LOWER PASSAIC RIVER RESTORATION PROJECT

QUALITY ASSURANCE PROJECT PLAN:
FISH AND DECAPOD CRUSTACEAN TISSUE COLLECTION AND CHEMICAL ANALYSIS AND FISH COMMUNITY SURVEY:
ATTACHMENT R – HEALTH AND SAFETY PLAN

FINAL

August 6, 2009
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Health and Safety Plan for Fish and Decapod Crustacean Tissue Collection for Chemical Analysis and Fish Community Survey

By their signature, the undersigned certify that this health and safety plan 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.

Name Project Manager	Date
Name Corporate Health and Safety Manager	Date
Name Field Coordinator/Health and Safety Officer	Date

1 Introduction

This site-specific health and safety plan (HSP) describes safe working practices for conducting field activities at potentially hazardous sites and for handling potentially hazardous materials/waste products. This HSP covers elements as specified in 29 CFR 1910§120 and certain sections of 29 CFR§1926. The procedures and guidelines contained herein are based on generally recognized health and safety practices. Any changes or revisions to this plan will be made by a written amendment that will become a permanent part of this plan. The goal of the HSP is to establish procedures for safe working practices for all field personnel and visitors.

This HSP is specific to field activities of the fish and decapod crustacean tissue collection for chemical analysis and fish community survey, which will be conducted to support the remedial investigation/feasibility study (RI/FS) of the Lower Passaic River Restoration Project (LPRRP). This HSP has been developed on behalf of the Lower Passaic River Study Area (LPRSA) Cooperating Parties Group (CPG). It includes relevant elements from the HSP Core Document developed by Malcolm Pirnie Inc. (Malcolm Pirnie 2005). The HSP Core Document describes the general health and safety issues related to field activities for the RI/FS.

This HSP addresses all activities associated with collection and handling of biological specimens from the LPRSA for preparation of tissue samples for chemical analyses and for the fish community survey sampling events. During site work, this HSP will be implemented by the field coordinator (FC), who is also the designated site health and safety officer (HSO), in cooperation with the Windward corporate health and safety manager (HSM) and the Windward project manager (PM).

All personnel involved in fieldwork on this project, including Windward, AECOM, and de maximis, inc. (dmi) employees and any contractor employees, are required to comply with this HSP. The contents of this HSP reflect the anticipated types of activities to be performed, knowledge of the physical characteristics of the site, and consideration of preliminary chemical data from previous investigations at the site. The HSP may be revised based on new information and/or changed conditions during site activities. Revisions will be documented in the project records. Each employee must sign the Field Team Health and Safety Plan Review Form (Appendix A) affirming that they have read and understood the details of the HSP.

2 Site Description and Project Scope

2.1 SITE DESCRIPTION

The sampling area is in the LPRSA (see Figure 2 in the quality assurance project plan [QAPP]). The CPG field facility and dock is located on the east bank of the Lower Passaic River (LPR) at approximately River Mile (RM) 13.3. The address and phone number of the field facility are:

Kellways Industrial Park
1 Madison Street, East Rutherford, NJ 07073
Phone: (973) 773-0200

The QAPP to which this HSP is attached summarizes the site and provides complete details of the sampling program. Additional details about the site are provided in Section 2 of the HSP Core Document (Malcolm Pirnie 2005). The following section summarizes the types of work that will be performed during field activities.

2.2 SCOPE OF WORK

Specific tasks to be performed are as follows:

- Collection of biological specimens from a boat using a gillnets and trotlines
- Collection of biological specimens from a boat using baited eel, minnow, crab, and crayfish traps
- Collection of biological specimens in shallow, nearshore water using electrofishing
- Sample handling, processing, and shipping

Four distinct sampling events are specified in this QAPP. The first event is the tissue collection and first quarterly fish community survey and is scheduled to occur in late summer or early fall (i.e., August/September) of 2009. The three subsequent events are the three additional quarterly fish community survey events and are scheduled to occur in late fall (November 2009), late winter (March 2010), and spring (May 2010). Additional details on the sampling design and sampling methods are provided in QAPP Worksheet Nos. 10, 11, 14, and 17.

3 Health and Safety Personnel

Key health and safety personnel and their responsibilities are described below. These individuals are responsible for the implementation of this HSP and will be responsible for informing all individuals assigned to work on the site, or visit the site, of the

contents of this plan and ensuring that each person signs the Health and Safety Plan Review Form. By signing the Health and Safety Plan Review Form, individuals recognize the site health and safety hazards, known or suspected, and will adhere to the protocols required to minimize exposure to such hazards.

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 HSP.

Field Coordinator/Health and Safety Officer: The FC and HSO will be the same person and will direct field sampling 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 FC/HSO will implement this HSP 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 FC/HSO also has stop-work authority, to be used if there is an imminent safety hazard or potentially dangerous situation. The FC/HSO or his designee will be present during sampling and operations.

Corporate Health and Safety Manager: The HSM has overall responsibility for preparation, approval, and revisions of this HSP. The HSM 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 HSP. They also have the responsibility to report any potentially unsafe or hazardous conditions to the FC/HSO immediately.

Boat Captain: All boat captains assigned to the project will be responsible for managing all on-water operations associated with the field work described in the QAPP and will have completed the boating safely course offered by the United States Coast Guard (USCG) Auxiliary. These responsibilities include:

- Serving as primary point of contact for coordinating marine operations
- Monitoring local boat traffic during on-water operations
- Broadcasting a security call prior to the start of each day's on-water activity and at regular intervals during the day to alert boat traffic of on-going marine sampling activities

- Verifying that the vessels are properly licensed and registered and that the vessels are properly sized and equipped for existing river conditions
- Conducting a mandatory all-hands safety briefing prior to the start of on-water activities and conducting a supplemental briefing for all visitors and/or personnel coming aboard after the initial briefing
- Conducting daily safety briefings to remind staff of on-water hazards and review any suggestions for improving vessel safety
- Performing a thorough inspection of the boat and deck
- Postponing or suspending on-water operations due to weather conditions
- Coordinating any emergency response efforts

4 Hazard Evaluation and Control Measures

This section covers potential physical, chemical, and biological hazards that may be associated with the proposed project activities and presents control measures for addressing these hazards. Confined-space entry will not be necessary for this project. Therefore, hazards associated with this activity are not discussed in this HSP.

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.

4.1.1 Slips, trips, and falls

As with all field work, caution should be exercised to prevent slips on slick surfaces. In particular, sampling from a boat or other floating platform requires careful attention to minimize the risk of falling down or falling overboard. The same care should be used in rainy conditions or on the shoreline where slick rocks are found. Slips can 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, in a cluttered work area, or in the intertidal zone where uneven substrate is common. 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 that would present a fall hazard is anticipated.

4.1.2 Sampling equipment deployment

Several different fishing methods and associated gear will be used to collect tissue samples and conduct the community surveys (see QAPP Worksheet No.17 for additional details). Appropriate protocols will be used in the deployment and hauling of all sampling gear to ensure the safety of the field personnel. Before sampling activities begin, there will be a training session for all field personnel for the equipment that will be onboard the sampling vessel.

4.1.3 Fish collection by backpack or boat electrofishing

Fish may be collected using electrofishing equipment, which employs electrical power to temporarily stun fish within an effective range. Electrofishing can be completed using backpack equipment or boat equipment.

Backpack Electrofishing

Backpack electrofishing equipment is designed to sample wadeable streams and shallow waters effectively. Backpack electrofishing equipment consists of a power source and a variable voltage pulsator (VVP) on a backpack frame with an anode and cathode (positive and negative electrodes, respectively) attached to the VVP. The backpack typically weighs between 30 and 50 pounds. Common power sources include a 12-volt battery or a small gas-powered generator.

One technician will wear and operate the backpack electroshocker, while the second technician will collect stunned fish in a net. The technician operating the electroshocker will hold the anode wand in one hand and drag the cathode in the water. The technician slowly passes the anode over the desired areas, creating an electric field. Neither technician should reach into the water while the electroshocker is operating. Additional precautions include:

- Prior to use, the unit should be inspected and, where practicable, used to verify its proper operation. The unit should be taken out of service if the necessary insulation or back board (prevents burns to user) is missing or insufficient.
- Individuals wearing the unit must wear rubber boots and electrical safety gloves.
- Netters should also wear gloves in case the anode comes in contact with the net. The handle of the net should also be properly insulated with fiberglass.
- Wading should only be done is areas where there is no danger of water filling the waders. If there is uncertainty in this regard, waders with a quick release harness or waders which will not fill with water must be used.

- Employees carrying the unit should be cautious in rough, uneven terrain to avoid tripping or falling. Care should be exercised to maintain good balance when entering and leaving the water and when wading.

Boat Electrofishing

Boat electrofishing equipment is similar to backpack electrofishing equipment but is designed to sample deeper waters. To adequately power the boat electrofishing equipment, a gas generator that produces 2,000 watts or more should be used. The boat is the staging area for the electrofishing equipment, and the sampling locations are sampled from the boat. There are different configurations for setting up the electrical equipment, and the user's manual will help determine the best one to use. In addition, the sampling location, water depth, conductivity, and fish species will be evaluated to determine an appropriate setup on the boat. Normally the VVP is positioned near or in the console of the boat. The electrical current from the water back to the VVP travels through the flexible metal conduit. Often the front probes or wands are constructed of fiberglass with a flexible metal conduit attached to their anterior ends. The boat operator is able to carefully position the boat and the wands to access areas full of obstructions (e.g., large woody debris, beds of aquatic plants) because of the flexible nature of the metal conduit.

Two field technicians work from the boat with a boat operator during boat electrofishing. All personnel must be aware of the kill switches for the electrofishing equipment and power sources. Both technicians will wear chest waders and electrical safety gloves. Technicians will work from the bow of the boat. A safety rail must border the bow of the boat to prevent technicians from falling into the water during electrofishing and fish collection.

4.1.4 Working on or near water

Some of the sampling activities will be conducted from a boat and are thereby subject to the "Working on or Near Water" regulations (29 CFR§1926.106). As with any work from a floating platform, there is a chance of falling overboard. USCG Type II or III personal flotation devices (PFDs) will be worn while working on the boat. A Type IV PFD (ring-type) with 90 ft of line, an air horn, and flares will also be available on all boats.

4.1.5 Manual lifting

Equipment and sample containers/coolers 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.

4.1.6 Hypothermia or frostbite

Because this field effort includes fish community events planned for late fall (November) and late winter (March), cold temperatures potentially associated with hypothermia or frostbite may be experienced. Cold temperatures at or below freezing or due to wind chill can lead to cold stress-related problems, including frostbite or hypothermia. Frostbite occurs in several degrees, ranging from frost nip (whitening of the skin) to deep frostbite (tissues become solid resulting in serious injury). Hypothermia is a systemic response caused by exposure to freezing temperatures and can be fatal. The five stages of hypothermia include: shivering; apathy or sleepiness; unconsciousness and slow pulse and respiratory rate; freezing of extremities; and death.

All personnel will wear protective clothing, such as protective gloves or mittens or a USCG-approved survival suit, appropriate for the weather conditions and physical activity. A person exhibiting any of the signs of cold stress should be removed from the work area to a warm area. Immediate steps that can be taken to reduce the symptoms of frostbite and/or hypothermia include minimizing contact with cold metal surfaces and bare skin, limiting sitting or standing still for long periods, rehydration with warm fluids, and the removal of outer layers of clothing to permit sweat evaporation during rest periods in a warm environment.

4.1.7 Heat stress

Heat stress could be an issue during the late summer/early fall tissue collection and community survey sampling event. Heat-related problems include heat rash, heat cramps, heat exhaustion, and heat stroke if the person does not ingest sufficient fluids. Heat rash can occur when sweat is not allowed to evaporate, leaving the skin wet most of the time and making it subject to irritation. Heat cramps are painful spasms of the muscles from excessive salt loss associated with sweating. Excessive sweating can also lead to heat exhaustion, resulting in moist, clammy skin. Physical signs and symptoms of heat exhaustion include headache, nausea, vertigo, weakness, thirst, and giddiness. Heat exhaustion may progress to heat stroke if a worker is unable to cool and re-hydrate their body. The primary signs and symptoms of heat stroke are confusion, irrational behavior, loss of consciousness, convulsions, a lack of sweating, hot dry skin, and an abnormally high body temperature. Workers should be aware of the key differences between the signs and symptoms of heat stroke and those of heat exhaustion, such as the lack of sweating, the color of the skin (red), and the rise in

body temperature. Heat stroke is a medical emergency that requires immediate medical attention.

A person exhibiting any of the signs of heat stress should be removed from the work area to a shaded area. Immediate steps that can be taken to reduce the symptoms include use of a fan or soaking with water to increase cooling and promote evaporation, rehydration with electrolyte replacement fluids, and the removal of outer layers of clothing.

4.1.8 Inclement weather

In general, field team members will be equipped for the normal range of weather conditions. The FC/HSO will be aware of current weather conditions and of the potential for those conditions to pose a hazard to the field crew. Some conditions that might force work stoppage are thunderstorms, high winds, or high waves resulting from winds.

During the expected sampling period, severe thunderstorms may pose a hazard to site personnel. The project team will be issued a battery-operated National Oceanic and Atmospheric Administration (NOAA) weather radio equipped with an alarm that will automatically broadcast any pertinent information from NOAA's National Weather Service. The most pertinent information would be whether severe thunderstorm watches or warnings have been issued for the work area by the National Weather Service. A severe thunderstorm watch indicates that a severe thunderstorm is possible. A severe thunderstorm warning, in contrast, indicates that a severe thunderstorm has actually been spotted or is strongly indicated on radar and it is time to seek safe shelter immediately.

If a severe thunderstorm watch is issued, field team members must remain alert for approaching storms and review the procedures for seeking refuge in the event that a warning is issued. If a severe thunderstorm warning is issued and thunder is heard, field team members will take the following measures:

- Cease all work, and contact shore support teams to coordinate a meeting at the nearest pre-defined access point on the river, then immediately seek shelter in a vehicle or back at the CPG field facility.
- Do not take shelter in small sheds, under isolated trees, or in convertible automobiles.
- If in a car, keep the windows up.

In the event that no shelter is available, field team members should find a low spot away from trees, fences and poles, and squat low to the ground on the balls of their feet and place their hands on their knees with their heads positioned between them.

Field team members should not return to work until 30 minutes after thunder was last heard.

4.1.9 Vessel traffic

Because of the high volumes of vessel and barge traffic in some areas of the LPRSA (i.e., specifically the lower 8 miles), precautions and safe boating practices will be implemented to ensure that the field boats do not interrupt vessel traffic. As practical, the field boats will stay out of the navigation channel. When samples are collected near cable crossing points in the LPRSA, clearance will be requested from the USCG prior to sampling.

In addition, when multiple boats are working to collect samples or transfer equipment, supplies and/or field personnel, the boat operators will clearly communicate their position to each other to avoid any potential interference or collision. Each boat will work a safe distance from the others and approach any dock one at a time.

4.1.10 Feral animals

Some field activities may take place on land, and field personnel may come into contact with a feral animal (i.e., dog or cat). If encountered, field personnel should not approach or touch the feral animal because it may have contacted a disease from another wild animal. Also, if field personnel encounter a pack of feral dogs, they should avoid eye contact, watch them cautiously while walking slowly to a safe area and give the dogs a wide berth. In the event that a field team member is scratched or bitten by a feral animal, that person will receive the appropriate medical care.

4.1.11 Pinch point

Pinch points can occur anywhere a part of the body can get caught between two objects. This is a concern while field personnel are handling the fish sampling equipment. Proper equipment and safety training will be provided to each individual who will be working with the sampling equipment. Field personnel will keep clothing and body extremities well clear of pinch points. The pinch point and moving part areas include the openings of the fish sampling traps and the space between the two field boats when tied up together to transfer samples.

4.1.12 Poisonous plants

Persons working on the site should be aware of the possible presence of poisonous plants. Poison ivy is a climbing plant with leaves that consist of three glossy, greenish leaflets. Poison ivy has conspicuous red foliage in the fall. Small yellowish-white flowers appear in May through July at the lower leaf axils of the plant. White berries appear from August through November. Poison ivy is typically found east of the

Rockies. Poison oak is similar to poison ivy but its leaves are oak-like in form. Poison oak occurs mainly in the south and southwest. Poison sumac typically occurs as a small tree or shrub and may be 6 to 20 ft in height. The bark is smooth, dark and speckled with darker spots. Poison sumac is typically found in swampy areas and east of the Mississippi. The leaves have 7 to 13 smooth-edged leaflets and drooping clusters of ivory-white berries appear in August and last through spring.

The leaves, roots, stems and fruit of these poisonous plants contain urushiol. Contact with the irritating oil causes an intensely itching skin rash and characteristic, blister-like lesions. The oil can be transmitted on soot particles when burned and may be carried on the fur of animals, equipment, and apparel.

Proper identification of these plants is the key to preventing contact and subsequent dermatitis. Wear long sleeves and pants when working in wooded areas. In areas of known infestation, wear Tyvek® coveralls and gloves. Oils are easily transferred from one surface to another. If you come in contact with these poisonous plants, wash all exposed areas immediately with cool water to remove the oils. Some commercial products such as Tecnu's Poison Oak-n-Ivy Cleanser claim to further help with the removal of oils.

4.1.13 Insects

Persons working on the site should be aware of the possible presence of poisonous and disease-bearing insects such as ticks, mosquitoes, wasps, and bees.

4.1.13.1 Ticks

Ticks are bloodsuckers and attach themselves to warm-blooded vertebrates to feed. Deer ticks are associated with the transmission the bacteria that causes Lyme disease. Female deer ticks are about one-quarter inch in length and are black and brick red in color. Males are smaller and all black. If a tick is not removed, or if the tick is allowed to remain for days feeding on human blood, a condition known as tick paralysis can develop. This is due to a neurotoxin, which the tick apparently injects while engorging. This neurotoxin acts upon the spinal cord causing incoordination, weakness, and paralysis.

The early stages of Lyme disease, which can develop within a week to a few weeks of the tick bite, are usually marked by one or more of these signs and symptoms:

- Tiredness
- Chills and fever
- Headache
- Muscle and/or joint pain

- Swollen lymph glands
- Characteristic skin rash (i.e., bulls-eye rash)

Rocky Mountain spotted fever is spread by the American dog tick, the lone-star tick, and the wood tick, all of which live in wooded areas and tall, grassy fields. The disease is most common in the spring and summer when these ticks are active, but it can occur anytime during the year when the weather is warm. Rocky Mountain spotted fever is found throughout the United States, except in Maine, Alaska, and Hawaii. Despite the name, few cases are reported from the Rocky Mountain region. Most cases occur in the southeastern United States.

Initial signs and symptoms of Rocky Mountain spotted fever include sudden onset of fever, headache, and muscle pain, followed by development of a rash. Initial symptoms may include fever, nausea, vomiting, severe headache, muscle pain, and lack of appetite. The rash first appears 2 to 5 days after the onset of fever and is often not present or may be very subtle. Most often it begins as small, flat, pink, non-itchy spots on the wrists, forearms, and ankles. These spots turn pale when pressure is applied and eventually become raised on the skin. Later signs and symptoms include rash, abdominal pain, joint pain, and/or diarrhea.

The characteristic red, spotted rash of Rocky Mountain spotted fever is usually not seen until the sixth day or later after onset of symptoms, and this type of rash occurs in only 35 to 60% of patients with Rocky Mountain spotted fever. The rash involves the palms or soles in as many as 50 to 80% of patients; however, this distribution may not occur until later in the course of the disease.

Tick season lasts from April through October; peak season is May through July. You can reduce your risk by taking these precautions:

- During outside activities, wear long sleeves and long pants tucked into socks. Wear a hat and tie hair back.
- Use insecticides to repel or kill ticks. Repellents containing the compound DEET can be used on exposed skin except for the face, but they do not kill ticks and are not 100% effective in discouraging ticks from biting. Products containing permethrin kill ticks, but they cannot be used on the skin – only on clothing. When using any of these chemicals, follow label directions carefully.
- After outdoor activities, perform a tick check. Check body areas where ticks are commonly found: behind the knees, between the fingers and toes, under the arms, in and behind the ears, and on the neck, hairline, and top of the head. Check places where clothing presses on the skin.

- Remove attached ticks promptly. Removing a tick before it has been attached for more than 24 hours greatly reduces the risk of infection. Use tweezers, grab as closely to the skin as possible and extract. Do not try to remove ticks by squeezing them, coating them with petroleum jelly, or burning them with a match.
- Report any of the above symptoms and all tick bites to the FC or HSO for evaluation.

4.1.13.2 Mosquitoes

West Nile encephalitis is an infection of the brain caused by the West Nile virus, which is transmitted by infected mosquitoes. Following transmission from an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of the brain tissue. However, most infections are mild and symptoms include fever, headache, and body aches. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis and rarely, death. Persons over the age of 50 have the highest risk of severe disease.

Prevention centers on public health action to control mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that cause the disease, use the following control measures:

- If possible, stay inside between dusk and dark. This is when mosquitoes are most active.
- When outside between dusk and dark, wear long pants and long-sleeved shirts.
- Spray exposed skin with an insect repellent, preferably containing DEET.

4.1.13.3 Wasps and bees

Wasps (hornets and yellow jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer, or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests or tree hollows. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow jackets tend to build their nests in the ground, but hornets tend to build their nests in trees and shrubbery. Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once; wasps sting multiple times because their stinger is barbless. Wasps sting when they feel threatened. By remaining calm and not annoying wasps by swatting, you lessen the chance of being stung.

Wasps and bees inject a venomous fluid under the skin when they sting. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Some people may develop an allergic reaction (i.e., anaphylactic shock) to a wasp or bee sting. If such a reaction develops, seek medical attention at once. In addition, if individuals know they have an allergic reaction to wasp and bee stings, they are encouraged to consult their doctor prior to working in the area that may pose such a risk and carry the proper medication.

4.2 CHEMICAL HAZARDS

Chemical hazards include those occurring in the natural environment of the site (i.e., sediments and surface water) and those that are used in sample preservation and decontamination.

4.2.1 Exposure routes

Potential routes of chemical exposure include inhalation, dermal contact, and ingestion. Exposure will be minimized by using safe work practices and by wearing the appropriate personal protective equipment (PPE). Further discussion of PPE requirements is presented in Section 7.

Inhalation — Inhalation is not expected to be an important route of exposure.

Dermal exposure — Dermal exposure to hazardous substances associated with sediments, surface water, or equipment decontamination will be controlled by the use of PPE and by adherence to detailed sampling and decontamination procedures.

Ingestion — Incidental ingestion of sediment or surface water is not considered a major route of exposure for this project. Accidental ingestion of surface water is possible. However, careful handling of equipment and containers onboard the boat should prevent the occurrence of water splashing or spilling during sample collection and handling activities.

4.2.2 Chemical hazards occurring in natural environment

Previous investigations have shown that some chemicals are present at higher-than-background concentrations in the sampling area. For the purpose of discussing potential exposure to chemicals in sediments, the chemical contaminants of concern are metals, dioxins, pesticides, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs). Each of these chemical groups is associated with significant adverse health effects. Additional details on the chemical hazards associated with these chemicals are provided in Section 4.2 of the HSP Core Document (Malcolm Pirnie 2005).

The site contaminants of concern are predominantly non-volatile in nature so exposure to the vapors of these compounds is not likely to occur. Similarly, the potential for exposure to dust containing the chemical contaminants of concern during sample collection and sample processing will also be minimal because the sampling equipment is not likely to come into contact with soils that could generate dust.

To avoid direct dermal contact with contaminated media, PPE, as described in Section 7, will be required when collecting samples. Exposure to chemical contaminants of concern may occur via ingestion (i.e., hand-to-mouth transfer). The decontamination procedures described in Section 9 address personal hygiene issues that will limit the potential for chemical contaminant ingestion.

4.2.3 Chemical hazards used in sample preservation and decontamination

Chemicals that may be used in the field for sample preservation or decontamination include:

- Formalin
- Nitric acid
- Hexane
- Acetone
- Methanol

The specific uses of these chemicals are described in QAPP Attachments I and J. Field personnel will safely handle these chemicals according to the QAPP and will wear appropriate PPE. A ventilation hood will be used in the field facility to minimize exposure to solvent vapors.

Material safety data sheet (MSDS) will be available for each of the chemicals listed above that is used in the field or the field facility. These MSDS will be maintained in a binder located in the field office, as well as on the boat. In addition, all containers of hazardous materials must be clearly labeled, ideally using the original manufacturer's label. Such a label will also need to be applied to any transfer bottles that are used.

4.3 BIOLOGICAL HAZARDS

Microbiological hazards, in the form of bacteria, protozoans, and viruses, might be encountered from contact with raw sewage or through cuts or wounds.

4.3.1 Raw sewage

Raw sewage may be discharged into the study area through combined sewer outfalls (CSOs). The most common pathogenic organisms found in raw sewage include bacteria, viruses, and parasitic protozoa.

Ingestion of and direct contact with contaminated water are the primary methods of disease transmission in humans. Infection generally results from bacterial penetration of the skin in scratched or abraded areas. Bacterial infection cause varying degrees of gastrointestinal disease and may be accompanied by fever, headache, and chills. Waterborne microbes can also cause eye and ear infections, as well as more serious diseases such as hepatitis A, jaundice, and gastrointestinal discomfort.

4.3.2 Tetanus

Tetanus is a bacterial disease that may be contracted through a cut or wound that becomes contaminated with tetanus bacteria. Tetanus bacteria may cause a fatal disease characterized by respiratory paralysis and tonic spasms and rigidity of the voluntary muscles, especially those of the neck and lower jaw (lockjaw). Common first signs of tetanus are a headache and muscular stiffness in the jaw followed by stiffness of the neck, difficulty in swallowing, rigidity of abdominal muscles, spasms, sweating and fever. Symptoms usually begin 8 days after the infection, but may range in onset from 3 days to 3 weeks.

4.3.3 Needles and syringes

Some riverbank areas may be littered with needles or syringes that have been used for medical and/or illicit drug use. To avoid contact with needles that could possibly be infected with the HIV or other viruses, field team members will not work in areas where drug paraphernalia and/or hypodermic needles are present.

4.3.4 Infection control

The following control measures will be implemented to minimize exposure to biological hazards:

- Field team members with skin lesions or abraded skin areas that are particularly susceptible to infection will be assigned to tasks that do not pose a potential exposure to bacterial hazards.
- Gloves of sufficient length to prevent contact with water and safety glasses will be worn when collecting or processing samples.

- Field team members will wash their faces and hands and any other part of their body that may have contacted contaminated water as soon as possible. Alcohol-based hand sanitizer or Wash 'n Dri towelettes will be available on each boat.
- All field team members will receive hepatitis A and tetanus booster vaccines if their existing vaccines are out of date.

5 Work Zones and Shipboard Access Control

During sampling and sample handling activities, work zones will be established to identify where sample collection and processing are actively occurring. The intent of the zone is to limit the migration of sample material out of the zone and to restrict access to active work areas by defining work zone boundaries.

5.1 WORK ZONE

The work zone will encompass the area where sample collection and handling activities are performed. Work zones will be identified for each sampling gear type. The FC/HSO will delineate the work zone as a particular area on-board the collection vessels (for gillnets and traps) or on the beach (for backpack electroshocking). Only persons with appropriate training, PPE, and authorization from the FC/HSO will be allowed to enter the work zone while work is in progress.

5.2 DECONTAMINATION STATION

A decontamination station will be set up, and personnel will clean soiled boots or PPE prior to leaving the work zone. The station will have the buckets, brushes, soapy water, rinse water, or wipes necessary to clean boots, PPE, or other equipment leaving the work zones. Plastic bags will be provided for expendable and disposable materials. If the location does not allow the establishment of a decontamination station, the FC/HSO will provide alternatives to prevent the spread of contamination.

Decontamination of the boat will also be completed at the end of each work day. Cockpit and crew areas will be rinsed down with water to minimize the accumulation of sediment.

5.3 ACCESS CONTROL

Security and control of access to the boat will be the responsibility of the FC/HSO and boat captain. Boat access will be granted only to necessary project personnel and authorized visitors. Any security or access control problems will be reported to the client or appropriate authorities.

6 Safe Work Practices

Following common sense rules will minimize the risk of exposure or accidents at a work site. These general safety rules will be followed on site:

- Do not climb over or under obstacles of questionable stability.
- Do not eat, drink, smoke, or perform other hand-to-mouth transfers in the work zone.
- Work only in well-lighted spaces.
- Never enter a confined space without the proper training, permits, and equipment.
- Make eye contact with equipment operators when moving within the range of their equipment.
- Be aware of the movements of shipboard equipment when not in the operator's range of vision.
- Get immediate first aid for all cuts, scratches, abrasions, or other minor injuries.
- Use the established sampling and decontamination procedures.
- Always use the buddy system.
- Be alert to your own and other workers' physical condition.
- Report all accidents, no matter how minor, to the FC/HSO.
- Do not do anything dangerous or unwise even if ordered by a supervisor.

7 Personal Protective Equipment and Safety Equipment

Appropriate PPE will be worn as protection against potential hazards. In addition, a USCG Type II or Type III PFD will be worn when working onboard the boat. Prior to donning PPE, the field crew will inspect their PPE for any defects that might render the equipment ineffective.

Fieldwork will be conducted in Level D or modified Level D PPE, as discussed below in Sections 7.1 and 7.2. Situations requiring PPE beyond modified Level D are not anticipated. Should the FC/HSO determine that PPE beyond modified Level D is necessary, the HSM will be notified and an alternative selected.

New personnel or visitors will be informed of PPE requirements during their initial site briefing (see Section 3).

7.1 LEVEL D PERSONAL PROTECTIVE EQUIPMENT

Workers performing general activities in which skin contact with contaminated materials is unlikely will wear Level D PPE. Level D PPE includes the following:

- Cotton overalls or lab coats
- Chemical-resistant steel-toed boots
- Chemical-resistant gloves
- Safety glasses
- USCG Type II or Type III PFD

7.2 MODIFIED LEVEL D PERSONAL PROTECTIVE EQUIPMENT

Workers performing activities during which skin contact with contaminated materials is possible and inhalation risks are not expected will be required to wear an impermeable outer suit. The type of outerwear will be chosen according to the types of chemical contaminants that might be encountered. Modified Level D PPE includes the following:

- Impermeable outer garb such as rain gear, waders or Tyvek®
- Chemical-resistant steel-toed boots
- Chemical-resistant outer gloves

7.3 SAFETY EQUIPMENT

In addition to PPE that will be worn by shipboard personnel, basic emergency and first aid equipment will also be provided. Equipment for the field team will include:

- A copy of this HSP
- First aid kit adequate for the number of personnel
- Emergency eyewash
- ABC-class fire extinguisher
- Flares

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

8 Monitoring Procedures for Site Activities

A monitoring program that addresses the potential site hazards will be maintained. For this project, air, dust, and noise monitoring will not be necessary. The sampled media will be wet and will not pose a dust hazard, and none of the equipment emits high-amplitude (>85 dBA) sound. 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:

- Headaches
- Dizziness
- Nausea
- Symptoms of heat stress
- Blurred vision
- Cramps
- Irritation of eyes, skin, or respiratory system
- Changes in complexion or skin color
- Changes in apparent motor coordination
- Increased frequency of minor mistakes
- Excessive salivation or changes in papillary response
- Changes in speech ability or speech pattern
- Shivering
- Blue lips or fingernails

If any of these conditions develop, work will 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.

9 Decontamination

Decontamination is necessary to prevent the migration of contaminants from the work zone(s) into the surrounding environment and to minimize the risk of exposure of personnel to contaminated materials that might adhere to PPE. The following sections discuss personnel and equipment decontamination. The following supplies will be available to perform decontamination activities:

- Wash buckets
- Rinse buckets
- Long-handled scrub brushes
- Clean water sprayers
- Paper towels
- Plastic garbage bags
- Alconox® or similar decontamination solution

9.1 MINIMIZATION OF CONTAMINATION

The first step in addressing contamination is to prevent or minimize exposure to existing contaminated materials and the spread of those materials. During field activities, the FC/HSO will enforce the following measures:

Personnel:

- Do not walk through areas of obvious or known contamination.
- Do not handle, touch, or smell contaminated materials directly.
- Make sure PPE has no cuts or tears prior to use. If it tears while working, stop and replace PPE.
- Fasten all closures on outer clothing, covering with tape if necessary.
- 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.

Sampling equipment and boat:

- Place clean equipment on a plastic sheet or aluminum foil to avoid direct contact with contaminated media.

- Keep contaminated equipment and tools separate from clean equipment and tools.
- Clean boots before entering the boat.

9.2 PERSONNEL DECONTAMINATION

The FC/HSO will ensure that all site personnel are familiar with personnel decontamination procedures. Personnel will perform the following decontamination procedures, as appropriate, before eating lunch, taking a break, or leaving the work location:

1. If outer suit is heavily soiled, rinse it off.
2. Wash and rinse outer gloves and boots with water.
3. Remove outer gloves; inspect and discard if damaged.
4. Wash hands if taking a break.
5. Don necessary PPE before returning to work.

Dispose of soiled, expendable PPE before leaving for the day.

9.3 SAMPLING EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated as described in QAPP Attachment I: SOP—Procedure to Decontaminate Biological Sampling Equipment. In summary, to minimize sample contamination, the following practices will be followed:

- Caught fish will only be placed on clean surfaces, such as aluminum foil (dull side touching the fish).
- Ice chests will be scrubbed with Alconox® detergent and rinsed with deionized water prior to any sampling activities.
- Samples will be placed in resealable, waterproof plastic bags to avoid contamination from melting ice.
- Sampling equipment will be free from contaminants such as oils, grease, and fuels.
- All utensils or equipment used directly in handling fish (e.g., such as measuring boards) will be scrubbed with Alconox® detergent and rinsed with deionized water and/or appropriate solvents (e.g., 10% nitric acid, acetone, methanol and hexane), and stored in aluminum foil until use.

10 Disposal of Contaminated Materials

Contaminated materials that may be generated during field activities include PPE and excess sample material. These contaminated materials will be disposed of as an integral part of the project.

10.1 Personal Protective Equipment

Gross surface contamination will be removed from PPE, including PFDs. All disposable sampling materials and PPE, such as disposable coveralls, gloves, and paper towels used in sample processing, will be placed in heavyweight garbage bags. Filled garbage bags will be placed in a normal refuse container for disposal as solid waste.

10.2 Excess Sample Materials And Other Waste

At each sampling location, excess or unwanted specimens collected for tissue samples or during the fish community survey will be returned promptly to the water. Other wastes generated during the investigation may include detergent wash water or decontamination solvents; these will be collected on the boat or at the CPG field facility and stored in a dedicated waste solvent 55-gallon drum at the field facility. Disposable PPE will also be collected in dedicated waste containers.

11 Training Requirements

Individuals performing work at locations where potentially hazardous materials and conditions may be encountered must meet specific training requirements. It is not anticipated that hazardous concentrations of contaminants will be encountered in sampled material, so training will consist of site-specific instruction for all personnel and the oversight of inexperienced personnel by an experienced person for one working day. The following sections describe the training requirements for this fieldwork.

11.1 Project-Specific Training

In addition to HAZWOPER training, field personnel will undergo training specifically for this project. All personnel and visitors must read this HSP and be familiar with its contents before beginning work or providing oversight. They must acknowledge reading the HSP by signing the Field Team Health and Safety Plan Review form (Appendix A). The form will be kept in the project files.

The boat captain and FC/HSO will also be required to have the US Coast Guard Auxiliary Boating Safely certification. The boat captain or a designee will provide

project-specific training prior to the first day of fieldwork and whenever new workers arrive. Field personnel will not be allowed to begin work until project-specific training is completed and documented by the FC/HSO. Training will address the HSP and all health and safety issues and procedures pertinent to field operations. Training will include, but not be limited to, the following topics:

- Activities with the potential for chemical exposure
- Activities that pose physical hazards and actions to control the hazard
- Ship access control and procedures
- Use and limitations of PPE
- Decontamination procedures
- Emergency procedures
- Use and hazards of sampling equipment
- Location of emergency equipment on the vessel
- Vessel safety practices
- Vessel evacuation and emergency procedures

11.2 DAILY SAFETY BRIEFINGS

The FC/HSO or a designee and the boat captain will present safety briefings before the start of each day's activities. These safety briefings will outline the activities expected for the day, update work practices and hazards, address any specific concerns associated with the work location, and review emergency procedures and routes. The FC/HSO or designee will document safety briefings in the logbook.

11.3 FIRST AID AND CPR

At least one member of the field team must have first-aid and cardiopulmonary resuscitation (CPR) training. Documentation of which individuals possess first-aid and CPR training will be kept in the project health and safety files.

12 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 following 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 as a result of possible over-exposures 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 8, employees will monitor themselves and each other for any deleterious changes in their physical or mental condition during the performance of all field activities.

13 Reporting and Record Keeping

Each member of the field crew will sign the Field Team Health and Safety Plan Review form (see Appendix A). If necessary, accident/incident report forms and Occupational Safety and Health Administration (OSHA) Form 200s will be completed by the FC/HSO.

The FC/HSO or a designee will maintain records on the health- and safety-related details of the project in electronic field logbook entries (see QAPP Attachment P: SOP—Documenting Field Activities). At a minimum, each day's entries must include the following information:

- Project name or location
- Names of all personnel onboard
- Weather conditions
- Type of fieldwork being performed

The person maintaining the entries will initial and date the bottom of each completed page. Each day's entries will begin on the first blank page after the previous workday's entries.

14 Emergency Response Plan

As a result of the hazards onboard and the conditions under which operations will be conducted, the potential exists for an emergency situation to occur. Emergencies may

include personal injury, exposure to hazardous substances, fire, explosion, or release of toxic or non-toxic substances (spills). OSHA regulations require that an emergency response plan be available for use onboard to guide actions in emergency situations.

Onshore organizations will be relied upon to provide response 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. Shipboard personnel will attempt to control only very minor hazards that could present an emergency situation, such as a small fire, and will otherwise rely on outside emergency response resources.

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 sampling location to a hospital.

14.1 PRE-EMERGENCY PREPARATION

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

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

14.2 PROJECT EMERGENCY COORDINATOR

The FC/HSO will serve as the project emergency coordinator in the event of an emergency. He/she will designate his replacement for times when he/she is not on board or is 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 Windward PM as soon as possible after initiating an emergency response action. The Windward PM will have responsibility for notifying the client.

14.3 EMERGENCY RESPONSE CONTACTS

All onboard personnel must know whom to notify in the event of an emergency situation, even though the FC/HSO has primary responsibility for notification. Table 1 lists the names and phone numbers for emergency response services and individuals. A copy of this HSP will be made available for every vehicle designated for field use or emergency transport, and on each sampling boat.

Table 1. Emergency response contacts

CONTACT	TELEPHONE NUMBER
Emergency Numbers:	
Ambulance	911
Police	911
Fire	911
St. Michael's Medical Center (Newark, NJ)	(973) 268-8000
Clara Maass Medical Center, West Hudson Division (Kearny, NJ)	(201) 955-7000
St. Mary's Hospital (Passaic, NJ)	(973) 365-4489
Emergency Responders:	
US Coast Guard Emergency General information – Sector New York Command Center	 (718) 354-4119 (718) 354-4353/4193 VHF Channel 16
National Response Center	(800) 424-8802
US Environmental Protection Agency	(800) 424-8802
New Jersey Department of Environmental Protection – Bureau of Emergency Response (24-hour emergency line)	(877) 927-6337
Emergency Contacts:	
Windward Project Manager	
Lisa Saban	(206) 577-1288
Windward Corporate Health and Safety Manager	
Tad Deshler	(206) 577-1285

CONTACT	TELEPHONE NUMBER
Field Coordinator/Field Health and Safety Officer	
Thai Do/Angelita Rodriquez	Site cellular telephone: To be determined at start of each sampling event
CPG Field Facility	(973) 773-0200

14.4 RECOGNITION OF EMERGENCY SITUATIONS

Emergency situations will generally be recognizable through 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.

14.5 DECONTAMINATION

In the case of evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. If an injured individual is also heavily contaminated and must be transported by emergency vehicle, the emergency response team will be told of the type of contamination. To the extent possible, contaminated PPE will be removed but only if doing so does not exacerbate the injury. Plastic sheeting will be used to reduce the potential for spreading contamination to the inside of the emergency vehicle.

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 the on-board fire extinguisher 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.

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:

- Administer first aid, if qualified.
- If not qualified, seek out an individual who is qualified to administer first aid, if time and conditions permit.
- Notify the project emergency coordinator of the incident, the name of the injured individual(s), the location, and the nature of the injury.

The project emergency coordinator will immediately do the following:

- Notify the boat captain and the appropriate emergency response organization.
- Assist the injured individual(s).
- Follow the emergency procedures for retrieving or disposing of equipment reviewed in the training session and leave the site en route to the predetermined land-based emergency pickup.
- Designate someone to accompany the injured individual to the hospital.
- If a life-threatening emergency occurs (i.e., injury where death is imminent without immediate treatment), the FC/HSO or boat captain will call 911 and arrange to meet the emergency personnel at the nearest accessible dock. Otherwise, for emergency injuries that are not life-threatening (e.g., broken bones, minor lacerations), the project emergency coordinator will follow the procedures outlined above and proceed to the CPG field facility or to an alternative location if that would be more expedient.
- Notify the HSM and the PM.

If the project emergency coordinator determines that emergency response is not necessary, he/she may direct someone to decontaminate and transport the individual by vehicle to the nearest hospital. Directions showing the route to the hospital are in Section 14.11.

If a worker leaves the boat to seek medical attention, another worker should accompany that individual to the hospital. When in doubt about the severity of an injury or exposure, personnel should 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.

14.8 OVERT PERSONAL EXPOSURE OR INJURY

If an overt exposure to toxic materials occurs, the first responder to the victim will initiate actions to address the situation. The following actions should be taken, depending on the type of exposure.

14.8.1 Skin contact

- Wash/rinse the affected area thoroughly with copious amounts of soap and water.

- If eye contact has occurred, eyes should be rinsed for at least 15 minutes using the eyewash that is part of the emergency equipment onboard.
- After initial response actions have been taken, seek appropriate medical attention.

14.8.2 Inhalation

- Move victim to fresh air.
- Seek appropriate medical attention.

14.8.3 Ingestion

- Seek appropriate medical attention.

14.8.4 Puncture wound or laceration

- Seek appropriate medical attention.

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.

14.10 BOATING HAZARDS

Emergency responses to boating hazards are described in Table 2.

Table 2. Potential boat emergency hazards and responses

POTENTIAL EMERGENCY HAZARD	RESPONSE
Fire or explosion	If manageable, attempt to put out a small fire with a fire extinguisher. Otherwise, call the US Coast Guard or 911 and evacuate the area (by life raft, rescue boat, or swimming) and meet at a designated area. The FC will take roll call to make sure everyone evacuated safely. Emergency meeting places will be determined in the field during the daily safety briefings.
Medical emergency/ personal injury	At least one person with current first aid/CPR training will be on board the vessel at all times. This person will attempt to assess the nature and critical path of the injury, call 911 immediately, and apply CPR if necessary. Stop work and wait for medical personnel to arrive. Fill out a site accident report.
Person overboard	Immediately throw the person in the water a life ring (Type IV PFD). Have one person keep an eye on the person and shout the distance (boat lengths) and direction (o'clock) of the person from the vessel. Stop work and use the vessel to retrieve the person in the water.
Sinking vessel	Call the US Coast Guard immediately. If possible, wait for a rescue boat to arrive to evacuate vessel personnel. Stay with the boat until rescue arrives, if possible. See the fire/explosion section for emergency evacuation procedures. The FC will take a roll call to make sure everyone is present.

POTENTIAL EMERGENCY HAZARD	RESPONSE
Hydraulic oil spill or leak	If the leak/spill is small, immediately apply absorbent pads to control the leak and continue work. If the leak/spill is uncontainable, stop work, call 911 immediately, and wait for assistance. The vessel operator will call the USCG for spill control, assess the personal safety hazard associated with the leak/spill and begin evacuation procedures if necessary.
Lack of visibility	If navigation visibility or personal safety is compromised because of smoke, fog, or other unanticipated hazards, stop work immediately. The vessel operator and FC will assess the hazard and, if necessary, send out periodic horn blasts to mark the vessel location and to warn other vessels potentially in the area, move to a secure location (i.e., berth), and wait for the visibility to clear.
Loss of power	Stop work and call the US Coast Guard for assistance. Vessel personnel should watch for potential collision hazards and notify vessel operator if hazards exist. Secure vessel to a berth, dock, or mooring as soon as possible.
Collision	Stop work and call the US Coast Guard for assistance. The FC and vessel operator will assess damage and potential hazards. If necessary, the vessel will be evacuated and secured until repairs can be made.

14.11 EMERGENCY ROUTE TO THE HOSPITAL

The names, addresses, and telephone numbers of the hospitals that will be used to provide medical care are as follows:

St. Michael's Medical Center
268 Dr. Martin Luther King Jr. Blvd., Newark, NJ
Phone: (973) 268-8000

or:

Clara Maass Medical Center, West Hudson Division
206 Bergen Ave., Kearny, NJ
Phone: (201) 955-7000

or:

St. Mary's Hospital
350 Boulevard, Passaic, NJ
Phone: (973) 365-4489

The hospital will be selected by the project emergency coordinator (i.e., the FC) based on proximity to the emergency scene. If the emergency occurs on the boat, the vessel will be docked at the closest available launch or dock.

Directions from the vicinity of LPRSA to St. Michael's Medical Center (Figure 1) are as follows:

- From McCarter Highway, turn left on Chestnut St.
- Turn right on Broad St.
- Turn left on Central Ave.
- The visitors' parking lot is located on Central Ave., between University Ave. and Dr. Martin Luther King, Jr., Blvd.

Figure 1. Route to St. Michael's Medical Center

Directions from the vicinity of LPRSA to the Clara Maass Medical Center/West Hudson Hospital (from Riverside Ave., going south) (Figure 2) are as follows:

- Riverside Ave. becomes River Rd. – continue for 1.3 miles.
- River Rd. becomes Passaic Ave. – continue for 0.5 miles to Magnolia Ave.
- Turn left on Magnolia Ave.
- Turn right on Kearny Ave.
- Turn left on Bergen Ave.
- Hospital is located on Bergen Ave. in a residential neighborhood between Elm St. and Forest St.

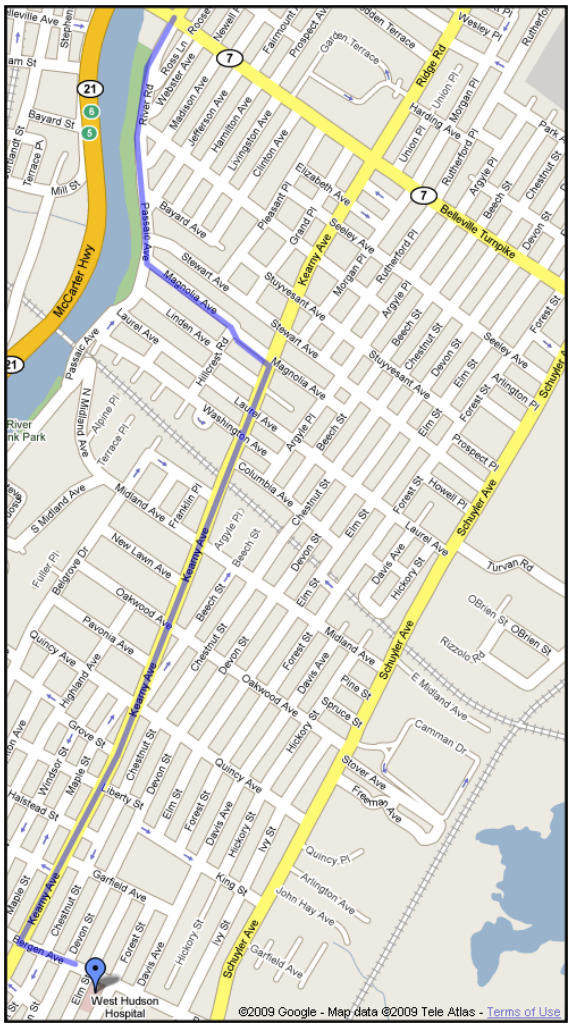

Figure 2. Route to Clara Maass Medical Center from Riverside Ave.

Directions from the vicinity of LPRSA to the Clara Maass Medical Center/West Hudson Hospital (from River Bank Park in Kearny) (Figure 3) are as follows:

- Start at River Rd., going south.
- River Rd. becomes Passaic Ave./River Rd. – continue for 0.6 miles.
- Passaic Ave./River Rd. becomes Passaic Ave. – continue for 1.2 miles to Bergen Ave.
- Turn left on Bergen Ave.
- Hospital is located on Bergen Ave. in a residential neighborhood between Elm St. and Forest St.

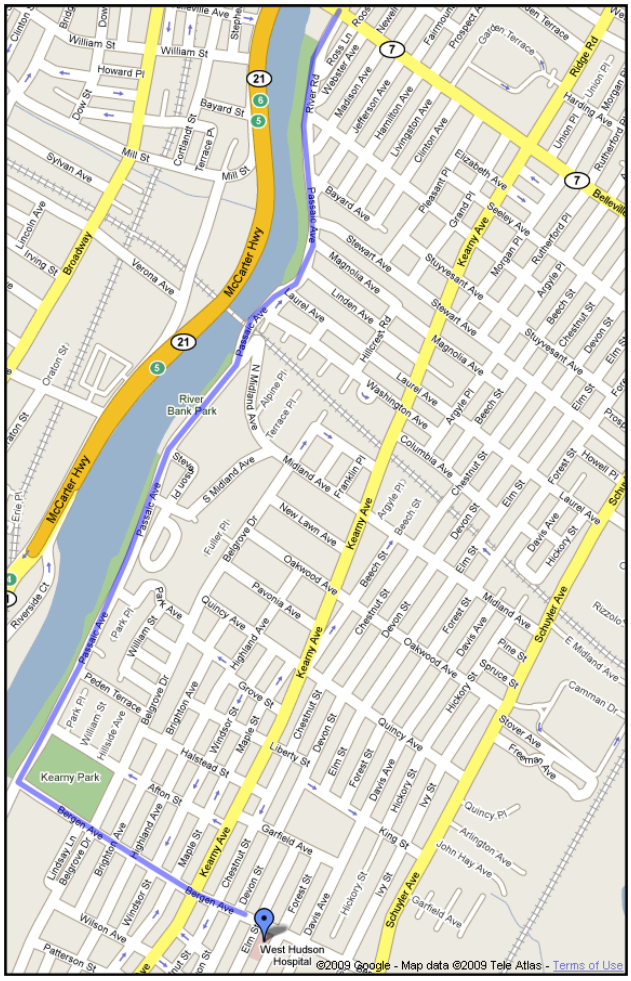

Figure 3. Route to Clara Maass Medical Center from River Bank Park

Directions from the CPG field facility to St. Mary's Hospital (Figure 4) are as follows:

- Head northeast on Madison St. toward Plosia Pl.
- Turn left at Carlton Ave.
- Continue straight onto Paterson Ave.
- Turn left at Main Ave.
- Take a slight right at River Rd./River Dr., continue to follow River Dr.
- Turn left at Prospect St.
- Turn left at Pennington Ave.
- Turn right at Paulison Ave.
- Turn left at Broadway
- Turn right at Boulevard St.
- Hospital will be on the right.

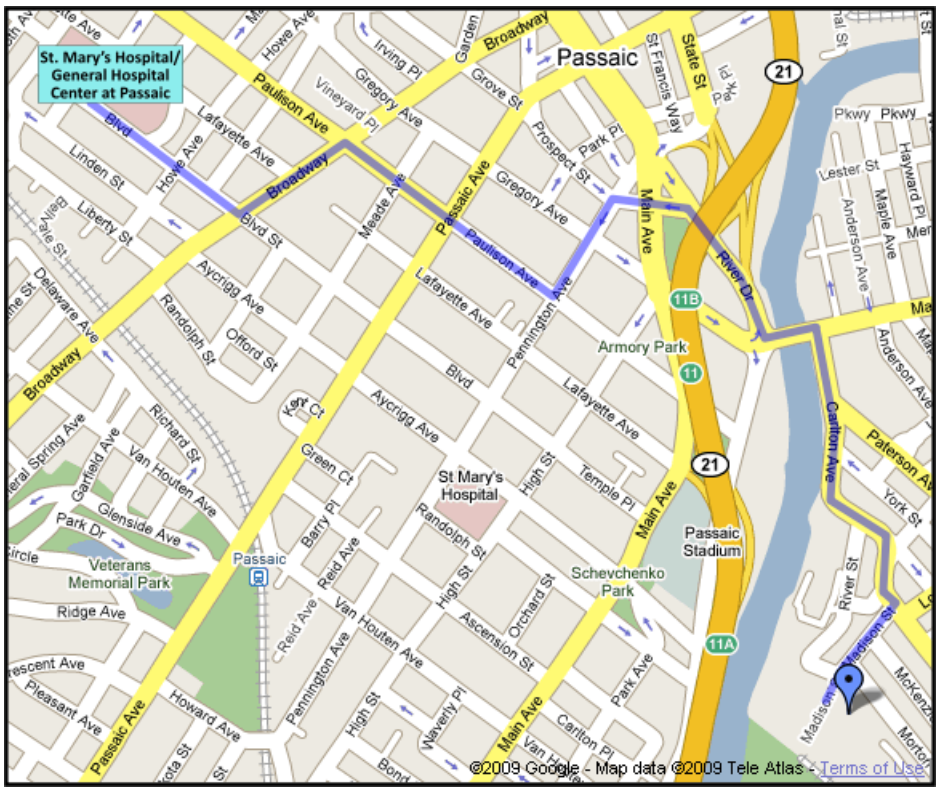

Figure 4. Route to St. Mary's Hospital from the CPG field facility

Directions to St. Mary's Hospital from the north (e.g., Dundee Dam) are as follows:

- Head southwest on Clifton Ave. toward Schoonmaker Pl.
- Turn left at Paulison Ave.
- Turn right at Oak St.
- Turn left at Boulevard St.
- Hospital will be on the left.

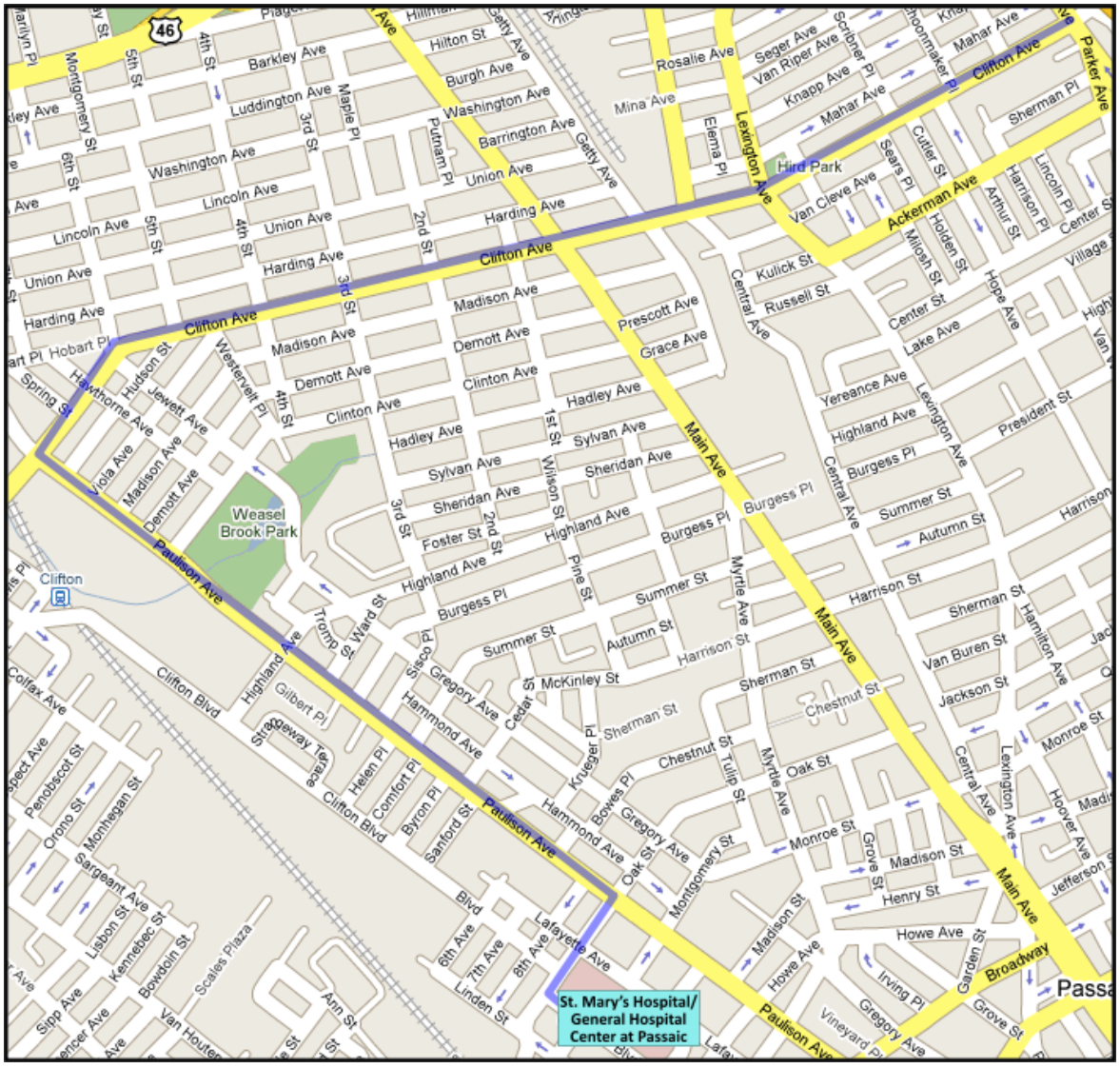

Figure 5. Route to St. Mary's Hospital from the north

Directions to St. Mary's Hospital from the south (e.g., Nutley, Belleville, or River Bank Park in Lyndhurst) (Figure 5) are as follows:

- If located on the east side of the river (e.g., River Bank Park in Lyndhurst), head north on Riverside Ave.
- Turn left on Kingsland Ave.
- Turn right to merge onto NJ-21 N.
- Continue (or from points on west bank of river, head) north on NJ-21 N.
- Take Exit 11A to merge onto River Rd./River Dr. toward Passaic.
- Turn left at Paulison Ave.
- Turn left at Broadway.
- Turn right at Boulevard St.
- Hospital will be on the right.

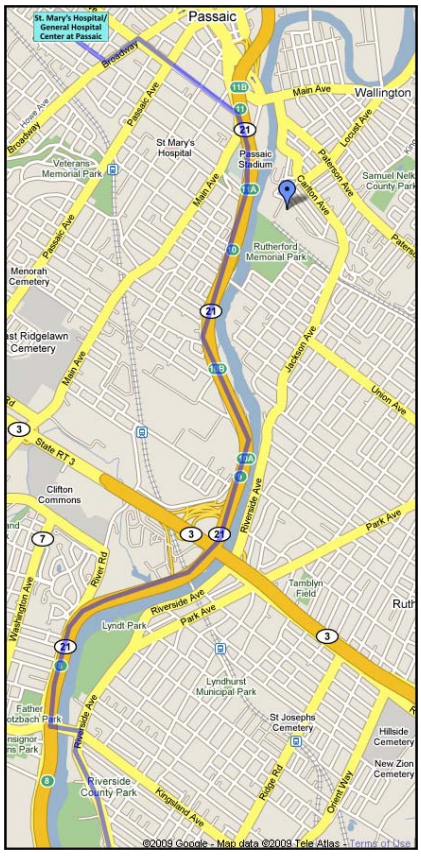

Figure 6. Route to St. Mary's Hospital from the south

15 References

Malcolm Pirnie. 2005. Lower Passaic River Restoration Project. Health and safety plan - core document and hydrodynamic studies. Final. Prepared for US Environmental Protection Agency and US Army Corps of Engineers. Malcolm Pirnie, Inc., White Plains, NY.

Appendix A. Field Team Health and Safety Plan Review

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 LPRSA. I understand the health and safety requirements of the project, which are detailed in this health and safety plan.

Signature	Date
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