



## Memo

To: Dane County Regional Airport

Date: June 29, 2021

Project: MSN PFAS BRRTS #02-13-584472

Project No.:2309936-200091.01

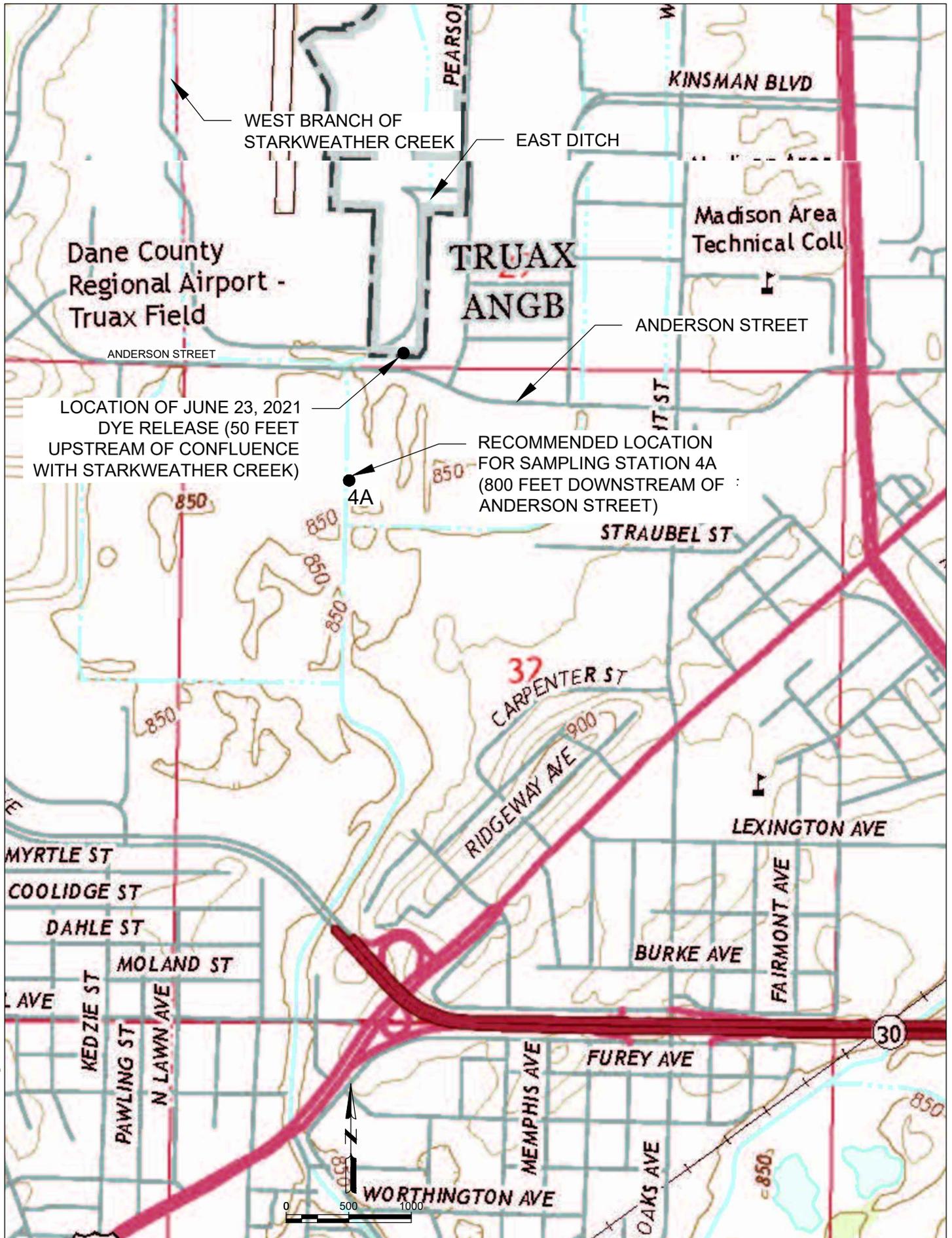
Subject: Dye Test on Tributary to West Branch of Starkweather Creek at Dane County Regional Airport (BRRTS Activity #02-13-584369 and #02-13-584472)

This memo describes the dye test conducted on the tributary (East Ditch) to the West Branch of Starkweather Creek (Creek) located at the south east end of the Dane County Regional Airport (Airport). The location of the dye test is shown in **Figure 1**. The purpose of this dye test was to determine the appropriate location for collecting water quality samples downstream of Anderson Street that would provide a representative sample of the well mixed combination of flows from the East Ditch and the Creek.

The first dye test was conducted on June 21, 2021. The dye test was conducted in accordance with the requirements of the Airport's Low Impact Discharge General Permit WI-0066575-01-0. A half cup of Fluorescent Red 50 dye was released to the East Ditch approximately 1,500 feet upstream of the confluence of the East Ditch with the Creek at 6:30 PM. The movement of the dye in the East Ditch was observed for approximately 30 minutes. The dye was moving northerly in the East Ditch and away from the confluence of the East Ditch with the Creek. A second release of a half cup of the dye was conducted in the East Ditch approximately 100 feet upstream of the confluence of the East Ditch and the Creek at 7:08 PM (See **Photo 1**). The movement of the dye in the East Ditch was observed for approximately 35 minutes after the dye release. The dye was moving easterly in the East Ditch away for the confluence of the East Ditch with the Creek (See **Photo 2**). The flow in the Creek upstream of Anderson Street was approximately 65 cubic feet per second (cfs) as measured at the Airport's flow monitoring station where the Creek crosses International Lane.

A second dye test was conducted on June 23, 2021. A half cup of dye was released approximately 50 feet upstream of the confluence of the East Ditch and the Creek at 1:57 PM (See **Photo 3**). The dye was observed to flow southwesterly into the Creek (See **Photo 4**). The dye continued to flow south in the Creek and remained along the east bank of the Creek for several hundred feet (See **Photo 5**). At about 600 feet downstream of Anderson Street, the dye appeared to be evenly distributed across the width of the Creek. The flow in the Creek upstream of Anderson Street was approximately 2 cfs as measured at the Airports flow monitoring station where the Creek crosses International Lane.

Weather conditions before the dye test were generally lower than average precipitation for the previous 4 months. There was 0.1 inch of rainfall reported at the Airport between June 1-16. A total of 1.48 inches



02/25/2021 2:18:24 PM  
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Figure 1 - June 23, 2021 DYE TEST LOCATION

of rain fell on June 17-18 and another 0.48 inches of rain fell on June 19-20. No rainfall was recorded during the dye tests between June 21-23.

The streambed of the East Ditch and the Creek had a dense growth of aquatic plants during the dye tests. During the June 21 test the water in the Creek was deep enough that the attached aquatic plants did not extend to the surface of the Creek (See **Photo 6** which is looking south on the Creek at Anderson Street). During the June 23 test the water level in the Creek and East Ditch had fallen and the attached aquatic plants generally extended to the water surface across the width of the flow channels. The attached aquatic plants appeared to be limiting the mixing of the flow from the East Ditch.

Based on the dye test observations, we recommend that future samples collected to represent a completely mixed combination of the East Ditch and the Creek should be collected approximately 800 feet downstream of Anderson Street, shown as 4A in Figure 1. This is where we propose to collect samples as part of the work plan submitted to Wisconsin Department of Natural Resources dated April 16, 2021. We proposed to designate this sampling location as 4A to distinguish it from sampling location 4 which is much closer to Anderson Street. The proposed location of sampling point 4A is approximately 500 feet upstream of where an unnamed tributary enters the Creek from the east.



**Photo 1. Dye Release in East Ditch On June 21, 2021**



**Photo 2. Dye Movement in East Ditch On June 21, 2021 (Looking East on North Side of Anderson Street)**



**Photo 3. Dye Release in East Ditch On June 23, 2021**



Photo 4. Dye Movement On June 23, 2021 (Looking North from Anderson Street)



**Photo 5. Dye Movement in Creek Along East Bank On June 23, 2021**



**Photo 6. Creek Flow and Vegetation On June 21, 2021**