

US EPA ARCHIVE DOCUMENT

DRAFT BASELINE HUMAN HEALTH RISK ASSESSMENT

Centredale Manor Restoration Project

October 2004

www.epa.gov/ne/superfund/sites/centredale

The U.S. Environmental Protection Agency (EPA) and Rhode Island Department of Environmental Management (RIDEM) continue to work with the town of North Providence, the potentially responsible parties, and the Woonasquatucket River Management Action Committee to address contamination at the Centredale Manor Restoration Project located along the Woonasquatucket River in North Providence, Rhode Island.

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Local Information Repositories

North Providence Library
Johnston Library

Or visit the Centredale Manor Restoration
Project Web site:

www.epa.gov/ne/superfund/sites/centredale

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EPA Releases Draft Baseline Human Health Risk Assessment for Centredale Manor Project

Since 2001, EPA has conducted several studies to assess the contamination in and along the Woonasquatucket River from Route 44 downstream to Dyer-ville Pond. These studies are being used to assess the potential risks to public health and the environment and will form the basis for any future cleanup activities at the site. This update summarizes the draft baseline human health risk assessment, which evaluates the current and potential future risks to people who eat fish caught from the Woonasquatucket River or come into direct contact with surface water, sediment, or soil at or near the site.

The draft baseline human health risk assessment estimates potential cancer and non-cancer risks to adults and children who may be exposed to contaminants while living or working near the Woonasquatucket River or using the river and floodplain for recreational (e.g., fishing, wading, or swimming) purposes. The risk assessment evaluates two primary routes through which people may be exposed to contaminants from the site. These include:

- Consumption of fish caught from the Woonasquatucket River.
- Direct contact with surface water, sediment, and/or bank soil while wading, swimming, or fishing along the river.

The risk assessment provides the community and decision makers with an understanding of the potential health risks posed by contamination from the site in the absence of any cleanup or other controls, such as fish consumption advisories. It is important to note that the risks presented here were developed based on public health protective scenarios, especially for surface water, and are likely to overestimate risks to actual residents.



What is a Human Health Risk Assessment?

To find out what the potential current and future health risks are, the risk assessment answers the following questions:

1 Are toxic contaminants present? (Hazard Identification)

Samples of surface water, sediment, soil, and fish (American eel, largemouth bass, and white sucker) were collected to find out what chemicals are present in the Woonasquacket River, its associated waterbodies, and floodplain.

2 Who is exposed? How often? (Exposure Assessment)

Chemicals may enter the body through eating or drinking (ingestion), by skin contact (dermal), or by breathing (inhalation). An exposure assessment is an estimate of how people may come into contact with chemicals and how often (for example, the number of times a person eats fish from the Woonasquacket River). A reasonable maximum exposure (RME) is used to represent a person who is more highly exposed, and a central tendency exposure (CTE) is used to represent the "average" person.

3 How toxic are the chemicals? (Toxicity Assessment)

EPA uses information from animal, human, and laboratory studies to assess the potential for chemicals to cause cancer or non-cancer effects.

4 Are there potential health risks? (Risk Characterization)

The risk characterization describes the potential health risks and identifies which chemicals may be causing the risk. EPA's risk assessment approach is intended to establish upper bounds on risk, meaning the risks are unlikely to be higher but could be lower.



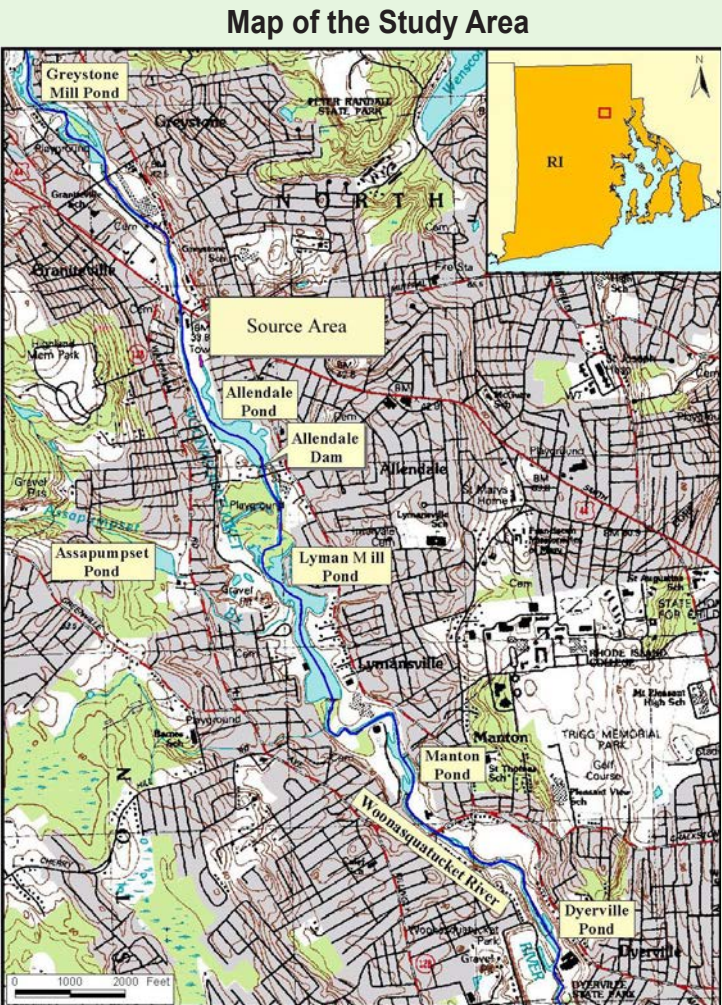
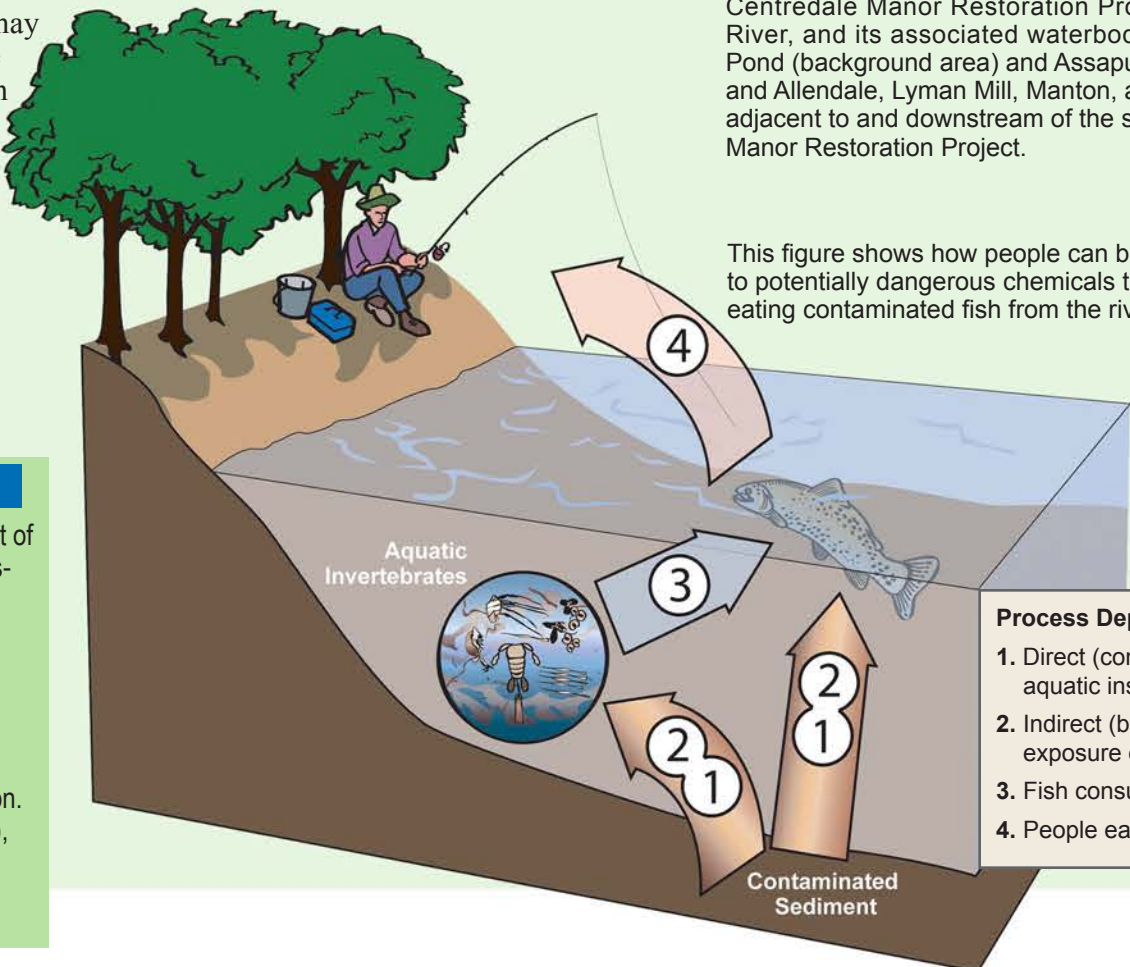
How are People Exposed to Contaminants?

Potential risks to human health were estimated for exposure to Dioxin and other contaminants from the Centredale Manor Restoration Project. Exposure can occur from (1) direct contact with soil and sediment or surface water and (2) eating fish.

Direct contact exposure occurs when a person comes into contact with contaminated floodplain soil or river sediment during recreational or other activities. For example, it might involve getting soil on skin or ingesting small amounts of soil through unintentional hand-to-mouth transfer. EPA evaluated a number of activities that could result in direct contact exposure. These included exposure for people who live along the river, visiting recreational anglers, people working near the site (Fogarty Center), and visiting subsistence anglers.

The potential risks to people who consume fish from the Woonasquacket River are based on concentrations of contaminants, assumptions about the amounts and types of fish consumed, and meal preparation methods. Although the current fish advisory is assumed to reduce the amount of fish that people eat, the draft baseline human health risk assessment evaluates the potential risks to people in the absence of any advisories, using reasonable exposure assumptions based on expected consumption in the absence of contaminants.

A person may experience one or both of these exposures.



Centredale Manor Restoration Project, the Woonasquacket River, and its associated waterbodies, including Greystone Mill Pond (background area) and Assapumpset Pond (reference area) and Allendale, Lyman Mill, Manton, and Dyerville Ponds located adjacent to and downstream of the source area, Centredale Manor Restoration Project.

This figure shows how people can be exposed to potentially dangerous chemicals through eating contaminated fish from the river.

Process Depicted:

1. Direct (contact) exposure of aquatic insects and fish with sediment
2. Indirect (bioaccumulation) exposure of aquatic insects and fish
3. Fish consume insects
4. People eat contaminated fish

Highlights of the Draft Baseline Human Health Risk Assessment

Although the baseline human health risk assessment is still in draft form, EPA's preliminary findings indicate that overall, the study areas downstream of the Centredale Manor Restoration Project may have higher cancer and non-cancer risks for fish consumption, surface water contact, and sediment contact compared with the background and reference areas.

Key findings of the draft baseline human health risk assessment, which evaluates cumulative lifetime risks (cancer risks) and hazards to different age groups (non-cancer risks), include:

- Potential cancer and non-cancer risks from eating fish caught from Allendale, Lyman Mill, Manton, and Dyerville Ponds may exceed EPA's acceptable cancer risk range.
- Eating fish appears to present a higher risk than direct contact with surface water, sediment, or soil at the site, especially eating fish captured from Allendale and Lyman Mill Ponds.
- Direct contact with surface water, including wading and swimming, in Allendale, Lyman Mill, Manton, and Dyerville Ponds may exceed EPA's acceptable cancer risk range.
- Coming into contact with sediments from Allendale and Lyman Mill Ponds may exceed EPA's acceptable cancer risk range.
- Coming into contact with soils from Allendale, Lyman Mill, Manton, and Dyerville Ponds does not appear to exceed EPA's acceptable cancer risk range.
- Workers who come into contact with soil at the Fogarty Center do not appear to be at risk.

These preliminary findings reinforce the Rhode Island Department of Health's fishing advisory. The findings also reinforce EPA's and the Woonasquacket River Watershed Council's educational campaign that people who live or work near the Woonasquacket River or use the river and floodplain for recreational purposes need to act responsibly and follow the Do's and Don't's for the Woonasquacket River.

EXPLANATION OF RISK LEVELS

Cancer Risk is the increased probability, or chance, of getting cancer as a result of exposure to chemicals at the site. In the draft baseline human health risk assessment report, a 1 in a million chance is written as 1E-06.

Non-cancer Risk is a comparison of an allowable exposure to the amount of exposure estimated at a site. The comparison is called the Hazard Index (HI).

HI = site exposure/allowable exposure

An HI greater than 1 indicates that the site exposure exceeds the allowable exposure.

Acceptable Risks for cancer are considered by EPA to be less than 1 in a million. Between 1 in a million and a 1 in ten thousand chance (EPA's cancer risk range), EPA looks at the site specific factors affecting risk and the uncertainties with the estimate. For non-cancer health effects, an HI less than 1 means people are unlikely to be harmed.

Do's and Don't's for the Woonasquatucket River

Please Act Responsibly Along the Woonasquatucket River

Preliminary findings from the draft baseline human health risk assessment confirm that people living or working near the Woonasquatucket River or using the river and floodplain for recreational purposes need to act responsibly.

- Please do not eat fish, turtles, eels, or plants from the Woonasquatucket River.
- Please do not wade in the shallow water or swim in the river.
- Please obey the warning signs posted along the river.
- Walking, jogging, or bike riding along the river are acceptable activities.
- Remember to wash thoroughly after any contact with the river water or sediment.



RISK ASSESSMENT CLEANUP DECISION NEXT STEPS

The Draft Baseline Human Health Risk Assessment is one in a series of reports being prepared for the Centredale Manor Restoration Project. This report, combined with the Draft Baseline Ecological Risk Assessment to be issued September 2004, characterizes the potential risks posed to people and the environment by contamination at the site. In addition to assessing the potential risks from contamination at the site, EPA is conducting environmental studies to assess the sources and nature and extent of contamination in the river. Following the completion of these studies, EPA will begin evaluating options for cleaning up the river. The public will have an opportunity to learn more about and comment on these various cleanup options before EPA makes a final decision about how to proceed.

Copies of the Draft Baseline Human Health Risk Assessment Report are available for public review at the public libraries in North Providence and Johnston.



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