



Notes from the desk of Amy Keranen

Spring
2015

Hi! This note is brought to you by the Remediation and Redevelopment Division (RRD) of the Michigan Department of Environmental Quality (DEQ) Calumet Field Office. Our division's goal is to keep you up to date on the RRD's environmental projects underway in the Keweenaw Peninsula. My name is Amy Keranen and I'm the DEQ project manager for the sites you are about to read about (this issue is all about the Abandoned Mining Wastes—Torch Lake project). I can be reached at the following phone number and addresses, and hope you'll keep in touch! DEQ Calumet Field Office (MSP Post), 55195 U.S. 41 North, Calumet, MI 49913; 906-337-0389; keranena@michigan.gov.

Amy

Abandoned Mining Wastes (including PCBs) Project -- Torch Lake

Open House on May 13, 2015 at Lake Linden-Hubbell School

Last summer, the DEQ began an investigation to identify and characterize mining wastes remaining along the shores of Torch Lake near Lake Linden-Hubbell. This work is separate from the projects conducted by the U.S. Environmental Protection Agency (EPA) under the Superfund program (please see below for more details).

From **4:00-8:00 p.m. on Wednesday, May 13th**, the DEQ and WESTON staff involved in the planning, field work, and reporting for the project will be on hand at the Lake Linden-Hubbell High School Auditorium to share our findings with the community. The DEQ sampling crew who conducted on-land and in-lake investigative activities will be there with some of their equipment, pictures and videos of their findings. WESTON and the DEQ will have maps and other photos on display to show you where we conducted our work and what we found.

It will be an informal open house, providing you with the opportunity to drop in to meet the project team and to get your questions answered. We are interested to learn of topics of interest the community may have that can be addressed at future open houses.

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We're on the web!

DEQ/RRD

http://www.michigan.gov/deq/0,4561,7-135-3306_28608--,00.html

Torch Lake Investigation Update – What We Did in 2014

Since the time of the last newsletter (May 2014) we have been conducting field work, preparing our report, and gearing up for the next phase of work, which will start within the next couple of weeks. This investigation is an evaluation of the former industrial areas in the area we call the C&H Lake Linden Operations Area (“C&H” referring to the Calumet & Hecla Mining Company). **Figure 1** depicts the study area and sub-areas of the Lake Linden Operations Area.

This work is needed to address two concerns remaining after the completion of the EPA’s Superfund project: The continued presence of PCBs in Torch Lake is preventing the recovery of the Torch Lake ecosystem and keeps it from being delisted as an Area of Concern under the Great Lakes Water Quality Agreement. In addition, other potential environmental and human health risks are present which require further evaluation and possible clean-up.

The EPA’s Superfund remedy involved capping the exposed stamp sands/tailings and was to require property/resource use restrictions to prevent certain activities in select areas. The EPA has defined the Superfund Site as the upper six inches of stamp sand and slag in certain areas of Houghton County and any soil cap and vegetative cover applied to these areas. It has also included a “no-action” remedy for lake sediments. The Superfund program continues to monitor this remedy.

For this project, we developed a comprehensive approach for determining the extent of contamination in the C&H Lake Linden Operations Area which wasn’t addressed as part of the Superfund project. The comprehensive approach was based on:

- Archival research that identified the location of former C&H facilities and industrial areas. The research identified potential mining-era sources of contaminants, including PCBs, through the study of waste streams from industrial buildings and processes;
- Compilation, evaluation, and interpretation of previous investigations conducted in the area in order to create a baseline understanding of what was known and to be sure we weren’t collecting unnecessary samples; and,
- Underwater mapping using side-scan sonar and a Remotely Operated Vehicle (ROV) underwater camera to locate drums, containers, and waste deposits on the bottom of Torch Lake. The side-scan sonar produces an image showing all the contours (shapes) of the lake bottom. We studied those images and found areas where drum-shaped objects were apparent, even in more than 50’ of water. Those images were used to guide underwater camera work. The side-scan sonar and the video images were used to develop a sampling plan targeting specific containers and/or waste deposit areas on the lake bottom.

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Torch Lake Backwater Area
 -Trap Rock Dump
 -Torch Lake Backwater

Lake Linden Sands Area
 -Stamp Sands

Lake Linden Recreation Area
 -Lake Linden Beach
 -Campground
 -Village Park
 -Marina

Lake Linden Processing Area
 -Calumet Stamp Mill
 -C&H Power Plant (Exclusive of EPA efforts)

Hubbell Processing Area
 -Hubbell Coal Dock
 -Mineral Building
 -Hubbell Smelter

Hubbell Slag Dump and Beach Area
 -Hubbell Red Slags
 -Hubbell Slag Dump

Image Source: ESRI World Imagery

Figure 1
 C&H Lake Linden
 Operations Area Map
 Lake Linden, Houghton County,
 Michigan

DEQ
 Prepared for:
 Michigan Department of
 Environmental Quality

Prepared By:
WESTON SOLUTIONS of MICHIGAN, INC.
 P.O. Box 577
 Houghton, MI 49931

What We Did

Based on a detailed work plan, we completed the following activities:

- Historical structures and artifacts associated with the former mining-era operations were identified, located, and inventoried;
- Each sub-area was inspected for potential physical and health hazards, including abandoned drums and containers, suspect asbestos-containing materials, stained or oily soils;
- Soil, groundwater, surface water, and sediments were investigated. Contaminants analyzed for included organic (PCBs, petroleum and other chemicals) and inorganic compounds (mainly metals and asbestos).

What We Found

Abandoned Drums and Other Wastes Found

The photo to the right was taken by the DEQ ROV underwater camera on June 13, 2014 in 30' of water. As you can see, multiple drums are present on top of each other. From our studies, we were able to verify the presence of the significant drum deposits offshore of the former Hubbell Smelter complex.

The photos below are of drums found in the Hubbell area at former industrial properties.



What we Found, continued

In addition to the presence of organic and inorganic contamination, there are physical hazards such as metal and porcelain-like debris at the Hubbell Beach near the old town dump. These wastes can be seen in the shallow water near the swimming area. The DEQ has provided the analytical data from the C&H Lake Linden Operations Area investigation including the Hubbell Slag Dump and Beach Area and the Lake Linden Recreation Area to the Michigan Department of Community Health (MDCH) for further evaluation to supplement their *Public Health Assessment, Evaluation of Recreational Uses at Beach Areas at Lake Linden and Along Torch Lake, Houghton County, Michigan* (MDCH, September 2014). You may recall that the MDCH gave a presentation of their draft reports in May 2013 at the school. Those reports have since been finalized and shared with the community. You can find them at the local library or on the internet at http://www.michigan.gov/mdch/0,4612,7-132-54783_54784_56159-278958--00.html.



What we Found, continued

We compared the sample results to generic cleanup criteria and it shows that contaminants are present at concentrations exceeding generic criteria in soil, groundwater and sediments at various locations. A site specific evaluation considering the actual location, property use, and concentrations of contaminants will be conducted to determine if unacceptable risks are present which require response.

Key PCB Findings

Key findings related to the identification of PCBs within and adjacent to Torch Lake included:

In the **Hubbell Processing Area**, PCB contamination is present in debris, charred waste materials, waste piles, soil, and groundwater.

These materials are subject to migration to **Torch Lake** via erosion channels on the ground surface that lead to holes in the former coal dock bulkhead. PCBs were also detected in groundwater suggesting the potential for movement of PCBs through the groundwater to the lake. Offshore sediment sampling confirmed that PCBs are present in Torch Lake sediment in front of the former smelter and coal dock.



Above is a photo provided by the NPS. Old *C&H News n' Views* newsletters described how scrap, brought in from all over the country for reclamation of copper during the war-effort, was often encased in plastic or other materials. The plastic coatings on wire would be stripped and/or burned off in piles such as depicted above. It has been determined that the coatings on some of the cables that were brought in contained PCBs.

In the **Lake Linden Recreation Area**, our studies confirmed the EPA Superfund's report of PCB contamination in sediments offshore of where the EPA conducted a time critical response in 2007. The DEQ's 2014 sediment PCB detections were found in 14' - 24' of water, not within the swimming area. The MDCH previously evaluated the detections of PCBs and is evaluating the additional data as well. We will be collecting more samples in this area in May in order to verify the extent of PCB contamination, which appears to pose more of a risk to aquatic organisms than human receptors, given their depth and concentration.

What's Next?

As the investigation moves down the shoreline to include the **C&H Tamarack City Operations Area**, we have completed historic archival research, compiled and evaluated the previous studies and reports for the Tamarack City area, and conducted underwater mapping (via side-scan sonar) to develop our sampling plan to be implemented starting in May. The figure below shows the **C&H Tamarack City Operations Area** and sub-areas. We expect to start soil sampling during the week of May 11. Studies in the lake will start in late-May. The work will continue in a phased manner, allowing us time to look at preliminary data and get back out to fill in any data gaps later in the summer.

Field work at the **C&H Tamarack City Operations Area** should wrap up for the season in October 2015. After that, as with the **Lake Linden Operations Area**, we will be compiling our findings and will share them with the community again the following spring (probably May 2016).

In the meantime, if you have any questions, have other information regarding historic waste handling we should be aware of, or have any concerns you wish to discuss with me, I look forward to talking with you. This spring and summer I'll be busy out in the field so you won't easily find me at my desk. If you don't bump into me around town as I work at the various sites, the next best way to find me is via my email at keranena@michigan.gov. I'll keep you informed as significant progress is made. Thanks for your interest, patience, and attention.

