

3.4 Hazardous Materials

What were the methods used to evaluate the project's effect on hazardous materials?

The hazardous materials analysts identified the range of potentially contaminated properties through a review of regulatory agency database lists and a search through historical records. They screened all properties based on their location relative to the project limits and construction areas and considering additional site-specific environmental data available in regulatory agency files and previous studies. Potential effects were evaluated based on property acquisition and construction activities. They then identified mitigation measures to avoid or control contaminated site effects on the project. This analysis is described in more detail in the *Mercer Corridor Improvements Project Hazardous Materials Discipline Report*.

What are the hazardous materials regulations for the study area?

Numerous federal, state, and local regulations and policies would govern planning and decision-making concerning hazardous waste and liability issues as the project develops. The local jurisdictions are the City of Seattle and King County. Regulatory requirements most likely to affect the project are:

Federal

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 et seq.
- Small Business Liability Relief and Brownfields Revitalization Act (SABRA)
- Resource Conservation and Recovery Act (RCRA), 42 USC 321 et seq.
- Occupational Safety and Health Act (OSHA), 29 USC 651 et seq.
- Clean Water Act, 33 USC 1251 et seq.
- Safe Drinking Water Act, 42 USC 300(f) et seq.
- Clean Air Act, 42 USC 7401 et seq.
- Toxic Substances Control Act, 15 USC 2601 et seq.
- Endangered Species Act, 7 USC 134, 16 USC 460 et seq.
- Federal Highway Administration, Technical Advisory T6640.8A (1987), Supplemental Hazardous Waste Guidance Memorandum (1997), and Hazardous Wastes in Highway Rights-of-Way Memorandum (1994)

Washington State

- Hazardous Waste Management Act, Chapter 70.105 Revised Code of Washington (RCW)
- Model Toxics Control Act (MTCA), Chapter 70.105D RCW
- Solid Waste Management Act, Chapter 70.95 RCW
- Underground Storage Tanks (UST), Chapter 90.76 RCW
- Water Pollution Control Act, Chapter 90.48 RCW
- Clean Air Act, Chapter 70.94 RCW
- Occupational Health Standards, Washington Administrative Code (WAC) 296-62
- Dangerous Waste Regulations, WAC 173-303
- Wastewater Discharges to Ground, WAC 173-216
- WSDOT Environmental Procedures Manual, Section 447, March 2006

What hazardous materials sites are found in the study area?

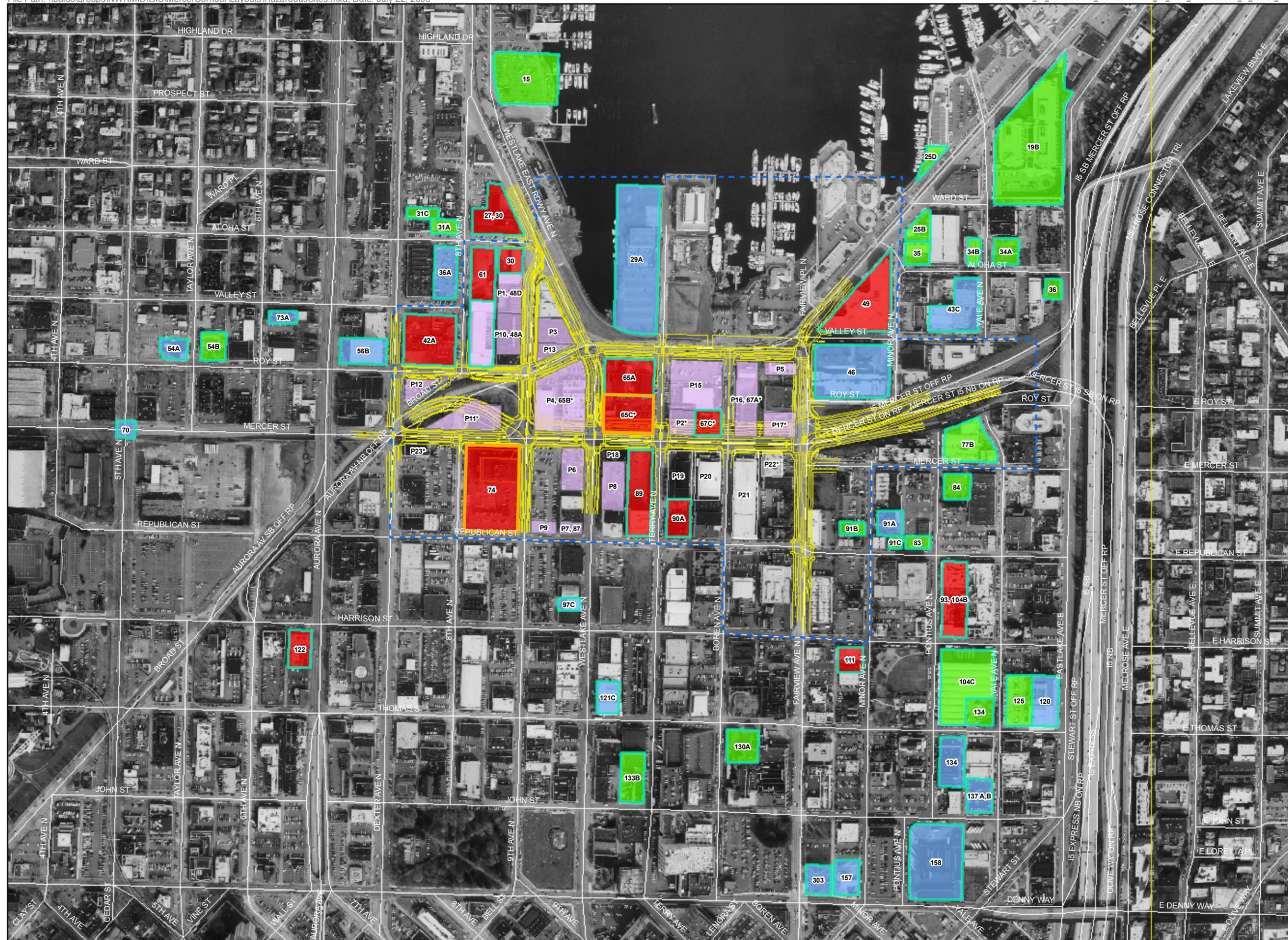
An analysis of the site conditions in the study area indicates that hazardous materials are present on 34 properties adjacent to or within proposed right-of-way (see Exhibit 3-7). Of the 34 properties:

- Two are substantially contaminated (defined as properties with extensive or persistent contamination or have multiple contaminants that occur in a small area);
- Ten are reasonably predictable to be contaminated (defined as small to medium size properties with potential contaminants that are not extremely toxic or difficult to treat); and
- Twenty-two are potentially contaminated (defined as properties with past or current uses in the vicinity that have the potential to cause contamination including gasoline service stations, printing, and plastics manufacturing).

Eight of these properties would be acquired for new roadway right-of-way. In addition to the properties described above, the south end of Lake Union contains thick deposits of wood waste. The decomposition of organics such as wood waste and sawdust typically produces methane gas. The approximate area of wood waste fill is shown on Exhibit 3-8.

How will project construction affect contaminated sites?

The proposed project would require right-of-way acquisitions and building demolition along Mercer Street, resulting in construction effects. These effects are discussed below.



LEGEND

-  Limits of detailed investigation
-  Build Alternative project alignment
-  Substantially contaminated properties
-  Reasonably predictable properties
-  Properties with confirmed releases likely to affect project
-  Properties with confirmed releases but not likely to affect project
-  Properties that have been cleaned up or received no further action letter
-  Properties potentially contaminated due to current or past activities
-  * Demolition sites with suspected hazardous buildings materials
-  74 Hazardous material site identification

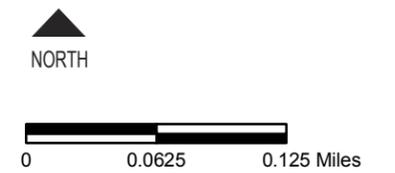
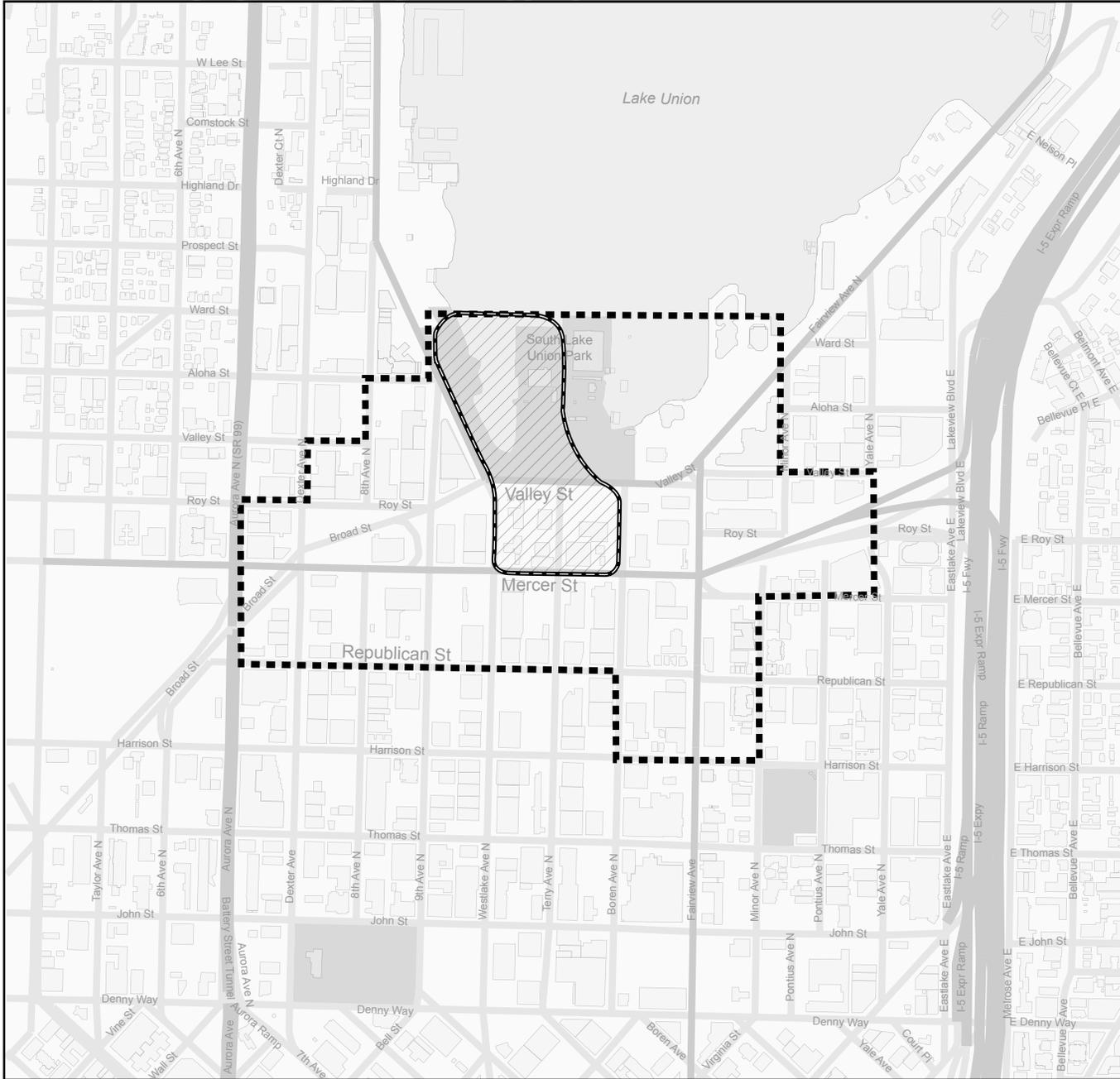


Exhibit 3-7
**Hazardous Materials Sites
 Within 1/4 Mile of Project Limits**
 MERCER CORRIDOR
 IMPROVEMENTS PROJECT



LEGEND

-  Limits of Detailed Investigation
-  Approximate Area of Wood Waste Fill

Note: Map adapted from *Seattle Commons / South Lake Union Plan Final Environmental Impact Statement, Volume 3A Technical Appendices (City of Seattle 1995)*.

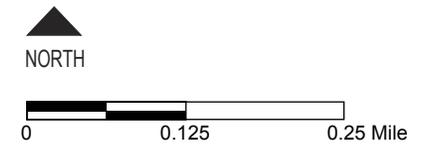


Exhibit 3-8
Approximate Area of Wood Waste Fill
MERCER CORRIDOR
IMPROVEMENTS PROJECT

Building Demolition Debris, Asbestos, and Lead-Based Paint

For the proposed project, buildings and structures on eight properties located on Mercer Street would be demolished (Exhibit 3-9).

According to King County tax records, all of these buildings were constructed prior to 1978. As a result, there is a possibility that they may contain hazardous building materials such as asbestos-containing material and lead-based paint. Asbestos-containing materials are often associated with floor tiles, countertops, roofing materials, insulation for the heating and cooling systems, or gaskets in boilers. Lead-based paint is resistant to abrasion and commonly found in buildings built prior to 1978.

In addition to regular building debris from demolition, the acquisition of these properties would pose the risk of also acquiring hazardous materials such as pesticides, solvents, fuels, and lead-based paint. These materials, along with the regular building demolition debris, would need to be removed, tested, and disposed of in accordance with state, federal, and local regulations.

Contaminated Soil

For the proposed project, soils that are confirmed or suspected to be contaminated are present on 14 properties (Exhibit 3-10). Of these 14 properties, 4 are located within or partially within the right-of-way acquisition area.

In addition to contaminated soil encountered within the right-of-way acquisition areas, contaminated soil may be encountered within the existing right-of-way during installation of stormwater detention system and utility works as a result of contaminant migration from adjacent properties. Soil contamination along the existing right-of-way, if found, would consist mostly of petroleum-based contaminants and possibly some metals, chlorinated solvents, and polycyclic aromatic hydrocarbons (PAHs). The potential effects of these sites on the project construction activities are unknown.

Contaminated Groundwater and Surface Water

Contaminated groundwater that may be encountered during excavation or utility installation would require special handling prior to disposal. Free-floating product was observed in the groundwater in the vicinity of the Union 76 service station (Map ID 65C) and Auto Services Company (Map ID 65A) (Urban Redevelopment 2005).

Contaminated stormwater could potentially run off from stockpiles and open excavation areas into stormwater drains and local surface water. Construction of Valley Street, Westlake Avenue North, and Fairview Avenue North along Lake Union would create the highest risk area due to the proximity of the construction to open water.

EXHIBIT 3-9 Potential Asbestos and Lead-Based Paint Effects - Sites with Buildings to be Demolished	
Map ID	Site Name
65C	Tosco 25535330857/ ConocoPhillips Company-255353/ Union 76
67C	Shell #23714/Texaco Station #63-232-0400
P2	West Marine
P4/65B	Pacific Lincoln, Land Rover, Nissan; Historical Service Station
P11	Former Artco Sign Company
P16/67A	Seattle City Department of Administration
P17	Lincoln Towing
P23	US Bank

EXHIBIT 3-10 Summary of Properties with Confirmed or Suspected Contaminated Soils and Groundwater within or Adjacent to the Project Right-of-way		
Map ID	Site Name	Location Relative to the Project Limits
27, 30	Aloha/9th Ave N Sites	Adjacent
42A	Maryatt Industries/ American Linen Supply Co.	Adjacent
49	Marriott Residence Inn Lake Union, Fairview Warehouse 070299, Uswcom Fairview, Finds	Adjacent
61	Seattle City Roy Street Facility/Roy St Shops #89	Adjacent
65A	Auto Service Company/Seattle City Westlake Site	Adjacent
65C ^a	Tosco 25535330857/ ConocoPhillips Company-255353/ Union 76	Within
67C ^a	Shell #23714/Texaco Station #63-232-0400	Within
74	Puget Sound Energy/ PSE Mercer Office/ Washington Natural Gas /UW Research Facility	Adjacent
89	UW Rosen Bldg/ H&A Investments Property	Adjacent
90A	Ivar's Commissary	1/2 block to the south
111	Mastercraft Metal Finishing Inc	1 block to the southeast
122	Seattle Vagabond Inn	2 blocks to the southwest
P16/67A	Seattle City Depart of Administration	Within
P17	Lincoln Towing	Within

^aSubstantial quantities of petroleum-contaminated soil will likely be encountered at or near this site.

Wood Waste and Methane Gas

Excavation within the western portion of the project limits could encounter wood waste fill and possible releases of methane gas. If ignition sources were present during excavation activities, the methane

gas would create a fire hazard if the concentrations were sufficiently high (i.e., between 5 and 15 percent). The presence of methane gas could also present a health concern for workers during trenching work if the work space is not adequately ventilated.

Underground Storage Tanks

Underground storage tanks (USTs) are currently known to be present at four locations that are within or partially within the proposed right-of-way acquisition area (see Exhibit 3-11).

EXHIBIT 3-11 Underground Storage Tanks within Proposed Right-of-Way		
Map ID	Site Name	Potential to Encounter
65C	Tosco 25535330857/ ConocoPhillips Company-255353/ Union 76	Yes
67C	Shell #23714/Texaco Station #63-232-0400	Yes
89	UW Rosen Bldg/ H&A Investments Property	No
P11	Former Artco Sign Company	Suspected
P16/67A	Seattle City Department of Administration	Yes
P17	Lincoln Towing	Yes

During construction, the USTs located within the right-of-way acquisition area would be removed. Residual petroleum contamination may be encountered in near-surface soils from current or previous USTs. The removal of USTs and excavation of petroleum-contaminated soil during demolition activities would expose the petroleum-contaminated soil to the atmosphere and rainfall for brief periods during excavation. There are strict requirements for UST removal and cleanup requirements under WDOE and City of Seattle Fire Department regulations. These regulations impose detailed protocols for addressing the environmental issues associated with USTs and petroleum-contaminated soil.

In addition, the possibility exists that unidentified USTs would be encountered during excavations. These unknown tanks create the greatest risk because of the explosion hazard and the potential to create a spill if the tank is ruptured. Vapors trapped within the tank may reach explosive limits and cause an explosion when ignited by a spark or some other incendiary source, like a cigarette.

Abandoned and Unknown Materials

In addition to the liability associated with acquiring properties with known contamination, if SDOT acquires a property where unknown contamination exists, it would incur liability for the contamination as well as the removal of any stored materials remaining onsite at the time of

acquisition. SDOT could also incur the costs for characterization and disposal of any contaminated media or materials that are onsite.

Hazardous Materials Spills

Accidental hazardous materials spills could occur due to construction activities throughout the project limits. Construction sites involve various activities, equipment, and materials that can result in a release of hazardous materials into the environment. Traffic detours and lane closures can increase the risk of accidents that cause spills of hazardous materials or substances into the environment. Areas where spilled hazardous materials would have the highest adverse effect on water resources within the project limits include areas near surface waters and stormwater catch-basins. Releases of relatively small amounts of chemicals to the ground can result in rapid migration to the underlying water table.

How will the completed project affect contaminated sites?

In areas where sawdust fill materials remain and confined spaces are created as part of the utility infrastructure (e.g., utility vaults), there is the potential for methane gas to build up to explosive levels within the confined spaces.

Effects of hazardous materials and waste from normal operations of the project would be associated with runoff of contaminants entrained in stormwater. Contaminants likely to be in stormwater runoff include fuel, lubricants, heavy metal compounds from tires and brakes, and automobile engine coolants such as ethylene glycol. Stormwater facilities would be designed to collect polluted runoff from traffic operations.

The potential for hazardous material spills from transport trucks would be reduced as a result of improved traffic flow and safer operations. The two-way Mercer Street would remove most truck traffic from Valley Street, where a spill might have a more adverse effect due to its proximity to Lake Union.

What effects on hazardous materials would occur if nothing were built?

With the No Action Alternative, the hazardous material properties would remain in place and undisturbed due to no construction activities. However, cleanup of hazardous materials in the construction right-of-way would not occur and the potential uncontrolled migration of existing contaminants would continue.

What measures are proposed to avoid or minimize effects on hazardous materials sites during construction?

To mitigate the risk of long-term liability associated with the purchase of a potentially contaminated property, the City of Seattle would perform “all appropriate inquiries” (AAI) under Section 101(35)(B)(ii) and (iii) of CERCLA and as specified in 40 CFR 312 prior to property acquisition. If

the AAI and subsequent site investigation identify actual soil and/or groundwater contamination, the City has the option to pursue a “Private Right of Action” to recover costs associated with cleanup of the property and costs to repair damages to natural resources, if necessary.

Several mitigation measures could be implemented during construction and operation to avoid or reduce adverse effects, and are discussed below.

Building Demolition Debris, Asbestos, and Lead-Based Paint

Generation of building demolition debris, ACM, and LBP wastes may occur at eight properties. Preconstruction investigation and testing would be needed to determine the location and quantity of ACM and LBP waste so that these wastes could be appropriately abated prior to demolition. In addition, buildings containing LBP should be sampled to determine the appropriate characteristics of the debris for disposal purposes. Mitigation for ACMs would include removal and disposal of the material prior to demolition.

Contaminated Soil

To mitigate the effects of encountering contaminated soil during construction, the City would require the construction contractor to prepare a soil construction contingency plan and to be familiar with the Washington State Department of Ecology’s *Guidance for Remediation of Petroleum Contaminated Soils* (WDOE 1995). Both of these documents would help to identify procedures, chains of responsibility, and concentration levels requiring cleanup in the event contaminated soil is encountered. In addition, petroleum-contaminated soil would have to be evaluated relative to MTCA cleanup levels, as discussed in the WAC 173-340.

Construction techniques that minimize disturbance to the subsurface and prevent the transport of possible contaminants to uncontaminated areas should be implemented. These techniques should address dewatering activities, site grading and excavation, installation of light standards, stormwater pollution prevention, and spill prevention.

The proposed project would affect properties that likely contain some hazardous materials and waste. While these sites can be managed and mitigation implemented, the sites cannot be avoided. The greatest contamination issue that would need to be dealt with would be to prevent the contamination from being released or migrating into a different area. Public and worker health issues, in addition to environmental contamination issues, would also be a concern. Furthermore, the mitigation and liability costs may be high. Additional characterization of soil and groundwater is recommended to provide more complete information to evaluate potential impacts on construction activities. With this information, SDOT would be better able to determine whether they would assume liability (cost of cleanup and disposal of any encountered contaminated media during construction activities) prior to construction.

Contaminated Groundwater and Surface Water

If dewatering is needed, the contractor would be required to develop and submit a dewatering plan that addresses the potential for encountering contaminated groundwater, including treatment and disposal of any contaminated groundwater.

The development of a stormwater pollution prevention plan (SWPPP) is useful in mitigating effects on soil, surface water, and groundwater by the implementation of BMPs for runoff from the construction site. In addition, a spill prevention, control, and countermeasures (SPCC) plan would address procedures, equipment, and materials used in the event of a spill of contaminated soil, petroleum products, contaminated water, or other hazardous substances during construction. The contingency plan would also specify procedures for notifications in the event of emergencies, inspection schedules for storage of hazardous materials, the identification of migration pathways (e.g., streams, dry wells, groundwater, etc.), and the provision of secondary containment and security for all hazardous material storage areas.

Contractors would be responsible for providing SDOT with a SWPPP and SPCC plan prior to commencing work.

Wood Waste and Methane Gas

A health and safety plan would be developed for the construction project that includes procedures to monitor for vapor releases and prevent fires from potential methane ignition. In addition, procedures should be in place to provide adequate ventilation, particularly during construction activities involving confined spaces or trenching work, to prevent worker asphyxiation.

Underground Storage Tanks

Preconstruction planning and surveys to determine the existence of USTs and associated fuel lines would be essential. An area-wide plan to remove any non-operational USTs that are encountered during construction excavation would be prepared. Planning would include contracting contingencies for removal and disposal of USTs and any associated contaminated soil.

Spill Prevention

The Oil Pollution Prevention and Response regulations contained in 40 CFR 112 require facilities that store or use oil or oily materials in above-ground tanks or containers with aggregate capacity of 1,320 gallons or more to prepare and maintain a SPCC plan. WSDOT's Standard Specification #1-07.15(1) also requires contractors to prepare a project-specific SPCC plan prior to any construction activities. The SPCC plan would address procedures, equipment, and materials used in the event of a spill of contaminated soil, petroleum products, contaminated water, or other hazardous substances during construction adjacent to or over water. The SPCC plan would also specify procedures for notifications in the event of emergencies, inspection schedules for storage

of hazardous materials, the identification of migration pathways, and the provision of secondary containment and security for hazardous material storage areas.

What measures are proposed to avoid or minimize effects on hazardous materials sites after the project is built?

In the areas where sawdust fill material would remain, long-term methane monitoring (e.g., vault gas meters) and methane venting could be necessary. A methane gas scavenging recovery system could be designed for construction of structures and utilities over areas of wood waste landfill (e.g., lidded roadway).

The effects from runoff of contaminants entrained in stormwater can be mitigated by the proper design of stormwater and water quality treatment facilities. They should be designed to collect and retain pollutants from traffic operations.

The proposed project would affect properties that likely contain some hazardous materials and waste. While these sites can be managed and mitigation implemented, the sites cannot be avoided. The greatest contamination issue that would need to be dealt with would be to prevent the contamination from being released or migrating into a different area. Public and worker health issues, in addition to environmental contamination issues, would also be a concern. Furthermore, the mitigation and liability costs may be high. Additional characterization of soil and groundwater is recommended to provide more complete information to evaluate potential impacts to construction activities. By conducting all appropriate inquiries or Phase I environmental site assessments on property identified for acquisition, SDOT would minimize the potential liability associated with acquisition of contaminated properties.

3.5 Surface Water Quality

What methods were used to evaluate the project's effect on water quality?

Water quality analysts gathered information relating to existing conditions of surface waters from several sources, including WDOE, King County Department of Natural resources, City of Seattle, and existing water quality and stormwater reports. Information relating to the existing drainage system in the study area was obtained from the City's geographic information system (GIS), project base-mapping, King County project plans, City side sewer cards, and discussions with Seattle Public Utilities staff.

Surface water analyses consisted of collecting available surface water quality information applicable to the study area, characterizing existing drainage conditions and proposed changes as a result of the project, and assessing the resulting water quality effects on surface water resources. Information collected and reviewed included surface water requirements and existing water resources conditions from available literature, anecdotal information from field surveys, and photographs taken as part of the project's preliminary design.

Next, water quality analysts identified drainage basins that would be affected by the stormwater runoff from the proposed project. GIS data, United States Geological Survey (USGS) topographic maps, and project base mapping were used to evaluate the surrounding topography and identify drainage basins.

Analysts reviewed design drawings for the project to determine how the proposed project would change the amount of pollution-generating impervious surface in the study area, and the resulting construction and operational effects on water quality. They assessed construction effects on surface water quality by determining the project's potential to increase erosion and sedimentation above the existing conditions. Long-term or operational effects were assessed by estimating annual pollutant loads to the receiving waters for the proposed project and for the existing condition.

What are the regulations governing surface water in the study area?

The Federal Clean Water Act (CWA) of 1972 was established to clean up and protect the nation's rivers, streams, and lakes by establishing national water quality standards and requiring dischargers to control pollution. Stormwater regulations in 1992 required larger municipalities and WSDOT to obtain National Pollutant Discharge Elimination System (NPDES) Phase 1 permits. The permits address stormwater discharges and discharges associated with construction activities. The construction of the proposed project would require an NPDES construction stormwater

general permit because construction activities would disturb more than 1 acre of land and could result in potential discharge to Lake Union.

Stormwater in the study area is regulated by the current City of Seattle Municipal Code (SMC) Chapters 22.800 through 22.808 (Stormwater, Grading and Drainage Control Code). Also, portions of the project in WSDOT right-of-way are regulated by the Highway Runoff Program (WAC 270-173). Technical requirements for WSDOT were developed in the *Highway Runoff Manual* (HRM) (WSDOT 2006c). The SMC and HRM contain stormwater design requirements pertaining to stormwater detention and treatment.

Based on SMC, stormwater quality treatment is not required for portions of projects that discharge to the City's combined sewer system. However, based on SMC and HRM regulations, stormwater treatment would be required for portions of the project discharging to Lake Union.

What surface water resources are in the study area?

The study area is located in the Lake Washington /Cedar River Watershed. Lake Union is immediately north of the study area and is the only water resource that could be affected by the project. Lake Union is unique among the other major lakes in the Seattle area in that it is the most heavily urbanized and drains residential, commercial, and industrial neighborhoods. Its shores are almost entirely bordered by marinas, houseboats, commercial docks, and dry-docks.

Potential pollutant sources to the lake include streets, commercial and industrial neighborhoods, residential areas, and combined sewer overflows. The lake has received sanitary discharges in the past from houseboats, and ship and industrial discharge from businesses along the shore, as well as fuel spills and discharge from ships and onshore facilities. While pollution from many of these sources has been reduced, not all of these discharges have stopped. During certain peak storm events, combined sewer overflows (CSOs) still discharge some diluted sewage and stormwater into the Ship Canal and Lake Union. However, recent infrastructure improvements along the west and south sides of Lake Union by King County and the City of Seattle have been constructed to reduce CSOs to Lake Union and Elliot Bay.

Lake Union does not meet state surface water quality standards for lead, fecal coliform, and aldrin (a pesticide) and is included on the WDOE 2004 list of Section 303d impaired waters.

How is stormwater in the study area currently managed?

Most of the runoff from streets within the Mercer Corridor project limits is currently conveyed to the City's combined sewer system. The combined sewer system is a network of City stormwater

What are combined sewers (CS)?

Combined sewers carry sewage in the same pipe as stormwater. During normal storm events, the combined sewers convey sewage and stormwater to wastewater treatment plants, where the water is treated and discharged. During heavy rainfall, the combination of sewage and stormwater sometimes exceeds the capacity of the pipe and bypasses the wastewater treatment plant. When this occurs, the combined sewage and stormwater will overflow and discharge into a nearby lake or stream without being treated.

What is the Ecology 303(d) list?

The 303(d) list identifies surface water body segments (lakes, streams, and ponds) with degraded water quality. Ecology assembles available water quality data and publishes this list, as required under Section 303(d) of the federal Clean Water Act (40 CFR 130.7, as revised July 1, 2003).

collectors, which in turn flow to the King County sewer system and then to the West Point treatment plant to be discharged to Puget Sound.

Runoff from two small areas at the east and west ends of the project limits drain to Lake Union through two separate outfalls located at the end of Minor Avenue and Broad Street. Additional information regarding existing and proposed stormwater facilities can be found in the *Mercer Corridor Improvements Project 60% Basis of Design Report* (CH2M HILL 2007).

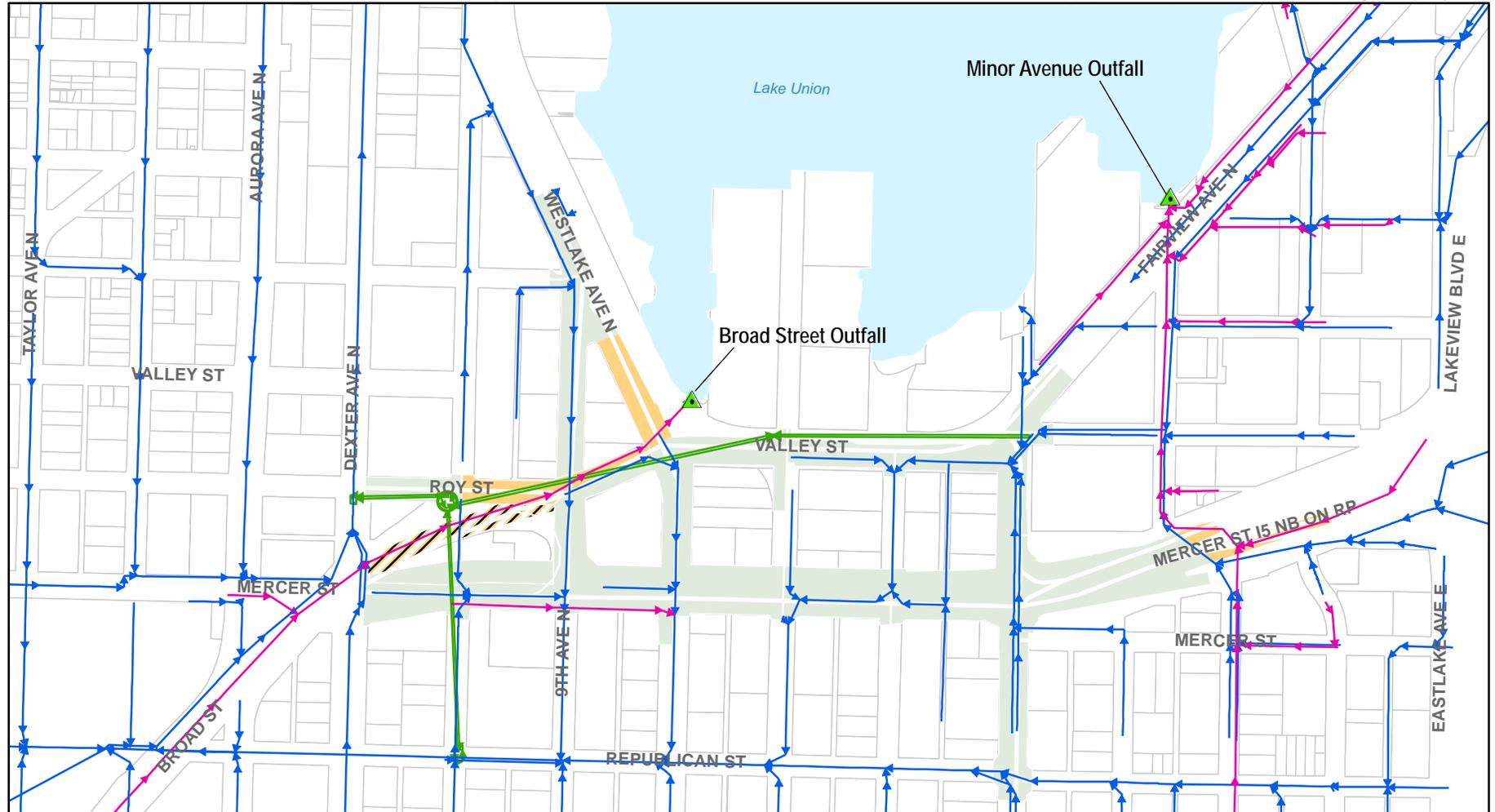
How will construction of the project affect surface water?

During construction, sediment from cleared and excavated areas and/or accidental spills of fuel, lubricants, and other construction-related hazardous material could cause these materials to enter local combined sewer systems or Lake Union. Sediment and pollutants entering the combined sewer system should not directly affect water quality because these flows are first treated before being discharged to Puget Sound. However, contaminants inadvertently entering Lake Union could adversely affect aquatic communities, although the volume of such a spill would likely be negligible barring a catastrophic event. Such construction-related effects could have an adverse effect on the aquatic environment in Lake Union if measures were not taken to prevent or minimize their occurrence.

How will the completed project affect surface water?

Stormwater runoff from the Mercer Corridor improvements would be directed to the same systems as it is today. After the project is completed, stormwater runoff from most of the street improvements would continue to discharge to the City combined sewer system, which flows to a regional treatment plant. Discharge rates to this system would be the same or less than current rates. Stormwater detention would be provided for these discharges as needed to satisfy the current City code to prevent increased flows to the downstream conveyance system. Portions of the project at the west and east ends of the project limits that discharge to Lake Union would not receive detention. Stormwater discharges to the lake do not require detention. However, stormwater discharges to the lake from the project would be treated to provide water quality improvements, as discussed below. Exhibit 3-12 shows portions of the proposed improvements draining to the combined sewer and to Lake Union, along with the existing conveyance systems.

The existing South Lake Union neighborhood has been extensively developed, with large amounts of impervious surface already within the project footprint. Although the proposed project would widen Mercer Street, the total amount of impervious surface would decrease because the project design includes a planted street median, sidewalk planting strips, and a narrowed Valley Street. Total impervious surface would decrease by 0.7 acre, compared to existing conditions.



Project Drainage Subbasins

- Drains to Combined Sewer
- Drains to Lake Union
- Removed Pavement

Drainage Features

- Outfall
- Storm Sewer
- Combined Sewer
- King County South Lake Union Pipeline



Exhibit 3-12
Drainage Basins and Features
 MERCER CORRIDOR
 IMPROVEMENTS PROJECT

For areas discharging to the combined sewer system, this reduction of impervious surface, and/or installing detention would benefit the existing system's capacity by reducing flow rates from the area. Reductions in flow rates from the proposed project to Lake Union and to the combined sewer system are anticipated because flow rates are directly proportional to changes in impervious surface areas. Reduced flows to the combined sewer system benefit the overall capacity of the system. The need for stormwater detention for discharges to the combined system to satisfy City code requirements will be evaluated during the design phase of the project.

For areas that drain to Lake Union, water quality effects are of greater concern than peak flow rates or volumes. Water quality analysts estimated annual pollutant loads to Lake Union from the existing and proposed project footprint. Three pollutants (total suspended solids [TSS], zinc, and copper) were estimated. Exhibit 3-13 presents estimated pollutant-generating impervious surface (PGIS) areas and pollutant loads for the No Action Alternative (existing) and the Build Alternative (developed). Overall, the proposed project would improve water quality with a net decrease in annual pollutant loading of TSS, zinc, and copper. Reductions in pollutant loads would be due to the inclusion of stormwater treatment for areas draining to Lake Union. The treatment best management practices (BMPs) are briefly described in the mitigation sections below.

What is pollution generating impervious surface (PGIS)?

PGIS is impervious surface that is considered a significant source of pollutants in stormwater runoff, including surfaces that receive direct rainfall (or run-on or blow-in of rainfall) and are subject to vehicular use, industrial activities, or storage of erodible or leachable materials, wastes, or chemicals.

EXHIBIT 3-13					
Summary of Pollutant Loads to Lake Union					
PGIS Areas (sf)		Pollutant Loads (pounds/yr) ^{a, b}			
Existing	Developed		Existing	Developed	% Change
95,700	118,200	TSS	1,415	636	-55%
		Zn	0.88	0.65	-26%
		Cu	0.18	0.13	-26%

^a Pollutant Yields from (WSDOT 2006a) Exhibit 431-4, Table 5. Maximum values for roads selected.
^b BMP effectivenesses assumed: 80% TSS; 50% Zn and Cu
TSS=total suspended solids, Zn= zinc, Cu = copper

What effects on water would occur if nothing were built?

Under the No Action Alternative, the City would continue current operations along the Mercer Street corridor and connecting streets, and there would be no change in impervious surface area in the project corridor. No change in overall water quality would likely occur.

Under the No Action Alternative, runoff from a portion of the study area would continue to be discharged untreated into Lake Union, and the benefits associated with constructing water quality improvements described above would not occur.

Other local road improvements and private development projects identified in Chapter 2 may trigger smaller-scale water quality and flow control improvements. Reductions of similar pollutants and flow rates in those locations may occur, depending on project size.

What measures are proposed to avoid or minimize effects on surface water during construction?

The Mercer Corridor Improvements Project must meet the erosion and sediment control requirements of the City drainage code as well as the state NPDES regulations. Therefore, the potential for erosion and transport of sediment away from the construction site should be minimized. A stormwater pollution prevention plan would be prepared following the requirements of the General Permit for Stormwater Discharges Associated with Construction Activities. The use of erosion control BMPs would reduce the erosion potential during project construction. The BMPs would include measures such as installing sediment-trapping devices, minimizing clearing, establishing construction access points, cleaning the streets, and conducting regular inspections of these practices. The general permit also requires the preparation of a SPCC plan for use during construction.

What are best management practices (BMPs)?

The structural devices, maintenance procedures, managerial practices, prohibitions of practices, and schedules of activities that are used singly or in combination to prevent or reduce detrimental impacts to stormwater, such as pollution of water, degradation of channels, damage to structures, and flooding.

The potential for erosion and sedimentation resulting from construction is related to construction phasing (i.e., the amount and location of excavation activity) instead of the overall amount of excavation. However, with proper use of BMPs, effects on surface water should be minimal.

What measures are proposed to avoid or minimize effects on surface water after the project is built?

The project would incorporate stormwater flow control facilities that meet City requirements where needed to prevent increases in flow rates to downstream conveyance systems. These facilities would likely consist of vaults or tanks constructed below the ground surface (due to limited space in built-out conditions). The vaults or tank would receive and store runoff from the street and release it more slowly so the discharges don't exceed existing flow rates.

Treatment BMPs meeting the requirements of the City's Stormwater, Grading and Drainage Control Code for facilities on city streets and the HRM (WSDOT 2006) for facilities in WSDOT right-of-way would be installed to mitigate the proposed project's water quality effects on Lake Union. The treatment BMPs would treat the stormwater through settlement, filtration, or other mechanisms.

Additional opportunities to mitigate stormwater runoff and water quality will be examined and considered during future design phases. These opportunities include supplemental storage/infiltration of stormwater in roadside depressions or planters or medians using amended soil, drain rock, and vegetation.

3.6 Land Use

What were the methods used to evaluate the project's effects on land use?

The land use analysis for the Mercer Corridor Improvements Project is based on a review of existing land use patterns and future development trends in the study area. The study area for land use is the South Lake Union neighborhood, which is roughly bounded by I-5 to the east, Aurora Avenue North to the west, Lake Union to the north, and Denny Way to the south. Direct land use effects would most likely occur on the blocks adjacent to Mercer and Valley streets between Fairview and Dexter avenues. Land use analysts conducted a field survey to confirm current land uses. They reviewed planning documents to identify future land uses, and evaluated the consistency of the proposed project with applicable state, county, and city land use plans and regulations. The proposed project alignment was overlaid on land use maps to identify the effects on land use, including the amounts and uses of land required for new right-of-way, temporary effects during construction, and the number of displacements.

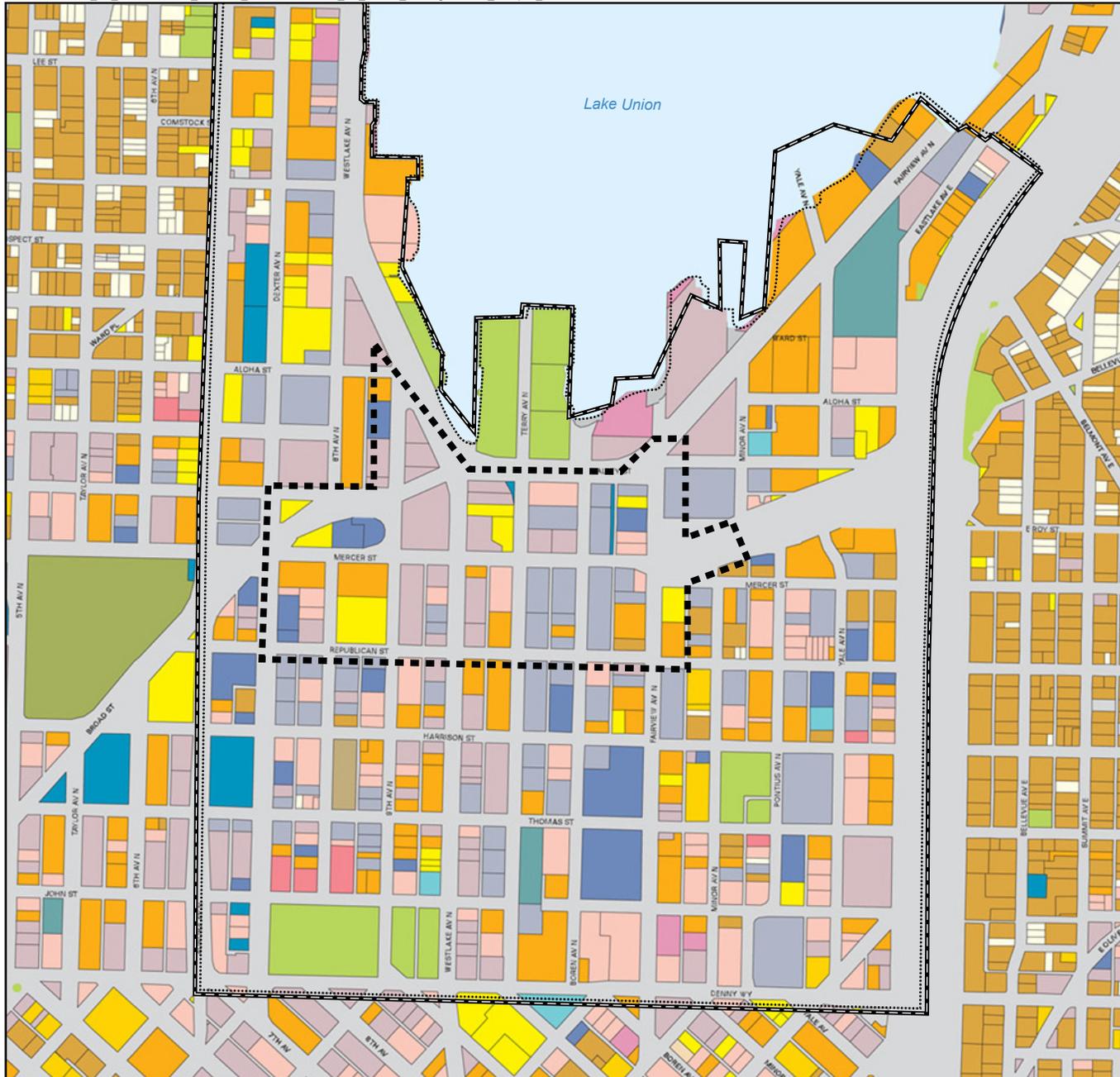
What are the existing land use characteristics of the study area?

The area affected by the proposed project is the South Lake Union neighborhood, located directly north of downtown Seattle. Existing land uses in this area include industrial, terminal/warehouses, retail/service businesses, office, parking lots, utilities, vacant, and open space (Exhibit 3-14). The Mercer Corridor links I-5 to the South Lake Union neighborhood and neighborhoods to the west and north, including Seattle Center. The South Lake Union neighborhood has experienced substantial redevelopment over the last 10 years, with an increasing number of biotech and high tech companies locating there. Redevelopment along the Mercer Street corridor has begun in the last few years, and efforts continue toward economic development in the South Lake Union neighborhood through several redevelopment projects planned along this corridor.

A residential component of the neighborhood, known as the Cascade neighborhood, existed until the 1960s when many residential structures were torn down for construction of I-5. A small portion of this residential area still exists within the South Lake Union neighborhood, located east and south of the project limits.

What are the land use plans and objectives for the study area?

In Spring 2003, the City of Seattle launched the South Lake Union Action Agenda, which identified infrastructure and neighborhood improvements to support economic development and housing goals in the neighborhood.



LEGEND

- Single Family
 - Multi-Family
 - Other Housing
 - Agriculture
 - Office
 - Retail/Service
 - Church
 - Recreation/Entertainment
 - Mixed Use
 - Parking
 - Industrial
 - Terminal/Warehouse
 - Utility
 - Government Service
 - Public Facilities
 - School/Daycare
 - Open Space
 - Vacant
 - Park/Playground
 - Unknown/Unavailable
 - Other
 - Waterbody
- Project Limits
 - South Lake Union Planning Area Boundary
 - Urban Village/Center Boundary

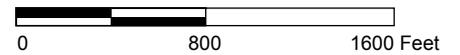


Exhibit 3-14
Existing Land Use
 MERCER CORRIDOR
 IMPROVEMENTS PROJECT

The City of Seattle's Comprehensive Plan designated South Lake Union as an urban center in 2004, as part of the City's urban village strategy. This designation means that residential and economic growth will be focused here in future years. For the South Lake Union neighborhood, the designation of urban center will guide a shift from light industrial and commercial land uses to more mixed residential and commercial development, along with professional offices and research facilities. A future focal point for the neighborhood will be South Lake Union Park, a 12-acre park under development to provide green space for local residents and to celebrate the area's maritime history.

The City has subsequently approved the land use code amendments needed to accommodate the unique characteristics of research and development laboratories planned for the area as well as to encourage mixed-use development in the South Lake Union neighborhood.

Is the project consistent with the land use plans and objectives for the study area?

The proposed project is consistent with all state, county, and local land use and transportation plans.

Vision 2020/Destination 2030

The Mercer Corridor Improvements Project is consistent with regional transportation strategies because it would aid in redeveloping a low-density, auto-dominated neighborhood into a high-density urban center and by redeveloping an urban transportation corridor to provide multimodal access. Other modes of transportation would be encouraged within the corridor through incorporation of new bicycle lanes and wider sidewalks. The proposed two-way Mercer Street would improve traffic circulation, which would improve transit reliability.

King County Comprehensive Plan/King County Countywide Planning Policies

The proposed project is consistent with the *King County Comprehensive Plan* and Countywide Planning Policies by promoting growth within a designated urban center and improving accessibility for pedestrians and bicyclists. The proposed project would improve travel conditions for drivers, pedestrians, and bicyclists in the South Lake Union neighborhood and would further the goals of the *King County Comprehensive Plan* by concentrating growth and encouraging transportation options.

Seattle Comprehensive Plan

The proposed project is consistent with *Seattle's Comprehensive Plan* because it would improve travel conditions within and through an urban center for all forms of transportation and would promote development of the South Lake Union urban center. The proposed project would improve east-west travel conditions between Seattle's two primary north-south thoroughfares, I-5 and SR 99, thereby improving access to neighborhoods and facilities in these areas. The proposed narrowing of Valley Street to

two lanes with bicycle lanes and sidewalks is compatible with planned improvements in South Lake Union Park. The proposed project would:

- Promote development of the South Lake Union urban center
- Promote enhancement and use of South Lake Union Park
- Provide safe and attractive facilities for pedestrians and bicyclists
- Provide connections for bicyclists to bicycle lanes on Dexter Avenue to the west and proposed bicycle facilities on Fairview Avenue to the east
- Promote efficient freight and goods movement to South Lake Union and other neighborhoods west of I-5

South Lake Union Neighborhood Plan

The proposed project is consistent with the South Lake Union Neighborhood Plan, which was updated in July 2006 to meet requirements for Urban Center plans under the Countywide Planning Policies. The proposed project would incorporate streetscape elements such as wider sidewalks, trees and planters, and pedestrian furniture. Pedestrian crossings would be improved at the intersection of Terry Street with both Valley and Mercer streets, and the intersections of Valley Street with Fairview, Boren, and Westlake avenues. This is consistent with the updated Neighborhood Plan's general emphasis on safe pedestrian crossings and draft Strategy 18, which calls for "improving non-motorized connections across Mercer and Valley Streets to South Lake Union Park."

South Lake Union Transportation Study

The proposed project is a direct implementation of the Two-Way Mercer and Narrow Valley Alternative as recommended in the *South Lake Union Transportation Study* and is therefore consistent with the goals and strategies set forth in this study.

South Lake Union Neighborhood Design Guidelines

The proposed project is consistent with the *South Lake Union Neighborhood Design Guidelines*. New designs for both Mercer and Valley streets would make them more pedestrian-friendly, with sidewalk widths ranging from 15 to 21 feet and planters and benches separating pedestrians from traffic. The boulevard look of Mercer Street and the narrowed Valley Street would accommodate future development of the intersections of these streets with Fairview Avenue into gateways, and the narrowed Valley Street would promote the designation of South Lake Union Park as a "heart location." Connectivity for all modes of transportation would be improved.

A heart location serves as the center of commercial and social activity within the neighborhood.

South Lake Union Park Master Plan

Proposed improvements to Valley Street together with the improvements on Mercer Street and the other proposed improvements are consistent

with plans for the development of South Lake Union Park. The addition of sidewalks with landscaping and benches on the north side of Valley Street would complement the park design. These improvements, along with less through traffic, new bicycle lanes on Valley Street, and the South Lake Union street car, would encourage nonmotorized access to the park.

City of Seattle Municipal Code

The proposed project would be consistent with Seattle zoning regulations and the Shoreline Master Program. Projects that are consistent with the City's Shoreline Master Program are typically also found to be consistent with Washington's Coastal Zone Management Program. A portion of the Mercer Corridor Improvements Project would be located within 200 feet of the Lake Union shoreline and within the Urban Stable shoreline designation, which would require a Shoreline Substantial Development Permit. The only work within this area would be improvements to the existing Westlake Avenue-Valley Street intersection and portions of these roads, which would not alter the general land use. No new roadways are proposed within the Shoreline District. The improvements to Valley Street would reduce (narrow) the footprint of the existing roadway.

Sections of Westlake Avenue and Valley Street are within a designated Environmentally Critical Area, as defined by SMC 25.09. Westlake Avenue and Valley Street are within a potential liquefaction zone, which is geologically hazardous and indicates that the soil is prone to losing substantial strength during earthquakes. This project, however, would not change the land use in this critical area or develop any new structures that may be affected by this designation.

Will project construction affect existing land use characteristics?

Project construction would take approximately 2.5 years. The City would purchase a temporary construction easement for contractor staging through the right-of-way process. This temporary construction staging site may require a land use approval from the City. Potential uses of the site would be for storage of materials, equipment, and field offices. The tentative location is the block between Terry and Boren avenues, north of Mercer Street. SDOT will comply with local regulations regarding construction activities, as stipulated in the Seattle City Code.

Land use impacts during construction could include a temporary disruption in retail/service, terminal/warehouse, industrial, and parking land use activities caused by lane closures, local traffic congestion, dust, noise, and construction lighting. Construction activities would temporarily affect vehicle and pedestrian access to, and parking for, land uses in the construction area. Although access to these uses via Mercer and Valley streets would be affected during temporary lane closures, these land uses would be accessible via side streets throughout the project construction period. Construction activities may cause drivers and pedestrians to temporarily avoid the study area.

Construction would initially occur entirely on the north side of Mercer Street, where some properties would be acquired and buildings demolished for the new street right-of-way. During construction, traffic on Mercer Street would operate as it does today on the south side of the road with three lanes in the eastbound direction, and therefore land uses located on the south side of the street would not be affected. Once the north section of the project is completed, traffic would be diverted to the newly constructed lanes, and the south section of the road (the existing Mercer Street) would be reconstructed. One retail business (Far Fetched Importers) would likely require temporary closure. The remaining property owners would be able to continue to use their land for its existing or planned land uses during project construction.

Valley Street would be constructed last; local access to businesses and South Lake Union Park would be provided. No temporary relocations on Valley Street or changes in current and planned use would result from construction.

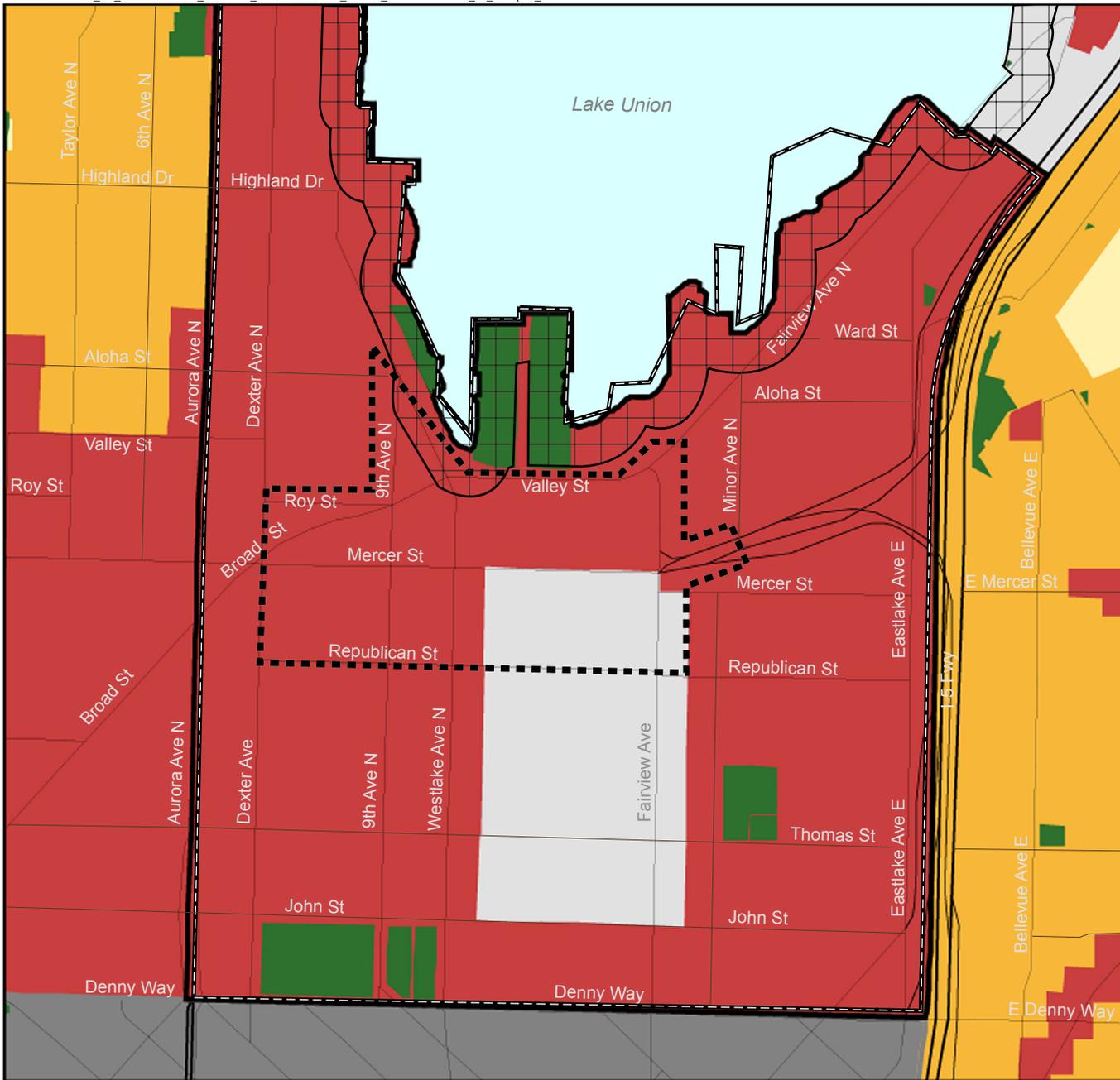
Access would be maintained to land uses beyond the project limits during project construction, and the ability of owners to use their property for existing or planned uses would not be affected.

Will the completed project affect existing land use characteristics?

The proposed project, as well as the other planned transportation and development projects listed, would be consistent with the City's policies to coordinate transportation and development in order to concentrate and intensify urban development. In accordance with regional and local plans and policies, these projects would provide mobility and access options that could accommodate higher densities and reduce land consumption. As such, localized effects on adjacent land uses within the Seattle Mixed and Commercial/Mixed Use zones would occur.

Some land use within the project corridor would be permanently converted from the existing mix of retail, office, and warehouses to transportation uses due to right-of-way acquisitions. The proposed project would require acquisition of 107,100 square feet from 13 properties, with 5 permanent business relocations. Most of the property would come from retail uses and vacant properties on the north side of Mercer Street. One of the properties, the McKay Pacific Building at 601 Westlake Avenue North, is a Section 4(f) property (see Chapter 6, Section 4(f) Evaluation, for a detailed analysis). The proposed project does not require the use of any land from parks and recreation facilities and would not result in any negative effects. No residential structures or residential units in mixed use structures would be displaced as a result of the project, so there would be no direct changes in residential land uses.

Affected properties are within the Seattle Mixed and Industrial-Commercial zones, and their redevelopment potential would increase with the proposed project. These land use changes would be consistent with adopted state and local land use plans and policies (Exhibit 3-15).



LEGEND

-  Project Limits
-  South Lake Union Planning Area Boundary
-  Urban Village/Center Boundary
-  Urban Stable Shoreline Designation
-  City-Owned Open Space
-  Single Family Residential Areas
-  Multi-Family Residential Areas
-  Commercial / Mixed Use Areas
-  Downtown Areas
-  Industrial Areas

Source: City of Seattle
Comprehensive Plan,
Future Land Use Map

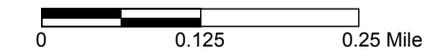


Exhibit 3-15
Future Land Use
MERCER CORRIDOR
IMPROVEMENTS PROJECT

Affected parcels that are not completely utilized would either continue to be used for their current use or be redeveloped into a land use compatible with existing zoning and land use plans for the South Lake Union neighborhood.

Water, combined stormwater/sewer, gas, telecommunications (including fiber optic), and natural gas utility mains are all currently buried within the project right-of-way. Electrical and telecommunication (including fiber optic) lines are present above ground within the project right-of-way. A joint or multiple use of right-of-way would occur because it is likely that all above-ground lines would be moved underground.

The proposed project would improve mobility for vehicles, pedestrians, and bicyclists, and provide better connectivity among neighborhoods, businesses, and public places. These improvements would support land use plans for the South Lake Union neighborhood that promote higher residential densities, increased access to parks and open spaces, and increased transportation options. Improved visual quality resulting from proposed landscaping and context sensitive design would further attract mixed use, commercial, and industrial development planned for the neighborhood. The project itself would not result in any unplanned land use changes nor result in a distribution of development that would create a burden among governing agencies or between cities and suburbs. In addition, there would be no land use changes caused by changes in noise, air, or water resources.

What effects on land use would occur if nothing were built?

The No Action Alternative would not result in any changes to the existing land use within the South Lake Union neighborhood. Redevelopment of the South Lake Union neighborhood would still likely occur as planned; however, some businesses may be less likely to relocate into this area due to traffic congestion and limited pedestrian mobility. Access to South Lake Union Park would not improve, and as the park develops, pedestrian and bike access would continue to be a challenge and would inhibit use of the park by some users. This alternative would not be consistent with the *South Lake Union Neighborhood Plan*, the *South Lake Union Transportation Study*, *Vision 2020*, or other City and regional plans.

What measures are proposed to avoid or minimize effects on land use during construction?

During construction, the City will work with business groups, neighborhood associations, and property owners to minimize short-term construction-related impacts to property owners. Affected parties will be notified of any planned closures or service disruptions. Impacts will be kept to a minimum by scheduling lane closures outside of the peak travel demand periods, such as during the commute hours and Seattle Center special events. Construction activities will be coordinated with other projects and services within the study area, such as Metro Transit, to avoid conflicts.

What measures are proposed to avoid or minimize effects on land use after the project is built?

The proposed project is consistent with all state, county, and local land use and transportation plans. Compensation and relocation mitigation will be provided as needed to affected property owners in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended in 1987.

3.7 Social

What methods were used to evaluate the project's effect on the social environment?

The analysts evaluated the effects of the Mercer Corridor Improvement Project, both positive and negative, on the social elements of the surrounding area. This section includes an analysis of community cohesion; population and demographics; public services and utilities; recreation; pedestrian, bicycle, and transit facilities; and noise effects on social elements. Methods used for the social analysis included a site visit, contacting service providers, informally surveying local businesses, reviewing planning documents and project discipline reports, and reviewing data from the U.S. Census Bureau and the Puget Sound Regional Council (PSRC).

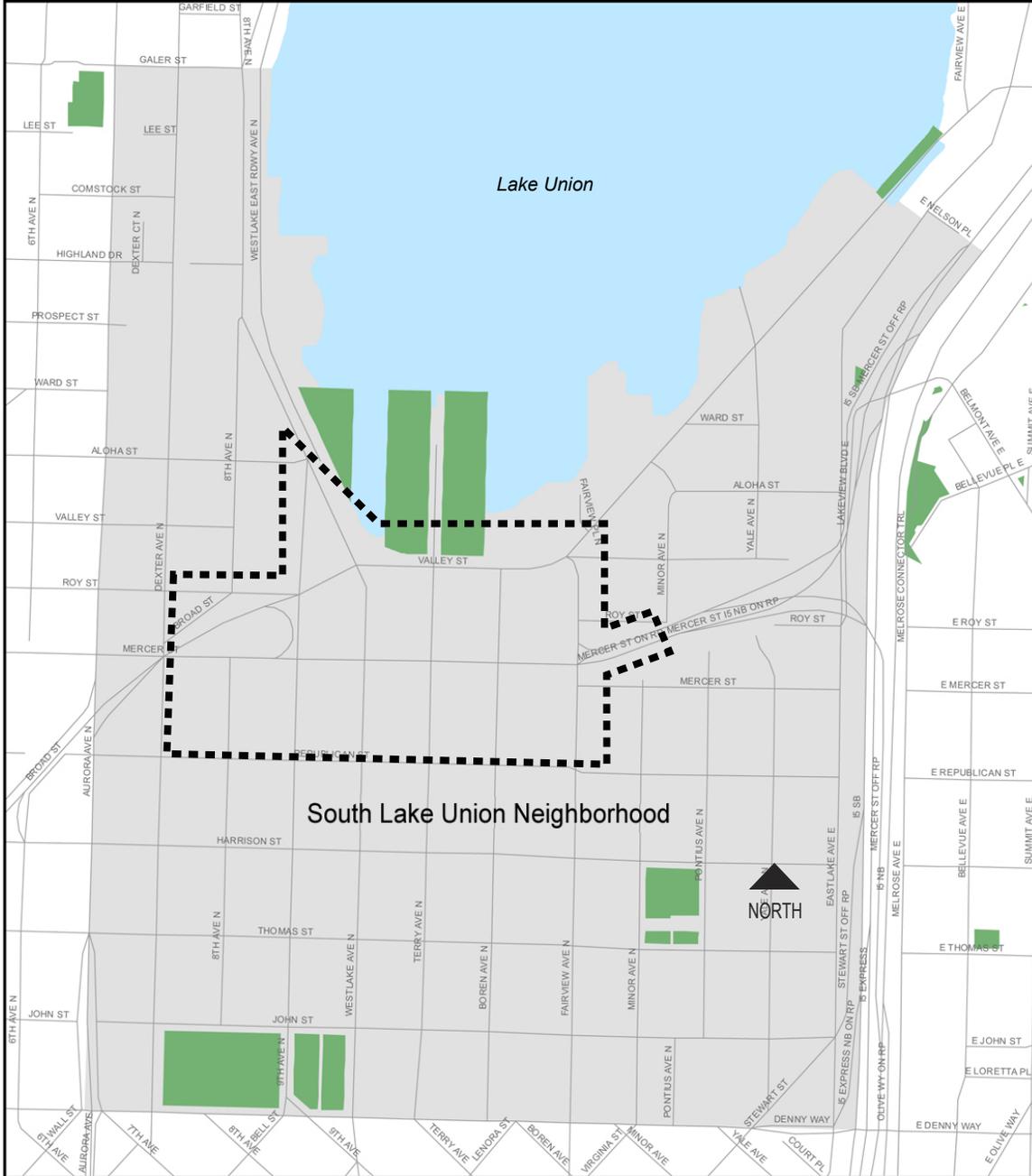
What are the general population characteristics in the study area?

The entire South Lake Union neighborhood has a population of 1,290. Population and demographic characteristics for Seattle and the South Lake Union neighborhood are shown in Exhibit 3-16. The study area has a lower percentage of minorities than the city of Seattle as a whole, and the majority of the residents in the study area speak at least some English. Exhibits 3-17 and 3-18 show the percentage of individuals living in the block groups reported by the 2000 U.S. Census to have limited English proficiency. The household median income in the study area is \$25,561, considerably less than the Seattle median of \$45,736. The average household size of the study area is 1.31; the Seattle average household size is 2.08.

What are the housing characteristics in the study area?

The study area has no residential properties that are owner-occupied; according to the 2000 Census, all the residences in the South Lake Union neighborhood are rental properties. For a complete discussion of the household and community characteristics, refer to the *Social Discipline Report*.

Residential uses have been increasing in the South Lake Union neighborhood over the past few years and are forecasted to continue to grow as the neighborhood is revitalized. The South Lake Union neighborhood has been designated as an urban center in the 2004 *City of Seattle Comprehensive Plan – 10-Year Update*. The South Lake Union Urban Center is projected to experience substantial growth in the next 20 years, including 16,000 jobs and 8,000 households. The neighborhood is projected to grow to a population of over 25,000 residents by 2030. Between 2000 and 2030, nearly 17 percent of the growth in the city of Seattle's population is forecasted to occur in the South Lake Union neighborhood.



1,290 (Total Population – South Lake Union)

- 897 White
- 226 African American
- 30 American Indian
- 59 Asian
- 3 Native Hawaiian /Pacific Islander
- 75 Other^a
- 71 Hispanic

Average Household Size:	1.31
Over 65:	108
Median Age:	31.8
Median Household Income:	\$25,561
Median House Value:	\$0 ^b
Population 5 and Older with a Disability:	331

Limited English-Speaking Households^c

Total Households: 723
Speaks Some English: 618
Limited English:
Spanish: 0
Indo-European: 0
Asian, Pacific Island: 13
Other Language: 10

Commute Mode

Drive alone: 275	Carpool: 80
	Bus: 91
	Motorcycle: 7
	Bicycle: 20
	Walk: 178
	Work at home: 8
	Other: 7

Sources: U.S. Census (2000), PSRC (2003, 2004).

Notes:

- ^a Includes two or more races.
- ^b No owner-occupied housing units in the South Lake Union neighborhood
- ^c A household with limited English-speaking abilities has all members 14 and over having at least some difficulty with English.

LEGEND

-  Project Limits
-  Park/Recreation Facility

Exhibit 3-16
Population and Demographic Information - South Lake Union Neighborhood
 MERCER CORRIDOR IMPROVEMENTS PROJECT



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Percent of Census Block Group population

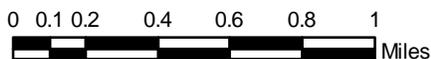
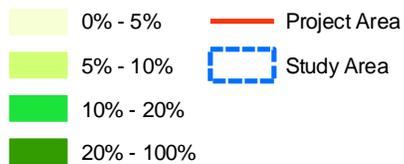


Exhibit 3-17

**Limited English Proficiency
Population by Census Block Group**
MERCER CORRIDOR
IMPROVEMENTS PROJECT

EXHIBIT 3-18 Populations with Limited English Proficiency in the Study Area												
Block Group ID	Per-cent Minor-ity	Per-cent Low-In-come	Total Popula-tion over 5 years	Limited English Profi-cency (percent)	Speak Spanish		Speak other Indo-European languages		Speak Asian and Pacific Island languages		Speak other languages	
					Total	Percent	Total	Percent	Total	Percent	Total	Percent
43	37.9	25.9	869	8.9	54	6.2	18	2.1	39	4.5	68	7.8
59	22.6	7.6	738	9.1	76	10.3	15	2.0	43	5.8	0	0.0

Source: U.S. Census, 2000.

Refer to the *Economics Discipline Report* for a complete discussion of population, housing, and employment growth estimates for the South Lake Union neighborhood and Seattle.

What are the community focal points within the study area?

The South Lake Union neighborhood is predominantly renter-occupied, which often indicates an area of low community cohesion. However, the majority of the study area residents are located within the Cascade community, an area within the South Lake Union neighborhood that includes a P-patch community garden, a neighborhood park, and social programs for the neighborhood residents. Other areas of the South Lake Union neighborhood (including the Mercer Corridor Improvements Project limits) generally lack a sense of community because they have relatively few residents, inadequate pedestrian and bicycle facilities, and few businesses and community facilities that promote social interaction. The following section describes the parks and recreational facilities, primary business destinations, and pedestrian, bicycle, and transit facilities that are located within the South Lake Union neighborhood.

Community/neighborhood cohesion refers to the ability of people to communicate and interact with each other in ways that lead to a sense of community as reflected in the neighborhood's ability to function and be recognized as a singular unit.

Parks and Recreational Facilities

Seattle Parks and Recreation (City of Seattle 2005a) owns and operates three park and recreational facilities within the study area (Exhibit 3-19):

- **South Lake Union Park** located at 860 Terry Avenue North. The park has 12 acres and includes paths and picnic tables. The park is also the location of the Naval Reserve Building, now owned by the City of Seattle. The building is part of an old U.S. Navy Base and includes indoor basketball courts and rooms that can be rented out. Seattle Parks and Recreation has plans to make major improvements to the park in the near future.
- **Cascade Playground** located at 333 Pontius Avenue North. The playground includes two play areas, a wide field, restrooms, paths, and a picnic table. Adjacent to the playground is a community P-patch. P-patches are located throughout the city and are community garden space for the surrounding residents. The Cascade P-Patch was established in 1996 and has 38 plots that are available for local resident use.



LEGEND

-  South Lake Union Neighborhood
-  Church
-  School
-  Medical Facilities
-  P-Patch
-  Park
-  Project Limits
-  Private Recreation Facilities



Exhibit 3-19
Social and Public Facilities
 MERCER CORRIDOR
 IMPROVEMENTS PROJECT

- **Denny Park** located at 100 Dexter Avenue North. The park is the location of the Administrative Building for Seattle Parks and Recreation and also includes paths and benches.

In addition to the facilities operated by the City, two privately operated recreation facilities are open to the public within the study area:

- **The Center for Wooden Boats** located at 1011 Valley Street. The Center for Wooden Boats is a privately funded organization that provides boat rentals as well as classes on learning to sail and restoring wooden boats. The Center is also a museum with over 100 boats on display.
- **Denny Playfield** located at 100 Westlake Avenue North. The playfield includes basketball courts and playfields.

Each of these City-owned and private facilities is accessible by private vehicle, walking, bicycles, and transit. The South Lake Union Park and the Center for Wooden Boats are immediately adjacent to the project limits.

The Mercer Corridor Improvements Project does not require the taking of any land from the parks and recreation facilities and would not result in any negative effects. Because of the lack of negative effects on parklands, evaluation of parkland effects under U.S Department of Transportation Act Section 4(f) is not applicable. However, a Section 4(f) Evaluation has been prepared for a historic structure in the study area. Because there were no affected parklands funded or improved with LWCF grants within the study area, U.S Department of Transportation Act Section 6(f) requirements are not applicable.

Primary Business Destinations

The following businesses are primary destinations for people traveling within or to the South Lake Union neighborhood:

- **Fred Hutchinson Cancer Research Center** located at 1100 Fairview Avenue North. The center is an independent, non-profit biomedical research institution and is one of the world's leading cancer research institutes. Its campus occupies 14 acres within the South Lake Union neighborhood.
- **UW Medical Center** located at 815 Mercer Avenue North. The South Lake Union Campus UW Medical Center occupies the "Blue Flame" building (the former home of Washington Natural Gas), and houses four floors of biotechnology and medical research laboratories. Expansion of the current facility is underway with one new building under construction and a second planned for construction.
- **Lakeside businesses** located along the Lake Union shoreline, including several restaurants, serve as focal points within the neighborhood.

Pedestrian, Bicycle, and Transit Facilities

Sidewalks and crosswalks are present in most of the study area. South of Mercer Street, pedestrian travel is easiest because this area has been redeveloped with improved sidewalks that meet City standards. Mercer and Valley streets contain a number of barriers to pedestrian and bicycle travel, including limited crossings between Fairview Avenue and Dexter Avenue. Mercer Street and Valley Street can be difficult to cross, making access to the South Lake Union Park and the waterfront difficult for the residents in the surrounding neighborhood. Poor pedestrian facilities are present throughout the project limits and include facilities that are non-compliant with the Americans with Disabilities Act (ADA); some have rough surfaces, and some have narrow sidewalk widths. The shared-use trail along the north side of Valley Street is in poor condition and lacks continuity. The *South Lake Union Neighborhood Plan* (City of Seattle 1998) identifies the need to improve pedestrian and bicyclist facilities in the study area, especially in the study area and the immediate vicinity.

The existing infrastructure system does not allow for easy access to the facilities within the study area, or circulation between the South Lake Union neighborhood and other Seattle neighborhoods. Aurora Avenue North and I-5 present obstacles for those within the neighborhood as these roadways limit connections with the neighborhoods to the west and east. Heavy traffic volumes on Mercer and Valley streets, combined with the limited number of safe pedestrian crossings and sidewalks, do not allow easy access for residents to the Lake Union waterfront area.

Only one roadway corridor within the South Lake Union Neighborhood includes bicycle facilities. Dexter Avenue North provides the only exclusive bicycle lanes. The limits of the lanes are from the Fremont Bridge to Denny Way.

Transit is provided on each of the north/south arterial streets in the study area. Routes on these streets include 17, 26, 28, and 70. Both Sound Transit and King County Metro buses serve the Fairview, Westlake/Ninth, Dexter, and Aurora Avenue corridors. Coverage in the east/west directions is sparse. Metro Route 74 provides the only local service to the study area; it travels west of Westlake Avenue North, along Mercer Street and Broad Street. Some of the roadways within the study area are used for transit layovers. The South Lake Union Streetcar is a 1.3-mile streetcar line connecting the South Lake Union neighborhood to Downtown Seattle. Construction of the line began in summer 2006 and it began operation in late 2007.

What public services and utilities are located in the study area?

Public services and utilities within the study area are provided by a mix of local, regional, public, and private entities. Locations of public services are presented in Exhibit 3-19 and listed below. There are no schools, cemeteries, government institutions, social institutions, or hospitals or medical clinics in the project limits.

Fire and Emergency Medical

Fire and emergency medical services in the study area are provided by the Seattle Fire Department. The Fire Department employs over 1,000 personnel within 33 stations throughout the city (City of Seattle 2005b). There are no fire stations located within the study area; the closest station is Station No. 2, which is located at 2334 Fourth Avenue. Emergency service is generally dispatched from the station nearest the call site, although other stations may also respond. The Fire Department has a goal to maintain a response time of 4 minutes or less to 90 percent of all fire and emergency medical calls. The Seattle Fire Department has three fireboats, two moored in Elliott Bay and the other at Fisherman's Terminal in Ballard. The boat moored at Fisherman's Terminal would respond to calls in the Lake Union area.

Harborview Medical Center, at 325 Ninth Avenue, is the Level 1 Trauma facility for the region and headquarters for the Seattle Fire Department's Medic One program. Medic One units respond to all fires, hazardous materials calls, and rescue calls within the study area.

Police

The following law enforcement agencies would respond to calls in the study area, although neither of these agencies has a station located in the study area:

- The Seattle Police Department provides law enforcement and responds to 911 emergency calls in Seattle. The Seattle Police Department has 409 sworn officers and is divided into five precincts (City of Seattle 2005c). The West Precinct station at 810 Virginia Street would respond to calls in the study area. The Harbor Unit facility of the Seattle Police Department is located on the north shore of Lake Union and responds to calls along the shoreline of Lake Union.
- District #2 of the Washington State Patrol responds to accidents on I-5 and its on-ramps, off-ramps, and interchanges. The Seattle North detachment of the Washington State Patrol is located at 811 East Roanoke.

Utilities

Exhibit 3-20 lists the utility and communications service providers in the study area.

How will the project affect community cohesion in the study area?

The redesign of Mercer and Valley streets would reduce the disruption to community cohesiveness caused by the existing Mercer/Valley streets couplet. The proposed project would positively affect the quality of life for the residents in the study area by making it easier and safer to circulate within the neighborhood and access South Lake Union Park. The project would not displace or negatively affect access to community facilities.

There would be no substantial increase in noise effects on residential or commercial properties that would detract from the character and enjoyment of the neighborhood (refer to Section 3.2 of this Environmental Assessment).

EXHIBIT 3-20 Utility and Service Providers		
Company/Agency	Service Provided	Description
Seattle Public Utilities	Water	Distribution lines with service provided to the entire study area
	Sewer	Collection lines with service provided to the entire study area
	Solid waste/recycle	Collection services provided within entire study area
Seattle City Light	Electricity	Distribution throughout the study area, both overhead and underground
Puget Sound Energy	Natural gas	Underground distribution lines, located within the study area
Qwest	Telecommunications	Overhead and underground lines, with service provided to the entire study area
Comcast	Cable/Internet	Combination of overhead and underground cable and co-axial distribution lines through the study area
Millennium Digital Media	Cable/Internet	Cable and co-axial distribution lines through the study area
Source: City of Seattle Comprehensive Plan, 2004; SvR, 2005		

The proposed project would not require the acquisition of any residential properties for new right-of-way, but would require the relocation of 5 businesses along Mercer Street. None of these relocated businesses, however, has a unique community value, such as a halal butcher or a Spanish-language pre-school. Refer to the *Mercer Corridor Improvements Project Economics Discipline Report* and *Relocation Discipline Report* for a complete discussion of business displacements.

The proposed narrowing of Valley Street to two lanes with bicycle and pedestrian facilities would integrate the neighborhood with South Lake Union Park and contribute to the character of a livable, walkable neighborhood. Streetscaping along Valley Street is being designed to enhance this integration. The addition of planted medians and wide sidewalks along Mercer Street would make the corridor more visually appealing to those who live in the surrounding area.

How will the project affect recreational resources in the study area?

The proposed project would benefit the Lake Union waterfront by offering better bicycle and pedestrian access to South Lake Union Park and the Center for Wooden Boats. Access to those resources from outside of the area would remain similar to current conditions. From the east, access to Valley Street would still be from Fairview Avenue North, and

from the west, access to Valley Street would be from Mercer Street, Westlake Avenue North, or Roy Street because Broad Street would be removed as part of the Alaskan Way Viaduct and Seawall Replacement Project. Vehicular traffic on the narrowed Valley Street would be reduced, which would reduce noise and potentially improve air quality for users of these facilities.

The Mercer Corridor Improvements Project does not require the taking of any land from the parks and recreation facilities and would not result in any negative effects. As a result, Section 4(f) and Section 6(f) are not applicable. However, a Section 4(f) Evaluation has been prepared for a historic structure (see Chapter 6).

How will the project affect population growth in the study area?

Seattle's Comprehensive Plan identifies growth targets of 16,000 new jobs and 8,000 new households for the South Lake Union Urban Center. Elimination of the circuitous travel associated with the Mercer/Valley Street couplet would have the direct effect of improved mobility within the neighborhood, which would facilitate planned growth in the Urban Center.

The proposed project would require the permanent relocation of 5 businesses. The effects on regional and community growth would be minimal. Any loss of business resulting from relocations would not substantially affect overall employment levels in the study area or the growth of the area.

How will the project affect services in the study area?

The proposed project would not result in any negative effects on any schools, churches, or hospitals located within the study area. The proposed project would not change the delivery of services within the study area and would not displace any services or create any impediments to reaching any of the services. Additionally, the proposed project would not affect any of the utility providers in the study area. The project is anticipated to improve circulation within the neighborhood. There may be a slight increase in response times in the eastbound and westbound directions on Mercer Street for emergency and other service vehicles. The addition of the bike lane and street parking along Valley Street would provide adequate space to allow vehicles to pull over to allow emergency service vehicles access through the corridor.

How will the project affect pedestrians, bicycles, and transit in the study area?

The proposed project would be a benefit to pedestrians and bicyclists. Sidewalks that are currently in poor condition would be replaced. The wider sidewalks and additional signalized street crossings proposed as part of this project would make the area safer for pedestrians and improve

pedestrian access and circulation. Plantings along the sidewalks and in the medians would make the neighborhood a more pleasant place to walk.

The proposed bicycle lane on Valley Street would improve safety for bicyclists. It would provide a new east-west bicycle route in the neighborhood and, because it would connect with bicycle lanes on Dexter Avenue, would provide a safer route for bicycle commuters from other neighborhoods.

No changes to transit service are proposed as part of this project. However, a two-way Mercer Street would provide an opportunity for improved east-west transit service in the study area. Refer to the *Transportation Discipline Report* for a complete discussion of transit service during operation.

How will this project affect minority and low-income populations?

SDOT conducted numerous public outreach efforts to the South Lake Union community. Analysts also examined the demographics of the study area and concluded that the Mercer Corridor Improvements Project would not have a disproportionately high and adverse effect on minority or low-income populations, or resources that are especially important to them. The project would not result in any residential displacements. The businesses that would be displaced do not employ a high proportion of minorities. No resources that primarily serve minority or low-income populations would be affected. The details of this analysis can be found in the *Mercer Corridor Improvements Project Environmental Justice Discipline Report* in Appendix C.

The proposed project would benefit the general traveling public, including minority and low-income individuals, by:

- Improving local safety, access, and circulation within South Lake Union for motor vehicles, bicycles, and pedestrians.
- Providing for more direct movement of traffic and freight through the corridor.
- Supporting transit use through convenient pedestrian access and a street network that allows east-west transit service.
- Creating a quiet, pedestrian-friendly Valley Street to connect the neighborhood to South Lake Union Park.
- Supporting the City's economic development and livability goals for South Lake Union.

What social effects would occur if nothing were built?

With the No Action Alternative, the South Lake Union neighborhood population is still anticipated to grow at the projected rate. The South Lake Union Park improvements would still be constructed. However, the No Action Alternative would not allow South Lake Union Park to achieve

its full potential due to existing circuitous traffic patterns and lack of safe access. Without the proposed bike lanes, sidewalk improvements, and pedestrian crossings, pedestrian and bicycle travel would continue to be difficult within and through the neighborhood.

Traffic congestion in the Mercer Corridor would likely increase, causing delays in the movement of persons and goods through the area. Greater congestion would increase the travel and response times of fire, emergency medical, and police service providers, and school buses.

What measures are proposed to avoid or minimize effects during construction?

The proposed project would include a number of measures to avoid or minimize the negative effects of construction on the area surrounding the project, including:

- Providing contact information (via the project website and newsletters) to allow area residents to voice concerns or receive information about the project by telephone, fax, or Internet. Informational materials will have text in Spanish on how to obtain project information in Spanish.
- Minimizing temporary road closures and ensuring that detour routes are well signed. Pedestrian detours will be ADA-compliant.
- Providing residents and local businesses advance notification of the project schedule, potential detours, and changes in any of the pedestrian, bicyclist, or transit routes.
- Coordinating construction schedules with South Lake Union Park event times to avoid sensitive time periods to the extent practical.
- Identifying and providing signage for detour routes and avoiding closing access to recreational facilities.
- Coordinating with fire, emergency medical, and police service providers before construction to provide construction schedules and any planned closures or detours; work with them to establish alternative detour routes if necessary.
- Providing for fire, emergency medical, and police vehicle travel in the study area during construction to ensure that access is not blocked and response times are affected as little as possible. This may include scheduling lane closures outside of the peak travel demand periods, temporary signals to provide vehicle pre-emption to minimize impacts to response times, providing a shoulder for emergency vehicle bypass, and maintaining a minimum of 11-foot lane widths through all construction zones.
- Developing a utility relocation plan during final design in consultation with affected utility companies and verifying as necessary the locations and depths of underground utilities.

What measures are proposed to avoid or minimize effects after the project is built?

Mitigation during operation will include all new traffic signals being equipped with emergency vehicle pre-emption, thereby minimizing impacts to response times for emergency service vehicles. No additional mitigation is proposed during operation.