DEPARTMENT OF NATURAL RESOURCES

Little Rock Creek Water Use Conflict – Project Goals

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Background

Stakeholders requested that the DNR clarify project goals and expectations for the Little Rock Creek Project. The goals described below are from existing documentation with additional context to clarify the project expectations.

Project Goals

Regulatory Goal

Ensure that the use of groundwater around Little Rock Creek complies with Minnesota Statute (103G) and Rules (Chapter 6115). This is determined by demonstrating, with surface and groundwater models, that no more than a 15% diversion of August median baseflow occurs at the three different gauge locations for any month of the year relative to reference conditions.

Process Goals

- Work with stakeholders to come up with a range of options and alternatives that support the agricultural community and resolve the water use conflict.
- Identify most feasible options considering as many tradeoffs as possible, including but not limited to benefits to baseflow, implementation and maintenance costs.
- Identify potential funding mechanisms that might align with various options.
- Support stakeholders in developing a plan to resolve the conflict so that plan can be approved by the Commissioner of Natural Resources.

Stream Health Goals

In scope - Implement projects and or practices in the watershed that maintain sufficient base flows in the stream based on the sustainable diversion limit. Note: Projects cannot further degrade water quality.

Out of scope – Restoring the stream and its ecosystem to a natural state that pre-dates modern development. We acknowledge that this process doesn't solve all problems. High nitrate levels and stream erosion problems won't necessarily be improved by resolving the water use conflict.

Fisheries management objectives and fishing opportunities are outside the scope of the water use conflict.

Little Rock Creek History

Background

The Little Rock Creek project has an extensive management history, beginning prior to the DNR investigating groundwater use effects on Little Rock Creek. Research, including the stressor identification report completed by Benton County SWCD in 2009 and the Total Maximum Daily Load (TMDL) report (2015) submitted to the USEPA, suggests that groundwater use contributes to water quality impairments for dissolved oxygen and temperature. These studies also indicate that warmwater species, in addition to trout (a coldwater species), are affected by water quality changes.

The DNR acknowledges, without these reports, this area would likely not have been prioritized as intensively as it has been. However, these investigations indicate the potential that groundwater use could affect Little Rock Creek. This connection and impact to aquatic habitat was shown through subsequent investigation by the DNR. The DNR is required to ensure that permits issued are not having a significant impact on ecology and downstream uses of water. To provide additional context, a general summary of efforts related to water quality and fisheries surveys completed in Little Rock Creek is below.

Little Rock Creek Water Quality

A majority of Little Rock Creek is designated as a Class 2A Stream and is regularly surveyed by the Minnesota Pollution Control Agency (MPCA). A Class 2A Stream is assigned to permit the propagation and maintenance of a healthy coldwater sport or commercial fish and the associated aquatic life and habitat. Additionally, Little Rock Creek is classified as a potential source of drinking water (2015 Little Rock Creek TMDL Report).

The MPCA first identified Little Rock Creek as impaired on the 2002 U.S. Environmental Protection Agency impaired waters list, due to low biotic index after a 1999 instream biological assessment. This initial impairment was evaluated based on warmwater indexes developed for the Upper Mississippi basin, causing the designation to be removed in 2006. In 2010, Little Rock Creek was designated as impaired, due to low dissolved oxygen, nitrate, temperature and Fish Bioassessment Impairments. Additionally, in 2020, E. Coli and three additional

Dissolved Oxygen (DO) is necessary for aquatic life to survive, and fish are known to avoid areas with low values of dissolved oxygen. DO values for Class 2A streams must remain above 7 mg/L. DO samples collected as part of the Stressor Identification work by Benton County SWCD were as low as 4 mg/L (2015 TMDL Report). The DO standard for Class 2B (warmwater) streams is 5mg/L.

Nitrate is a listed impairment, as Little Rock Creek is considered a potential drinking water source; high nitrate is also a concern in coldwater streams. A stream is considered impaired if nitrate is above 10 mg/L, which is the drinking water standard. According to the 2015 TMDL report, measured nitrate values ranged between 1 mg/L and 18 mg/L.

MPCA has also continued to evaluate turbidity in Little Rock Creek, which is measured by using Total Suspended Solids (TSS). Measurements of TSS have varied, with two samples exceeding 11 mg/L in 2025 (threshold is a maximum of 10 mg/L with 10% exceedance over 2 years for Class 2A Streams). Multiple years of TSS sampling is necessary to evaluate Little Rock Creek for turbidity and further work is necessary.

The MPCA continues to routinely monitor water quality in Little Rock Creek. Impairment designations and stream classification are adjusted to match criteria when supported by data. For example, in 2023, MPCA reclassified the section of Little Rock Creek east of 230th Avenue as a warmwater stream with drinking water potential (Class 2Bd) and retained the classification of Little Rock Creek as a coldwater stream west and south of 230th Avenue (Class 2A).

Little Rock Creek Trout Stream History

At the November 2025 stakeholder meeting, there was discussion and questions about the history of Little Rock Creek and how it came to be managed as a trout stream. The DNR reviewed the available files, to shed some light on the history. The following summarizes some key points in the history of Little Rock Creek as it relates to trout management.

As a reminder, the fish habitat analysis conducted by the DNR is based on using multiple, representative native species that inhabit Little Rock Creek. The sustainable diversion limit is based on not losing more than 20% of available habitats due to groundwater diversions. Five of the six habitat guilds reviewed as part of the Instream Flow Incremental Methodology (IFIM) study published in 2021 lost more than 20% of habitat under current use when flows in Little Rock Creek fall below 75% exceedance flow.

Records indicate that trout stocking has occurred in the watershed since at least 1908, when the first stocking of brown trout was recorded. In 1962, Commissioner's Order 1607 designated Little Rock Creek as a trout stream. Although brown trout were reproducing on their own, DNR Fisheries managers attempted stocking native brook trout from 1962-1972. In 1975, the first stream population assessment was conducted, in which DNR Fisheries indicated that approximately the first 10 miles upstream of the mouth of Little Rock Creek supported a brown trout population and contained good spawning conditions. However, this report also noted that upstream of the 14.5-mile mark, the stream was impractical to manage for trout due to low flow conditions.

Many surveys have been conducted on Little Rock Creek to assess stream habitat and fish populations. These surveys indicate that every survey prior to 2002 suggests a trout population in Little Rock Creek in addition to other fish populations. These reports also highlight long-running concerns and changes in the stream, including indications that low flow conditions may be affecting the brown trout population. The assessments also indicate that an increased dependance on irrigation in the watershed, which was first identified as a concern in the 1992 stream population survey, needs to be monitored.

To support the trout fishery in this area, the DNR has continued to stock Little Rock Creek with brook and brown trout. Though catch numbers are low, the 2022 electrofishing assessment found that multiple year classes of trout are present in the stream, suggesting over winter survival of stocked trout. The report also assessed stream temperatures. Stream temperatures in 2022 never exceeded the critical high temperature of 75 degrees Fahrenheit. The average daily temperature has exceeded the lower critical temperature of 66 degrees Fahrenheit on multiple days. However, water temperatures are adequate to support brook and brown trout.

Skunk-Rice Lake Wildlife Management Area Operations

After inquiries from stakeholders, the DNR dug deeper into the potential options related to the basins at Rice-Skunk Lake Wildlife Management Area (WMA) and the wetland complex. DNR Wildlife staff provided information that indicates that the water levels in the wetland complex can fluctuate rapidly with rainfall and this rapid change is an important natural feature that drives the ecology of the system.

The dam located on the Rice-Skunk Lake WMA is designed and managed to maintain natural flowage and natural water level changes from late November through mid-July. From mid-July to late November, stop logs are used to stabilize water levels, to allow for public access for waterfowl hunting. The dam was deliberately designed to not impound water. The normal water elevation is 1097 ft, and flowage easements were obtained up to an elevation of 1100 feet that allow for manipulation of water levels as required by law. However, the dam does not and physically cannot flood areas upstream above 1097.1 ft.

Lastly, stoplogs are only to hold water behind the dam when conditions are dry enough to warrant. Stoplogs cannot be installed prior to the third week of July and must be removed by Nov. 23 annually. Some years, stop logs are never installed.