From:	Danko, Jeff
To:	Stanek, Mark F - DNR
Cc:	Janeczek, Joseph; Mator, Richard; Suennen, Ryan; DuFresne, Kristin I - DNR; Neal, Conor
Subject:	Planned Operating Procedure - Tyco Fire Products LP Pump Down Program
Date:	Tuesday, June 20, 2017 1:25:45 PM
Attachments:	SystemTestingLtr_WDNR_06202017.pdf

Mark:

Per our discussion, attached is the planned operational testing of the groundwater treatment system associated with the required pump down program at the Tyco Fire Products LP site. The testing is necessary to determine treatment capabilities of the existing treatment system assuming that increased contribution of groundwater from the former Salt Vault and 8th Street Slip area will be necessary to maintain target groundwater elevations within these areas. Your expedited review is greatly appreciated. Please let me know if you have any questions.

Jeff Danko
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262-951-6888

One Stanton Street
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June 20, 2017

Mr. Mark Stanek
Wisconsin DNR
Oshkosh Service Center
625 East County Road Y, Suite 700
Oshkosh, WI 54901

Re: Planned Operating Procedure for Groundwater Treatment System Testing
Pump Down Program Optimization
Tyco Fire Products LP Site
One Stanton Street, Marinette, WI
EPA# WID 006 125 215
WDNR BRRTS #02-38-000011

Dear Mr. Stanek:

The purpose of this correspondence is to provide information to the Wisconsin Department of Natural Resources (WDNR) regarding the planned procedure for evaluating the existing groundwater treatment system operational capabilities associated with the ongoing pump down program at the site. The pump down program is a required component of the Agreement on Resolution (AOR) for the 5-year technical review between the U.S. Environmental Protection Agency (USEPA) and Tyco Fire Products LP (Tyco).

Background

Tyco installed containment structures around the former Salt Vault and 8th Street Slip at the Stanton Street facility as part of remedial actions completed at the site. Additional containment structures surround the manufacturing area and portions of the "Wetlands Area" at the site. An engineered groundwater collection and treatment system (GWCTS) was installed at the site, coupled with phyto-pumping plots, to manage water levels within the site to prevent flooding of the manufacturing area. The GWCTS currently recovers groundwater water from the site through seven existing extraction wells and treats and discharges the groundwater under a Wisconsin Discharge Elimination System (WPDES) permit. A component of the successful treatment of site groundwater is the proper "blending" of the varied arsenic concentrations at the site prior to processing through the groundwater treatment system.

As part of the AOR, Tyco is required to lower existing water levels within the former Salt Vault and 8th Street Slip areas and maintain the water levels at or below the

target water level of 577.9 feet above mean sea level to reduce the possibility of offsite migration of impacted groundwater from these areas. Pump down operations were initiated during the 2016 field season using a temporary recovery system installed in these areas. While the target water levels in each area were reached during the pump down operation, the majority of the recovered water was transferred from the site for offsite disposal. Limited groundwater recovered from the areas was transferred to the groundwater treatment system for processing; however, ongoing system upgrades and discharge exceedences resulted in the cessation of treatment of groundwater collected from the pump down area. Based on pump down operations and area water level monitoring during the winter period, a permanent groundwater management program appears necessary to effectively manage the groundwater levels in the area.

Groundwater in the pump down area contains relatively high concentrations of arsenic. Because the groundwater treatment system was not designed to manage groundwater collected from the pump down area at the flow rates that appear to be required to effectively manage the groundwater levels in the area, testing of the treatment system is required. Below is a brief description of the planned testing operation to assess the groundwater treatment systems ability to treat the combined site groundwater.

Testing Procedures

Consistent with procedures used during the 2016 season, groundwater will be extracted from the pump down area using the existing temporary pump down system and placed in tanks located adjacent to the pump down area. Groundwater collected from the former 8th Street Slip will be placed in dedicated temporary storage tanks and groundwater collected from the former Salt Vault will be placed in separate dedicated temporary storage tanks.

Recovered groundwater will be transferred to one of two area-dedicated storage tanks to be located adjacent to the GWCTS building (Building 14). Each tank will be dedicated to groundwater recovered from the former 8th Street Slip and former Salt Vault, respectively, and will be labeled to avoid unnecessary mixing of the waters. Water samples will be collected from the water in the temporary storage tanks prior to incorporation into the treatment stream on a daily basis for laboratory testing of total arsenic concentration. This testing will provide information on the system influent concentration and possible changes in total arsenic concentrations in the groundwater from the pump down area that is contributed to the treatment stream during the system testing period. The concentration data may be used to assess treatment system effectiveness and potential groundwater withdrawal scenarios in the pump down area (varying rates or individual extraction well operation).

The anticipated flow rate necessary to maintain compliance with the target groundwater elevation in the pump down area is estimated at 1.5 gallons per minute (gpm) from each area at this time (combined 4,320 gallons per day). Based on current estimated maximum capacity of the GWCTS (30 gallons per minute), this represents approximately 10% of the total groundwater contributed to the treatment system. It is unknown if the treatment system has the ability to effectively treat the groundwater with this percentage of groundwater contribution from the pump down area.

Groundwater from the tanks located adjacent to the GWCTS building will initially be transferred to the GWCTS equilibration tank at a rate of approximately 0.25 gpm, while the remaining site-wide extraction wells continue pumping into the equilibration tank at their typical operating rates. Total flow into the GWCTS is estimated at 25-30 gpm. This will ensure proper mixing/dilution and represent operating conditions likely to be encountered during full scale operation. Care will be taken to avoid "slugging" or batch processing of former 8th Street Slip/Salt Vault water without proper mixing of other site groundwater to minimize the risk of discharge exceedences during the testing period.

In general, the treatment system includes an inclined plate separator followed by a microfiltration system, a primary reverse osmosis and a secondary (brine) reverse osmosis or vibratory shear enhancement process system prior to discharge of the treated water to the river. Addition of various treatment-associated chemicals occurs at selected locations along the treatment process. Following treatment of the groundwater through the existing system, a treated water sample will be collected from the ISCO sampler on a daily basis. A portion of the sample will be tested using the on-site laboratory to provide information on compliance with discharge criteria within approximately 24 hours of sample collection. The onsite testing results will aid in determining continued operation of the testing program and minimize the risk and volume of water that may be discharged that exceeds discharge criteria. In addition, a portion of the sample will be submitted to the project laboratory for testing of total arsenic concentration under quick turn-around (estimated at 3 days) to determine compliance with discharge criteria.

Depending on initial results, the ratio of groundwater supplied to the treatment system from the former Salt Vault and 8th Street Slip may be increased to determine the maximum rate of groundwater that can be contributed to the treatment system from the pump down area. The increase in volume of water contributed from the former Salt Vault and 8th Street Slip that is incorporated into the treatment train will depend on the initial treated water testing results, but will likely be in 0.25 gpm increments from each area. The increase in volume of water contributed to the treatment system will continue until break-through is encountered, compliance is achieved, or sufficient volume/rate is achieved to ensure future compliant

operation. It should be noted that the existing WPDES permit allows for the discharge of 0.680 parts per million (ppm) of total arsenic to the river. However, based on the variance request submitted to the agencies, the target maximum discharge criteria during the testing period will be 0.5 ppm.

Based on the testing results, an operational plan will be developed for permanent management of groundwater recovered from the pump down area.

Closure

I trust the information provided herein provides sufficient detail on the testing program to allow WDNR to approve the approach, as well as provide notification of the potential for limited discharge criteria exceedences during the planned activities. As discussed during our June 16, 2017 conversation, Tyco is interested in moving forward with the testing activities immediately upon your approval and installation of the temporary tanks near the GWCTS building. Should you have any questions, or require additional information, please do not hesitate to contact me at 262-951-6888.

Sincerely,

Tyco Fire Protection Products

Attachments

cc: Joseph Janeczek – Johnson Controls
Rich Mator – Johnson Controls
Ryan Suennen – Tyco Fire Protection Products
Conor Neal – USEPA
Kristin DuFresne - WDNR