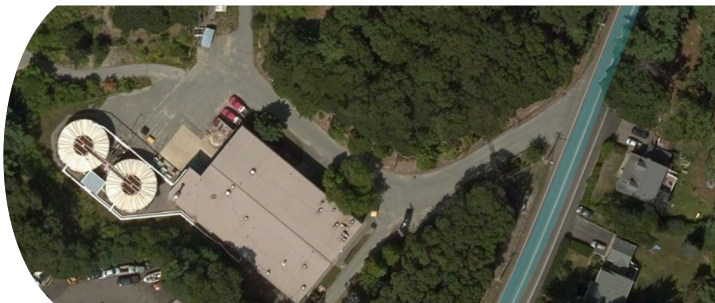


LEARN MORE AT: epa.gov/superfund/baird

Frequently Asked Questions on EPA's Remedial Action

Baird & McGuire Superfund Site Holbrook, MA



BACKGROUND

The Baird & McGuire facility is located on a 20-acre site in Holbrook and operated as a chemical mixing and batching company from 1912 to 1983. Later activities included mixing, packaging, storing, and distributing various products, including pesticides, disinfectants, soaps, floor waxes, and solvents. Some of the raw materials used at the site were stored in a tank farm and piped to the laboratory or mixing buildings. Other raw materials were stored in drums on site. Waste disposal methods at the site included direct discharge into the soil, a nearby brook, wetlands, and a former gravel pit. Hazardous wastes historically were disposed of in an on-site lagoon and cesspool. EPA listed the Site on the National Priority List of Superfund sites in 1983.

Following the latest Virtual Public Meeting held on February 10, 2021 regarding the Baird & McGuire Superfund Site, United States Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) have received a variety of questions and comments. Responses to the questions are provided below and have been categorized accordingly.

1. HOW LONG HAS THE BAIRD AND MCGUIRE SITE BEEN CONTAMINATED? WHAT ARE THE CONTAMINANTS AT THE SITE?

Contamination to site soils, groundwater and sediment occurred from 1912 to 1983 due to operations associated with a chemical manufacturing facility. Due to poor disposal methods, chemicals were directly discharged on to the site and/or disposed of in an un-lined lagoon and cesspool. In general, the contaminants of concern at the site are volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) polycyclic aromatic hydrocarbons (PAHs), other organic compounds, inorganic chemicals, pesticides, dioxin, heavy metals such as lead and arsenic, and LNAPL. (LNAPLs are undissolved chemicals that are less dense than water and thus float on top of the groundwater and that have been determined to be a source of contamination in groundwater at this site.) This contamination affected the former municipal supply wells, the South Street Municipal Well Field, and contaminated the Cocha-to River sediments. The site groundwater was also sampled for PFAS in fall 2018 and summer 2019, and the detected levels were below [EPA's health advisory standards](#). No remediation of PFAS is planned.

[continued >](#)

Closing of the South Street Municipal Well Field (completed in 1982)

- The Upper Reservoir/Great Pond was expanded to replace the lost municipal water supply in 2001

Implementation of Institutional Controls (completed in 2018)

- Issuance of Notice of Activity and Use Limitation (NAULs) at properties in and around the Site (see question 15)

3. HOW DO YOU KNOW IF THE CLEAN-UP IS STILL EFFECTIVE?

EPA performs Five-Year Reviews of Superfund sites to evaluate the implementation and performance of a Superfund remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. EPA last issued a Five-Year Review report for the Baird & McGuire Superfund Site in 2019. Read the general overview at: [Five-Year Review Process in the Superfund Program](#).

The clean-up (remedy) at the Baird & McGuire Site currently protects human health and the environment, as exposure pathways that could result in unacceptable risk are being controlled—for example, the pathway for human exposure to contaminated groundwater has been eliminated. However, for the remedy to be protective in the long-term, the cleanup levels that were established on an interim basis need to be evaluated to determine if they remain appropriate. This determination will be completed once additional investigations and field pilot tests are finalized. Links to: 2019 [Baird & McGuire Fifth Five-Year Review Report](#) (83 pp, 14.12 MB, [About PDF](#)) and [Five Year Review Reports](#).

4. WHO OPERATES THE SITE NOW AND WHAT IS THE STATUS OF THE SITE?

In accordance with federal regulations, MassDEP has been operating the site since June of 2004. The state has maintained and replaced outdated equipment and installed energy saving technologies such as new lights and variable frequency drives on motors. MassDEP has also repaired old extraction wells, installed new extraction wells, and monitors the Site groundwater and the Cochato River.

In 2019, the site groundwater treatment plant pumped and treated approximately 34 million gallons of contaminated groundwater, removing approximately 108 pounds of arsenic and 318 pounds of organics. LNAPL has continued to be detected in some wells; however, the specific gravity of the LNAPL appears to be close to water making LNAPL recovery unsuccessful. Recoverable LNAPL within wells at the Site has waned and recoverable LNAPL has not been collected since May 2015. In 2019, MassDEP initiated investigations and treatability studies to better define current site conditions and evaluate potential technologies that could be employed at the site to optimize the groundwater treatment system. Field pilot testing is being conducted in 2021 to validate the results of the treatability studies. (See **Pilot Test Background** section for additional information.)

HEALTH STUDY

5. HAVE PRIOR CANCER OR OTHER HEALTH STUDIES BEEN CONDUCTED AT THE SITE, AND WILL POST-INCINERATION CANCER/HEALTH STUDIES BE CONDUCTED?

During the implementation of the soil remedy for the site, which included the incineration of contaminated soils, the Massachusetts Department of Public Health conducted a study based on the finding of a Health Assessment of the Baird and McGuire Superfund Site. The health assessment concluded that the employment of appropriate air pollution control technologies would minimize the opportunity for exposure to arsenic and, therefore, minimize the potential for health impact. However, the emission of small-sized particulates (less than 10 microns) during incineration would be of concern if appropriate engineering controls were not implemented. Therefore DPH documented the extent of human exposure to arsenic from the incinerator in a sensitive segment of the surrounding population in order to compile the necessary information so that the community and health professionals can be appropriately informed of any consequences of exposure to incinerator emissions. The study was conducted for 2 years and found that no elevated levels of arsenic were observed in samples of hair and urine collected from children living in the community. The full report can be found at: [Biological Monitoring of Arsenic in Children: An Assessment of Exposure Near a Hazardous Waste Incinerator](#) (48 pp, 2.61 MB, [About PDF](#)) and a summary of the findings are provided here: [Information Booklet - Summary of Arsenic Testing Results in Children Living Near the Baird and McGuire Incinerator: Results Before Incineration Began and for the Period Fifteen Months After Incineration Began January 1994 - September 1996](#) (9 pp, 997.53 KB, [About PDF](#))

For more information, you can reach out to the Massachusetts Department of Public Health Point of Contact:

Dalene LaPointe
Massachusetts Department of Public Health, Bureau of Environmental Health
250 Washington Street
Boston MA 02109
(617) 624-5757
<https://www.mass.gov/orgs/bureau-of-environmental-health>
This contact can also address any concerns regarding future cancer studies.

6. WHAT GROUNDWATER MONITORING IS BEING DONE AT THE SITE? HOW ARE OUTDATED SITE WELLS BEING ADDRESSED?

The groundwater treatment facility has been operating since 1993. Operation and monitoring of the treatment facility and the wells was transferred to MassDEP in 2004. The groundwater treatment facility (GWTF) includes groundwater extraction, treatment, and a recharge system with several extraction wells that recover groundwater for treatment and many monitoring wells that are used to evaluate the groundwater contaminate plume. Detailed explanations of the treatment process and operation guidance for the GWTF are presented in the document Baird & McGuire Superfund Site Groundwater Treatment Plant Operation & Maintenance Manual prepared in 1991 and revised in 2007.

MassDEP monitors nine extraction wells, 21 monitoring wells, eight additional monitoring wells located on the northeast side of the Cochato River, and five piezometers in the river in accordance with the Sampling and Analysis Plan (SAP) Revision 3 dated July 2013 (CHES 2013). During the monitoring, the wells are assessed and wells that need replacing are replaced on an on-going and as needed basis. MassDEP has replaced two extraction wells since 2004.

The monitoring reports document the progress related to operations of the existing groundwater remedy to reduce groundwater contamination concentrations, capture and contain groundwater contamination, protect potential human and ecological receptors, and remediate residual contamination at the Site. Reports are prepared annually, quarterly, weekly and daily depending on the parameter being monitored and where the groundwater is sampled, i.e., in the ground, influent to the plant, in the treatment system, discharge to infiltration basins. The annual reports, which provide a complete summary of the treatment, monitoring and maintenance in each year can be found on the website under the [Report and Documents section](#). For the planned pilot testing, see **Pilot Test Section** of this FAQ.

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7. ARE THE COCHATO RIVER AND SYLVAN LAKE BEING MONITORED FOR CONTAMINATION FROM THE SITE? IS IT SAFE TO USE THESE WATERBODIES FOR RECREATION (E.G., FISHING)?

As part of the Superfund remedy, EPA excavated contaminated sediments from a length of the Cochato River extending from the Baird & McGuire Site to the Union Street crossing and then placed clean backfill in excavated areas. After those actions were performed, long-term monitoring has been conducted in select areas of the Cochato River and Sylvan Lake. The sampling of river and lake sediments is performed every five years, and the contaminant levels are observed to be below the site-specific risk levels for contact with the sediments. However, the fish in the Cochato River have been found to contain polycyclic aromatic hydrocarbons and pesticides. Although these contaminants were detected within EPA's acceptable risk range, there is a Massachusetts Department of Public Health advisory to prevent people from eating the fish from the Cochato River. The advisory is based on fish contamination by mercury, which is not site related. Fish advisory signs cautioning against the consumption of the fish in multiple languages (as shown) have been installed and maintained on the banks of the Cochato River and near downstream Sylvan Lake.

8. HAS CONTAMINATION FROM THE SITE AFFECTED PUBLIC DRINKING WATER SUPPLY? AND WHERE CAN I GET MORE INFORMATION ABOUT THE QUALITY OF THE WATER COMING INTO MY HOME?



The town drinking water well field was located near the site prior to its listing on the federal hazardous waste site list (National Priority List, NPL) in 1983. Those supply wells were closed when contamination was detected and have been permanently closed. The town currently uses an alternative water source. The contaminated ground-water plume at the Site is not migrating, and it is being treated by the Site's ground-water treatment facility. Water quality testing associated with any public water supply connected to homes and businesses in Holbrook and Randolph can be found on the respective town websites:

Holbrook:

<https://www.holbrookma.gov/public-works>

Randolph:

<https://www.randolph-ma.gov/department-public-works>

9. WERE DIOXINS FOUND AT THE SITE?

Dioxins are persistent organic pollutants (POPs), meaning they take a long time to break down once they are in the environment. Dioxins were identified in soils at the Site ranging from 0.07 ug/kg (parts per billion) to approximately 48 ug/kg during the Remedial Investigation completed in 1985. The OU1 remedial action addressed

soil dioxin contamination in areas with the highest concentration of dioxin with the incineration and capping of soils on the site. Dioxin was detected in groundwater in 2011 at one well, EW6, at a concentration expressed as Toxic Equivalents (TEQ), which is a measure of dioxin & dioxin-like contaminants, of 649 picograms per liter (pg/l) or 0.000649 ug/l which is above the Massachusetts state standards applicable to drinking water (Method 1 GW-1 standard of 0.00003 ug/l for drinking water.) but below the Massachusetts state standards for discharge to surface water (Method 1 GW-3 standard of (0.4 ug/l)) for surface water.

Additional information about dioxins can be found on the EPA website: <https://www.epa.gov/dioxin>

10. CAN CONTAMINATED SOILS BE REMOVED FROM THE SITE? WHERE CAN RESIDENTS FIND PRIOR SOIL SAMPLE RESULTS AVAILABLE TO RESIDENTS?

Remediation of contaminated soils at the Baird & McGuire Site is complete, and EPA continues to review the Superfund remedy to ensure that it remains protective of human health and environment. The remedy included incineration of contaminated soils from areas with the highest concentration of the contaminants of concern, which occurred from 1995 -97. The ash remaining from the

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incineration was tested for contaminants of concern (COCs); if COCs were found to possibly leach into the groundwater, then the burned soils were stabilized (to eliminate the possibility of the ash being a source of contamination) before being placed back on the site with other ash. The ash remaining at the site has been covered with clean fill, and this remedial action is considered protective of human health and the environment.

Soil contamination below the water table continues to contaminate groundwater at the site, this is being addressed by the pilot tests.

In addition, EPA implemented enforceable activity and use limitations for properties within and adjacent to the Site, requiring owners to not use their properties in any way that could negatively impact the protectiveness of the Superfund remedy. (See Question #'s 14 & 15 for additional information on the site institutional controls).

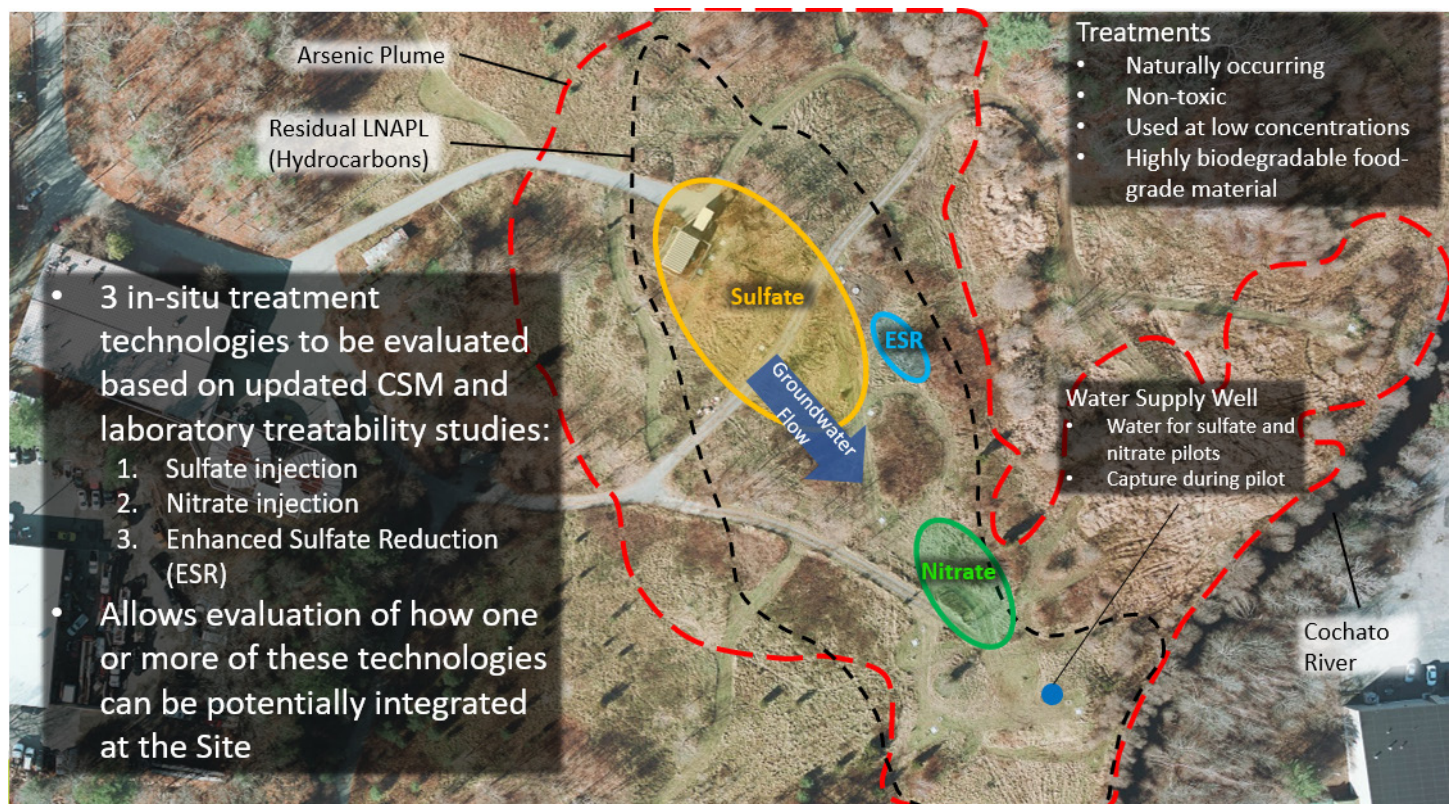
Soil sampling data for the Site conducted by EPA and MassEP can be found on the EPA website:

- Historical soil sampling data, can be found in the Remedial Investigation Report: [Final Remedial Investigation \(RI\) Addendum Report](#) (499 pp, 99.26 MB, [About PDF](#))
- Recent soil sampling data can be found in the Five Year Reviews : [Five Year Review Reports](#)
- For information related to soil testing on the Lot 19-003, 3 Phillips road associated with the Waste Transfer station, please refer to the MassDEP Bureau of Waste Site Clean-up website: <https://eeaonline.eea.state.ma.us/portal#!/search/wastesite>

PILOT TEST BACKGROUND

Since 2004, MassDEP has been operating the groundwater treatment plant at the Baird and McGuire Superfund Site and has been monitoring the site groundwater and the conditions of Cochato River. In addition, MassDEP has recently funded and implemented the recommendation of [EPA's Optimization Study](#) to comprehensively re-evaluate the site after 25 years of groundwater treatment with new and improved site assessment methods. This work has been completed, and a new Conceptual Site Model (CSM) of the existing contamination at site has been developed.

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Further, EPA's Optimization Study recommended that "in-situ" treatment technologies be evaluated for use at the site to complete the clean-up of groundwater. The "in-situ" methods are innovative ways of cleaning up groundwater, that are designed NOT to take groundwater out of the ground for clean-up at the plant but to treat it in the aquifer.

The in-situ treatments being tested at the Baird & McGuire site focused on the injection of sulfate and nitrate compounds that breakdown arsenic through the formation of minerals that would change the composition of arsenic in the groundwater to a form that is no longer hazardous to human health and the environment. The overall objectives of the proposed pilot testing being conducted in 2021 are to validate the results of the laboratory scale treatability studies that were conducted in 2019, at a field-scale before making a decision as to their applicability on a full scale. Data will be collected to evaluate the efficacy of the treatments on the Site areas with the highest concentrations of arsenic and hydrocarbons (including downgradient areas), to limit or intercept migration from secondary sources, and to provide for protection of the Cochato River and to manage the potential effects to the existing groundwater extraction and treatment system.

11. HOW WILL CONTAMINATION BE MEASURED DURING THE PILOT? AND HOW WILL CONTAMINATION BE CAPTURED?

Groundwater and surface water samples will be collected from several locations on site and in the Cochato River at several intervals over the pilot test period. The concentrations of contaminants in both groundwater and the river will be measured in a MassDEP- certified laboratory using EPA analytical methods for volatile organic compounds, semi-volatile organic compounds, metals, and pesticides. Operational reports will be prepared two times per month for the duration of the pilot test, and seven monitoring reports related to groundwater sampling results are proposed at periodic intervals during the proposed pilots.

It is expected that arsenic and hydrocarbons concentrations in groundwater at the site will decrease during the pilot test. Arsenic and hydrocarbons treated through the injection of sulfate and nitrate undergo a process where they become bound to the minerals and become stable on soil grains, so they are no longer in the groundwater. The stabilized arsenic and hydrocarbons in the subsurface do not need to be removed from the site because they would no longer pose a risk to human health and the environment.

12. HOW LONG HAVE THE SULFATE AND NITRATE TREATMENT METHODS BEEN IN USE FOR THE TREATMENT OF GROUNDWATER CONTAMINATION?

At other sites, sulfate and nitrate have been applied for the remediation of petroleum (which is similar to the oil substance, LNAPL, found at the site's impacted groundwater) beginning approximately 20 years ago. Generating minerals for the in-situ (below ground) remediation of arsenic by injecting sulfate, nitrate, and enhanced sulfate reduction also started approximately 20 years ago. More information can be found on Contaminated Site Clean-up Information website (CLU-IN.org), a USEPA sponsored website that provides information about innovative treatment and site characterization technologies: https://clu-in.org/techfocus/default.focus/sec/In_Situ_Chemical_Reduction/cat/Overview

13. WHAT INVESTIGATIONS OR SAMPLING WAS CONDUCTED AT THE SITE TO PREPARE FOR THE PILOT TEST?

From 2017 -2019, MassDEP's contractor conducted site investigation to evaluate site conditions to inform possible improvements to the groundwater treatment, based on the recommendation from the EPA optimization report completed in 2013. Field sampling activities included LNAPL sampling, lysimeter installation, site-wide water levels, shallow soil borings, LNAPL characterization and mobility borings, vertical profile borings, slug testing, and survey. The initial investigations better defined the location of any residual source area contamination, which was followed by an evaluation of the groundwater under natural conditions, without the treatment plant operating. During the evaluation of natural groundwater flow patterns, wells were also sampled for the movement of the site contaminants. The samples collected were analyzed for the following: field parameters (dissolved oxygen, ORP, pH, specific conductance), dissolved (filtered) arsenic and iron, SVOCs, pesticides, sulfate, sulfide, dissolved methane, nitrate, nitrite, and bicarbonate.

14. WILL NEW REMEDIATION TECHNOLOGIES BE FUNDED?

Following the pilot studies, MassDEP and EPA will evaluate the effectiveness of the new technologies before any new remedy can be considered. Whether to proceed with a new technology, maintain the current pump and treat system or utilize some hybrid of the new and current technologies, the groundwater remediation of the site will be funded until clean-up levels are achieved.

REDEVELOPMENT/RE-USE

15. WHAT ARE INSTITUTIONAL CONTROLS /ACTIVITY AND USE LIMITATIONS (AULS) AND WHY IS THIS IMPORTANT?

Institutional controls are administrative and legal controls that minimize the potential for human exposure to contamination by limiting land use or resource use. EPA uses institutional controls at Superfund sites to supplement engineered measures such as waste treatment, removal, or containment.

At the Baird & McGuire Superfund Site, EPA worked in coordination with MassDEP to implement institutional controls in the form of Notices of Activity and Use Limitations (NAULs), legally binding instruments which become a part of the deeds for the properties subject to the controls. NAULs were recorded for each property within or adjacent to the Site, including 11 contiguous properties – some owned by the Town of Holbrook and others owned by private owners. The activity and use limitations vary from property to property but the restrictions generally include:

- No excavation within the restricted area of the Site, except with specific approval from EPA and MassDEP after showing that the proposed excavation will not negatively impact the Superfund remedy.
- No extraction or consumption of groundwater.
- No subsurface injection of water from stormwater management or runoff, except with specific approval from EPA and MassDEP after showing that such water use will not negatively impact the Superfund remedy.
- No residential development.
- No activities or uses that will compromise the selected remedy.
- No agricultural use.
- Changes in land use require notice to MassDEP and EPA.
- No operation of childcare facilities.
- Should development occur in restricted areas, soil & groundwater must be managed, subject to EPA and MassDEP approval.

More information about institutional controls at this site can be found here: [Institutional Controls](#)

16. WILL ANY OF THE SITE WORK AFFECT DEVELOPMENT ON PROPERTIES SURROUNDING THE SITE?

The Superfund remediation of the Site does not affect the planning, development or approval of work on adjacent properties as long as such development does not compromise the remedial site work and complies with the NAUL requirements for that property.

Specifically, EPA has received several questions about the potential TLA-Holbrook solid waste transfer station project proposed for the 3 Phillips Road property. This property borders the Site, and it is owned by the Town of Holbrook. The Town cooperated with EPA in recording a NAUL on the property. The TLA-Holbrook project is undergoing a public review process, which includes seeking appropriate local permits and seeking approval from MassDEP's Solid Waste Division:

<https://www.mass.gov/service-details/ta-holbrook-llc-solid-waste-transfer-station-holbrook>

EPA expects to review copies of technical plans for the TLA-Holbrook project as those plans are developed to ensure that the project complies with the NAUL requirements and will not have a negative impact on the Superfund remedy at the Site. Uses of the property that are inconsistent with the NAUL requirements are prohibited unless EPA and MassDEP approve an exception. The NAUL establishes a detailed process if an owner seeks EPA and MassDEP approval for an exception. For example, in order to receive an excavation exception approval under the NAUL, an owner must submit a written request prepared and signed by a qualified hazardous waste site cleanup professional that includes a detailed explanation of the proposed work, a performance schedule, and a description of performance standards that will be met to ensure that the proposed work does not interfere with the Superfund remedy at the Site.

Besides ensuring compliance with the NAUL and maintaining the protectiveness of the Superfund remedy, EPA's Superfund Program does not have a role in overseeing any other aspect of the TLA-Holbrook project. For more information about the TLA-Holbrook project, please see MassDEP's website for the project at:

<https://www.mass.gov/service-details/tla-holbrook-llc-solid-waste-transfer-station-holbrook>

and the Town of Holbrook's Board of Health's website at:

<https://www.holbrookma.gov/board-health/pages/link-tla>

17. WILL THE GROUNDWATER AT THE SITE OR WATER FROM THE RIVER BE USED AS A DRINKING WATER SOURCE NOW OR IN THE FUTURE?

The groundwater at the site is considered of high use and value by the state, as it is classified as a high yield aquifer and potential drinking water source area. A Town of Holbrook public drinking water supply wellfield was located downgradient from the Baird & McGuire property in the past. However, due to contamination, the well closest to the site was closed in 1959 and the remaining two wells in the wellfield were closed in 1980 and 1982. The site's groundwater is no longer used as a source for drinking water by the Town and cannot be used so long as contaminant concentration in groundwater remains above drinking water standards. EPA and MassDEP continue to work toward treating the groundwater to meet the current site clean-up levels.

The river has never been a drinking water source, and EPA and MassDEP are not aware of any plans by the town to use the Cochato River as a drinking water source in the future.

18. ARE SOLAR PANELS AN OPTION FOR PRODUCTIVE RE-USE?

Yes, this is possible. MassDEP funded a feasibility report for the site using the upland properties for a 500 kilowatts (kW) array of solar panels. For further information on this study, please contact Dorothy Allen at dorothy.t.allen@state.ma.us. Additional information on the redevelopment of Superfund sites can be found at: <https://www.epa.gov/superfund-redevelopment-initiative>

COMMUNITY INVOLVEMENT

19. HOW DOES EPA COMMUNICATE WITH DIFFERENT LANGUAGE GROUPS?

Translation services are available and utilized frequently to assist in engaging and informing a large variation of language groups. EPA also works closely with their Environmental Justice Coordinator on ways to provide support to the community as needed. If translation services are needed for documents, this service can be requested directly by the community and EPA can also have a translator available during public meetings.

For translation service needs, please contact the EPA Community Involvement Coordinator:

ZaNetta Purnell

purnell.zanetta@epa.gov

617-918-1306

20. HOW CAN THE COMMUNITY STAY INFORMED ABOUT WHAT IS GOING ON AT THE SITE, AND HOW CAN WE PROVIDE INPUT?

EPA and MassDEP intend to continue to inform the community through the [Five Year Review](#) process, updates on the EPA website: epa.gov/superfund/baird and through periodic email communications, public meetings and other outreach methods that will be established in a future amendment/revision to the Community Involvement Plan for the site. A Community Involvement Plan (CIP) is a site-specific strategy to enable meaningful community involvement throughout the Superfund cleanup process. The CIP reflects community needs, concerns, and expectations that are identified through community interviews and other means. The last version of the CIP was prepared in 1989 and can be found here: [Community Relations Plan](#) (8 pp, 1.87 MB, [About PDF](#)). The CIP is expected to be revised or amended before the end of 2021 which the community will have input on.

Other opportunities for community input will likely follow once EPA has determined what, if any, revisions will be made to the clean-up levels and after EPA completes the evaluation of the current remedy and alternative technologies considered as part of the pilot testing.

HELPFUL LINKS

EPA Baird and McGuire Site page: epa.gov/superfund/baird

February 10, 2021 Presentation/Agenda: [Presentation from 02/10/2021 Virtual Public Meeting](#) (66 pp, 7.33 MB)

MassDEP Solid Waste page: <https://www.mass.gov/service-details/tla-holbrook-llc-solid-waste-transfer-station-holbrook>

CONTACTS

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