FMC283

Environment Canada / Environmental Protection — Environnement Canada / Protection de l'Environnement

FILE NO. 4000.2-1&4&4A

SIGNIFICANT EVENT REPORT

REGION	SEQ NO.	ACCIDENT DATE
PACY	38	March 20/75

TYPE OF ACCIDENT
- ☐ Oil spill
- ☒ Chemical spill
- ☐

SPECIFIC HAZARD
Tailings pond effluent and fines

SOURCE (Name of Carrier/Facility)
Cyprus Anvil Mining Corp. Ltd.

QUANTITY & UNIT
54,000,000 gallons (estimate by Cyprus Anvil)

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Rose Creek on Mining Property near Faro, Y.T.	62° 21'	133° 23'	Breaks in 2 Tailings Dykes.

PRESENT DAMAGE TO ENVIRONMENT/PROPERTY – OTHER RISKS/HAZARDS – WEATHER

There was extensive environmental damage to Rose Creek. The creek bottom and flood plain was extensively covered with tailings. The effluent will most likely be toxic and it will take from 3 - 5 years for the stream to recover.

SHORT TERM ACTION
- ☐ None
- ☒ Containment
- ☐ Cleanup
- ☐ Observation
- ☐ Control
- ☐

AGENCIES ADVISED/INVOLVED – LONG TERM ACTION – EST. COMPLETION DATE – LEGAL ASPECTS

E.P.S. was informed of the spill at 9:30 A.M. March 20, 1975 by DIAND and W. Robson went to the mine that afternoon with DIAND. Originally the mine plugged the break in the old tailings dyke. By March 21st this plug had washed out also. On Friday this dyke was repaired.

Saturday and Sunday there was a temporary dyke placed across Rose Creek just below the earth plug which was the site of the second break. This stopped the flow for a time and acted as a secondary settling pond. A detailed report on E.P.S. visit is attached.

STATUS
- ☐ Cleaned-up/terminated
- ☐ Controlled/dormant
- ☒ Mobile/active
- ☐ Uncontrolled
- ☐

PACY: 7538

Spill ID: 491 (NEES)

ON SCENE COMMANDER	TITLE	DEPT./ORG'N	PHONE
Cyprus Anvil Mining Corp.			

REPORTED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Cliff Williams	A/Controller of Water Rights	DIAND Whitehorse, Yukon	668-5151	March 20/75

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Ken Weagle	A/District Manager, EPS	Whitehorse, Yukon	667-7487	March 24/75

EP-1101 (Rev. 4/74)

Environment Canada
Environmental Protection

Environnement Canada
Protection de l'Environnement

FILE NO. 4000.2-1&4&4A

SIGNIFICANT EVENT – SUPPLEMENTARY REPORT NO.

REGION	SEQ NO.	ACCIDENT DATE
PACY	38	March 19/75

TYPE OF ACCIDENT	SPECIFIC HAZARD	QUANTITY & UNIT
☐ Oil spill ☒ Chemical spill ☐	Tailings Pond Effluent and Fines SOURCE (Name of Carrier/Facility) Cyprus Anvil Mining Corp. Ltd.	54,000,000 Gallons (estimate by Cyprus Anvil)

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Rose Creek on Mining Property near Faro, Y.T.	62° 21'	133° 23'	Breaks in 2 tailings dykes

REMARKS:

The report on our March 20, 1975 visit to the mine is attached.

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Ken Weagle	Sr. Biologist, EPS	Whitehorse, Yukon	667-6487	March 27/75

EP-1109 (6/74)

On Wednesday, March 19, 1975 at 9:45 A.M. I, (Wish Robson) received a call from C. Williams, DINA about a breach in the tailings impoundment wall at Cyprus Anvil Mines, Faro, Y.T. He informed me that they would be flying up within the hour and wanted to know if I wanted to go. I replied in the affirmative and proceeded to collect bottles, tape deck, legal sample box and photographic equipment before proceeding to the airport. We left Whitehorse around 1100 hours and arrived at Faro Airport at 1210 hours and were met by M. Reger, DINA, and were driven into the town site while she briefed us on what had transpired as she had seen the area just an hour ago.

Before landing however, we flew over the spill area and from the air we were unsure as to the origin of the spill. We were able to see the "earth plug" that had been washed out and the path that the effluent (decant water and tailings) followed to Rose Creek. The effluent entered Rose Creek at some distance from the hole in the earth plug. The hole in the dyke appears quite large and has fairly straight sides. There is a high water mark that appears to be four to six feet above the present creek level, that is, four to six feet vertical height. From the air we saw extensive flooding in lower areas and could follow the dirty, foaming water for several miles (we later surveyed this area by helicopter).

When we arrived in Faro we met Bob Studds the local R.M.O. (Resource Management Officer, DIAND) and exchanged what information we had to date. I should add here that I was accompanied by Tony Parrotino of DINA Whitehorse. A helicopter was chartered from Ross River and Mr. Parrotino and myself drove to the mine where Mr. Studds and the helicopter would meet us. When Tony and I arrived on site the mine was endeavouring to patch the hole at the decant of the old tailings pond (please see attached sketch). When we arrived the hole at the decant pipe area was approximately 12' high and 25' wide, but it was a hole not a gouge. This suggested to both Tony and myself that the washout had occured not due to water running over the dyke but rather washing out from underneath. The decant pipes had dropped about six feet from their previous position and also seemed to have moved forward a similar distance. Neither Tony or myself were able to make an accurate estimate of the flow rate but the water was running out from all around the bottom of the hole. Sample #1 was taken here at 1345 hours and witnessed by Tony Parrotino. The sample was locked in my sample box and the continuity maintained throughout (see location on sketch). Several pictures were also taken at this location as well as at all sample sites and any area which seemed to show evidence of pollution resulting from this spill.

The helicopter arrived and we boarded to take an overview of the area and then headed down Rose Creek and followed the path of the spill. The decant running from the upper pond (old tailings pond) remained visible for a short distance then headed under a layer of ice to remain invisible until several hundred feet from the washed out earth plug. This layer of ice covered the whole lower (new tailings impoundment) pond but as all the water had left, the ice had fallen to a new level. At the South end the drop was approximately six feet, however at the North end near the wash out the drop was about ten feet. The hole itself was huge, about forty to forty-five feet wide, thirty feet deep and up to fifty feet wide at the base. The material that was washed out of the area into Rose Creek looks to be primarily tailings.

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The whole area is a mess. As stated earlier the lower areas are inundated with this effluent. There is quite a lot of timber in the water and many game trails were seen on both sides of the valley. Even as we flew further down Rose Creek conditions appeared much the same, the only difference being less solids deposited on the shores as we got further downstream. The high water mark appears still to be four feet above the ice cover in most areas, higher in the narrow spots. As we approached the confluence of Rose and Anvil Creeks there are signs of decreasing damage i.e. high water and dirty foaming water.

Approximately one-half mile downstream from the confluence the ice cover on the creek resumes and we lost sight of the damage. This confluence is less than half the distance from the mine to the Pelly River (about 15 miles). The rest of the flight saw no further sign of open water, not even at the junction with the Pelly River. Sample #2 was collected through a weak spot in the ice, at the junction of Anvil Creek and the Pelly River. Sample collection was witnessed by Tony Parrotino and Bob Studds. Sample continuity was maintained. The sample looked quite clean, with no sediment, no smell or foam. We then flew back to the earth plug wash-out taking many pictures along the way. Here we met two Mine people, not management, who were discussing how to patch the hole. They did not want to say very much in our (my?) presence so we went to see the General Manager, Jim Olk. After discussing the situation with him we offered to take him for a ride over a portion of the spill area to show him the extent of the damage. While he was with us, we landed beside Rose Creek where I took sample #3. This location was about 100 yards downstream from the confluence of the effluent and Rose Creek. Sample continuity was maintained. I did not preserve any of the samples un-il early the next morning after I talked with Dr. Swingle at EPS in Vancouver. We returned to the office and Tony phoned in a report to Cliff Williams. After talking to Jim Olk and two of his mining engineers we learned that they planned not to decant for two or three days as they feel the old tailings area has that much holding capacity. They hoped this would give them enough time to construct another earth plug or dyke in front of the washed out section. Their explanation for the disaster was as follows: The new tailings area was almost full of fluid which was exerting great pressure on the plug (which was not designed to carry such hydraulic load). When the decant from the old pond gave way the surge of water caused a flow over the earth plug and eventually a large section of dyke washed out. As a result the mine lost all the water in the new tailings pond and a large percentage from the old pond. Jim Olk estimated 200 acre feet of fluid were lost which is about 54,000,000 gallons. The mine plans to start on the dyke repairs some time tonight or as soon as they find some good material. In the old tailing dyke they plan to place a ten foot wall with decant pipes in front of the broken wall and then line the inside with tailings to seal the surface. They are not going to put in a fixed crest wier for decant as they claimed they did not have the materials at this time.

As for clean up I didn't know what to suggest, however Ken Weagle will look at the scene on Thursday and then we may come up with a few ideas. My only suggestions (made to C. Williams and Tony Parrotino) were to call in an expert on dyke construction to ensure proper construction and repair of the tailings area, and perhaps find some way of flushing the creek out with clean water to rid the area of tailings as soon as possible. This second idea would have to be dealt with by Fisheries.

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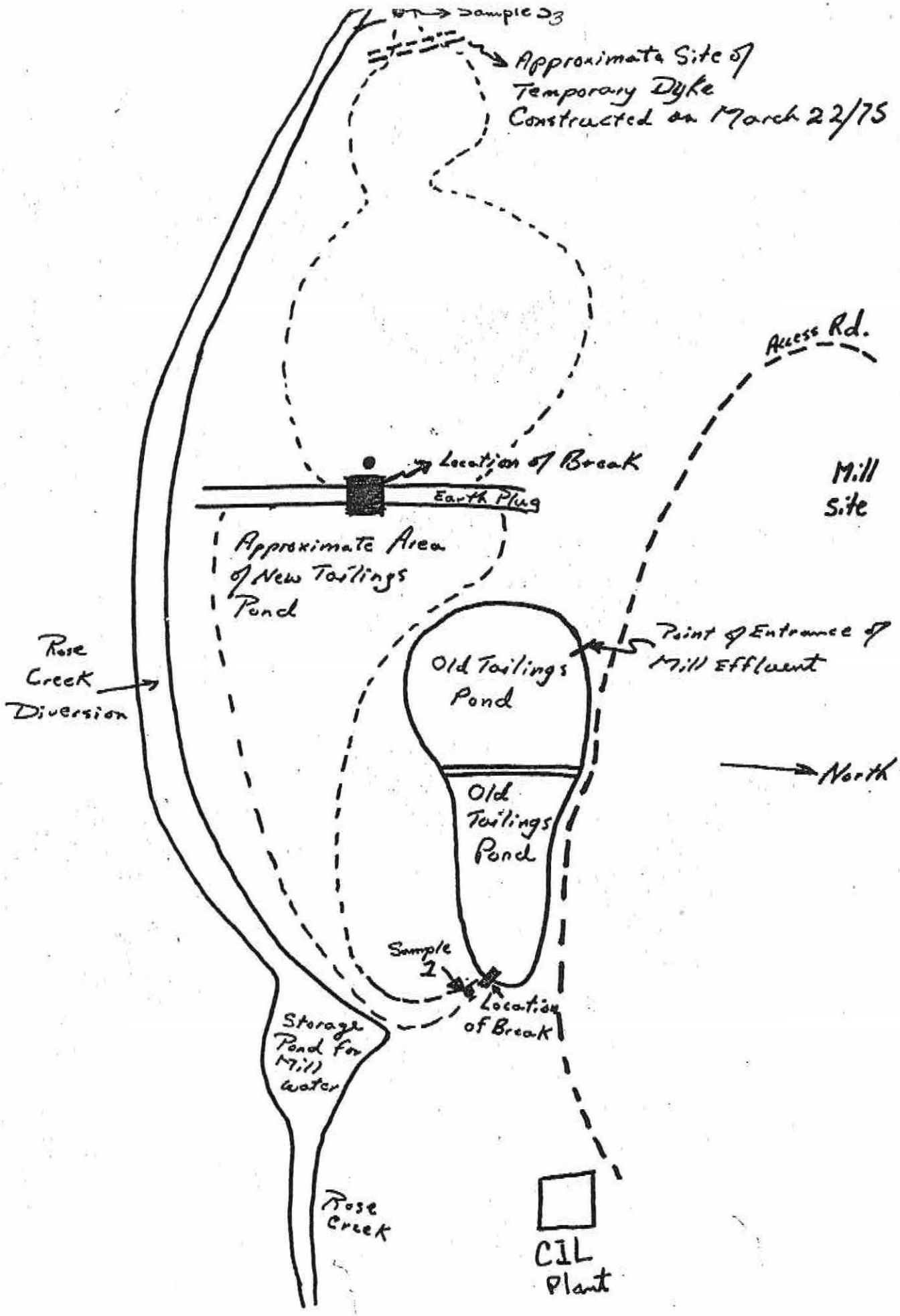
Before leaving the mine we found out that a W.P.Y.R. driver had spotted the break earlier that morning and reported it to the mine. The mine still insists the dykes were checked either late on the 18th or early on the 19th as this is part of the Mill Superintendents duties.

DINA feelsthat the cause of the spill was leakage around the culverts and improper compaction of fill material in the dyke. They are unsure as to their actions. I have possession of all legal samples and our lab will do the legal analysis.

These notes were originally put on tape while at the scene, transferred to rough notes the next day and transcribed to these notes on Monday, March 24, 1975. When not in use the tape was locked in with the legal samples until the rough notes were made.

for W. Robson


Sample 3
Approximate Site of Temporary Dyke Constructed on March 22/75
Access Rd.
Location of Break
Earth Plug
Mill Site
Approximate Area of New Tailings Pond
Point of Entrance of Mill Effluent
Rose Creek Diversion
Old Tailings Pond
North
Old Tailings Pond
Sample 1
Location of Break
Storage Pond for Mill water
Rose Creek
CIL Plant

Report on the 2nd Trip to Cyprus Anvil Mine
to investigate the Tailings Impoundment break
of March 19, 1975

Date: March 20, 1975

People Involved: Kenneth V. Weagle, A/District Manager, EPS
Dennis Brock, Fisheries Officer, FMS
Bob Studds, R.M.O. Faro, DIAND

Brock and I (Weagle) arrived at Faro about 1:20 P.M. and were met by Studds. We proceeded to Studds office where we discussed the situation. I then called Wish Robson, E.P.S. Whitehorse, to inform him of our plans.

We arrived at the mine office at 2:10 and met with Jim Olk, General Manager. Olk outlined the problem and the work done to date. He also informed us that there was seepage under the plug put in the old tailings dyke. He said they were waiting for the arrival of a consultant before the finalized plans for repairs to the Earth Plug (apparently the mine involved the consultant after a suggestion by DINA).

At 2:30 P.M. we were at the site of the break in the old tailings impoundment. The plug put in the day before had been undercut and in our estimation all the effluent entering the impoundment was flowing directly out with no retention time. We took a bioassay sample at this point. Continuity was maintained on the sample. A water sample was also taken and continuity was maintained.

We then proceeded to the site of the break in the earth plug. Here there was a flow of very silty water which was greater in volume than just the decant. We were informed that this flow contained seepage from the south bank in the area. A water sample was taken below the break and continuity was maintained.

After taking numerous pictures of the area we checked the cyclon (on the effluent pipe before it enters the old tailings dyke) and found it was operating and therefore the mill was in operation.

We went back to Studds' office in Faro and I called Mr. R.E. McLaren in Vancouver to brief him on the situation. During the briefing it was agreed that Dr. C. Guarnaschelli would come to Faro on Friday to evaluate the situation.

At approximately 4:30 P.M. we left for Whitehorse. On route we flew down Rose Creek and Anvil Creek to their confluence with the Pelly River. The tailings were noticeable on the flood plain as far as the junction of Anvil and Rose Creeks (15 miles). From there to the junction with the Pelly River (40 miles from mine) one could notice areas where the effluent had overflowed the ice and frozen but there had been a limited deposition of tailings.

We arrived in Whitehorse at approximately 5:30 P.M.

Ken Weagle

K.V. Weagle
A/District Manager
EPS Yukon

Environment Canada / Environmental Protection — Environnement Canada / Protection de l'Environnement

FILE NO. 4000.2-1&4&A

SIGNIFICANT EVENT – SUPPLEMENTARY REPORT NO.

REGION	SEQ NO.	ACCIDENT DATE
PACY	38	March 19, 1975

TYPE OF ACCIDENT	SPECIFIC HAZARD	QUANTITY & UNIT
☐ Oil spill ☒ Chemical spill ☐	Tailings pond effluent and fines SOURCE (Name of Carrier/Facility) Cyprus Anvil Mining Corp. Ltd.	600 acre-feet (162.6 Million gal) (200 a.-f. from old tailings pond and 400 a-f from behind earth plug DIAND and Mine)

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Rose Creek on Mining Property near Faro, Y.T.	62° 21'	133° 23'	Breaks in 2 tailings dykes

REMARKS:

Three reports on inspection trips: March 21 and 22
March 25
March 27 and 28

are attached.

Note the new estimate of quantity lost.

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Kenneth Weagle	Sr. Biologist, E.P.S.	Whitehorse, Yukon	667-6487	April 7/75

EP-1109 (6/74)

Inspection Trip to Cyprus-Anvil Mine, Faro, Y.T. March 21 and 22, 1975.

Present:	Kenneth Weagle	E.P.S. Whitehorse
	Claudeo Guarnaschelli	E.P.S. Vancouver
	Dennis Brock	F.M.S. Whitehorse
	Wayne Knapp	F.M.S. Vancouver

We arrived in Faro by truck at about 10:00 P.M. on March 21, 1975. After checking into the hotel we called Cliff Williams, DIAND for an up-date on the situation. He informed us that the hole in the old tailings dyke had been suitably repaired and the seepage was stopped. We discussed briefly our action from here and invited him to come to the mine with us that evening to take water samples which he declined.

We proceeded to the mine and went to the guardhouse to see who was in charge. The watchman said only a few foremen were on site and at the moment no one in authority was on site. I gave him my card and informed him we wanted some samples from the area. We took a water sample below the hole in the earth plug at 11:15 P.M. The flow through this area was reduced from our March 20th visit but was still very cloudy. There had been little or no work done on the patch in this area.

The patch in the old tailings dyke was then inspected and there was no apparent seepage. The mill was in operation and the effluent was ponding on the old tailings pond.

We met Cliff Williams and Norm McCammon of Golder, Brawner at breakfast and informed him we wanted to have a good look at the site and then have a meeting between DOE, DIAND, Goldner, Brawner and Mine Management to discuss repairs needed and the scheduling of them.

We proceeded to the mine where we looked in detail at the structures that had failed, other associated structures and the damage caused. The old tailings dyke was in place and as we noted the evening before and there was no apparent seepage. C. Guarnaschelli thought the plug was sufficient to hold. They were continuing to pond in the old impoundment and at this time the decant had not been reconstructed. No work was in progress on the patch in the earth plug. The flow in this area was very cloudy. We took a water sample at the temporary culvert at 9:45 A.M. This structure was about 200 yards downstream from the earth plug. At 10:00 A.M. we took a water sample from seepage water in the Rose Creek diversion. The seepage water was clear. We briefly examined the area upstream from the earth plug and found that the water presently flowing through the plug was seepage from the south side of the area and the seepage picked up tailings as it flowed through the area. From this area we went to the west end of the old airport and found that in this area the entire flood plain of Rose Creek was covered with tailings and tailings were deposited on the banks to a height of about four feet above the present water level. Water samples were taken here at about 10:15 A.M.

After leaving the old airport we met Cliff Williams who informed us we could have the meeting at any time. I informed him Mr. Brian Trevor, DIAND had asked me to tell him when I explained the Fisheries Act to the Mine Management he do the same for the Northern Inland Waters Act. I also told him I was going to inform the mine we had and were continuing to take legal samples.

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The meeting was begun at about 11:00 A.M. with the following people present:

Jim Olk	Mine Manager
Norm McCammon	Goldner, Brawner Assoc.
Cliff Williams	DIAND, Whitehorse
Dennis Brock	F.M.S. Whitehorse
Wayne Knapp	F.M.S. Vancouver
Dr. C. Guarnaschelli	E.P.S. Vancouver
Ken Weagle	E.P.S. Whitehorse

The meeting began with the following series of questions by Dr. Guarnaschelli and answers from the mine (Olk).

Q. Why did the old tailings dyke fail?
A. There was a seepage zone that developed around the decant pipes. This seepage gradually ate away at the material until the flow was high enough to wash the pipes out completely. The pipes were checked at about 5:30 A.M. on March 19, 1975 and nothing was noticed. The break was noted about 8:30 A.M.

Q. Why did the earth plug fail?
A. When the old tailings dyke was washed out all the effluent contained by the structure was released into the pond contained by the earth plug. The volume of effluent was too great to be handled by the decant and the effluent went over the top. The overwash caused the damn to weaken and wash out.

Q. How safe is the present patch on the old tailings dyke?
A. The mine hedged a bit on this question then explained it was considerably wider than the original dyke and although they wouldn't guarantee the patch they were of the opinion it would hold.

The mine then outlined their plans for the repairs to the system:

1) Put a fixed crest weir for the decant from the old tailings pond;
2) Put a temporary secondary settling pond just upstream from the temporary culvert;
3) Prepare the earth plug for repair and in repairing it use fines on the upstream side, a rock core and gravel on the downstream side.

While repairing the earth plug the mine said they would like to divert the decant from the old tailings pond into the Rose Creek diversion channel to take pressure off the repairs. Both Fisheries and E.P.S. said this was not advisable because it would permanently pollute the diversion. The mine continued to express interest in the plan and finally E.P.S. said don't do it and if pressure had to be taken off the plug during the repairs shut down the mill to eliminate the decant.

Fisheries said they would look into ways to clean up Rose Creek below the earth plug and report back to E.P.S.

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Dr. Guarnaschelli expressed concern about the recent use of ammonia in the process because of the lower pH (around 8) in the old tailings pond. He explained that the lower pH did not allow for heavy metal percipitation in the old tailings pond and would result in an even more toxic effluent. He suggested the best route is a high pH with facilities for secondary treatment.

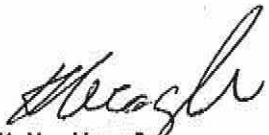
The mine said the earth plug should be repaired in three to four days (March 25 to 26) and that the temporary secondary settling pond would be completed on the afternoon of March 22nd.

Both E.P.S. and Fisheries were satisfied that if the mine adhered to the schedule outlined the system would be back in its original state by the following week.

At this time I explained the Fisheries Act and how the incident related to it emphasizing that each day toxic effluent entered a stream was a new offence and that the sooner the repairs were effected the happier we would be. I also explained we had taken and were continuing to take legal samples of the water and effluent.

Cliff Williams continued by explaining the Northern Inland Waters Act and that the mine had most likely contravened a condition of their Water Use Licence.

Dr. Guarnaschelli's final question to the mine was, was the mill ever shut down. Olk answered by saying when they discovered the break on March 19th the mill was shut down at about 9:30 A.M. and remained down until the old tailings dyke was first repaired at about 3:00 P.M. on the same day. At no other time during the incident had the mill shut down.



K.V. Weagle
Sr. Project Biologist
EPS Yukon

Inspection Trip to Cyprus-Anvil Mine, Faro, Y.T. March 25, 1975.

Present: Kenneth Weagle E.P.S.
Dennis Brock F.M.S.

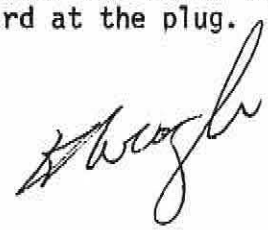
We arrived at the mine at about 2:00 P.M. on March 25th and went to see Jim Olk. His secretary informed us he was in a meeting and wouldn't be available for half an hour. We asked her to inform him we were on site and we would meet with him later.

We proceeded to the site of the temporary secondary settling pond which had been completed. The dyke was at a height of four to five feet above the previous water level and the pond was full. The decant was fairly clear and one could see three to four inches into it. The pH of the decant was 7.8. Newt Cornish was at the site and they were in the process of raising the dyke another two feet to try to get increased storage. He hoped this work would be completed by later on March 25th. We took water and bioassay samples at 2:30 P.M. from the decant of the temporary secondary settling pond.

Jim Olk met with us here and said they would be starting work on repairs to the earth plug on Wednesday March 26th. We discussed the pH results with Olk and the purpose of our visit (to inspect progress on repairs and take additional samples).

We then went to the earth plug where little work had been done since March 22nd. There was some bed preparation and a drag line was in position but not working at the moment.

We proceeded to the old tailings pond decant where the fixed crest weir was in place and decant was flowing. From the looks of the ice on the pond the level had not reached the pre-break level. The decant was quite clear and you could see about twelve inches into it. The plug in the dyke seemed to be holding and there was no apparent seepage. The top of the plug nearest the pond had sunken slightly and at one spot there was a hole about 18 inches in diameter where material had caved in and you could see fluid. There was from 12 to 18 inches freeboard at the plug. The pH of the decant was 10.45.



Inspection Trip to Cyprus-Anvil Mine, Faro, Y.T. March 27 & 28, 1975.

Present: Kenneth Weagle, E.P.S.
Dennis Brock F.M.S.

We arrived at the mine at 1:35 P.M. and immediately visited the old tailings pond decant. There was about four to six inches of freeboard on the plug in the dyke and the volume of decant was considerably higher than on March 25th.

From there we went to the mine office and asked Olk's secretary to inform Bob Marshall (A/Mine Manager) that we were on site (he wasn't in at the time).

We proceeded to the temporary secondary settling pond where we took a bioassay and water samples from the decant at 2:15 P.M. This structure had been raised and the water was fairly clear. Flow from the decant appeared higher than on March 25th.

We proceeded to the earth plug where work had begun to patch the hole. They were preparing the bed for the new dyke when we arrived. The flow through the area was kept open as long as possible. They began placing the rock core at about 5:00 PM.

Cliff Williams, DIAND arrived at about 5:25 P.M. and was upset with the method of placing the rock. Apparently DIAND had said it should be built up from the bottom and compacted as they went. The rock was being placed by pushing it over the edge which resulted in very little compaction.

At about 6:00 P.M. Williams, Brock and I visited the old tailings pond decant on our way to dinner in Faro. The level was raising and there was from three to four inches freeboard left. We later mentioned this to Newt Cornish and he showed little concern. He also said the mill was remaining in operation all week-end.

Before dinner I called Wish Robson, E.P.S. Whitehorse who had received some analysis on water samples from Vancouver. At dinner I gave the results verbally to Cliff Williams.

About 7:30 P.M. we talked to Cornish on site and he felt it would take a week to complete the repairs to the earth plug. He also said they were going to lower the level of the decant at the old tailings pond immediately. Cornish also informed us later that evening that they were going to drop the level of the decant at the earth plug by five feet. Cliff Williams was upset with this because of the resulting reduction in retention time. Construction stopped on the repairs at about 11:30 P.M. on March 27th.

The flow from the area had been cut off at about 5:30 P.M. on March 27th.

On the morning of March 28th we arrived at the mine at about 8:30 A.M. and after checking the pump house went directly to the earth plug. At the pump house the water level was at about the same as at 10:00 P.M. the evening before indicating that there was little run off during the day and most of the fluid passing through the earth plug was either decant or natural seepage. At 8:30 P.M. they were working on the patch to the earth plug and had begun to prepare the pad for the gravel.

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We checked the decant on the old tailings pond and found that it had reached a steady state with about three inches of freeboard.

We went to the end of the mine airstrip to take water samples and examine the stream. The water in the area was still cloudy but clearer than on March 22nd. We took a bioassay and two water samples to see if the natural seepage plus the suspended fines were toxic. Samples were taken at 9:15 A.M.

We then went to the temporary secondary settling pond and found the decant to be cloudy but clearer than on previous days. The volume of water flowing in the decant indicated that there were large volumes of seepage entering the area. We took a water sample for metal analysis from the decant at 9:30 A.M. We checked the flow from the Rose Creek diversion channel and found it was clear.

Returning to the earth plug we found that they had started to place gravel on the downstream side of the patch at about 10:00 A.M.

At about noon they dropped the level of the decant on the old tailings pond to take pressure off the dyke.

By 1:15 P.M. they had finished the rock core and tailings portion of the patch in the earth plug and were well advanced with the placing of gravel. Cliff Williams was satisfied that the construction was proceeding as planned and we left the mine at about 2:00 P.M.

We arrived in Whitehorse at about 6:30 P.M. on March 28, 1975.

K Weagle

Kenneth V. Weagle
Sr. Project Biologist
EPS Yukon

Environment Canada / Environmental Protection — Environnement Canada / Protection de l'Environnement

FILE NO. 4000.2-1& 4A

SIGNIFICANT EVENT – SUPPLEMENTARY REPORT NO.

REGION	SEQ NO.	ACCIDENT DATE
PACY	38	March 19/75

TYPE OF ACCIDENT	SPECIFIC HAZARD	QUANTITY & UNIT
☐ Oil spill ☐ Chemical spill ☒ Other	Tailings Pond Effluent and Fines SOURCE (Name of Carrier/Facility) Cyprus Anvil Mining Corp. Ltd.	600 acre-feet (162.6 Million Gallons)

LOCATION	LAT. (N)	LONG. (W)	CAUSE OF ACCIDENT
Rose Creek on Mining Property near Faro, Y.T.	62° 21'	133° 23'	Breaks in 2 tailings dykes

REMARKS:

Report of the April 22 and 23, 1975 visit and the resulting activities attached.

Cyprus Anvil have been charged with three counts of depositing a waste under the Northern Inland Waters Act and one count of depositing a deleterious substance under the Fisheries Act and have pleaded 'Not Guilty' to all four counts. The trial dates are set for September 10 to 12, 1975.

REPORT PREPARED BY	POSITION/TITLE	LOCATION	PHONE	DATE
Kenneth Weagle	Sr. Biologist	EPS Whitehorse, Yukon	667-6487	June 10/75

EP-1109 (6/74)

Inspection Trip to Cyprus-Anvil Mine, Faro, Y.T. April 22 & 23, 1975.

Present: Kenneth Weagle, E.P.S. Whitehorse
Dr. Claudeo Guarnaschelli, E.P.S. Vancouver
Garnet Jones, F.M.S. Whitehorse
Cliff Williams, DIAND, Whitehorse

Weagle, Jones and Guarnaschelli arrived at the mine at 13:00 hours and proceeded to Jim Olk's office where we met with Olk and Williams. Guarnaschelli asked the mine a series of questions to ascertain what had gone on since our last visit (March 27 and 28, 1975). We explained the purpose of the visit to Olk at this time.

We proceeded by helicopter to conduct an inspection of Rose Creek from its junction with Anvil Creek to the mine site. The purpose of this inspection was to recommend to the Yukon Territory Water Board areas where clean up of the tailings could be conducted and possibly methods of clean up. We landed at several sites along Rose Creek where Williams had previously conducted a survey to determine the amounts of tailings that had been deposited. Our final stop was at a point about two miles downstream from the break in the Earth Plug. At this point there were extensive deposits of tailings in the flood plain and Weagle and Jones walked from here to the temporary secondary settling pond to get a better idea of the extent of the deposit of tailings. The DOE recommendations for clean up are enclosed in the attached memo to C.E. Wykes (April 24, 1975).

After our inspection of Rose Creek we proceeded to the patch in the Earth Plug. We found that this plug had not been completed in the manner outlined earlier to DIAND. The DOE concerns related to the repairs are also outlined in the above mentioned memo.

After leaving the Earth Plug we again went to the mine office and met with Olk, Marshall and Cornish. There was considerable discussion about retention time behind the Earth Plug and the structure of the dyke and we expressed our discontent with both situations. There was considerable disagreement between DOE and the mine on the retention time and the soundness of the Earth Plug and decant. Cliff Williams agreed to check the Earth Plug further on April 23, 1975.

We left the mine on the morning of April 23, 1975.

On April 24, 1975 Weagle, Jones and Guarnaschelli were invited to attend a Yukon Territory Water Board meeting to present and discuss the DOE recommendations for clean up.

At the Water Board meeting it was decided that Jones would accompany Dr. A.B. Hollingshead, Asst. Regional Director of Renewable Resources, DIAND, Mr. C. Williams, A/Controller of Water Rights, DIAND, and Mr. H. Boyd, Member Yukon Territory Water Board to the mine on April 25, 1975 to test some procedures for clean up of the tailings. The Yukon Territory Water Board made 4 recommendations on clean up to the mine as a result of the trip (Minutes of the Yukon Territory Water Board Mining Sub-Committee meeting, April 28, 1975). Mr. Jones report on the investigations and tests are enclosed in a letter from Jones to Gibson, May 2, 1975.

Weagle

Environment Canada Environnement Canada

MEMORANDUM NOTE DE SERVICE

DATE
April 24, 1975

FROM: K.V. Weagle, E.P.S.
DE: Dr. C. Guarnaschelli, E.P.S.
G. Jones, F.M.S.

Our file Notre référence
4000.2-4/A

TO: Colin E. Wykes
À: District Manager
EPS Yukon

Your file Votre référence

SUBJECT: D.O.E. Recommendations on Tailings Spill
SUJET: Clean-Up at Cyprus Anvil Mine, Faro, Y.T.

On April 22, 1975 Dr. C. Guarnaschelli, E.P.S., Kenneth Weagle, E.P.S., Garnet Jones, F.M.S., and Cliff Williams, DIAND, inspected the deposits of tailings in Rose Creek from its junction with Anvil Creek to the site of the break at the mine. The object of the inspection was to formulate a D.O.E. position on clean up of the spilled tailings.

The Water Board and you are probably fully aware of the situation as it developed beginning on March 19, 1975 so I shall only outline the present situation and our recommendations.

First I shall outline problems we see with the plug in the new tailings dyke:

1) The plug has not been constructed in the manner the mine outlined to DIAND during earlier meetings.

2) The elevation of the plug has been raised using unsuitable material and unsound engineering practices.

3) The decant is being discharged through pipes not by a fixed crest weir as agreed upon earlier.

4) The crest of the plug is less than five feet above the level of the pond and there are large areas where there is only one foot freeboard (one of these areas Mr. Cornish of Cyprus-Anvil Mine, said was an emergency spillway, however there was no rock placed in the area and an overflow would most likely result in another wash out).

After the inspection we would like to make the following recommendations on clean-up:

1) Complete clean-up of all deposits from the foot of the new (unfinished) tailings dyke to the canyon (approximately half way down the air strip). There are extensive deposits of tailings in this area and in places the deposits are up to four inches deep. This area has received extensive disturbance in the past.

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2) Complete clean up from the downstream end of the canyon to the lower gravel pit.

3) Suitable equipment such as a suction dredge, should be located and used to clean up the tailings on the stream bed in the canyon.

4) In all areas of clean up it will be necessary to remove the tailings that have been deposited from high water mark (during peak of break) to the bottom of the creek bed.

5) All tailings and debris removed from the area will be placed within the new tailings empoundment.

6) The entire clean up operation must be supervised by either DIAND or DOE personnel to ensure its proper completion.

7) Clean up operations must start as soon as possible so that this work can be completed prior to spring break-up.

The justification for the clean up operation is as follows:

1) The tailings have a high acid-leaching potential because of the iron sulfides.

2) It will remove extensive sources of unnatural sediments from the stream.

3) It will eliminate large deposits of slowly dissolving sulfides containing heavy metal cations.

4) It will lead to quicker stabilization of the biological communities in Rose Creek.

It is our opinion that damage must be resurveyed after the clean up is completed and spring run-off has occurred. After the survey the need for further clean up will be accessed. A monitoring program run by the mine should begin immediately under the following conditions:

1) Weekly sampling at the four stations outlined in 2).

2) Stations to be sampled:
   a) decant from new tailings pond;
   b) flow at foot of new (uncompleted) dyke;
   c) Rose Creek at furthest downstream gravel pit (end of clean up);
   d) Rose Creek at junction with Anvil Creek.

3) The following parameters should be measured: pH, NH_3, CN, Pb, Zn, Fe and suspended solids. The heavy metals should be measured both as dissolved and extractable.

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4) The results should be transmitted immediately after each sampling to DIAND in Whitehorse.

5) Sampling will be reduced or discontinued when DOE is satisfied that the situation has stabilized.

In conclusion we feel the mine should be held solely responsible for the clean up. The clean up must be supervised because of inadequacies displayed by the mine to react to an emergency situation and the mine's apparent lack of ability to apply sound engineering principles. The Yukon Territory Water Board should act immediately to inform the mine of the necessary action.

K.V. Weagle
Sr. Project Biologist
EPS Yukon

MINUTES OF THE YUKON TERRITORY
WATER BOARD MINING SUBCOMMITTEE
HELD ON 28 APRIL 1975

Anvil Tailings Spill Investigation

The following visited Cyprus Anvil Mine 25 April 1975 to determine if and how the deposited tailings could be picked up:

Mr. H. Boyd, Member Water Board
Dr. A.B. Hollingshead, Asst.Reg'l Dir. DIAND
Mr. C. Williams, A/Controller of Water Rights
Mr. G. Jones, District Supervisor, Fisheries

A discussion was held with the Mine personnel, Bob Marshall, Assistant Manager, and Newt Cornish, Superintendent. The need for picking up the tailings due to it's leachability was pointed out. Mr. Marshall advised that he had a front-end loader at our disposal.

The first area visited was immediately below the alignment for the new tailings dam. This area was previously stripped for future extension of this dam.

The material lying in place varied from 0 to 4" in thickness. The first inch was thawed material. The front-end loader was able to pick up the tailings (cleanly) without too much difficulty.

The second area looked at is site 4(a). It is a bend in the water course and a significant sized flood plain has been inundated with the frozen slurry. There appeared to be a one inch deposit of tailings in this region. The region is covered with scrub brush and spruce. The front end loader was worked in this region but was unable to do an adequate job. The sub-soil was frozen and the layer of tailings slurry was too thin for any effective work to be achieved.

The third area looked at was the creek bed and the canyon. The significant amount of tailings in the creek bed appeared within the first area described. The remainder of the creek was spotty. As far as removal within the canyon is concerned, the deposits are very concentrated but small in areal extent as it has gathered on point bars.

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The following recommendations are made:

1. The mine should be required to clean up the tailings immediately below the alignment of the new dam. The mine has agreed to this and is bringing in a buggy and cat to do the work.

2. The creek bed within the first region should be cleaned out by cat; Mine has agreed.

3. The remainder of the regions cannot be cleaned at this time. The regions should be monitored and B.C. Research should be contacted for their opinion on the leachability of the thin layers of tailings. The mine may then be required to go in and clean up these regions in the summer.

4. The clean-up of the canyon region will have to be investigated further. There is a possibility that clean-up could be attempted in the Fall when flows could be shut off.

CNW
28 APR'75

2092

1100A 1st Avenue,
Whitehorse, Y. T. Y1A 1A2.

May 2, 1975.

Mr. Al Gibson,
Chief, Northern B.C. &
Yukon Division,
1090 West Pender Street,
VANCOUVER, B. C. V6E 2P1.

Dear Mr. Gibson:

Re: Cyprus - Anvil Tailings Spill.

On April 22, 1975, Dr. C. Guarnaschelli and Mr. K. Veagle from the Environmental Protection Service, Mr. C. Williams from Department of Indian and Northern Affairs and myself inspected the spill area at the Anvil Mine. Following this inspection Dr. Guarnaschelli, K. Veagle and I prepared recommendations for clean up (see attached). These recommendations were presented to C. Wykes who in turn presented them to the Water Board sub-committee on mining.

On April 24, the three of us sat in at a Water Board sub-committee meeting to discuss our recommendations further. As there was considerable discussion regarding the feasibility of our recommendations, it was decided that a further inspection would be made on April 25, at which time an initial clean up attempt would be made.

During the evening of April 24 I had a request from C. Williams of D.I.N.A. to partake in the inspection trip on the 25th. Likewise, Mr. Wykes requested that I represent the D.O.E. on their behalf.

On April 25, Dr. M. Hollingshead and Mr. C. Williams from D.I.N.A., Mr. B. Boyd, Water Board member and myself flew to the Anvil mine. Upon arrival at the mine we met with Bob Marshall, assistant superintendent, and M. Cornish, general foreman to discuss clean up action and to request their assistance in attempting same.

Shortly thereafter we all proceeded to the spill area where a 988 Cat loader was made available, to determine the feasibility of clean up.

In the area immediately below the tailings dam break to the canyon mouth, it became apparent that clean up was possible; (recommendation #1). The loader was readily able to scrape up tailings and with the removal of a couple of inches of gravel as well, good results were achieved.

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Throughout the area below the canyon, the tailings are deposited over the creek flood plain in buck brush and other vegetation (recommendation # 2). Here the loader had extreme difficulty in reducing any results. It was not possible for the loader to break through the front and as the tailings deposits are fairly thin in this area, the loader could not scrape them up. The loader made several attempts at skinning the area but only resulted in breaking down the brush.

After the various attempts at clean up, the following points were made by Mr. W. Hollingshead and agreed to by the rest of the inspection party, including the mine personnel.

1. The area below the tailings pond break and to the mouth of the canyon (recommendation # 1) is to be cleaned up immediately. A rubber-tired scrapper with a push cat is to be used, with the tailings and gravel placed inside the final tailings containment area. The creek bed in this area is to be cleaned up as well, utilizing the same methods of clean up as described above.

2. As it was impossible to clean up the lower area (recommendation # 2) at present because of the frost conditions, clean up efforts will be discontinued for the present time. After the area thaws sufficiently another attempt is to be made with a scrapper or loader to skim the area, picking up vegetation and tailings together.

3. As the tailings in the canyon area are mainly covered with water clean up here if any will be deferred until a later date.

The D.I.N.A. is to monitor clean up activities that are presently being undertaken and advise the mine when attempts should be made at the lower area.

Throughout the inspection and clean up attempts on April 25, the atmosphere was one of co-operation by all. D.I.N.A. personnel accepted and initiated all reasonable approaches to clean up and the mine personnel carried out all requests made of them.

Yours truly,

original signed by
Garnet F. Jones,
District Supervisor.

G.F.J:djp

cc: C. Thom,
W. Hollingshead,
C. Williams.