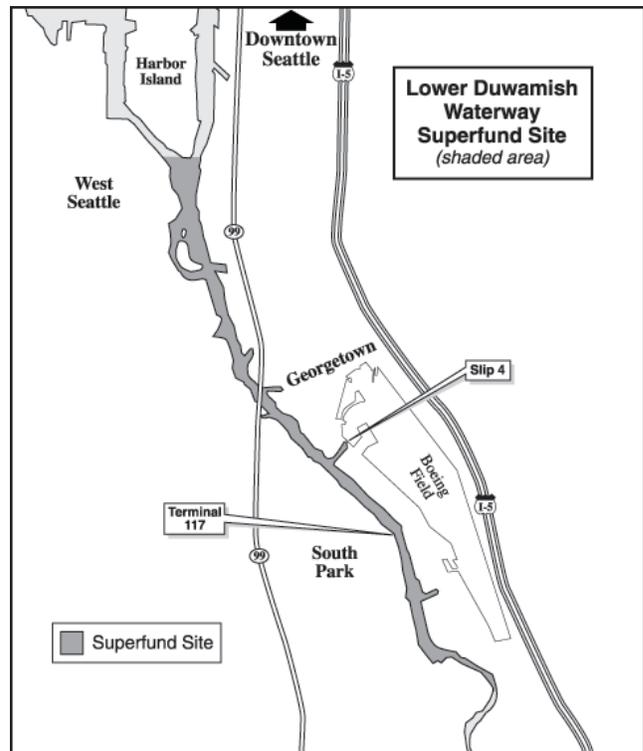




The Lower Duwamish Waterway site is a 5.5 mile portion of the Lower Duwamish River which flows into Elliott Bay. The waterway lies just south of downtown Seattle and is flanked by industrial corridors, as well as the South Park and Georgetown neighborhoods.

Sediments (mud and sand on the river bottom) in and along the waterway contain a wide range of contaminants from years of industrial activity and from stormwater. The Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) are working to clean up contaminated sediment and control sources of recontamination in the waterway.



An important milestone has been achieved: Lower Duwamish Waterway contamination investigation is complete.

As part of the cleanup process for the Lower Duwamish Waterway, the Lower Duwamish Waterway Group (LDWG) investigated contamination in the Waterway’s sediments. The investigation answered questions including:

- What contaminants are in the Waterway?
- What areas are most contaminated?
- What risks do those contaminants pose to humans and wildlife?

After seven years of work, the results were described in a document called a Remedial Investigation Report. The report was submitted to EPA and Ecology for their review and approval. EPA and Ecology recently completed their review of the report. They shared many of the concerns expressed by community members who came to a public meeting on November 29, 2007 to learn about the investigation.

Please see the last page of this fact sheet for contact information and websites.

EPA and Ecology provided comments to the Lower Duwamish Waterway Group on what revisions must be made to the report. Those comments are summarized at the end of this fact sheet. The final Remedial Investigation Report should be ready by early 2009.

This fact sheet provides EPA and Ecology's responses to some of the questions asked at the November public meeting and other information that may be of interest to you. A more detailed version of this fact sheet that includes responses to many of the questions asked at the public meeting is available on EPA's website.

Responses To Your Questions

Is it OK to eat salmon from the Duwamish Waterway?

It is OK to eat salmon from the Lower Duwamish Waterway if you follow the attached guidelines from the Washington State Department of Health. Salmon caught in the Duwamish spend little time in the Waterway. As a result, Duwamish salmon have similar contaminant concentrations to salmon caught elsewhere in Puget Sound.

The Department of Health recommends:

- Chum, Coho, Pink and Sockeye: up to 2-3 meals a week
- Chinook: no more than 1 meal a week
- Blackmouth (resident Chinook): no more than 2 meals a month.

Salmon can be part of a healthy diet and are a great source of omega-3 fatty acids, which are good for the heart.

What about other types of fish and shellfish in the Duwamish – can I eat them?

No! Fish or shellfish taken from the Lower Duwamish Waterway are not safe to eat. These animals have picked up too many contaminants from the mud in the waterway. For example, PCB levels in fish and crab that live in the waterway most of their lives are 35 to 110 times higher than in Puget Sound salmon. The high levels of PCBs and other chemicals pose an unacceptable risk of cancer and other diseases. A long-term goal of the cleanup is to reduce the contaminants in the sediments and in the fish and shellfish, but for now it is best not to eat them. Salmon are OK to eat, but not any other fish or shellfish.

Is it OK to walk and play on public beaches along the Duwamish Waterway?

Yes, it is OK to walk and play in the public areas. However, some beaches near industrial sites have higher contaminant concentrations. EPA, Ecology and the Washington Department of Health (DOH) recommend avoiding beaches near industrial sites. We recommend using the public beach areas such as Duwamish Waterway Park. EPA, Ecology and DOH also recommend common sense precautions after walking on the beaches:

- wash your hands if they come into contact with the mud
- take off your shoes before entering your house
- wash off your pets

The attached fact sheet from the Department of Health has more details on these recommendations.



What are the most harmful contaminants found in the Duwamish?

There are many chemical contaminants in Duwamish sediment, fish, and shellfish. Most of the human health risk comes from the four chemicals discussed below. While each of these chemicals can be found throughout the Waterway, the largest amounts were found near industrial areas.

Polychlorinated biphenyls (PCBs) are manmade chemicals that were banned in the late 1970s. They stay in the environment for a long time and can build up in fish and shellfish. PCBs are known to impact the immune system and may cause cancer in people who have been exposed over a long time.

Arsenic is naturally present at low levels in Puget Sound area rock and soil. Industrial activities have spread additional arsenic over much of the Puget Sound region. Long-term exposure to toxic forms of arsenic may cause skin, bladder, and other cancers.

Polycyclic aromatic hydrocarbons (PAHs) are formed during the burning of substances such as coal, oil, gas, wood, garbage and tobacco and during the charbroiling of meat. Long periods of breathing, eating, or having skin contact with high levels of some of the PAHs may increase a person's risk of cancer.

Dioxins and furans (dioxins) are by-products of burning (either in natural or industrial settings), chemical manufacturing and metal processing. Dioxins last a long time in the environment and, like PCBs, can build up in fish and fatty foods. Specific toxic effects related to dioxins include reproductive problems, problems in fetal development or in early childhood, immune system damage, and cancer.

What about the wildlife living in or close to the Waterway?

The Remedial Investigation included an Ecological Risk Assessment which evaluated the potential risk to animals, birds, fish and organisms that live in the Lower Duwamish Waterway. The risk assessment compared levels of contaminants in the tissues of these animals, in their food, and in the mud, to levels of ecological concern based on scientific studies.

The Ecological Risk Assessment found that PCBs are the contaminant that poses the greatest risk to mammals. The report found that river otters in the Lower Duwamish Waterway may be exposed to enough PCBs in their food to reduce the growth or survival of their offspring.

In addition, sediment in about one quarter of the Lower Duwamish Waterway contains many contaminants that exceed the State of Washington's standards. Those standards are designed to protect worms, clams, and other organisms that live in the sand or mud. These creatures are eaten by fish and other animals, so anything that harms them affects the whole ecosystem.

After analyzing the results of the Human Health Risk Assessment and the Ecological Risk Assessment, EPA and Ecology believe that cleaning up the waterway to protect those at greatest risk – people, river otters, and organisms that live in the sediments – will protect the waterway's fish and birds too.

How did EPA and Ecology choose seafood consumption rates to assess risks from chemicals in seafood?

The Human Health Risk Assessment estimated how much Duwamish fish and shellfish people might eat after the cleanup. The report evaluated a range of studies of people's eating habits. That range included the possibility of eating a single one half pound meal a month up to eighteen meals a week. Special attention was given to the eating habits of American Indians as represented by the Tulalip and Suquamish Tribes as

well as those of Asian and Pacific Islanders. Some members of these groups are known to eat more fish than average.

EPA and Ecology looked at:

- How much seafood from the Duwamish people might want to eat after the cleanup.
- How much good habitat (places where fish, clams and other animals live) will exist after the cleanup and habitat restoration work.

These agencies decided that three meals of fish (not including salmon) and shellfish a week is the best estimate to use for decision-making. Ninety-five percent of Tulalip Tribe members eat that amount or less each week but many Suquamish Tribal members eat more than this. Recognizing that not everyone agrees with this approach, EPA and Ecology will carefully consider all of the seafood consumption estimates when deciding how much cleanup is needed at the site.

Can we get some of the most contaminated areas cleaned up sooner rather than later?

Yes, efforts are underway to get some of the most contaminated areas of the Lower Duwamish Waterway cleaned up as soon as possible. Some of these sites are being addressed under EPA, Ecology or joint authorities. Some cleanups already have been conducted near the Duwamish/Diagonal and Norfolk combined sewer outflows (CSOs). Early cleanups are being planned at several locations in the waterway, including Boeing Plant 2, Slip 4, Terminal 117 and many others. More detail about early cleanup work is available on EPA and Ecology's web sites.

Why should we try to clean up the river if there is still going to be industry and continuing contamination?

The cleanup will address over a hundred years of

contamination from industry, stormwater, and municipal discharges. EPA and Ecology cleanup projects along the waterway are addressing historical and ongoing contamination. Today's industrial practices are much different from those even 30 years ago. Past practices of discharging pollutants to the Duwamish have been greatly reduced.

In addition to their work on the cleanup, Ecology is the lead for source control. Source control is the process of finding and then stopping or reducing releases of pollution to waterway sediments. The point of source control is to keep sediments from becoming contaminated again after being cleaned up. Ecology is in the process of developing Source Control Action Plans which outline the actions that must be completed in order to ensure that sediment cleanup will not be recontaminated.

In addition to Ecology, EPA, the City of Seattle, and King County are working on greatly reducing sources of pollution. Ecology's Urban Waters Initiative is focused on keeping contaminants from all sources out of our rivers and Puget Sound. King County and the City of Seattle are working on improving control of combined sewer overflows and stormwater. Each of us can help by reducing contaminants in stormwater runoff. Many of the contaminants in stormwater come from roads and vehicles so we have a big challenge ahead.

Who pays for all this work?

Four organizations have stepped forward to pay for the Remedial Investigation and Feasibility Study. Those organizations are the City of Seattle, King County, the Port of Seattle, and The Boeing Company, collectively known as the Lower Duwamish Waterway Group (LDWG). Three of these organizations are public entities and receive remedial action grant money from Ecology.

EPA and Ecology's policy is to have the polluters pay for cleaning up the contamination they created. Since contaminants have been flowing into the Duwamish for over one hundred years from many different sources, determining who will be responsible for paying for

cleanup is difficult. EPA is in the process of determining who may be responsible for paying for the Waterway-wide cleanup. For more information on this topic, please see our webpage (address on last page).

What were EPA and Ecology's responses to the draft Remedial Investigation Report?

EPA and Ecology had many of the same concerns about the draft Remedial Investigation Report as the Duwamish River Cleanup Coalition (DRCC) and other stakeholders. A number of stakeholder comments were included in the changes that EPA and Ecology are requiring to the Remedial Investigation Report, including:

- Revising the discussion of the results of the sediment transport model (how sediments move around in the river).
- Revising the discussion of background sediment concentrations. In addition, stakeholders need to be involved in discussions about what are appropriate background concentrations for the site.
- Including a more detailed discussion of what is known about sources of contamination to the Duwamish.

What happens next?

The first step in the cleanup process is to identify the contaminants in the Lower Duwamish Waterway and to understand which are the most dangerous. That effort is the **Remedial Investigation**. Now we need to know how and where to clean up those contaminants. Answers to those questions will be part of the **Feasibility Study**. Work on the Feasibility Study has begun and the draft study should be available in 2009. The EPA and Ecology will review the options for cleanup, and will develop a **Proposed Plan** for cleaning up the contaminated sediments. EPA and Ecology expect that the

Proposed Plan will be available for public review and comment in 2010.

At every step in the cleanup process, many stakeholders are reviewing draft documents and providing recommendations to EPA and Ecology. This stakeholder group includes the Duwamish River Cleanup Coalition (the citizens' advisory group), the Muckleshoot and Suquamish Tribes, and the agencies that work to protect natural resources in the river. As important milestones are reached, EPA and Ecology will invite feedback from the public.

Where can I learn more? How can I get involved?

The best way for people to get involved is to join the Duwamish River Cleanup Coalition (DRCC). That group is made up of members of the local community and serves as the focal point for the exchange of information among the local community and EPA, Ecology, and other agencies. The list below provides several resources for finding out more about the work being done at the site.

Duwamish River Cleanup Coalition
5410 First Avenue NE Seattle, WA 98105
(206) 954-0218
info@duwamishcleanup.org
www.duwamishcleanup.org

Environmental Protection Agency:
Renée Dagseth, Community Involvement
Coordinator
206-553-1889 or dagseth.renee@epa.gov
Visit EPA's website at:
[yosemite.epa.gov/r10/cleanup.nsf/sites/
lduwamish](http://yosemite.epa.gov/r10/cleanup.nsf/sites/lduwamish)

For information on the Superfund process, visit:
www.epa.gov/superfund/index.htm

Washington State Department of Ecology :
Molly Morris, Community Outreach & Education
425-649-7135 or momo461@ecy.wa.gov
Visit Ecology's website at:
[www.ecy.wa.gov/programs/tcp/sites/
lower_duwamish/lower_duwamish_hp.html](http://www.ecy.wa.gov/programs/tcp/sites/lower_duwamish/lower_duwamish_hp.html)



U. S. Environmental Protection Agency
1200 Sixth Avenue, Suite 900, ETPA-081
Seattle, Washington 98101-3140

Pre-Sorted Standard
Postage and Fees Paid
U.S. EPA
Permit No. G-35
Seattle, WA

*What is in the Lower Duwamish Waterway?
Lower Duwamish Waterway Superfund Site
Seattle, Washington
June 2008*

Where can I learn more? (continued)
Washington State Department of Health
Lenford O'Garro, Public Health Advisor
877-485-7316 (toll free)
Lenford.Ogarro@doh.wa.gov
Visit the Department of Health's website at
***www.doh.wa.gov/ehp/oehas/fish/
consumpadvice.htm#Lower_Duwamish_Waterway***

Or

Erin Kochaniewicz, Community Outreach &
Environmental Education Specialist
877-485-7316 (toll free)
Erin.Kochaniewicz@doh.wa.gov

Lower Duwamish Waterway Group:
(The Boeing Company, City of Seattle, King
County, Port of Seattle)
The Lower Duwamish Waterway Group's web site:
www.ldwg.org contains all final reports the group
has prepared to date, along with other information
about the Waterway.

**Natural Resource Damage Assessment
(NRDA)**

Please contact Rebecca Hoff, NOAA, Case Team
Coordinator, 206-526-6276, on behalf of the Lower
Duwamish Waterway natural resource trustee
council.

The Lower Duwamish River NRDA website link is:
***www.darrp.noaa.gov/northwest/
lowerduwamishriver/index.html***

***Information Repositories (where important site-
related documents are available for review):***

South Park Public Library

8604 Eighth Ave. S.
Seattle, WA 98108
206-615-1688

EPA Records Center

1200 6th Avenue
Seattle, Washington 98101
206-553-4494



Alternative formats are available. For reasonable accommodation, please call Renée Dagseth at 206-553-1889. TTY users, please call the Federal Relay Service at 800-877-8339.