

Updated Health and Safety Plan

By their signature, the undersigned certify that this Health and Safety Plan (HASP) is approved and that it will be used to govern health and safety aspects of fieldwork described in the Quality Assurance Project Plan to which it is attached.



Tom Wang, PE
Anchor QEA, LLC, Project Manager

October 10, 2022

Date



Tim Shaner
Anchor QEA, LLC, Health and Safety Program Lead

October 10, 2022

Date



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Northwest Hydro, Inc., Field Operations
Manager/Health and Safety Officer

October 10, 2022

Date

ACRONYMS

CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
EPA	U.S. Environmental Protection Agency
FOM	Field Operations Manager
HASP	Health and Safety Plan
HAZMAT	hazardous materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSM	Health and Safety Manager
HSO	Health and Safety Officer
HSPL	Health and Safety Program Lead
LDW	Lower Duwamish Waterway
MHHW	mean higher high water
OSHA	Occupational Safety and Health Administration
PFD	personal flotation device
PM	Project Manager
PPE	personal protective equipment
True North	True North Land Surveying, Inc.
USCG	U.S. Coast Guard
VHF	very high frequency

A.1.0 Introduction

This Health and Safety Plan (HASP) presents health and safety requirements and procedures that will be followed by personnel during survey work activities in the Lower Duwamish Waterway (LDW) (the site). This HASP was developed in accordance with Title 29 of the Code of Federal Regulations (CFR), Part 1910.120(b), and will be used in conjunction with applicable Health and Safety Programs. See Section A.1.1 for HASP modification procedures.

The provisions of this HASP are mandatory for all personnel assigned to the project. A copy of this HASP must be always maintained on site and available for employee review. Personnel assigned to work at the project site will be required to read this plan and must sign the HASP Acknowledgement Form (Attachment A.1) to confirm that they understand and agree to abide by the provisions of this HASP. During site work, this HASP will be implemented by the Northwest Hydro, Inc. (NWH) Field Operations Manager (FOM), who is also the designated site Health and Safety Officer (HSO), in cooperation with the corporate Health and Safety Manager (HSM).

The objectives of this HASP are to identify potential physical, chemical, and biological hazards associated with field activities; establish safe working conditions and protective measures to control those hazards; define emergency procedures; and describe the responsibilities, training requirements, and medical monitoring requirements for site personnel.

Issuance of this approved HASP documents that the workplace has been evaluated for hazards. A hazard assessment was performed, and the adequacy of the personal protective equipment (PPE) selected was evaluated as required by 29 CFR 1910.132(d)—Personal Protective Equipment, General Requirements (General Industry); 29 CFR 1910.134—Respiratory Protection; 29 CFR 1926.28—Personal Protective Equipment (Construction Industry); and 29 CFR 1926.55—Gases, Vapors, Fumes, Dusts and Mist, and is duly noted by the signature(s) and date appearing on the certification page of this document.

A.1.1 Health and Safety Plan Modifications

This HASP will be modified by amendment, if necessary, to address changing field conditions or additional work tasks not already described in this document. Modifications will be proposed by the FOM/HSO using the Modification to Health and Safety Plan form included as Attachment A.2. Modifications will be reviewed by the HSM or authorized representative and approved by the Project Manager (PM).

The field team has the responsibility to immediately report any potentially unsafe or hazardous conditions to the FOM/HSO, and all members of the field team have STOP WORK AUTHORITY—the authority to stop or suspend work if conditions arise that pose an unacceptable health and safety risk

to the field team or environment, or if conditions arise that warrant modifications to this HASP. It is critical that all field team members proactively communicate with the FOM/HSO to identify potential unsafe conditions.

A.2.0 Site Description and Project Scope

The surveying area is in the LDW (see Figure 1 in the attached QAPP). The area is affected by tidal fluctuations. The main activity covered by this HASP is bathymetric surveying, which will be conducted from a survey vessel and has a low likelihood of contact with sediment. This HASP also covers installation of survey monuments for the middle reach in the public right of way to support bathymetric survey controls. Survey monument installation will be performed by a topographic surveyor. No other topographic surveying is proposed for this phase of work.

A.3.0 Health and Safety Personnel

Key health and safety personnel and their responsibilities are described below. These individuals are responsible for the implementation of this HASP.

Anchor QEA Project Manager: The PM has overall responsibility for the successful outcome of the project. The PM will ensure that adequate resources and budget are provided for the health and safety staff to carry out their responsibilities during fieldwork. The PM, in consultation with the HSM, makes final decisions concerning implementation of the HASP.

NWH Field Operations Manager/Health and Safety Officer: Because of the limited scope and duration of fieldwork, the NWH FOM and HSO will be the same person. The FOM/HSO will direct field surveying activities, coordinate the technical components of the field program with health and safety components, and ensure that work is performed according to the QAPP.

The FOM/HSO will implement this HASP at the work location and will be responsible for all health and safety activities and the delegation of duties to a health and safety technician in the field, if appropriate. The FOM/HSO also has stop-work authority, to be used if there is an imminent safety hazard or potentially dangerous situation. The FOM/HSO or their designee shall be present during surveying operations.

True North Field Operations Manager/Health and Safety Officer: The True North FOM and HSO will be the same person. The FOM/HSO will direct field surveying activities, coordinate the technical components of the field program with health and safety components, and ensure that work is performed according to the Survey QAPP addendum.

The FOM/HSO will implement this HASP at the work location and will be responsible for all health and safety activities and the delegation of duties to a health and safety technician in the field, if

appropriate. The FOM/HSO also has stop-work authority, to be used if there is an imminent safety hazard or potentially dangerous situation. The FOM/HSO or their designee shall be present during surveying operations.

Anchor QEA Corporate Health and Safety Program Lead: The HSPL has overall responsibility for preparation, approval, and revisions of this HASP. The HSPL will not necessarily be present during fieldwork, but will be readily available, if required, for consultation regarding health and safety issues during fieldwork.

Field Crew: All field crew members must be familiar with and comply with the information in this HASP. They also have the responsibility to report any potentially unsafe or hazardous conditions to the FOM/HSO immediately.

A.4.0 Hazard Evaluation and Control Measures

This section covers potential physical and chemical hazards that may be associated with the proposed project activities and presents control measures for addressing these hazards. The activity hazard analysis, Section A.4.3, lists the potential hazards associated with each site activity and the recommended site control to be used to minimize each potential hazard.

Confined space entry will not be necessary for this project. Therefore, hazards associated with this activity are not discussed in this HASP.

A.4.1 Physical Hazards

For this project, it is anticipated that physical hazards will present a greater risk of injury than chemical hazards. Physical hazards are identified and discussed below.

A.4.1.1 *Slips, Trips, and Falls*

As with all fieldwork sites, caution should be exercised to prevent slips on slick surfaces. In particular, surveying requires careful attention to minimize the risk of falling down. Bathymetric surveying will be performed on a boat and care will be taken to minimize the risk of falling overboard. Slips will be minimized by wearing boots with good tread, made of material that does not become overly slippery when wet.

Trips are always a hazard on the uneven deck of a boat or in a cluttered work area. Personnel will keep work areas as free as possible from items that interfere with walking.

Falls may be avoided by working as far from exposed edges as possible, by erecting railings, and by using fall protection when working on elevated platforms. For this project, no work is anticipated that would present a fall hazard. As with any work from a floating platform, there is a chance of falling

overboard. Personal flotation devices (PFDs) will be worn while working on deck or working from an open boat. PFDs need not be worn while working inside an enclosed cabin, but must be readily available when going on deck from the cabin area. An individual in the water shall be considered a "person overboard" and appropriate rescue actions shall be taken immediately to prevent hypothermia. PFDs will be worn while working within 10 feet of the water's edge or on banks.

A.4.1.2 Manual Lifting

Equipment must be lifted and carried. Back strain can result if lifting is done improperly. During any manual handling tasks, personnel should lift with the load supported by their legs and not their backs. For heavy loads, an adequate number of people will be used, or if possible, a mechanical lifting/handling device will be used.

A.4.1.3 Heat Stress, Hypothermia, or Frostbite

The work crew and other personnel shall have adequate clothing and foul-weather gear in their possession prior to beginning work. Hypothermia is a potentially hazardous condition.

Hypothermia is characterized by pain in the extremities and loss of manual dexterity, with severe, uncontrollable shivering, and an inability to maintain the level of activity. Symptoms include excessive fatigue, drowsiness, irritability, or euphoria. Severe hypothermia includes clouded consciousness, low blood pressure, pupil dilation, cessation of shivering, unconsciousness, and possible death.

Move the individual to a warm, dry place. If the individual's clothing is wet, remove it and replace it with dry clothing. Keep the individual warm. Rewarming the individual should be gradual to avoid stroke symptoms. Dehydration, or the loss of body fluids, may result in a cold injury due to a significant change in blood flow to the extremities. If the individual is conscious and alert, warm sweet liquids should be provided. Coffee and other caffeinated liquids should be avoided because of diuretic and circulatory effects. Extremities affected by frostbite should be gradually warmed and returned to normal temperature. Moist compresses should be applied; begin with lukewarm compresses and slowly increase the temperature as changes in skin temperature are detected. Keep the individual warm and calm and move to a medical facility as soon as possible.

A.4.1.4 Weather

In general, field team members will be equipped for the normal range of weather conditions. Work shall be preceded by an evaluation of weather reports and conditions by the FOM/HSO and vessel pilot to ascertain that safe working conditions exist and safe refuge of personnel is assured. An alternate safe harbor shall be designated for emergency situations. Field personnel shall maintain monitoring of the local area weather broadcasts or other readily available weather forecasting

services. Some conditions that might force work stoppage are electrical storms, high winds, or high waves resulting from winds.

A.4.1.5 Boating Operations

The following precautions shall be taken when conducting boating trailer and launch activities. These procedures are provided as a reference; NWH will follow their own internal boating safety procedures and consider the procedures below.

- Follow the trailer and boat manufacturers' instructions for securing the boat to the trailer.
- Follow the trailer manufacturer's instructions for securing the trailer to the towing vehicle.
- Prohibit site personnel from moving into trailer/vehicle pinch points without advising the vehicle operator.
- Use experienced operators when backing trailers on boat ramps.
- Wear proper work gloves when the possibility of pinching or other injury may be caused by moving or handling large or heavy objects.
- Maintain all equipment in a safe condition.
- Launch boats one at a time to avoid collisions.
- Use a spotter for vehicles backing boats to the launch area.
- Understand and review hand signals.
- Wear boots with non-slip soles when launching boats.
- Wear USCG-approved PFDs when working within 10 feet of the water.
- Keep ropes and lines coiled and stowed to eliminate trip hazards.
- Maintain three-point contact on dock/pier or boat ladders.
- Verify that drain plugs are in place.

The following precautions shall be followed when conducting boating operations:

- Maintain a current boater's license(s) as required.
- Wear USCG-approved PFDs for work activities within 10 feet of the water.
- Obtain and review information regarding dams that may be present in work areas, particularly with regard to "no boating" zones and safety buoys, cables, and warning signage.
- Maintain boat anchorage devices commensurate with anticipated currents, distance to shore, and water depths.
- Provide a floating ring buoy in the immediate boat launch/landing areas with at least 60 feet (18.3 meters) of line for a vessel less than 65 feet (19.8 meters) in length, or 90 feet (27.4 meters) of line for a vessel 65 feet (19.8 meters) or greater in length (see <https://www.law.cornell.edu/cfr/text/46/117.70> for more information).
- Step into the center of the boat.
- Keep your weight low when moving on the boat.

- Move slowly and deliberately.
- Steer directly across other boat wakes at a 90-degree angle to avoid capsizing.
- Steer the boat facing forward.
- Watch for floating objects in the water.
- Right-of-way is yielded to vessels on your boat’s right, or starboard, and vessels with limited ability to maneuver such as any wind-propelled vessel.

The following precautions shall be followed when working on a boat:

- Observe proper lifting techniques.
- Wear USCG-approved PFDs for work activities within 10 feet of the water.

The safety-related items listed in Table A-1 shall be available when conducting boating operations.

**Table A-1
Safety equipment specific to in-water work**

Additional Safety Equipment for Sampling Vessel per U.S. Coast Guard Requirements
<ul style="list-style-type: none"> • Proper vessel registration, numbering, and documentation (registered with state, certificate of vessel registration number displayed, and carrying a valid certificate of number) • USCG-approved personal flotation devices (PFDs; or life jackets) for every person on the sampling vessel (Type I, II, III, or V are required). High-visibility required by Anchor QEA. • Appropriate, non-expired, visual distress devices for day and night use from the following: <ul style="list-style-type: none"> – Three hand-held red flares (day and night), or – One hand-held red flare and two parachute flares (day and night), or – One hand-held orange smoke signal, two floating orange smoke signals (day), and one electric distress light (night only) • Alternate means of propulsion (oars or paddles) • Dewatering device (pump or bailer) • Properly maintained and inspected USCG-approved fire extinguishers (no fixed system = (2) B-1 or (1) B-2 type extinguishers; fixed system = (1) B-1 type extinguisher) • Proper ventilation of gasoline-powered vessels • Sound-producing device (whistle, bell, or horn) • VHF 2-way radio • Proper navigational light display • Throwable life ring with attached line (any vessel larger than 16 feet is required to carry one Type IV [throwable] PFD)

Additional Safety Equipment for Sampling Vessel per U.S. Coast Guard Requirements	
Additional USCG Recommended Equipment Includes:	
<ul style="list-style-type: none"> • Extra visual distress signals • Primary and spare anchor • Heaving line • Fenders • First aid kit • Flashlight • Mirror • Searchlight • Sunburn lotion • Tool kit • Spare fuel 	<ul style="list-style-type: none"> • Boat hook • Spare propeller • Mooring line • Food and water • Binoculars • Spare batteries • Sunglasses • Marine hardware • Extra clothing • Spare parts • Pertinent navigational chart(s) and compass

A.4.1.6 Working in a Roadway

These procedures are provided as reference; NWH and True North will follow their own internal safety procedures for working in a roadway and consider the procedures below:

- Plan and conduct work in a manner that traffic may be continuously observed. This may require having a spotter equipped with a noise-making device such as an air horn or a whistle, as appropriate.
- Wear a high-visibility traffic vest and hardhat when a vehicle hazard exists. Include lighted elements when possible in high-hazard environments.
- Use cones, flag-mounted cones, caution tape, and/or barricades.
- Protect the work area with a vehicle or piece of heavy equipment if this does not pose an additional hazard. The vehicle should have a strobe light and operating headlights or running lights (if equipped).

A.4.2 Chemical Hazards

The Record of Decision identified polychlorinated biphenyl compounds, carcinogenic polycyclic aromatic compounds, arsenic, and dioxins/furans are contaminants of concern in sediments below mean higher high water (MHHW). Direct contact with contaminated sediment may occur when working from a boat if equipment is lowered to the sediment surface and raised back into the boat.

A.4.2.1 Exposure Routes

Possible routes of exposure to the chemicals potentially encountered on this project include inhalation, dermal contact, and ingestion of dust, mist, gas, vapor, or liquid. Exposure will be minimized by using safe work practices and by wearing the appropriate PPE. A further discussion of PPE requirements is presented in Section A.7.0.

Inhalation

Inhalation of particulates, dust, mist, gas, or vapor during field activities is possible. Chemicals of concern at this site are not volatile and strongly adsorb to sediment, so the principal route of inhalation exposure is through contaminated particulate or dust. Wet sediment should generate little dust, but dried sediment may present a hazard of inhalation. Care should be taken when working in areas with contaminated sediment, generally below MHHW in the work areas, and when decontaminating personal protective equipment and survey equipment that has been in contact with sediment.

Dermal Contact

Dermal contact with potentially contaminated soil, sediment, or groundwater during field activities is possible. Direct contact will be minimized by using appropriate PPE and decontamination procedures.

Ingestion

Direct ingestion of contaminants can occur by inhaling airborne dust, mist, or vapors, or by swallowing contaminants trapped in the upper respiratory tract. Indirect ingestion can occur by introducing the contaminants into the mouth by way of food, tobacco, fingers, or other carriers. Although ingestion of contaminants can occur, proper hygiene, decontamination, and contamination reduction procedures should reduce the probability of this route of exposure.

Chemicals of Concern Profile

Table A-2 provides a summary profile for the chemicals of concern for this project. This profile is based on recent site history and site characterization information. For more detailed and specific information, always refer to the Safety Data Sheet.

**Table A-2
Chemicals of Concern**

Chemical	Exposure Routes	Symptoms	Target Organs	OEL (STEL)	Odor Threshold (ppm)	LEL (%)	Ionization Energy (eV)
PCBs (Chlorodiphenyls) (42% CI / 53469-21-9) (54% CI / 11097-69-1)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects Potential occupational carcinogen	Skin, eyes, liver, reproductive system	0.001 mg/m ³ TWA8 Skin IDLH / Ca – 5 mg/m ³	N/A	N/A	N/A
Polycyclic aromatic hydrocarbons (PAHs) – as coal tar pitch volatiles. (Includes benzo(a)pyrene, chrysene, phenanthrene, fluoranthene, pyrene, acenaphthene, methylnaphthalenes, and anthracene)	Skin, eye, inhalation, and ingestion hazard	Direct contact or exposure to the vapors may be irritating to the eyes. Direct contact can be highly irritating to the skin and can cause dermatitis. Exposure to high vapor concentrations may cause headaches, nausea, vomiting, and other symptoms. Includes human carcinogens. Exposure to all routes should be carefully controlled to levels as low as possible. Confirmed animal carcinogen.	Respiratory system, skin, bladder, kidneys	0.2 mg/m ³ TWA8 0.1 mg/m ³ TWA8 (Cyclohexane-extractable fraction) IDLH / Ca – 80 mg/m ³	Varies	N/A	N/A
Dioxins/Furans (as 2,3,7,8-Tetrachloro-dibenzo-p-dioxin) - TCDD	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; allergic dermatitis, chloracne; porphyria; gastrointestinal disturbance; possible reproductive, teratogenic effects; In Animals: liver, kidney damage; hemorrhage Potential occupational carcinogen	Eyes, skin, liver, kidneys, reproductive system	Lowest Feasible Concentration (LFC) Proposed OEL of 0.2 ng/m ³ Skin IDLH / Ca - LFC	N/A	N/A	N/A
Hydrogen Sulfide (H2S) (7783-06-04) 1 ppm = 1.40 mg/m ³	Inhalation, skin and/or eye contact	Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	Eyes, respiratory system, central nervous system	1 ppm TWA8 (5 ppm) C – 10 ppm (10-min over an 8-hr shift) IDLH - 100 ppm	0.03 ppm	4.0	10.46
Arsenic, and inorganic compounds as (7440-38-2)	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin Potential occupational carcinogen	Liver, kidneys, skin, lungs, lymphatic system	Ceiling limit of 0.002 mg/m ³ [15-Minute] IDLH / Ca – 5 mg/m ³	N/A	N/A	N/A
Barium and soluble compounds, as Ba, including Barium chloride (7440-39-3) (10361-37-2)	Inhalation, skin and/or eye contact	irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles (heart contractions); hypokalemia (deficiency of potassium in the bloodstream).	Eyes, skin, respiratory system, heart, central nervous system	0.5 mg/m ³ TWA8 IDLH – 50 mg/m ³	N/A	N/A	N/A
Cadmium and compounds, as Cd (7440-43-9)	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia Potential occupational carcinogen	respiratory system, kidneys, prostate, blood, prostatic & lung cancer	0.005 mg/m ³ TWA8 IDLH / Ca – 9 mg/m ³	N/A	N/A	N/A

Chemical	Exposure Routes	Symptoms	Target Organs	OEL (STEL)	Odor Threshold (ppm)	LEL (%)	Ionization Energy (eV)
Chromium (II) inorganic compounds, as Cr	Inhalation, ingestion, skin and/or eye contact	Irritation eyes; sensitization dermatitis	Eyes, skin	0.5 mg/m ³ TWA ₈ IDLH – 250 mg/m ³	N/A	N/A	N/A
Chromium (III) inorganic compounds, as Cr (7440-47-3)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes; sensitization dermatitis	Eyes, skin	0.5 mg/m ³ TWA ₈ (total dust) 0.003 mg/m ³ TWA ₈ (inhalable fraction) IDLH – 25 mg/m ³	N/A	N/A	N/A
Chromium (VI) inorganic compounds, as Cr (18540-29-9) (1333-82-0 as CrO ₃)	Inhalation, ingestion, skin and/or eye contact	Irritation respiratory system; nasal septum perforation; liver, kidney damage; leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia; eye injury, conjunctivitis; skin ulcer, sensitization dermatitis Potential occupational carcinogen	Blood, respiratory system, liver, kidneys, eyes, skin, lung cancer	0.0002 mg/m ³ TWA ₈ IDLH / Ca – 15 mg/m ³	N/A	N/A	N/A
Lead and inorganic compounds, as Pb (7439-92-1)	Inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival (gum) tissue	0.05 mg/m ³ TWA ₈ IDLH – 100 mg/m ³	N/A	N/A	N/A
Mercury, elemental and inorganic compounds, as Hg (7439-97-6)	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis (inflammation of mucous membranes of the mouth), salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria (abnormal quantities of protein in the urine)	Eyes, skin, respiratory system, central nervous system, kidneys	0.025 mg/m ³ TWA ₈ C – 0.1 mg/m ³ Skin IDLH – 10 mg/m ³	N/A	N/A	N/A
Selenium compounds, as Se (7782-49-2)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	0.2 mg/m ³ TWA ₈ IDLH – 1 mg/m ³	N/A	N/A	N/A
Silver metal, and soluble compounds, as Ag (7440-22-4)	Inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	0.01 mg/m ³ TWA ₈ IDLH – 10 mg/m ³	N/A	N/A	N/A

TWA₈ – 8-hour time weighted average
 Skin – OEL based primarily on skin exposure hazard
 C – Ceiling Limit
 Ca – potential or confirmed human carcinogen
 IDLH – Immediately Dangerous to Life or Health
 LFC – Lowest Feasible Concentration
 OEL – Occupational Exposure Limit
 STEL – Short Term Exposure Limit
 LEL – Lower Explosive Limit

A.4.3 Activity Hazard Analysis

The activity hazard analysis summarizes the field activities to be performed during the project, outlines the hazards associated with each activity, and presents controls that can reduce or eliminate the risk of the hazard occurring. Table A-3 presents the activity hazard analysis for conducting the bathymetric survey.

**Table A-3
Activity Hazard Analysis**

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering if the community level is high and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water’s edge on banks. ¹			
Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying	Slips, trips, and falls	<ul style="list-style-type: none"> • Avoid walking while writing or texting—maintain a heads-up posture. • Be aware of potentially slippery surfaces and tripping hazards. Use handrails where available. Wear footwear that has sufficient traction. • Maintain good housekeeping practices. Clean up all spills immediately. • Be aware of weather effects on the work area, including wet and/or frozen ground. • Jumping, running, and horseplay are prohibited. • Keep all areas clean and free of debris to prevent any trips and falls. • Be aware of and limit loose clothing or untied shoelaces that may contribute to slips, trip, and falls. • Notify the field team members of any unsafe conditions. 	<ul style="list-style-type: none"> • Routinely inspect work area for unsafe conditions.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering if the community level is high and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water's edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying (continued)	Heat stress	<ul style="list-style-type: none"> • Adjust work schedules, as necessary, to avoid the hottest part of the day. • Take rest breaks as warranted. • Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. • Maintain body fluids at normal levels. • Train workers to recognize the symptoms of heat-related illness. 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Monitor workers' physical conditions. • Monitor outside temperature versus worker activity.
	Cold stress	<ul style="list-style-type: none"> • Provide shelter (enclosed, heated environment) to protect personnel during rest periods. • Educate workers to recognize the symptoms of frostbite and hypothermia. • Use appropriate cold-weather gear, up to and including Mustang-type bib coveralls or jacket/bib combinations. • Consider additional precautions if working near water in cold weather. • Have a dry change of clothing available. • Train workers to recognize the symptoms of cold-related illness. 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Monitor workers' physical conditions and PPE. • Monitor outside and water temperature versus worker activity and PPE.
	Rain or snow	<ul style="list-style-type: none"> • Wear appropriate PPE (rain gear). 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Inspect PPE daily prior to use.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering if the community level is high and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water's edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying (continued)		<ul style="list-style-type: none"> • Be aware of slip hazards, puddles, and electrical hazards when working in wet conditions. • If extremely cold conditions are forecast, consider additional precautions or postponing work activity. 	<ul style="list-style-type: none"> • Routinely inspect work area for deteriorating conditions.
	Sunshine	<ul style="list-style-type: none"> • Have sunscreen available for ultraviolet protection. • Have abundant water available to prevent dehydration. • Consider wearing wide-brimmed headwear and light-colored, lightweight, sun-blocking clothing. 	<ul style="list-style-type: none"> • Ensure that sunscreen and water are available.
	Lightning	<ul style="list-style-type: none"> • Do not begin or continue work until lightning subsides for at least 30 minutes. Disconnect and do not use or touch electronic equipment. • Immediately head for shore if on the water and lightning is observed. If not able to get to shore, disconnect and do not use or touch the major electronic equipment, including the radio, throughout the duration of the storm. 	<ul style="list-style-type: none"> • Obtain weather forecast and updates as needed.
	High winds	<ul style="list-style-type: none"> • Wear goggles or safety glasses if dust or debris are visible. 	<ul style="list-style-type: none"> • Review weather forecast prior to field work. • Ensure that goggles or safety glasses are available.
	Biological hazards (flora [e.g., poison ivy and poison oak])	<ul style="list-style-type: none"> • Be aware of likely biological hazards in the work area. 	<ul style="list-style-type: none"> • Ensure that insect repellent is available.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering if the community level is high and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water's edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, physical activity and surveying (continued)	and fauna [e.g., ticks, bees, spiders, mosquitoes, and snakes]	<ul style="list-style-type: none"> • Wear appropriate clothing (i.e., hat, long-sleeve shirt, long pants, leather gloves, boots, and Tyvek coveralls, as appropriate), and apply insect repellent. • Wear hand and arm protection when clearing plants or debris from the work area. • Be aware of potential wildlife and defensive behavior (e.g., nesting birds, or animals with young). 	<ul style="list-style-type: none"> • Inspect clothing and skin for insects (e.g., ticks) after working in insect-prone areas.
	Noise exposure	<ul style="list-style-type: none"> • Wear hearing protection in high noise environments or when working around heavy machinery or equipment (action level of 85 decibels averaged over an 8-hour day). 	<ul style="list-style-type: none"> • Ensure that hearing protection is available.
	SARS-CoV-2 virus (COVID-19)	<p>Follow all basic L&I requirements and guidance for preventing COVID-19.</p> <ul style="list-style-type: none"> • Keep workers known or suspected to have COVID-19 from working around others by following appropriate isolation or quarantine guidance, as outlined by the Washington State Department of Health. • Provide hand washing facilities and supplies, and regularly clean and sanitize surfaces. 	<ul style="list-style-type: none"> • Confirm by observation that work conforms to preventive measures.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering if the community level is high and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water's edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
		<ul style="list-style-type: none"> • Educate workers about COVID-19 prevention in the language they understand best. • Provide written notice of potential COVID-19 exposure within one business day to all workers, as well as the employers of any subcontracted workers who were at the same work site as the person who tested positive (without disclosing the person's identity). • Report COVID-19 outbreaks to L&I within one business day if they involve 10 or more workers at a workplace or job site with more than 50 workers. • Allow workers to voluntarily wear masks (respirators, medical procedure masks, or cloth face coverings) PPE as long as it does not create a safety or security issue. 	
	Physical injury from moving heavy equipment	Follow procedures outlined in Section A.4.1.5 for safely launching a boat from a trailer.	<ul style="list-style-type: none"> • Confirm by observation that work conforms to preventive measures.

Required PPE: ANSI/ASTM compliant hard hat (if overhead hazards), high-visibility vest, safety glasses, safety shoes or boots, a face covering if the community level is high and the following as needed for hazards present: safety goggles, dust masks, gloves, hearing protection (if noise is 85 decibels or above), chaps, foul weather gear, PFD if on a boat or within 10 feet of water's edge on banks.¹

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
	Falling overboard	Use care in boarding/departing from vessel. Wear PFD when on deck. Follow safe work practices related to vessel operations specified in Section A.6.0.	<ul style="list-style-type: none"> • Confirm by observation that work conforms to preventive measures.

Note:

1. https://pdhonline.com/courses/l101/02_surveys.pdf

A.5.0 Work Zones and Shipboard Access Control

Direct contact with contaminated media may occur if retrieving equipment that has been in contact with contaminated sediment; however, no physical sample collection or processing will occur. The only designated contaminated work zone is below MHHW and will require minimal decontamination upon exit. Any security or access control problems will be reported to the property owner or appropriate authorities. When accessing other property through access agreements, HASP requirements will be coordinated with those owners and any other HASPs that may be applicable on that site.

Security and control of access to the boat will be the responsibility of the FOM/HSO and boat captain. Boat access will be granted only to necessary project personnel and authorized visitors. Visitors will be provided a copy of the HASP, a briefing on the project and related health and safety requirements, and an opportunity to ask questions about the HASP, and they will be required to sign the acknowledgement in Attachment A.1.

A.6.0 Safe Work Practices

Due to the nature of the bathymetric surveying, safe work practices are primarily related to slips, trips, and falls. Some operations may be performed from a boat or other floating platform, which would introduce additional potential hazards. All employees actively working on projects involving vessel operations will be thoroughly trained in the applicable safety, underway, docking, fueling, and various necessary operational procedures. The minimum responsibilities of the field crew members are as follows:

1. Do not climb over or under obstacles of questionable stability.
2. Work only in well-lighted spaces.
3. Make eye contact with equipment operators when moving within the range of their equipment.
4. Be aware of the movements of equipment when not in the operator's range of vision.
5. Get immediate first aid for all cuts, scratches, abrasions, or other minor injuries.
6. Always use the buddy system.
7. Be alert to your own and other workers' physical condition.
8. Have contact information for the client or owner while on site. If unauthorized personnel or a homeless encampment is encountered during work, the individuals should not be disturbed, the field crew should leave the area, contact the client or owner, and notify the PM or field lead.
9. Report all accidents, no matter how minor, to the FOM/HSO.
10. Do not do anything dangerous or unwise even if ordered by a supervisor.

The following safety rules are specific to on-water operations:

1. During all vessel operations the boat captain is in charge and takes full responsibility for safe operation of the vessel.
2. All vessel operators shall have adequate knowledge of the US Coast Guard (USCG) regulations, "Rules of The Road" and shall be approved for vessel operation by the FOM.
3. Vessels over 20 feet shall be inspected annually by a qualified marine surveyor to ensure structural integrity and safe operating conditions exist. Records of inspections shall be maintained on the vessel for vessels over 20 feet and shall be available to the designated authority.
4. When the vessel is brought onto a job site, it shall be inspected and tested by the vessel crew and determined to be in safe operating condition prior to the initiation of prescribed work.
5. Any vessel found to be in an unsafe condition shall be taken out of service and its use prohibited until the specified unsafe conditions have been corrected.
6. Prior to vessel departure from the dock, all onboard personnel shall be familiar with their duties and responsibilities in the event of an emergency, and the location of the vessel's emergency first-aid and firefighting equipment, as verbally communicated by a qualified member of the vessel crew.
7. All vessels shall be equipped with a PFD for each person onboard, a VHF marine radio and all USCG required safety equipment.
8. Navigation lights, radar systems, radios, depth sounders, and other navigational equipment shall be operated, inspected, and recorded each week and prior to each job by qualified personnel to ensure their proper operation.
9. A detailed daily work schedule that includes the approximate times, site locations, access points and other pertinent information necessary to locate crew members in the event of emergency, will be filed with the local field office or appropriate shore-side personnel.
10. Prior to departure from the dock, the vessel's fuel capacity will be checked to ensure adequate fuel is available to complete the day's work and maintain sufficient fuel reserves to allow for a reasonable margin of safety.
11. Fuel used on the outbound trip to assigned work areas shall not exceed one-third of the total fuel reserves. The pilot shall monitor fuel consumption throughout the work day and begin the inbound transit when remaining fuel reserves approach 150% of the fuel quantity used during the outbound transit.
12. Coast Guard approved PFDs shall be worn by all personnel when on deck or in an open vessel, regardless of other safety devices utilized. All safety devices must be inspected for defects prior to each use and those found to be defective replaced immediately. PFDs need not be worn while working inside an enclosed cabin, but must be readily available when going on deck from the cabin area.

13. Additional emergency/rescue equipment onboard vessels will include, but not be limited to, throw rings, throw ropes, dye markers, strobes, flares, boat hooks, and other safety equipment required by the USCG.
14. Vessel fuel valves shall be in the closed position when shutting down boat operations for the night or more than 8 hours.
15. Smoking shall be prohibited on the boat at all times and/or within 20 feet of fuel tanks.
16. A minimum of one 10-pound A-B-C fire extinguisher will be properly certified, maintained, and located conspicuously onboard all motor-driven vessels.
17. Work areas and access-ways shall be kept clean and clear of obstructions at all times.
18. A proper watch shall be maintained in order to avoid other vessels, floating debris, deadheads, and other obstructions.
19. When conducting night operations or working in reduced visibility, proper navigation lights shall be displayed, a safe speed (as warranted by the conditions) shall not be exceeded, and a proper watch shall be posted.

A.7.0 Personal Protective Equipment and Safety Equipment

Appropriate PPE will be worn as protection against potential hazards. Specific PPE is outlined in the activity hazard analysis. In addition to PPE that will be worn by personnel, basic emergency and first aid equipment will also be provided. Equipment for the field team will include the following:

1. A copy of this HASP
2. First aid kit adequate for the number of personnel

The FOM/HSO will ensure that the safety equipment is utilized. Equipment will be checked daily to ensure its readiness for use.

A.8.0 Monitoring Procedures for Site Activities

For this project, the monitoring program will consist of all workers monitoring themselves and their co-workers for signs that might indicate physical stress or illness. All personnel will be instructed to look for and inform each other of any deleterious changes in their physical or mental condition during the performance of all field activities. Examples of such changes are as follows:

1. Headaches
2. Dizziness
3. Nausea
4. Symptoms of heat stress
5. Blurred vision
6. Cramps
7. Irritation of eyes, skin, or respiratory system

8. Changes in complexion or skin color
9. Changes in apparent motor coordination
10. Increased frequency of minor mistakes
11. Excessive salivation or changes in papillary response
12. Changes in speech ability or speech pattern
13. Shivering
14. Blue lips or fingernails

If any of these conditions develop, work shall be halted immediately and the affected person(s) evaluated. If further assistance is needed, personnel at the local hospital will be notified, and an ambulance will be summoned if the condition is thought to be serious. If the condition is the direct result of sample collection or handling activities, procedures will be modified to address the problem.

A.9.0 Decontamination

Bathymetric surveyors have a low likelihood of contact with contaminated sediment, but decontamination protocols will be followed if contact occurs. At a minimum, boots and equipment that contact contaminated sediment will require decontamination before leaving contaminated areas. Decontamination stations will be set up adjacent to the boat to clean boots, equipment, and any other contaminated gear and avoid tracking contamination into clean areas. The following measures will be observed to prevent or minimize exposure to potentially contaminated materials:

- Do not walk through spilled materials.
- Do not handle, touch, or smell environmental media directly.
- Make sure PPE has no cuts or tears prior to use.
- Protect and cover any skin injuries.
- Stay upwind of airborne dusts and vapors.
- Do not eat, drink, chew tobacco, or smoke in the work zones.

A.9.1 Decontamination Equipment

All equipment taken into potentially contaminated areas will be visually inspected and, if necessary, decontaminated prior to leaving the area. Rinsate from all decontamination activities will be collected for proper disposal. Decontamination of equipment and tools will take place within the contamination reduction zone.

The following supplies will be available to perform decontamination activities:

- Wash and rinse buckets
- Tap water and phosphate-free detergent
- Scrub brushes

- Distilled/deionized water
- Pressure washer/steam cleaner, if appropriate
- Paper towels and plastic garbage bags

A.9.2 Personnel Decontamination

The FOM will verify that all site personnel are familiar with personnel decontamination procedures as listed below. All personnel wearing PPE in a contaminated work area must undergo decontamination, as appropriate, prior to entering the Safe Zone. Personnel will perform the following decontamination procedures:

- Wash and rinse outer gloves and boots in portable buckets to remove gross contamination.
- If suit is heavily soiled, rinse it off.
- Remove outer gloves; inspect and discard if damaged. Leave inner gloves on. Personnel will remove their outer garment and gloves, dispose of them, and properly label container or drum. Personnel will then decontaminate, as appropriate, their hard hats and boots with an aqueous solution of detergent or other appropriate cleaning solution. These items then will be hand-carried to the next station. Remove inner gloves.
- Thoroughly wash hands and face if they came into contact with sediment before leaving an area with contamination.

A.9.3 Non-Disposable Personal Protective Equipment

Non-disposable PPE may include boots and gloves. When decontaminating boots and gloves, observe the following practices and procedures:

- Decontaminate the boots or gloves outside with a solution of detergent and water; rinse with water prior to leaving the site.
- Protect the boots or gloves from exposure by covering with disposable covers such as plastic to minimize required decontamination activities.

A.9.4 Emergency Personnel Decontamination

Personnel with medical problems or injuries may also require decontamination. There is the possibility that the decontamination may aggravate or cause more serious health effects. If prompt lifesaving, first aid, and medical treatment are required, decontamination procedures will be omitted. In either case, a member of the site management team will accompany contaminated personnel to the medical facility to advise on matters involving decontamination.

A.10.0 Disposal of Contaminated Materials

Contaminated materials must be contained and characterized for proper disposal. Anchor QEA will provide decontamination equipment and remove residue from decontamination.

A.11.0 Training Requirements

HAZWOPER training is not required for bathymetric surveying personnel since this work will be performed from a boat and there will be limited, if any, contact with contaminated sediment. Field team members must have first-aid and cardiopulmonary resuscitation (CPR) training. Documentation will be kept in the project health and safety files.

A.12.0 Medical Surveillance

A medical surveillance program conforming to the provisions of 29 CFR 1910.120(f) is not necessary for field team members because they do not meet any of the four criteria outlined in the regulations for implementation of a medical surveillance program:

- Employees who are or may be exposed to hazardous substances or health hazards at or above permissible exposure levels for 30 days or more per year (1910.120(f)(2)(I))
- Employees who must wear a respirator for 30 days or more per year (1910.120(f)(2)(ii))
- Employees who are injured or become ill due to possible overexposures involving hazardous substances or health hazards from an emergency response or hazardous waste operation (1910.120(f)(2)(iii))
- Employees who are members of HAZMAT teams (1910.120(f)(2)(iv))

As described in Section A.8, employees will monitor themselves and each other of any deleterious changes in their physical or mental condition during the performance of all field activities.

Specific attention will be given to the requirement to screen all workers at the beginning of their shifts by taking their temperatures and asking them if they have a fever, cough, shortness of breath, fatigue, muscle aches, or new loss of taste or smell. Thermometers used shall be 'no touch' or 'no contact' models to the greatest extent possible. If a 'no touch' or 'no contact' thermometer is not available, the thermometer will be properly sanitized between each use. Any worker with a temperature of 100.4°F or higher will be considered to have a fever and will be sent home.

As described in Section A.8, employees will monitor themselves and each other for any deleterious changes in their physical or mental conditions during the performance of all field activities.

Regarding monitoring exposures to the SARS-CoV-2 (COVID-19) virus, there are three possible scenarios:

- Primary exposure: When an employee has tested positive for the virus
- Secondary exposure: When an employee has had close contact with someone diagnosed with COVID-19 within two days of the onset of symptoms or positive test, whichever comes first

- Tertiary exposure: When an employee has had close contact with a secondary exposure or was in the same general work area with a confirmed or presumed case but there was not close contact

The FC/HSO (or designee) will also act as the on-site COVID-19 Supervisor, and shall monitor the health of employees and enforce the measures established to minimize exposure to the SARS-CoV-2 virus. Workers are expected to inform the FC/HSO if they develop symptoms of or have been exposed to anyone with COVID-19.

A12.1 COVID-19 Primary Exposure

If an employee has tested positive for COVID-19, the FC/HSO will immediately take the following actions:

- The employee will be immediately sent away for isolation (i.e., until cleared by a the third-party healthcare provider) if they are at the site.
- The employee's steps will be traced to identify work areas with which the individual may have been in contact.
- All identified areas will be quarantined and marked as off limits to all site personnel, until a decontamination/disinfection process following CDC guidelines has been implemented.
- Employees who have been in direct/close contact (within 6 feet for 15 minutes or greater during a 24-hour period) with the infected individual will be asked to quarantine until released by the third-party healthcare provider.

A12.2 COVID-19 Secondary Exposure

If an employee has had direct/close contact with someone who has been diagnosed with COVID-19 within the two days prior to symptoms or a positive test, whichever comes first, the FC/HSO will immediately take the following actions:

- Immediately send the employee home until released by the third-party healthcare provider.
- Consult with the Washington State Department of Health for additional guidance if the employee is diagnosed with COVID-19 and has been instructed to self-quarantine.
- Inform the CHSMs and PMs immediately.
- Continue cleaning common touch areas with recommended disinfectants.
- Follow primary exposure scenario (Section A.12.1) if an employee is confirmed as positive for COVID-19.

A12.3 COVID-19 Tertiary Exposure

It is more difficult to manage tertiary exposure because there is innately less control in a situation wherein an employee may have had close contact with a secondary exposure, or has been in the

general area with a confirmed or presumed case with no close contact. The FC/HSO will request that all site workers provide any relevant exposure information. If an employee is believed to have been subject to tertiary exposure, take the following actions:

- Consult with the Washington State Department of Health for additional guidance if the acquaintance who is diagnosed with or screened for COVID 19 has been instructed to self-quarantine.
- Inform the CHSMs and PMs immediately.
- Follow up with the field team after test results for the potentially exposed employee have been received.
- Continue cleaning common touch areas with recommended disinfectants.
- Follow secondary exposure scenario (Section A.12.2) if the acquaintance is confirmed as positive for COVID-19.

A12.4 COVID-19 Field Guidance

We must keep in mind that our underlying social distancing requirements and responsibilities are the foundation of all our activities. Do not come to work if you are feeling sick, and contact your Manager immediately if you have symptoms consistent with COVID-19, have tested positive for COVID-19, and/or suspect you have been exposed.

- If masks (i.e., N 95) are used, they should be used in accordance with OSHA 1910.120, stating, in part, that the user must be fit-tested and in a surveillance program.
- Prior to departing for the site, the Site Safety Officer should obtain enough supply of U.S. Environmental Protection Agency (EPA)-registered disinfectants, wipes, hand sanitizers, and gloves.
- Regardless of vaccination status, if staff feel that they are sick or showing symptoms, they are required to stay home and not report to work.
- All staff who work on the site will be required to undergo a site safety orientation (tailgate meeting), which will include information on specific measures to be followed to address efforts to prevent the spread of COVID-19. All field staff are required to vocalize concerns and ensure that protective measures that will slow the spread of COVID-19 are employed.
- Follow the site-specific HASP Personal Protective Equipment (PPE) requirements.
- One step to control spread of the virus at the project job site is focused on hygiene. All staff and management staff will follow CDC guidance regarding hand washing. <https://www.cdc.gov/handwashing/index.html>
- Hand wash stations and/or sanitizing wipes/sanitizing gel will be made readily available around the job site and within project office trailers. If these supplies are insufficient, work should be stopped until additional supplies are procured.

- Smart phones and radios should be wiped down frequently throughout the day and should not be shared to the greatest extent possible. If these items are shared, they are to be wiped down prior to handing off to another individual or placing in storage for the day.
- Field support areas, boats/vessels, and equipment cabs will be cleaned throughout the day and at every shift change. All “touch” surfaces will be thoroughly wiped clean using a disinfectant.
- Staff should follow published guidance to limit transmission at home and outside of work: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-prevent-spread.html>

A.13.0 Reporting and Record Keeping

Each member of the field crew will sign the HASP review form (see Attachment A.1). If necessary, accident/incident report forms will be completed by the FOM/HSO.

The FOM/HSO or a designee will note health- and safety-related details of the project in the field logbook and record. The logbook must be bound, and the pages must be numbered consecutively. Entries will be made with indelible ink. At a minimum, each day's entries must include the following information:

1. Project name or location
2. Names of all personnel onboard
3. Weather conditions
4. Type of fieldwork being performed

The person maintaining the entries will initial and date the bottom of each completed page. Blank space at the bottom of an incompletely filled page will be lined out. Each day's entries will begin on the first blank page after the previous work day's entries.

A.14.0 Emergency Response Plan

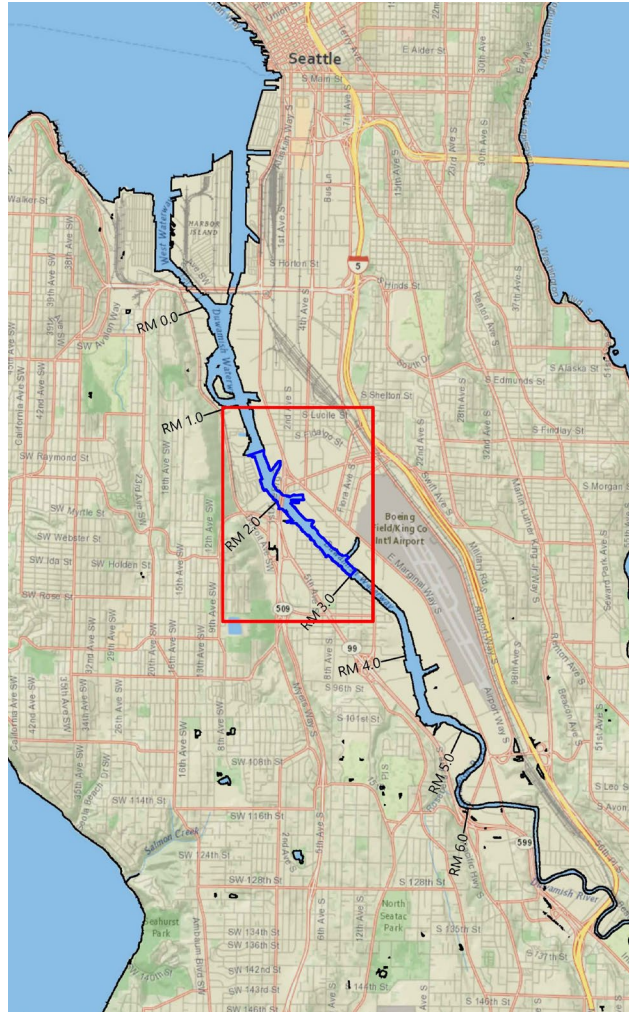
As a result of the hazards and the conditions under which operations will be conducted, the potential exists for an emergency situation to occur. Emergencies may include personal injury, fire, or explosion. Occupational Safety and Health Administration (OSHA) regulations require that an emergency response plan be available for use to guide actions in emergency situations.

The local fire department and ambulance service can provide timely response. Field personnel will be responsible for identifying an emergency situation, providing first aid if applicable, notifying the appropriate personnel or agency, and evacuating any hazardous area.

The following sections identify the onboard individual(s) who should be notified in case of emergency, provide a list of emergency telephone numbers, offer guidance for particular types of emergencies, and provide directions and a map for getting from any surveying location to a hospital.

Site Map

**Figure A
General Site Location Overview**



Category	Information
Possible Chemicals of Concern	Polychlorinated biphenyl compounds, carcinogenic polycyclic aromatic hydrocarbons, arsenic, dioxins/furans in sediment below MHHW
Minimum Level of Protection	Level D

Category	Information
Site Location	Lower Duwamish Waterway middle reach (between river miles 1.5 and 3.0)

A.14.1 Pre-Emergency Preparation

Before the start of field activities, the FOM/HSO will ensure that preparation has been made in anticipation of emergencies. Preparatory actions include the following:

1. Meeting with the FOM/HSO and equipment handlers concerning the emergency procedures in the event that a person is injured
2. A training session given by the FOM/HSO informing all field personnel of emergency procedures, locations of emergency equipment and their use, and proper evacuation procedures
3. A training session given by senior staff operating field equipment, to apprise field personnel of operating procedures and specific risks associated with that equipment
4. Ensuring that field personnel are aware of the existence of the emergency response plan in the HASP and ensuring that a copy of the HASP accompanies the field team

A.14.2 Project Emergency Coordinator

The FOM/HSO will serve as the Project Emergency Coordinator in the event of an emergency. They will designate their replacement for times when they are not onboard or not serving as the Project Emergency Coordinator. The designation will be noted in the logbook. The Project Emergency Coordinator will be notified immediately when an emergency is recognized. The Project Emergency Coordinator will be responsible for evaluating the emergency situation, notifying the appropriate emergency response units, coordinating access with those units, and directing interim actions onboard before the arrival of emergency response units. The Project Emergency Coordinator will notify the HSM and the PM as soon as possible after initiating an emergency response action. The PM will have responsibility for notifying the client.

A.14.3 Emergency Response Contacts

All onboard personnel must know whom to notify in the event of an emergency situation, even though the FOM/HSO has primary responsibility for notification. Table A-4 lists the names and phone numbers for emergency response services and individuals.

**Table A-4
Emergency Response Contacts**

Contact	Telephone Number
Emergency Numbers	

Contact	Telephone Number
Ambulance	911
Police	911
Fire	911
Harborview Medical Center	(206) 323-3074
Emergency Responders	
U.S. Coast Guard	
Emergency General information	(206) 286-5400 (206) 442-5295 UHF Channel 16
National Response Center	(800) 424-8802
EPA	(908) 321-6660
Washington State Department of Ecology – Northwest Region Spill Response (24-hour emergency line)	(206) 649-7000
Emergency Contacts	
<i>King County Project Representative</i>	
Bryahna Davis	(206) 263-2540 (office)
<i>Project Manager</i>	
Tom Wang	(206) 903-3314 (office) (206) 465-0900 (cell)
<i>Corporate Health and Safety Director</i>	
David Templeton	(206) 903-3312 (office) (206) 910-4279 (cell)
<i>Health and Safety Program Lead</i>	
Tim Shaner	(251) 375-5282 (Office) (251) 281-3386 (Cell)
<i>Field Operations Manager/Field Health and Safety Officer</i>	Site cellular telephone:
James Glaeser, Northwest Hydro, Inc.	(360) 241-7313
Jo Miller, True North Land Surveying, Inc.	(206) 332-0800 (Office) (253) 344-9069 (Cell)

A.14.4 Recognition of Emergency Situations

Emergency situations will generally be recognizable by observation. An injury or illness will be considered an emergency if it requires treatment by a medical professional and cannot be treated with simple first-aid techniques.

A.14.5 Emergency Procedures Related to Vessel Operations

In deteriorating weather/sea conditions, radio the field office or U.S. Coast Guard (USCG) with your location, direction of travel, and approximate speed before a dangerous situation can develop. In an emergency, contact the USCG on VHF channel 16. Emergency VHF radio broadcasts should be preceded by “Pan-Pan, Pan-Pan, Pan-Pan” for non-life-threatening emergencies and “Mayday, Mayday, Mayday” for life-threatening situations. Be prepared to provide your vessel name, location, and the nature of the emergency. Don life jackets and/or survival suits, take necessary measures to prevent hypothermia, and wait for the search and rescue.

A.14.6 Fire

Field personnel will attempt to control only small fires, should they occur. If an explosion appears likely, personnel will follow evacuation procedures specified during the training session. If a fire cannot be controlled with a fire extinguisher on board that is part of the required safety equipment, personnel will either withdraw from the vicinity of the fire or evacuate the boat as specified in the training session.

A.14.7 Personal Injury

In the event of serious personal injury, including unconsciousness, possibility of broken bones, severe bleeding or blood loss, burns, shock, or trauma, the first responder will immediately do the following:

1. Administer first aid, if qualified.
2. If not qualified, seek out an individual who is qualified to administer first aid, if time and conditions permit.
3. Notify the Project Emergency Coordinator of the incident, the name of the individual, the location, and the nature of the injury.
4. The Project Emergency Coordinator will immediately do the following:
 - a. Notify the boat captain and the appropriate emergency response organization.
 - b. Assist the injured individual.
 - c. Follow the emergency procedures for retrieving or disposing equipment reviewed in the training session and leave the site en route to the predetermined land-based emergency pick-up.
 - d. Designate someone to accompany the injured individual to the hospital.

- e. If a life-threatening emergency occurs, i.e., injury where death is imminent without immediate treatment, the FOM/HSO or boat captain will call 911 and arrange to meet the Medic One unit at the nearest accessible dock. Otherwise, for emergency injuries that are not life threatening (i.e., sprains, minor lacerations, etc.) the Project Emergency Coordinator will follow the procedures outlined above and proceed to the Harbor Island Marina or to an alternative location of their choice if that would be more expedient.
- f. Notify the HSM and the PM.

If the Project Emergency Coordinator determines that emergency response is not necessary, he or she may direct someone to transport the individual by vehicle to the nearest hospital. Directions and a map showing the route to the hospital are in Section A.14.10.

If a worker leaves the boat to seek medical attention, another worker should accompany them to the hospital. When in doubt about the severity of an injury or exposure, always seek medical attention as a conservative approach, and notify the Project Emergency Coordinator.

The Project Emergency Coordinator will have responsibility for completing all accident/incident field reports, OSHA Form 200s, and other required follow-up forms.

A.14.8 Overt Personal Exposure or Injury

No overt exposure to toxic materials is expected to occur. Accordingly, no emergency procedures related to such exposure are required for this project.

A.14.9 Spills and Spill Containment

No bulk chemicals or other materials subject to spillage are expected to be used during this project. Accordingly, no spill containment procedure is required for this project.

A.14.10 Emergency Route to the Hospital

The name, address, and telephone number of the hospital that will be used to provide medical care is as follows:

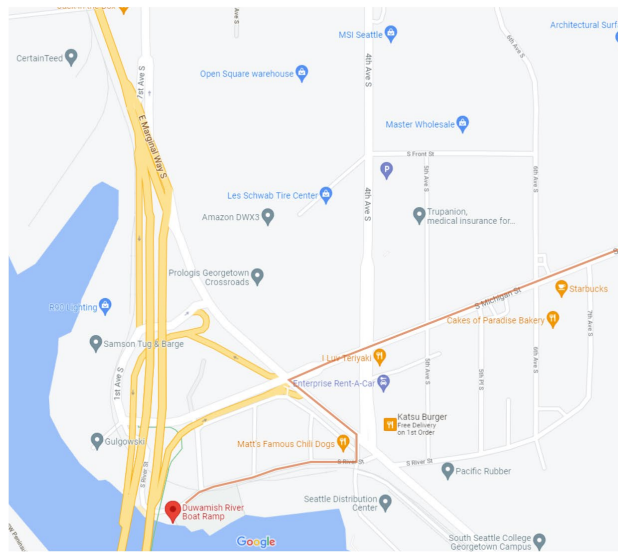
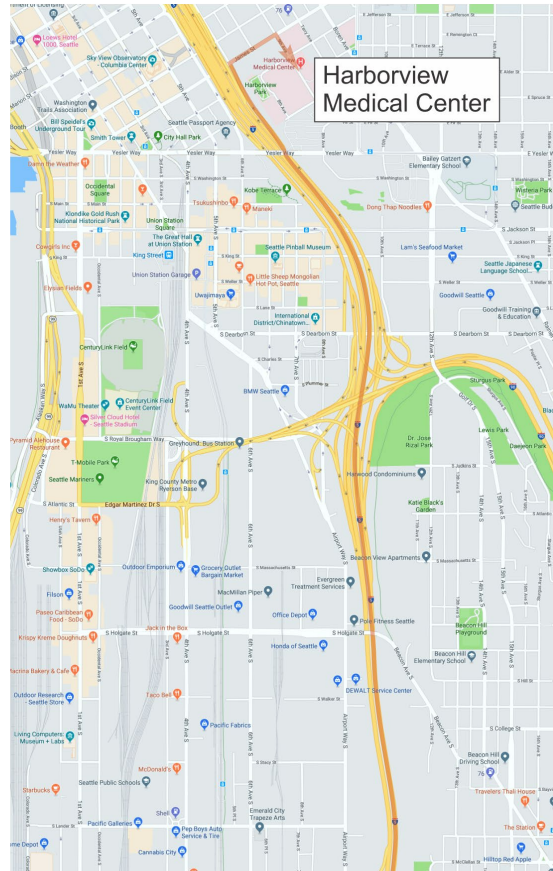
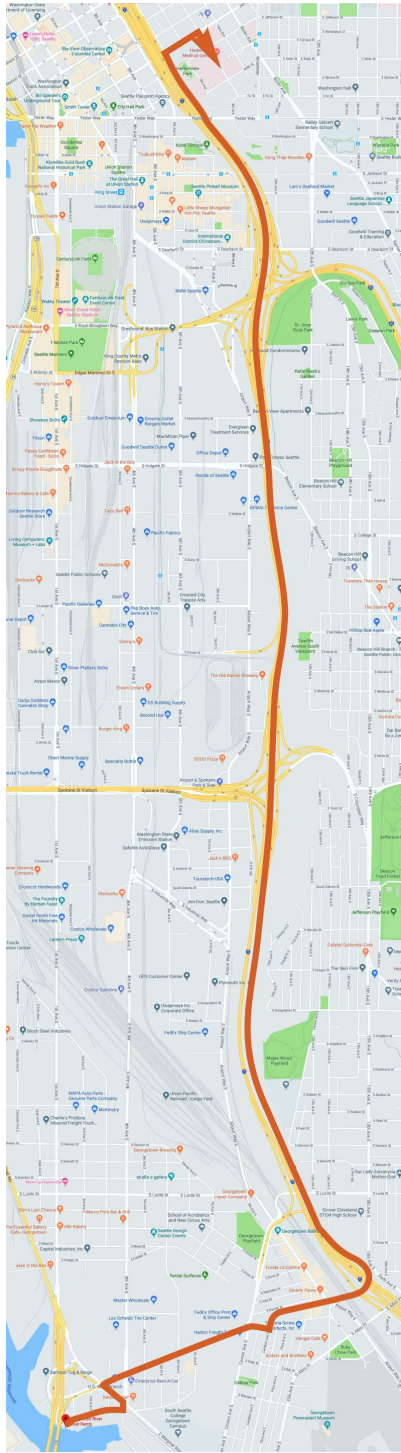
Harborview Medical Center
325 - 9th Ave.
Seattle, WA
(206) 323-3074

Directions from the Duwamish River Boat Ramp to Harborview Medical Center (Figure B) are as follows:

1. Dock the vessel at the 1st Avenue S boat launch (Duwamish River Boat Ramp).
2. Drive east on S River Street.

3. Turn left on 4th Avenue S.
4. Turn left on E Marginal Way S.
5. Turn right on S Michigan Street.
6. Look for entrance ramps to I-5 Northbound (left turn).
7. Head north on I-5.
8. Take the James Street exit.
9. Turn right on James Street to 9th Avenue.
10. Turn right on 9th Avenue.
11. Emergency entrance will be two blocks south on the right.

Figure B
Hospital Route Map



Modifications to Health and Safety Plan

Modification to Health and Safety Plan

Date: October 7, 2022
Project No: 180067-02.03
Project Name: Lower Duwamish Waterway Middle Reach Hydrographic Survey

Modification: The following updates are being made to the Health and Safety Plan (HASP).

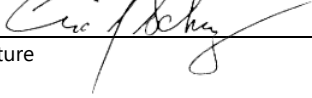
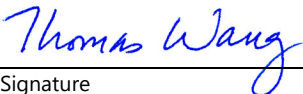
Updates made to the plan are as follows.

- Corrected reference to Northwest Hydro, Inc. in Section A.1.0 as the hydrographic surveyor leading this field effort.
- Updated Table A-3 to reflect current COVID-19 procedures and protective measures.
- Updated COVID-19 information in §A.12.0 to reflect current guidance and procedures.
- Deleted Attachment A.3.

Site Personnel Briefed

Name: <u>Noarhwest Hydro, Inc.</u>	Date: <u>October 10, 2022</u>
Name: <u>True North Land Surveying</u>	Date: <u>October 10, 2022</u>
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____

Approvals

Field Lead: <u>Rick Schwarz</u> Printed Name	 Signature	<u>Oct 7, 2022</u> Date
Project Manager: <u>Tom Wang</u> Printed Name	 Signature	<u>Oct 7, 2022</u> Date

Responsibility is taken, not given. Take responsibility for safety.

Attachment A.1

HASP Acknowledgement Form

Attachment A.1. HASP Acknowledgement Form

I have read a copy of the Health and Safety Plan, which covers field activities that will be conducted to investigate potentially contaminated areas in the LDW. I understand the health and safety requirements of the project, which are detailed in this Health and Safety Plan.

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Attachment A.2

Modification to Health and Safety Plan
Form

Modification to Health and Safety Plan



Modification: _____

Reason for Modification: _____

Site Personnel Briefed

Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____
Name: _____	Date: _____

Approvals

Field Lead: _____
Printed Name Signature Date

Project Manager: _____
Printed Name Signature Date