

## CHAPTER 9 - ADDITIONAL IMPACTS

SEPA requires investigation of alternative actions and their predictable environmental effects including cumulative effects. NEPA requires additional impact analysis including cumulative, irreversible and irretrievable, short-term and long-term, and growth inducing impacts of the proposed actions. The proposed action (Alternative 1) and alternatives evaluated are described in Chapter 3.

This chapter describes specific cumulative impacts of potential concurrent projects or existing facilities, direct and indirect impacts from project implementation, unavoidable adverse impacts of the proposed actions, short- and long-term impacts, irreversible and irretrievable commitments of resources, and growth-inducing impacts. Only those environmental resources with any of these impacts are included in each section. Mitigation measures in Chapter 10 include measures to reduce these impacts from construction and operation of the Denny/Lake Union Project.

### 9.1 CUMULATIVE IMPACTS

As stated in 40 CFR 1508.7, cumulative impacts are the impacts “on the environment which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions.” These impacts could occur from concurrent construction of projects or operation of existing facilities in a localized area.

Under Alternatives 1 and 2, King County’s and Seattle’s CSO control facilities in the south Lake Union area would be constructed concurrently, resulting in cumulative impacts on some environmental resources. In the general area of the Elliott West site, cumulative impacts could occur from King County’s construction of the CSO control facility and pipelines for Alternatives 1 or 2 and Immunex Corporation’s proposed construction of a new facility located north of the project at Galer Street, the 401 Elliott West development immediately south of the Denny/Lake Union Project, or other projects in the area (see Figure 2-7 and Appendix B). Operation of the CSO control facilities should have no adverse cumulative impacts as the facilities would be unmanned and would operate intermittently. Under Alternatives 1 and 2, the reduction of CSO-related loading to Lake Union and Elliott Bay from project implementation would significantly reduce the adverse impacts of CSO discharges in these waterbodies.

*The following sections describe cumulative impacts on specific resources. The alternatives listed in parentheses are those which produce the discussed impact. Impacts specific to only one alternative are stated separately with the alternative identified.*

**Air Resources** (Alternatives 1 and 2). Construction would contribute to a regional trend toward increasing levels of dust and airborne particulates.

**Water Resources** (Alternatives 1, 2 and 3). On a cumulative basis, the project would significantly reduce pollutant loadings to Puget Sound and Lake Union, benefiting aquatic life and reducing human health risks to the region as a whole. It should also be noted that the project is designed as a component of efforts to meet federal and state CSO reduction targets. The project would result in a significant reduction in CSO flow volumes and associated contaminants to Lake Union and Elliott Bay.

This represents a significant reduction from existing conditions, and would reduce the chronic, cumulative pollutant loading to Lake Union and Elliott Bay. Contaminant loading to sediments from CSOs in the vicinity of CSO #125, CSO #175 and the Dexter and Denny regulators would be reduced, with accompanying potential benefits to aquatic organisms. Total annual untreated overflow frequencies at the Denny Way CSO would be reduced to one event per year. The reduction in solids discharged from the Elliott West Outfall would contribute to remediation efforts associated with the Denny Way Sediment Capping Project. Overall CSO reduction efforts would contribute to King County goals for system-wide CSO reduction. In Alternative 2, stormwater would continue to discharge to the lake on a periodic seasonal basis. Separated stormwater would contribute to chronic, cumulative loading from numerous non-point sources of pollution in the South Lake Union Subbasin. Contaminants discharged with stormwater would continue to accumulate in sediments adjacent to the stormwater outfalls. Under Alternative 3, up to 115 overflow events per year into Lake Union and 50 events at the Denny Way CSO location would continue, and could increase in volume and frequency with future increases accompanying overall increased intensity of development. In combination with other sources of pollution (i.e., stormwater runoff, loadings of pollutants to south Lake Union and Elliott Bay) would cumulatively increase.

**Biological Resources** (Alternatives 1, 2 and 3). In combination with the Regional Wastewater Services Plan, the Southeast Lake Union CSO 126B, Elliott Bay/Duwamish Restoration Program, and the Vine Street Basin projects, reductions in CSO volumes reaching Lake Union and Elliott Bay would result from project implementation, thereby benefiting plants, animals, fish and shellfish resources in Lake Union and Elliott Bay. However, the increase in untreated stormwater discharges in Alternative 2 would contribute to a regional trend toward increased levels of non-point pollution and stormwater loading to Lake Union and Elliott Bay. Under Alternative 3, continued loadings of pollutants to south Lake Union and Elliott Bay would continue and could increase accompanying overall urbanization. Degraded water quality would contribute to degradation of fish and shellfish habitat.

**Environmental Health** (Alternatives 1 and 2). After construction, the project would contribute on a cumulative basis to the reduction of environmental health risks in Lake Union, Elliott Bay, and Puget Sound. The proposed project would contribute to efforts associated with the Regional Wastewater Services Plan, the City of Seattle's CSO 126B, Elliott Bay/Duwamish Restoration Program, and the Vine Street Basin projects to improve water quality and reduce associated environmental health impacts in and around Lake Union, Elliott Bay, and Puget Sound. Alternative 3 would contribute to increasing public health risks associated with shellfish consumption and water-contact recreation in Elliott Bay and Lake Union.

**Noise** (Alternatives 1 and 2). Increased noise levels could occur from various construction projects in close proximity to the Denny/Lake Union Project.

**Aesthetics** (Alternatives 1 and 2). Elliott Avenue north of Denny Way has been changing from industrial to an industrial/commercial mix. Vacant buildings and lots are becoming developed including lots directly below the bluff east of the roadway. Vacant lots allow pedestrians and drivers to have views on Elliott Bay from Elliott Avenue. However, as these lots are developed, many of these views are lost. Although the CSO control facilities on the Elliott West site would reduce views from the street, the site is located adjacent to the railroad tracks that often contain double-decker container cars which are taller than the tops of the proposed facilities.

**Historical and Cultural Preservation** (Alternatives 1 and 2). Future development in the project area (e.g., public works projects such as potential transportation improvements in the Mercer Street Corridor or through private development of individual properties) may include demolition or substantial alteration of historic structures. Future public and private development in the subbasin may decrease the number of significant historic structures in the area, although public utility projects would probably utilize federal funds which require compliance with Section 106 of the National Historic Preservation Act. Thus, assessment and evaluation for archaeological resources and historic structures should occur. Private development and utility construction near the south shore of Lake Union may also affect hunter-fisher-gatherer and historic archaeological deposits, but would probably be less likely to require studies for archaeological resources prior to construction and/or building demolition. The possible Roy Street underpass is on the edge of an area with some potential for archaeological deposits but may not have any cultural materials directly in the project footprint. No historic structures that may be eligible for listing on the National Register of Historic Places and/or are eligible for designation as a Seattle City Landmark are at the intersection of Roy Street and Aurora Avenue.

**Parks and Recreation** (Alternatives 1 and 2). The cumulative impact of various CSO projects completed by Seattle and King County would significantly improve water quality and recreational opportunities in area waterbodies. However, under Alternative 2, negative impacts to parks and recreation near new and existing stormwater outfalls could occur from stormwater flows.

**Transportation** (Alternatives 1 and 2). Cumulative transportation impacts could occur from various construction projects occurring concurrently in the project area, specifically if the 401 Elliott West Project, Immunex, West Galer Street Flyover, and Fred Hutchinson Center are being constructed at the same time as the project facilities.

**Socioeconomics** (Alternatives 1 and 2). In combination with other construction activities in the project vicinity, construction of proposed facilities would contribute to temporary disruptions in business activities. No long-term impacts would occur.

## 9.2 DIRECT AND INDIRECT IMPACTS

Direct effects are caused by the proposed action and occur at the same time and place. Indirect effects are caused by the proposed action but are later in time or further removed in distance, but are still reasonably foreseeable.

### Direct Impacts

#### Alternatives 1 and 2

- ◆ Increase in traffic congestion on streets where construction activity is occurring
- ◆ Increase in noise levels in the immediate vicinity of construction sites
- ◆ Potential for utility disruptions during construction
- ◆ Inaccessibility to some park areas during construction activity
- ◆ Potential for destruction of unknown, buried hunter-fisher-gatherer and/or historic archaeological resources from excavation through fill and other elements of the built environment that currently protect cultural resources

- ◆ Modifications of the viewsheds from some of the urban design elements like Myrtle Edwards Park during construction of the project
- ◆ Permanent alteration of the appearance of the Elliott West site
- ◆ Impacts to historic structures from ground settling and destabilization caused by equipment vibrations during construction
- ◆ Modification of viewsheds from certain historic properties by project facilities during and after construction
- ◆ Temporary generation of dust, fumes, and noise during construction
- ◆ Potential for intermittent odor problems in the vicinity of regulating and control facilities
- ◆ Temporary increases in turbidity and sedimentation in south Lake Union and Elliott Bay from construction of outfalls and runoff from construction sites
- ◆ Potential dewatering and disturbance of contaminated groundwater resources
- ◆ Improvement in south Lake Union and Elliott Bay water quality from the reduction of CSO events
- ◆ Removal of aquatic and upland vegetation during construction
- ◆ Temporary disturbance and displacement of fish, shellfish, and wildlife
- ◆ Improvement in habitat conditions for fish and shellfish from reductions in CSO events
- ◆ Potential spills of fuels, oils, or other materials
- ◆ Potential disturbance of the Denny Way Sediment Cap
- ◆ Lower potential for direct human contact with CSOs
- ◆ Temporary restriction of access to commercial areas
- ◆ Loss of Elliott Bay views from street level
- ◆ Enhancement of foreground street level views due to landscaping of a vacant lot
- ◆ Loss of public access on the street end of Mercer Street, if a Street Vacation is necessary
- ◆ One percent increase in sediment loading through the West Point outfall off Discovery Park
- ◆ Increase biosolids truck trips by about 25 roundtrips a year or two per month

#### Alternative 3

- ◆ Continued decline of water quality in Lake Union and Elliott Bay due to CSOs
- ◆ Continued decline of fish and shellfish habitats from CSOs
- ◆ Increased potential for direct human contact with CSOs

#### **Indirect Impacts**

#### Alternatives 1 and 2

- ◆ Contribute to regional recovery efforts for anadromous salmonids by improving water quality
- ◆ Increase in traffic volumes on streets not directly impacted by construction
- ◆ Increase in recreational value of some parks because of the improvement in water quality

#### Alternative 3

- ◆ Potential reduction in fish and shellfish numbers due to loss of habitat and water quality from CSOs

### **9.3 UNAVOIDABLE ADVERSE IMPACTS**

Implementation of mitigation measures can reduce or eliminate adverse impacts associated with the proposed alternatives. Unavoidable adverse impacts are those that remain after the application of mitigation measures. These impacts must be considered in the context of construction which is occurring in the area and which would continue regardless of whether or not the proposed actions are implemented. Unavoidable adverse impacts associated with the alternatives are listed below. Although they would be temporary and would be partially mitigated by proposed mitigation measures, some construction-related adverse impacts would be unavoidable.

*The following sections describe unavoidable adverse impacts on specific resources resulting from implementation of Alternatives 1 and 2.*

**Air Resources.** Dust and fumes would be generated in the vicinity of construction sites. While these impacts would be partially mitigated with dust control measures and proper maintenance of equipment, impacts to receptors in the immediate vicinity of construction would be unavoidable.

**Water Resources.** Short-term increases in sedimentation and turbidity would be largely unavoidable. Outfall construction would require disturbance of shorelines and disturbance of Elliott Bay floor sediments. Although erosion control measures would reduce runoff from construction sites, some runoff into surface waterbodies would unavoidably occur. If groundwater is encountered during excavation some dewatering would be required.

**Biological Resources.** Some fish and wildlife species would be temporarily but unavoidably displaced by noise and excavation, during construction. Over the long term, fish and shellfish resources in the immediate vicinity of outfalls would be unavoidably disturbed or displaced. Any permanent clearing of vegetation for project facilities would also unavoidably result in a loss of habitat for some species.

**Environmental Health.** The use of fuels, oils, solvents, and other materials would temporarily but unavoidably increase the risk of spills during construction. During operation, the potential exists for chlorine leaks from tanks.

**Noise.** A temporary increase in noise levels in the vicinity of construction sites would occur.

**Recreation.** A temporary loss of recreation space during construction in Myrtle Edwards and Elliott Bay parks is unavoidable.

**Historical and Cultural Preservation.** Unknown hunter-fisher-gatherer and/or historic archaeological resources may be inadvertently destroyed by pipeline excavation and subsurface disturbance associated with project construction.

**Aesthetics.** The proposed project would be visible from unobstructed viewing locations and lighting could be evidenced at night.

**Transportation.** A temporary increase in traffic congestion would occur as a result of construction.

**Socioeconomics.** Some restriction of access to and general disturbance of business activity would be unavoidable in the immediate vicinity of construction activity where facilities are constructed in road rights-of-way.

## **9.4 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

For Alternatives 1 and 2, short-term is defined as the construction period and long-term is defined as the operation of the CSO facilities. Short-term and long-term impacts could be either beneficial or adverse. A list of short-term and long-term impacts related to Alternatives 1 and 2 follows.

### **Short-Term Impacts - Beneficial**

- ◆ Demand for construction labor and equipment would support construction-related business

### **Short-Term Impacts - Adverse**

- ◆ Dust and fumes
- ◆ Sedimentation and turbidity in area waters
- ◆ Disturbance of shorelines and Elliott Bay sediments
- ◆ Displacement of some fish and wildlife species by noise and excavation
- ◆ Temporary increase in noise levels
- ◆ Increased congestion on affected roadways
- ◆ Temporary disruption of utilities
- ◆ Temporary decrease of visual resources during construction
- ◆ Increased risk of spills
- ◆ Modification of viewsheds from some historic properties and/or urban design elements during construction
- ◆ Temporary disruption to recreational activities in Myrtle Edwards and Elliott Bay parks

### **Long-Term Impacts - Beneficial**

- ◆ Improvement of south Lake Union and Elliott Bay water quality
- ◆ Enhancement of aquatic biological productivity from reduction in frequency of CSO events
- ◆ Reduction in environmental health risks
- ◆ Improved water quality would enhance recreational value of parks adjacent to waterbody
- ◆ Existing visual resource permanently modified from vacant land to landscaped buildings

## **Long-Term Impacts - Adverse**

- ◆ Localized losses of biological productivity in the immediate vicinity of outfalls
- ◆ Localized loss of upland productivity could occur where aboveground facilities are located
- ◆ Loss of view from street level due to buildings and landscaping on the Elliott West site
- ◆ Potential loss of public access on a street right-of-way

## **9.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

The labor necessary to construct, maintain, and operate the proposed facilities for Alternatives 1 and 2 would be irreversibly and irretrievably committed, as would the materials used in constructing the various facility components. Material commitments would include water, steel, gravel, asphalt, concrete, and fuels.

The physical installation of outfalls, pipelines, regulators, and control facilities, while not technologically irreversible, would be costly to remove and would be considered irreversible actions. The dedication of sites for facilities, such as the proposed site for the Elliott West CSO Control Facility, would be considered an irreversible and irretrievable loss of this land. Although small, there may be some irreversible losses of fish and wildlife habitat where vegetation would be permanently removed and in the immediate vicinity of outfalls. The commitment of capital required to construct, maintain, and operate facilities would also be considered irreversible and irretrievable. Under Alternatives 1 and 2, loss of viewsheds from historic properties and/or urban design elements would be irretrievable during construction and in areas where aboveground facilities affect the viewshed. Construction activity would result in an irreversible commitment of gas and oil resources.

## **9.6 GROWTH-INDUCING IMPACTS OF THE PROPOSED ACTIONS**

The intent of the proposed project is to improve the water quality of Lake Union and Elliott Bay through reduction in untreated CSOs in the area tributary to the Denny Regulator. The current overflow conditions exceed the State of Washington's current regulations. King County and Seattle have separate agreements with Ecology to reduce system-wide CSOs. Therefore, none of the alternatives would induce or accelerate growth in the area.