Vegetation, Wildlife, Fish, and Endangered and Threatened Species

COPY TO:	Project File
PREPARED BY:	Puget Sound Gateway Program Team
DATE:	November, 2017
SUBJECT	NEPA Re-evaluation for Phase 1, SR 509 Completion Project

1. Introduction

This memorandum was prepared in support of the Phase 1, SR 509 Completion Project National Environmental Policy Act (NEPA) re-evaluation. It compares the changes to the project and resultant impacts (beneficial and/or adverse) against the Record of Decision (ROD) issued by the Federal Highway Administration (FHWA) in 2003 to determine if Phase 1 of the SR 509 Completion Project would result in any new significant impacts not evaluated in the *SR 509: Corridor Completion/I-5/South Access Road Final Environmental Impact Statement* (2003 FEIS). This Re-evaluation Memo makes many references to the 2003 FEIS, including the maps and mitigation measures that are still relevant to the updated analyses. The SR 509: Corridor Completion/I-5/South Access Road FEIS can be found on WSDOT's website at http://www.wsdot.wa.gov/Projects/SR509/completion/Library.htm.

1.1. Project History

The State Route (SR) 509 Completion Project is based on more than two decades of project planning and development. In 1995, Washington State Department of Transportation (WSDOT) released the *Tier I Corridor Draft Environmental Impact Statement* (DEIS), which recommended extending SR 509 from S 188th Street southward to connect with Interstate 5 (I-5) and adding a spur roadway, the South Access Road, to connect with Seattle-Tacoma International Airport (Sea-Tac Airport). Within the SR 509 corridor, three routes and a No Build Alternative were evaluated in a project level (Tier II) Draft EIS published in 2002. The Final EIS (FEIS) and Record of Decision (ROD) issued in 2003 identified a six-lane Preferred Alternative (Alternative C2) that included two general purpose (GP) lanes and one high-occupancy vehicle (HOV) lane northbound and southbound on SR 509. It also included interchange connections at S 188th Street, S 200th Street, 24th/28th Avenue, and I-5 and a new South Access Road. Since the ROD was issued, project progress has included actions such as the purchase of needed right-of-way (ROW), construction of an advanced wetland mitigation site, construction of work elements in coordination with local agencies, and refinements in preliminary design. The project area is shown in Figure 1.

With the passing of the Connecting Washington Transportation Package in 2015 by the state legislature, funding has become available for the first phase of the SR 509 Completion Project (Phase 1 Improvements) to proceed through environmental review, design, and into construction. WSDOT undertook a Practical Solutions design approach for the project which allowed a fresh look at the previous project plans to ensure that the revised project is designed according to actual demand and needs. Part of the Practical Solutions approach included reengaging stakeholders to review design and potential changes. The purpose of this document is to reevaluate the Phase 1 Improvements to determine whether they have the potential to result in any new significant environmental impacts that were not previously evaluated in the 2003 FEIS and 2003 ROD. Table 1 provides a comparison of Alternative C2 with the Phase 1 Improvements.

Figure 1 Project Vicinity

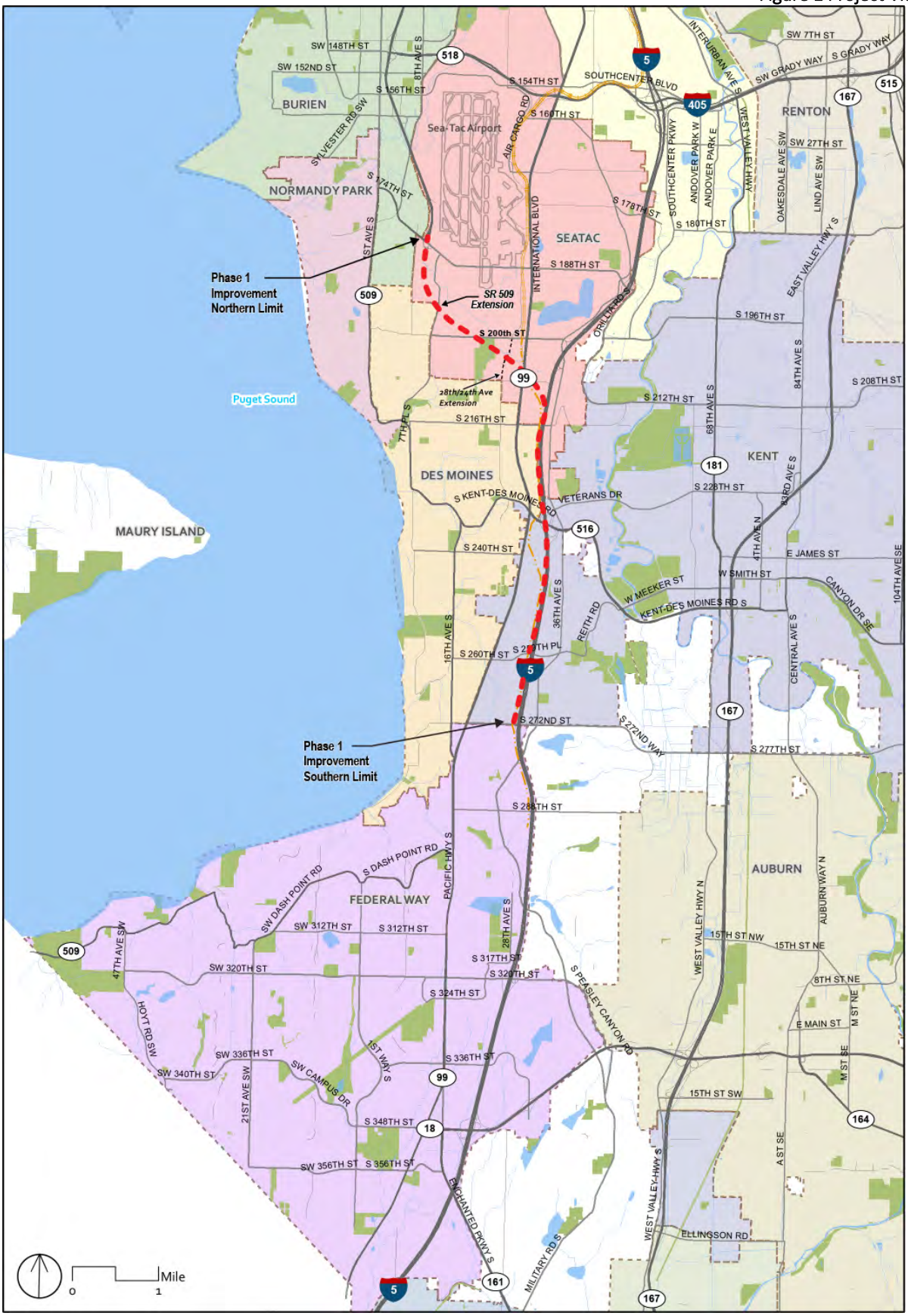


Table 1. Comparison of Design Components		
SR 509	**Alternative C2 (2003 FEIS and ROD)**	**Phase 1 Improvements (Re-evaluation)**
SR 509: I-5 to S 188th Street	Six lanes (120 feet), 60 mph – 2 GP lanes in each direction and 1 HOV lane each direction	Four lanes (78 feet), 60 mph – 2 GP lanes in each direction
S 188th Street	Full single-point urban interchange (SPUI)	1/2 diamond (ramps to/from north) – but doesn't preclude future construction of full diamond with additional funding.
S 200th Street	1/2 diamond (to/from north)[a]	None– but doesn't preclude future construction with additional funding
South Access Roadway	Four-lane limited access facility to S 200th Street	None– but doesn't preclude future construction with additional funding
24th Avenue S/28th Avenue S	1/2 diamond (to/from south)	1/2 diamond (ramps to/from south)
Tolling	None	2 GP lanes in each direction
Toll Points	None	One south of 24th Avenue S/28th Avenue S
Interstate 5	**Alternative C2 (2003 FEIS and ROD)**	**Phase 1 Improvements (Re-evaluation)**
I-5/SR 509 GP connection	60 mph	50 mph
I-5 SB: SR 516 to SR 509	Southern braid – three-lane C/D	Northern braid and two-lane C/D
I-5 NB: SR 516 to SR 509	two-lane C/D	Auxiliary lane– but doesn't preclude future construction with additional funding
I-5/SR 509 HOV Direct Connection	I-5/SR 509 center-to-center HOV direct access roadway	None – but doesn't preclude future construction with additional funding
I-5/SR 516 Interchange[b]	Full diamond and at grade intersection with Veterans Drive connector	Full diamond and at-grade intersection with Veterans Drive connector
I-5 SB: SR 516 to S 272nd Street	Two auxiliary lanes	One auxiliary lane– but doesn't preclude future construction with additional funding
I-5 SB: 272nd to S 320th Street	One auxiliary lane	None– but doesn't preclude future construction with additional funding
I-5 NB: S 272nd Street to SR 516	One auxiliary lane S 272nd Street to SR 516	None– but doesn't preclude future construction with additional funding

[a] 1/2 diamond interchange has an on and off ramp that serves traffic to and from one direction.

[b] The Phase 1 Improvements would also maintain pedestrian connections on both sides of the I-5/SR 516 interchange and construct a new pedestrian path from Veterans Drive to SR 516/Kent Des Moines Road, which would help facilitate pedestrian trips to and from the transit centers around this interchange.

C/D = collector/distributor lanes; GP = general purpose; HOV = high-occupancy vehicle; mph = miles per hour; NB = northbound; SB = southbound

2. What are the Phase 1 Improvements and how do they compare with the 2003 FEIS Alternative C2?

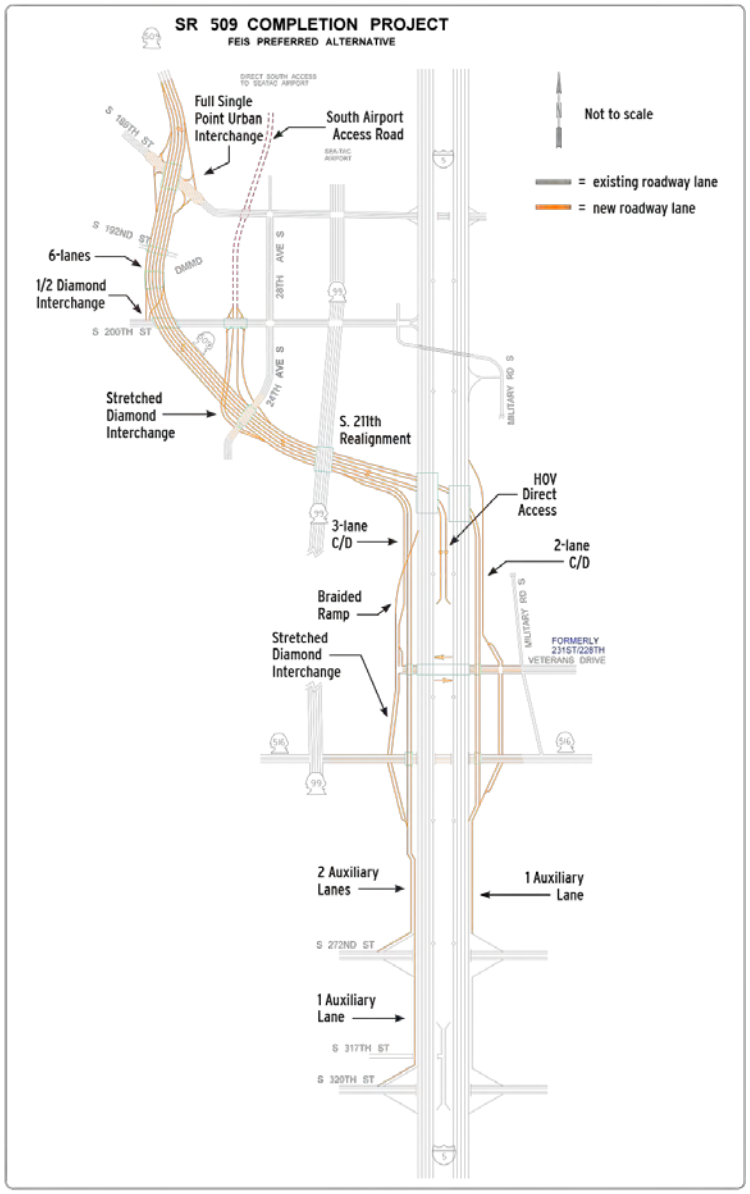
The purpose and need of the proposed action remains the same as described in the 2003 FEIS.

- The purpose of the proposed action is to improve regional highway connections with an extension of SR 509 to serve current and future transportation needs in southwest King County and to enhance southern access to Sea-Tac Airport. The project area is shown in Figure 1.
- The proposed action is needed to create system linkages, accommodate travel demand and capacity needs, and improve intermodal relationships. The SR 509 freeway currently terminates at S 188th Street and does not connect to the regional transportation highway system; this leaves a major gap in the system. As a result, local streets and major transportation routes like I-5 are at or over capacity given current travel demand. This situation is expected to worsen as travel demand for Sea-Tac Airport and major roadways increases.

FHWA issued a ROD in 2003 for the SR 509 Project FEIS that analyzed the extension of the SR 509 corridor. The 2003 SR 509 Project ROD selected Alternative C2. Alternative C2 included a six-lane extension of SR 509 from S 188th Street to I-5. New interchange improvements were proposed at four locations: S 188th Street, S 200th Street, 24th Avenue, 28th Avenue S, and I-5. A four-lane limited access roadway (South Access Road) was also proposed to connect SR 509 at 24th Avenue S/28th Avenue S with the Sea-Tac Airport Terminal Drive system, and an interchange on the South Access Road was proposed at S 200th Street. Improvements on I-5 included adding northbound and southbound collector-distributor (C/D) lanes between SR 509 and SR 516, and adding auxiliary lanes between SR 516 and S 320th Street. Interchange improvements which included a new undercrossing of I-5 to connect to Veteran's Drive were also proposed at SR 516.

The Phase 1 Improvements are essentially a subset of the improvements that were proposed in the 2003 FEIS (Table 1 and Figure 2). The Phase 1 Improvements would include a four-lane SR 509 extension (compared to six lanes as analyzed in the 2003 FEIS) from S 188th Street to I-5. Interchange improvements would occur at three locations (compared to four locations as analyzed in the 2003 FEIS): S 188th Street interchange, 24th Avenue S/28th Avenue S, and I-5. In addition, there would be no South Access Road or interchange at S 200th Street, and improvements on I-5 would be less extensive than those proposed in the 2003 FEIS (see Figure 3). The Phase 1 Improvements also assumes that the extension of SR 509 between S 188th Street and I-5 would be fully tolled. A toll point would be located on SR 509 south of the 24th Avenue S/28th Avenue S interchange. Figure 3 provides an overlay comparison of the Phase 1 Improvements and the 2003 FEIS.

Figure 2 – Design Components of FEIS Preferred Alternative (Alternative C2) and Phase 1 Improvements



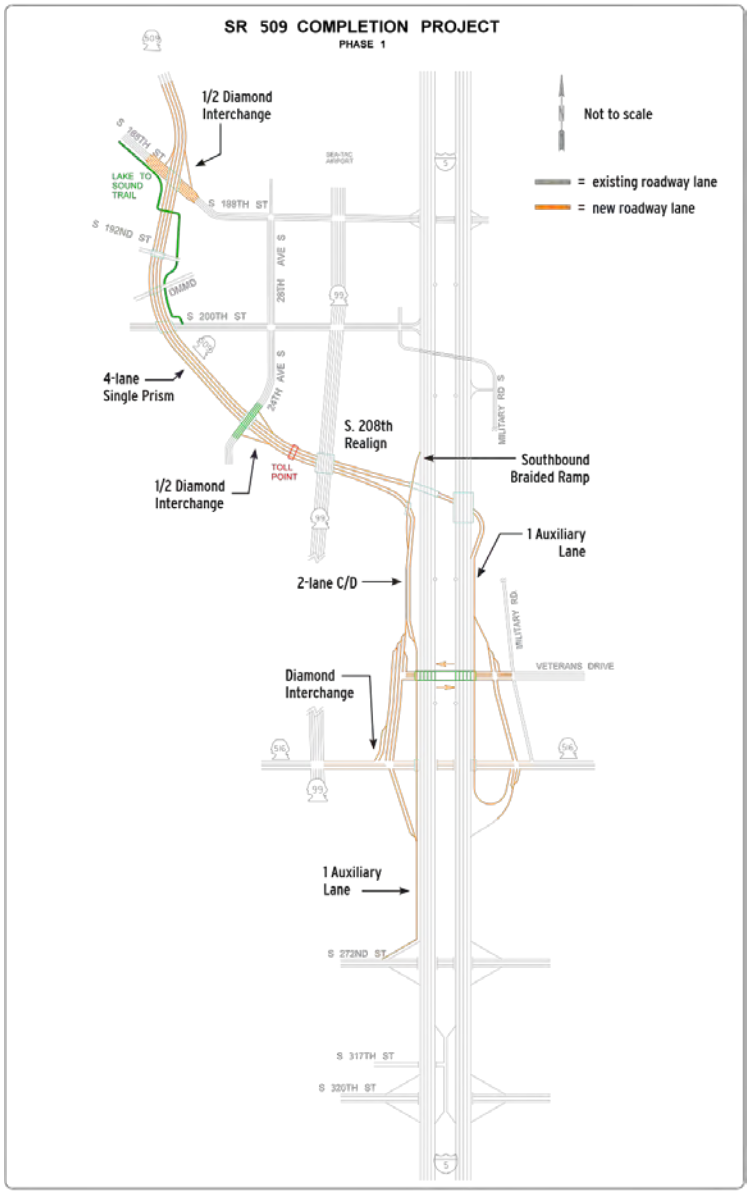
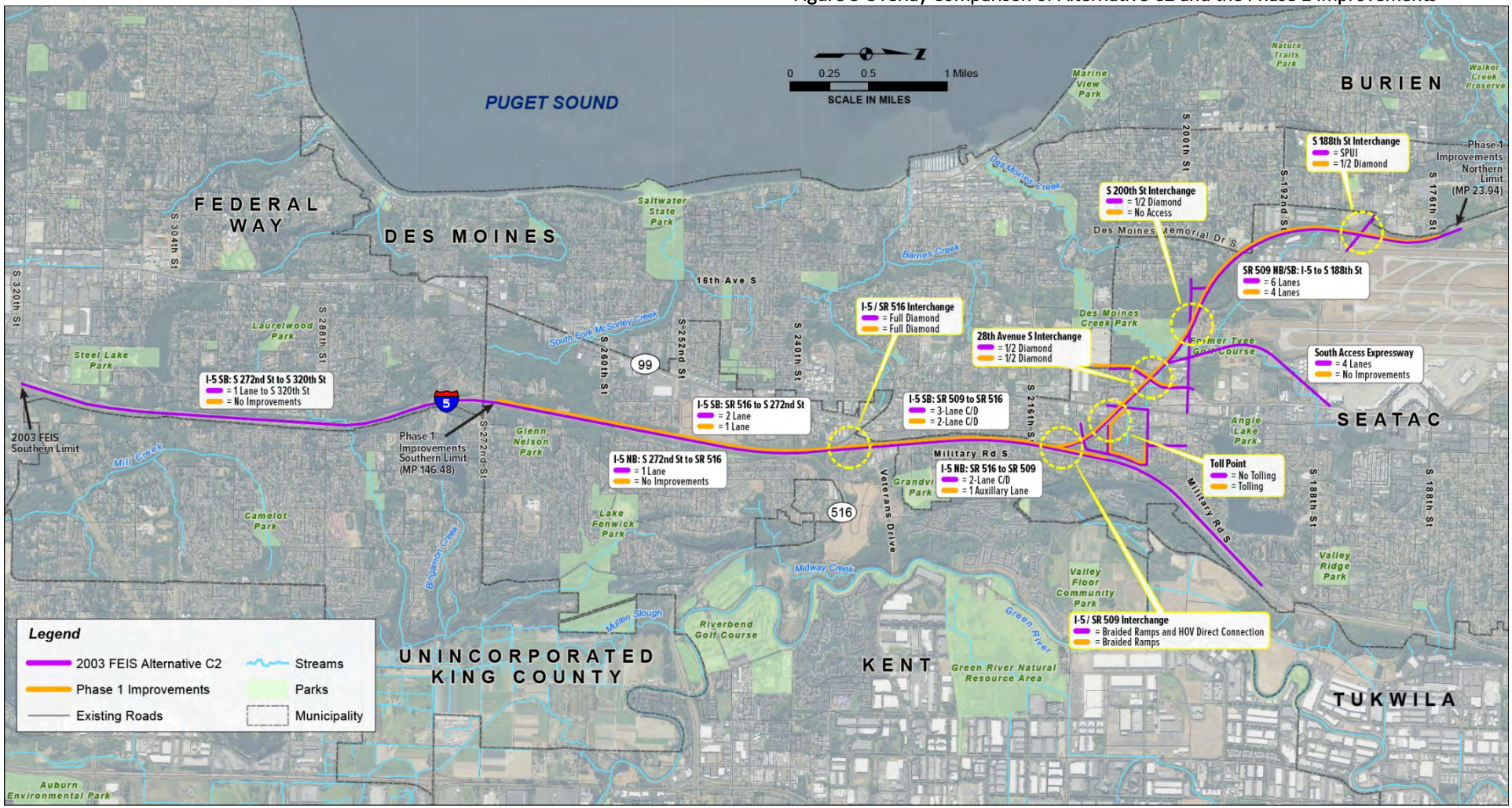


Figure 3 Overlay Comparison of Alternative C2 and the Phase 1 Improvements



1. What has changed in the affected environment since 2003?

The U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Washington Department of Fish and Wildlife (WDFW), and other entities were contacted to update information on federal and state threatened, endangered, proposed, and candidate species that may occur in or near the project area. The WDFW was also consulted regarding changes since 2003 in priority habitats and sensitive plant and wildlife species that may occur in or near the project area. The King County Sensitive Areas Map Folio (King County, 1990) and the Catalog of Washington Streams and Salmon Utilization (Williams et al., 1975) were reviewed to identify changes regarding fisheries resources. The inventory of resources that could be affected by Phase 1 Improvements was updated based on the revised information.

Aerial imagery was used to identify vegetation types present and likely to be impacted in the project area. The area of influence extended from 5 feet to 20 feet from the cut-and-fill line. The vegetation map produced was compared to the project footprint in a geographic information system (GIS) environment to calculate impacts. New field studies were not conducted as part of the Phase 1 Improvements re-evaluation.

The Biological Assessment (BA) prepared in accordance with the Endangered Species Act (ESA) for the 2003 FEIS analysis was updated with new information for the re-evaluation. The revised analysis determined that the Phase 1 project will have no effect on ESA-listed species, based on a lack of species present in the project area. These findings were shared with the USFWS and NMFS who agreed with the assessment that further ESA review by the Services is not necessary.

Has the vegetation in the project area changed?

Vegetation communities in the project area have changed little and continue to include mowed and un-mowed grassland; shrubland; mixed deciduous/coniferous forest; commercial and residential areas containing a fragmented mixture of native, non-native, and ornamental plants; and wetlands. Residential and commercial growth in the project area has continued since 2003, likely resulting in an increase of disturbed habitat. The majority of vegetation communities remain fragmented due to the developed nature of the area.

Grasslands are concentrated in the area that once was the Tyee Valley Golf Course and adjacent to I-5. The location and general size of fragmented mixed deciduous/coniferous forests are similar to the conditions in 2003, with this habitat concentrated south of S 192nd Street and in Des Moines Creek Park. Old growth forested stands are not found in the project area. The majority of commercial and residential habitats are located south of the Tyee Valley Golf Course and west of the I-5 project corridor. Species assemblages are still the same in the habitats, with a mix of native, non-native, and ornamental species.

Riparian habitat continues to be limited to adjacent to Des Moines Creek. S 200th Street divides high-quality shrub and forested riparian habitat in Des Moines Creek Park to the south from dispersed, low-quality riparian habitat to the north in the Tyee Valley Golf Course. Wetlands continue to be distributed through the project area and are discussed in the Phase 1 Improvements Wetlands Technical Memorandum (CH2M, 2017a).

Has the wildlife in the project area changed?

The project area terrestrial and aquatic habitat continues to support diverse wildlife populations, including wetlands and forests with a well-developed shrub layer supporting the greatest number of species. Habitat quality is still highest in the forested riparian and wetland areas. Commercial and residential areas continue to support low-quality habitat. The mixed deciduous/coniferous forest in the

northern project area continues to provide valuable nesting habitat for native species. Riparian and wetland areas have a diverse mix of mammal, avian, reptile, and amphibian species, including waterfowl. The developed areas of the project are still dominated by native and non-native species adapted to disturbance. Species identified in the 2003 FEIS are still applicable.

Have the fishery resources or aquatic habitat in the project area changed?

Des Moines Creek continues to be the only fish-bearing stream in the project area. The riparian habitat, where present, does not meet any criteria for properly functioning habitat and therefore is a limiting factor to natural salmonid production (Washington State Conservation Commission, 2000). Hydrology, lack of large woody debris, and poor water quality are other salmonid-limiting factors. Fish passage barriers are less of a salmonid-limiting factor than when the 2003 FEIS was published because the major blockage at Marine View Drive has been replaced with a bridge.

Resident coastal cutthroat trout (*Oncorhynchus clarki*) and coho salmon (*Oncorhynchus kisutch*) are documented in Des Moines Creek (King County, 1997; Laird O'Rollins, personal communication, 2017). Non-native fish, including pumpkinseed sunfish (*Lepomis gibbosus*) and largemouth bass (*Micropterus salmoides*), may be in the project area as a result such fish moving downstream from Bow Lake and Northwest Ponds (King County 1997).

Several activities have occurred in Des Moines Creek since the 2003 FEIS that have improved habitat use as well as the habitat. The Des Moines Creek culvert under Marine View Drive was replaced in the spring of 2007 to allow for anadromous fish passage up Des Moines Creek (Laird O'Rollins, personal communication, 2017). The channel by the new bridge was modified in 2008 to further improve fish passage. This opened up potential spawning habitat south of S 200th Street, where there is higher-quality riparian habitat in the Des Moines Creek Park area.

King County has also been improving aquatic habitat in Des Moines Creek by completing a series of habitat restoration projects starting in 2007 (Laird O'Rollins, personal communication, 2017). Habitat enhancements included placing logs, boulders, and other stream enhancement elements; removing invasive plants; and installing native vegetation within the stream buffer between Marine View Drive Bridge and the Midway Sewer Treatment Plant. Habitat improvements were then completed in the reach below Marine View Drive in 2009 and 2010. In 2010 during Phase III of the habitat restoration projects, the County completed some adaptive management work, invasive species removal, and planting of native plants in the Des Moines Creek buffer between S 200th Street and Midway Sewer Treatment Plant to enhance fish habitat in that reach. Limited channel improvements also were completed above S 200th Street.

Habitat improvements and reconnecting the project area to Puget Sound has mitigated stream erosion and scouring of spawning gravels. Coho salmon are now using Des Moines Creek up to and above S 200th Street (Laird O'Rollins, personal communication, 2017). The coho salmon have been reported spawning as far upstream as S 200th Street (Fisher, 2017).

Has the status of federal threatened and endangered species in the project area changed?

The federal and state status of the bald eagle (*Haliaeetus leucocephalus*) has changed since the 2003 FEIS. It was delisted from threatened to a species of concern and removed from the federal list of threatened and endangered species on August 9, 2007.

Table 2. USFWS and NMFS-listed threatened and endangered species evaluated under the Endangered Species Act

Species/Habitat	Federal Status
Oregon Spotted Frog *(Rana pretiosa*)	Threatened
Oregon Spotted Frog critical habitat	Designated; no critical habitat present in action area
Yellow-billed Cuckoo (*Coccyzus americanus*) (Western U.S. DPS)	Threatened
Yellow-billed Cuckoo critical habitat	Proposed; no critical habitat present in action area
Marbled Murrelet (*Brachyramphus marmoratus*)	Threatened
Marbled Murrelet critical habitat	Designated; no critical habitat present in action area
Bull Trout (*Salvelinus confluentus*) (Coastal-Puget Sound DPS)	Threatened
Bull Trout critical habitat	Designated; no critical habitat present in action area
Chinook salmon *(Oncorhynchus tshawytscha*) (Puget Sound ESU)	Threatened
Puget Sound chinook salmon critical habitat	Designated; no critical habitat present in action area
Steelhead (*Oncorhynchus mykiss*) (Puget Sound DPS)	Threatened
Puget Sound steelhead critical habitat	Designated; no critical habitat present in action area
Bald Eagle (*Haliaeetus leucocephalus)* [a]	Federal Species of Concern
Coho Salmon (*Oncorhynchus kisutch)* [a] Puget Sound/Strait of Georgia ESU	Federal Species of Concern

ESU – Evolutionarily Significant Unit
DPS- Distinct population segment
[a] Not Evaluated under ESA, but addressed in this TM

Has the status of Washington sensitive species or Priority Habitat designations in the project area changed?

The WDFW Priority Habitat and Species (PHS) data system identifies the reach of Des Moines Creek from Puget Sound to S 200th Street as providing a priority anadromous fish presence/migration and priority resident fish presence/migration. This is a change from conditions presented in the 2003 FEIS, when only the first mile of stream was designated for anadromous fish. The increased length of priority habitat is due to the replacement of the Marine View Drive culvert. Removal of that fish passage barrier has resulted in coho salmon being reported as far upstream as S 200th Street. As identified in the 2003 FEIS, other priority habitats in the project's vicinity include aquatic areas (wetlands) at the northern end of the project area and a biodiversity area/corridor that is Des Moines Creek Park. The coho salmon and resident coastal cutthroat trout in Des Moines Creek are priority species.

Following the bald eagle delisting, the state removed it from the state's protected species list (formerly classified as threatened) and from the priority species for management list. The bald eagle's status was noted as state threatened in the 2003 FEIS.

Have the King County sensitive areas designations in the project area changed?

King County sensitive area designations have not changed since the 2003 FEIS.

2. Would the Phase 1 Improvements result in any new significant adverse impacts?

Vegetation and Wildlife

As with the Alternative C2 analysis, potential construction direct impact area estimates for Phase 1 Improvements are based on aerial photograph analysis and preliminary engineering plans prepared for the SR 509 Project and represent the maximum extent of clearing that would occur under the Phase 1 Improvements. Because the analysis is based on a worst-case scenario, actual clearing or disturbance would likely be less than the total area shown on Table 3.

As shown in Table 3, the vegetation community construction impacts under Phase 1 Improvements would be less than with Alternative C2. With the Phase 1 Improvements, impacts to all vegetation types would decrease except for grassland and the residential/commercial land use types. Grassland impacts may have risen due to clearing of other vegetation types since the EIS was prepared. There is an increase in residential/commercial vegetation impacts over Alternative C2 because right-of-way has been acquired and structures have been removed since the time of the 2003 FEIS. Many of these areas now contain a combination of mowed grasses and fragmented mixture of native, nonnative, and ornamental trees and shrubs. All residential/commercial areas were identified as such in 2017, regardless of vegetation status on each parcel, while the 2003 Alternative C2 analysis may have only included those areas with vegetation. There also has likely been additional residential and commercial development in the project area in the 14 years since the 2003 FEIS analysis. Excluding residential/commercial areas from Phase 1 Improvements would result in fewer construction impacts to natural communities than under Alternative C2.

As described in the Phase 1 Improvements Wetlands Technical Memorandum, direct impacts of approximately 0.3 acre would occur to Wetlands A, B, M, and N and the buffer for Wetland F; this would be less than reported in 2003 (CH2M 2017a). See the Phase 1 Improvements Wetlands Technical Memorandum for a complete discussion of wetlands (CH2M 2017a).

Alternative C2 would have encroached into the northeast corner of Des Moines Creek Park and required acquisition of 4.7 acres of mixed deciduous/coniferous forest in the park for a ROW, while the Phase 1 Improvements would require acquisition of 4.2 acres. With both Alternative C2 and the Phase 1 Improvements, the roadway would cross through the park on a bridge structure. For Phase 1 Improvements, the bridge would be 82 feet wide with only one structure for both the northbound and southbound lanes, versus two structures with Alternative C2 that would be 60-foot-wide each, with 30 to 40 feet between the bridges. Vegetation would only be removed as required for construction access and bridge piers. Riparian vegetation would be removed in the area that was once the Tyee Valley Golf Course and in the northern area of Des Moines Creek. No large habitat blocks would be fragmented.

Phase 1 Improvements operational impacts on vegetation communities would be limited to shading associated with the bridges over Wetland A and Wetland B. Section 3.6 of the 2003 EIS has a complete discussion of wetland shading effects. Other than those communities shaded by bridges, operation of Phase 1 Improvements would not affect existing vegetation communities—this is consistent with the Alternative C2 analysis.

Table 3. Comparison of Phase 1 Improvements and Alternative C2 Vegetation Community Construction Impacts, including Changes Between the Analysis Periods (acres).

Vegetation/ Land Use Type	Phase 1 Improvements Total Impact Area (Acres)	Alternative C2 Impact Area (Acres)	Change in Impacted Area (Acres)
Grassland	32	30.9	1.1
Shrubland	15	28.1	-13.1
Upland Mixed Forest	47	48.2	-1.2
Wetlands	0.3	0.32	-0.02
Total Natural Vegetation Communities	**94.3**	**107.52**	**-13.22**

Wildlife impacts applicable to Phase 1 Improvements would be the same as with Alternative C2. Construction activity would result in visual and auditory impacts to wildlife. These impacts would be temporary and not continue after construction is complete. Long-term impacts from Phase 1 Improvements operation would be minor and mostly related to noise from vehicular traffic in the immediate vicinity of roadways. Where wildlife are not tolerant to the traffic disturbance, they would most likely relocate to quieter areas, but the suitable habitat occupied by the relocated wildlife would most likely already be occupied. The increased stress and competition for resources could result in the relocated wildlife perishing. Phase 1 Improvements could also result in altered migration patterns and changes in individual home ranges (Informatics, 1980). Operational impacts would not be observable along the I-5 corridor portion of the Phase 1 Improvements because noise would be consistent with existing conditions following construction. The mostly developed nature of the project area would render these construction and operational impacts insignificant.

Vehicle collision-related wildlife mortality would most likely increase in areas where new roads are constructed. Black-tailed deer and small mammals such as raccoon, opossum, and skunk are most likely to be affected (Informatics, 1980). Spring and early summer when young are dispersing would be the period of highest mortality (Leedy, 1975).

Fish

Fish impacts discussed in the 2003 FEIS that are applicable to Phase 1 Improvements would be less than under Alternative C2. Three bridge crossings of the East Fork of Des Moines Creek would not occur on the Tyee Valley Golf Course because the South Access Road would not be constructed with the Phase 1 Improvements. An extension of the existing culvert under S 200th Street with Alternative C2 would not occur with the Phase 1 Improvements. As with the three East Fork crossings, the culvert extension would not occur with no South Access Road. Quality fish habitat does not exist in the golf course, but anadromous fish (coho) have now been reported as far upstream as S 200th Street. Therefore, there would be no direct or indirect effects to occupied aquatic habitat on the Tyee Valley Golf Course at the S 200th Street crossing.

Water quality in receiving waters is the primary concern related to aquatic resource impacts. Des Moines Creek is the only fish-bearing stream that would be crossed by the Phase 1 Improvements. Implementation of best management practices (BMPs) during construction would protect receiving waters from storm-related runoff. Therefore, construction-related fisheries impacts are not expected to be significant.

New impervious surface area would be reduced from 113 acres with Alternative C2 to 61 acres with Phase 1 Improvements; therefore, impacts would be less. Significant water quality impacts would be avoided through compliance with the King County *Surface Water Design Manual* and Washington State

Department of Transportation's (WSDOT) *Highway Runoff Manual*. Refer to Section 3.5 of the 2003 FEIS and the Phase 1 Improvements Water Quality Technical Memorandum for more detailed information.

Stormwater runoff from new impervious surfaces may include worn rubber, lubricants, heavy metal fine sediments, and fuel. There would be no cumulative operational effects to receiving waters relative to existing nonpoint source pollution because all runoff from new surfaces would be treated.

Water quality impacts under Alternative C2 in the Mill Creek Basin would not occur under Phase 1 Improvements because no new impervious surface would be constructed in that basin.

Accidental spills of deleterious or hazardous substances is another potential operational impact. Phase 1 Improvements would be designed under current regulatory safety standards, which would lower the frequency of accident-related spills compared to current conditions because roadway improvements would improve overall road safety. In addition, the stormwater management plan and mitigation required in regulatory permits would further reduce spill-related impacts to nonsignificant levels.

Coho salmon and resident fish habitat in Des Moines Creek and marine receiving waters in Puget Sound would not be affected by operation of the Phase 1 Improvements because no stormwater will be discharged directly into Des Moines Creek. There are currently no stormwater treatment facilities in the project area that treat stormwater from impervious surfaces. The enhanced stormwater treatment BMPs for the Phase 1 Improvements are designed to achieve greater removal of dissolved metals than basic treatment and would include media filter drains, compost amended biofiltration swales, and wetland/detention ponds. Therefore, construction of treatment facilities to treat stormwater as part of Phase 1 Improvements would improve the quality of water in the fish-bearing waters over current conditions.

Construction Effects

Vegetation and Wildlife

As described in the 2003 FEIS for Alternative C2, the primary impact associated with project construction would be the removal of vegetation and subsequent loss of wildlife habitat. Impacts to higher-quality habitat such as forests and wetlands would be of greater consequence than impacts to commercial and residential areas. Habitats to be cleared would include mowed and un-mowed grass, shrubland, mixed coniferous/deciduous forest, wetlands, and fragmented urban/commercial areas consisting of native, non-native, and ornamental plants. These effects would be the same with Phase 1 Improvements.

Exposed, un-vegetated, and/or compacted soils after construction would be susceptible to colonization by invasive species (mainly weeds). Heavy equipment-caused compaction can directly impact plants with shallow root systems and reduce water infiltration, thereby affecting revegetation efforts. Exposed soil must be seeded/planted as soon as practicable following construction.

Wildlife would be displaced or eliminated from habitat they depend on through vegetation clearing during construction (Table 3). Birds and larger mammals would be able to move to other areas during construction, but less mobile wildlife such as amphibians, reptiles, and some small mammals would be directly affected though potential mortality. Most habitats in the project area are generally at carrying capacity (Krebs, 1994; Morrison et al., 1992; Miller, 1990); therefore, displaced wildlife are at risk due to competition from existing populations and could perish.

Construction noise and activity could affect wildlife in adjacent habitat not directly affected. Nesting birds may abandon their nests and other wildlife may be temporarily displaced. Affected wildlife may return to the area following construction.

Fish

Bridge construction over Des Moines Creek would not require in-water work. Unlike Alternative C2, with the Phase 1 Improvements the culvert under S 200th Street would not be extended, and no in-water work in habitat occupied by resident cutthroat trout and coho salmon would be required. The existing culvert would continue to block fish passage to remain in compliance with Federal Aviation Administration policy that no anadromous fish be allowed to travel north of S 200th Street to avoid attracting raptors close to Sea-Tac Airport.

General construction activities are likely to generate some non-point chemical pollution. There is a low probability of this adversely affecting aquatic habitat due to implementation of BMPs that would isolate construction areas from streams. Vegetation removal, clearing, and grading operations would be likely to temporarily increase generation and mobilization of fine sediments during storm events. This has potential to impair water quality and degrade fishery habitat, but with a low probability if BMPs are functioning properly.

Unlike conditions reported in the 2003 FEIS, there is now anadromous fish spawning habitat in the project area. Therefore, adverse effects on water quality can harm habitat both in the project area as well as downstream of the Phase 1 Improvements. Establishment of BMPs and appropriately sized, vegetated stream buffers at the bridge construction location would be used to minimize potential adverse impacts from construction-related stormwater runoff and accidental spills containing petroleum pollutants, concrete leachate, and suspended sediment entering the streams.

With safeguards in place, water quality impacts would be short-term and minimized with proper management. Construction periods would be limited to protect fish, according to recommendations from WDFW, NMFS, and USFWS. The Phase 1 Improvements Water Quality Technical Memorandum has additional information on water quality effects.

Threatened and Endangered Species

As with Alternative C2, no federal- or state-listed threatened, or endangered wildlife species regularly breed, forage, or occupy the Phase 1 Improvements project area. For this reason and reasons discussed above for fish, no impacts are expected to threatened and endangered species.

3. How would mitigation measures compare to the 2003 FEIS Alternative C2?

During Operation

Mitigation for Alternative C2 described in the 2003 FEIS is still applicable to Phase 1 Improvements, although at a smaller scale. The predominant mitigation measure for vegetation is establishing native vegetation on disturbed areas—in many instances, replacing non-native species. A reduction of 12.9 acres in vegetation impacts (excluding in commercial/residential land use areas) would require less establishment of new plant communities. Implementing variable mowing schedules to create a variety of grass habitats is still be recommended.

Implementing BMPs to protect water quality from stormwater runoff, as described in the 2003 FEIS for Alternative C2, would still apply to Phase 1 Improvements for potential aquatic resources impacts. A reduction of 51 acres of new impervious surface compared to Alternative C2 means that less BMP infrastructure would be required.

In the 2003 FEIS, no mitigation was proposed for terrestrial threatened and endangered species under Alternative C2, and this is still applicable to the Phase 1 Improvements. Water quality treatment will prevent potential threatened and endangered aquatic resource impacts.

During Construction

The mitigation measures during construction discussed in the 2003 FEIS for Alternative C2 remain applicable to the Phase 1 Improvements.

Vegetation and Wildlife

As is discussed in Section 3.7.5 of the 2003 FEIS and is still applicable to Phase 1 Improvements, construction would avoid forested areas, wetlands, and riparian areas to the extent practicable. Habitat elements such as snags, downed trees, and brush piles would be protected where possible. Construction timing would be developed based on recommendations from WDFW, including scheduling clearing during early spring before birds begin nesting. Clearing would be limited to only the area needed for construction. Monitoring would be conducted during construction to ensure mitigation measures are successfully implemented.

Fish

Mitigation commitments for Alternative C2 have changed since the 2003 FEIS. The commitment to contribute to the construction of the Marine View Drive bridge to replace the existing culvert is no longer needed because that project has been completed. Continued 404 Merger Process commitments include the following:

- Des Moines Creek would be crossed with a bridge to minimize impacts on streams and fish habitat from the project.
- Enhancement opportunities for Des Moines Creek in the project area are being investigated to compensate for any riparian impacts. The type of mitigation could be enhancement or restoration of the stream or the riparian buffer in locations that are currently biologically or topographically deficient.

Fish and water quality-related design guidelines would comply with federal, state, and local permit requirements. A Temporary Erosion and Sediment Control Plan (TESC), a Spill Control and Containment Plan (SCCP), and a Stormwater Pollution Plan (SPP) would be developed prior to construction. Additionally, the design would comply with the King County *Surface Water Design Manual* and WSDOT's *Highway Runoff Manual.*

Appropriate construction BMPs would be selected during development of the TESC, SCCP, and SWPPP to prevent or reduce potential impacts on surface water quality. Surface runoff from new and replaced impervious surfaces will be detained for flow control, and treated with enhanced stormwater treatment.

WSDOT will apply for a Hydraulic Project Approval permit from WDFW for bridge installation over Des Moines Creek. Using bridges to cross streams would allow for fish passage and reduce impacts to aquatic species.

Monitoring would still be part of the mitigation process.

4. Conclusion

With adherence to the regulatory requirements described above, no new significant impacts to vegetation, wildlife, fisheries, or threatened and endangered species would occur as a result of the Phase 1 Improvements that were not previously identified in the 2013 FEIS and ROD for Alternative C2. No new or revised mitigation measures would be required.

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