



**Montana Fish,
Wildlife & Parks**

HELENA AREA RESOURCE OFFICE

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June 16, 2003

TO: Lewis and Clark County
Road and Bridge Department
Attn: Eric Griffith

FROM: Steve Dalbey 

RE: Spokane Creek Crossing at Keir Lane

Dear Eric,

Following our conversation on June 3, 2003 and review of the hydrology of the Spokane Creek watershed, we have concluded that the culvert at Keir Lane crossing on Spokane Creek should be replaced with a larger capacity culvert or replaced with a bridge. Several issues factored into this decision;

- 1) **Stream Permitting Guidelines:** The stream-permitting manual that guides the local Conservation Districts in Montana states that culverts should be capable of effectively passing a 25-year flood event (minimum) and ideally a 100-year flood event (see attachment). Based on the drainage area of Spokane Creek above Keir Lane, the following flood magnitudes and recurrence intervals (Q_n) were estimated (range of flow estimates incorporate standard error of estimate:
 - a. Q_{25} = 1,444.9 cfs to 1564.9 cfs
 - b. Q_{50} = 2,404.9 cfs to 2524.9 cfs
 - c. Q_{100} = 6,863.6 cfs to 7013.6 cfsAdditionally, the culvert must be capable of handling the bed load and debris accumulation from upstream.
- 2) **Existing Culvert Size:** The existing culvert at Keir Lane was measured at 7'9"x 5' with an effective capacity of 320 cfs which is substantially less than the aforementioned guidelines.
- 3) **Culvert washout frequency:** Your records probably indicate the frequency of washout and replacement more specifically than ours, but from various reports to us, it appears to have washed out approximately every 10-years.

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- 4) **Cost to Replace Culvert:** The price for a culvert that would meet these flow requirements seemed high so we called Roscoe Steel in Billings and found they will deliver culverts for significantly less cost than stated: According to a phone estimate on 6/10/03, Roscoe Steel will deliver culverts (40'5" long) for the following price (one month delivery): **13'x 4'1" = \$6,966.**
- 5) **Violation of the conditions set forth in the 124 permit dated 4/19/2003:** Putting the existing culvert back in ignores the recommendations in the 124 permit dated 4/19/2003. This letter serves as an addendum to the permit dated 4/19/2003 to allow the installation of either a larger capacity culvert (s) meeting the 25-year flood interval as a minimum (Above #1) or a full span bridge. As part of this addendum to the 124-permit dated 4/19/03, it should be noted that regardless of what action is taken, a DEQ, 318 authorization for turbidity will be required. You will need to contact Jeff Ryan of DEQ. Please note that violation of you're permit conditions could result in a fine as well as a requirement to restore the site.
- 6) **Local Concerns:** The Lewis and Clark Conservation District and surrounding landowners recommend either increasing the capacity of this culvert or abandoning the crossing at Keir Lane.
- 7) **Fisheries Concerns:** Spokane Creek, primarily the reach below Keir Lane, is arguably the most important fish-spawning tributary on Hauser Reservoir. The most recent Keir Lane culvert washout dumped an estimated 350 cubic yards of sediment directly into Spokane Creek. It is our belief that this will negatively impact spawning for a number of years to come.

Reference:

U.S. Geological Survey. 1992. Analysis of the Magnitude and Frequency of Floods and the Peak-Flow Gauging Network in Montana, Water Resources Investigations Report 92-4048. Helena Montana.

Cc. Steve Leathe
Glenn Phillips