

## **Danelski, Denise D - DNR**

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**From:** Danko, Jeff <jdanko@tycoint.com>  
**Sent:** Friday, September 1, 2017 10:42 AM  
**To:** Neal, Conor  
**Cc:** DuFresne, Kristin I - DNR; Killian, James - DNR; Austin, Brian P - DNR; Moen, Trevor J - DNR; Janeczek, Joseph; Mator, Richard; Suennen, Ryan; Ziegelbauer, Heather/MKE  
**Subject:** Response to Comments to Pilot Dye Test Work Plan - Tyco Fire Products LP site  
**Attachments:** 20170901\_RTC\_EPAPilotTest\_Final.pdf

Conor:

Attached is the response to comments on the Tyco Fire Products LP Pilot Dye Test Work Plan tentatively scheduled for implementation the week of September 18, 2017. Based on the comments received, no revisions to the work plan appear warranted. Please review our responses and if you have additional comments please let us know.

***Jeff Danko***

Environmental Project Geologist  
262-951-6888

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September 1, 2017

Mr. Conor Neal  
Geologist and Project Manager  
Remediation and Reuse Branch  
Land & Chemicals Division  
US Environmental Protection Agency, Region 5  
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Chicago, IL 60604-3590

RE: Responses to EPA and WDNR Comments on Pilot Dye Test Work Plan-Tyco Fire Products LP Facility, EPA RCRA Administrative Order Docket No. RCRA-05-2009-0007 Tyco Stanton Street Facility; EPA ID No. WID 006 125 215

Dear Mr. Neal:

Tyco Fire Products LP (Tyco), has prepared this correspondence in response to the US Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (WDNR) comments on the document referenced above. The comments were provided in a letter attached to an email delivered on August 22, 2017. For ease of review, the EPA/WDNR comments are presented in italics followed by the Tyco response in plain text.

### **Response to Comments**

1. *Section 1.0 Introduction, paragraph 2 – Tyco state “The full-scale barrier wall dye test is planned for summer 2018. The September 2017 timing for the pilot test also will be beneficial, as it will be under similar conditions as that proposed for the full-scale test when lower river flows are most common and will limit the amount of dye needed during the full-scale test.” The EPA granted Tyco’s request for extension for implementing the full-scale barrier wall dye to test to May 1, 2018. If Tyco would like to extend the implementation for the full-scale barrier wall dye test, it must request to do so, and should consider that the Agencies will require the results of the full-scale barrier wall dye test to be submitted for review and approval prior to the 2018 5-year review.*

Comment noted. Tyco will request an extension from the EPA if it determines that a starting date after May 1, 2018 is appropriate for scientific or operational reasons (such as groundwater injections may be more difficult to complete in spring due to higher groundwater levels, and dye releases to river more difficult to detect due to higher diluting river flows). If proposed, the full-scale dye testing start date would consider the 16 weeks of river monitoring following completion of groundwater injections and the need to analyze and report results by the December 31, 2018 due date for the 2018 5-Year Review. As stated in the Barrier Wall Groundwater Monitoring Plan Update (BWGMPU), EPA will be notified via email if dye is detected exceeding background levels in samples collected from the river. As stated in the BWGMPU, dye testing results will be summarized in a report submitted to EPA and WDNR within 60 days of completing testing or as an attachment to the 5-Year Review, if timing is appropriate.

2. *Section 1.1 Background, paragraph 2 – Tyco states “the dye test was designed only to measure the effectiveness of representative portions of the barrier wall. However, the information obtained during the dye test will be regarded as being representative of the entire wall containment integrity.” The heterogeneous nature of the subsurface (tie rods spaced approximately every 9 feet, utilities, surface mounds, and old wood piers and piles adjacent to the barrier wall) and the likelihood of needing to change injection locations in the field means it is difficult to assess whether the dye test will be representative of the entire wall’s containment integrity. However, given the volume of dye required to assess the entire length of the wall, the EPA agrees that nine injections locations are sufficient for assessing the wall’s containment integrity in the Main Plan containment cell.*

Comment noted.

3. *Section 1.1 Background, paragraph 2 – Tyco states “The proposed full-scale barrier wall dye testing scheduled for August or September 2018 includes injecting Rhodamine WT dye into groundwater at nine locations near the barrier wall in the Main Plant Area, accompanied by surface water sampling of the Menominee River...” Tyco should revise this paragraph to include the vertical profiling and grab sampling that was previously proposed and is mentioned in this document in Section 2.4.3.*

The phrase “surface water sampling” refers to the entire water column in the river; therefore, includes the vertical profiling and grab sampling facets of the previously proposed full-scale barrier wall dye testing and monitoring. Tyco plans to conduct the vertical profiling and grab sampling of surface water as part of the full-scale dye test.

4. *Section 1.1 Background, paragraph 3 – Tyco states “The proposed full-scale barrier wall dye testing scheduled for August or September 2018...” Again, the EPA granted Tyco’s request for extension for implementing the full-scale barrier wall dye test to May 1, 2018. If Tyco would like to extend the implementation for the full-scale barrier wall dye test, it must request to do so.*

See response to Comment 1.

5. *Section 1.2 Pilot Test Objectives – Understanding the vertical dispersion of the dye is not included as an objective of the pilot test. Tyco should consider adding this component to the pilot test to better understand the dispersion and dilution of the dye if a leak occurs at deeper depths of the wall. Section 2.0 mentions two dye events at the first location, near the surface and river bottom. Tyco should indicate whether any vertical profiling will be conducted during these two dye events.*

Lateral dispersion is expected to be the dominant dye-transport mechanism, with expected lateral dispersion an order of magnitude higher than vertical dispersion; therefore, Tyco’s main focus is on measuring the lateral dispersion of the dye. Vertical profile samples (at least 3 depths) will be collected during at least one of the first two events (at the first location) to provide information on vertical dispersion.

6. *Section 2.0 Field Methods, Bullet 6 – Will the fluorometers be positioned in the same location for the first two dye events, which will occur near the surface and river bottom at location 1?*

SCUFAs will be deployed in roughly the same x, y position during these two tests. However, it is expected that the SCUFAs will be deployed at elevations similar to the dye injection depth (for example, near the surface for the surface test, but at deeper depth for the deep

test). Adjustments to the spatial (x, y, and z) locations may be made between the first (surface) test and the second (deeper) test based on the results of the first test, to ensure that SCUFA's are located to capture useful data. In addition, locations could be adjusted slightly if conditions change between tests.

7. *Section 2.0 Field Methods, paragraph 1 and Section 2.4.3 Surface Water Sampling – Tyco should provide clarification of the surface water sampling protocol. Tyco states that the sampling scheme proposed for the full-scale barrier wall dye test will be followed for one of the three proposed pilot tests. The following questions should be addressed in this section:*
- a. *Does this include vertical profiling with the YSI Sonde to determine locations for grab samples.*
  - b. *What is the grab sampling protocol for the other two pilot test locations?*
  - c. *Is Tyco proposing replacing the YSI Sonde technology with the Turner Designs Self-Contained Underwater Fluorescence Apparatus (SCUFA) during the full scale dye test?*

**7a.** Yes, vertical profiling with the YSI sonde will be conducted during the test of the full-scale barrier wall dye test scheme.

**7b.** Surface water grab samples will be collected at the other two pilot test locations with two goals. One goal is to collect samples adjacent to SCUFA's to determine accuracy of SCUFA readings, and two, to supplement the SCUFA data set with samples from portions of the plume not monitored by the SCUFA's. The exact number of grab samples and locations will be determined at the discretion of the field crew based on the following:

- Capability to collect samples without interfering with plume dynamics
- Visual observations of plume
- Results from the earlier tests

**7c.** No, Tyco is not proposing at this time to replace the YSI Sonde technology. Any recommendations for changes to the full-scale dye test sampling protocol or equipment will be made in the pilot dye test report.

8. *Section 2.0 Field Methods, bullet 4- Turner Design's website states that as of December 1, 2008, they obsoleted the SCUFA and replaced it with the C3 Submersible Fluorometer. Tyco should consider using the C3 Submersible Fluorometer rather than the SCUFA during the pilot dye test.*

Tyco's consultant, CH2M, has many years of experience using the SCUFA on dozens of dye tracer studies. While the SCUFA's are no longer manufactured, they still provide the information necessary with the results obtained from these instruments well proven over time. CH2M works closely with a vendor that has the required number of SCUFA fluorometers (which are set up for use with Rhodamine WT) that are needed to conduct the pilot study.

9. *Section 3.1.3 Fluorometers – Tyco plans to perform a second calibration of the fluorometers after the pilot test using dye and distilled water rather than river water and use both calibration curves to correct or adjust the observed dye concentrations. Tyco should specify how both curves will be used and if the calibration curve using river water will take precedence over the curve using distilled water.*

Two types of blanks and two types of dye standards will be used in the pilot study, as follows:

**Distilled Water Blank:** Distilled water used to calibrate the instrument for zero dye concentration.

**QA/QC Standards:** Dilutions of dye mixed with distilled water. The purpose of these standards is to determine whether the reading of a given concentration of dye is the same in clean water and in river water (i.e., whether the dye is measurable in the river). Use of these standards prior to and following the study provides an indication of instrument drift independent of receiving water properties. Ranges of dilutions appropriate for receiving water will be used.

**Receiving Water Blanks:** River water collected upstream of the project site prior to the dye study. These blanks will represent the amount of fluorescent materials occurring naturally in the receiving water, expressed as a concentration of the fluorescent material being measured.

**Receiving Water Standards:** A known dilution of the dye mixed with river water collected prior to the start of dye study (pre-calibration) and near the conclusion of the dye study (for post-calibration). The standards are created from the same receiving water sample as the receiving water blanks.

All calibration data will be entered onto a datasheet. The difference between the actual (receiving water standards) and measured (observed) dye concentrations are plotted, and the resulting calibration curve is used to correct actual readings collected during the dye study. Post-study calibrations will be performed in the same manner. Instrument drift will be assessed and applied using the curves developed from the QC (distilled water) standards.

We trust the information provided herein addresses your comments. Should you have any questions please do not hesitate to call at 262.951.6888. Tyco is also open to a call to discuss these responses to comments, if needed.

Respectfully,



Jeffrey H. Danko  
Environmental Geologist

cc: Kristin DuFresne – WDNR  
Brian Austin – WDNR  
Jim Killian – WDNR  
Trevor Moen - WDNR  
Joseph Janeczek – Johnson Controls  
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