DETAILED REPORT OF MONITORING DATA AND OBSERVATIONS OF HAMMER SLOUGH WATER QUALITY

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March 13 Debriefing

Met at Leo Luczak's office to debrief on borrow pit operations. City operates ½ of pit approx. 2 months of the year starting in May; DOT operates the other half on an as-needed basis for contract work. Pit was not being worked during our field visit. City expansion of the pit is planned in the future; 404 permit is required including encapsulating the site and having a drainage plan for diverting and treating runoff. Eli Lucas was not aware of any stipulations placed on the current city permit for operations.

A BMP discussed was to divert runoff into muskeg areas to act as a sediment/turbidity filter and to employ settling basins or ponds to remove heavier fractions.

Plan is to work from gravel pit down to mainstem of Hammer Slough.

Bruce Jones provided copies of turbidity, color, and settleable solids data taken adjacent to his home from mid part of Hammer Slough at low tide.

March 14

Reconvene at Leo L. Office at 8:30 am. Steady and often heavy rain during day. Field party in morning includes Ken Hagerman, Brian Lynch, Ken Thynes, Eric Decker and Doug Redburn. Afternoon group included Ken H., Doug R., Eric D., Ken Thynes and Leo Luczak.

Access road to quarry site (adjacent to airport runway) is mushy, muddy and eroding. Little use of road is made until May. Maintenance to control runoff of sediment is recommended during periods of high use.

Sump at gravel pit site received turbid water from fines pile and overburden on cliff overlooking the pit on the state side. Sump is effective at removing heavy fractions but turbidity still moderately high downstream. City crews regularly maintain the settling ponds by removing sediments. Water levels in sump are variable and often not enough water is available for the rock crusher or to help with dust control on site.

Hay bales are employed at the base of the sump area once operations begin; during this inspection, one bale was in place, left from previous season. Wastewater below this area is diverted through muskeg.

City side of borrow pit has some leaked hydraulic fluid at the rock crusher site with a sheen

flowing in the ditch. Slight visable sheen from petroleum products observed.

Water flowing from quarry rock face on city side into the drainage ditch on state side was observed to have low turbidity. Major turbidity sources were "fines" pile and leaching overburden on the DOT side of the pit. Controls discussed as in B. Lynch report (attached).

Midway down the quarry access road to the airport runway. Truck storage area for DOT contractor (Norpac Electric? Miller?) that included silt disposed on the side of road as a by-product of asphalt production. Some silt eroding into creek; most of it draining to muskeg. Solid waste dumped at site - needs to be cleaned up by contractor under directive from DOT.

Airport runway location. Hay bale maintained with screens on main culvert draining to East Fork of Hammer Slough. Turbidity measurements taken in afternoon reported below. Ken Hagerman confirmed that little sand and gravel used now for runway maintenance now that urea is used. Estimates approx. 8 cyds per winter season. North Fork of Hammer Slough below airport runway had some snow disposal adjacent to it. DOT maintains the road and agreed to BMP to dispose of snow by forested fringe away from creek.

Accessed Hammer Slough North Fork through residential area (Fifth and Kiseno) to observe flow and turbidity. Estimated turdibity at 50 to 100 NTU; this was verified in afternoon through direct measurement at culvert point adjacent to City Shop.

City of Petersburg Public Works area. Sloughing of soils from banks above the culvert was observed; application of grass seed to stabilize exposed soil and reduce sedimentation was agreed to by City staff. Natural revegetation taking root in a portion of the sloping banks.

Debriefed at City offices. Improved housekeeping practices (petroleum leakage control, properly dispose of contaminated gravel, placing tarp on fines pile or moving it to higher ground, seeding the exposed soils on top of the cliff overlooked the DOT side of the quarry) were discussed and agreed to. Followup letters to be written by City of Petersburg, Fish and Game, and DOT.

City agreed to clean up hydraulic fluid within 48 hours and control further leakage and report results to DEC.

For DOT, Ken will write a short letter to DEC by March 25 confirming low usage of sand and gravel on airport runway and agreement to use the dedicated snow disposal site on North Fork mentioned above. For accomplishing the controls on the contractor at the quarry and dealing with those sources, Joe Scribner must direct the construction chief to take the action, who in turn directs the project engineer to ensure site cleanup. Bill Ballard and Van Sundberg of DOT are Juneau contacts. City of Petersburg letter will copy DOT, emphasizing the joint responsibility they have to ensure the quarry operations meet water quality standards.

Consensus was reached that maintenance of the road adjacent to the airport runway is necessary during normal usage periods. City will share this responsibility with the state beginning with the normal construction season. FAA is planning on paving 500 ft of the road for dust control, but

no more. Capping with road with clean shot rock (6 " thick over 500 feet) would cost $40,000 (assuming $20/yard and 200 yards of material) and was ruled out as uneconomical.

Turbidity measurements taken in afternoon of March 14. Results are below, by location.

1. Existing Rock Quarry Site

Brian Lynch report gives good overview of site observations at this location. Results of duplicate turbidity measurements (Hach 2100 Turbidimeter) taken at several locations at this site are as follows:

* (Station 1) State side of rock pit, ditch runoff adjacent to pile of fine material and face of pit:

242 NTU, 237 NTU

*(Station 2) Sheet flow drainage from City side of quarry upland from flow into sump area:

43.2 NTU, 35.6 NTU

*(Station 3) Directly below gravel pit sump area:

121 NTU, 106 NTU

2. Airport Runway and tributaries to Hammer Slough

*(Station 4) "Beaver Pond" location on uphill side of airport runway:

55.9 NTU, 66.2 NTU

*(Station 5) Reference/control location (called middle West Fork) on uphill side of airport runway:

28.5 NTU, 35 NTU

3. City Shop location/mainstem of Hammer Slough

*(Station 6) Mainstem of Hammer Slough 200 feet below City Shop:

65.7, 62.9 NTUs

*(Station 7) Main "control" fork entering Slough just above City Shop:

27.4, 28.2 NTUs

*(Station 8) Mouth of main culvert discharging to Slough at City Shop location:

86.4, 92.4 NTUs

*Small feeder rivulet entering Hammer Slough, draining natural blue clay deposit across from Leo's office:

225 NTU, 205 NTU

Note: Turbidity above the blue clay deposit was less than 10 NTUs

Bruce Jones data for turbidity, color, temperature, settleable solids, and TSS collected during February 1996 are attached. Station noted on Figure 1.

Figure 1 attached.

CONCLUSION

The slightly elevated levels of turbidity over background levels are controllable through implementation of the BMPs listed above and prudent followup by the City and DOT. The difference in turbidity readings was at its highest due to the high flow event of March 14 and the frozen soils; during normal flows of Hammer Slough, this difference is expected to be slight. For example, Bruce Jones data taken at a station in front of his home during February 1996 show turbidity levels ranging from 18 to 24 NTUs, with no measureable settleable solids exceeding the MDL with the exception of February 7, with a reading of 0.03 ml/l.

Visual observations on the airport runway on March 15 (from the airplane) showed little flow on the upland side of the airport runway in comparision to the previous day. March 15 had no rain, with slight overcast. This day-to-day difference in flow was striking and the consequent effects on the water quality of the mainstem of Hammer Slough from the gravel pit were significantly moderated and reduced on March 15.