change by answering the following questions:** *if yes to any of the following criteria, continue with the indirect effect analysis. If no to all of the following criteria, then no further indirect effect analysis is needed.*

- a) Is there a building moratorium in place that is contingent on the proposed road improvements?
- b) Are there any land use changes tied by permit condition to the proposed project?
- c) Do the project's NEPA documents identify other actions or land use changes caused by or resulting from the project that are reasonably certain to occur?
- d) Do development plans include scenarios for the planning area where land use differs based on a "build" and "no build" outcome related to the proposed project?
- e) Is there land use change that is likely to occur at a different rate as a result of the project?

Answering the questions in Step 3 will require obtaining information about land use planning in the area. The focus should be determining the extent to which the proposed project would influence grown patterns and/or rates in the planning area. Some potential sources of this information are:

1. Applicable sections of municipal/county comprehensive plans that reference the proposed project under consultation.
2. Interviews with local jurisdiction planners.
3. Applicable local and county building permits.
4. Metropolitan Planning Organization (MPO) population forecast models such as Puget Sound Regional Council's DRAM/EMPAL.
5. Funding applications (can be obtained via internet search).
6. NEPA documents including discipline reports.
7. Regional Transportation Investment District.
8. Port Planning Documents (Port of Tacoma, Port of Chehalis, Port of Seattle, etc.).

### **BA Task**

Review relevant documents and consult with the appropriate local agency public works or planning office to determine whether development projects in the area meet criteria 3(a) through 3(e). Seek expertise from planning, traffic engineering, or other areas to conduct this evaluation. Conversations with local jurisdiction or agency staff should be cited as a personal communication

in the BA. Information on land use indirect effects contained in the project NEPA documents and other sources should be summarized in the BA.

Projects that receive all “No” answers to the questions in Step 3 do not need to provide additional documentation on land use indirect effects. Projects that receive a “Yes” answer to any of the questions in Step 3 must also provide responses to the questions in steps 4 through 10.

*Example 1:*

A new interchange and road extension proposed along SR 1 will be constructed between two existing highway interchanges. All of the roads and adjoining lands that will be accessible from the new interchange are currently accessed from the two existing interchanges. However, the new interchange and road extension will likely result in improved freeway access to much of the area located between the existing interchanges. The project definition indicates that the existing SR 1 access points are insufficient to accommodate the anticipated future highway access needs in the service area. The city’s comprehensive plan identifies the area in the vicinity of the proposed new road and interchange as occurring within the city’s urban growth boundary. The city’s comprehensive plan identifies the area as key for urban growth because of its proximity to SR 1 and existing commercial centers. The comprehensive plan also identifies the need for improved transportation facilities as the primary factor limiting growth in this area. As a result, the city has imposed traffic concurrency requirements for future development in this designated growth area.

These proposed improvements are consistent with the city’s land use and transportation plans. The above information indicates that the proposed project is intended to serve planned growth.

This project meets *criterion a* because the city has imposed traffic concurrency requirements for future development in this designated growth area that has produced a de facto moratorium. Therefore, further evaluation will be needed to assess potential indirect effects.

*Example 2:*

WSDOT proposes to improve vehicle capacity at I-7 and SW 120th Street intersection. These improvements will ease congestion, improve roadway deficiencies, and improve safety at the interchanges of I-7 and I-100 with SW 120th Street. To accomplish this, WSDOT will construct a new interchange at SW 120th Street over I-7 and I-100, and add an auxiliary lane along the I-7 corridor from SW 115th Street to 149th Street. Local improvements will include signal modifications, the addition of lanes (road widening), rechannelization, and realignment. Currently, the I-7 corridor does not meet the LOS standards as identified in the county comprehensive plan. The proposed project will improve the existing LOS from LOS D to LOS B.

Review of the county comprehensive plan and zoning ordinances did not identify any instances of building moratoria (*criterion a*) or developments tied to the project by permit condition (*criterion b*). This finding was further reinforced by information provided by county staff. The county community planning department indicated there were no projects being delayed or prevented from moving forward

pending the construction of the I-7 corridor project. Review of the project's NEPA documentation, the land use and transportation discipline reports and the Environmental Assessment in particular, confirmed there were no actions or land use changes that were reasonably certain to occur (*criterion c*) caused by or resulting from the project. No incidences of developments being contingent upon the project were identified by county staff. Evaluation of other major projects under consideration in the action area did not identify any contingent relationships between them and the project (*criterion d*).

The population of the county, which more than doubled during a 20-year timeframe, indicates an increased demand on the regional transportation system. To determine whether the project would speed up the rate of planned development in the area, WSDOT and the county examined the existing level of development within the action area and the land area remaining for future development. The acreage of existing development and land available for development were identified within the zone of influence (see Step 4 for methods to define the zone of influence). Based on the historic rate of development within the zone of influence, it was determined that only 9 percent (41 acres) of the 465 acres of developable land was likely to develop over the next 20 years. In addition, with an average growth rate of 15 acres/year, the available acreage for development would be fully built out a year before the scheduled I-7 corridor project construction start. Because the available acreage for development would fully build-out prior to construction, the rate of development would not change as a result of the project (*criterion e*).

Although the corridor project would improve LOS, under further scrutiny, it does not meet any of the criteria under Step 3. Therefore, the project has no indirect effect related to land use.

**Step 4: Recheck the size and location of the action area.**

Indirect effects occur later in time than the original action and may occur outside of the area directly affected by the action. The entire area that is evaluated in the BA for potential project effects on the listed species is called the action area. When defining the action area it is important to include the area that is directly and indirectly affected by the proposed action. The extent of the action area is based on the physical, chemical and biotic extent of the project effects.

In some more complex cases, determining an action area for a transportation project may involve analysis of surface water, traffic patterns, and local land development. Appropriate expertise in traffic engineering, transportation land use planning, and other technical areas may need to be consulted as the BA is prepared. The purpose is to determine if a project may ultimately affect a listed species by affecting land use.

Defining this action area can be complex for development related indirect effects. An overly generous definition for action area leads to more complexity for cumulative effects analysis and a potential to overestimate effects. This can lead to unnecessary complications, particularly for formal consultation. An undersized action area may fail to adequately characterize the extent of potential impacts. For the BA, the objective is to identify the geographic extent of the effect of land use changes that are caused by the action, and which may ultimately affect the species or

their habitat. In some cases, the action area may not be one contiguous area, but could be a patchy distribution.

One method for determining the action area is described below. This may be tailored with respect to project specifics and the available information. Alternative methods may be used; however, an explanation of the methodology may be necessary. It is recommended that such alternatives be discussed with the Services before significant work is accomplished.

**Characterize the potential “zone of influence” for change in traffic caused by the project.**

- A. The zone could be estimated for traffic using projected traffic volumes and focusing on any projected changes in traffic patterns due to the proposed action (i.e., the area accessed through a new interchange).
- B. In some cases, this could be generally defined as a corridor along the road including the project and continuing to the closest intersection with a major transportation route such as a state highway.
- C. Existing planning units (i.e., travelsheds) exist in some jurisdictions as part of land use planning documents and traffic mitigation analysis. These could be utilized as the action area or in conjunction with subwatershed boundaries as an action area).
- D. Detailed analyses of traffic patterns such as origin-destination studies or other studies may be performed as part of planning for certain actions. These may be used where available from project planning materials.

**A. Factor in the watershed**

To define the action area, overlay the “zone of influence” boundary with the subwatershed (watershed administrative unit) that coincides. For aquatic species, the BA analysis should cover the geographic area defined by the overlap, plus any downstream portions of the subwatershed.

***BA Task***

Define the zone of influence. The zone of influence for potential land use changes may not match what was identified as the project action area based on direct effects. This can be an iterative process where, once indirect land use effects are considered, the action area may broaden.

*Example 1:*

Under the SR 1 interchange scenario, the zone of influence includes all roads that will be affected by the new interchange. These include:

- The area in the vicinity of the proposed new road with an imposed traffic concurrency requirement
- All locations where access to SR 1 is most direct or quickest using the new interchange, compared to the existing interchanges

- The roads from which traffic would be diverted as a result of the proposed action (see Figure 10-2).

The action area includes this zone of traffic influence as well as any surrounding area that could be affected by actions that occur as a result of the proposed action. The action area also includes a 0.5-mile buffer from the 80 acres of land where development is reasonably certain to occur as a result of the proposed action, to account for possible construction disturbance, as well as the farthest downstream distance where these future actions could affect water quality or hydrology (see Figure 10-2).

*Example 2:*

Under the I-7 scenario outlined above, there are no development or land use related indirect effects.

Though the project does not present any development related indirect effects (as described above), the BA author would still need to consider project related impacts that occur later in time. One project related impact that will occur later in time is stormwater runoff resulting from added impervious surface from the project corridor. The zone of influence related to stormwater effects includes up to 530 feet downstream of the project stormwater outfall in Ripple Creek, 260 feet downstream in the tributary to Ripple Creek, and less than 1 foot in Bear Creek.

***Step 5: Determine the presence of proposed or listed species or designated critical habitat in the action area.***

In most cases, the immediate project area probably includes designated critical habitat for salmonid ESUs/DPSs or other ranges of listed species. In some cases, a project might affect listed species only because of its indirect effects.

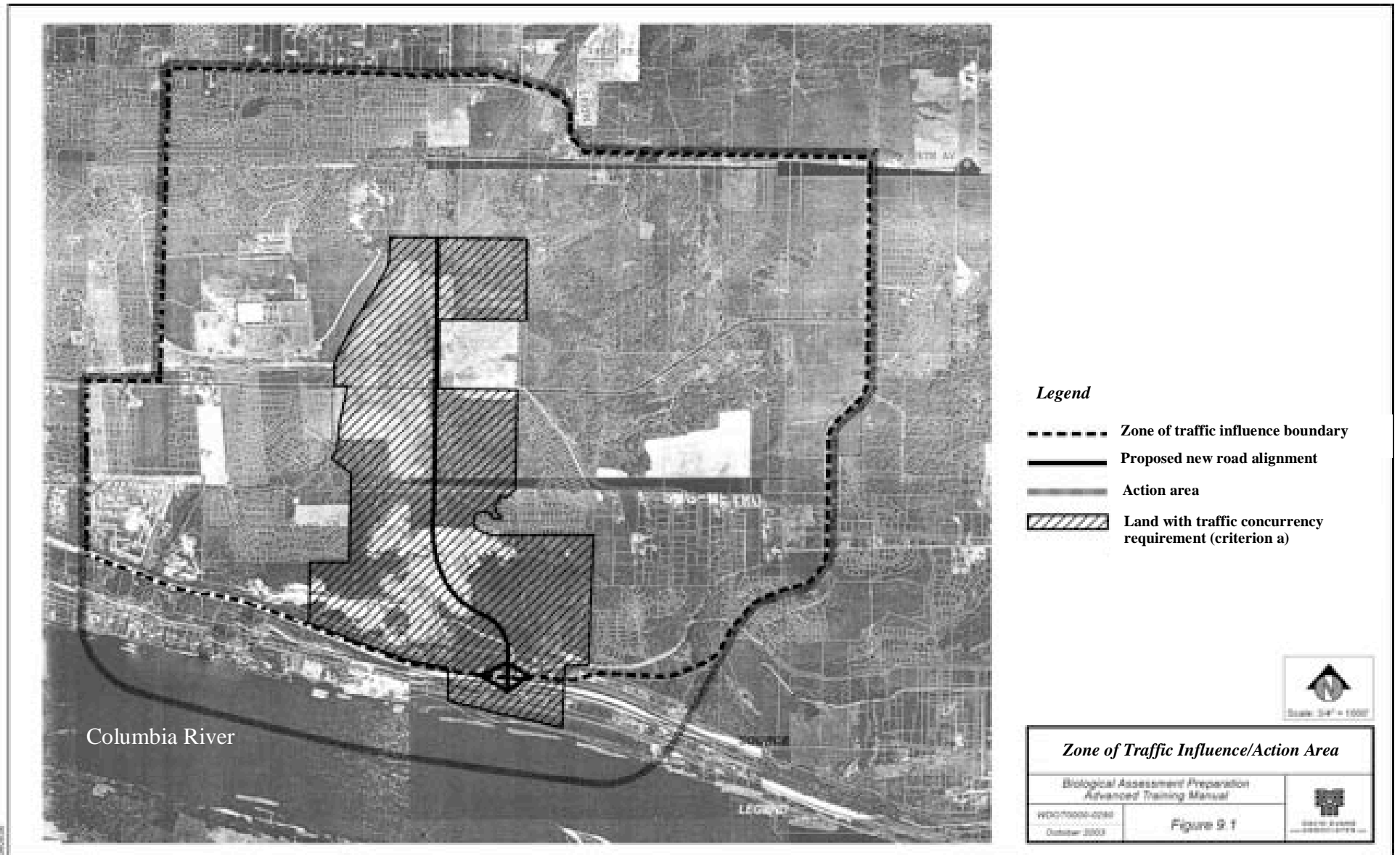
***BA Task***

Make certain that all listed species and critical habitat within the action area are included in the analysis. Once the action area is determined, re-check the listing information to ensure it is still adequate for the analysis. The species list should apply to the entire action area, not just the project area. Obtain additional species information if needed. The use of countywide species information is one way to avoid additional species information requests.

*Example:*

If the action area of indirect effects is larger than the action area of direct effects, the larger action area could extend into the range or habitat associated with a listed species that would otherwise not be analyzed based on direct effects alone.

Using the SR 1 interchange/road extension example portrayed in Figure 10-2, suitable salmonid and eulachon habitat located within the Columbia River would likely be outside of the action area if indirect effects were not included in the analysis, because proposed stormwater treatment for the project includes



**Figure 10-2. SR 1: Zone of influence and action area boundaries.**

complete infiltration for new impervious surface. However, when there are indirect effects associated with future development that is contingent on the project, the potential for stormwater impacts could extend into the Columbia River, therefore part of the Columbia River would be included in the action area.

***Step 6: Identify the potential for impacts to the species and habitat from the development.***

The BA author should evaluate the development in the action area that is contingent on or likely to occur, because of the proposed project. This may include an evaluation of the local jurisdictions comprehensive plan, likely project dependent changes in the existing level of development, likely project dependent growth boundary changes, etc. This information may be available through the local RTPO or MPO.

The key question here is: Does it appear there will be adverse effects to the species and/or its habitat? Consider potential impacts to aquatic habitats, adjacent riparian zones, creation of impervious surfaces and properly functioning conditions as well as direct effects to listed species.

***BA Task***

Expand the analysis of effects to include the effects of development that is contingent on or likely to occur, because of the proposed project. The analysis of the effects of the development should cover the same elements analyzed for the original project. It may be necessary to estimate conditions for anticipated future land development. The BA author should also complete a stormwater analysis for the impervious surface created from future development as part of the indirect effects evaluation.

*Example:*

Using the SR 1 interchange/road extension example portrayed in Figure 10-2, the indirect effects (specifically 80 acres of proposed development) could result in two key forms of impact from future development dependent on the proposed action: 1) loss of 80 acres of terrestrial habitat (including 20 acres of mixed deciduous-coniferous forest and 60 acres of unforested land consisting of fallow pasture), and 2) water quality impacts from increased impervious surface and pollutant sources.

Based on the existing zoning of the parcels where development could occur as a result of the proposed action, up to 40 acres of new impervious surface could be generated if each of the parcels is developed to full density. The associated increase in impervious surface area could have an adverse effect on water quality and hydrology in the action area, in turn potentially affecting listed salmonids and Pacific eulachon that rear in the Columbia River.

***Step 7: Identify what rules or measures are in place to help minimize the potential effects.***

The BA author should note any protection for listed species and habitat provided by existing local Critical Areas Ordinances (CAOs) or other pertinent regulations or agreements pertaining to the action area. This may include protection for riparian or wetland buffers, stormwater regulations, and the implementation and enforcement of existing CAOs.

## **BA Task**

The BA author should identify required conditions or measures that may prevent or minimize adverse effects including:

- Protective measures available to minimize project impacts
- Factors that would help reduce or minimize the potential effect of development caused by the project. These might include plans or commitments by agencies or project proponents outside regulatory requirements.
- Protective conditions required by permits such as an HPA or Section 404 approval

The minimization measures should be incorporated into the discussion of the effects of the proposed action on the environmental baseline.

### *Example:*

Where the SR 1 interchange/road extension example is located, there are many rules and measures in place to help minimize potential effects to species from changes in land use and associated development. These rules and measures are described in the following text:

The local jurisdiction requires all development to comply with its critical areas ordinance. The critical areas ordinance that would apply to the action area for this project is compliant with Section 4(d) of the Endangered Species Act—regulations to conserve species listed as threatened or endangered. Applicable critical areas located within the zone of influence include critical habitats, flood hazard areas, and wetlands. The following text describes how the critical areas ordinance applies to land use within the zone of influence under this project:

- **Critical Habitats:** The Columbia River is considered a DNR Type S water; therefore activities are regulated within the greater of the 100-year flood plain, or 250 feet of the Columbia River. Through consultation with WDFW, this ordinance is implemented through the city's biologist using best available science and mandates of the GMA to conserve the functional integrity of the habitats needed to perpetually support fish and wildlife populations. This ordinance would be applied to land that could be potentially developed within the zone of influence and located within 250 feet of the Columbia River.
- **Flood Hazard Areas:** The construction or reconstruction of residential structures (excluding parks, recreational, agricultural or other open space uses that don't involve structures, fill, or equipment storage) within the floodway and the floodplain of the Columbia River is prohibited. Some activities allowed include repairs, reconstruction, or improvements that do not increase ground floor area; and repairs, reconstruction, or improvements to a structure wherein the cost does not exceed 50 percent of its fair market value.

- Wetlands: Wetland protection measures include best available science to protect function and values of wetlands with special consideration to conserve, protect, and enhance anadromous fisheries; promote no net loss of wetlands; encourage restoration and enhancement of degraded, low quality wetlands; complement state/federal wetland measures; and allow reasonable use of property. The provisions apply to all lands, all land uses, and all development activity. No altering of wetlands or wetland buffers is allowed unless the activity is consistent with the ordinance conditions. Depending on the category of the wetland, specific buffer widths are required to protect both water quality and habitat functions.

In addition, the local jurisdiction currently requires all development to provide stormwater treatment consistent with the Department of Ecology's Stormwater Management Manual for Western Washington as specified in their Stormwater and Erosion Control Ordinance. The activities in the zone of influence must apply the standards specified in the manual based on the size and type of development. For example, because the zone of influence is located in an urban area, the provisions of the Stormwater and Erosion Control Ordinance apply to all development activities or redevelopment that results in 2,000 square feet or more of new impervious surface compared to a threshold of 5,000 square feet or more of new impervious area within the rural area. The Stormwater Management Manual for Western Washington is a guidance document and Ecology expects that implementation of the practices identified in the manual will result in compliance with existing regulatory protections for stormwater—including compliance with the Federal Clean Water Act, Federal Safe Drinking Water Act, and the State Water Pollution Control Act. However, even with the adoption of the manual, some impacts to listed fish and habitat may occur, due to the limitations associated with the effectiveness of available BMPs for stormwater treatment.

Other applicable local programs that are tied to the action area for this project include the county's stormwater management program, the Road Maintenance and Street Sweeping Program, and the Low Impact Development Initiative.

- The county's stormwater management program focuses on reducing the harm caused to streams, wetlands, and lakes by stormwater runoff from developed areas and county roads through a systematic, drainage basin-oriented approach. Within the action area for this project, the county has several stormwater improvement projects listed in their capital improvement projects database. By 2011, stormwater from a total of 100 acres will be treated within the action area. The specific acreage of impervious surface that will be treated within the action area by future projects is not available.
- The county's road maintenance and street sweeping program, as with critical areas ordinances, is compliant with ESA. The main objective of the program is to protect salmon and steelhead using approved BMPs for maintenance, and through the implementation of street sweeping to prevent sediment and associated pollutants from entering neighborhood waterbodies (including the Columbia River).
- The county's Low Impact Development Initiative is applied to all new developments within the action area. The techniques provided maximize

infiltration capacity to minimize runoff to the Columbia River, and discharges from new development are treated for a variety of pollutants including sediments, heavy metals, oils/grease, and bacteria.

Additional Regulations and BMPS include the following:

- Clean Water Act –Includes National Pollutant Discharge Elimination System (NPDES) permitting program
- Aquatic resource permit conditions—Hydraulic Permit Approval (HPA), the U.S. Army Corps of Engineers (Corps) Nationwide and Individual permits, and clearing and grading permits
- WSDOT Highway Runoff Manual
- Section 9 of the Federal bald eagle protection rules

Given these existing regulations, development resulting from the proposed action will not significantly alter water quality, hydrology, streams, or wetlands, and is not likely to result in significant effects to the listed salmonids and eulachon that rear in the action area.

***Step 8: Describe how this development would affect the environmental baseline conditions.***

The potential effects of the action should be compared to the environmental baseline conditions. NMFS guidance documents and any appropriate guidance from USFWS should be used. Measures in place to protect the species or habitat should be considered in this assessment.

***BA Task***

As part of the effect determination, describe the existing environmental baseline condition and describe how the direct and indirect effects of the action would likely affect it. Address whether it would degrade, maintain or improve the existing conditions.

***Step 9: After the consideration of conservation measures in the previous step, identify any of the remaining, potential effects to the species and habitat from the associated land use development.***

If the project has any effects on the species (including designated critical habitat), even if they are small or temporary, then a biological assessment will need to be prepared and ESA Section 7 consultation will need to be conducted.

***BA Task***

Combine this analysis with the evaluation of direct effects. If there is no effect from any development that is likely to result from the action AND there are no other direct or indirect effects, then the project as a whole will have no effects. Combine this analysis with the evaluation of direct effects and proceed with the appropriate documentation (no effect assessment) for the

project. Adequate information must be provided to explain and support the conclusions of the analysis.

If the project does have potential effects, then proceed with the biological assessment to determine if the effects are significant or discountable.

*Example:*

Because of the existing building moratorium, future development is contingent on the SR 1 interchange/road extension project; the most notable indirect effect of the project include possible development in the vicinity of the interchange and along SR 1 that would not occur without the project. Other impacts include a potential accelerated rate of development of lands along the road extension, which would probably occur eventually, regardless of the proposed action. It is assumed that complete build-out within the action area would result sooner with the proposed project than without these roadway improvements, although this rate of acceleration cannot be quantified, given the difficult task of isolating this factor from the numerous other influences on development.

Because development in the vicinity could affect aquatic habitats within the Columbia River as a result of stormwater runoff from approximately 40 acres of new impervious surface, the proposed action could indirectly result in increased impacts on listed salmonids and Pacific eulachon. However, any future development within the action area, whether directly or indirectly influenced by the project, is not anticipated to have a significant impact on listed species because of the anticipated rate of mixing within the Columbia River and the stringent stormwater treatment requirements of the municipality. As discussed under Step 7, the county has also recently updated its Critical Areas Ordinance to ensure that the baseline conditions in the action area are maintained. The county has also adopted the Department of Ecology's Stormwater Management Manual for Western Washington as specified in their Stormwater and Erosion Control Ordinance. Even with the stormwater management manual, some impacts to listed fish and habitat may occur, due to the limitations associated with the available BMPs for stormwater treatment. While future development may have some impacts associated with build-out and the added impervious that comes with it, the county and municipality have other measures in place to ensure that the impacts from development remain insignificant. Most notably, the county's Stormwater Capital Improvement Program has previously and will continue to construct stormwater projects that include retrofitting of existing facilities to improve water quality. Other local programs applicable to activities within the action area for this project include the county's Road Maintenance and Street Sweeping Program, and Low Impact Development initiatives. Based on this rationale, indirect impacts on listed fish species will be minimized.

**Step 10: Identify whether the development will be likely to adversely affect the species or critical habitat.**

In this step, a determination is made as to the significance of any potential effects on the species (including designated critical habitat). This differentiation will lead either to formal or informal consultation, based on whether the effect is considered insignificant or discountable (informal consultation) or adverse (formal consultation).

**Insignificant** is generally an effect that is very small in scale, does not reach the level of “take” and cannot be meaningfully measured, detected or evaluated. **Discountable** effects are those which are extremely unlikely to occur.

An adverse effect occurs when the effect cannot be considered insignificant or discountable. If an action significantly degrades the baseline conditions it may be considered an adverse effect by the Services. Actions that result in a “take” of individuals or modify critical habitat, are considered likely to adversely affect the species under consideration. The extent of any adverse effect is considered in the consultation.

**If your answer is “No”-** then consider this a “Not likely to adversely affect” (NLTA) for the indirect effects part of the BA. *If the direct effects of the project are also NLTA-* then proceed with informal consultation and an overall effect determination of NLTA.

**If your answer is “Yes”-** then consider this a “Likely to adversely affect” (LTA); the project will need formal consultation. This analysis must be combined with an analysis of the project’s direct effects to complete the biological assessment.

If the consultation results in a no jeopardy opinion, the Services will issue an incidental take statement for take that cannot be avoided. The Services do not have to authorize take for indirect effects over which FHWA has no jurisdiction. The incidental take statement will include Reasonable and Prudent Measures (RPM’s) to minimize take, together with terms and conditions. If the consultation results in a jeopardy opinion, reasonable and prudent alternatives may be provided to avoid jeopardy to the species or adverse modification of critical habitat. Also there may be voluntary conservation recommendations by the Services to help further reduce potential effects.

As part of formal consultation the effects of the action must be evaluated in the context of the cumulative effects. These are defined in the ESA as the effects of future state, tribal, local or private activities that are reasonably certain to occur in the foreseeable future within the action area. The larger the action area of the project, the more extensive this aspect of the consultation becomes. Once identified, the cumulative effects are evaluated with the direct and indirect effects of the action for the services’ Jeopardy/adverse modification determination to provide the context under which the effects of the action are evaluated. Project impacts in areas where the baseline is severely degraded would be more significant than those where the baseline is functioning well.

### **BA Task**

These effect determinations are for indirect effects only and need to be combined with analysis of direct effects to complete the biological assessment.

Example:

Indirect impacts of growth induced by the proposed SR 1 interchange and road extension project may affect but are not likely to adversely affect Pacific eulachon and listed salmonids.

A *may affect* determination is based on:

- The potential for stormwater impacts that could affect listed Pacific eulachon, listed salmonids, and designated salmonid critical habitat.

A *not likely to adversely affect* determination is based on:

- The applicability of the local government's critical areas ordinance and stormwater treatment requirements, and other applicable measures minimizing impacts on water quality and aquatic habitats for listed Pacific eulachon and listed salmonids.
- Native soils in the action area meet specific permeability and chemical criteria that would both treat and provide flow control before stormwater reaches the Columbia River.
- Flow control for the Columbia River is considered exempt by the USFWS and NOAA.
- Stormwater that enters the Columbia River (receiving waterbody) will be quickly diluted due to the high rate of mixing associated with this large river system.

### 10.2.5 Growth Management Act (GMA): Comprehensive plans — Mandatory elements — Transportation

**RCW 36.70A.070 (6):** A transportation element that implements, and is consistent with, the land use element.

The transportation element shall include the following subelements:

- (i) Land use assumptions used in estimating travel;
- (ii) Estimated traffic impacts to state-owned transportation facilities resulting from land use assumptions to assist the department of transportation in monitoring the performance of state facilities, to plan improvements for the facilities, and to assess the impact of land use decisions on state-owned transportation facilities;
- (iii) Facilities and services needs, including:
  - (A) An inventory of air, water, and ground transportation facilities and services, including transit alignments and general aviation airport facilities, to define existing capital facilities and travel levels as a basis for future planning. This inventory must include state-owned transportation facilities within the city or county's jurisdictional boundaries;
  - (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;
  - (C) For state-owned transportation facilities, level of service standards for highways, as prescribed in chapters 47.06 and 47.80 RCW, to gauge the performance of the system. The purposes of reflecting level of service standards for state highways in the local comprehensive plan are to monitor the performance of the system, to evaluate improvement strategies, and to facilitate coordination between the county's or city's six-year street, road, or transit program and the department of transportation's six-year investment program. The concurrency requirements of (b) of this subsection do not apply to transportation facilities and services of statewide significance except for counties consisting of islands whose only connection to the mainland are state highways or ferry routes. In these island counties, state highways and ferry route capacity must be a factor in meeting the concurrency requirements in (b) of this subsection;
  - (D) Specific actions and requirements for bringing into compliance locally owned transportation facilities or services that are below an established level of service standard;
  - (E) Forecasts of traffic for at least ten years based on the adopted land use plan to provide information on the location, timing, and capacity needs of future growth;
  - (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;
- (iv) Finance, including:
  - (A) An analysis of funding capability to judge needs against probable funding resources;
  - (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 six-year improvement program developed by the department of transportation as required by \*RCW 47.05.030;

(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;

(iv) Finance, including:

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

(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 six-year improvement program developed by the department of transportation as required by \*RCW 47.05.030;

(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;

(v) Intergovernmental coordination efforts, including an assessment of the impacts of the transportation plan and land use assumptions on the transportation systems of adjacent jurisdictions;

(vi) Demand-management strategies;

(vii) Pedestrian and bicycle component to include collaborative efforts to identify and designate planned improvements for pedestrian and bicycle facilities and corridors that address and encourage enhanced community access and promote healthy lifestyles.

(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" shall mean 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.

(c) The transportation element described in this subsection (6), and the six-year plans required by RCW 35.77.010 for cities, RCW 36.81.121 for counties, RCW 35.58.2795 for public transportation systems, and \*RCW 47.05.030 for the state, must be consistent.

Note: \*RCW [47.05.030](#) was amended by 2005 c 319 § 9, changing the six-year improvement program to a ten-year improvement program.