Minnesota Dye Trace Database

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The Database

The Minnesota Department of Natural Resources (DNR) has been collecting data about karst springs, streams, and springshed systems for the past 10 years using fluorescent dye tracing. Dye has been used to map karst conduit flow and to delineate karst springshed boundaries. The dye trace reports include geographic locations of dye inputs and the resulting dye output points. The data is stored in the Minnesota Department of Natural Resources' (DNR) official geodatabase and contains geographic locations of dye input points, important trace information such as dye types and colors, and resulting trace information such as dye output points and dye streaks. The dye trace reports are published in the Minnesota Geological and Economic Survey (MGES) report series and are also available on the DNR's website. The data is also made available in a web database for easy access and download.

Dye Trace Reports

The dye trace reports are summaries of the findings of dye trace investigations that typically contain geologic and hydrologic descriptions of the study area, study methods, dye introduction points, and dye detection locations. The dye trace reports also contain color photographs of dye streaks and dye output points.

Historic Minnesota Dye Tracing

To our knowledge, the first systematic mapping of ground water using fluorescent dye was conducted by the Minnesota Department of Natural Resources (Barry, 1975). dye tracing has been used to map karst conduit flow and to delineate karst springshed boundaries. The dye trace reports include geographic locations of dye input points, important trace information such as dye types and colors, and resulting trace information such as dye output points and dye streaks. The dye trace reports are published in the Minnesota Geological and Economic Survey (MGES) report series and are also available on the DNR's website. The data is also made available in a web database for easy access and download.

Introducing Minnesota Dye Trace Reporting System

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Minnesota Karst Lands

Figure 1. Minnesota Karst Lands, map of southeastern Minnesota. Modified from Alexander, Gao and Green with designated trout streams and their tributaries as dark blue lines.

Figure 2. Minnesota Karst Lands, map showing springshed and karst springshed systems. Modified from Alexander, Gao and Green with designated trout streams and their tributaries as dark blue lines.

Karst Domains

Three major karst domains (the Cedar Valley, Galena-Spillarite, and Primitive or Other karst systems) have been identified and studied in Minnesota (Burkel et al., 1996). Recent work has also documented complex conduit flow phenomena in the St. Lawrence-Love Rock System (Green et al., 2012; Barry et al., 2015). The dye trace reports include geographic locations of dye input points, important trace information such as dye types and colors, and resulting trace information such as dye output points and dye streaks. The dye trace reports are published in the Minnesota Geological and Economic Survey (MGES) report series and are also available on the DNR's website. The data is also made available in a web database for easy access and download.

References