

XIV. Impacts on Streams in the Study Area

Streams Located Above or Near Underground Mines

Plate 9 shows the relationship between areas permitted for underground mining during the study period and the overlying drainage network. The mines that operated during the study period extended beneath only a small fraction of the drainage network. None of the mines extended beneath any of the area's major waterways – the Allegheny, Casselman, Conemaugh, Monongahela and Ohio rivers. Most mining took place beneath the area's smaller tributary streams.

Plate 9 does not distinguish between perennial streams (streams that flow year round) and intermittent and ephemeral streams (streams that dry out periodically during most years). The Department's current regulations protect only those streams that qualify as perennial. At this time, most streams within the study area have not been classified as perennial, intermittent or ephemeral based on regulatory definitions. Stream classification is done at the time of permit application and is based on the flow information compiled by permit applicants. Figure XIV.1 is an example of the classification form taken from a permit application.

Reported Impacts on Streams

Information from the claims database and property owners' survey included 16 reports of streams being affected by underground mining activities. Of this total, six concerned the reported diminution or loss flow, three concerned the ponding of stream water along subsided channel sections, and three involved the diversion of streams. There was also one case where a stream was diverted and subsequently lost flow and one case where a stream became ponded and subsequently lost flow. In addition, the Department received two reports of streams that were affected where the nature of the impact was not disclosed. Table XIV.1 provides a summary of the reported impacts.

**Table XIV.1
Reported Impacts on Streams**

Type of Impact	Number of Reported Cases
Diminution	8
Ponding	2
Diversion	2
Ponding followed by diminution	1
Diversion followed by diminution	1
Unspecified	2
Total	16

From the available information, it was not possible to determine how many of these streams would qualify as perennial under the regulatory definition. In one case, the property owner specifically mentioned that the affected stream was intermittent.

Most of the reported incidents were associated with longwall mines. There were, however, two cases that involved room-and-pillar mining. Table XIV.2 provides a summary of reported incidents by mine type.

Table XIV.2
Stream Incidents versus Mining Method

Mine Type	Number of Reported Incidents
Longwall	14
Room and pillar	2
Total	16

Observations of Surface Subsidence Agents

The Department's surface subsidence agents have observed mining-related impacts on nine streams within their inspection areas. These streams were all situated over longwall mines. The inspectors have observed ponding along eight of streams situated over longwall panels. They also observed diminution of two stream segments. One case involved a stream segment approximately 4000 feet (1219m) in length. The other involved a stream segment of approximately 500 feet (152m).

It was unclear if any of the incidents observed by the inspectors corresponded to incidents reported in Table XIV.2. The inspectors did, however, report that all nine streams were described as perennial in the associated permit applications.

Repair of Affected Stream Segments

There was only one report of restoration work being performed on an affected stream segment. This involved the regrading of an area along a subsided channel segment where flooding was affecting the adjacent land use.

It was unclear how many of the reported cases warranted any sort of restorative measures by the mine operator. As indicated earlier, it was unclear if any of the 16 incidents derived from the claims database and property owners' survey involved perennial streams. In addition, many of the cases involved the ponding of subsided channel segments. Historically, the Department has not required mine operators to regrade subsided stream segments unless the ponded water impacts adjacent land use.

The diminution incidents reported by the Department's surface subsidence agents were discovered late in the study period and were still under investigation at the time of report

preparation. If the Department finds that the impacts are mining-related and can substantiate that the stream was perennial prior to mining, it will take appropriate action to require the mine operators to restore the streams to the extent technologically and economically feasible.

