

**SEATTLE PUBLIC UTILITIES  
SEPA ENVIRONMENTAL CHECKLIST**

This SEPA environmental review of Seattle Public Utilities' 2017 Large Diameter Sewer Lining Project has been conducted in accord with the Washington State Environmental Policy Act (SEPA) (RCW 43.21C), State SEPA regulations [Washington Administrative Code (WAC) Chapter 197-11], and the City of Seattle SEPA ordinance [Seattle Municipal Code (SMC) Chapter 25.05].

**A. BACKGROUND**

**1. Name of proposed project:**

2017 Large Diameter Sanitary Sewer, Combined Sewer and Stormwater Drain Lining

**2. Name of applicant:**

Seattle Public Utilities (SPU)

**3. Address and phone number of applicant and contact person:**

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**4. Date checklist prepared:**

September 10, 2019

**5. Agency requesting checklist:**

Seattle Public Utilities (SPU)

**6. Proposed timing or schedule (including phasing, if applicable):**

Work at all 17 project sites is scheduled to occur in 2020, with substantial completion anticipated to occur on or before December 31, 2020. The duration of work at each site is expected to be 2 to 4 working days, with a total work duration of 34 to 68 working days.

**7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

The proposed project would repair existing large-diameter (greater than 12 inches) sanitary sewer, combined sewer and stormwater drain system pipes using cured-in-place pipe (CIPP) installation at 17 sites in the City of Seattle (SPU capital project #C317019). For efficiency and due to the repetitive nature of the work across the 17 sites, SPU plans to bundle the work into a single public works construction contract and is now conducting this SEPA review on the 17 sites collectively. If SPU identifies other large-diameter sewer pipes in need of repair using CIPP, SPU would conduct additional SEPA review prior to undertaking that additional work.

**8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

No formal environmental information has been prepared that is related to this proposal.

**9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

SPU is not aware of pending government approvals of other proposals that directly affect the property or rights-of-way (ROW) covered by this proposal.

**10. List any government approvals or permits that will be needed for your proposal, if known.**

Implementation of the proposed work at all sites will require a Seattle Department of Transportation (SDOT) Street Use Permit.

A Seattle Department of Construction and Inspections (SDCI) Shoreline Substantial Development Permit (SSDP) or SSDP Exemption will be required for work at Sites 5, 6, and 11, which are in the City's Shoreline Management District.

A Revocable Use Permit from Seattle Department of Parks and Recreation (SPR) may be required for Sites 5, 6, and 8, which are in City of Seattle parks and/or in or along designated park boulevards managed by SPR.

A Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW) will be required for work at Site 10 because the subject pipe conveys waters from a regulated watercourse. Please refer to Section (B)(3) of this Checklist.

**11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.**

SPU uses its Sewer Lining Program to resolve small wastewater, and sometimes stormwater, conveyance problems throughout the City of Seattle relatively quickly and with minimal impacts. The Program rehabilitates deteriorated sewer pipes and associated structures located in City-owned street ROW or in City easements on private property. Rehabilitation is achieved through installation of CIPP liners in existing sewer and stormwater pipes. Work typically includes traffic control and permitting, public outreach, coordination with other utilities, bypass pumping, pre-installation pipe cleaning and inspection using closed circuit television (CCTV), debris removal, obstruction removal, CIPP installation, reinstatement of active laterals, post-installation CCTV inspection, and restoration of undeveloped areas to pre-construction conditions.

CIPP is a trenchless rehabilitation method that installs a jointless, seamless, pipe-within-a-pipe to repair or rehabilitate existing pipelines. The process involves pulling a felt and resin pipe liner into the pipe to be rehabilitated. Both ends of the liner are then sealed with protective end caps and air pressure is introduced, forcing the liner to expand into place.

The liner is cured using ultraviolet light. In this method, an ultraviolet light train is inserted into the liner. Cameras on the train allow for viewing of the alignment and fit. When proper placement is confirmed, the ultraviolet light train is activated and drawn through the pipe at a controlled, pre-determined speed of up to six feet per minute. When the CIPP process is complete, lateral pipe connections can be reinstated using a remote-controlled cutting unit or via worker entry into larger diameter pipes.

Generally, CIPP lining is a “no-dig” operation requiring no excavation. However, minor vegetation removal and excavation may be required to locate and access maintenance holes (MH) and to stage equipment. Where sites are located partially within or adjacent to an Environmentally Critical Area (ECA), including wetlands, watercourses, or shorelines, staging would be located as far from the ECA as possible to avoid vegetation impacts and ground disturbance within the ECA or its buffer.

The proposed project includes rehabilitation using CIPP at 17 sites in the City of Seattle. Each site includes one to eight segments of mainline sanitary sewer, combined sewer, or storm drain. For each mainline segment, a CIPP liner would be installed along the entire segment between upstream and downstream MHs. Existing MHs would be used for access during CIPP installation and associated work. Approximately 8,637 linear feet of mainline pipe would be rehabilitated using CIPP as part of this project. No MHs would be altered or replaced as part of this work. A brief summary of each site is provided below.

Site 1

Segment 1A: Install CIPP liner in mainline sanitary sewer between MHs 012-392 and 012-393. Subject pipe is a 267-foot segment of 18-inch diameter vitrified clay pipe (VCP) located below the travel lanes of NW Market St between 6th and 7th Ave NW.

Segment 1B: Install CIPP liner in mainline sanitary sewer between MHs 012-391 and 012-392. Subject pipe is a 235-foot segment of 18-inch diameter VCP/reinforced concrete pipe (RCP) located below the travel lanes of NW Market St between 5th and 6th Ave NW.

Site 2

Segment 2A: Install CIPP liner in mainline sanitary sewer between MHs 051-008 and 051-009. Subject pipe is a 379-foot segment of 21-inch diameter RCP and is in the center of Occidental Ave S at S Stacy St.

Segment 2B: Install CIPP liner in mainline sanitary sewer between MHs 051-006 and 051-007. Subject pipe is a 380-foot segment of 18-inch diameter RCP and is in the center of Occidental Ave S north of S Stacy St.

Segment 2C: Install CIPP liner in mainline sanitary sewer between MHs 051-007 and MH 051-008. Subject pipe is a 980-foot segment of 21-inch diameter RCP and is in the center of Occidental Ave S at S Walker St.

Site 3

Segment 3A: Install CIPP liner in mainline sanitary sewer between MHs 301-093 and 301-100. Subject pipe is a 347-foot segment of 18-inch diameter RCP and is in the center of Seola Beach Dr SW between SW 107th St and SW 106th St.

Segment 3B: Install CIPP liner in mainline sanitary sewer between MHs 301-071 and 301-093. Subject pipe is a 332-foot segment of 18-inch diameter RCP and is in a utility easement north of the intersection of SW 106th St and Seola Beach Dr SW.

Segment 3C: Install CIPP liner in mainline sanitary sewer between MHs 301-070 and 301-071. Subject pipe is a 339-foot segment of 18-inch diameter RCP located in a utility easement north of the intersection of SW 106th St and Seola Beach Dr SW.

Site 4

Segment 4A: Install CIPP liner in mainline sanitary sewer between MHs 028-188 and 028-187. Subject pipe is a 54-foot segment of 18-inch diameter VCP that runs from the center of 11th Ave W northwest through a landscaped utility easement between two residential properties.

Site 5

Segment 5A: Install CIPP liner in mainline sanitary sewer between MHs 059-400 and 059-399. Subject pipe is a 453-foot segment of 21-inch diameter VCP that runs from the intersection of 48th Ave S and S Bradford St northwest beneath the landscape strip on the west side of Lake Washington Blvd S.

Segment 5B: Install CIPP liner in mainline sanitary sewer between MHs 059-399 and 059-398. Subject pipe is a 302-foot segment of 21-inch diameter VCP that runs from the landscape strip on the west side of Lake Washington Blvd S northwest to a grassy area in Stan Sayres Park.

Segment 5C: Install CIPP liner in mainline sanitary sewer between MHs 059-398 and 059-456. Subject pipe is a 291-foot segment of 21-inch diameter VCP and runs west beneath landscaped areas in Stan Sayres Park.

Site 6

Segment 6A: Install CIPP liner in mainline combined sewer between MHs 081-061 and 081-058. Subject pipe is a 260-foot segment of 21-inch diameter VCP in Pritchard Park.

Segment 6B: Install CIPP liner in mainline combined sewer between MHs 081-062 and 081-061. Subject pipe is a 105-foot segment of 21-inch diameter VCP in Pritchard Park.

Site 8

Segment 8A: Install CIPP liner in mainline combined sewer between MHs 075-015 and 075-016. Subject pipe is a 230-foot segment of 18-inch diameter VCP/polyvinyl chloride pipe located beneath the landscape strip and residential driveways on the east side of Fautleroy Way SW.

Segment 8B: Install CIPP liner in mainline combined sewer between MHs 075-016 and 075-017. Subject pipe is a 170-foot segment of 18-inch diameter VCP/RCP that runs from east to west under landscape strips of Fautleroy Way SW at SW Cloverdale St.

Segment 8C: Install CIPP liner in mainline combined sewer between MHs 075-041 and 075-042. Subject pipe is a 145-foot segment of 18-inch diameter VCP located between a landscaped median and an access road in Lincoln Park.

Site 10

Segment 10A: Install CIPP liner in mainline stormwater drain between MHs D078-183 and D078-171. Subject pipe is a 30-foot segment of 24-inch diameter corrugated metal pipe (CMP) in a utility easement on the west side of Myers Way S.

Segment 10B: Install CIPP liner in mainline stormwater drain between MHs D078-171 and D078-172. Subject pipe is a 167-foot segment of 24-inch diameter CMP that runs underneath Myers Way S between a landscaped utility easement and a ravine.

Site 11

Segment 11A: Install CIPP liner in mainline combined sewer between MHs 004-398 and 004-343. Subject pipe is a 287-foot segment of 36-inch diameter brick pipe located between the sidewalk on the east side of Woodlawn Pl N and the center of Aurora Ave N.

Segment 11B: Install CIPP liner in mainline combined sewer between MHs 004-358 and 004-398. Subject pipe is a 134-foot segment of 36-inch diameter brick pipe located beneath Woodlawn Pl N at N 65th St.

Site 12

Segment 12A: Install CIPP liner in mainline combined sewer between MHs 013-022 and 013-021. Subject pipe is a 432-foot segment of 8-inch diameter VCP located beneath N 63rd St between Fremont Ave N and Linden Ave N.

Site 14

Segment 14A: Install CIPP liner in mainline combined sewer between MHs 026-352 and 026-351. Subject pipe is a 267-foot segment of 30-inch diameter VCP located beneath 32nd Ave W just south of its intersection with 33rd Ave W.

Site 15

Segment 15A: Install CIPP liner in mainline combined sewer between MHs 057-040 and 057-039. Subject pipe is a 336-foot segment of 21-inch diameter VCP located beneath South Dakota St between 6th and 7th Aves S.

Site 16

Segment 16A: Install CIPP liner in mainline combined sewer between MHs 061-015 and 061-016. Subject pipe is a 310-foot segment of 15-inch diameter RCP located beneath 50th Ave SW south of SW Hudson St.

Site 17

Segment 17A: Install CIPP liner in mainline combined sewer between MHs 066-465 and 066-482. Subject pipe is a 336-foot segment of 15-inch diameter polyvinyl chloride pipe located beneath 47th Ave S south of S Juneau St.

Site 18

Segment 18A: Install CIPP liner in mainline combined sewer between MHs 233-268 and 233-295. Subject pipe is a 331-foot segment of 8-inch diameter concrete pipe located beneath 1st Ave NE just south of its intersection with NE 90th St.

Segment 18B: Install CIPP liner in mainline combined sewer between MHs 233-295 and 233-322. Subject pipe is a 332-foot segment of 12-inch diameter RCP located beneath 1st Ave NE south of NE 89th St.

Segment 18C: Install CIPP liner in mainline combined sewer between MHs 233-322 and 233-359. Subject pipe is a 141-foot segment of 15-inch RCP located beneath 1st Ave NE just south of NE 88th St.

Segment 18D: Install CIPP liner in mainline combined sewer between MHs 233-359 and 233-361. Subject pipe is a 225-foot segment of 15-inch diameter RCP located beneath 1st Ave NE south of NE 88th St.

Segment 18E: Install CIPP liner in mainline combined sewer between MHs 233-361 and 233-362. Subject pipe is a 228-foot segment of 15-inch diameter RCP located beneath 1st Ave NE between NE 88th St and NE 85th St.

Segment 18F: Install CIPP liner in mainline combined sewer between MHs 233-362 and 005-059. Subject pipe is a 43-foot segment of 15-inch diameter RCP located beneath 1st Ave NE at the intersection with NE 85th St.

Segment 18G: Install CIPP liner in mainline combined sewer between MHs 233-360 and 233-359. Subject pipe is a 39-foot segment of 8-inch diameter concrete pipe and extends from the southwest corner of a residential property on 1st Ave NE to the center of 1st Ave NE ROW.

Segment 18H: Install CIPP liner in mainline combined sewer between MHs 233-365 and 233-360. Subject pipe is a 258-foot segment of 8-inch diameter concrete pipe located along the south property boundaries of two residential properties between 1st Ave NE and 2nd Ave NE.

Site 22

Segment 22A: Install CIPP liner in sanitary sewer between MHs 041-154 and 041-152. Subject pipe is an 82-foot segment of 27-inch diameter VCP located beneath E Jefferson St west of 22nd Ave.

Site 23

Segment 23A: Install CIPP liner in mainline sanitary sewer between MHs 051-260 and 051-259. Subject pipe is a 30-foot segment of 21-inch diameter RCP located beneath Airport Way S and S Lander St.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

Attachment A is a vicinity map that depicts the general location of the project sites. Attachment B lists the physical address for the general vicinity of each site and provides the nearest upstream and downstream MH numbers. All project sites are in the City of Seattle and are in street ROW, utility easements, and/or City-owned public park property.

**B. ENVIRONMENTAL ELEMENTS**

**1. Earth**

- a. General description of the site:** *[Check the applicable boxes]*

Flat     Rolling     Hilly     Steep Slopes     Mountainous     Other:

- b. What is the steepest slope on the site (approximate percent slope)?**

Most sites are flat to rolling, with slopes ranging from zero to 15 percent. Segments 10B, 12A, 14A, 18A through 18H, and 23A intersect or are adjacent to areas mapped by SDCI as steep slopes (40 percent average). However, the slope of the existing surface in the project area is no greater than 15 percent at any of these sites.

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing these soils.**

The general geologic condition of the Puget Sound region is a result of glacial and non-glacial activity that occurred over the course of millions of years. Review of the geologic map covering the project sites (Troost et al. 2005, available at <http://pubs.usgs.gov/of/2005/1252/>) indicates the project sites are underlain primarily by younger glacial deposits, including Vashon subglacial till, Vashon recessional or advance outwash deposits, or Vashon recessional coarse-grained deposits. However, urban development in the City of Seattle over the last 150 years has resulted in a predominance of disturbed native soils/sediments, cut slopes, and placements of fill material. The entire project location and immediately surrounding areas at all sites have been completely developed and disturbed in this way. There are no agricultural lands of long-term commercial significance designated in the City of Seattle.

More specifically, Site 11, near Green Lake in northern Seattle, is underlain by contents of an historic landfill. Site 2, in the industrial area south of downtown Seattle, is underlain by fill. Site 15 (south of Site 2 and in the industrial area) is underlain by non-glacial alluvial deposits. The two sites on Lake Washington shoreline (5 and 6) are underlain by older, non-glacial lake deposits. Sites 22 and 23, in the Central District and Greater Duwamish District respectively, are underlain by fill.

**d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe:**

None of the sites present evidence of unstable soils—such as head scarps, hummocky terrain, seepage along steep slope surfaces, bulging at the bases of slopes, and/or evidence of permeable strata over relatively impermeable strata that indicate past or possible future instability. However, the City of Seattle has mapped geologically hazardous areas as ECAs based on historical and current geologic conditions, including topography and underlying soils. According to City maps, Site 5 is in a 1,000-foot methane buffer associated with an historic landfill. Site 8 is partially in a potential slide area. Site 10 is partially in steep slope ECAs. Sites 12, 14, 18, and 23 are adjacent to steep slope ECAs. Sites 2, 8, 15, and 23 are in liquefaction ECAs. Site 22 is located adjacent to a flood-prone ECA.

**e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate the source of fill.**

Excavation, fill, or grading associated with the proposed work would be related to exposing buried MH covers and is expected to be *de minimis*. Of 54 MHs to be used for this work, 43 are flush with an existing paved or grass surface. Of the 11 MHs in areas of unpaved landscaped or vegetated areas, six (one at Site 8, three at Site 10, and two at Site 18) could potentially require minimal excavation for access. Excavation would be completed using hand tools, and all ground surfaces would be restored to pre-construction conditions. Backfill materials would include native excavated material. Total volume of excavation is estimated to be no more than 16 cubic yards; total volume of fill is estimated to be no more than 16 cubic yards. Excavation and backfill are anticipated to balance, resulting in no net change in the existing soil surface. Total area of disturbed ground is estimated to be no more than 160 square feet.

If initial construction inspection identifies the subject pipe at a given site to be unsuitable for rehabilitation using CIPP, and that significant ground disturbance would be necessary to make the repair (e.g. for pipe replacement), work would halt at that site and then resume under a separate SPU capital project and associated permitting and environmental review process.

**f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe:**

Most sites are in existing impervious (paved) areas or adjacent to existing residential developments having minimal potential for erosion. Ground disturbance and vegetation trimming would be limited to that required for construction staging and access. Such areas would be situated in existing paved areas wherever possible. Erosion and sedimentation could occur as a result of project construction, although this risk is low because most project sites are flat or relatively flat and temporary erosion and sediment control BMPs would be deployed, inspected, and maintained as needed. Disturbed areas would be restored to their near-original conditions. Damaged and demolished pavements would be restored as required by SDOT.



**g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

Most sites are in existing impervious (paved) areas. Existing paved surfaces damaged by construction would be repaired as required by SDOT. The proposed work would result in neither an increase nor decrease in impervious surfaces.

**h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:**

No filling or excavation would take place in or near shorelines, watercourses, or wetlands and best management practices (BMPs) would be used to protect the existing stormwater drainage systems and to minimize erosion and sedimentation. A temporary erosion and sedimentation control plan would be prepared and implemented. BMPs as identified in the City of Seattle’s Stormwater Code (Seattle Municipal Code Title 22, Subtitle VIII), the City of Seattle Director’s Rule SDCI 17-2017/SPU DWW-200, and Volume 2 Construction Stormwater Control Manual would be used to manage stormwater runoff, construction disturbance, and erosion during construction.

**2. Air**

**a. What types of emissions to the air would result from the proposal [e.g., dust, automobile, odors, industrial wood smoke, greenhouse gases (GHG)] during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.**

Mobile and stationary equipment would be used to construct the proposed project, thus generating emissions due to the combustion of gasoline and diesel fuels (such as oxides of nitrogen, carbon monoxide, particulate matter and smoke, uncombusted hydrocarbons, hydrogen sulfide, carbon dioxide, and water vapor). Emissions during construction would also include dust from ground-disturbing activities and exhaust (carbon monoxide, sulfur, and particulates) from construction equipment and are expected to be minimal, localized, and temporary.

In certain CIPP applications, installation generates fumes from curing of resin (mainly styrene, but possibly including very minor amounts of acetone, benzene, chloroform, isopropylbenzene, methylene chloride, methyl ethyl ketone, N-propylbenzene, 1,2,4-trimethylbenzene [TMB], 1,3,5-TMB), and other substances (see Section B7, Environmental Health).

This proposal would generate greenhouse gas (GHG) emissions through construction activity only. Total GHG emissions for the project are estimated to be about 106 metric tons of carbon dioxide emission (MTCO<sub>2e</sub>). GHG emission calculations are shown in Attachment C and summarized in the table below. One metric ton is equal to 2,205 pounds. Though not calculated, it is anticipated the CIPP method would emit fewer GHGs compared to traditional open cut and backfill pipe replacement methods.

This project would generate GHG emissions during the maximum estimated 68 working day construction period through the operation of diesel- and gasoline-powered equipment and to transport materials, equipment, and workers to and from the project

sites. Because project construction methods were not completely known at the time this checklist was prepared, the estimates provided here are based on daily vehicle operation times for the maximum estimated project duration (68 working days); actual times may be less. Estimates are also based on typical transportation and construction equipment used for this type of work.

Embodied energy in CIPP materials used in this project has not been estimated as part of this SEPA environmental review due to the difficulty and inaccuracy of calculating such estimates.

During project operation, the project is not expected to result in increased GHG emissions as compared with pre-project levels, as the pipes rehabilitated using CIPP installation are not expected to require maintenance for approximately 50 years.

**Summary of Greenhouse Gas (GHG) Emissions**

Activity/Emission Type	GHG Emissions (pounds of CO <sub>2</sub> e) <sup>1</sup>	GHS Emissions (metric tons of CO <sub>2</sub> e) <sup>1</sup>
Buildings	0	0
Paving	0	0
Construction Activities (Diesel)	217,046	99
Construction Activities (Gasoline)	16,524	8
Long-term Maintenance (Diesel)	0	0
Long-term Maintenance (Gasoline)	0	0
<b>Total GHG Emissions</b>	<b>233,570</b>	<b>107</b>

<sup>1</sup>Note: 1 metric ton = 2,204.6 pounds of CO<sub>2</sub>e. 1,000 pounds = 0.45 metric tons of CO<sub>2</sub>e

**b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.**

There are no known off-site sources of emissions that may affect this proposal.

**c. Proposed measures to reduce or control emissions or other impacts to air, if any:**

During construction, impacts to air quality would be reduced and controlled through implementation of standard federal, state, and local emission control criteria and City of Seattle construction practices. These would include requiring contractors to use best available control technologies, proper vehicle maintenance, and minimizing vehicle and equipment idling.

**3. Water**

**a. Surface:**

**(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If so, describe type and provide names. If appropriate, state what stream or river it flows into.**

Six of the sites are near surface water bodies:

- Site 3 is adjacent to wetlands located on either side of the utility corridor, and likely in associated wetland buffers. The wetlands are connected via a cross culvert to a Riparian Management Area, as mapped by SDCI, adjacent to the south end of the project area. The Riparian Management Area contains Seola Beach Creek, a Puget Sound tributary classified as a Type 5 (Type Ns) stream (Tabor et al. 2010, *Distribution and Habitat Use of Fish in Seattle's Streams*).
  
- Sites 5 and 6 are in the 200-foot Shoreline Management District of Lake Washington, as mapped by SDCI. Site 6 is also partially in a wetland and its buffer associated with the Lake, as mapped by SDCI.
  
- Site 10 is adjacent to wetlands and is in the wetland buffer. It is also in the Riparian Management Area of Durham Creek, as mapped by SDCI (Figure 1). The subject pipes convey stream flow beneath Myers Way S. Immediately upstream and west of the subject pipes, stream flow is routed through a stormwater detention pond on the City of Seattle Joint Training Facility property. The pond also collects wetland drainage runoff from areas to the southeast. Upstream and south of the detention pond, a historic stream channel flows through a wetland area before being conveyed into the pond. The stream in this area is ephemeral and less than two feet wide. This is the farthest upstream extent of Durham Creek as mapped by the SDCI and Tabor et al. (2010, *Distribution and Habitat Use of Fish in Seattle's Streams*). Tabor mapped this as a Type F stream channel based on stream characteristics, although no fish were captured.

Some of the discharge out of the detention pond is directed into a compensatory wetland mitigation area located in a large ditched feature on the west side of Myers Way S, adjacent to the project area. Most of the flow, however, is directed into the subject pipe, which conveys the flow beneath Myers Way S. The pipe discharges flow into a ravine on the east side of the road. The upper portion of the ravine is an approximately 30% slope. Farther downstream, the channel area appears to be of sufficient width (greater than two feet) and gradient (less than 16%) to provide fish habitat. However, at State Route 509, the stream enters a steep, approximately 1,000-foot-long piped segment. The stream then daylight for a short segment within Marra-Desimone Park, where it again meets fish-bearing criteria. Near the northwest corner of the Park, the stream enters the municipal stormwater system, eventually discharging into the Duwamish River near 7th Ave S—more than one mile to the north.

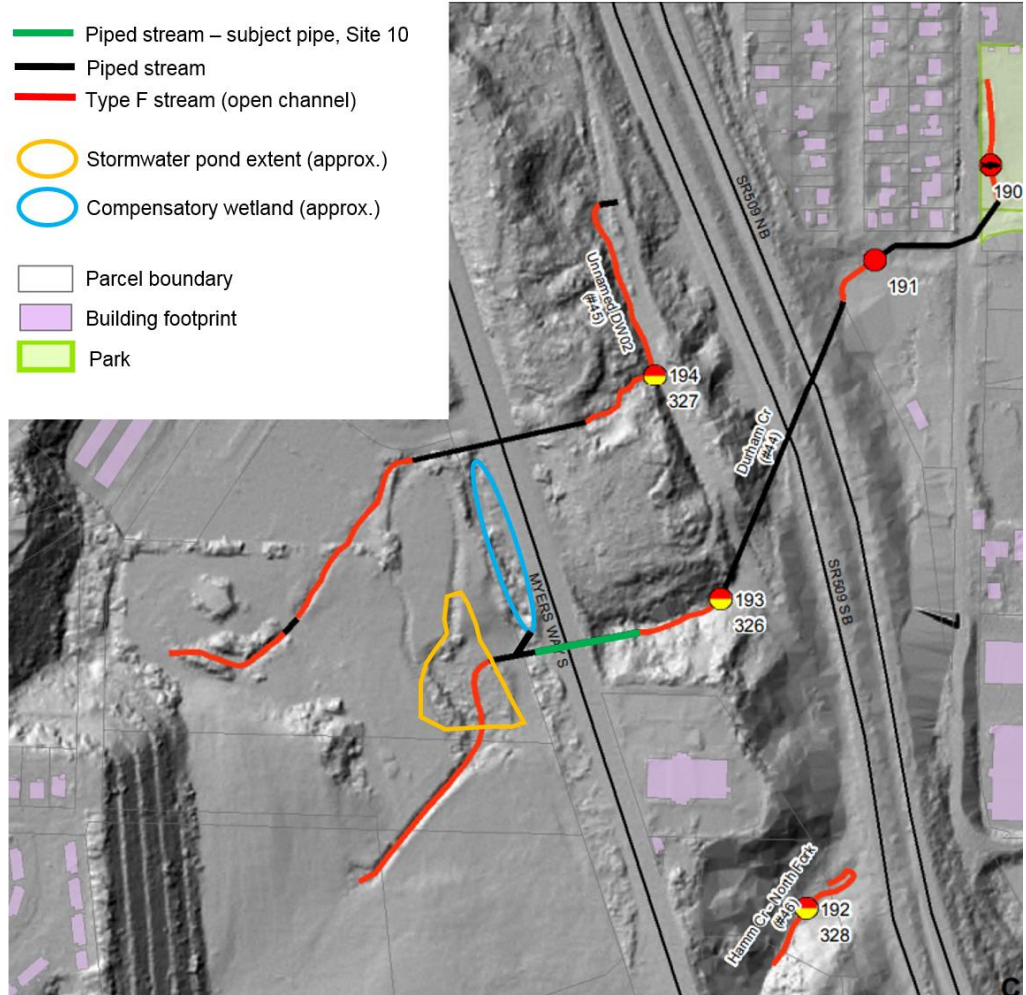


Figure 1. Site 10 piped streams and observed surface water features. Modified from Tabor et al. (2010). Note typing of upstream extent of Durham Creek has not been modified from original mapping.

- Site 11 is partially in the 200-foot Shoreline Management District of Green Lake, as mapped by SDCI.

**(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If so, please describe, and attach available plans.**

For those sites listed above, one or more existing MHs are adjacent to or partially in the wetland or surface water body. Work in these areas would be limited to work in the MHs and existing pipe. Staging and vehicle access areas would be located 200 feet or farther from the surface water bodies listed in (1) above.

**(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands, and indicate the area of the site that would be affected. Indicate the source of fill material.**

No material would be placed in or removed from surface water or wetlands.

- (4) Will the proposal require surface water withdrawals or diversions? If so, give general description, purpose, and approximate quantities if known.**

The proposed work would not require surface water withdrawals. The subject pipe at Site 10 conveys flow from Durham Creek together with stormwater and would be diverted during construction at that site to discharge to the same ravine into which it currently discharges, but through an existing outfall at a different location. No other sites would require surface water diversions.

- (5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

No portion of the project lies within a 100-year floodplain.

- (6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

The proposal would not produce or discharge waste materials to surface waters.

**b. Ground:**

- (1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.**

The proposal would not withdraw, discharge, or surcharge groundwater.

- (2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals...; agricultural, etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

No waste material would be discharged to groundwater for this project.

**c. Water Runoff (including storm water):**

- (1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Stormwater runoff may need to be managed during construction to prevent sediment from entering and leaving the construction site. Any precipitation that lands on the construction site would be contained on-site and allowed to infiltrate. Barriers such as sand bags would be used to prevent runoff from entering the construction zone. Once construction is complete, temporary erosion control measures would be removed.

The completed project would not create a need to manage additional stormwater runoff beyond current conditions. Stormwater would follow pre-construction

pathways. The current volume, timing, and duration of these stormwater flows are not known.

**(2) Could waste materials enter ground or surface waters? If so, generally describe.**

There would be no waste materials from this project that could enter ground or surface waters.

**(3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

The completed project would restore disturbed areas to near-original condition and would not create a need to manage additional stormwater runoff beyond currently existing conditions. Stormwater would follow pre-construction pathways. The current volume, timing, and duration of these stormwater flows are not known.

**d. Proposed measures to reduce or control surface, ground, runoff water, and drainage impacts, if any:**

No adverse impacts to surface, ground, or runoff water are anticipated. Best management practices, as identified in the City of Seattle’s Stormwater Code (Seattle Municipal Code Title 22, Subtitle VIII), the City of Seattle Director’s Rule SDCI 17-2017/SPU DWW-200, and Volume 2 Construction Stormwater Control Manual, would be used as needed to control erosion and sediment transport from and to the project site during construction.

**4. Plants**

**a. Types of vegetation found on the site:**

<input checked="" type="checkbox"/> Deciduous trees:	<input type="checkbox"/> Alder	<input checked="" type="checkbox"/> Maple	<input type="checkbox"/> Aspen	<input checked="" type="checkbox"/> Other: Willow
<input checked="" type="checkbox"/> Evergreen trees:	<input checked="" type="checkbox"/> Fir	<input checked="" type="checkbox"/> Cedar	<input checked="" type="checkbox"/> Pine	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Shrubs				
<input checked="" type="checkbox"/> Grass				
<input type="checkbox"/> Pasture				
<input type="checkbox"/> Crop or grain				
<input type="checkbox"/> Orchards, vineyards, or other permanent crops				
<input type="checkbox"/> Wet soil plants:	<input type="checkbox"/> Cattail	<input type="checkbox"/> Buttercup	<input type="checkbox"/> Bulrush	<input type="checkbox"/> Skunk cabbage
<input checked="" type="checkbox"/> Other: Yellow flag iris, reed canarygrass, northern giant horsetail				
<input type="checkbox"/> Water plants:	<input type="checkbox"/> water lily	<input type="checkbox"/> eelgrass	<input type="checkbox"/> milfoil	<input type="checkbox"/> Other:
<input type="checkbox"/> Other types of vegetation:				

**b. What kind and amount of vegetation will be removed or altered?**

Most sites are in paved street ROW, including sidewalks. Work at these sites would not alter or remove vegetation. Where sites are in landscaped or vegetated natural areas, vegetation modification would be limited to trimming to allow access; no vegetation is proposed for permanent removal. Vegetation damaged by construction, staging, or access would be restored to pre-project conditions.

**c. List threatened or endangered species known to be on or near the site.**

No federally listed endangered or threatened plant species or State-listed sensitive plant species are known to occur in Seattle’s municipal limits. All project sites have been intensively disturbed by development and redevelopment over the last 150 years and have been extensively excavated, filled, paved, or occupied by street, utility, residential, and other constructed features. There is no habitat for threatened or endangered plants.

**d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:**

The proposed work would limit plant removal, pruning, and other disturbance to that required for project construction. Project construction would not remove any trees or shrubs, but may temporarily damage lawn or landscaped areas. All damaged vegetation would be restored to pre-project conditions following project completion.

**e. List all noxious weeds and invasive species known to be on or near the site.**

Most sites are in unvegetated paved street ROW, including sidewalks. However, numerous weeds are present in adjacent vegetated areas. Himalayan blackberry (*Rubus armeniacus*), and reed canarygrass (*Phalaris arundinacea*) are present in the wetland area of Site 3 (Segment 3C). Reed canarygrass and yellow flag iris (*Iris pseudacorus*) are present along the shoreline at Site 6 (Segment 6B). Hedge bindweed (*Convolvulus sepium*; listed as a King County weed of concern) is present near Sites 3C and 6B. Giant hogweed (*Heracleum mantegazzianum*; a Class A noxious weed in King County) is present near Sites 22 (Segment 22A) and 23 (Segment 23A). Tansy ragwort (*Senecio jacobaea*); a Class B Designate noxious weed in King County) and kochia (*Bassia scoparia*; a Class B noxious weed in King County) are present near Site 23 (Segment 23A).

**5. Animals**

**a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site:**

**Birds:**             Hawk             Heron             Eagle             Songbirds

Other: Due to the geographic extent of the project, and the fact that it is located within the Pacific Flyway migratory corridor, the project area as a whole experiences the occurrence of a wide variety of resident and migratory waterfowl, song birds, and raptors. In addition to boxes checked, some commonly observed species include geese, ducks, crows, pigeons, and gulls.

**Mammals:**         Deer             Bear             Elk             Beaver

Other: The geographic extent of the project encompasses the presence and habitats for a variety of animal species commonly found in urban areas of the region. Commonly observed species include opossums, rabbits, raccoon, skunk, squirrel, rats, mice, and bats.

**Fish:**             Bass             Salmon         Trout         Herring

Shellfish    Other: Fish species are present in water bodies adjacent to project sites (Lake Washington and Puget Sound). The watercourse at Site 10 is typed as potentially used by fish (Type F), but is upstream of complete, artificial fish passage barriers (Tabor et al. 2010, *Distribution and Habitat Use of Fish in Seattle's Streams*).

**b. List any threatened or endangered species known to be on or near the site:**

Based on a check of the Washington Department of Fish and Wildlife's "Priority Habitat Species on the Web" database on February 15 and July 25, 2018, Site 10 is mapped as being within a known occurrence of western pond turtle (*Actinemys marmorata*), a State-listed endangered species. Site 8 is adjacent to another known occurrence area for that species. Sites 5 and 6 are adjacent to Lake Washington, which supports threatened Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and bull trout (*Salvelinus confluentus*).

**c. Is the site part of a migration route? If so, explain.**

Seattle is in the migratory route of many birds and other animal species and is part of the Pacific Flyway, a major north-south route of travel for migratory birds in the Americas extending from Alaska to Patagonia, South America. Also, Puget Sound and Lake Washington are important water migration routes for many animal species.

**d. Proposed measures to preserve or enhance wildlife, if any:**

The proposed work would limit plant removal, pruning, and other disturbance to that required for project construction. Project construction would not remove any trees or shrubs, but may temporarily damage lawn or landscaped areas. All damaged vegetation would be restored to pre-project conditions following project completion.

**e. List any invasive animal species known to be on or near the site.**

King County lists the European starling, house sparrow, Eastern gray squirrel, and fox squirrel as terrestrial invasive species for this area (<http://www.kingcounty.gov/services/environment/animals-and-plants/biodiversity/threats/Invasives.aspx>).

**6. Energy and Natural Resources**

**a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.**

No energy would be required to meet the constructed project's energy needs, beyond the energy already utilized for the existing sewer and storm systems.

**b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

The proposed project does not involve building structures or planting vegetation that would block access to the sun for adjacent properties.



- c. **What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:**

There are no conservation features or proposed measures to reduce or control energy impacts because there would be no such impacts.

**7. Environmental Health**

- a. **Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe:**

Small amounts of materials likely to be present during construction, mainly to support vehicle and construction equipment, include gasoline and diesel fuels, hydraulic fluids, oils, lubricants, but also may include solvents, paints, and other chemical products. A spill of one of these chemicals could potentially occur during construction due to equipment failure or worker error. Though unlikely, contaminated soils, sediments, or groundwater could also be exposed during excavation. If disturbed, contaminated substances could expose construction workers and potentially other individuals in the vicinity through blowing dust, stormwater runoff, or vapors.

CIPPs are manufactured using either thermal curing (hot water or steam) or photo curing [ultraviolet (UV) light] methods. The proposed CIPP work at all sites would use UV light to cure the resin. The photo curing installation process uses liners impregnated with a mixture of unsaturated polyester resins and other compounds that cures upon exposure to UV light. Once the liner has been exposed to UV light, the liner hardens inside the existing deteriorated pipe to create a new pipe-within-a-pipe.

Because UV curing CIPP technology is relatively new, limited research has been conducted regarding its potential chemical emissions into the air or water during installation or released into water after installation. Because the chemical emissions resulting from use of this technology are poorly known, the environmental effects related to Environmental Health are difficult to evaluate. However, concerns regarding chemical emissions into the environment by both thermal and UV curing CIPP technologies have been identified as possible or confirmed worker safety, public safety, and environmental issues. For UV-cured CIPP installations, a variety of organic compounds such as carcinogens, endocrine-disrupting compounds, and hazardous air pollutants have been found, including phenol, styrene, dibutyl phthalate, and possibly ozone<sup>1</sup>.

Except for styrene, the total maximum exposures for these and other hazardous or potentially hazardous compounds released into the environment by the proposed work are unknown and have not been evaluated for purposes of this SEPA environmental review. For styrene, photo-curing methods are generally acknowledged to result in lower styrene emissions than thermal curing methods. Styrene has been determined by

<sup>1</sup> Li, Xianzhen, R. Kyungyeon, M. Nuruddin, S.M.T. Sendesi, J.A. Howarter, J.P. Youngblood, N. Zyaykina, C.T. Jafvert, and A.J. Whelton. 2019. Outdoor manufacture of UV-cured plastic linings for storm water culvert repair: Chemical emissions and residual. Environmental Pollution 245: 1031-1040. <https://doi.org/10.1016/j.envpol.2018.10.080>

the federal government to be “a reasonably anticipated carcinogen.” Though SPU anticipates that total maximum exposures resulting from the UV-curing process would be on the order of a few ppm at each site, at most, during a period of several hours. This exposure is well below the Occupational Safety and Health Administration’s (OSHA) established regulatory styrene exposure limit (Permissible Exposure Limit [PEL]) of 100 ppm for healthy adult workers in the workplace (8 hours per day, 5 days per week). OSHA’s air regulatory exposure limit for styrene is not protective of infants, children, or immuno-compromised individuals who would be more susceptible to chemical toxicity. Based on risk assessments by the United States and the Netherlands, the International Toxicity Estimates for Risk (ITER) values for styrene for these susceptible populations range from 20 to 25 ppm.

**(1) Describe any known or possible contamination at the site from present or past uses.**

None of the project sites are known to have environmental contamination. However, it is possible that contamination of soil or groundwater associated with past uses or activities on or near a site may be present.

**(2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

There are no known hazardous chemicals or conditions that might affect project development and design.

**(3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project’s development or construction, or at any time during the operating life of the project.**

Chemicals and pollutants that may be present during construction include:

- Petroleum products associated with vehicular and equipment use, including fuel, lubricants, hydraulic fluids, and form-release oils
- Paints, glues, solvents, and adhesives
- Chemicals associated with portable toilets.

No toxic or hazardous chemicals would be stored, used, or produced at any time during the operating life of the constructed project.

**(4) Describe special emergency services that might be required.**

No special emergency services such as confined space rescue would be required during construction or operation of the project. Possible fire or medic services could be required during project construction, as well as possibly during operation of the completed project. However, the completed project would not demand higher levels of special emergency services than already exist at the project location.

**(5) Proposed measures to reduce or control environmental health hazards, if any:**

The construction contractor would be required to develop and implement a Spill Plan to control and manage spills during construction. In addition, a spill response kit would be maintained at each site during construction work at that site, and all project site workers would be trained in spill prevention and containment consistent with the City of Seattle’s Standard Specifications for Road, Bridge, and Municipal Construction. During construction, the contractor would use standard operating procedures and best management practices identified in the City of Seattle’s Stormwater Code (Title 22, Subtitle VIII), the City of Seattle Director’s Rule SDCI 17-2017/SPU DWW-200, and Volume 2 Construction Stormwater Control Manual to reduce or control any possible environmental health hazards . Soils contaminated by spills during construction would be excavated and disposed of in a manner consistent with the level and type of contamination, in accordance with federal, state and local regulations, by qualified contractor(s) and/or City staff.

Additionally, workers would be required to follow Washington State safety standards for entry and work in confined spaces (Chapter 296-809 Washington Administrative Code [WAC]), which includes requirements for atmospheric testing in a confined space structure prior to entry and work in the structure. Following completion of construction, SPU workers performing routine operation and maintenance activities requiring entry to MHs and other underground confined space structures would be required to follow requirements of SPU’s Confined Space Safety Program which implements the requirements of WAC 296-809.

**b. Noise**

**(1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

Noise that exists in the area would not affect the project.

**(2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.**

Noise levels in the vicinity of project construction would temporarily increase during construction. Short-term noise from construction equipment would be limited to the allowable maximum levels of applicable laws, including the City of Seattle's Noise Control Ordinance (SMC 25.08.425—Construction and Equipment Operations). Within the allowable maximum levels, SMC 25.08 permits noise from construction equipment between the hours of 7 a.m. and 7 p.m. weekdays, and 9 a.m. and 7 p.m. weekends and legal holidays. SPU expects construction at each site would take no more than four working days to complete. The completed project would generate no additional noise from equipment used for operation or maintenance.

**(3) Proposed measures to reduce or control noise impacts, if any:**

Construction equipment would be muffled in accordance with the applicable laws. Seattle Municipal Code Chapter 25.08, which prescribes limits to noise and construction activities, would be enforced while the project is being constructed and during operations, except for emergencies.

**8. Land and Shoreline Use**

**a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

Most sites are in improved street ROW and adjacent landscaping. Sites outside of ROW are in existing utility easements adjacent to or in private residential property or City-owned public park property. Site 10 is in a utility easement adjacent to an area known to be used as a homeless encampment.

Adjacent land uses are primarily residential. At Sites 1 and 11, adjacent residential uses are interspersed with commercial uses. Adjacent land uses at Sites 2, 15, and 23 are primarily commercial or industrial. Adjacent land uses at Site 10 are institutional. In addition to residential land uses, adjacent land uses at Sites 6, 8, and 11 include recreational (park) uses.

The project could result in short-term, temporary street lane and sidewalk closures, and/or route detours that would be experienced by individuals who live, work, or visit destinations near project sites. For three sites (5, 8, and 18), MH access would temporarily block access to a residential driveway; coordination with the resident would be required.

**b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or non-forest use?**

The proposed project sites have not been recently used for agricultural purposes or forestry. The project would not result in land use conversion of any kind.

**(1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversized equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

The proposed work would neither be affected by nor affect surrounding working farm or forest land normal business operations because there are no such operations at or near any of the project sites.

**c. Describe any structures on the site.**

The project sites are locations of existing, buried sewer and stormwater infrastructure and other utilities located in improved street ROW and utility easements. Where MH covers are in undeveloped utility easements, they are built into small above-ground concrete structures. Other structures in the vicinity of project sites include street signs

and utility poles, residential structures, and fences, and are not associated with the project. At Site 9 (in the rear yard of a residential property), one of the subject MHs is adjacent to a stone and wood fence. This fence does not interfere with access to the MH and project activities would not affect the fence.

**d. Will any structures be demolished? If so, what?**

The project would not demolish any aboveground structures.

**e. What is the current zoning classification of the site?**

Site	Zoning Classification
1	Multi-Family Residential (LR1) / Neighborhood/Commercial (NC1-30)
2	Manufacturing/Industrial (IG2 U/85)
3	Single-Family Residential (SF 5000)
4	Single-Family Residential (SF 5000)
5	Single-Family Residential (SF 5000)
6	Single-Family Residential (SF 5000)
8	Single-Family Residential (SF 5000)
10	Neighborhood/Commercial (C2-65)
11	Single-Family Residential (SF 5000) / Neighborhood/Commercial (NC1-30)
12	Single-Family Residential (SF 5000)
14	Single-Family Residential (SF 5000)
15	Manufacturing/Industrial (IG2 U/85)
16	Single-Family Residential (SF 5000)
17	Single-Family Residential (SF 5000)
18	Single-Family Residential (SF 5000)
22	Multi-Family Residential (LR1)
23	Manufacturing/Industrial (IG1, IG2)

**f. What is the current comprehensive plan designation of the site?**

Site	Zoning Classification
1	Multi-Family Residential / Commercial Mixed Use
2	Industrial
3	Single-Family Residential
4	Single-Family Residential
5	City-Owned Open Space
6	City-Owned Open Space
8	City-Owned Open Space
10	Commercial Mixed Use
11	Single-Family Residential / Commercial Mixed Use
12	Single-Family Residential
14	Single-Family Residential
15	Industrial
16	Single-Family Residential
17	Single-Family Residential

18	Single-Family Residential
22	Multi-Family
23	Industrial

**g. If applicable, what is the current shoreline master program designation of the site?**

- Site 5 is in the 200-foot Shoreline Management District of Lake Washington, Conservancy Recreation Shoreline Environment Designation.
- Site 6 is located within the 200-foot shoreline management district of Lake Washington. The subject pipe segments span both the Conservancy Recreation and Urban Residential Shoreline Environment Designations.
- Site 11 is located partially within the 200-foot shoreline management district of Green Lake, Urban Residential Shoreline Environment Designation.

**h. Has any part of the site been classified as an “environmentally critical” area? If so, specify.**

The following environmentally critical areas (ECAs) are mapped by SDCI:

- Site 2 is in a Liquefaction ECA.
- Site 3 is adjacent to a wetland and likely within its associated buffer. The wetland does not appear to be connected to another surface water body.
- Site 5 is in the 1,000-foot methane buffer of a Historical Landfill.
- Site 6 is partially in a wetland and its buffer associated with Lake Washington.
- Site 8 is partially in a Liquefaction ECA and Potential Slide Area.
- Site 10 is in the Riparian management Area for Durham Creek. Stream flow is culverted under Myers Way S and subsequently flows east to the Duwamish Waterway. On the west side of Myers Way S, the site is in the buffer of a compensatory wetland (D. Coulbert, City of Seattle Joint Training Facility; pers. comm., March 26, 2018). On the east side of Myers Way S, the site partially extends into a ravine that is mapped as a Steep Slope ECA.
- Site 14 is adjacent to a Steep Slope and partially in a Potential Slide Area.
- Site 15 is in a Liquefaction ECA.
- Site 22 is near a flood-prone ECA.

**i. Approximately how many people would reside or work in the completed project?**

No people would reside or work in the completed project.

**j. Approximately how many people would the completed project displace?**

The project would not displace any people.

**k. Proposed measures to avoid or reduce displacement impacts, if any:**

There would be no displacement impacts.

**l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

The project would be compatible with existing and projected land uses and plans. No measures are required to ensure the proposal is compatible with existing and projected land uses and plans.

**m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:**

There are no nearby agricultural and forest lands of long-term commercial significance. No measures are required to reduce or control impacts to agricultural and forest lands of long-term commercial significance.

**9. Housing**

**a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

The proposed project would not construct any housing units.

**b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

The proposed project would not eliminate any housing units.

**c. Proposed measures to reduce or control housing impacts, if any:**

No measures are proposed because there would be no housing impacts.

**10. Aesthetics**

**a. What is the tallest height of any proposed structure(s), not including antennas? What is the principal exterior building material(s) proposed?**

All structures are buried. Above-ground MHs would not be modified.

**b. What views in the immediate vicinity would be altered or obstructed?**

No views would be altered or obstructed.

**c. Proposed measures to reduce or control aesthetic impacts, if any:**

No such measures are proposed because there would be no aesthetic impacts.

**11. Light and Glare**

**a. What type of light or glare will the proposal produce? What time of day would it mainly occur?**

The constructed project would not produce light or glare. No new street lights are proposed or required. During construction, if an emergency situation calls for after-dark work, the construction contractor may deploy portable lights that temporarily produce light and glare.

**b. Could light or glare from the finished project be a safety hazard or interfere with views?**

The completed project would not create light or glare.

**c. What existing off-site sources of light or glare may affect your proposal?**

There are no existing off-site sources of light and glare that would affect the proposal.

**d. Proposed measures to reduce or control light and glare impacts, if any:**

No measures are needed to reduce or control light and glare impacts because no impacts would occur. If an emergency requires after-dark work during construction, portable lighting would be adjusted as feasible to minimize glare.

**12. Recreation**

**a. What designated and informal recreational opportunities are in the immediate vicinity?**

Most sites are in improved street ROW used for informal recreational activities such as dog-walking, walking, jogging, and bicycling. Additionally, Site 5 is partially in Stan Sayres Memorial Park; Site 6 is in Pritchard Island Beach Park; Site 8 is partially in Lincoln Park. All three properties are multi-purpose, City of Seattle public parks.

**b. Would the proposed project displace any existing recreational uses? If so, describe.**

Proposed work would not permanently displace any existing recreational uses. Access to the streets and parking areas affected by project construction would be more challenging during construction, but SPU would require the project contractor to maintain safe pedestrian and vehicle access at all times. In the three City parks listed above, lawn and other vegetated areas in the immediate vicinity of the existing MH covers would be off-limits for the duration of project construction (two to four working days).

**c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

Temporary closures or detours affecting vehicle and/or pedestrian routes/access may be required. The project would attempt to make those closures and detours as brief as possible.

**13. Historic and Cultural Preservation**

**a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.**

Site 2 is located in the center of Occidental Ave S. On the west side of this street, and adjacent to the proposed project site, are two buildings that have been determined to be eligible for historic status due to their age. The buildings are both brick façade buildings. The northern building was built in 1900 and is located at 2200 S 1st Ave S. The southern building was built in 1925 and is at 2230 1st Ave S.



Additionally, Site 5 is located in the Lake Washington Boulevard historic district. The district encompasses Lake Washington Boulevard connecting Montlake Boulevard to Seward Park through the Washington Park Arboretum and land generally adjacent to Lake Washington. The district was designated March 16, 2017 and is considered significant at the local level.

No other places or objects listed on, or proposed for, national, state, or local preservation registered are known to be on or adjacent to the project sites.

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.**

According to the Washington Information System for Architectural and Archaeological Records Data predictive model based on environmental factors, those sites located in south Seattle, on historic fill, and/or located on shorelines (Sites 2, 3, 5, 6, 8, 10, 14, 15, and 16) are at Very High Risk for archaeological resources. Sites 1 and 4 are at High Risk for archaeological resources. Sites 11, 12, 17, 22, and 23 are in areas predicted to have Moderately Low risk for such resources. Site 18 contains pipe segments in areas predicted to have Moderate to High risk.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the Department of Archaeology and Historic Preservation, archaeological surveys, historic maps, GIS data, etc.**

To determine if National Register or Washington Heritage properties are in or adjacent to the project, the 16 project sites were checked against the following registers on February 15 and July 25, 2018:

Washington Heritage Register and National Register of Historic Places:

<http://www.dahp.wa.gov/historic-register>

Washington Information System for Architectural and Archaeological Records Data database: <https://fortress.wa.gov/dahp/wisaardp3/>

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.**

The proposed work would not affect buildings or known cultural resources. Only portions of SPU's existing sewer and stormwater systems would be affected. None of those objects are considered historically or culturally important. Also, the proposed work is located on previously disturbed and filled upland areas. The work's location on previously disturbed and filled ground reduces the chance of encountering contextually significant archaeological materials.

**14. Transportation**

- a. Identify public streets and highways serving the site or affected geographic area, and describe proposed access to the existing street system. Show on site plans, if any.**

Most sites are in existing public street ROW. For sites in utility easements or public parks, access would be obtained using adjacent public street ROW. Staging areas would be within 200 feet of each MH on existing street ROW or utility easements where possible.

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?**

Public bus transit service is provided by King County Metro. The availability and level of service near the project sites varies by site; however, all sites are located in one half mile of a bus stop. The proposed project would not require nor affect public transit.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?**

The completed project would neither create nor eliminate parking spaces. However, during construction, there may be temporary on-street parking closures during construction activities. Specific timing and duration of parking closures are not known at this time, but such closures would comply with relevant policies administered by SDOT as part of the street use permitting process.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

The project would restore any damaged street panels, curbs, traffic aprons, or other transportation infrastructure to pre-construction conditions or better and consistent with SDOT requirements. The proposal would not require any new or improved public or private transportation infrastructure.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

The proposed project would not use or occur in the immediate vicinity of water, rail, or air transportation.

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?**

Construction would require approximately 204 round trips for the 17 sites collectively. Project work would be conducted at existing sewer and storm drain sites. These sites currently require infrequent, periodic trips to transport SPU crews, contractors, and equipment to perform visual inspections, maintenance, and repairs when needed. The

completed project would not require additional traffic beyond that which currently occurs.

**g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

The proposal would not interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area.

**h. Proposed measures to reduce or control transportation impacts, if any:**

The following measures would be used to reduce or control transportation impacts:

- SPU would require the construction contractor to submit a traffic control plan for approval and enforcement by SPU and SDOT.
- SPU would conduct public outreach before and during project construction to notify residents, local agencies, Metro, and other stakeholders of work progress and expected disruptions or changes in traffic flow.
- Access for emergency-response vehicles would be maintained at all times.
- Through access may not be available at all times during construction, but temporary closures would be minimized and detour routes would be properly and clearly signed. Vehicle access to private properties would be maintained, subject to temporary traffic control measures such as signage and flagging.
- Alternative routes for pedestrians, bicyclists, and those with disabilities would be identified and clearly signed, as needed.

**15. Public Services**

**a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.**

The proposed project is not expected to create an increased need for public services. The project would be required at all times to accommodate emergency access for buildings accessed via the affected streets. Emergency access would comply with relevant policies administered by SDOT as part of the Street Use permitting process.

**b. Proposed measures to reduce or control direct impacts on public services, if any.**

During construction, the project would be required at all times to accommodate emergency access. Otherwise, no mitigation is being proposed because the project would have no adverse impacts on public services.

**16. Utilities**

**a. Check utilities available at the site, if any:**

- |                               |  |  |   |  |
|-------------------------------|--|--|---|--|
| <input type="checkbox"/> None | <input checked="" type="checkbox"/> Electricity                | <input checked="" type="checkbox"/> Natural gas    | <input checked="" type="checkbox"/> Water | <input checked="" type="checkbox"/> Refuse service |
|                               | <input checked="" type="checkbox"/> Telephone                  | <input checked="" type="checkbox"/> Sanitary sewer | <input type="checkbox"/> Septic system    |  |
|                               | <input checked="" type="checkbox"/> Other: cable, fiber optics |  |   |  |

**b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

During CIPP installation to sanitary sewer and combined sewer pipes, sewer service would be interrupted for brief periods to install and then disconnect a bypass around the affected feeder main. SPU would notify affected residents and businesses by issuing Service Disruption Notices (in the form of door hangers) at least 48 hours before those outages occur.

No new utilities are being proposed. No interruptions of other utilities or services are anticipated during project construction.

**C. SIGNATURE**

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: *Samantha Menathy*  
Samantha Menathy, Project Manager

Date: 09-10-19

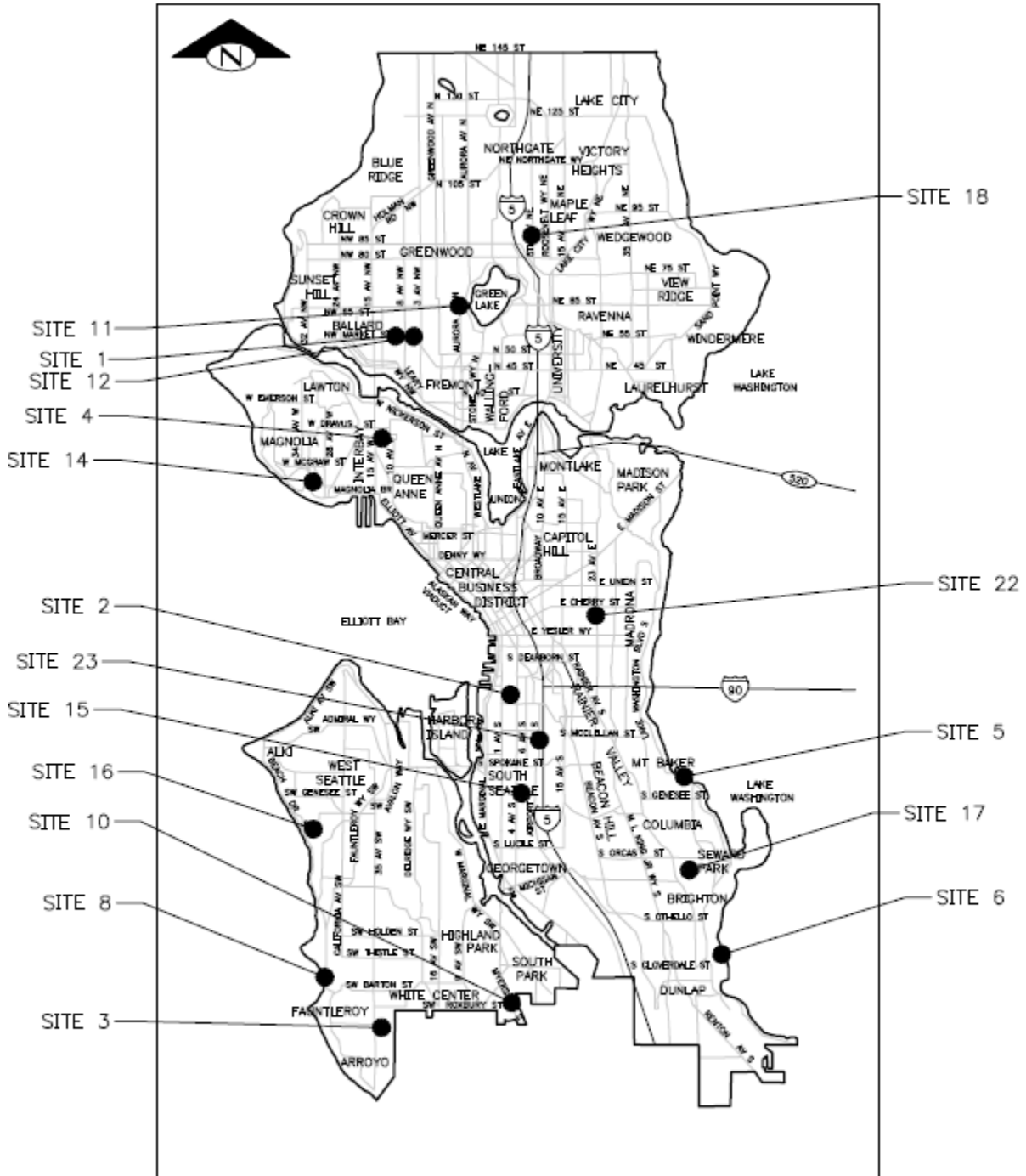
Attachment A – Vicinity Map

Attachment B – Summary, 2017 Large Diameter Sewer Lining Sites

Attachment C – Greenhouse Gas Emissions Worksheet



Attachment A – 2017 Large Diameter Sewer Lining Contract Vicinity Map



2017 LARGE DIAMETER SEWER LINING CONTRACT  
VICINITY MAP

**2017 Large Diameter Sewer Lining  
SEPA Environmental Checklist**

**Attachment B - Summary, 2017 Large Diameter Sewer Lining Sites**

Pipe Materials: CMP = Corrugated Metal; CON = Concrete; RCP = Reinforced Concrete; VCP = Vitrified Clay; PVC = Polyvinyl Chloride; BRICK = Brick

Site #	Conveyance System	Pipe Segment	Upstream MH	Downstream MH	Work Address	SPU Work Order #	Linear Feet of Repair	Pipe Diameter (in)/Material
1	Sanitary sewer	1A	012-392	012-393	5503 6 <sup>th</sup> Ave NW	4284373	267	18 VCP
		1B	012-391	012-392	417 NW Market St	7457051	235	18 VCP/RCP
2	Sanitary sewer	2A	051-008	051-009	2244 1 <sup>st</sup> Ave S	5941472	379	21 RCP
		2B	051-006	051-007	1952 1 <sup>st</sup> Ave S	7495659	380	18 RCP
		2C	051-007	051-008	1900 Occidental Ave S	7496386	380	21 RCP
3	Sanitary sewer	3A	301-093	301-100	2850 SW 106 <sup>th</sup> St	6012505	347	18 RCP
		3B	301-071	301-093	3004 B SW 106 <sup>th</sup> St	6014119	332	
		3C	301-070	301-071	10262 31 <sup>st</sup> Ave SW	6034443	339	
4	Sanitary sewer	4A	026-188	028-187	2712 11 <sup>th</sup> Ave W	6279579	54	18 VCP
5	Sanitary sewer	5A	059-400	059-399	3903 48 <sup>th</sup> Ave S	6489528	453	21 VCP
		5B	059-399	059-398	4620 S Bradford St	6491205	302	
		5C	059-398	059-456	4600 S Bradford St	6491237	291	
6	Combined sewer	6A	081-061	081-058	8314 Island Dr S	6751562	260	21 VCP
		6B	081-062	081-061		6752301	105	
8	Combined sewer	8A	075-015	075-016	8406 Fautleroy Way SW	7256884	230	18 VCP/PVC
		8B	075-016	075-017	8436 Fautleroy Way SW	7516910	170	18 VCP/RCP
		8C	075-041	075-042	8621 Fautleroy Way SW	7518218	145	18 VCP
10	Stormwater drain	10A	D078-183	D078-171	9401 Myers Way S	7463439	30	24 CMP
		10B	D078-171	D078-172		7463440	167	
11	Combined sewer	11A	004-395	004-343	6509 Aurora Ave N	7615578	287	36 BRICK
		11B	004-358	004-398	6507 Woodland Pl N	8154068	134	
12	Combined sewer	12A	013-022	013-021	626 N 63 <sup>rd</sup> St	626496	432	8 VCP
14	Combined sewer	14A	026-352	026-351	2005 33 <sup>rd</sup> Ave W	636806	267	30 VCP
15	Combined sewer	15A	057-040	057-039	710 S Dakota St	651635	336	21 VCP
16	Combined sewer	16A	061-015	061-016	5003 50 <sup>th</sup> Ave SW	654127	310	15 RCP
17	Combined sewer	17A	066-465	066-482	4703 S Juneau St	656743	336	15 PVC
18	Combined sewer	18A	233-268	233-295	8854 1 <sup>st</sup> Ave NE	621835	331	8 CON
		18B	233-295	233-322	8828 1 <sup>st</sup> Ave NE	622139	332	12 RCP
		18C	233-322	233-359	8556 1 <sup>st</sup> Ave NE	622287	141	15 RCP
		18D	233-359	233-361	8544 1 <sup>st</sup> Ave NE	622477	225	15 RCP
		18E	233-361	233-362	8528 1 <sup>st</sup> Ave NE	622683	228	15 RCP
		18F	233-362	005-059	104 NE 85 <sup>th</sup> St	622720	43	15 RCP

**2017 Large Diameter Sewer Lining  
SEPA Environmental Checklist**

Site #	Conveyance System	Pipe Segment	Upstream MH	Downstream MH	Work Address	SPU Work Order #	Linear Feet of Repair	Pipe Diameter (in)/Material
		18G	233-360	233-359	8544 1 <sup>st</sup> Ave NE	622286	39	8 CON
		18H	233-365	233-360	8549 2 <sup>nd</sup> Ave NE	622276	258	8 CON
22	Sanitary sewer	22A	041-154	041-152	2122 E Jefferson St	9406689	82	27 VCP
23	Sanitary sewer	23A	051-260	051-259	2600 Airport Way S	9881709	30	21 RCP



**2017 Large Diameter Sewer Lining  
SEPA Environmental Checklist**

**Attachment C – Greenhouse Gas Emissions Worksheet**

<b>Section I: Buildings</b>						
			Emissions <b>Per Unit</b> or <b>Per Thousand Square Feet</b> (MTCO <sub>2</sub> e)			
Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Embodied	Energy	Transportation	Lifespan Emissions (MTCO <sub>2</sub> e)
Single-Family Home	0		98	672	792	0
Multi-Family Unit in Large Building	0		33	357	766	0
Multi-Family Unit in Small Building	0		54	681	766	0
Mobile Home	0		41	475	709	0
Education		0.0	39	646	361	0
Food Sales		0.0	39	1,541	282	0
Food Service		0.0	39	1,994	561	0
Health Care Inpatient		0.0	39	1,938	582	0
Health Care Outpatient		0.0	39	737	571	0
Lodging		0.0	39	777	117	0
Retail (Other than Mall)		0.0	39	577	247	0
Office		0.0	39	723	588	0
Public Assembly		0.0	39	733	150	0
Public Order and Safety		0.0	39	899	374	0
Religious Worship		0.0	39	339	129	0
Service		0.0	39	599	266	0
Warehouse and Storage		0.0	39	352	181	0
Other		0.0	39	1,278	257	0
Vacant		0.0	39	162	47	0
<b>TOTAL Section I Buildings</b>						<b>0</b>

<b>Section II: Pavement</b>						
						Emissions (MTCO <sub>2</sub> e)
Pavement (sidewalk, asphalt patch)		0.0				0
Concrete Pad		0.0				0
<b>TOTAL Section II Pavement</b>						

<b>Section III: Construction</b>						
						Emissions (MTCO <sub>2</sub> e)
(See detailed calculations below)						
<b>TOTAL Section III Construction</b>						<b>107</b>

<b>Section IV: Operations and Maintenance</b>						
						Emissions (MTCO <sub>2</sub> e)
(See detailed calculations below)						
<b>TOTAL Section IV Operations and Maintenance</b>						<b>0</b>

<b>TOTAL GREENHOUSE GAS (GHG) EMISSIONS FOR PROJECT (MTCO<sub>2</sub>e)</b>						<b>107</b>
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**Attachment C – Greenhouse Gas Emissions Worksheet, continued**

<b>Section III Construction Details</b>		
<b>Construction: Diesel</b>		
<b>Equipment</b>	<b>Diesel (gallons)</b>	<b>Assumptions</b>
Jetter/vac truck (for pre-cleaning pipe)	468	5 hours/site x 17 sites x 5.5 gallons/hour (270 hp engine)
Refrigeration truck (transporting pre-fab liners)	3,740	10 hours/day/site (2 hours travel + 8 hours working) x 4 days x 17 sites x 5.5 gallons/hour (270 hp engine)
Installation truck with air compressor, bypass pump	3,740	10 hours/day/site (2 hours travel + 8 hours working) x 4 days x 17 sites x 5.5 gallons/hour (270 hp engine)
Support box truck with hydraulic lift	227	68 working days x 1 round trip/day x 20 miles/round trip ÷ 6mpg
<b>Subtotal Diesel Gallons</b>	<b>8,175</b>	
<b>GHG Emissions in lbs CO<sub>2</sub>e</b>	<b>217,046</b>	26.55 lbs CO <sub>2</sub> e per gallon of diesel
<b>GHG Emissions in metric tons CO<sub>2</sub>e</b>	<b>99</b>	1,000 lbs = 0.45359237 metric tons

<b>Construction: Gasoline</b>		
<b>Equipment</b>	<b>Gasoline (gallons)</b>	<b>Assumptions</b>
Pick-up Trucks or Crew Vans	680	68workdays x 5 trucks x 2 round-trip/day x 20 miles/ round trip ÷ 20 mpg
<b>Subtotal Gasoline Gallons</b>	<b>680</b>	
<b>GHG Emissions in lbs CO<sub>2</sub>e</b>	<b>16,524</b>	24.3 lbs CO <sub>2</sub> e per gallon of gasoline
<b>GHG Emissions in metric tons CO<sub>2</sub>e</b>	<b>8</b>	1,000 lbs = 0.45359237 metric tons

<b>Construction Summary</b>		
<b>Activity</b>	<b>CO<sub>2</sub>e in pounds</b>	<b>CO<sub>2</sub>e in metric tons</b>
<b>Diesel</b>	217,046	99
<b>Gasoline</b>	16,524	8
<b>Total for Construction</b>	<b>233,570</b>	<b>107</b>

<b>Section IV Long-Term Operations and Maintenance Details</b>		
<b>Operations and Maintenance: Diesel</b>		
<b>Equipment</b>	<b>Diesel (gallons)</b>	<b>Assumptions</b>
		n/a
<b>Subtotal Diesel Gallons</b>		
<b>GHG Emissions in lbs CO<sub>2</sub>e</b>		26.55 lbs CO <sub>2</sub> e per gallon of diesel
<b>GHG Emissions in metric tons CO<sub>2</sub>e</b>		1,000 lbs = 0.45359237 metric tons

<b>Operations and Maintenance: Gasoline</b>		
<b>Equipment</b>	<b>Gasoline (gallons)</b>	<b>Assumptions</b>
		n/a
<b>Subtotal Gasoline Gallons</b>		
<b>GHG Emissions in lbs CO<sub>2</sub>e</b>		24.3 lbs CO <sub>2</sub> e per gallon of gasoline
<b>GHG Emissions in metric tons CO<sub>2</sub>e</b>		1,000 lbs = 0.45359237 metric tons

<b>Operations and Maintenance Summary</b>		
<b>Activity</b>	<b>CO<sub>2</sub>e in pounds</b>	<b>CO<sub>2</sub>e in metric tons</b>
<b>Diesel</b>		
<b>Gasoline</b>		
<b>Total Operations and Maintenance</b>		