

APPENDIX 3-21



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PERENNIAL STREAM CONSIDERATIONS AT

“NO-NAME CREEK” & BLIND CANYON CREEK,

TRIBUTARIES TO HUNTINGTON CANYON CREEK

(MT. NEBO SCIENTIFIC)

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DIV OF OIL GAS & MINING

**PERENNIAL STREAM CONSIDERATIONS AT
"NO-NAME CREEK" & BLIND CANYON CREEK,
TRIBUTARIES TO HUNTINGTON CANYON CREEK**

**PREPARED FOR
CRANDALL CANYON MINE
EMERY COUNTY, UTAH**



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PERENNIAL STREAM CONSIDERATIONS AT "NO NAME CREEK" & BLIND CANYON CREEK, TRIBUTARIES TO HUNTINGTON CANYON CREEK

SUMMARY

A survey of some of the biological resources in Blind Canyon Creek and "No-Name Creek" suggests that the former could be considered a perennial stream. No-Name Creek, on the other hand, may *not* be perennial due to a variety of considerations, especially in its upper reaches. A conclusive statement at the time of this report regarding its perennial status in the lower section would be premature.

INTRODUCTION

Operators of Crandall Canyon Mine have been interested in ascertaining the perennial status of two creeks that exist somewhat near their current coal mining activities. The first creek has an outlet to Huntington Creek and is located approximately 1 mile north of Crandall Canyon via SR-31 (T15S, R7E, Section 32). This creek has been called "No Name Creek" in this report because it has not been named on the USGS quadrangle maps. The outlet to Huntington Creek for the second stream, or Blind Canyon Creek, is located about 0.5 mile north of No-Name Creek (T15S, R7E, Sections 29 and 32).

Field work on the creeks was accomplished to survey the stream reaches and to obtain data in order to make a determination whether or not they should be considered "perennial", "intermittent" or "ephemeral" based on some biological indicators.

METHODS

Field visits were made to the creeks on three different occasions to assess the biological resource indicators and to note the stream flows. In addition, offices of the State of Utah, Division of Water Rights were contacted and later visited to research any information that they had on file regarding the creeks, especially, No Name Creek. Meetings and correspondence with staff at the USDA Forest Service in Price, Utah were also accomplished to compare definitions and requirements for determinations of perennial stream status.

The field visits of the study area were conducted on May 6, May 14, and June 18, 2004. On each field trip, qualitative notes were recorded pertaining to the creeks and riparian plant communities in the drainages. On the second field visit (May 14, 2004) invertebrate "grab" samples were taken at several locations in the main channels of each creek and were combined to make two composite samples (one composite sample for each creek). Macroinvertebrate species were identified by Dr. Dennis K. Shiozawa (Brigham Young University, Provo, Utah).

RESULTS

Perennial Stream Definition

There are several definitions one could use to determine whether a stream is “perennial” or not. One such definition that has been used in studies conducted or reviewed by the USDA Forest Service is shown below:

“A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Ground water is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for streamflow (USACE, definitions for 2002 Nationwide Permits). The importance of springs in maintaining perennial streamflow is variable and ranges from a major to a supplemental source. A perennial stream is made up primarily of gaining or effluent segments. However, in arid environments, a stream may have losing or influent segments and still be considered perennial if the influent segment has perennial segments up- and downstream of it. Note that the alluvial ground water that supports perennial stream segments originates in a variable source area upstream/up-gradient of the perennial segment. Intermittent streams typically occur in these portions of the source area. Intermittent streams flow during snowmelt runoff and are usually dry by late summer and early fall. Ephemeral streams only flow as a direct response to storm events.”

No-Name Creek

As one walks up No-Name Creek from Huntington Canyon Creek, the channel remains fairly straight and consistent, the streambed often comprised of Star Point sandstone (see Fig. 1). At a point nearly 3,000 ft from the outlet there is a confluence called the “Left Fork” and “Right Fork” of No-Name Creek in this report (Figs. 2-4).

No-Name Creek was flowing during each field survey, although the flow decreased with each successive visit. At the time of the last field trip to the site (June 18), less water was flowing from the Left Fork and only a trickle of water was flowing from the Right Fork of the creek. Consequently, most of the water present in the main channel was coming from the Left Fork, gaining flow as it moved downstream.

Species identified by macroinvertebrate sampling suggested that this stream is *not* perennial. The species identified were taxa that do not require year-round flow to complete their life cycles [mostly present were Chironomids (midges) and Simuliids (blackflies)].

Plant species existing in the riparian zones of No-Name Creek strongly suggested the presence of wet or moist soils – but these species could be a result of a perennial *or* intermittent stream. Some of these plants included woody species such as Red-osier dogwood (*Cornus sericea*), quite common in the drainage, and water birch (*Betula occidentalis*), less common in the drainage.

Moreover, herbaceous species such as the grass, redtop (*Agrostis stolonifera*) and pretty shooting-star (*Dodecatheon pulchellum*) also suggested contact with water during much of the year, especially the shooting-star species. However, absent (at least inconspicuous during the time of the field visits) were wetland/riparian species such as rushes (*Juncus* spp.), sedges (*Carex* spp.), bulrushes (*Scirpus* spp.) and spikerushes (*Eleocharis* spp.).

Blind Canyon Creek

The initial field trips to Blind Canyon Creek suggested that the stream *is* indeed perennial (Figs. 5-6). Indicators for this assumption were many of the plant species mentioned above, active beaver ponds and a host of macroinvertebrate taxa that usually require a year-round water source [i.e. Perlodids (*Isoperla*), Baetids (Baetis), Hydropsychids, Oligochaetes, Pteronarcids and *Ephemerella grandis*].

DISCUSSION

No information about the two streams was available at the State of Utah, Division of Water Rights. The time line for a perennial stream determination study happened to come at a difficult time of the year to make conclusive findings for some creeks in the Wasatch Plateau. No-Name Creek was one such stream. For example, the study was conducted mostly during peak runoff periods. Moreover, some plant species were in a difficult stage to identify by species. Finally, it was necessary to conduct the last field survey (June 18) on a day following a significant storm event, which undoubtedly influenced the stream flows in the area.

Macroinvertebrate species present in the main channel of No-Name Creek suggested the stream was *not* perennial. However, due to some of the plant species present near this creek, a perennial designation with field work conducted later in the year is certainly a possibility. It does seem more likely than not that the No-Name Creek is *not* perennial, but a survey later in the growing season is the only method to make a conclusive determination of this reach.

As a side note, with more stream monitoring it is also possible that No-Name Creek could be intermittent in the upper reaches (beginning at the fork or confluence described above), but perennial in the lower reaches (main channel) where underground mining has not been proposed. *In other words, the upper reaches near the locations where mining has been proposed near No-Name Creek could probably be classified as "intermittent" in the very near future because these areas had rapidly decreasing flows over time, most of which were already dry by the end of the field portion of the study.*

On the other hand, Blind Canyon Creek drains a much larger surface area when compared to No-Name Creek, supports a variety of macroinvertebrate species that require a continuous water source, sustains more wetland/riparian plant species and supports active beaver populations. A perennial designation of this creek could be assigned with much more confidence at this time.

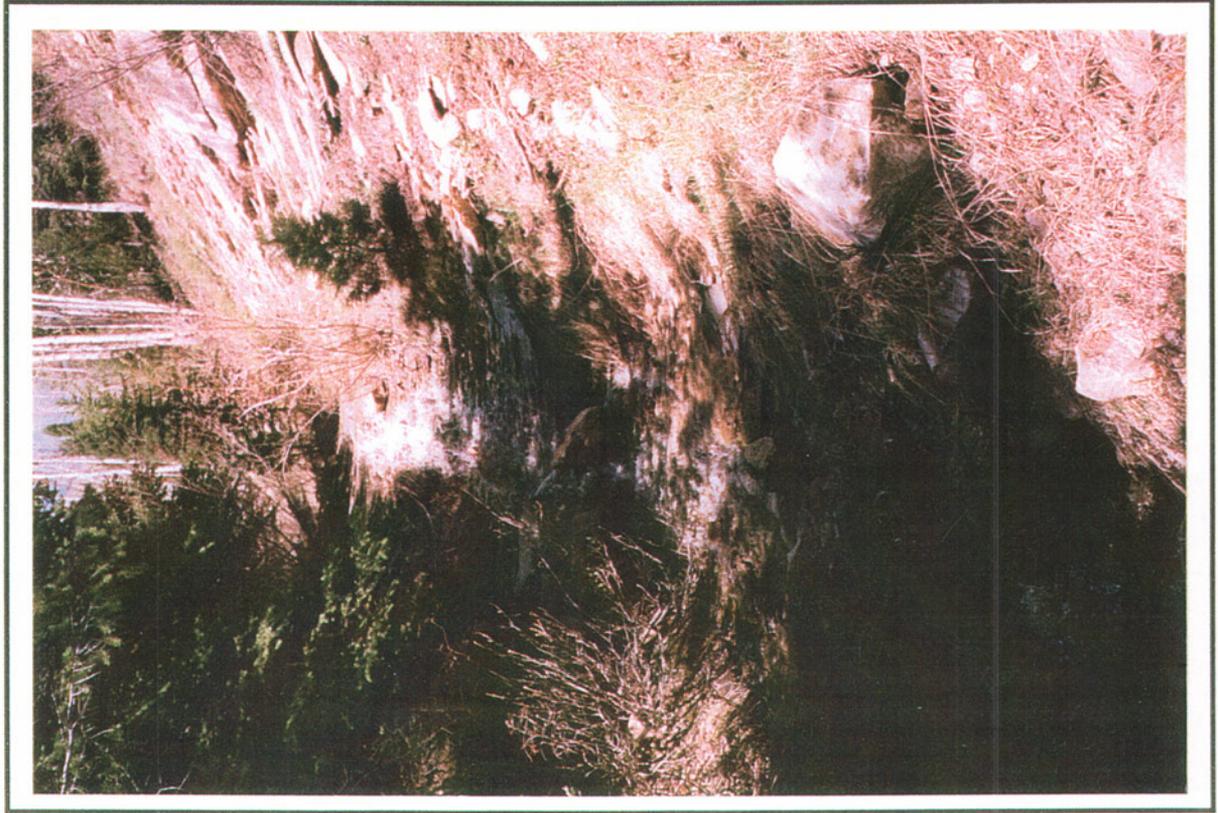


Fig. 1. No-Name Creek Main Channel (May 6, 2004)



Fig. 2. No-Name Creek Left Fork Near Confluence (May 6, 2004)



Fig. 3. No-Name Creek Right Fork Near Confluence (May 6, 2004)

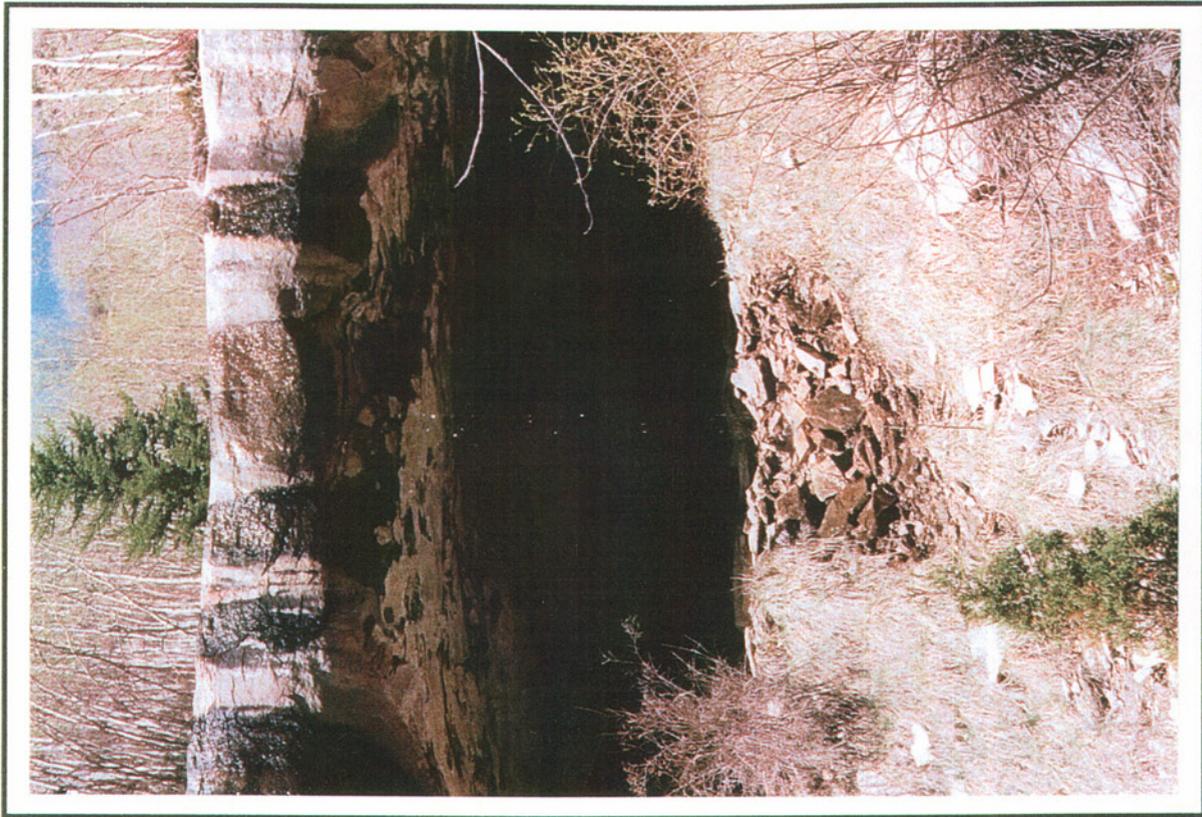


Fig. 4. No-Name Creek Right Fork Waterfall (May 6, 2004)



Fig. 5. Blind Canyon Creek (May 6, 2004)



Fig. 6. Blind Canyon Creek (May 6, 2004)