

Appendix A-5

First Avenue Sewer Rehabilitation
Technical Memorandum

Appendix A-5

First Avenue Sewer Rehabilitation Work

Background

The City of Seattle Department of Transportation (SDOT) is constructing the Center City Connector (C3) Streetcar to expand the City's streetcar network. The C3 project will connect the two existing modern streetcar lines through Downtown Seattle. The alignment begins at the southern terminus of the South Lake Union Streetcar, at McGraw Square on Sixth Avenue and Westlake Avenue. The alignment continues west on Stewart Street, then south on First Avenue. The southern extent will connect to the First Hill Streetcar terminus, where Occidental Park meets S Jackson St.

As an opportunity to improve infrastructure, share project costs, reduce future risk and costs, minimize public disruption, and abate impacts from construction, Seattle Public Utilities (SPU) evaluated improvements and repairs to its sewer system along First Avenue and First Avenue S in downtown Seattle that could be coordinated with SDOT's design and construction packages.

Inspections found that many portions of the mainline sewer would be needed to be replaced, or relined with cured-in-place pipe (CIPP).

Description of Proposed Work and Location

The proposed action would reline portions of the existing sewer line and make spot masonry repairs to existing maintenance holes, and oviform and round brick sewers under First Avenue and First Avenue S. The work area extends from S Jackson Street in the south to Seneca Street in the north. All work will be completed in existing street rights-of-way.

Work on the mainline sewer would include the following:

- *Between S Jackson Street and Cherry Street* – Masonry repairs of the existing maintenance holes, and oviform and round brick sewers.
- *Between Cherry Street and Madison Street* – Relining approximately 900 feet of the sewer mainline.
- *Between Spring Street and Seneca Street* –Relining approximately 200 feet of mainline sewer.

In addition to the work on the mainline sewer, SPU identified numerous locations where the connections between catch basins and the mainline sewer were broken or deteriorated and in need of repair. The following provides information on the work that would be required:

- To facilitate relining or masonry repairs to the mainline sewer the street would need to be opened at maintenance hole locations. To do this work a temporary sewer bypass would be installed¹.
- At the conclusion of the relining or masonry repair maintenance holes would be rebuilt and restored.

¹ A temporary bypass consists of piping and pumps laid on the surface to pump sewer flows around the work area.

- Repair of the catch basin-to-mainline sewer connections (laterals) would occur at most intersections and in at least one or more locations per intersection. The laterals are located roughly perpendicular to the long access of the street and at intersections or mid-block. This work would involve trenching 10 to 15 feet below street grade to repair or replace the broken or deteriorated pipes.

Proposed Construction Schedule

Construction of the proposed work is anticipated to occur during the planned period of construction for utility relocation and repairs for the C3 project. The work is scheduled to occur in Fall 2017 through Winter 2018.

Relevant Environmental Information Related to this Proposal

- Center City Connector Streetcar Environmental Assessment (EA) and Appendices March 2016²
- Center City Connector Streetcar Findings of No Significant Impacts (FONSI) - February 2017

Government Approvals for Other Projects Directly Affecting Property Covered by this Proposal

- National Environmental Policy Act (NEPA) review by the Federal Transit Administration (FTA) and issuance of a Finding of No Significant Impacts (FONSI) for the C3 project
- City of Seattle Department of Construction and Inspections (SDCI): Noise Variance for work performed at night for the C3 project
- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit for the C3 project

Government Permit/Approvals Required for this Proposal³

The following permits/approvals are anticipated for the proposed action:

- City of Seattle Department of Construction and Inspections (SDCI): Noise Variance for work performed at night and Side Sewer Connection permits
- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit
- King County - Industrial Waste Discharge Permit for dewatering

Environmental Elements

Earth

The proposed action is located in a relatively flat and urbanized area that has undergone extensive modification over the past 150 years including moving the shoreline waterward with the construction of the Elliott Bay seawall. Historically the shoreline was originally located close to current-day First Avenue. As a result, much of the study area consists of fill material from early development including the construction of the original sewer line as well as other utilities and the roadway. The proposed action is

² The EA was prepared pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. 4231 et seq.) and was adopted to support a State Environmental Policy Act (SEPA) Determination of Non-significance (DNS) in lieu of a SEPA Environmental Checklist, as per Ch. 43.21 RCW, SMC 25.05.610(B).

³ Note: All permits will be coordinated with C3 project permits

located within existing City of Seattle right-of-way currently covered by impervious surface and does not result in any changes to impervious surface.

This area is also characterized as having high liquefaction susceptibility and there are areas where peat settlement is a concern. Excavation would be required for maintenance hole access along First Avenue and the repairs and replacements to the laterals located in the intersections and mid-block. Suitable excavated material would be used for backfill and any materials not suitable would be disposed of at a permitted facility. The amount of material excavated would vary depending on the trenching depth required to access the lateral. Imported clean backfill would be from a permitted facility. Materials would be excavated consistent with the requirements in the 2014 Edition, City of Seattle Standards for Municipal Construction and Standard Plans for Road, Bridge, and Municipal Construction and would require shoring to ensure side slopes are stable.

During construction any exposed or stockpiled soils could result in erosion. Measures that would be implemented reduce or construction erosion include implementing standard engineering and design practices along with the implementation of best management practices (BMPs). BMPs include those identified in the City of Seattle Stormwater Code and Manual (SMC 22.800) which would be used to address stormwater runoff and erosion during construction as applicable. A National Pollutant Discharge Elimination System Program General Permit for Stormwater Discharges Associated with Construction Activities would be obtained. One of the permit requirements is a proposal-specific Stormwater Pollution Prevention Plan and Sediment Control Plan, which would employ BMPs during construction to minimize the potential for soil erosion and sediment to enter the stormwater system.

Air

Construction would result in temporary increases in emissions from the operation of construction equipment that would temporarily affect air quality. Typical sources of emission during construction include the following:

- Dust generated during demolition of pavement
- Engine exhaust emissions from construction vehicles and equipment

The sewer lining process does create a rapidly dissipating odor that comes from the chemical styrene in the pipe liner. There are no off-site sources of emissions or odors that would affect the proposed action.

During construction, BMPs listed below will be followed to reduce air quality impacts:

- Promptly clean up spills of transported material on public roads
- Cover dirt and gravel
- Maintain machinery in good mechanical condition to minimize exhaust emissions
- Encourage contractors to reduce idling time of equipment and vehicles and to use newer construction equipment or equipment with add-on emission controls

Water

Surface Water. There are no exposed surface waters along the proposal alignment and the proposed action is not within a 100-year floodplain. Elliott Bay is the nearest water body and depending on the portion of the route, the sewer main is located around two to three blocks to the west. Construction would not result in fill or dredge material being placed or removed from surface waters, in any water withdrawals or diversions, or the discharge of waste materials to surface waters.

Ground Water. Depths to ground water vary, with the lowest about 12 feet beneath the surface around Pioneer Square and increasing northward. Because the proposed action would reline the existing sewer line and limit excavation, no impacts to groundwater are anticipated with either relining or the

temporary access requirements around the maintenance holes. If groundwater is encountered during the repair/replacement of the laterals, dewatering would be required and standard collection and pumping methods would be implemented and a King County Waste Discharge Permit would be obtained.

Water Runoff (Stormwater). The project area is entirely paved with impervious surfaces. Stormwater runoff is collected by inlets or catchbasins and conveyed to the combined sewer system where stormwater runoff combines with sanitary sewer flows. The combined flow is piped to the West Point Wastewater Treatment Plant in the City’s Magnolia neighborhood where it is treated and then discharged to Puget Sound. During occasional large storm events, the combined sewer system may overflow into Puget Sound, resulting in a combined sewer overflow (CSO).

During construction, exposed sediment may drain into the combined sewer system. The following measures would be implemented during construction to reduce or control stormwater runoff:

- The proposed action would comply with the stormwater quality and flow control requirements contained in SMC 22.805 including the development, deployment, and enforcement of best management practices (BMPs) to control erosion and sediment transport. The proposed action would also comply with other applicable federal, state, and local regulatory requirements including obtaining a National Pollutant Discharge Elimination System Program General Permit for Stormwater Discharges Associated with Construction Activities.

Environmental Health

There are ten known high risk hazardous material sites located within two blocks adjacent to the proposed action on First Avenue. Table 1 provides information on these sites.

Table 1 - Hazardous Material Sites in the Study Area⁴

Site Name and Address	Hazardous Material Potential Impact
Alexis Hotel – 1007 First Avenue	Benzene, gasoline, and non-halogenated solvents in soil and groundwater. Lead and other metals are also confirmed in soil.
Old Seattle Parking Garage – 74 S Jackson Street	Gasoline confirmed in soil. Benzene and other petroleum products are also suspected in soil.
Cherry Street Garage -213 Cherry Street	Gasoline in soil, groundwater, and air.
Commuter Centre Parking -801 Western Avenue	Gasoline and other petroleum products in soil. (Seven USTs were removed in July 2011. Soil contamination, including gasoline and other petroleum products, remains above cleanup levels.)
Butler Garage -114 James Street	Benzene, non-halogenated solvents, and gasoline in soil and groundwater. (Two USTs were removed in 2000, and at least one tank remains in place for storage.)
Seattle Steam Company - 700 Post Avenue	Petroleum products in soil and groundwater. Metals, PCBs, and PAHs are also suspected in soil and groundwater.
Seattle Fire Station 10 - 301 Second Avenue S	Petroleum in soil.
Seattle Steam - 1310 and 1319 Western Avenue	Petroleum products in groundwater and polycyclic aromatic hydrocarbons (PAHs) and petroleum products in soil. Metals and polychlorinated biphenyl (PCBs) are also suspected in

⁴ Detailed information on these sites can be found in EA Chapter 4.10 and EA Appendix D4.10.

Site Name and Address	Hazardous Material Potential Impact
	soil and groundwater, and PAHs are also suspected in groundwater.
Union Substation/Seattle City Light - 1312 Western Avenue	Petroleum products in soil.
Fourth Avenue and Virginia Street - 1920 Fourth Avenue	Petroleum products in soil and groundwater.

Excavation and the repair of the laterals could result in the release of hazardous materials into the environment through the disturbance and removal of contaminated soil and/or groundwater. Hazardous materials release of fuels, oil, or uncured concrete entering soil, groundwater, or surface water could result from spills during construction.

The likelihood of impacts from encountering existing contamination or hazardous materials depends upon the extent and characteristics of the contamination and hazardous materials. A variety of impacts, would be possible during construction if hazardous materials were encountered:

- Construction activities in the vicinity of these materials could release contaminants to soil, groundwater, and surface water.
- Contaminated materials might be uncovered, allowing more direct exposure to the public.
- Contamination might spread as a result of construction.
- If required, dewatering might generate contaminated water that would need to be treated and properly disposed.
- Contamination not previously known could be discovered and require local cleanup

Under these circumstances, the following BMPs would be implemented as applicable:

- Minimize disturbance or release of contaminated media
 - Identify areas of known contamination on project plans
 - Avoid disturbance of hazardous materials when possible
- Minimize risk for accidental release of hazardous materials
 - Prepare a comprehensive spill prevention plan that meets City standards to control spills on the site (Standard specifications A 1-07.15(1)8-01.3(2)(C) and a waste management plan that follows City Standard Specification 1-07.3, Discoveries of Contaminated Materials, Dangerous Waste(s) and TSCA Waste(s), which includes procedures for identifying and characterizing unanticipated hazardous materials.
 - Manage and dispose of hazardous or contaminated materials in accordance with applicable requirements.

Mitigation measures for potential impacts from hazardous materials discovery or spills during construction are the same as those described for the C3 project and are included in Appendix B of this SEPA Addendum.

Noise

The proposed action is located in downtown Seattle—an urbanized area where urban noise from traffic, large volumes of persons, and late-night events create a high decibel levels. Construction noise would be short-term and temporary and result from operation of the sewer relining equipment and excavation and repair of the laterals and work associated with opening access the maintenance holes. The Seattle Noise Control Code (SMC Chapter 25.08) specifies permissible sound levels during construction. The Noise Control Ordinance provides additional allowances for construction activities, raising the

permissible levels for construction equipment and allowing daytime limits between 7 a.m. and 10 p.m. on weekdays and 9 a.m. and 10 p.m. on weekends and legal holidays. Construction is expected to occur between 7 a.m. and 6 p.m. on weekdays. If construction occurs outside of the hours during the weekday then a noise variance from the SDCI would be obtained prior to construction.

Mitigation measures would include the following, as applicable:

- Use only ambient-sensing broadband back up alarms and minimize backing up
- Limit engine idling to 5 minutes or less
- Use radios for long-range communication; only use raised voices and public address systems in an emergency
- Use upgraded engine exhaust mufflers, engine shrouds, or sound enclosures on noisier equipment
- Use electric and hydraulic equipment instead of diesel or pneumatic equipment
- Require the contractor to develop a noise control plan to identify and mitigate noise impacts using specific means and methods
- Obtain a noise variance for work performed at night

Aesthetics

The proposed action does not include any structures and does not alter or obstruct any views. During construction there would be temporary impacts associated with the closing of portions of streets, utility relocation, and construction equipment. Construction activities would be visible from nearby areas that consist primarily of commercial uses and those that would be affected include property owners, pedestrians, and others traveling through the construction area. No construction mitigation measures are required because of the temporary and short-term nature of the construction activities.

Light and Glare

The sewer rehabilitation work may produce light and glare. During construction, if nighttime work is required, the selected contractor may use lighting. To minimize impacts from light and glare during construction lighting would be directing away from adjacent uses and adjusted as applicable to minimize glare.

Recreation

The only recreation facility adjacent to the study area is Pioneer Place at 100 Yesler Way. The 0.3 acre park includes benches, an historic totem pole, a fountain adjacent to a small garden, and a historic pergola. Construction activities would be adjacent to the park in the existing street right-of-way but would not impact the use of or access to the park.

Historic and Cultural Resources

There are numerous known historic and cultural resources along the full length of First Avenue, including buildings, structures, sites, and objects. In addition, the proposed action runs through the Pioneer Square Historic District. These resources were thoroughly evaluated in the C3 EA Chapter 4.14, Appendix H-14.

The Center City Connector EA Cultural Resources Technical Report Addendum (Appendix A-3 of this SEPA Addendum) evaluated the cultural significance of structures that had not been included in the EA analysis. One such structure was the water main below First Avenue and its associated perpendicular mains, service lines, hydrants, and other appurtenances. These facilities were determined to not be eligible for listing on the National Register of Historic Places (NRHP). On October 20, 2016, the

Washington Department of Historic and Archaeological Preservation (DAHP) concurred with these findings.

Potential impacts from sewer rehabilitation were not evaluated in the above documents. However, due to its age, the existing sewer mainline was also reviewed separately to determine the listing eligibility of that structure and its associated appurtenances. Additional detail on the sewer can be found in Appendix A-5, Sewer Rehabilitation Work Cultural Resources Technical Report (DAHP has reviewed this report and concurred with the findings that the sewer line is not eligible for listing on the NRHP).

There are no known pre-historic cultural sites in or adjacent to First Avenue and First Avenue S. However, data from previous projects, and the proximity of known historic and pre-historic cultural sites to First Avenue, suggest that intact archaeological sites could exist beneath the ground surface in some areas. Because the sewer alignment has been previously disturbed, filled, and developed, it is highly unlikely that construction activities could encounter unknown, intact sites. As mitigation, the proposed action would use a Monitoring and Inadvertent Discovery Plan, which prescribes the procedures to be followed should potential cultural resources or human remains be discovered during construction.

Transportation

The proposed action is located within the existing First Avenue right-of-way. There are nine King County Transit bus routes that either provide service and have stops (16, 66, 99, 113, 121, 122, 123, and 125) or travel (12) along First Avenue. In addition, Solid Ground operates a shuttle for low income residents along First Avenue. The sewer rehabilitation work would not result in any permanent impacts to transit, parking, or motorized, or non-motorized facilities. The work would not generate new vehicle trips once completed.

The sewer rehabilitation work would be constructed in close coordination and concurrently with the C3 Project. Mitigation measures described for the C3 Project in Appendix B of this SEPA Addendum would be included in sewer work plans and specifications.

Public Services

The proposed action would not result in any increased need for public services. During construction, the proposed action would coordinate with SDOT, the Seattle Police Department, Seattle Fire Department, and King County Metro regarding temporary lane closures and detour routes. Once construction is complete, no additional impacts would occur.

Utilities

The proposed action does not propose any new utilities and would only repair and rehabilitate the existing sewer system by relining portions of the sewer, conducting masonry repairs, and repairing catch-basin-to-mainline sewer connections (laterals).

This sewer rehabilitation work would result in short-term and temporary construction impacts that include pavement demolition, excavation, repaving, shoring systems, groundwater control, utility relocations, dust and noise control, short-term traffic disruptions, and lane or sidewalk closures.

Direct effects on utilities could include short disruptions to utility services during the cutover from existing to temporary bypasses or service feeds and again when permanent utilities are completed or reconnected. Inadvertent damage to underground utilities could occur during construction if utility locations are uncertain or misidentified. All required improvements would be installed per the 2014 Edition, City of Seattle Standards for Municipal Construction and Standard Plans for Road, Bridge, and Municipal Construction.

To mitigate risk of disrupting utilities during construction, SPU would develop a utility relocation plan prior to construction, which will include coordination with utility providers to minimize potential

disruptions through detailed construction schedules and sequencing. When more than a short service disruption may be needed, temporary connections to businesses and residences will be provided.