SEATTLE PUBLIC UTILITIES
SEPA ENVIRONMENTAL CHECKLIST

This SEPA environmental review has been conducted in accord with the Washington State Environmental Policy Act (SEPA) [Revised Code of Washington (RCW) Chapter 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

A1. Name of proposed project:

Thornton Creek Confluence Improvement Project

A2. Name of applicant:

Seattle Public Utilities

A3. Address and phone number of applicant and contact person:

Jason Sharpley, Project Manager
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A4. Date checklist prepared:

September 19, 2013

A5. Agency requesting checklist:

Seattle Public Utilities (SPU)

A6. Proposed timing or schedule (including phasing, if applicable):

SPU intends to construct this project during the summer months of 2014, potentially as early as June 1, 2014, as logistics and various permits/approvals allow. Project construction is estimated to take up to 90 working days.

A7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

There are no known future additions, expansion, or further activity related to or connected with this proposal.

A8. List any environmental information you know about that has been prepared, or would be prepared, directly related to this proposal.

Easterberg, Charles (local birder). No date. Checklist of Meadowbrook Pond Bird Species.

SPU Materials Laboratory. 2010 (January). Geotechnical Data Report, 35th Avenue Northeast Culvert Replacement.

Natural Systems Design. 2010 (January 22). Thornton Confluence Culvert Technical Memo. Memo from Rocky Hrachovec, P.E. to Greg Stevens (SPU Project Manager).

Northwest Archaeological Associates (NWAA). 2011 (May). Cultural Resources Assessment for the Thornton Creek Confluence Project, King County, Washington.

Symbiosis Tree Care. 2011 (October). Hazard and Exceptional Tree Evaluation.

Chapin, David. 2011 (June). Thornton Creek Confluence Project Jurisdictional Wetland Identification and Delineation Report. Seattle Public Utilities.

Aspect Consulting. 2011 (June). Thornton Confluence Geotechnical Report.

Osborne Consulting, Inc. 2012 (June 22). Large Project Construction Stormwater Control Plan Narrative: Thornton Creek Confluence Project.

Cardno-Entrix. 2012 (June 21). Technical Memorandum: Thornton Confluence Hydraulic Modeling in Support of 60% Design. Memo from Florin Braileanu to Rocky Hrachovec (Natural Systems Design, Inc.).

Natural Systems Design. 2012 (July 25). Basis of Design, 60% Design Update, Thornton Creek Confluence Project.

Natural Systems Design. 2013a (March 5). Email from Rocky Hrachovec, P.E. to Greg Stevens (SPU Project Manager). [hydraulic modeling]

Natural Systems Design. 2013b (May 30). Email from Rocky Hrachovec, P.E. to Clayton Antieau (SPU Environmental Analyst). [noise and vibration]

Lo, Masako, P.E. (SPU Senior Civil Engineer). 2013 (July 15). Thornton Creek Confluence Project, Hydraulic Modeling for Downstream Analysis. Memo to Jason Sharpley (SPU Project Manager).

A9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

There are no known applications pending for governmental approvals or other proposals directly affecting the properties covered by this proposal.

A10. List any government approvals or permits that would be needed for your proposal, if known.

Implementation of this project would require some or all of the following permits and approvals:

- Tree Protection provisions compliance— City of Seattle, Department of Planning and Development (DPD)

- Environmentally Critical Areas provisions compliance—City of Seattle, SPU
- Two Street Improvement Permits (SIP) (one each for 35th and 36th Avenue Northeast)—City of Seattle, Department of Transportation (SDOT)
- Street Use Permits—SDOT
- Temporary Construction Easement—Seattle Public Schools
- Permanent Maintenance Easement—Seattle Public Schools
- Temporary Construction Easement—Seattle Department of Parks and Recreation (Parks)
- Memorandum of Agreement between SDOT and SPU related to Future Ownership of Assets in Right-of-way—Department Directors
- King County Waste Discharge Permit
- Clean Water Act (CWA) Section 401 Water Quality Certification—Washington Department of Ecology [linked to CWA Section 404 permit]
- Hydraulic Project Approval—Washington Department of Fish and Wildlife (WDFW)
- Construction Stormwater General Permit—Washington Department of Ecology
- Clean Water Act (CWA) Section 404 Nationwide Permit—US Army Corps of Engineers
- National Historic and Preservation Act Section 106 compliance—Washington State Department of Archaeological and Historic Preservation (DAHP) [linked to CWA Section 404 permit]
- Endangered Species Act (ESA) compliance—US Fish and Wildlife Service and/or National Marine Fisheries Service [linked to CWA Section 404 permit]
- Magnuson-Stevens Fishery Conservation and Management Act compliance (Salmon Essential Fish Habitat)—National Marine Fisheries Service [linked to CWA Section 404 permit]

A11. 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. (Lead agencies may modify this form to include additional specific information on project description.)

The 11.6 square mile Thornton Creek watershed is located in highly urbanized areas in the cities of Seattle and Shoreline. As a result, many areas along Thornton Creek experience flooding, contain limited floodplain (for flood storage), and provide poor instream and riparian habitat. SPU owns approximately 3 acres in the Meadowbrook neighborhood at the confluence of the North and South Branches of Thornton Creek in the City of Seattle (Attachment A). The confluence area has sustained repeated localized flooding.

More specifically, the confluence area is notable for the following challenges:

Undersized Infrastructure
The existing culvert under 35th Avenue Northeast conveys South Branch Thornton Creek and is under-sized for current flow conditions. SPU's desired level of service for this culvert is to have no flooding unless there is at least a 25-year storm. Currently, 10-year storm events routinely cause flooding and road closures. In addition, this culvert has been damaged by repeated flood flows and debris blockages. The culvert was nearly washed out during December 2007 flooding, forcing temporary repairs to the culvert and roadbed. While the culvert is not considered a high risk for catastrophic failure, it has exceeded its expected life span of 50 years and is expected to continue to experience future flood damage.

Urban Flooding
Currently, 10-year storm events routinely cause flooding of private property and public infrastructure in the confluence area (which does not meet SPU's 25-year storm desired level of service). This flooding extends to areas upstream of Meadowbrook Pond and the confluence area - such as Kramer Creek, the Nathan Hale High School reach of South Branch, and the North Branch between Northeast 110th Street and Meadowbrook Pond - as well as areas downstream of Meadowbrook Pond

Instream Habitat
SPU's 3 acre property ownership in the Meadowbrook neighborhood includes parcels that had been developed into single family residences but which were subject to frequent flooding. These parcels were eventually purchased by SPU and the houses and associated structures subsequently demolished. However, Thornton Creek remains confined to the hardened channels associated with that previous development. These rip-rapped, concrete-lined, and straightened constructed channels are subject to high-flow scour at almost every storm event and provide negligible floodplain storage and poor in-stream and riparian habitat. Ironically, these short reaches of stream channel are used by Endangered Species Act (ESA)-listed Chinook salmon and are the location for more than 90% of all Chinook spawning in the City of Seattle.

To address these challenges, SPU is proposing to build this floodplain reconnection project that would reconstruct stream channels of the North and South Branches of Thornton Creek, portions of the former floodplain, and associated wetland, riparian, and upland forest habitats. The project's main objectives are to meet flood management service levels for 35th Ave Northeast and reduce flooding of private property. Additional goals are to create floodplain storage; improve mixing of surface water and groundwater (hyporheic functioning); reduce stream velocities and increase areas of slow water; and improve instream and riparian habitat quality and functioning. The project is expected to provide temporary flood storage (on the created floodplain), delay timing of flood peaks (by seconds or a few minutes), slow instream peak flows in the project area (to reduce streambed scour and channel erosion), and improve water quality within the project reach. The project includes the following elements:

35th Avenue Northeast

- Remove and replace the existing 6.5 foot arch culvert with a new pre-cast 32 foot wide, 3-sided concrete box culvert (bridge) with stem-wall footing. Disconnect and re-connect/relocate impacted utilities, as required.
- Install grade controls in new culvert to allow dispersed stream flow in low-flow conditions.

- Reconstruct the road base, travel surfaces, sidewalks, pedestrian barriers, railings, and signage on 35th Avenue Northeast above and adjacent to the new culvert.
- Reconfigure roadway travel lanes over the bridge/culvert and provide wider sidewalks in accordance with SDOT's plans and direction (via SIPs).
- SDOT would assume ownership of constructed transportation assets within the right-of-way (including the bridge) after construction is complete.

West of 35th Avenue Northeast on Seattle Public Schools Property

- Realign stream channel of South Branch to connect to the new 35th Avenue Northeast box culvert, create pools, and add woody material for habitat.
- Create flood storage and functional riparian habitat by re-grading and planting native shrubs, trees (primarily conifers), and ground cover on approximately 2.5 acres.
- Remove abandoned pedestrian bridge and Lombardy poplars and MacKenzie willows as required by the re-grading.
- Remove the existing arch culvert from the Seattle Public Schools property and from under 35th Avenue Northeast.

Parcels east of 35th Avenue Northeast and Portion of Right-of-way of 36th Avenue Northeast

- Reconstruct existing armored and straightened stream channels into meandering channels with significant floodplain. Realign the channels of both North and South Branches of Thornton Creek to facilitate more desirable hydraulics at the confluence.
- Create a hyporheic zone. [In a stream or river system, the hyporheic zone is that region beneath and alongside stream channels where shallow groundwater mixes with surface water.]
- Install woody material and create pools in the stream channels to enhance fish spawning and rearing habitat.
- Construct a service road to provide maintenance vehicle access and pedestrian access to the adjacent Meadowbrook Pond Stormwater Detention Facility.
- Construction of a formal cul-de-sac and associated sidewalks in the 36th Avenue Northeast street end.
- Install a visible public work of art using SPU's 1 Percent for the Arts Program funding.

In addition, the project would install structures used to monitor the chemical, physical, and biological characteristics of the completed project.

A12. 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.

The project would occur on the following seven tax parcels:

Address	King County Tax Parcel	Owner
3600 Northeast 105th Street	2726049129	SPU
10703 36th Avenue Northeast	2726049185	SPU
10709 36th Avenue Northeast	2726049186	SPU
10723 36th Avenue Northeast	2726049140	SPU
10718 35th Avenue Northeast	2726049064	SPU
10750 30th Avenue Northeast	2826049152	Seattle Public Schools
10727 36th Avenue Northeast	2726049095	Chase

The SPU owned parcels are immediate upstream, to the north, of Meadowbrook Pond.

Portions of the project would also be located in the right-of-way for 35th Avenue Northeast and the street right-of-way for 36th Avenue Northeast Street south of Northeast 110th Street. The project is located in the densely developed, residential Meadowbrook neighborhood of northeast Seattle, in the southwest quarter of Section 27, Township 26 North, Range 4 East and within the Lake Washington Water Resource Inventory Area (WRIA 8). The GPS location is 47.706645, -122.289853. A vicinity map is included as Attachment A. Attachment C depicts major elements of the project.

B. ENVIRONMENTAL ELEMENTS

B1. 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)?

The project location is mostly flat with one small five-foot high berm at the south end of 36th Avenue Northeast. The project location ranges from a high point of 60 feet above sea level along the western portion of the 35th Avenue Northeast to a low of 54 feet east of 36th Avenue Northeast (excluding submersed elevations in the stream channels).

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 prime farmland.

Historically, this location consisted of peat-based wetlands, riparian forest, and floodplain area. Currently, subsurface and surface soil materials on and near the project location are grouped into five units: asphaltic-concrete pavement (up to 1 foot thick); concrete (0 to 1 feet) artificial fill (0 to 4.5 feet); recessional glacial outwash (0.5 to 21.5 feet) and fine-grained recessional glacio-lacustrine (glacial lake) deposits (17.7 to 21.5 feet). Portions of the project location may also be underlain by organic soils from former wetland habitats that were filled to develop the project location. Essentially the entire site has been impacted by cutting, filling, and grading activity over the past 80 years.

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

There are no surface indications suggesting past or possible presence of unstable soils. Because of the site's history as peat-based wetlands, most of the site is identified as a liquefaction area—an Environmentally Critical Area as mapped by DPD.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate the source of fill.

Project construction would disturb soil on approximately 2 acres (90,000 square feet) through activities that clear, excavate, grade, and fill. The project would excavate and realign approximately 730 feet of existing stream channels to create approximately 1,000 feet of new stream channels within an integrated floodplain and wetland terrain. Collectively, this activity would excavate up to 9,000 cubic yards of earth. The project would import up to 2,000 cubic yards of various loose materials, including mineral aggregate, controlled density fill, and compost for culvert and road construction, utility bedding, and landscaping. In addition, the project would import 5,600 tons of rock for creating suitable stream channel morphology, including 3-, 2- and 1-man boulders, cobble, gravel, and sand. Woody material imported for that restoration purpose would include up to 136 logs, rootwads, and whole trees. Unknown quantities of any of these materials may be acquired from on-site excavation and tree removal (if suitable to the purpose) but would otherwise be imported. All imported material would be provided by a State-licensed and SPU-approved purveyor of such materials.

In addition, the project would install up to 675 square yards of articulated concrete pavers and pour approximately 360 cubic yards of concrete for cast-in-place culvert abutment elements, pedestrian barriers, curbs, and sidewalks. Approximately 275 tons of hot mix asphalt would be used to pave vehicle travel surfaces.

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

Excavation could result in erosion, in particular stormwater runoff from stockpiling of excavated materials.

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

The project location has an estimated area of existing impervious surface of approximately 26,000 square feet (25 percent of the project area) which is mostly the paved surfaces of 35th and 36th Avenues. The proposed project would construct a new asphalt-paved service road 330 feet long by 15 feet wide (4,950 square feet). Construction of new floodplain would permanently eliminate approximately 5,000 square feet of impervious surface at the 36th Avenue Northeast street end. Thus, the project is not expected to change the percent of impervious surface area. The project would also install 675 square yards of articulated concrete pavement, which is not considered impervious surface.

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

Temporary erosion and sediment controls will be used during construction to ensure that excavated and stockpiled materials are not deposited on city streets or eroded into streams or city conveyance piping. Controls on stormwater during construction would include:

- The project would implement a Construction Stormwater and Erosion Control Plan (CSECP) (Osborne Consulting, Inc. 2012) that contains standard operating procedures (SOPs) and best management practices (BMPs) appropriate to the site, conditions, and proposed activities. Construction work would be monitored, maintained, and adjusted as necessary to meet changing conditions.

- The project would prepare and implement a stormwater pollution prevention plan and spill prevention plan to meet the requirements of SMC 22.800 (City of Seattle Stormwater Code), as well as the City of Seattle Standard Plans and Specifications for Municipal Construction.
- Construction equipment would be staged outside of sensitive or critical areas.
- The North and South Branches of Thornton Creek would be pumped-and-bypassed around the construction area.
- Erodible material stockpiles would be covered with impervious barriers for protection from rain.
- Native plants would be used to restore disturbed areas.

B2. 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 and when the project is completed? If any, generally describe and give approximate quantities if known.

Construction activities have the potential to create temporary fugitive dust emissions from demolition, materials handling, and earth-moving activities. Also, mobile and stationary equipment would be used to construct the proposed project, generating usual exhaust emissions (that is, carbon monoxide, sulfur, and particulates) due to the combustion of gasoline and diesel fuels. These dust and exhaust emissions are expected to be minimal, localized, and temporary.

This project would also generate greenhouse gas (GHG) emissions in three ways: concrete, asphalt, and other materials usage (embodied); construction activity; and periodic monitoring over five years. Total GHG emissions for the project are estimated to be 2,087 metric tons of carbon dioxide emission (MTCO2e). The GHG emission calculations are shown in Attachment D. One metric ton is equal to 2,205 pounds. GHG emissions generated by from operation and maintenance activity of the completed project are not included in these calculations because the proposed project is not expected to substantially alter operation or maintenance activities in terms of their current GHG or other air emissions.

This project would generate approximately 1,908 MTCO2e of GHG emissions by adding approximately 4,950 square feet of new asphalt, pouring approximately 360 cubic yards of concrete, and using articulated concrete pavers and a precast culvert assembly. In addition, the project would generate approximately 178 MTCO2e of GHG emissions during the estimated 90 work days through the operation of diesel- and gasoline-powered equipment and to transport materials, equipment, and workers to and from the project location. 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 entire estimated project duration and assuming work occurs over 90 work days; actual times may be less. There would be an estimated 0.7 MTCO2e of GHG emissions from approximately 60 round-trips due to the post-construction five year monitoring period.

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 or odor that would affect this proposal.

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

The Puget Sound Clean Air Agency (PSCAA) is responsible for enforcing federal, state, and local air pollution standards and governing air pollutant emissions from new sources in King, Snohomish, Pierce, and Kitsap Counties. As required by PSCAA regulations, emissions would be controlled by using reasonably available control technologies (PSCAA 2008) and City of Seattle SOPs and BMPs for construction. These would include requiring contractors to use best available control technologies, proper vehicle maintenance, and minimizing vehicle and equipment idling.

B3. 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 or water body it flows into.

Thornton Creek is a tributary to Lake Washington. The project location is about one stream-mile upstream from the mouth of Thornton Creek as it flows into Lake Washington. The South Branch of Thornton Creek confluences with the North Branch at the project location, forming the mainstem Thornton Creek, which consists primarily of an open creek channel approximately 5 feet wide.

Downstream from the confluence, the mainstem Thornton Creek flows through the forebay of the Meadowbrook Pond Stormwater Detention Facility from the west to the east (see location of confluence relative to Meadowbrook Pond in the second vicinity map of Attachment A). During low flows, most if not all of the flow continues through the Pond forebay and bypasses Meadowbrook Pond (see Attachment C). During high flows, a portion flows over the entrance dike and into the Pond.

Very narrow bands of wetland habitat are associated with the ordinary high water marks (OHWM) of Thornton Creek. Otherwise, no wetland areas were identified in or near the project location (Chapin 2011). Meadowbrook Pond Stormwater Detention Facility is a constructed stormwater facility and, generally, is not regulated as a wetland under federal or state wetland regulations. The wetlands mentioned above, Meadowbrook Pond, and Thornton Creek are Environmentally Critical Areas (Wetlands), as mapped by DPD.

(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.

The project would construct approximately 1,000 feet of new channel and associated floodplain for North Branch, South Branch, and mainstem Thornton Creek. That activity would require work below the OHWM along approximately 730 feet of existing stream channel.

(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.

The project would require work below the OHWM along approximately 730 feet of Thornton Creek. Overall site-wide amounts of excavation and imported material are described in Section B1e above. These amounts would be predominantly within existing upland and/or surface water bodies (existing channel of Thornton Creek). Because invasive New Zealand mud snails have been found in the Thornton Creek watershed and are known to survive out of water (in moist media) for many days, any material exported from the project location would be landfilled in a licensed landfill and not used for other purposes.

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

A full-channel bypass of the North and South Branches of Thornton Creek would be used temporarily during construction to allow excavation and grading. Several smaller pumps may be deployed to remove groundwater during construction. Quantities of water potentially collected by dewatering are unknown.

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

The entire project location lies within the 100-year floodplain of Thornton Creek. The project parcels are identified as being in a flood-prone area—an Environmentally Critical Area as mapped by DPD.

(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 project would not produce or discharge waste materials to surface waters. Turbidity generated by construction would be contained on the project location or (with the proper approvals) discharged to a King County sanitary sewer mainline that passes through the project location.

b. Ground:

(1) Will ground water be withdrawn, or would water be discharged to ground water? If so, give general description, purpose, and approximate quantities if known.

Groundwater is known to occur across the project location between elevations 49 to 53, or roughly 5 feet below the existing ground surface. Groundwater levels are expected to fluctuate seasonally with variations in precipitation, changes in site and near-site use, and water levels in Thornton Creek. Thus, some groundwater may be encountered during excavation. Dewatering may be required to accommodate construction activities. Quantities of water potentially collected by dewatering are unknown. Construction of a more functional hyporheic zone would not involve discharges to groundwater because that zone would include existing groundwater flows and existing surficial and sub-surficial stream flows.

(2) Describe waste material that would be discharged into the ground from septic tanks or other sources, if any (*e.g.*, domestic sewage; industrial, containing the following chemicals…; agricultural, *etc.*). Describe the general size 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. Any turbidity generated by construction would be contained on the project location or discharged to the sanitary sewer with the proper approvals. To manage the spill prevention of hazardous and waste materials during construction, the project would implement a spill prevention plan and CSECP with SOPs and BMPs appropriate to the site, conditions, and activities. Construction work would be monitored, maintained, and adjusted as necessary to meet changing conditions.

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 would this water flow? Would this water flow into other waters? If so, describe.

Currently, stormwater on the project location either infiltrates or surface-flows to Thornton Creek. Stormwater is collected on 35th Avenue Northeast by a 30 inch public storm drain that discharges to Thornton Creek south of the project location. The proposed project would not create a need to manage additional stormwater runoff beyond existing conditions and is actually designed to increase stormwater detention capacity in the Thornton Creek watershed.

Stormwater runoff may need to be managed during construction to prevent sediment from leaving the construction site or entering Thornton Creek. To minimize the erosion potential of stormwater runoff during construction, temporary erosion control measures such as a silt fences or straw wattles would be deployed as needed and according to the project's CSECP. Once construction is complete, temporary erosion control measures would be removed and stormwater flows would follow their pre-construction pathways.

SPU anticipates the project will reduce local and downstream flooding and improve water quality in Thornton Creek and Lake Washington. The proposed project would provide up to 220,000 cubic feet of additional in-creek flood storage during the 100-year storm event (Natural Systems Design 2013a). A simple comparison of volume with flows yields an additional 4 minutes of in-creek storage at the 100-year peak flow of 912 cubic feet per second (cfs), and an additional 18 minutes of in-creek storage at the bankfull flow of 205 cfs.

The proposed project would not alter any flow control features affecting Thornton Creek or the Meadowbrook Pond Stormwater Detention Facility, including the high flow bypass pipe inlet, the Pond entrance dike, the Pond outlet weir, the overflow pipe to the high flow bypass pipe, or Pond volume. To determine the project impacts on peak flow and peak flow duration in the creek, the high flow bypass pipeline, and the high flow bypass pipeline outfall to Lake Washington, the project team modeled flow at the following locations, in the order encountered downstream of the proposed project (Lo 2013):

1. The Creek channel at the choke point immediately downstream of the confluence;
2. The Creek channel at the high flow bypass pipe inlet;
3. The overflow pipe (in the Pond) to the high flow bypass pipe; and
4. The diversion structure on Riviera Place Northeast, which leads to two outfalls (42 inch and 48 inch diameters) that flow into Lake Washington.

The modeling indicates that, for both the 100-year and the 10-year storm event, the additional flood storage capacity provided by the proposed project would reduce the peak flow rate at the first two downstream locations by almost 30% during the 100-year storm event (from about 754 cubic feet per second [cfs] to about 530 cfs) and approximately 20% during the 10-year storm event (from about 563 cfs to about 445 cfs). Modeling also predicts that, as the peak flow rate decreases, the water surface elevation would decrease at the Creek channel choke point and would increase slightly at the inlet to the high flow bypass pipe. During the 100-year storm event, modeling indicates the water surface elevation at the Creek channel choke point would decrease from about 55.26 feet to about 52.98 feet and the water surface elevation at the inlet to the high flow bypass pipe would increase from about 51.43 feet to about 51.71 feet. During the 10-year storm event, modeling indicates the water surface elevation at the Creek channel choke point would decrease from about 53.5 feet to about 52.5 feet and the water surface elevation at the inlet to the high flow bypass pipe would increase from about 50.7 feet to about 51.31 feet.

At the third location (the in-Pond overflow pipe to the high flow bypass line), modeling was conducted to determine the impact on the peak flow rate, peak surcharge duration, and water surface elevation during peak flows. During a 100-year storm event, modeling predicts the peak flow rate in the high flow bypass pipeline would increase by 2 cfs, from 366 cfs to 368 cfs; the peak flow duration (surcharge condition) would increase by 1 minute (from 203 minutes to 204 minutes); and the water surface elevation at the overflow to the high flow bypass pipeline would decrease by 0.1 feet (from 51.0 to 50.9 feet). During a 25-year storm event, modeling predicts the peak flow rate in the high flow bypass pipeline would be unchanged, the peak surcharge duration in the high flow bypass pipeline would decrease by 6 minutes (from 532 minutes to 526 minutes), and the water surface elevation at the overflow to the high flow bypass pipeline would remain constant at 49.3 feet.

At the fourth location (the diversion structure on Riviera Place Northeast), modeling was conducted to determine the impact on the peak flow rate, the peak surcharge duration, and the water surface elevation during peak flows. During a 100-year storm event, modeling predicts the peak flow rate would remain constant at about 348 cfs, the peak surcharge duration would increase by 2 minutes (from 212 minutes to 214 minutes), and the water surface elevation would remain constant at about 34.9 feet. During a 25-year storm event, modeling predicts the peak flow rate would decrease by 2 cfs (from 343 cfs to 341 cfs), the peak surcharge duration would increase by 5 minutes (from 672 minutes to 677 minutes), and the water surface elevation would decrease by 0.1 feet (from 34.4 feet to 34.3 feet).

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

This project would not generate waste materials that could enter groundwater or surface waters. Turbidity generated by construction would be contained on the project location or (with the proper approvals) discharged to a King County sanitary sewer mainline that passes through the project location.

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

To minimize the erosion potential of stormwater runoff during construction, temporary erosion control measures, such as a silt fences or straw wattles, would be deployed as needed and according to the project's CSECP. Construction work would be monitored, maintained, and adjusted as necessary to meet changing conditions.

B4. Plants

a. Types of vegetation found on the site: *[check the applicable boxes]*

☒ Deciduous trees:	☒ Alder	☒ Maple	☐ Aspen	☒ Other: c*ottonwood, poplar, willow, ash*
☒ Evergreen trees:	☒ Fir	☒ Cedar	☒ Pine	☐ Other: (identify)
☒ Shrubs				
☒ Grass				
☐ Pasture				
☐ Crop or grain				
☐ Water plants**:**	☐ water-lily	☐ eelgrass	☐ milfoil	☐ Other:
☐ Other:				

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

The project area east of 35th Avenue Northeast was formerly used for single family residential purposes. While those previous structures have been demolished, existing vegetation remains indicative of this recent past use, being comprised of abandoned turf areas and scattered, formerly cultivated trees and shrubs. The area east of 36th Avenue Northeast consists of mostly black cottonwoods *(Populus balsamifera)* and Himalayan blackberry (*Rubus armeniacus*). There is no appreciable ground cover in this area.

Street trees along 35th Avenue Northeast in the project location include ash (*Fraxinus* sp.) and maple (*Acer* sp.). On the west side of 35th Avenue Northeast there are two rows of Lombardy poplars (*Populus* x *nigra*) and a few MacKenzie willows (*Salix prolixa*) on either side of the stream channel. Invasive species such as English ivy *(Hedera helix)* and knotweed (*Polygonum* x *bohemicum*) exist under that tree canopy along the stream channel. Upland areas are mostly grass (either mown or unmown).

As partially shown in Attachment B, project grading would remove up to 108 trees more than 6 inches in diameter (measured 4.5 feet above the ground surface). Of these, 17 have been identified as Exceptional Trees: one weeping willow (*Salix* x *alba*), three MacKenzie willows, and thirteen Lombardy poplars. Exceptional Trees have significant value due to their size and species (as defined in DPD's Director's Rule 16-2008) and that have unique historical, ecological, or aesthetic value. A number of trees (including some Exceptional Trees) in the project location were identified as hazardous trees (that is, trees

posing a high risk of damage to persons or property). Removal of up to eight street trees along 35th Avenue Northeast would include two 12 inch diameter ash (included in the total of 108 trees removed) as well as six 2 inch trees. Woody debris and habitat snags will be sourced from the removed trees as possible, depending upon the condition and type of trees removed.

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

According to a review of the Washington Department of Natural Resources (WDNR) Natural Heritage Program's document called "Sections that Contain Natural Heritage Features, Current as of March 1, 2013" (accessed at www.dnr.wa.gov), there are no documented occurrences of sensitive, threatened, or endangered plant species in this Section. No federally-listed endangered or threatened plant species or State-listed sensitive plant species are known to occur within the municipal limits of the City of Seattle. The project location has been intensively disturbed by development and redevelopment over the last 80 years. Portions of the site have been excavated, filled, paved, or occupied by built structures. 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 project would limit plant removal, pruning, and other disturbance to that required for project construction. Construction limits would be clearly and physically delineated by protective construction fencing to prevent unauthorized trespass and collateral damage to nearby vegetation. The project would also prepare a tree, vegetation, and soil protection plan that would protect the remaining native and non-invasive non-native trees and their root zones during construction, to the maximum feasible extent. Native plants would also be used to restore disturbed areas, where and when appropriate.

Because up to 108 trees are expected to be removed, replacement trees may be required by City of Seattle Tree Protection provisions, including Executive Order 03-05 (2005; Clerk File #307611) directing City departments to replace every tree removed from City property with two new trees. The project would plant more than 780 native trees in upland, wetland, and riparian areas to enhance fish and wildlife habitat. Replacement of street trees removed along 35th Avenue Northeast and 36th Avenue Northeast right-of-way would be guided by the project's SDOT SIPs. Additionally, the woody debris and habitat snags will be sourced from the removed trees as possible, depending upon the condition and type of trees removed.

B5. Animals

a. Birds and animals that have been observed on or near the site or are known to be on or near the site: *[check the applicable boxes]*

Birds:	☒ Hawk	☒ Heron	☒ Eagle	☒ Songbirds
☒ Other: Ducks and other waterfowl				
Mammals:	☐ Deer	☐ Bear	☐ Elk	☒ Beaver
☒ Other: otter, bats, raccoon, possum				
Fish:	☒ Bass	☒ Salmon	☒ Trout	☐ Herring
☐ Shellfish	☒ Other: perch, peamouth, whitefish, carp (goldfish), stickleback			

This reach of Thornton Creek sustains a diverse fish community, as described in Section B5b. Fish in the nearby Meadowbrook Pond Stormwater Detention Facility tend to be perch, peamouth, carp, and sticklebacks. Numerous songbird, waterfowl, and other bird species have been observed in the project vicinity. A checklist of these species is available at https://sites.google.com/site/friendsofmeadowbrookpond/flora-fauna/wildlife as presented in Appendix E. In addition, beavers routinely use the nearby Meadowbrook Pond Stormwater Detention Facility, where they build lodges and dens.

In 2011, the New Zealand mud snail (*Potamopyrgus antipodarum*) was identified in the lower reaches of Thornton Creek. This invasive, non-native snail has a history of becoming a pest in streams and lakes in many parts of the world. The species has a propensity for very rapid growth through cloning. Populations can grow so large as to consume most of the periphyton on which entire aquatic foodwebs are based. This species is known to have the potential to adversely impact the foodwebs of native salmon, trout, and other fish species and the stream and terrestrial ecosystem processes linked to those foodwebs.

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

The project location is more than 3,000 feet west of Lake Washington, which drains to Puget Sound. Endangered Species Act-listed species for Puget Sound (PS) and Lake Washington are Chinook salmon (*Oncorhynchus tshawytscha*, Threatened PS), steelhead (*O. mykiss*, Threatened PS), and bull trout (*Salvelinus confluentus*, Threatened, PS). Chinook salmon are known to use and breed in Thornton Creek in the vicinity of the project location and in upstream locations. Steelhead carcasses have been sighted in Thornton Creek. There are no records of bull trout in Thornton Creek. There is no federally designated Critical Habitat on Thornton Creek for any of these species. Coho salmon (*O. kisutch*) is a Candidate species for listing as Threatened and is known to use Thornton Creek near the project location.

Thornton Creek received State releases of hatchery-reared Chinook salmon on and off between 1977 and 1994, mostly from the University of Washington hatchery in Portage Bay. SPU conducted salmon surveys in Thornton Creek from 1999 through 2008. A total of about 40 Chinook salmon redds were observed during that period. Of these, about one-quarter were located in the mainstem between the confluence and the outlet of Meadowbrook Pond; one-fifth were located in the North Branch downstream of a barrier at Northeast 125th Street; one was in the South Branch; and the rest were in the mainstem downstream of the outlet of Meadowbrook Pond. No information is available on emergent juvenile abundance, but smolt trapping conducted by SPU for a couple of weeks each May between 2000 and 2009 captured small numbers of Chinook smolts each year, with a peak of 309 smolts in 2004.

There have only been two confirmed sighting of adult steelhead in Thornton Creek since 2001. The two sightings were carcasses, found in the mainstem downstream of 45th Avenue Northeast in 2002 and on the North Branch in 2004. Adult steelhead may have been observed in Thornton Creek in 1991, 1992, and 1995 but they can be confused with large adfluvial cutthroat trout from Lake Washington that commonly spawn in Thornton Creek in the winter and spring.

A July 22, 2013 check of WDFW's Priority Habitat and Species data (http://wdfw.wa.gov/conservation/phs/) for the project area indicates Thornton Creek is known to support Priority anadromous and resident fish presence. In addition to the fish species described above, Thornton Creek is known to be used by coast-resident cutthroat trout (*O. clarki*) and sockeye salmon (*O. nerka*), both of which are not considered threatened or endangered.

Bald eagle (*Haliaeetus leucocephalus*) is currently a federal Species of Concern and a sensitive species (priority species) in Washington. The project location is known to be (but not mapped as being) within the habitat of bald eagle and great blue heron (*Ardea herodias*), another priority species. While eagles and herons are occasionally sighted nearby at the Meadowbrook Pond Stormwater Detention Facility, there are no known eagle or heron nests in the vicinity of the project location.

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

While the project location is not part of a specific known migration route, Seattle is located within the migratory route of many bird 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. The project location is more than 3,000 feet west of Lake Washington, another important migration route for many animal species.

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

The project would use approved SOPs, BMPs, and conservation measures to determine and direct work in fish-bearing waters. For example, all equipment to be used for construction activity would be cleaned and inspected before it arrives at the project location to avoid and minimize the potential for fuel or lubricant leaks. As possible, construction equipment would use vegetable-based oils and lubricants. Native plants would be used to restore disturbed areas, where and when appropriate.

Because the project would construct during the agency-approved construction window for in-water work and involves a full pump-and-bypass of the North and South Branches around the work area, impacts to fish and other aquatic life are expected to be minimal and temporary. However, fish and other aquatic life could be injured or killed by the proposed stream work as might be caused by crushing, stranding, turbidity, and/or elevated water temperatures. To further avoid or minimize impacts, the project would rely on fish removal from work areas and the relocation of those organisms to safe areas. The method for doing so is briefly described below.

All in-channel and work would occur during the agency-approved in-water construction window (fish window), generally between July 1 and August 30. Work areas with fish would first be isolated with fish exclusion nets to prevent fish from entering those areas. After the nets are installed, fish would be carefully captured by qualified biologists using WDFW protocols for using capture nets and electro-fishing equipment. Those fish would be carefully removed from the work area and relocated to safe areas outside of the work area.

Once the fish are relocated, the work area would be isolated by installing sandbag berms upstream and downstream of the work area and using mechanical pumps to fully "pump and bypass" flows in the North and South Branches of Thornton Creek around the work area. Those flows would be discharged back to the stream channel downstream of the work area through an energy dissipater to minimize turbidity as that water re-enters the stream channel.

Sump pumps may be used to continuously dewater the work area during construction. That discharge water tends to be small in volume, but turbid. Thus, the discharge water would be directed to an upland location where it could soak into the soil without causing turbidity problems.

After in-stream construction is complete, the upstream berm would be breached to allow a small amount of water to re-enter the work area and suspend loose sediment. This initial water would then be pumped and discharged to a designated upland area. Once the discharge water cleared, both berms would be removed to allow unimpeded flows in Thornton Creek.

Up to 108 trees may be removed by the project. Removed trees may be replaced on at least a 2-for-1 basis, as may be required by former Mayor Greg Nickels' Executive Order 03-05 (2005; Clerk File #307611). The project would plant more than 780 native trees in upland, wetland, and riparian areas to enhance fish and wildlife habitat. An increase in the number of trees together with the increase in the vegetated surface area of the confluence and floodplain is expected to benefit wildlife species by increasing habitat diversity and availability. Additionally, the woody debris and habitat snags will be sourced from the removed trees as possible, depending upon the condition and type of trees removed.

Due to the known presence of New Zealand mud snail in the Thornton Creek watershed, precautions are needed to guard against inadvertent dispersal of the snail to other parts of the Thornton Creek watershed or to other watersheds. Such precautions would also function to protect against the introduction of other new invasive alien species to the Thornton Creek watershed. As a result, this project would implement Level 1 and Level 2 decontamination procedures of the most current WDFW Invasive Species Management Protocols (version 1; July 2011). That document is available from Allen Pleus, Aquatic Nuisance Species Coordinator for WDFW (360-902-2724; Allen.Pleus@dfw.wa.gov). Because New Zealand mud snails are known to survive out of water (in moist media) for many days, material excavated from existing creek channels to be exported from the project location would be landfilled in a licensed landfill and not used for other purposes.

B6 Energy and Natural Resources

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

The completed project would not require additional energy or natural resources. Maintenance and operations crew vehicles would continue to combust diesel fuel and gasoline.

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.

B7. 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:

Materials likely to be present during construction would include gasoline and diesel fuels, hydraulic fluids, oils, lubricants, and other chemical products. A spill of one of these chemicals could potentially occur during construction as a result of either equipment failure or worker error. A spill prevention plan and CSECP would be prepared and implemented during construction.

The completed project would not result in any environmental health hazards.

(1) Describe special emergency services that might be required.

Possible fire or medic services could be required during project construction, as well as possibly during maintenance of the completed project. However, the completed project would not demand higher levels of special emergency services than already exist at the project location. Typical emergency services required for medical emergencies are provided by the Seattle Fire Department. Typical public safety services are provided by the Seattle Police Department. During construction, SPU's contractor will provide typical construction site security services.

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

A CSECP would be developed to control and manage spills during construction. Any soils contaminated by spills would be excavated and disposed of in a manner consistent with the level of contamination, in accordance with federal, state, and local regulatory requirements, by a qualified contractor(s) and/or City staff. During construction, SPU or its Contractor would use SOPS and BMPs, as identified in the City of Seattle's Stormwater Code SMC 22.800–22.808, Director's Rule: 2009-004 SPU/16-2009 DPD, and Volume 2 Construction Stormwater Control Technical Requirements Manual, to reduce or control environmental health hazards. Equipment would be inspected for leaking hoses, mechanical joints, and hydraulic pistons. Temporary control measures for both erosion and hazardous material spills would be installed to minimize access pathways to Thornton Creek in the event of a spill or leak. Hazardous material spill response materials would be available on the construction site for the duration of construction.

As required by the Washington Department of Labor and Industries (WAC 296-843), a Health and Safety Plan would be prepared by SPU for SPU construction staff and SPU's contractor for its staff before work commences. The plan would address proper employee training, use of protective equipment, contingency planning, and secondary containment of hazardous material. It would identify measures to ensure construction worker safety, outline emergency medical procedures, and reporting requirements. Public access to the work areas would be restricted.

b. Noise

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

Noises that exist 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 and vibration levels in the vicinity of construction would temporarily increase during construction. Noise and heavy vibration are expected to result from the driving of sheet piles (for shoring). Noise and medium vibration are expected to result from vibratory roller-compactors, large track hoes, hoe-packs (track hoe-mounted hydraulic compactors), discharges of boulders and other rock from dump trucks onto staging areas, and track hoe-mounted pavement breakers. Noise and low vibration are expected to result from small or medium track hoes, hand-operated compaction equipment such as jumping jacks or plate compactors, large [greater than 3 inch] diesel-powered pumps for dewatering and 24 hour stream bypass, concrete trucks and concrete pumper trucks, concrete vibratory stingers, and jackhammers.

Short-term noise from construction equipment would be limited to the allowable maximum levels of City of Seattle's Noise Control Ordinance [Seattle Municipal Code (SMC) Chapter 25.08]. Per SMC 25.08, elevated noise from construction equipment would be allowed only between the hours of 7 am and 10 pm weekdays, and between 9 am and 10 pm on weekends and legal holidays. For this project, construction typically would take place between 7 am to 6 pm on weekdays, except for emergencies that may occur before or after those times. The completed project would not contribute noise or vibration beyond that which already exists related to existing site uses and maintenance.

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

Construction equipment would be muffled in accordance with the applicable laws. SMC 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. In addition, the project would:

- locate access ways and construction activity as far from sensitive receptors and structures as possible;
- inspect adjacent foundations and infrastructure before and after construction, documenting those features with photos;
- pothole to identify exact horizontal and vertical locations of buried utilities prior to construction to evaluate potential conflicts;
- limit equipment operation to what is needed for construction;
- minimize equipment idling;
- evaluate soils and water conditions to determine if saturated soils conditions exist and consider site dewatering if geotech recommends this as a way to dampen vibrations where likelihood of damage to adjacent structures exists;
- throttle pumps to minimum speeds needed to bypass streams; and
- limit compaction to that needed to achieve structure and/or soil stability of proposed project.

B8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The project location is surrounded by single-family residential properties to the north, south and east. Meadowbrook Pond is located to the south of the easterly portion of the project location. Residential streets 35th and 36th Avenues Northeast pass through the project location. Pedestrians are able to access the project location from all directions. There is street parking on both streets. Nathan Hale High School and the Meadowbrook Community Center are located west of the project location.

b. Has the site been used for agriculture? If so, describe.

A 1936 aerial photograph suggests the project location may have been used for agricultural purposes (hay or pasturage). The rows of Lombardy poplars and a few MacKenzie willows on either side of the straightened stream channel of the South Branch west of 35th Avenue Northeast are believed to be residual from a previous dairy operation. However, the project location has not been used for agricultural purposes for at least 50 years.

c. Describe any structures on the site.

The project location contains three small bridges for pedestrian and service access. Two concrete walls define the channel of the South Branch east of 35th Avenue Northeast and a 6.5 foot metal arch culvert conveys South Branch under 35th Avenue Northeast.

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

The project would demolish two pedestrian bridges: one on the Seattle School District property and one on the parcel at 10723 36th Avenue Northeast. A site plan showing these structures is included as Attachment C. A concrete wall on the north side of the South Branch would be removed; however, the south wall would remain. The project would also remove wingwalls and existing 6.5 foot arch culvert from the Seattle School District property and under 35th Avenue Northeast.

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

The project parcels are currently zoned SF 7200 (Residential, Single Family; 7,200 square feet minimum lot size).

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

The current comprehensive plan designation of the project area is single family residential.

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

The project parcel has no Shorelines of the State that are regulated under the City of Seattle's Shoreline Master Program.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

The project or portions of it are within a Wetland Area, a Riparian Corridor, Liquefaction-prone Area and a Flood-prone area—Environmentally Critical Areas as mapped by DPD.

The project location is situated in a former organic-soil based wetland and, more generally, a seismically active area and is prone to seismic hazards such as liquefaction, lateral spreading, and amplified seismic response. The project location lies approximately 7 miles north of the Seattle fault zone, a shallow crustal tectonic structure that is considered active (meaning it has the potential to cause earthquakes in the future) and is capable of producing earthquakes of magnitude 7.3 or greater. The recurrence interval of earthquakes on this fault zone is believed to be on the order of 1,000 years or more. The most recent large earthquake on this fault occurred about 1,100 years ago. There are also several other shallow crustal faults in the region (such as the Southern Whidbey Island fault zone) that are capable of producing strong ground shaking.

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?

No people would be displaced by the project.

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

No such measures are proposed because there are no impacts related to displacement.

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

No such measures are proposed because the project is compatible with existing and project land uses and plans. "Open space" is a principal use permitted outright in single-family zones [SMC 23.44.006 (Principal Uses Permitted Outright)].

B9. 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.

Four housing units were removed from the SPU-owned properties in 2008. The proposed project would not remove any additional housing units.

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

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

B10. Aesthetics

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

No buildings are planned for the project. The project would include a public art component, which may have height, depending on the artist's final design.

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

The project would plant more than 780 native trees in upland, wetland, and riparian areas to enhance fish and wildlife habitat. Local view corridors are expected to be obstructed over time due to the growth of that vegetation.

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

The project would plant more than 780 native trees in upland, wetland, and riparian areas to enhance fish and wildlife habitat. Thus, removed trees would be replaced on more than a 2-for-1 basis. Replacement of street trees removed along 35th Avenue Northeast and 36th Avenue Northeast right-of-way would be guided by the project's Seattle Department of Transportation's Street Improvement Permit.

B11. Light and Glare

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

The project would replace two existing street lights on 35th Avenue Northeast and one existing street light on 36th Avenue Northeast. The street lights on 35th may generate more wattage than the existing streetlights but the final requirements [from SDOT and Seattle City Light (SCL)] had not been identified at the time this Checklist was prepared.

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

The project would replace three existing street lights that provide for vehicular and pedestrian safety. The replacement street lights would meet requirements determined by SDOT and SCL.

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:

The project would replace three existing street lights that provide for vehicular and pedestrian safety. The replacement street lights would meet requirements determined by SDOT and SCL. No mitigation is being proposed because there would be no adverse impacts related to light and glare.

B12. Recreation

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

SPU's Meadowbrook Pond Stormwater Detention Facility is located adjacent to and southeast of the proposed project. The Facility is used by the Meadowbrook community for passive recreational uses such as walking, jogging, non-motorized biking, and wildlife watching. The Meadowbrook Community Center and Nathan Hale High School and its athletic fields are west of the project location, on the west side of 35th Avenue Northeast.

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

The proposed project would not permanently displace any existing recreational uses. During construction, some vehicle and pedestrian access to the Meadowbrook Community Center and Meadowbrook Pond Stormwater Detention Facility would be temporarily restricted or closed.

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

B13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

The proposed project is located on fill materials in a former wetland area of the Thornton Creek watershed. There are no places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site. To determine if National Register or Washington Heritage properties are located in or adjacent to the project area, the project location was checked against the following registers on July 9, 2013:

• City of Seattle Landmarks
http://www.cityofseattle.net/neighborhoods/preservation/landmarks_listing.htm

• Washington Heritage Register and National Register of Historic Places
http://www.dahp.wa.gov/historic-register (general site on historic registers),
http://www.dahp.wa.gov/washington-heritage-register (a site specific to the Washington Heritage Register) and the WISAARD database
http://www.dahp.wa.gov/learn-and-research/find-a-historic-place

While the WISAARD database indicates numerous historic properties reports have been submitted for various structures near the project location, none of these registers recorded any places or objects formally listed on, or proposed for, national, state, or local preservation registers on or adjacent to the project location. In addition, the cultural resources assessment conducted for both this Thornton Creek Confluence Improvement Project and the Meadowbrook Pond Stormwater Detention Facility Dredging and Improvements Project (NWAA 2011) identified no such resources.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

The cultural resources assessment for the Thornton Creek Confluence Project (NWAA 2011) identified no such resources. Much of the project location consists of previously disturbed land associated residential development, improved street rights-of-way, and other disturbances. The project's location on fill materials and the site's disturbance history combine to reduce the project's likelihood of encountering undisturbed archaeological materials.

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

Due to the project's location on fill material and the site's disturbance history, the cultural resources assessment for the Thornton Creek Confluence Project (NWAA 2011) did not recommend monitoring for archaeological resources during construction. However, should evidence of cultural artifacts or human remains, either historic or prehistoric, be encountered during excavation, work in that immediate area would be suspended and the find would be examined and documented by a professional archaeologist. Decisions regarding appropriate mitigation and further action would be made at that time.

B14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Vehicle access to the project location is by means of 35th and 36th Avenues Northeast. 35th Avenue Northeast is a local arterial. Street parking exists on both of these streets. Pedestrian access to the project location is available from 35th and 36th Avenues Northeast and from the adjacent Meadowbrook Pond Stormwater Detention Facility. Construction traffic for this project would access the project using 35th and 36th Avenues Northeast. During construction, 35th Avenue Northeast is expected to be closed to vehicle and pedestrian travel in both directions for as long as eight continuous weeks.

b. Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The project location is currently served by nearby public transportation. Metro transit routes 64 and 65 travel on 35th Avenue Northeast. The nearest transit stop is located on 35th Avenue Northeast at Northeast 110th Street, approximately 500 feet north of the project location.

c. How many parking spaces would be unavailable during project construction? How many spaces would the completed project have? How many would the project eliminate?

The project anticipates construction staging occurring on 35th and 36th Avenues Northeast, on parcel 2726049129 east of 36th, and in the parking lot of the Meadowbrook Community Center located on Seattle Public Schools property. Construction during culvert installation would temporarily displace up to 25 on-street and up to 30 public parking spaces on 35th Avenue Northeast and at the Meadowbrook Community Center, respectively, for as long as eight continuous weeks. The project would not permanently displace any parking spaces at the Community Center. Based on communications with SDOT, SPU anticipates that the project's Street Improvement Permit would include a requirement to include dedicated bicycle lanes in the pavement restoration design for 35th Ave NE, consistent with the City's Bicycle Master Plan. This would result in the permanent loss of up to 10 on-street parking spaces on 35th Avenue Northwest.

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

The proposed project would not require any new public roads or streets. A new restricted-access road to the Meadowbrook Pond Stormwater Detention Facility and SPU Pump Station 114 would be constructed east of 36th Avenue Northeast. This new access road would accommodate pedestrians and authorized maintenance vehicles. Construction of a formal cul-de-sac in the 36th Avenue Northeast street end would require addition of new, associated public sidewalks.

e. Will the project 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? If known, indicate when peak volumes would occur.

Project construction would require a total of approximately 2,309 round-trips (estimated using Attachment D) due to workers and materials being transported to and from the project location during the 90 work day construction period. This includes an estimated total of 871 round-trips for removal of excavated material and import of material by truck. Generally, trips would occur between the hours of 7 am and 10 pm weekdays, and 9 am and 10 pm weekends and legal holidays. Specific timing of peak volumes is not known. The completed project is expected to generate approximately 120 round trips to support the monitoring of chemical, physical, and biological characteristics of the completed project for 5 years post-construction.

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

There are no proposed measures to reduce or control transportation impacts because the proposed project would have relatively brief and localized temporary impacts. No measures are proposed to offset the permanent displacement of up to ten on-street parking spaces on 36th Avenue Northeast because there is a community desire to limit vehicular access at that street-end to discourage criminal and other undesirable activity.

Details regarding temporary closure of sidewalks, on-street parking spaces, traffic lanes, and the 36th Avenue street end would be controlled by the Street Use Permits, SDOT-approved Traffic Control Plans and Traffic Permits issued by SDOT. Details regarding temporary closure of parking spaces at Meadowbrook Community Center would be controlled by Parks and Seattle Public Schools.

Metro Transit would establish detour routes and signed temporary stops for routes 64 and 65 during the eight week closure of 35th Avenue Northeast. No bus routes would be permanently impacted.

B15. Public Services

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

The proposed project would not create increased need for public services.

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

The project would formally notify the Seattle Police and Fire departments of the impending timing and duration of the 35th Avenue Northeast street closure.

B16. Utilities

a. Check utilities available at the site, if any: *[check the applicable boxes]*

☐ None
☒ Electricity ☒ Natural gas ☒ Water ☒ Refuse service
☒ Telephone ☒ Sanitary sewer ☐ Septic system
☒ Other: Fiber/Cable (telecom), stormwater/drainage

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.

☐ **None**

This project would replace an existing 4 foot by 6.5 foot metal arch culvert that conveys Thornton Creek under 35th Avenue Northeast with a 32 foot wide concrete box culvert (bridge). Construction of the new culvert must integrate with existing utilities, which include a 30 inch stormwater line (flowing from north to south), an 8 inch drinking water main, a 4 inch natural gas main, and telecommunication lines in the sidewalk. At the 36th Avenue Northeast street-end, the project would underground existing overhead electrical wires and relocate an existing 8 inch water main to allow for floodplain grading. These utilities will be relocated to accommodate the new culvert. A King County 42 inch sanitary sewer is located within the 36th Avenue Northeast right-of-way, but would not be disturbed or relocated by this project.

Utility relocations would be conducted according to agency regulations and permits, utility provider and emergency response provider requirements, and best management practices. Any utility interruptions would be planned in advance and coordinated with utility providers. The project would prepare a utility relocation plan to assure minimization of potential disruptions and provide information on construction schedules and sequencing. The project anticipates minimal interruptions in service during those utility relocations. However, if more than a short service disruption would occur during relocation, then temporary connections to businesses and residences would be provided.

Inadvertent damage to underground utilities could also occur during construction. While such incidents do not occur frequently, they could temporarily affect services to customers served by the affected utility while emergency repairs are made.

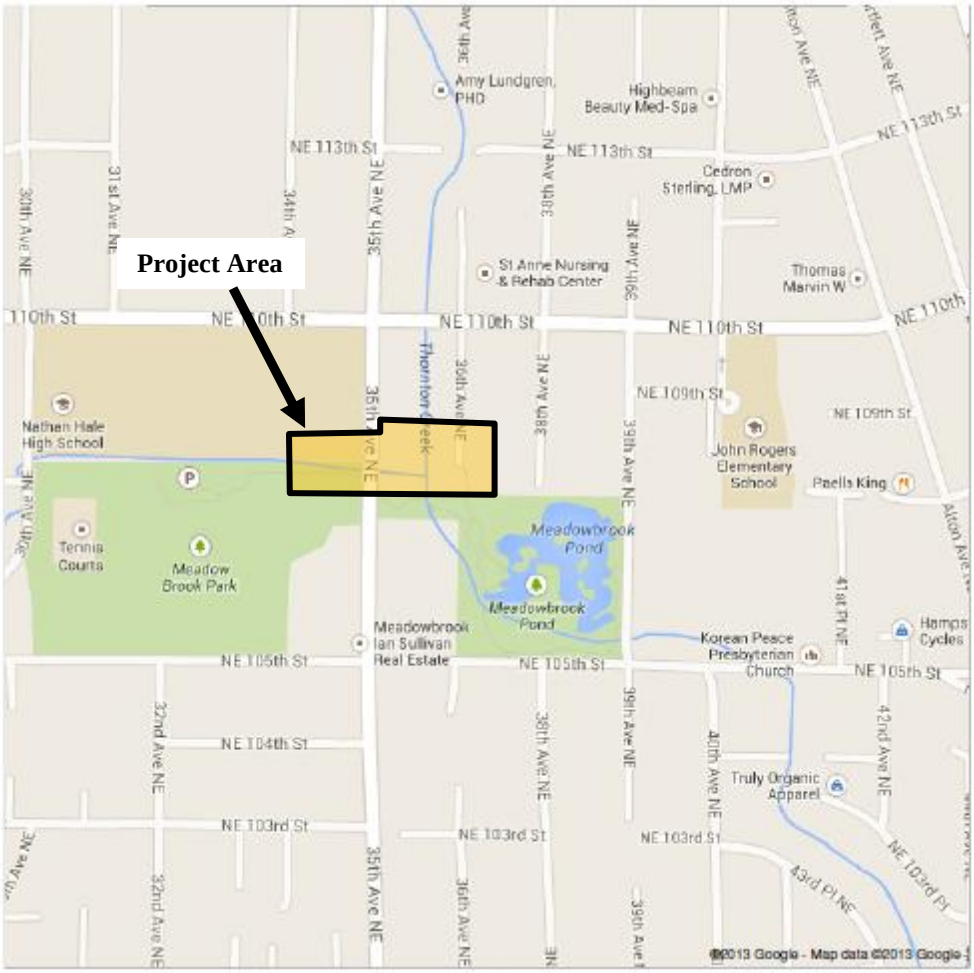
C. SIGNATURE

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.

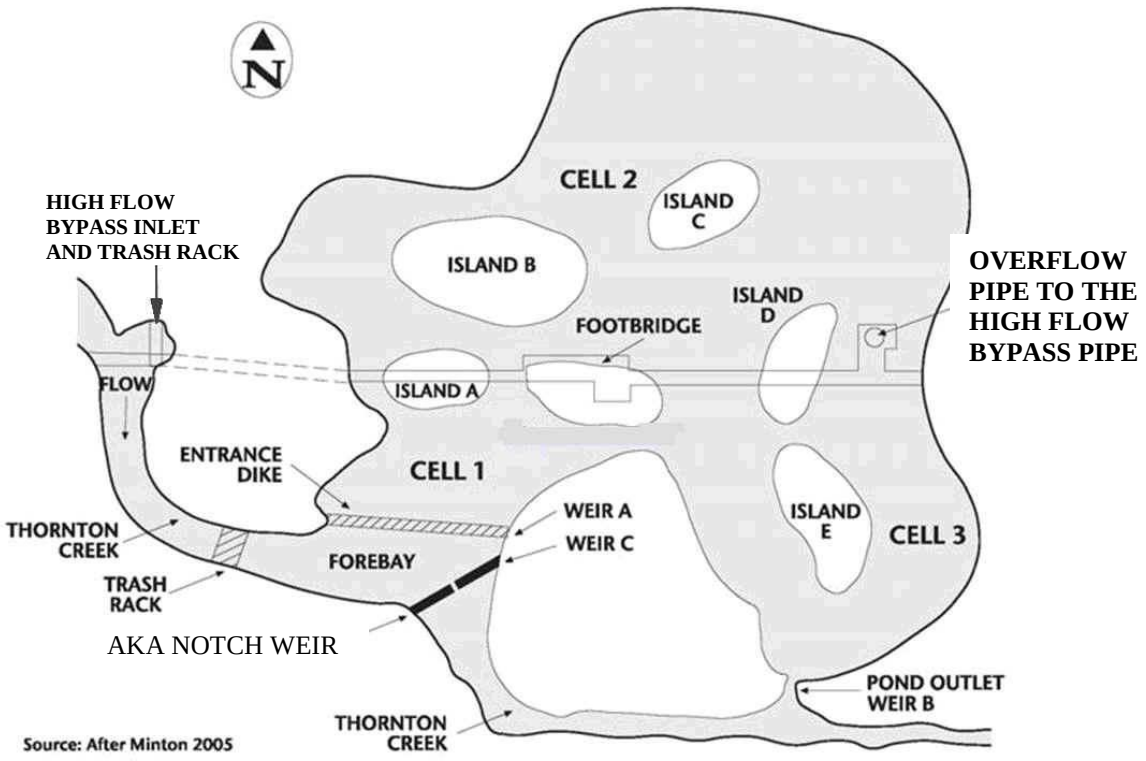
Signature: _____ Date: 9/19/2013

Jason Sharpley, Project Manager

Attachment A: Vicinity Maps

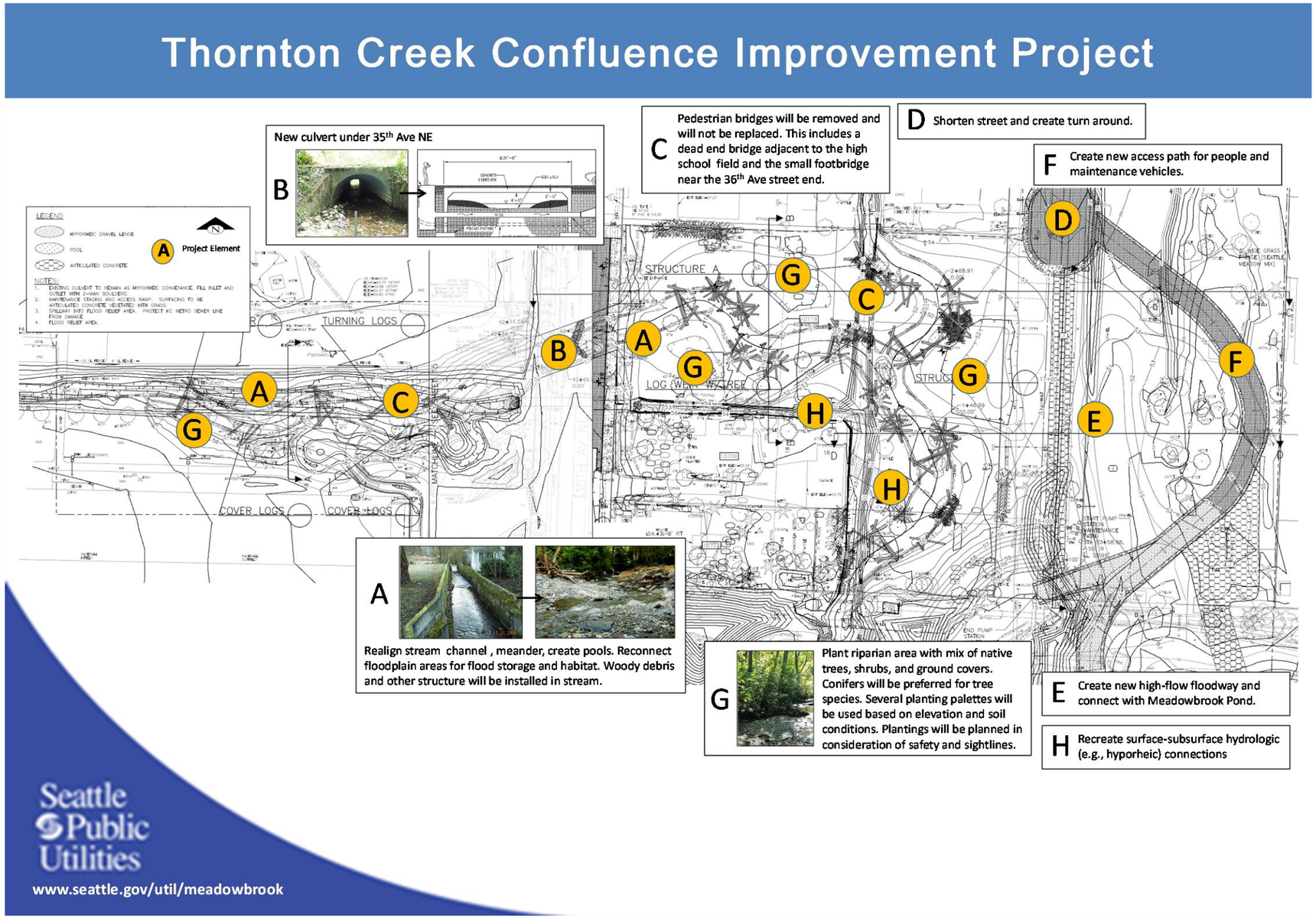


Attachment C: Layout of Adjacent Meadowbrook Pond Stormwater Detention Facility



Meadowbrook Pond General Layout

Attachment B: Project Location and Components



Attachment D: Greenhouse Gas Emissions Worksheet

Section I: Buildings						
			Emissions Per Unit or Per Thousand Square Feet ($MTCO_2e$)			
Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet	Embodied	Energy	Transportation	**Lifespan Emissions ($MTCO_2e$)**
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**
					TOTAL Section I Buildings	**0**

Section II: Pavement						
						Emissions ($MTCO_2e$)
Concrete/curb (50 $MTCO_2e$/1,000 sq ft at 6 inches of thickness)		4,950 sq ft asphalt, 6 in thick; 360 cy poured concrete; 25 cy in articulated concrete blocks; 230 cy in precast bridge components;				**1,908**
					TOTAL Section II Pavement	**1,908**

Section III: Construction	
(See detailed calculations below)	**Emissions ($MTCO_2e$)**
TOTAL Section III Construction	**178**

Section IV: Operation and Maintenance	
	Emissions ($MTCO_2e$)
TOTAL Section IV Operations and Maintenance	**0.7**

TOTAL GREENHOUSE GAS (GHG) EMISSIONS FOR PROJECT ($MTCO_2e$)	**2,087**

Section III Construction Details		
Construction: Diesel		
Equipment	**Diesel (gallons)**	**Assumptions**
Concrete trucks (10 cubic yard capacity)	1,920	16 round trips x 6 hours/trip x 20 gallons/hour (345 HP engine)
Concrete pumper truck (1)	720	6 days x 6 hours/day x 20 gallons/hour (345 HP engine)
Excavator/track hoe (1)	4,320	60 days x 8 hours/day x 9 gallons/hour
Backhoe (1)	640	20 days x 8 hours/day x 4 gallons/hour
Transfer dump trucks (17 cubic yard or 25 ton capacity)	2,613	871 round trips x 15-mile round-trip ÷ 5 mpg
Flatbed truck (1)	240	60 days x 1 round/trip/day x 20 mile round trip ÷ 5 mpg
Vibratory Roller-compactor (1)	280	5 days x 8 hours/day x 7 gallons/hour
Crane (20 ton) (1)	48	3 days x 8 hours/day x 2 gallons/hour
Asphalt Paver (1)	120	5 days x 8 hours/day x 3 gallons/hour
Wheel Loader (1)	1,120	20 days x 8 hours/day x 7 gallons/hour
Subtotal Diesel Gallons	12,021	
GHG Emissions in lbs CO_2e	319,158	At 26.55 lbs CO_2e per gallon of diesel
GHG Emissions in metric tons CO_2e	145	1,000 lbs = 0.45359237 metric tons

Construction: Gasoline		
Equipment	**Gasoline (gallons)**	**Assumptions**
Pick-up truck or crew vans (3)	2,025	90 days x 3 trucks x 5 round-trips/day x 15-mile round-trip ÷ 10 mpg
6 inch pump (for creek by-pass) (2)	960	24 days (24 hours/day) x 20 gallons/day x 2 pumps
Subtotal Gasoline Gallons	2,985	
GHG Emissions in lbs CO_2e	72,536	At 24.3 lbs CO_2e per gallon of gasoline
GHG Emissions in metric tons CO_2e	32.9	1,000 lbs = 0.45359237 metric tons

Construction Summary		
Activity	**CO_2e in pounds**	**CO_2e in metric tons**
Diesel	319,158	145
Gasoline	72,536	32.9
Total for Construction	391.694	**178**

Section IV Long-Term Operation and Maintenance Details		
Operation and Maintenance: Diesel		
Equipment	**Diesel (gallons)**	**Assumptions**
Subtotal Diesel Gallons	0	
GHG Emissions in lbs CO_2e	0	At 26.55 lbs CO_2e per gallon of diesel
GHG Emissions in metric tons CO_2e	0	1,000 lbs = 0.45359237 metric tons

Operation and Maintenance: Gasoline		
Equipment	**Gasoline (gallons)**	**Assumptions**
Pick-up truck or crew vans	60	12 days/year x 5 years x 2 trucks x 10-mile round-trip ÷ 20 mpg
Subtotal Gasoline Gallons	0	
GHG Emissions in lbs CO_2e	1,458	At 24.3 lbs CO_2e per gallon of gasoline
GHG Emissions in metric tons CO_2e	0.7	1,000 lbs = 0.45359237 metric tons

Operation and Maintenance Summary		
Activity	**CO_2e in pounds**	**CO_2e in metric tons**
Diesel	0	0
Gasoline	1,458	0.7
Total Operations and Maintenance	1,458	**0.7**

Attachment E: Checklist of Bird Species

Friends of Meadowbrook Pond

Mission

Dedicated to enhancing Meadowbrook Pond as a safe urban sanctuary benefiting people and wildlife through stewardship and community outreach

85
days since
Pond CLOSED for Summer Construction

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Flora & Fauna >

Birds

As with most urban areas, birds are the most often seen category of wildlife a fly is certainly an advantage when it comes to getting around. And being wa year round. To learn more about our local birds, check-out the following web

- Seattle Audubon http://www.seattleaudubon.org/sas/
- Washington Department of Fish & Wildlife (WDFW) http://wdfw.wa.go
- http://animals.nationalgeographic.com/animals/birding/backyard-birds-
-

Waterfowl, shorebirds, etc.

Meadowbrook Pond Bird List

Meadowbrook Pond Bird species observed since the pond was opened to th

WATERFOWL
Canada goose
gadwall
American wigeon
mallard
blue-winged teal
cinnamon teal
green-winged teal
northern shoveler
ring-necked duck
lesser scaup
bufflehead
common goldeneye
hooded merganser
common merganser
wood duck
(mandarin duck-escaped)

GREBES
pied-billed grebe

CORMORANTS
double-crested cormorant

HERONS

Discussions

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great blue heron
green-back heron
black-crowned night heron

RAPTORS
osprey
bald eagle
sharp-shinned hawk
Cooper's hawk
northern goshawk
red-tailed hawk
northern harrier
American kestrel
merlin

RAILS
sora
American coot

SHOREBIRDS
killdeer
lesser yellowlegs
spotted sandpiper
solitary sandpiper
short-billed dowitcher
Wilson's snipe

GULLS, TERNS
ring-billed gull
glaucous-winged gull
mew gull
Caspian tern

PIGEONS
band-tailed pigeon
mourning dove
rock dove

OWLS
barred owl
great horned owl

GOATSUCKERS
common nighthawk

SWIFTS
black swift
Vaux's swift

HUMMINGBIRDS
Anna's hummingbird
rufous hummingbird

KINGFISHERS
belted kingfisher

WOODPECKERS
downy woodpecker
northern flicker
pileated woodpecker
red-breasted sapsucker

FLYCATCHERS
- western wood pewee
- willow flycatcher

VIREOS
- warbling vireo

CORVIDS
- Steller's jay
- American crow
- Common raven

SWALLOWS
- tree swallow
- violet-green swallow
- barn swallow

CHICKADEES, NUTHATCHES
- black-capped chickadee
- chestnut-backed chickadee
- bushtit
- red-breasted nuthatch

CREEPERS
- brown creeper

WRENS
- winter wren
- Bewick's wren

DIPPERS
- American dipper

KINGLETS
- golden-crowned kinglet
- ruby-crowned kinglet

THRUSHES
- hermit thrush
- American robin
- varied thrush

STARLINGS
- European Starling

WAXWINGS
- cedar waxwing

WARBLERS
- common yellowthroat
- Nashville warbler
- orange-crowned warbler
- Townsend's warbler
- Wilson's warbler
- yellow warbler
- yellow-rumped warbler (both types)

FINCHES
- dark-eyed junco
- red crossbill

golden-crowned sparrow
Lincoln's sparrow
savannah sparrow
song sparrow
spotted towhee
white-crowned sparrow
white-throated sparrow (rare)
house finch
pine siskin
American goldfinch
house sparrow
fox sparrow

GROSBEAKS
black-headed grosbeak
evening grosbeak

BLACKBIRDS
red-winged blackbird
brown-headed cowbird
Bullock's oriole

TOTAL SPECIES: 106 as of April 10, 2009

Comments

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