FAQ: Rennie Farm Groundwater Pump and Treatment System

What happens to the water that is being pumped?

Water is pumped from the ground and filtered to remove 1,4-dioxane. After the water is pumped through the filtering system, it is discharged into the ground on the Rennie Farm property, returning it to the natural water cycle. In addition, the water is periodically sampled to confirm that it is clean.

How does the system clean the water?

The water is pumped through carbon and synthetic resin filters to remove the 1,4-dioxane. First, a carbon filter removes particles from the water, and then the resin filters are used to remove the 1,4-dioxane.

Where does the 1,4-dioxane go?

The 1,4-dioxane is periodically removed from the resin and captured in another series of carbon filters for disposal off site. The carbon filter containing the 1,4-Dioxane is removed from the site for disposal at a licensed disposal facility.

Why isn't water testing analysis done on site?

Analysis for 1,4-dioxane requires specialized laboratory equipment.

How do you know that the 1,4-dioxane is being removed?

Samples of water are collected from the midpoint of the treatment system and from the fully treated water and tested by a laboratory. Sampling from the two locations helps to ensure 1,4-dioxane is not discharged from the treatment system.

How frequently is testing done on the system and how long does it take to learn the results?

Samples are collected monthly; it takes one to ten days to receive the results. During the startup of the system, sampling is more frequent and results are obtained sooner to help ensure that the system is working. Sampling requirements are specified in the discharge permit issued from NH DES for the site (available here).

How long before you need to change the materials used in the filters?

The synthetic resin used in the filtration process should not need to be changed but is periodically cleaned. The system uses carbon filters to remove particles from the water before the resin filtration. It also uses carbon filters at the end of the process to capture 1,4-dioxane that is

removed from the resin for disposal off the site. The carbon in the filters will be changed as needed, but we anticipate the need to change them approximately every three months.

What about other chemicals? Can the system remove them?

The system can also remove other volatile organic compounds (often called VOCs), semi-VOCs, particles, and various inorganic chemicals including some metals. Some of these materials will be removed by the carbon filter before the water gets to the synthetic resin filters. The system will not discharge any chemicals above state or EPA limits into the environment.

Are you adding water to the site?

No water or chemicals are added to the site. The system only filters out the 1,4-dioxane, and the clean water is returned to the natural water cycle at the site. Dartmouth's contractors will continually monitor the area to control erosion and stormwater run off.

Where does the system discharge the clean water?

The treated water is put back into the ground at a location downslope from the treatment building on the Rennie Farm property. Some of this water will end up in springs and groundwater seeps that form a stream originating on the Rennie Farm property. No water is being added to the site, it is being returned to the natural groundwater cycle.

Why don't I see any water coming out of the pipes?

The discharge pipe is buried underground to speed infiltration and avoid freezing in winter. All of the piping from the extraction wells is also buried and routed into the treatment system. The pipes sticking out of the ground are monitoring wells. The monitoring wells are used to collect samples of water for testing, and are not part of the pump-and-treat system.

What happens if there is a power outage?

If there is a power failure, a propane-fired generator will keep the system running.

How do you know the system is working?

We monitor the system remotely 24 hours a day. If there is a problem with the system, it is set up to send an alarm to several people on their mobile phones. The alarms include conditions such as "low temperature," "system not running," and "no power from the grid."