0015

Document Information Form

Mine Number: C/007/005

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To: DOGM

From:

Person N/A

Company N/A

Date Sent: OCTOBER 18, 1988

Explanation:

LETTER

cc:

File in:
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Refer to:
- ☐ Confidential
- ☐ Shelf
- ☐ Expandable

Date _____ For additional information

Lowell, the pollution has manifested itself as high nitrogen and phosphorus measurements, a gray slime (either a bacteria or a mold) on the stream's substrate and an abundance of green filamentous algae persisting along the full length of Eccles Creek below the mine. High NPDES values for suspended solids, that represented a mica problem, were elevated for a period of time. Surface sudsing along Eccles Creek has been in evidence, also.

DOGM and DWR personnel in cooperation with Skyline Mine have aggresively persued this issue. The original perception of the problem which was recognition of the slime growth, occurred in late June, 1987. Basic sampling and ultimate resolve to the problem was thought to have been reached by late July, 1987. A potential sewage contamination source at the mine was better managed and a floculation treatment for the mica was developed and implemented.

Monitoring throughout the summer of 1988 showed the condition (slime) of Eccles Creek to not substantially improve, although random water quality measurements were in the acceptable range. The lack of a spring time "flush" was believed to have resulted in the slime staying attached to the substrate. However, there have been times when the slime seemed to be disappearing.

Fish sampling in mid September, 1988 showed that fish in the lower segment of Eccles Creek were abundant and macroinvertebrate populations appeared normal. The ecology of the upper segment of Eccles Creek was not assessed at that time since the slime was equally abundant in the lower stream segment as compared to the upper segment.

During late September, 1988, surface sudsing along the full length of Eccles Creek was evident. At that time the slime appeared to be actively growing and extending itself deeper into the stream's substrate. Again, extensive water sampling was initiated along with intensive sampling of the fish and macroinvertebrate populations.

The trout population and their biomass in the upper segment of Eccles Creek had declined by 97% and 92% respectively. Macroinvertebrates in that segment were essentially gone. Diversity in macroinv[illegible] numbers increased as sampling was extended do[illegible]omass in the lower segment increased e[illegible]e increases relative to fish are su[illegible]ld have been expected through nat[illegible]: a downstream migration away from [illegible]arly nitrite nitrogen. Tributarie[illegible]he toxic affects of nitrites in the low[illegible]lowing inhabitation by fish and macroinver[illegible]spawning success from

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The trout population and their biomass in the upper segment of Eccles Creek had declined by 97% and 92% respectively. Macroinvertebrates in that segment were essentially gone. Diversity in macroinvertebrate taxa and numbers increased as sampling was extended downstream. Fish numbers and biomass in the lower segment increased 68% and 239%, respectively. The increases relative to fish are substantially more than what would have been expected through natural recruitment and represent a downstream migration away from the pollution source, particularly nitrite nitrogen. Tributaries and secretion flow diluted the toxic affects of nitrites in the lower segment of Eccles Creek, allowing inhabitation by fish and macroinvertebrates. Unfortunately, spawning success from

1987 and 1988 was not in evidence. Either the slime precluded successful spawning and ultimate over winter survival or the nitrites resulted in mortality to the eggs and fingerlings or both.

Investigation of the mining operation showed that an oil (5%)/water (95%) emulsion used in a longwall unit was suspect of high nitrogen levels. Assay determined 872 mg/l nitrate nitrogen and 182 mg/l nitrite nitrogen in the emulsion. During a longwall move, of which there have been six since late 1986, approximately 4,000 gallons of emulsion can be discharged. Lesser amounts of emulsion are discharged as leaks during interim periods. The oil is captured, but the nitrogen rich water discharges from the mine, into the sedimentation pond and ultimately into Eccles Creek. During base flow periods, the sedimentation pond discharge equals 50% or more of the Eccles Creek flow.

Flows from the mine containing phosphate phosphorus, a component of the soap used in the degreasing shop, also reach the sedimentation pond.

At this point in time it is believed that eutrophication is the reason for presence of the slime growing in Eccles Creek's substrate. The mica problem was solved in 1987 and sewage contamination may have never occurred. Reduction of high nitrogen (nitrates and nitrites) and phosphorus levels to acceptable standards should eliminate the slime and toxic effects of nitrites. Once this is accomplished, natural recolinization of macroinvertebrates and natural restablishment of fish popluations should occur.

In order for the Skyline Mine to mitigate for damages to the Eccles Creek aquatic system, the following actions are recommended:

(1) A new oil emulsion product containing no nitrogen compounds or at least acceptable levels of such must be utilized in the mine. Such emulsion must not contain other uncontrolable environmental contaminates. The immediate goal is to achieve sedimentation pond effluent with nitrate nitrogen levels of 10 mg/l or less. Nitrite nitrogen must not exceed 0.06 mg/l. These standards must be maintained for life-of-mine.

At which time that the longwall unit is moved, the 4,000 gallons of nitrogen rich emulsion must be captured within the mine and appropriately disposed. In the interim, if a catastrophy occurs, the flow system away from the longwall unit must be modified.

A capability to divert the nitrogen rich emulsion to a temporary storage cell rather than letting it discharge to the sedimentation pond must be developed.

(2) Monitoring of the sedimentation pond effluent for nitrate and nitrite by Skyline Mine must be accomplished at least twice in each week for life-of-mine. The goal is to ensure an effluent compatible with a healthy aquatic ecosystem in Eccles Creek. Data trends indicative of nitrogen levels that will soon or already have exceeded acceptable limits warrant expeditious notification of DOGM and immediate remedial action by the mine.

(3) Soaps utilized by the mine that ultimately flow into the sedimentation pond must be of a no phosphate phosphorus type. The goal is to achieve a sedimentation pond effluent with 0.04 mg/l or less phosphate phosphorus.

(4) During the spring time "flush" of 1989, the mine should arrange to dump the sedimentation pond to enhance scouring with Eccles Creek. At the same time the mine must provide blasting materials and personnel certified as a blaster to assist DWR in removal of selected beaver dams in the Eccles Creek drainage. The goal is to scour off the slime from the stream's substrate and flush silt from the drainage. This will also facilitate upstream fish migration and spawning throughout the full length of Eccles Creek below the mine complex.

Consideration should be given to dredging of the sedimentation pond at the time of a spring flush/dump.

(5) The mine, in cooperation with DWR and DOGM, must persue identification of the slime to ensure that the aforementioned mitigations will result in its removal from Eccles Creek. If further remedial action is needed, the mine must pursue such in consultation with DOGM and DWR where appropriate.

DWR will monitor biotic life in Eccles Creek during 1989 to determine effectiveness of this mitigation. Macroinvertibrate observations will occur multiple time during the summer of 1989.

Fish sampling will occur in late summer of early fall 1989. DOGM and Skyline Mine will be advised of findings.

Thank you for DOGM's assistance on this complex problem.

Sincerely,

Larry B. Dalton
Resource Analyst

cc: Darrell Nish, DWR
Bruce Schmidt, DWR
David Ariotti, Dept. of Health
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Keith Zobel, Skyline Mine