Appendix V

Report Date:November 03, 2021 File:UA178045

Report Number:178045

REGISTERED MAIL

Quinsam Coal Corporation
950-1090 West Georgia Street
Vancouver BC V6E 3V7

Dear Quinsam Coal Corporation,

Re: Warning Letter, Unauthorized Discharge, Quinsam Coal Corporation, 5800 Argonaut Main, Campbell River, BC, Effluent

On August 18, 2021, Ministry of Environment, Environmental Protection Division staff conducted an inspection of your facility, located at Quinsam Coal Corporation, 5800 Argonaut Main, Campbell River, BC. The inspection determined that Quinsam Coal Corporation is out of compliance with the *Environmental Management Act*, Part 2 Prohibitions and Authorizations, Section 6(2) waste disposal. This Warning Letter lists the compliance verification information below.

By discharging waste under Environmental Management Act without a valid authorization Quinsam Coal Corporation commits an offence under the *Environmental Management Act (EMA)*. Section 120(3) of *EMA* states as follows:

> *120(3) A person who contravenes any of the following commits an offence and is liable on conviction to a fine not exceeding $1 000 000 or imprisonment for not more than 6 months, or both: (a) section 6 (2), (3) or (4) [waste disposal];…*

It should also be noted that, as an alternative to prosecution of the offence referenced above, the Ministry may initiate action to impose an administrative penalty against Quinsam Coal Corporation. The Administrative Penalties Regulation (EMA) (B.C. Reg. 133/2014) (APR) was brought into force in 2014. The APR describes the prescribed provisions of the EMA as well as that of specified regulations under which administrative penalties can be assigned. Section 12(1) of the APR states as follows:

> *12(1) A person who contravenes section 6 (2), (3) or (4), 7, 8, 9 (1) or (4), 11, 25 (2), 40 (1), (2), (3), (6) or (7), 48 (8), (10) or (15), 55 (1), 72 (1) or (2) or 76.2 of the Act is liable to an administrative penalty not exceeding $75 000.*

I request that Quinsam Coal Corporation immediately implement the necessary changes or modifications to correct the non-compliance(s) listed above with the *Environmental Management Act*. Further, I request that Quinsam Coal Corporation notify this office in writing, by email or letter within 30 days of this letter, advising what corrective measures have been taken, and what else is being done, to prevent similar non-compliances in the future.

Please submit your response to the Ministry's Compliance Mailbox at:EnvironmentalCompliance@gov.bc.ca.

As a result of this Warning, this authorization will be prioritized for follow-up inspection. The corrective measures will be reviewed by an Officer as part of the next inspection.

Finally, if you fail to take the necessary actions to restore compliance, you may be subject to escalating enforcement action. This Warning Letter and the alleged violations and circumstances to which it refers, will form part of the compliance history of Quinsam Coal Corporation and will be taken into account in the event of future violations.

Quinsam Coal Corporation failed to comply with the *Environmental Management Act*, section 6(2) as outlined below.

Ministry of Environment and Climate Change Strategy

Compliance
Environmental Protection Division

Mailing Address:
2080-A
Labieux Rd
Nanaimo BC V9E 6J9

Telephone: 250 751 3100
Facsimile: 250 751 3103
Website: www.gov.bc.ca/env

Inspection Details:

The inspection assessed compliance for the period from October 1, 2020, to August 20, 2021, and included the review of the following documents:

- Quinsam Coal Annual Water Quality Monitoring Report 2020-2021 (2020-2021 Annual Report), dated June 2021, including data from April 1, 2020 to March 31, 2021, Prepared by Quinsam Coal Corporation;
- PE:7008 Quarter 3 Report Oct- Dec 2020 (Q3 Report), submitted to the Ministry on January 29, 2021, Prepared by Quinsam Coal Corporation;
- PE:7008 Quarter 4 Report January through March 2021(Q4 Report), submitted to the Ministry on April 30, 2021, Prepared by Quinsam Coal Corporation;
- Quinsam Coal Corporations Quarterly Report (April-June 2021) For Effluent Permit PE: 7008 (Q1 Report), submitted to the Ministry on July 30, 2021, Prepared by Quinsam Coal Corporation;
- 2020 Q4 Water Quality Monitoring Report, submitted to the Ministry on May 1, 2020, Prepared by Quinsam Coal Corporation;
- Dangerous Goods Incident Report 204584 (DGIR 204584), dated March 17, 2021, reported by Quinsam to Emergency Management BC;
- PE:7008 NCR: Unauthorized Discharge for Quinsam Coal Mine DGIR 204584 Report (Initial NCR Report), sent to the Ministry on March 19, 2021, Prepared by Quinsam Coal Corporation;
- PE:7008 Follow-Up Report Unauthorized Discharge DGIR 204584 (DGIR 204584 Follow-Up Report), submitted to the Ministry on September 8, 2021, Prepared by Quinsam Coal Corporation; and,
- Response letter to ENV, dated October 7, 2021, Prepared by Quinsam Coal Corporation.

Requirement Description:	**Environmental Management Act, Environmental Management Act** 6 (2): Subject to subsection (5), a person must not introduce or cause or allow waste to be introduced into the environment in the course of conducting a prescribed industry, trade or business.

Details/Findings:	On March 17, 2021, Quinsam Coal Corporation (Quinsam) contacted Emergency Management BC to report that they had discovered material was "flowing 150m on ground and entering into the Quinsam River" at a reported rate of 12 liters per second, and the source of the material was "a mine pool causing a drowned water well" (Photo 1). This initial report is documented in DGIR 204584. In the Initial NCR Report, sent to the Ministry on March 19, 2021, Quinsam reports that the "groundwater well (QU11-09) accessing the mine pool, is artesian and discharging to the Quinsam river." This Initial NCR Report was sent via email and the email adds that "the discharge has been mitigated with a cap on the well as of March 19, 2021, reducing the risk for any further potential adverse impacts on the receiving environment." (Photos 2 and 3). In the Annual Report, it is stated that on February 23, 2020, the 5-Mains 2-North dewatering pump failed, and on November 30, 2020, the 1-Mains 2-North dewatering pump failed. The 2-North Mine was dewatered through a network of pump systems which include 1 Mains 2-North (1M2N), 5 Mains 2-North (5M2N), and 3 Mains 2-North (3M2N). The 2020-2021 Annual Report explains that after the failures of the 5M2N and 1M2N, "the 3-Mains [3M2N] pumping network was used as the backup system for dewatering the mine pool until the pumps could be replaced. Consequently, the 2-North mine pool water elevation rose to about 243.7 meters above sea level (mASL) by March 17, 2021". The 2020-2021 Annual Report states that "the ground elevation at QU11-09 is 226.3 mASL." This rise in mine pool water elevation is reported in the 2020-2021 Annual Report to have "caused the well to become artesian and discharge mine water into the Quinsam river." The DGIR 204584 Follow-Up Report explains that groundwater well "is a nested well that accesses three zones, shallow groundwater, water cover over potentially acid generating (PAG) course coal refuse (CCR) in the No. 1 coal seam and water quality below the 1 seam located in the River Barrier Pillar (RBP) between the 2 North and 5-South Mine." A cross section of 2-North Mine, River Barrier Pillar (QU11-09) and 5-South Mine is provided in the DGIR 204584 Follow-Up Report (Figure 1 attached). The 2020-2021 Annual Report states that the discharge occurred "from January 4, 2021, until March 19th, 2021, when the well was capped, and discharge was reduced but did not completely stop until May 1st, 2021". This report adds that during this time the discharge was directed to a sump, which the Officers observed to be unlined. The DGIR 204584 Follow-Up Report provides a less specific start date for the unauthorized discharge, and reports that the discharge began “sometime in January” 2021. A Although discharge from the well was stopped, as the DGIR 204584 Follow-Up Report states "the shallow groundwater aquifer in the area was under pressure and continued to seep from the ground upward into the Quinsam river until approximately July 20, 2021." [Findings continued below] ...
Compliance:	Out
Requirement Description:	**Environmental Management Act, Environmental Management Act** 6 (2): Subject to subsection (5), a person must not introduce or cause or allow waste to be introduced into the environment in the course of conducting a prescribed industry, trade or business.

Details/Findings:	[continued from above] ... The DGIR 204584 Follow-Up Report states that “water quality from the seepage area was consistently elevated above BC Water Quality Guidelines for Protection of Aquatic Life (WQG) in arsenic, boron and sulphate and occasionally elevated in copper and sulphide as H2S.” When Officers conducted the on-site inspection on August 18, 2021, they observed the flow path of this seep. Puddles were observed on the ground along the flow path of the seep, but no visible flow was observed entering the Quinsam River (Photos 4 and 5). The head of the seep (Photo 6) was found to be down gradient of the well and closer to the Quinsam River than the well head. In a letter emailed on October 7, 2021, Quinsam stated that they continue to monitor the area, and with recent rain fall the seep drainage channel is flowing again but it is not determined if it is mine related water flowing down the channel or if it is rain water runoff. This letter states that the "conductivity is elevated (~1000 s/cm) indicting it could be mine related water, but this could also be the flow path the water is taking". As mine impacted water was discharged to the environment without authorization to do so, Quinsam is out of compliance with section 6(2) of the Environment Management Act.
Compliance:	Out
Actions to be taken:	Ensure that no unauthorized discharges to the environment occur.

Compliance History:
This is the first electronic compliance record for this authorization since January 1, 2012.

This IR was created from the same inspection which also produced IR174939 and IR178073.

The Ministry of Environment Compliance and Enforcement Policy and Procedure (C&E Policy) prescribes common requirements and procedures for all Ministry staff to ensure consistent and risk-based assessment and response to non-compliance. Using the Non-Compliance Decision Matrix, the compliance determination for this inspection has been assessed as Level 3, Category B Warning Unauthorized 6(2).

More information about Environmental Compliance, the Non-Compliance Decision Matrix, and reporting and data submission requirements can be found at the links below:
General compliance information:
www.gov.bc.ca/environmentalcompliance
Non-Compliance Decision Matrix information:
www.gov.bc.ca/environment/how-compliance-is-assessed
Reporting and data submission requirements (to be sent to EnvAuthorizationsReporting@gov.bc.ca):
https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/comply

Please be advised that this inspection report may be published on the provincial government website within 7 days.

Below are attachments related to this inspection.

If you have any questions about this warning, please contact the undersigned.

Yours truly,

Katelyn Dick
Environmental Protection Officer

cc:

Attachments:
1) 2021-10-13 Figure 1 from Quinsam Follow-Up Report Unauthorized Discharge DGIR 204584 .jpg Figure 1. Cross section of 2-North Mine, River Barrier Pillar (QU11-09) and 5-South Mine provided by Quinsam in the DGIR 204584 Follow-Up Report.
2) 2021-10-13 Photo 7 from DGIR 204584 Follow-Up Report.jpg Photo 1 - Initial flow path of discharge into Quinsam River provided by Quinsam in the DGIR 204584 Follow-Up Report.
3) 2021-10-13 Photo 3 from DGIR 204584 Follow-Up Report.jpg Photo 2 - Taken March 18, 2021, showing discharge contained and directed into a low-lying sump area next to the well away from the river. Photo provided by Quinsam in the DGIR 204584 Follow-Up Report.
4) 2021-10-13 Photo 4 from DGIR 204584 Follow-Up Report.jpg Photo 3 - Taken March 19, 2021 showing the well capped discharge still directed to the sump area. Photo provided by Quinsam in the DGIR 204584 Follow-Up Report.
5) Photo (28).jpg Photo 4 - puddles on the ground of the seep flow path near the Quinsam River. Photo taken August 18, 2021, by Officer Dick.
6) Photo (30).jpg Photo 5 - puddle on the ground of the seep flow path farther back from the Quinsam River. Photo taken August 18, 2021, by

Deliver via:

Email:	X	**Fax:**		**Mail:**	
Registered Mail:	X	**Hand Delivery:**			

Ministry of Environment and Climate Change Strategy
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Environmental Protection Division
Mailing Address:
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Labieux Rd
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Facsimile: 250 751 3103
Website: www.gov.bc.ca/env

Officer Dick.

Ministry of Environment and Climate Change Strategy

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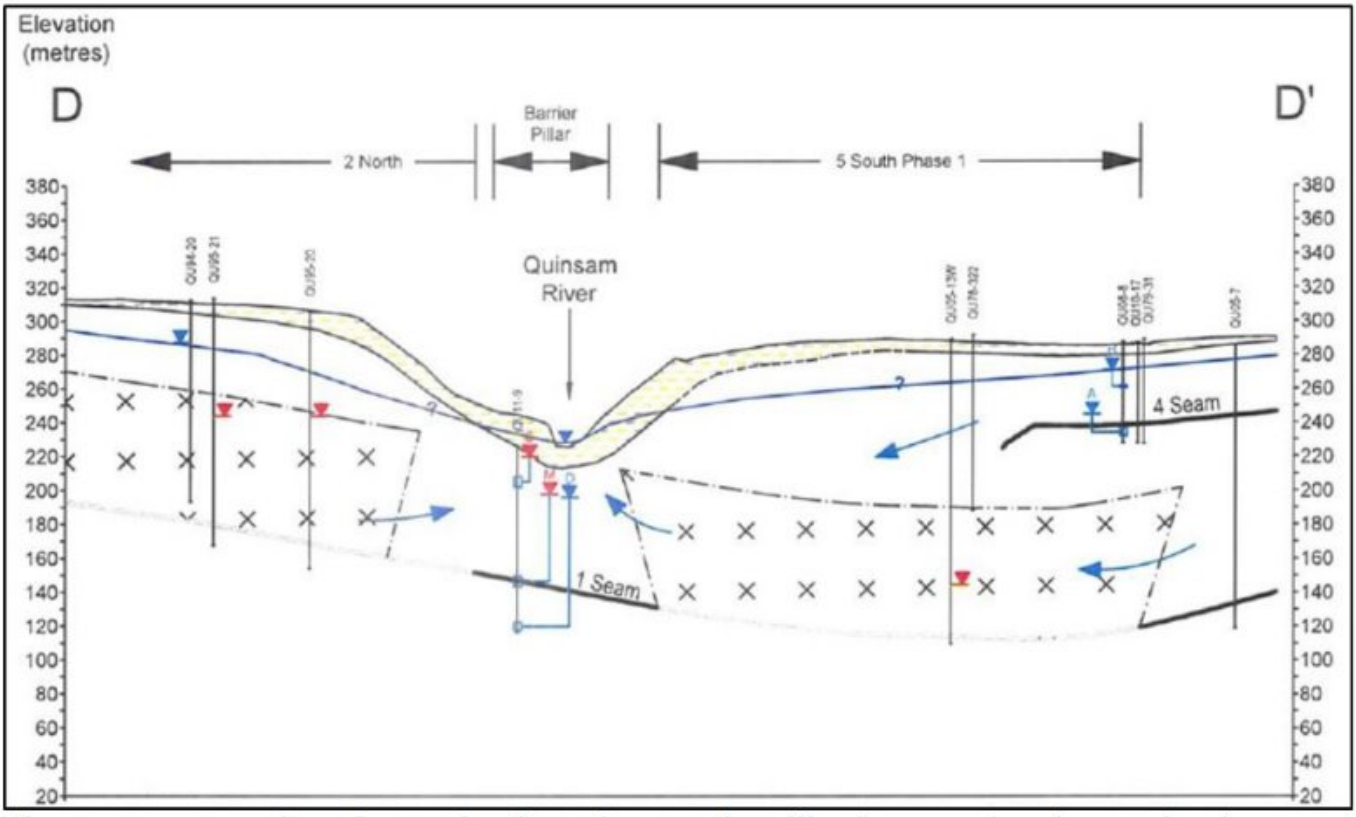

Img : 2021-10-13 Figure 1 - Source: Quinsam Follow-Up Report Unauthorized Discharge DGIR 204584 .jpg

Img comment: Figure 1. Cross section of 2-North Mine, River Barrier Pillar (QU11-09) and 5-South Mine provided by Quinsam in the DGIR 204584 Follow-Up Report.

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Img : Photo (30).jpg

Img comment: Photo 5 - puddle on the ground of the seep flow path farther back from the Quinsam River. Photo taken August 18, 2021, by Officer Dick.

Img : Photo (25).jpg

Img comment: Photo 6 - Head of groundwater seep near QU11-09 which was flowing into the Quinsam River

Report Date:November 03, 2021 File:UA178073

Report Number:178073

REGISTERED MAIL

Quinsam Coal Corporation
950-1090 West Georgia Street
Vancouver BC V6E 3V7

Dear Quinsam Coal Corporation,

Re: Warning Letter, Unauthorized Discharge, Quinsam Coal Corporation, 5800 Argonaut Main, Campbell River, BC, Effluent

On August 18, 2021, Ministry of Environment, Environmental Protection Division staff conducted an inspection of your facility, located at Quinsam Coal Corporation, 5800 Argonaut Main, Campbell River, BC. The inspection determined that Quinsam Coal Corporation is out of compliance with the *Environmental Management Act*, Part 2 Prohibitions and Authorizations, Section 6(2) waste disposal. This Warning Letter lists the compliance verification information below.

By discharging waste under Environmental Management Act without a valid authorization Quinsam Coal Corporation commits an offence under the *Environmental Management Act (EMA)*. Section 120(3) of *EMA* states as follows:

> *120(3) A person who contravenes any of the following commits an offence and is liable on conviction to a fine not exceeding $1 000 000 or imprisonment for not more than 6 months, or both: (a) section 6 (2), (3) or (4) [waste disposal];…*

It should also be noted that, as an alternative to prosecution of the offence referenced above, the Ministry may initiate action to impose an administrative penalty against Quinsam Coal Corporation. The Administrative Penalties Regulation (EMA) (B.C. Reg. 133/2014) (APR) was brought into force in 2014. The APR describes the prescribed provisions of the EMA as well as that of specified regulations under which administrative penalties can be assigned. Section 12(1) of the APR states as follows:

> *12(1) A person who contravenes section 6 (2), (3) or (4), 7, 8, 9 (1) or (4), 11, 25 (2), 40 (1), (2), (3), (6) or (7), 48 (8), (10) or (15), 55 (1), 72 (1) or (2) or 76.2 of the Act is liable to an administrative penalty not exceeding $75 000.*

I request that Quinsam Coal Corporation immediately implement the necessary changes or modifications to correct the non-compliance(s) listed above with the *Environmental Management Act*. Further, I request that Quinsam Coal Corporation notify this office in writing, by email or letter within 30 days of this letter, advising what corrective measures have been taken, and what else is being done, to prevent similar non-compliances in the future.

Please submit your response to the Ministry's Compliance Mailbox at:EnvironmentalCompliance@gov.bc.ca.

As a result of this Warning, this authorization will be prioritized for follow-up inspection. The corrective measures will be reviewed by an Officer as part of the next inspection.

Finally, if you fail to take the necessary actions to restore compliance, you may be subject to escalating enforcement action. This Warning Letter and the alleged violations and circumstances to which it refers, will form part of the compliance history of Quinsam Coal Corporation and will be taken into account in the event of future violations.

Quinsam Coal Corporation failed to comply with the *Environmental Management Act*, section 6(2) as outlined below.

Ministry of Environment and Climate Change Strategy

Compliance
Environmental Protection Division

Mailing Address:
2080-A
Labieux Rd
Nanaimo BC V9E 6J9

Telephone: 250 751 3100
Facsimile: 250 751 3103
Website: www.gov.bc.ca/env

Inspection Details:

The inspection assessed compliance for the period from October 1, 2020, to August 20, 2021, and included the review of the following documents:

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- PE:7008 Quarter 3 Report Oct- Dec 2020 (Q3 Report), submitted to the Ministry on January 29, 2021, Prepared by Quinsam Coal Corporation;
- PE:7008 Quarter 4 Report January through March 2021(Q4 Report), submitted to the Ministry on April 30, 2021, Prepared by Quinsam Coal Corporation;
- Quinsam Coal Corporations Quarterly Report (April-June 2021) For Effluent Permit PE: 7008 (Q1 Report), submitted to the Ministry on July 30, 2021, Prepared by Quinsam Coal Corporation;
- 2020 Q4 Water Quality Monitoring Report, submitted to the Ministry on May 1, 2020, Prepared by Quinsam Coal Corporation;
- PE:7008 Follow-Up Report Unauthorized Discharge DGIR 204584 (DGIR 204584 Follow-Up Report), submitted to the Ministry on September 8, 2021, Prepared by Quinsam Coal Corporation;
- Suspension of Long Lake Seep Passive Treatment System, dated February 15, 2018, Prepared by the Ministry;
- Response letter to ENV, dated October 7, 2021, Prepared by Quinsam Coal Corporation;
- Long Lake Seep as an Authorized Discharge Point and Long Lake Seep Passive Treatment System - Demonstration System Overview and Long Term Plan (2017 LLS Treatment Report), dated November 30, 2017, Prepared by Gary Gould (Golder Associates);
- Quinsam Coal Corporations Quarterly Report (July 1 - September 30) 2018 (2018 Q2 Report), submitted to the Ministry on November 2, 2018, Prepared by Quinsam Coal Corporation;
- Long Lake Seepage Treatment - Supplemental Evaluation (PTS 2018 Evaluation), dated May 22, 2018, prepared by Lorax Environmental;
- Mitigation of the Long Lake Seep, dated December 1, 2010, Prepared by the Ministry; and,
- Ministry Response to PE:7008 Request for a Temporary Bypass of Works for Long Lake Seep and Notification Letter for 2-South Pump, dated August 31, 2021, prepared by the Director.

Requirement Description:	**Environmental Management Act, Environmental Management Act** 6 (2): Subject to subsection (5), a person must not introduce or cause or allow waste to be introduced into the environment in the course of conducting a prescribed industry, trade or business.

Details/Findings:	As described on page 53 of the 2020-2021 Annual Report, Quinsam Coal Corporation (Quinsam) has a bedrock groundwater seep delivering water from the 2-3 South mine pool and discharging at two sites into Long Lake. The two seep sites are monitored for water quality on a monthly basis – LLS is the smaller seep with more consistent flow, and LLSM is considered the primary seep, as flows at this site are typically much higher and more variable compared to LLS. Appendix 1 Table 32 of the 2020-2021 Annual Report and Appendix 1 Table 30 of the Q1 Report show that during the inspection period the LLSM seep site had detectable discharge flow rates from November 23, 2020, through to at least June 30, 2021, from when data was last reported. These same tables show that the LLS site had detectable discharge flow rates from November 10, 2020, to least June 29, 2021, from when data was last reported. During the on-site inspection Officers observed the LLSM seep flow path to be wet with several puddles with minimal flow near the top and no flow further down the path (Photos 1, 2, and 3). No flow was observed to be entering the lake from this seep. Quinsam staff confirmed that the seep was not reaching the lake at that time. During the on-site inspection Officers also observed the LLS seep which was flowing minimally, but more so than the LLSM seep (Photos 4 to 7). Officers followed the flow path to the lake; however, due to vegetation cover Officers could not determine if the seep effluent was entering the lake at the time of the inspection (Photo 8). Quinsam staff reported that it was not reaching the lake. Although Permit 7008 (Permit) requires that Quinsam monitor these seeps, there is no authorization for Quinsam to discharge to the environment from either site. These seeps have been known to the Ministry for a number of years. In a Ministry letter dated December 1, 2010, the director used Section 3.8 of the Permit to required Quinsam to install additional treatment works. This letter states that "Section 3.8 of the effluent discharge permit indicates that additional treatment works may be required based on the results of monitoring studies. At the November 4, 2010 ETRC meeting, Golder Associates (Golder) discussed the results of their recent Long Lake sediment study, in which lower benthic invertebrate biodiversity downstream of the seep was correlated with elevated sediment porewater sulphate levels." The 2010 letter goes on to state that "As a result of the above, and in accordance with sections 3.8 and 3.10 of effluent discharge permit PE-07008, Quinsam Coal Corporation is hereby required to install and operate a mitigation system to collect and treat the flow of effluent currently entering Long Lake via the seep, such that iron levels are reduced below the permit limits for settling pond 1. The system must also treat the effluent to reduce sulphate levels, considering the findings of the recent Long Lake sediment quality study." This 2010 letter did not state that Quinsam would be authorized to discharge via the seeps once a mitigation system was in place. [Details and findings continued below] ...
Compliance:	Out
Requirement Description:	**Environmental Management Act, Environmental Management Act** 6 (2): Subject to subsection (5), a person must not introduce or cause or allow waste to be introduced into the environment in the course of conducting a prescribed industry, trade or business.

Details/Findings:	[Finding continued] ... In an email sent on October 14, 2021, Quinsam staff explained that after this 2010 letter was issued, Quinsam began a three stage project with the purpose being to reduce the sulphate and iron levels in mine water discharging via the Long Lake seep. The email states that construction of the Passive Treatment System (PTS) (also known as the Long Lake Seep Treatment System) was "the second stage of this project. The first stage of the project was the bench scale testing to determine the parameters needed to design a system capable of treating flow rates measured at the Long Lake seep. The average discharge rate of the Long Lake seep was estimated at 18 litres/second (L/s). The plan presented was to go from the bench scale testing to a “Demonstration Module” that treats 25% of the seep flow, or 4.5 L/s. This Demonstration Module is regarded as the second stage of the project and is the current operating system with some modifications, as water is directed into the 2-South pit instead of the Aeration lagoon." The 2017 LLS Treatment Report states that " the demonstration phase of the Long Lake treatment system was constructed in 2012 and commissioned in 2012 (bio-chemical reactor cell) and 2013 (sulphide polish cell)." On pages 17 and 18 the 2017 LLS Treatment Report it's stated that in 2017 the system was treating 126,000 cubic meters of water a year and the remaining annual average discharge at the long lake seep was 204,400 cubic meters. Page 55 of the 2020-2021 Annual Report explains that the current PTS reduces discharge at the seep into Long Lake during low flow periods by dewatering the mine pool and decreasing the elevation of the mine pool below the elevation of the seep. This page of the report states that "the period of “no flow” at the Middle Seep into Long Lake (LLSM) has been observed to be extended by pumping down the mine pool." Page 9 of the 2020-2021 Annual Report explains that the PTS previously consisted of four ponds which include the "Biochemical Reactor (BCR), Sulphide Polishing Cell (SPCEFF), Aeration Lagoon (AL) & Settling Pond (SP) where water passively flowed through processing. Since 2018 only the ponds BCR and SPCEFF have been operating, with the other two ponds decommissioned. Since May 2018, the treatment system discharge was directed into the 2S pit from the SPCEFF." At the request of the Ministry, Quinsam completed a final report on the demonstration phase of the PTS which was submitted on May 22, 2018. This PTS 2018 Evaluation states that the purpose was to use the results of the report to formulate the plan for the long-term treatment system. On February 15, 2018, the Ministry issued a temporary amendment, allowing Quinsam to suspend operation of the PTS due to failure of the 2-South underground mine pool pump. This temporary amendment expired on May 31, 2018. In this time Quinsam attempted to implement an alternate mitigation strategy of grouting to try and stop the flow of effluent entering Long Lake via the seep. This strategy did not stop the seep discharges, and the PTS was reported to be operational again in early August of 2018, as reported in the 2018 Q2 Report. In April of 2018 Quinsam applied for a major permit amendment which included an application to have the Long Lake seeps authorized in the Permit. This amendment was never completed and thus the seeps remain unauthorized discharges. As mine impacted water is being discharged to the environment without authorization to do so, Quinsam is out of compliance with section 6(2) of the Environment Management Act.
Compliance:	Out
Actions to be taken:	Ensure that no unauthorized discharges to the environment occur.

Compliance History:
This is the first electronic compliance record for this authorization since January 1, 2012.

This IR was created from the same inspection which also produced IR174939 and IR178045.

The Ministry of Environment Compliance and Enforcement Policy and Procedure (C&E Policy) prescribes common requirements and procedures for all Ministry staff to ensure consistent and risk-based assessment and response to non-compliance. Using the Non-Compliance Decision Matrix, the compliance determination for this inspection has been assessed as Level 3, Category B, Warning Unauthorized 6(2).

More information about Environmental Compliance, the Non-Compliance Decision Matrix, and reporting and data submission requirements can be found at the links below:
General compliance information:
www.gov.bc.ca/environmentalcompliance
Non-Compliance Decision Matrix information:
www.gov.bc.ca/environment/how-compliance-is-assessed
Reporting and data submission requirements (to be sent to EnvAuthorizationsReporting@gov.bc.ca):
https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/comply

Please be advised that this inspection report may be published on the provincial government website within 7 days.

Below are attachments related to this inspection.

If you have any questions about this warning, please contact the undersigned.

Yours truly,

Katelyn Dick
Environmental Protection Officer

cc:

Attachments:
1) Photo (60).jpg Photo 1 - LLSM Seep flow path taken from up gradient
2) 2021-08-19 Jason Photo (1).jpg Photo 2 - LLSM Seep flow path with mud and the flow appearing to end here
3) Photo (66).jpg Photo 3 - LLSM Seep flow path with another view of the mud
4) Photo (70).jpg Photo 4 - LLS Seep flow path up gradient of weir
5) Photo (69).jpg Photo 5 - LLS Seep flow path gradient of weir, but below Photo 4
6) Photo (71).jpg Photo 6 - LLS Seep weir
7) 2021-08-19 Jason Photo (6).jpg Photo 7 - LLS Seep weir
8) Photo (72).jpg Photo 8 - LLS flow path down gradient of the weir, close to Long lake, covered in vegetation

Deliver via:

Email:	X	**Fax:**		**Mail:**	
Registered Mail:	X	**Hand Delivery:**			

Ministry of Environment and Climate Change Strategy
Compliance
Environmental Protection Division
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Website: www.gov.bc.ca/env

Ministry of Environment and Climate Change Strategy

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Img : Photo (60).jpg

Img comment: Photo 1 - LLSM Seep flow path taken from up gradient

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Img comment: Photo 8 - LLS flow path down gradient of the weir, close to Long lake, covered in vegetation

Report Date:November 04, 2021 File:7008

Report Number:174939

REGISTERED MAIL

Quinsam Coal Corporation
950-1090 West Georgia Street
Vancouver BC V6E 3V7

Dear Quinsam Coal Corporation,

Re: An Administrative Penalty Referral, Permit 7008, 5800 Argounaut Main, CR, BC, (West on Hwy 28) Underground Coal Mining Coal Mine, Effluent

On August 18, 2021, Ministry of Environment and Climate Change Strategy (Ministry) Officers Katelyn Dick and Jason Lasuik (Officers) conducted an on-site inspection of Quinsam Coal Corporation (Quinsam), an underground coal mine (Site) located at 5800 Argonaut Main, Campbell River, BC to verify compliance with Environmental Management Act (EMA) Permit 7008 (Permit). The Permit authorizes the discharge of effluent from a coal mining operation and coal preparation plant to the land with overland flows draining to Middle Quinsam Lake, Long Lake, Iron River, and Quinsam River, subject to the conditions of the Permit. The Permit was issued on December 23,1987, and most recently amended on November 1, 2019. Present during the inspection was Kathleen Russel, (Environment Coordinator, Quinsam) and Cassandra Cyr (Technician, Quinsam).

For your information, this inspection record is being referred for an Administrative Penalty.

Inspection Details:

The inspection assessed compliance for the period from October 1, 2020, to August 20, 2021, and included the review of the following documents:

- Quinsam Coal Annual Water Quality Monitoring Report 2020-2021 (2020-2021 Annual Report), dated June 2021, including data from April 1, 2020 to March 31, 2021, Prepared by Quinsam Coal Corporation;
- PE:7008 Quarter 3 Report Oct- Dec 2020 (Q3 Report), submitted to the Ministry on January 29, 2021, Prepared by Quinsam Coal Corporation;
- PE:7008 Quarter 4 Report January through March 2021 (Q4 Report), submitted to the Ministry on April 30, 2021, Prepared by Quinsam Coal Corporation;
- Quinsam Coal Corporations Quarterly Report (April-June 2021) For Effluent Permit PE: 7008 (Q1 Report), submitted to the Ministry on July 30, 2021, Prepared by Quinsam Coal Corporation;
- 2020 Q4 Water Quality Monitoring Report, submitted to the Ministry on May 1, 2020, Prepared by Quinsam Coal Corporation;
- PE:7008 Follow-Up Report Unauthorized Discharge DGIR 204584 (DGIR 204584 Follow-Up Report), submitted to the Ministry on September 8, 2021, Prepared by Quinsam Coal Corporation;
- Proposed Iron River Sediment & Benthic Sampling (CABIN) Program, dated August 19, 2020, Prepared by Quinsam Coal Corporation;
- Iron River Sediment & Benthic Sampling (CABIN) Program approval, dated September 4, 2020, prepared by the Ministry;
- Dangerous Goods Incident Report 204584 (DGIR 204584), dated March 17, 2021, reported by Quinsam to Emergency Management BC;
- 2020 Environmental Procedures Manual (EMP), dated March 2021, Prepared by Quinsam Coal Corporation;
- Response letter to ENV, dated October 7, 2021, Prepared by Quinsam Coal Corporation;
- Mitigation of the Long Lake Seep, dated December 1, 2010, Prepared by the Ministry;
- Probe Calibration Log from August 10, 2021 to October 4, 2021, Prepared by Quinsam Coal Corporation; and,
- Authorization 7008 Amendment to Monitoring Requirements, dated November 1, 2019, prepared by the Ministry.

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Requirement Description:	**1. AUTHORISED DISCHARGES, 1.1, 1.1.1** 1.1.1: This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT as shown on attached Site Plan A. The site reference number for this discharge is E207409. 1.1.1 The maximum and average authorised rates of discharge are 0.32 m3/s and 0.08 m3/s respectively. The authorised discharge period is 365 d/a.
Details/Findings:	Following a review of Appendix 1 - Table 28 of the 2020-2021 Annual Report and Appendix 1 - Table 26 of the Q1 Report, it was determined that no reported daily maximum rates of discharge exceeded the Permit limit. The 2020-2021 Annual Report includes an annual average rate of discharge for the 2020-2021 reporting year (April 1, 2020 to March 31, 2021) for E207409, and this reported average rate was 0.074 m3/s which is less than the permitted average rate.
Compliance:	In
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.1, 1.1.2** 1.1.2: This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT as shown on attached Site Plan A. The site reference number for this discharge is E207409. 1.1.2 The characteristics of the discharge shall not exceed: Parameters: Total Suspended Solids (daily composite), Limit: 25, Unit: mg/L; Total Suspended Solids (hourly composite), Limit: 35, Unit: mg/L; pH, Limit: 6.0 - 8.5, Unit: - ; Ammonia (as N) , Limit: 1.0, Unit: mg/L; Phosphorus (as P) (asterisk - see NOTE 1), Limit: 0.03, Unit: mg/L; NOTE 1: Dissolved; Oil and Grease (total), Limit: 5, Unit: mg/L; Aluminum (asterisk - see NOTE 1), Limit: 0.5, Unit: mg/L; NOTE 1: Dissolved; Copper (asterisk - see NOTE 1), Limit: 0.02, Unit: mg/L; NOTE 1: Dissolved; Iron (asterisk - see NOTE 1), Limit: 0.3, Unit: mg/L; NOTE 1: Dissolved; Lead (asterisk - see NOTE 1), Limit: 0.05, Unit: mg/L; NOTE 1: Dissolved; Zinc (asterisk - see NOTE 1), Limit: 0.1, Unit: mg/L; NOTE 1: Dissolved; Rainbow Trout Bioassay (Oncorhynchus mykiss), Limit: (double asterisk - see NOTE 2), Unit: - ; NOTE 2: No mortalities at 100 percent effluent concentration after 96 hours.

Details/Findings:	Following a review of the Appendix 1 - Table 6 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 6 of the Q1 Report, the following exceedances were determined: Date Parameter Result March 09, 2021 Dissolved Iron 0.679 mg/L March 15, 2021 Dissolved Iron 0.44 mg/L March 10, 2021 TSS 65 mg/L March 11, 2021 TSS 39 mg/L March 19, 2021 TSS 35 mg/L March 22, 2021 Dissolved Iron 9.82 mg/L March 22, 2021 TSS 35 mg/L Note that compliance with effluent quality limits for Ammonia, Phosphorus, and the Rainbow Trout Bioassay were not assessed in this inspection record as samples collected at E207409 were not analyzed for these parameters during the inspection period. Analysis for Ammonia and Phosphorus is required every 3 years during the low flow period (August to early September). The Rainbow Trout Bioassay is required once a year and the 2021 test was not conducted within the inspection period.
Compliance:	Out
Actions to be taken:	Ensure the characteristics of the discharge do not exceed the Permit limits.
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.1, 1.1.3** 1.1.3: This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT as shown on attached Site Plan A. The site reference number for this discharge is E207409. 1.1.3 The authorised works are surface runoff collection and diversion ditches, plant-site runoff collection box, flocculation facilities, settling pond #4, 2 North pit sump, tailings storage facility, 2 North portal sump, surface and underground pumping facilities and related appurtenances approximately located as shown on attached Site Plan A.
Details/Findings:	During the on-site inspection, the Officers viewed some of the north coal mining operation and coal preparation plant authorised works such as settling pond #4 and several surface runoff collection and diversion ditches. As some authorised works are underground and not visible and others were not viewed during the on-site inspection due to time constraints, Officer Dick emailed Quinsam to request confirmation of the works, and on October 7, 2021, Quinsam sent a letter confirming that all the authorised works listed in section 1.1.3 were located as shown on attached Site Plan A during the on-site inspection.
Compliance:	In

Requirement Description:	**1. AUTHORISED DISCHARGES, 1.1, 1.1.4** 1.1.4: This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT as shown on attached Site Plan A. The site reference number for this discharge is E207409. 1.1.4 The authorised works must be complete and in operation on and from the date of this amended permit.
Details/Findings:	As described on page 22 of the 2020-2021 Annual Report, on February 23, 2020, the 5-Mains 2-North dewatering pump failed and was not in operation again until it was replaced on March 25, 2021. On November 30, 2020, the 1-Mains 2-North dewatering pump failed and was not in operation again until it was replaced on April 6, 2021. The pumps are part of the surface and underground pumping facilities listed as authorised works in Section 1.1.3, and as they were not in operation for a significant amount of time, Quinsam is out of compliance with this requirement.
Compliance:	Out
Actions to be taken:	Ensure the the authorised works are complete and in operation.
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.2, 1.2.1** 1.2.1: This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION as shown on attached Site Plan B. The site reference number for this discharge is E218582. 1.2.1 The maximum and average authorised rates of discharge are 0.46 m3/s and 0.10 m3/s respectively. The authorised discharge period is 365 d/a.
Details/Findings:	Following a review of the Appendix 1 - Table 29 of the 2020-2021 Annual Report and Appendix 1 - Table 27 of the Q1 Report, it was determined that no reported daily maximum rates of discharge exceeded the Permit limits. The 2020-2021 Annual Report includes an annual average rate of discharge for the 2020-2021 reporting year (April 1, 2020 to March 31, 2021) for E218582, and this reported average rate was 0.023 m3/s which is below the permitted average rate.
Compliance:	In

Requirement Description:	**1. AUTHORISED DISCHARGES, 1.2, 1.2.2** 1.2.2: This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION as shown on attached Site Plan B. The site reference number for this discharge is E218582. 1.2.2 The characteristics of the discharge shall not exceed: Parameters: Total Suspended Solids (daily composite), Limit: 25, Unit: mg/L; Total Suspended Solids (hourly composite), Limit: 35, Unit: mg/L ; pH, Limit: 6.0 - 8.5, Unit: - ; Ammonia (as N) , Limit: 1.0, Unit: mg/L; Phosphorus (as P) (asterisk - see NOTE 1), Limit: 0.03, Unit: mg/L; NOTE 1: Dissolved; Oil and Grease (total), Limit: less than DL (3 asterisk - See NOTE 3), Unit: mg/L; NOTE 3: less than Detection Limit; Aluminum (asterisk - see NOTE 1), Limit: 0.5, Unit: mg/L; NOTE 1: Dissolved; Copper (asterisk - see NOTE 1), Limit: 0.02, Unit: mg/L; NOTE 1: Dissolved; Iron (asterisk - see NOTE 1), Limit: 0.5, Unit: mg/L; NOTE 1: Dissolved; Lead (asterisk - see NOTE 1), Limit: 0.05, Unit: mg/L; NOTE 1: Dissolved; Zinc (asterisk - see NOTE 1), Limit: 0.2, Unit: mg/L; NOTE 1: Dissolved; Rainbow Trout Bioassay (Oncorhynchus mykiss), Limit: (double asterisk - see NOTE 2), Unit: - ; NOTE 2: No mortalities at 100 percent effluent concentration after 96 hours.
Details/Findings:	Following a review of the Appendix 1 - Table 11 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 11 of the Q1 Report, it was determined that Quinsam was in compliance with the Permit limits for effluent quality discharged from the south coal mining operation (E218582). Note that compliance with effluent quality limits for Ammonia, Phosphorus, and the Rainbow Trout Bioassay were not assessed in this inspection record as samples collected at E218582 were not analyzed for these parameters during the inspection period.
Compliance:	In
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.2, 1.2.3** 1.2.3: This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION as shown on attached Site Plan B. The site reference number for this discharge is E218582. 1.2.3 The authorised works are surface runoff collection and diversion ditches, flocculation facilities, settling pond, 3 pit sumps (1S, 2S and 3S Pits), an adit sump (4S Adit), pumping facilities , and related appurtenances approximately located as shown on attached Site Plan B.
Details/Findings:	During the on-site inspection, the Officers viewed some of the south coal mining operation authorised works such as settling pond 1 and some of the surface runoff collection and diversion ditches. In a letter sent on October 7, 2021, Quinsam stated that sites 1S and 4S Adit, have been reclaimed since 2015-2016. As these authorised works are no longer in place as per Site Plan B, Quinsam is out of compliance with this requirement.
Compliance:	Out

Actions to be taken:	Apply to have the Permit amended to remove the 1S Pit and 4S Adit sites.
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.2, 1.2.4** 1.2.4: This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION as shown on attached Site Plan B. The site reference number for this discharge is E218582. 1.2.4 The authorised works must be complete and in operation on and from the date of this amended permit.
Details/Findings:	As stated in Section 1.2.3, in a letter sent on October 7, 2021, Quinsam stated that sites 1S Pit and 4S Adit, have been reclaimed since 2015-2016. As these authorised works are no longer in operation, Quinsam is out of compliance with this requirement.
Compliance:	Out
Actions to be taken:	Apply to have the Permit amended to remove the 1S and 4S Adit sites.
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.3, 1.3.1** 1.3.1: This subsection applies to the discharge of effluent from the BLOCK 242 COAL MINING OPERATION as shown on attached Site Plan C. The site reference number for this discharge is E225796. 1.3.1 Subject to Subsection 4.4.3 the maximum authorised rate of discharge is 0.0082 m3/s. The authorised discharge period is 365 d/a.
Details/Findings:	During the on-site inspection, Quinsam staff reported that there continues to be no mine activity in the Block 242 Coal Mining Operation. The 2020-2021 Annual Report states that the site is reclaimed and not monitored. No discharge was reported to have occurred from E225796 during the inspection period. Furthermore, a letter amendment was approved by the Ministry on November 1, 2019, which removed monitoring requirements for E225796 and E225797 from the Permit monitoring program, stating that the most effective way to monitor for any impacts here is in the groundwater, which will continue to be sampled. As there is no discharge, and monitoring of this site is no longer required, compliance with this section is not applicable during the inspection period.
Compliance:	Not Applicable

Requirement Description:	**1. AUTHORISED DISCHARGES, 1.4, 1.4.1** 1.4.1: This subsection applies to the discharge of effluent from the 7 SOUTH MINING OPERATION as shown on attached Site Plan D and E. The site reference number for this discharge is E292069. 1.4.1 The maximum authorized rate of discharge is 0.005 m3/s. The authorized discharge period is 365 d/a.
Details/Findings:	The 2020-2021 Annual Report states that no discharge occurred from the 7 South Mining Operation during the 2020-2021 reporting period (April 1, 2020 to March 31, 2021), and Appendix 1 - Table 30 of the 2020-2021 Annual Report supports this statement. Table 28 of the Q1 Report shows that no discharge occurred from E292069 during April, May, and June of 2021. In a letter sent on October 7, 2021, Quinsam stated that water is captured at 7-South containment pond and 7SSD (E292069) and pumped back to the 7-South Adit. From there water from underground and surface is pumped via 58 Hp pump and pipeline into the 5-South Mine pool. The Annual Report states that all water from 5-South (includes 7-South water) and SDS will enter 2-North mine and be received at Settling Pond #4 or 2-North subaqueous PAG-CCR facility. As no discharge occurred during the inspection period, the maximum rate of discharge was not exceeded.
Compliance:	In
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.4, 1.4.2** 1.4.2: This subsection applies to the discharge of effluent from the 7 SOUTH MINING OPERATION as shown on attached Site Plan D and E. The site reference number for this discharge is E292069. 1.4.2 The characteristics of the discharge shall not exceed: Parameter: Total Suspended Solids (daily composite), Limit: 25, Unit: mg/L; Total Suspended Solids (hourly composite), Limit: 35, Unit: mg/L; pH, Limit: 6.0 - 8.0, Unit: - ; Sulphate (asterisk - see NOTE 1) , Limit: 500, Unit: mg/L; NOTE 1: Dissolved; Aluminum (asterisk - see NOTE 1), Limit: 0.1, Unit: mg/L; NOTE 1: Dissolved; Cadmium (asterisk - see NOTE 1), Limit: 0.000045, Unit: mg/L; NOTE 1: Dissolved; Copper (asterisk - see NOTE 1), Limit: 0.014, Unit: mg/L; NOTE 1: Dissolved; Iron (asterisk - see NOTE 1), Limit: 0.35, Unit: mg/L; NOTE 1: Dissolved; Selenium (asterisk - see NOTE 1), Limit: 0.016, Unit: mg/L; NOTE 1: Dissolved; Rainbow Trout Bioassay (Oncorhynchus mykiss), Limit: (double asterisk - see NOTE 2), Unit: - ; NOTE 2: No mortalities at 100 percent effluent concentration after 96 hours.
Details/Findings:	Following a review of the Appendix 1 - Table 23 of the 2020-2021 Annual Report and the Appendix 1 - Table 23 of the Q1 Report it was determined that Quinsam was in compliance with the Permit limits for effluent quality from the 7 south mining operation (E292069). These samples are collected in the E292069 pond before it is pumped back to the 7SPS (E292110).
Compliance:	In

Requirement Description:	**1. AUTHORISED DISCHARGES, 1.4, 1.4.3** 1.4.3: This subsection applies to the discharge of effluent from the 7 SOUTH MINING OPERATION as shown on attached Site Plan D and E. The site reference number for this discharge is E292069. 1.4.3 The authorized works are surface runoff collection and diversion ditches, flocculation facilities, one surface settling pond, an adit sump (7S Adit), pumping facilities and related appurtenances approximately located as shown on attached Site Plan D.
Details/Findings:	In a letter sent on October 7, 2021, Quinsam stated that the authorized works listed in Section 1.4.3 are complete and operational as listed.
Compliance:	In
Requirement Description:	**1. AUTHORISED DISCHARGES, 1.4, 1.4.4** 1.4.4: This subsection applies to the discharge of effluent from the 7 SOUTH MINING OPERATION as shown on attached Site Plan D and E. The site reference number for this discharge is E292069. 1.4.4 The authorized works must be complete and in operation when the discharge commences.
Details/Findings:	In a letter sent on October 7, 2021, Quinsam stated that the authorized works listed in Section 1.4.3 are complete and operational as listed.
Compliance:	In
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.1 North Coal Mining and Coal Preparation Plant Operation (Settling Pond #4), 2.1.2 Pumping Rate** 2.1.2: The combined rate at which effluent may be pumped from the 2-North portal sump, 2-North underground workings and the tailings facility to the settling pond shall not exceed 0.32 m3/s unless authorisation has been obtained from the Director. Pumping rates shall be decreased as necessary to accommodate flows as defined in Subsection 2.1.1(a).
Details/Findings:	The pumping rate data was not included in the 2020-2021 Annual Report, Q3 Report, Q4 Report or Q1 Report; therefore, compliance with this requirement is not determined for the inspection period.

Compliance:	Not Determined
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.1 North Coal Mining and Coal Preparation Plant Operation (Settling Pond #4), 2.1.4 Wash Plant Effluent** 2.1.4: Wash plant effluent shall not be conveyed to the 2-North pit sump via the wash plant ditch. The Permittee shall keep records of the date, duration and estimated volume of any overflow of the wash plant effluent sump. Subject to review of this data, the Director may request changes to the works.
Details/Findings:	The Q3 Report, Q4 Report, Q1 Report, and 2020-2021 Annual Report confirm that Quinsam has been in care and maintenance throughout the inspection period. Final coal processing occurred in October 2019. In a letter sent on October 7, 2021, Quinsam stated that no wash plant effluent has been conveyed to 2-North pit sump and no overflow of the wash plant effluent sump occurred during the inspection period; therefore, compliance with this requirement is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.1 North Coal Mining and Coal Preparation Plant Operation (Settling Pond #4), 2.1.5 Settling Pond Solids and Storage Volume** 2.1.5: Settled solids which have accumulated in the settling pond shall be removed as required to maintain a minimum water depth below the pond decant of 1.0 m and a minimum water storage volume of 2 300 m3. The removed solids shall be disposed of in a manner approved by the Director.
Details/Findings:	During the on-site inspection, the Officers viewed Settling Pond 4 and determined the water depth below the pond decant to be less than 1.0 m (Photo 1). The water storage volume was not determined. Quinsam staff stated that no solids had been removed from the settling pond during the inspection period.
Compliance:	Out
Actions to be taken:	Ensure that a minimum water depth below the pond decant of at least 1.0 m is maintained.

Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.1 North Coal Mining and Coal Preparation Plant Operation (Settling Pond #4), 2.1.7 Effluent Characteristics (for Total Suspended Solids)** 2.1.7: The characteristics of the effluent with respect to total suspended solids shall be equivalent to or less than the levels specified in Subsection 1.1.2 for discharge rates up to 0.32 m3/s (or as may be redefined by the Director according to Subsection 2.1.1). Variances may be allowed by the Director for higher discharge rates. The Director may as well, in the future, establish a maximum level for total suspended solids during extreme storm events.
Details/Findings:	As described in the findings for Subsection 1.1.2 characteristics of the effluent exceeded Permit limits for TSS on four instances. As per Appendix 1 - Table 28 of the 2020-2021 Annual Report on the dates of exceedances (listed below) discharge rates were less than 0.32 m3/s; therefore, Quinsam is out of compliance with this requirement. March 10, 2021 TSS 65 mg/L March 11, 2021 TSS 39 mg/L March 19, 2021 TSS 35 mg/L March 22, 2021 TSS 35 mg/L
Compliance:	Out
Actions to be taken:	Ensure the characteristics of the effluent with respect to total suspended solids are equivalent to or less than the levels specified in Subsection 1.1.2.
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.2 South Coal Mining Operation (Settling Pond #1), 2.2.3 Settling Pond Solids and Storage Volume** 2.2.3: Settled solids which have accumulated in the settling pond shall be removed as required to maintain a minimum water depth below the pond decant of 1.0 m and a minimum water storage volume of 1400 m3. The removed solids shall be disposed of in a manner approved by the Director.
Details/Findings:	During the on-site inspection, Quinsam staff informed the Officers that no settled solids were removed during the inspection period. The Officers observed the pond decant and determined that greater than 1.0 m of water depth below the pond decant was maintained.
Compliance:	In

Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.2 South Coal Mining Operation (Settling Pond #1), 2.2.5 Effluent Characteristics (for Total Suspended Solids** 2.2.5: The characteristics of the effluent with respect to total suspended solids shall be equivalent to or less than the levels specified in Subsection 1.2.2 for discharge rates up to 0.46 m3/s (or as may be redefined by the Director according to Section 2.2.1). Variances may be allowed by the Director for higher discharge rates. The Director may as well, in the future, establish a maximum level for total suspended solids during extreme storm events.
Details/Findings:	As stated in the findings for Subsection 1.2.2, the characteristics of the effluent with respect to total suspended solids were determined to be in compliance for the inspection period.
Compliance:	In
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.3 Block 242 Coal Mining Operation, 2.3.1 Pumping Rate** 2.3.1: Subject to Subsection 4.4.3 the rate at which effluent may be pumped from the underground sump(s) to the primary settling pond and from the primary settling pond to the secondary settling pond shall not exceed 0.043 m3/s (up to a maximum of 400 m3/d) and 0.0082 m3/s respectively.
Details/Findings:	During the on-site inspection, Quinsam staff reported that there continues to be no mine activity in Block 242 Coal Mining Operation. The 2020-2021 Annual Report states that the site is reclaimed and not monitored. No discharge was reported to have occurred from E225796 during the inspection period. As there is no discharge, compliance with this section is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.4 7 South Mining Operation Settling Pond, 2.4.1 Rate of Discharge** 2.4.1: The maximum flow of 0.005 m3/s is the peak routed outflow from the settling pond resulting from an assumed response of the maximum equivalent catchment area as defined in subsection 2.4.3 to a design 1 in 10 year return period of 24 hour duration. Additional flow from the 7S adit sump pump must not cause the settling pond to overflow or exceed the maximum flow. The Director may from time to time redefine the maximum routed outflow based upon actual on-site measurements.

Details/Findings:	The 2020-2021 Annual Report states that to date, no water has ever been routed or pumped or flowed from the 7-South Portal Sump to the settling pond (7SSD). Appendix 1 - Table 30 of the 2020-2021 Annual Report shows no flow from 7SSD during the entire reporting period (April 1, 2020 to March 31, 2021). Page three of the 2021 Q1 Report confirms that discharge did not occur during Q1 (April, May, and June 2021). As no effluent is pumped to the settling pond, compliance with this requirement is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.4 7 South Mining Operation Settling Pond, 2.4.2 Pumping Rate** 2.4.2: The Permittee shall keep records of the date, duration and estimated volume when water from the 7 South Adit Sump (7S-Sump) is pumped to the settling pond and submit the records to the Regional Waste Manager upon request.
Details/Findings:	The Appendix VII Annual Status Form of the 2020-2021 Annual Report states that to date, no water has ever been routed or pumped or flowed from the 7-South Portal Sump to the settling pond (7SSD). All water from 7-South Portal Sump (7SPS) is pumped underground to 5S mine pool which eventually enters Settling Pond #4 which is the north coal mining operation settling pond. Page three of the 2021 Q1 report confirms that discharge did not occur during Q1 (April, May, and June 2021). As no effluent is pumped to the settling pond, compliance with this requirement is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.4 7 South Mining Operation Settling Pond, 2.4.5 Discharge Routing** 2.4.5: The discharge from the settling pond shall be conveyed to the Quinsam River via an ephemeral stream (Stream 1) and a wetland (Lower Wetland) adjacent the Quinsam River in a manner acceptable to the Director.
Details/Findings:	As described in Appendix I, Table 30 of the 2020-2021 Annual Report and Appendix I, Table 28 of the Q1 Report, no water was discharged from the settling pond (7SSD) and conveyed to the Quinsam River during the inspection period and compliance with this requirement is not applicable for the inspection period.

Compliance:	Not Applicable
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.4 7 South Mining Operation Settling Pond, 2.4.6 Settling Pond Discharge Dilution Rate** 2.4.6: The 7-South settling pond must not discharge unless a minimum flow is measured in Stream 1 (7S monitoring site). The minimum Stream 1 to discharge ratio shall be documented to the satisfaction of the Director in the Environmental Procedures Manual required in Section 3.2.
Details/Findings:	As stated in a letter emailed by Quinsam on October 7, 2021, no discharge from the 7 South Mining Operation settling pond (7SSD - E292069) occurred during the inspection period; therefore, compliance with this requirement is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**2. SPECIFIC REQUIREMENTS, 2.4 7 South Mining Operation Settling Pond, 2.4.8 Contingency Measures** 2.4.8: In the event of a 7-South settling pond discharge permit limit exceedance, the settling pond discharge valve must be closed immediately and the effluent must temporarily be diverted to the 5S mine or 7S mine underground workings, or to another area acceptable to the Director. Details of the contingency measures shall be documented in the Environmental Procedures Manual required under Section 3.2. Additionally, the Permittee shall follow Section 3.9 requirements.
Details/Findings:	Following a review of Appendix 1 - Table 23 of the 2020-2021 Annual Report and the Appendix 1 - Table 23 of the Q1 Report it was determined that Quinsam were in compliance with the Permit limits for effluent quality from the 7 south mining operation (E292069) for the inspection period; therefore, compliance with this requirement is not applicable for the inspection period.
Compliance:	Not Applicable

Requirement Description:	**3. GENERAL REQUIREMENTS, 3.1 Flocculation** 3.1: In order to meet the levels specified for total suspended solids in Subsections 1.1, 1.2, 1.3 and 1.4, it may be necessary to use chemical flocculating agents. The Permittee is required to carry out laboratory testing of the flocculants proposed for toxicity and effectiveness for removing suspended matter. The methodology and details of the testing program are subject to the approval of the Director. Based on the results of laboratory testing the Director may approve a flocculant for use under actual operating conditions. At least one alternate flocculant shall be tested and, if approved by the Director, an adequate supply shall be located within 6 hours travel time from the mine site.
Details/Findings:	In a letter emailed to the Ministry on October 7, 2021, Quinsam stated that the flocculation facilities had not been used during the inspection period; therefore, compliance with this requirement is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.2 Environmental Procedures Manual** 3.2: An Environmental Procedures Manual shall be maintained by the Permittee as a working document for use by supervisory personnel and a guide to field staff during various stages of the project. The manual should cover all aspects of onsite environmental management applicable to mine construction and operation including but not limited to, the following items: 1) Land clearing, topsoil stripping and road construction; 2) Construction of water diversion and water collection ditches; 3) Flocculation; 4) Macrophyte growth and harvesting in the ponds, drainage ditches and discharge channels; 5) Acid-base accounting and materials handling; 6) Reclamation activities; 7) Construction of waste dumps; 8) Contingency planning for effluent liming, lake aeration and forest fertilization. 9) Settling pond operation under various flow/discharge conditions for the Block 242 coal mining operation as detailed in the Block 242 Mine Water Management Quinsam Coal Mine, AGRA Earth and Environmental Limited, February 1997; 10) Underground pump operation during extreme rainfall events; 11) Settling pond operation for the 7-South mining operation, including details on the contingency measures. The Permittee shall review the Environmental Procedures Manual at least on an annual basis to determine if any changes are required and submit any revisions to the Director for approval. Annual reviews and submission of revisions are due on March 31 of each year.
Details/Findings:	A revised version of the EMP was submitted to the Ministry via email on March 25, 2021.
Compliance:	In

Requirement Description:	**3. GENERAL REQUIREMENTS, 3.3 Acid Generation Control** 3.3: In order to prevent generation of acid rock drainage and associated environmental problems it is necessary that potentially acid generating materials be identified and be subject to special handling techniques. The frequency of sampling and analysis shall be according to procedures outlined in Mines Act Permit C-172 and the Environmental Procedures Manual. If in the opinion of the Director acid rock generation is developing, the Permittee shall undertake corrective action as outlined in the appropriate section of the Environmental Procedures Manual or take any additional steps which are considered necessary to resolve the problem.
Details/Findings:	In a letter emailed to the Ministry on October 7, 2021, Quinsam stated that no new potentially acid generating materials were identified during the inspection period.
Compliance:	In
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.5 Nutrient Control** 3.5: The mine and coal preparation plant shall be operated such that the discharge of nutrients will not result in excessive algal growth or biomass accumulation which, in turn, could have a negative impact on water quality, fish production, and aesthetic values of Quinsam and Iron River systems. If in the opinion of the Director there is evidence of deterioration in the water quality, which can be attributed to the significant discharge of nutrients from the mine operation, the Permittee may be required to implement any of the mitigative measures outlined in the Environmental Procedures Manual (lake aeration/forest fertilization) or other methods as approved by the Director.
Details/Findings:	The Officers observed some algae growth at settling pond 1 (Photo 2) which is the south coal mining operation settling pond. Algae growth was also observed at LLE (Photo 3) which is the wetland that settling pond 1 discharges into before flowing into Long Lake. At this time, the Director has not provided an opinion on whether there is evidence of deterioration in the water quality; therefore, compliance for this requirement was not determined for the inspection period.
Compliance:	Not Determined
Actions to be taken:	Ensure that the discharge of nutrients does not result in excessive algal growth or biomass accumulation.

Requirement Description:	**3. GENERAL REQUIREMENTS, 3.7 Spill Reporting** 3.7: All spills to the environment (as defined in the Spill Reporting Regulation) shall be reported immediately in accordance with the Spill Reporting Regulation. Notification shall be via the Provincial Emergency Program at 1-800-663-3456.
Details/Findings:	During the inspection period, Quinsam had one spill which was discovered on March 17, 2021, and was reported immediately in accordance with the Spill Reporting Regulation via the Provincial Emergency Program. This spill is documented in DGIR 204584.
Compliance:	In
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.8 Additional Works** 3.8: Based on the results of the monitoring program and/or other information obtained in connection with these discharges, the Permittee may be required to install additional treatment works or take other measures considered necessary. This may include, but is not necessarily limited to, facilities for the removal of nutrients and metals from the effluent or the provision of additional settling pond capacity.
Details/Findings:	During the inspection period, no additional treatment works were required by the Ministry to be installed; therefore, this section is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.9 Maintenance of Works, Non-Compliances and Emergency Procedures** 3.9.1: The Permittee shall inspect the authorized works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the Permittee which prevents continuing effective operation of the authorized works, the Permittee shall take appropriate remedial action and immediately notify the Regional Waste Manager or a designated Officer.

Details/Findings:	In the 2020 Q4 Water Quality Monitoring Report submitted to the Ministry on May 1, 2020, it was reported that the on February 23, 2020, the 5-Mains 2-North dewatering pump failed. The 2-North Mine was dewatered through a network of pump systems which include 1 Mains 2-North (1M2N), 5 Mains 2-North (5M2N), and 3 Mains 2-North (3M2N). According to the 2020 Q4 Water Quality Monitoring Report "3M2N was installed for contingency". The 2020 Q4 Water Quality Monitoring Report states that "Quinsam has considered the cost and associated risk of not replacing the 5Mains pump [5M2N] carefully and concluded that having 1M2N and 3-Mains [3M2N] pumps operating during this time is expected to maintain water levels." The 2020 Q4 Water Quality Monitoring Report goes on to state "the water elevation at 5-Mains was stabilizing at 267 feet without the pump operating during this time. Quinsam will be turning off the 5-South mine pump discharging into the 3-Mains area of 2-North to decease the volume of water entering 3-Mains". On January 29, 2021, the Q3 Report was submitted to the Ministry and it states that "the 1M2N dewatering pump failed on November 30th leaving only 3M2N operating to dewater the 2-Noth mine." On March 17, 2021, Quinsam contacted Emergency Management BC to report that they had discovered material was "flowing 150m on ground and entering into the Quinsam River" at a reported rate of 12 liters per second, and the source of the material was "a mine pool causing a drowned water well". This initial report is documented in DGIR 204584. The 2020-2021 Annual Report explains that after the failures of the 5M2N and 1M2N, "the 3-Mains pumping network was used as the backup system for dewatering the mine pool until the pumps could be replaced. Consequently, the 2-North mine pool water elevation rose to about 243.7 meters above sea level (mASL) by March 17, 2021". The 2020-2021 Annual Report states that "the ground elevation at QU11-09 is 226.3 mASL." This rise of the mine pool water elevation is reported to have "caused the well to become artesian and discharge mine water into the Quinsam river" as stated in the 2020-2021 Annual Report. This discharge is reported to have occurred "from January 4, 2021 until March 19th, 2021 when the well was capped, and discharge was reduced but did not completely stop until May 1st, 2021" as stated in the 2020-2021 Annual Report. This report adds that during this time the discharge was directed to a sump, which the Officers observed to be unlined. Although discharge from the well was stopped as the DGIR 204584 Follow-Up Report states "the shallow groundwater aquifer in the area was under pressure and continued to seep from the ground upward into the Quinsam river until approximately July 20, 2021." As reported in the 2020-2021 Annual Report, the 5-Mains 2-North dewatering pump was replaced on March 25, 2021, and the 1-Mains 2-North dewatering pump was replaced on April 6, 2021. The failure of the 5-Mains 2-North dewatering pump was initially reported to the Ministry in the 2020 Q4 Water Quality Monitoring Report submitted to the Ministry on May 1, 2020. The failure of the 1-Mains 2-North dewatering pump was first reported in the Q3 Report, submitted to the Ministry on January 29, 2021. In a letter emailed on October 7, 2021, Quinsam stated that they reported this 1 Mains 2-North pump failure to the Ministry of Energy Mines and Petroleum Resources (now called Ministry of Energy, Mines and Low Carbon Innovation) through daily /weekly reports. As these works were not maintained in good working order, were not repaired or replaced for a significant amount of time, and the Regional Waste Manager (Director) was not notified immediately, Quinsam is out of compliance for not maintaining these underground pumping facilities in good working order and not sending notification of their failure immediately.
Compliance:	Out

Actions to be taken:	Ensure authorized works are maintained in good working order and in the event of an emergency or condition beyond the control of the Permittee which prevents continuing effective operation of the authorized works, take appropriate remedial action and immediately notify the Regional Waste Manager or a designated Officer.
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.9 Maintenance of Works, Non-Compliances and Emergency Procedures, 3.9.2** 3.9.2: In the event of commissioning of the works, operational system modifications, equipment failure, operator error, spill, permit non-compliances or any other condition which may affect the quantity or quality of the discharge such that permit limits may be exceeded, the Permittee shall: take appropriate action to prevent or mitigate pollution, immediately notify the Provincial Emergency Program (PEP) 1-800-663-3456, as soon as possible, conduct sampling and analysis of discharges which may cause non-compliance with the characteristics of the discharge as specified in Section 1 of this permit and provide the results to the Regional Waste Manager or a designated Officer, as soon as practicable (but not later than 30-days after the Permittee became aware of the event), investigate the event and provide a report including results of sampling and analysis, permit non-compliance, corrections to the operational system, root cause of the event and decisions for corrective and preventive action.
Details/Findings:	As described in Section 3.9.1 during the inspection period on November 30, 2020, the 1-Mains 2-North dewatering pump failed. This equipment failure was not reported to the Provincial Emergency Program (PEP) 1-800-663-3456 until an unauthorized discharged of mine impacted water occurred from groundwater well QU11-09 into the Quinsam River on March 17, 2021.
Compliance:	Out
Actions to be taken:	Ensure the Provincial Emergency Program (PEP) is notified immediately of commissioning of the works, operational system modifications, equipment failure, operator error, spill, permit non-compliances or any other condition which may affect the quantity or quality of the discharge such that permit limits may be exceeded.
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.10 Bypasses** 3.10: The Permittee shall ensure that no effluent is discharged without being processed through the authorised works unless prior written approval is received from the Director.

Details/Findings:	As described in Section 3.9.1, during the inspection period effluent was discharged to the Quinsam River without being processed through the authorised works, without prior written approval from the Director during the inspection period. The DGIR 204584 Follow-Up Report explains that groundwater well QU11-09 located down gradient of the River Barrier Pillar mine pool, became artesian and discharged to the Quinsam River. It is then stated that "QU11-09 is a nested well that accesses three zones, shallow groundwater, water cover over potentially acid generating (PAG) course coal refuse (CCR) in the No. 1 coal seam and water quality below the 1 seam located in the River Barrier Pillar (RBP) between the 2 North and 5-South Mine." As described in Section 3.9.1 this discharge occurred when the 2-North mine pool water elevation rose due to pump failures. Figure 1 of the 2020-2021 Annual Report shows that effluent dewatered from 2-North mine pool via the dewatering pumps (1M2N, 5M2N, and 3M2N) should pass through Settling Pond 4 before being discharged to the Quinsam River. However, this unauthorized discharge, which was discovered by Quinsam staff on March 17, 2021, bypassed the authorised works and discharged to the Quinsam River without passing through Settling Pond 4. The 2020-2021 Annual Report states that the discharge from the QU11-09 groundwater well "occurred from January 4, 2021 until March 19th, 2021". The DGIR 204584 Follow-Up Report states that the groundwater well accessing the mine pool discharged to the Quinsam River from sometime in January [2021] until March 18, 2021". Both the 2020-2021 Annual Report and the DGIR 204584 Follow-Up Report state that the well was capped on March 19, 2021; however, after this, the shallow groundwater aquifer in the area was under pressure and continued to seep from the ground upward into the Quinsam River until approximately July 20, 2021. When the Officers were on-site on August 18, 2021, there was no flow from the seep reaching the river, however the flow path was wet with several puddles (Photos 4 and 5). In a letter sent on October 7, 2021, Quinsam stated that they continue to monitor the area and with recent rain fall the seep drainage channel is flowing again but it is not determined if it is mine related water flowing down the channel or if it is rain water runoff. This letter states that the "conductivity is elevated (~1000 s/cm) indicting it could be mine related water, but this could also be the flow path the water is taking". As effluent was discharged to the Quinsam River without being processed through the authorised works, without prior written approval from the Director for approximately six months during the inspection period, Quinsam is out of compliance with this requirement.
Compliance:	Out
Actions to be taken:	Ensure that no effluent is discharged without being processed through the authorised works unless prior written approval is received from the Director.
Requirement Description:	**3. GENERAL REQUIREMENTS, 3.10 Bypasses** 3.10: The Permittee shall ensure that no effluent is discharged without being processed through the authorised works unless prior written approval is received from the Director.

Details/Findings:	As described on page 53 of the 2020-2021 Annual Report, Quinsam has a bedrock groundwater seep delivering water from the 2-3 South mine pool and discharging from two sites into Long Lake. The two seep sites are monitored for water quality on a monthly basis – LLS is the smaller seep with more consistent flow, and LLSM is considered the primary seep, as flows at this site are typically much higher and more variable compared to LLS. Appendix 1 Table 32 of the 2020-2021 Annual Report and Appendix 1 Table 30 of the Q1 Report show that during the inspection period the LLSM seep site had detectable discharge flow rates from November 23, 2020, through to at least June 30, 2021, from when data was last reported. These same tables show that the LLS site had detectable discharge flow rates from November 10, 2020, to least June 29, 2021, from when data was last reported. During the on-site inspection Officers observed the LLSM seep flow path to be wet with several puddles with minimal flow near the top and no flow further down the path (Photos 6, and 7). No flow was observed to be entering the lake from this seep. Quinsam staff confirmed that the seep was not reaching the lake at that time. During the on-site inspection Officers also observed the LLS seep which was flowing minimally, but more so than the LLSM seep (Photos 8 and 9). Officers followed the flow path to the lake; however, due to vegetation cover Officers could not determine if the seep effluent was entering the lake at the time of the inspection (Photo 10). Quinsam staff reported that it was not reaching the lake. Although Permit 7008 requires that Quinsam monitor the seep, there is no authorization for Quinsam to discharge to the environment from either site. These seeps sites have been known to the Ministry for a number of years. In a Ministry letter dated December 1, 2010, the Director used Section 3.8 of the Permit to require Quinsam to install additional treatment works. This 2010 letter did not state that Quinsam would be authorized to discharge via the seeps once a mitigation system was in place. In an email sent on October 14, 2021, Quinsam staff explained that after this 2010 letter was issued, Quinsam began a three stage project to reduce the sulphate and iron levels in mine water discharging via the Long Lake seep. The email states that construction of the Passive Treatment System (PTS) was the second stage of this project as a “Demonstration Module” that treats 25% of the seep flow, or 4.5 L/s. This Demonstration Module is the current operating system with some modifications, as water is directed into the 2-South pit instead of the Aeration lagoon. In April of 2018, Quinsam applied for a major permit amendment which included an application to have the Long Lake seeps authorized in the Permit. This amendment was never completed. As described on page 9 and in Figure 2 of the 2020-2021 Annual Report, the flow path in the south coal mining operation has water flowing between the 2S and 3S pits and then from 3S to settling pond 1. Settling pond 1 discharges to the Long Lake entrance (LLE) which then enters long lake. The PTS draws water from monitoring well QU11-11 (INF), treats it and then discharges it into the 2S pit, and although the PTS has been in place since 2013, the works associated with the system are not authorized in this Permit. As the two long lake seep sites discharge effluent from the 2-3 South mine pool into Long Lake without this effluent being processed through settling pond 1, and these discharges occurred for at least six months of the inspection period, without prior written approval from the Director, this is considered to be a bypass.
Compliance:	Out
Actions to be taken:	Ensure that no effluent is discharged without being processed through the authorised works unless prior written approval is received from the Director.

Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.1 North Coal Mining and Coal Preparation Plant Operation (i) Decent - WD (EMS # E207409)** 4.1.1 (i): See Attached Document for Section 4.1.1 (i) Table
Details/Findings:	The November 1, 2019, letter amendment reduced the monitoring frequency for TSS at this location (E207409 settling pond 4 discharge) from daily to weekly for decant flow conditions exceeding 0.054 m3/s, and the amendment letter states that dissolved metals analysis must be undertaken monthly. Following a review of the Appendix 1 - Table 6 and Table 27 and Table 28 of the 2020-2021 Annual Report and Appendix 1 - Table 6 and Table 26 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.1.1 (i) Table.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.1 North Coal Mining and Coal Preparation Plant Operation (ii) Culvert, at Middle Quinsam Lake Road - WC (EMS # E207411)** 4.1.1 (ii): See Attached Document for Section 4.1.1 (ii) Table
Details/Findings:	The November 1, 2019, letter amendment reduced the frequency of pH and conductivity monitoring from weekly to monthly for monitoring site Middle Quinsam Lake Road – WC (EMS # E207411). Following a review of the Appendix 1 - Table 10 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 10 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.1.1 (ii) Table.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.1 North Coal Mining and Coal Preparation Plant Operation (iii) 2-North Portal Sump Effluent - SN-P-Sump (EMS # E283433)** 4.1.1 (iii): See Attached Document for Section 4.1.1 (iii) Table

Details/Findings:	The November 1, 2019, letter amendment reduced the frequency of pH and conductivity monitoring from weekly to monthly for monitoring site E283433. Following a review of Appendix 1 - Table 8 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 8 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.1.1 (iii) Table.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.1 North Coal Mining and Coal Preparation Plant Operation (iv) Additional Sites Monitoring Schedule** 4.1.1 (iv): See Attached Document for Section 4.1.1 (iv) Table
Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, states that monitoring site E292126 (south dyke sump) has been removed from the monitoring program. As Section 4.1.1 (iv) Table includes monitoring sites E207412 and E292126, compliance is now only assessed with monitoring requirements for site E207412. Furthermore, the November 1, 2019, letter amendment reduced the frequency of pH and conductivity monitoring from weekly to monthly for monitoring site E207412. Following a review of Appendix 1 - Table 7 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 7 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.1.1 (iv) Table.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.2 South Coal Mining Operation (i) Decant - SPD (EMS # E218582)** 4.1.2 (i): See Attached Document for Section 4.1.2 (i) Table
Details/Findings:	The November 1, 2019, letter amendment reduced the monitoring frequency for TSS at this location (E218582 settling pond 1 discharge) from daily to weekly for decant flow conditions exceeding 0.046 m3/s, and the amendment letter states that dissolved metals analysis must be undertaken monthly. Following a review of Appendix 1 - Table 11, Table 27, and Table 29 of the 2020-2021 Annual Report and Appendix 1 - Table 11 and Table 27 of the Q1 Report it was determined that on March 9, 2021, one day of continuous flow rate monitoring was missed at the South Coal Mining Operation Decant – SPD (EMS # E218582). Section 4.1.2 (i) Table requires continuous monitoring of flow rate at EMS site E218582. This non-compliance was reported to be due to the flow meter sensor failing in the 2020-2021 Annual Report.

Compliance:	Out
Actions to be taken:	Ensure requirements of Section 4.1.2 (i) Table are followed, and flow rate is continuously monitored at EMS site E218582.
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.2 South Coal Mining Operation (ii) Culvert, Downstream End at Access Road - SPC (EMS #E217014)** 4.1.2 (ii): See Attached Document for Section 4.1.2 (ii) Table
Details/Findings:	The November 1, 2019, letter amendment reduced the frequency of pH and conductivity monitoring from weekly to monthly for monitoring site E217014 (Culvert, Downstream End at Access Road – SPC). Following a review of the Appendix 1 - Table 19 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 19 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.1.2 (ii) Table.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.2 South Coal Mining Operation (iii) South Pit Main Sump Water - 3S (EMS # E217015)** 4.1.2 (iii): See Attached Document for Section 4.1.2 (iii) Table
Details/Findings:	The November 1, 2019, letter amendment reduced the frequency of pH and conductivity monitoring from weekly to monthly for monitoring site E217015. Following a review of Appendix 1 - Table 18 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 18 of the Q1 Report it was determined that monitoring frequency was conducted in compliance with Section 4.1.2 (iii) Table.
Compliance:	In
Actions to be taken:	

Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.2 South Coal Mining Operation (iv) Additional Monitoring Sites Schedule (2S, 3S77, 4S-Lo)** 4.1.2 (iv): See Attached Document for Section 4.1.2 (iv) Table
Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, states that monitoring sites E292128 (1977 bulk sample pit) and E292129 (culvert downstream of 4 south access road) have been removed from the monitoring program. As Section 4.1.2 (iv) Table includes monitoring sites E292127 and E292128, and E292129, compliance is now only assessed with monitoring requirements for site E292127. Furthermore, the November 1, 2019, letter amendment reduced the frequency of pH and conductivity monitoring from weekly to monthly for monitoring site E292127. Following a review of Appendix 1 - Table 16, Table 27, and Table 31 of the 2020-2021 Annual Report and Appendix 1 - Table 16 and Table 29 of the Q1 Report it was determined that on December 19, 2020, one day of continuous flow rate monitoring was missed at the 2S outflow E292127. Section 4.1.2 (iv) Table requires continuous inflow and outflow monitoring of EMS site E292127. This non-compliance was reported to be due to the battery on the flow meter dying in the 2020-2021 Annual Report.
Compliance:	Out
Actions to be taken:	Ensure requirements of Section 4.1.2 (iv) Table are followed, and flow rate is continuously monitored at EMS site E292127.
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.3 Block 242 Coal Mining Operation (i) Decant (EMS # E225796)** 4.1.3 (i): See Attached Document for Section 4.1.3 (i) Table
Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, states that monitoring site E225796 – Block 242 decant has been removed from the monitoring program; therefore, compliance with this section is no longer applicable.
Compliance:	Not Applicable

Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.3 Block 242 Coal Mining Operation (ii) Underground Settling Pond Effluent (EMS # E225797)** 4.1.3 (ii): See Attached Document for Section 4.1.3 (ii) Table
Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, states that monitoring site E225797 – Block 242 underground settling pond effluent has been removed from the monitoring program; therefore, compliance with this section is no longer applicable.
Compliance:	Not Applicable
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.4 7 South Mining Operation (i) Decant - 7SSD (EMS # E292069)** 4.1.4 (i): See Attached Document for Section 4.1.4 (i) Table
Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, states that the monitoring frequency at this location (E292069) is reduced from monthly to quarterly when no discharge is occurring. Following a review of Appendix 1 - Table 23, Table 27, and Table 30 of the 2020-2021 Annual Report and Appendix 1 - Table 23 and Table 28 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.1.4 (i) Table.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.4 7 South Mining Operation (ii) 7 South Adit Sump - 7S-Sump (EMS # E292110)** 4.1.4 (ii): See Attached Document for Section 4.1.4 (ii) Table

Details/Findings:	Section 4.1.4 (ii) Table requires daily monitoring of TSS and weekly monitoring of all other parameters when pumping from 7 South Adit sump to 7S settling pond. In a letter emailed on October 7, 2021, Quinsam confirmed that pumping from 7 South Adit sump to 7S settling pond (7SSD) has never occurred, and water is pumped the opposite direction from 7S containment pond into 7 South Adit sump. A review of Appendix 1 - Table 25 of the 2020-2021 Annual Report and Appendix 1 - Table 25 of the Q1 Report determined that monitoring of the 7 South Adit sump (E292110) occurred monthly during the inspection period. As Section 4.1.4 (ii) Table does not specify a monitoring frequency when no pumping is occurring compliance with this requirement could not be determined for the inspection period.
Compliance:	Not Determined
Actions to be taken:	
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.1 Initial Dilution Zone Monitoring Sites (i) Long Lake Entrance - LLE** 4.2.1 (i): See Attached Document for Section 4.2.1 (i) Table
Details/Findings:	Following a review of Appendix 1 - Table 20, Table 27, and Table 32 of the 2020-2021 Annual Report and Appendix 1 - Table 20 and Table 30 of the Q1 Report it was determined that monitoring frequency was conducted in compliance with Section 4.2.1 (i) Table at monitoring site E292130.
Compliance:	In
Actions to be taken:	
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.1 Initial Dilution Zone Monitoring Sites (ii) Road Crossing-etc.** 4.2.1 (ii): See Attached Document for Section 4.2.1 (ii) Table

Details/Findings:	Following a review of Appendix 1 - Table 24 and Table 27 of the 2020-2021 Annual Report and Appendix 1 - Table 24 of the Q1 Report it was determined that continuous flow monitoring did not occur from November 20, 2020, through to January 27, 2021, for a total of 69 days missed. The 2020-2021 Annual Report states this was due to the fact that a level logger could not be retrieved from a well. This is a non-compliance with the requirements of Section 4.2.1 (ii) Table which requires continuous monitoring of both decant flow and no decant flow at Road Crossing bridge on Stream 1 above the Lower Wetland – 7S (EMS # E292109).
Compliance:	Out
Actions to be taken:	Ensure requirements of Section 4.2. (ii) Table are followed, and flow rate is continuously monitored at EMS site E292109.
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.2 Seep Monitoring Sites (i) Long Lake Seeps (LLS)** 4.2.2 (i): See Attached Document for Section 4.2.2 (i) Table
Details/Findings:	Following a review of Appendix 1 - Table 21, Table 22, Table 27, Table 32, of the 2020-2021 Annual Report and Appendix 1 - Table 21, Table 22, and Table 30 of the Q1 Report it was determined that monitoring was conducted in compliance with Section 4.2.2 (i) Table at monitoring site E292131.
Compliance:	In
Actions to be taken:	
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.4 Sediment and Benthic Monitoring Sites** 4.2.4: See Attached Document for Section 4.2.4

Details/Findings:	Part (i) of Section 4.2.4 requires that the permittee shall submit proposed sediment monitoring locations in the 7-South Area 5 receiving environment to the Director by October 1, 2014, for approval. In a letter dated September 4, 2020, Ministry staff state that on August 19, 2020, Quinsam submitted an application to address permit clause 4.2.4 (i) and two additional monitoring sites were approved to be added to the sediment and benthic invertebrate sampling requirements of the Permit. These sites are: - E297231 - IR6 – Upstream of 7-South Area 5 potential impact(s), downstream of 4-South potential impact(s) - E297232 - IR8 - New “Lower Iron River” site, downstream of IRT6 and the expected inflow of mine impacted water This September 4, 2020, approval letter also states "While the submission of proposed locations for sediment and benthic monitoring was due October 1, 2014, it is understood that no mining has yet occurred in Area 5. Therefore, the data collected will represent baseline conditions relative to any impacts from mining in 7-South Area 5." For this reason, and because this occurred outside of the inspection period, compliance with part (i) of Section 4.2.4 is not applicable.
Compliance:	Not Applicable
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.4 Sediment and Benthic Monitoring Sites** 4.2.4: See Attached Document for Section 4.2.4
Details/Findings:	Part (ii) of Section 4.2.4 requires that near seep sediment monitoring applicable to No Name Lake and Middle Quinsam Lake seeps sites consist of a set of three samples equally spaced on a 5 m triangular grid. Long Lake near seep sediment monitoring sites consist of a set of six samples equally spaced on a 5 m triangular grid. A review of the 2020-2021 Annual Report determined that sediment monitoring was previously conducted in August through October of 2016 and is required to be completed every five years. The 2020-2021 Annual Report states that the sediment and benthic invertebrate sampling will be conducted in early September 2021. As this data is not yet available it will be reviewed in the next inspection of Quinsam and compliance with this section is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.5 Stream Monitoring Requirements** 4.2.5: See Attached Document for Section 4.2.5

Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, states that the following monitoring sites and applicable monitoring requirements are removed from the monitoring program: - E286930 (Quinsam River downstream Site 1, upstream 7S operation); - E292112 (lower wetland outlet, at confluence of Quinsam River); and, - E297230 (Iron River upstream of mining operations). The November 1, 2019, letter amendment also altered the monitoring frequencies of the following monitoring sites: - E219412 (Long Lake outlet) – monitoring requirements are reduced at this site from weekly to 5-in-30 three times per year (spring, summer and fall) - E297231 (Iron River upstream of 7SA5) and E297232 (Iron River downstream of 7SA5 and 242 inputs): The monitoring frequency at these two sites are reduced from monthly and 5-in-30 three times per year to 5-in-30 two times per year (summer and fall). Following a review of Appendix 1 - Table 27, Table 41, Table 42, and Table 43 of the 2020-2021 Annual Report and Appendix 1 - Table 37 of the Q1 Report it was determined that the required stream monitoring sites were monitored in October of 2020 and April of 2021 for five days in 30 days for all required parameters. Monitoring sites E225798 and E225808 were not monitored in October of 2020 and April 2021; however, as per Section 4.3.9 of the Permit monitoring at the Block 242 Mining Operation required by Subsections 4.1.3 and 4.2.3 shall commence at the start of mine-influenced discharge from the Block 242 secondary settling pond. As the Block 242 Mining Operation is reclaimed and not discharging, this monitoring was not required during the inspection period.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.6 Lake Monitoring Requirements** 4.2.6: See Attached Document for Section 4.2.6 Table
Details/Findings:	The letter amendment issued by the Ministry on November 1, 2019, altered the monitoring frequencies of the following monitoring sites: - E217018 (No Name Lake, centre) – monitoring requirements are reduced to five samples collected within a 30-day time frame (“5-in-30 sampling”) in the spring only. - E292118 (Lower Quinsam Lake, centre) – monitoring requirements are reduced to 5-in-30 sampling in the spring only. Following a review of the 2020-2021 Annual Report and the Q1 Report it was determined that Quinsam has conducted all the lake monitoring requirements for the fall of 2020 and spring of 2021 monitoring periods as required by the Permit.
Compliance:	In

Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.7 Sediment and Benthic Monitoring** 4.2.7: See Attached Document for Section 4.2.7
Details/Findings:	Part (i) of Section 4.2.7 provides general requirements applicable to all sites defined under section 4.2.4 and part (ii) allows the monitoring program described in 4.2.7 to be conducted over two consecutive years, with upper and lower watershed sites sampled in respective years. Part (iii) requires that sediment and benthic monitoring cycles occur every 3 to 5 years. A review of the 2020-2021 Annual Report determined that sediment monitoring was previously conducted in August through October of 2016 and is therefore next required to be completed in 2021 at the latest. The 2020-2021 Annual Report states that the sediment and benthic invertebrate sampling will be conducted early in September 2021. As this data is not reported in the inspection period it will be reviewed in the next inspection of Quinsam and compliance with this section is not applicable for the inspection period.
Compliance:	Not Applicable
Actions to be taken:	Ensure sediment and benthic monitoring is conducted as required in the Permit.
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.1 Composite Sampling** 4.3.1: The Permittee shall install suitable sampling facilities and obtain 24 hour composite samples of effluent for total suspended solids. Each daily composite sample shall consist of 8 samples taken at three hour intervals. Sampling shall be performed at frequencies specified in Subsections 4.1.1, 4.1.2., 4.1.3 and 4.1.4. The Permittee may also be required to collect hourly composite samples in order to verify compliance with the total suspended solids criteria of 35 mg/l specified in Subsections 1.1.2, 1.2.2, 1.3.2 and 1.4.2. Each hourly composite sample shall consist of 4 samples taken at 15 minute intervals. Proper care should be taken in sampling, storing, and transporting the samples to adequately control temperature and avoid contamination or breakage. The Permittee shall collect a grab sample instead of a composite sample when weather conditions result in freezing conditions, rendering collection of composite samples not feasible.
Details/Findings:	During the on-site inspection the Officers viewed the composite samplers to be in place. A review of the 2020-2021 Annual Report and the Q1 Report determined that no composite samples were reported to have been missed.

Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.2 Continuous Flow Recording** 4.3.2: The Permittee shall provide and maintain suitable flow measuring devices and maintain a continuous record of the rate at which the effluent is discharged from the settling ponds authorised in Subsections 1.1.3, 1.2.3, 1.4.3 and from the secondary settling pond authorised in Subsection 1.3.3.
Details/Findings:	A review of the 2020-2021 Annual Report and the Q1 Report determined that a continuous record of the rate at which the effluent is discharged from the settling ponds authorised in Subsections 1.1.3, 1.2.3, and 1.4.3 was maintained during the inspection period. As reported in the 2020-2021 Annual Report and the Q1 Report, no discharge from the Block 242 Coal Mining Operation (E225796) occurred during the inspection period and letter amendment was approved by the Ministry on November 1, 2019, which removed monitoring requirements for E225796 and E225797 from the Permit monitoring program. As the secondary settling pond authorised in Subsection 1.3.3. was the point of discharge for the Block 242 Coal Mining Operation (E225796) monitoring is no longer required for the secondary settling pond authorised in Subsection 1.3.3.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.4 pH and Conductivity Monitoring** 4.3.4: All pH and conductivity probes used for field measurements shall be maintained according to manufacturer's requirements. Maintenance and calibration logs and instrument manuals shall be kept up to date and made available upon inspection. Any instance where pH results are deemed unreliable due to low conductance will be noted along with the corresponding conductance, and these results shall be included in quarterly and annual reports described in section 4.5.
Details/Findings:	Officer Dick requested that Quinsam send copies of the most recent pages of maintenance and calibration logs for the pH and conductivity probes used at E207409 and E218582 to demonstrate compliance with this requirement. On October 7, 2021, Quinsam sent scans of a log book with entries from August 10, 2021, to October 4, 2021, for the calibration of an Oakton probe and a YSI Exo probe. pH and conductivity readings are reported in the 2020-2021 Annual Report and the Q3 Report, Q4 Report, and Q1 Report and no instances where pH results were deemed unreliable due to low conductance were noted.

Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.5 Monitoring of Seeps** 4.3.5: The Permittee is required to sample in-pit, out-of-pit, underground mine, coal, and waste rock seeps. The location and frequency of sampling will be determined by the Director. Analyses will be obtained for pH, sulphate (d), and metals (t+d). Sediment sampling may also be required at seeps, as and when requested by the Director.
Details/Findings:	Quinsam has three known seeps: Long Lake seep - LLS (described as the lesser seep with constant flow), Long lake middle seep - LLSM (described as the main seep with a more variable and significant flow), and the most recent seep near QU11-09 M, which flows into the Quinsam River. Section 4.2.2 of the Permit provides a sampling frequency for the long lake seeps with EMS ID E292131. The 2020-2021 Annual Report and the Q3 Report, Q4 Report, and Q1 Report use this EMS ID for both LLS and LLSM, and samples are analyzed for pH, sulphate (d), and metals (t+d). The seep near QU11-09 M flowing into the Quinsam River was also sampled once it was detected and was reported to have stopped visible flow in July 2021 in the DGIR 204584 Follow-Up Report. A review of the DGIR 204584 Follow-Up Report determined that samples collected from this seep were analyzed for pH, sulphate (d), and metals (t+d). No sampling requirements have been set by a Director for this seep at this time.
Compliance:	In
Actions to be taken:	The location and frequency of sampling for the QU11-09 M seep must be approved by the Director, should the seep continue to flow.
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.6 Groundwater Observation Wells** 4.3.6: The Permittee may be required to install groundwater observation wells in the vicinity of pits 2N, 1S, 2S, 3S, 4S, 5S, Block 242 and 7S. The number, location and structural details of these wells will be subject to the approval of the Director. As an alternative to the 2N, 1S, 2S, 3S, 4S, 5S and 7S wells, the Permittee may establish monitoring sites at the underground sumps subject to the approval of the Director.
Details/Findings:	A review of the 2020-2021 Annual Report determined that Appendix I, Tables 48 and 49 report data from samples collected at groundwater wells in the vicinity of pits 2N, 1S, 2S, 3S, 4S, 5S, Block 242 and 7S.

Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.7 Monitoring of Drainage Ditches and Water Channels** 4.3.7: Visual inspection of drainage ditches and water channels within the mining operational areas shall be carried out by Environmental Protection staff as part of the regular inspections for the entire mine operation. Based on these monitoring results the Permittee may be required to take measures to minimize soil erosion.
Details/Findings:	During the on-site inspection, the Officers viewed many of the drainage ditches and water channels within the mining operational areas; however, not all drainage ditches and water channels were able to be viewed by the Officers during the inspection. No additional measures to minimize soil erosion were required during the inspection period.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.8 Precipitation Monitoring** 4.3.8: The Permittee shall maintain a suitable rain gauge at a location approved by the Director and measure and record the daily accumulated precipitation.
Details/Findings:	Appendix I, Table 33 of the 2020-2021 Annual Report and Appendix I, Table 31 of the Q1 Report included daily accumulated precipitation records for the inspection period.
Compliance:	In
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.9 Block 242 Monitoring** 4.3.9: Monitoring relating to the Block 242 Mining Operation required by Subsections 4.1.3 and 4.2.3 shall commence at the start of mine-influenced discharge from the Block 242 secondary settling pond.

Details/Findings:	The 2020-2021 Annual Report and Quinsam staff during the on-site inspection confirmed that he Block 242 Mining Operation is not operational, and the area has been reclaimed; therefore, monitoring relating to the Block 242 Mining Operation is not yet required and compliance with this Section is not applicable for the inspection period.
Compliance:	Not Applicable
Requirement Description:	**4. MONITORING AND REPORTING REQUIREMENTS, 4.5 Reporting** 4.5.1 (i): The Permittee shall submit the results of the monitoring program to the Director on a quarterly basis within thirty days following the previous quarter of monitoring. Based on these results, the monitoring program may be increased or decreased at the discretion of the Director. The format and content of the quarterly report is subject to the approval the Director. An annual review and interpretative report shall be prepared and submitted by the Permittee by June 30 of each year. The report will include, but is not necessarily limited to, the following items: 1) A summary of monitoring results for the previous twelve months. 2) Spills or other unusual events. 3) Changes in the environment resulting from mining activity. 4) Summary of completed, in progress activities or studies relevant to the permitted discharges, associated authorized works and the receiving environment relevant to the reporting period. 5) Projected activities for the coming year which may have an impact on the environment. The format and content of the annual report is subject to the approval of the Environmental Technical Review Committee and the Director. 4.5.1 Through the duration of mining in 7-South Area 5, quarterly and annual reports shall include a summary of: i. Quality and quantity of water pumped from the 7-South Area 5 development with potential to reach Settling Pond 4.
Details/Findings:	The Q3 Report, Q4 Report, Q1 Report, and 2020-2021 Annual Report were all submitted to the Ministry within their required time lines. The 2020-2021 Annual Report included all the required items. As Quinsam is in care and maintenance and no mining occurred during the inspection period, requirements i. through iv. which apply through the duration of mining in 7-South Area 5 are not applicable during the inspection period.
Compliance:	In

Compliance History:
2020-10-20 IR 159669 Warning 120(6): AUTHORISED DISCHARGES 1.1.1; 1.2.2, Bypasses 3.10, Composite Sampling 4.3.1, Continuous Flow Recording 4.3.2, Effluent Characteristics (for Total Suspended Solids 2.2.5, Initial Dilution Zone Monitoring Sites (i) Long Lake Entrance - LLE 4.2.1 (i), Lake Monitoring Requirements 4.2.6, Maintenance of Works, Non-Compliances and Emergency Procedures 3.9.1, Reporting 4.5.1 (i), Settling Pond Solids and Storage Volume 2.4.4, South Coal Mining Operation (i) Decant - SPD (EMS # E218582) 4.1.2 (i), South Coal Mining Operation (iv) Additional Monitoring Sites Schedule (2S, 3S77, 4S-Lo) 4.1.2 (iv), Stream Monitoring Requirements 4.2.5
2017-09-19 IR 70993 Warning 120(6): AUTHORISED DISCHARGES 1.1.1; 1.1.2; 1.1.3; 1.1.4; 1.2.2; 1.2.3; 1.2.4; 1.4.2; 1.4.3; 1.4.4, Composite Sampling 4.3.1, Continuous Flow Recording 4.3.2
2018-10-11 IR 106411 Advisory: AUTHORISED DISCHARGES 1.1.1; 1.1.4; 1.2.2; 1.2.4; 1.4.3, Bypasses 3.10, Composite Sampling 4.3.1, Initial Dilution Zone Monitoring Sites (i) Long Lake Entrance - LLE 4.2.1 (i), Initial Dilution Zone Monitoring Sites (ii) Road Crossing-etc 4.2.1 (ii), Lake Monitoring Requirements 4.2.6, North Coal Mining and Coal Preparation Plant Operation (i) Decent - WD (EMS # E207409) 4.1.1 (i), North Coal Mining and Coal Preparation Plant Operation (ii) Culvert, at Middle Quinsam Lake Road - WC (EMS # E207411) 4.1.1 (ii), Reporting 4.5.1 (i), South Coal Mining Operation (i) Decant - SPD (EMS # E218582) 4.1.2 (i), South Coal Mining Operation (iv) Additional Monitoring Sites Schedule (2S, 3S77, 4S-Lo) 4.1.2 (iv), Stream Monitoring Requirements 4.2.5
2019-09-19 IR 139588 Advisory: Acid Generation Control 3.3, AUTHORISED DISCHARGES 1.1.1; 1.1.2, Bypasses 3.10, Composite Sampling 4.3.1, Environmental Procedures Manual 3.2, Initial Dilution Zone Monitoring Sites (i) Long Lake Entrance - LLE 4.2.1 (i), North Coal Mining and Coal Preparation Plant Operation (i) Decent - WD (EMS # E207409) 4.1.1 (i), Reporting 4.5.1 (i), South Coal Mining Operation (i) Decant - SPD (EMS # E218582) 4.1.2 (i), Stream Monitoring Requirements 4.2.5

This IR is accompanied by two IRs for unauthorized discharges: IR178045 and IR178073.

The Ministry of Environment Compliance and Enforcement Policy and Procedure (C&E Policy) prescribes common requirements and procedures for all Ministry staff to ensure consistent and risk-based assessment and response to non-compliance. Using the Non-Compliance Decision Matrix, the compliance determination for this inspection has been assessed as Level 3, Category C, AMP.

More information about Environmental Compliance, the Non-Compliance Decision Matrix, and reporting and data submission requirements can be found at the links below:
General compliance information:
www.gov.bc.ca/environmentalcompliance
Non-Compliance Decision Matrix information:
www.gov.bc.ca/environment/how-compliance-is-assessed
Reporting and data submission requirements (to be sent to EnvAuthorizationsReporting@gov.bc.ca):
https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/comply

Please be advised that this inspection report may be published on the provincial government website within 7 days.

Below are attachments related to this inspection.

If you have any questions about this letter, please contact the undersigned.

Yours truly,

Katelyn Dick
Environmental Protection Officer

cc:

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Attachments:

1) Photo (82).jpg Photo 1 - Settling Pond 4 pond decant with water depth below the 1.0 m mark.
2) Photo (35).jpg Photo 2 - Settling Pond 1 with some algae growth on the surface.
3) Photo (33).jpg Photo 3 - LLE with some algae growth on the surface
4) 2015 06 23 Tables PE 7008 - Section 4.1.1, 4.1.2, 4.1.3, 4.1.4.pdf Attached Document for Tables in Sections 4.1.1, 4.1.2, 4.1.3, 4.1.4
5) 2015 06 23 Tables PE 7008 - Section 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6.pdf Attached Document for Tables in Sections 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6
6) Photo (25).jpg Photo 4 - groundwater seep near groundwater well QU11-09 flow path to Quinsam River - this part of the path was near the head where it was fist observed coming out of the ground
7) Photo (28).jpg Photo 5 - flow path of groundwater seep near groundwater well QU11-09 - this part of the path was close to the River but puddles did not reach the river
8) Photo (60).jpg Photo 6 - LLSM Seep flow path taken from up gradient
9) 2021-08-19 Jason Photo (1).jpg Photo 7 - LLSM Seep flow path with mud and the flow appearing to end here
10) Photo (71).jpg Photo 8 - LLS Seep weir
11) 2021-08-19 Jason Photo (6).jpg Photo 9 - LLS Seep weir
12) Photo (72).jpg Photo 10 - LLS flow path down gradient of the weir, close to Long lake, covered in vegetation

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Ministry of Environment and Climate Change Strategy

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4. MONITORING AND REPORTING REQUIREMENTS

4.1 Effluent and In-Mine Releases

4.1.1 North Coal Mining and Coal Preparation Plant Operation

i) Decant – WD (EMS # E207409)

Parameters	No Decant Flow	Decant Flow <0.054 m^3/s	Decant Flow >0.054 m^3/s
Flow	continuous	continuous	continuous
Total Suspended Solids (TSS) (24 Hour Composite Sample, See 4.3.1)	monthly	weekly	daily
Hardness, metals (t) and (d)	every 2 months	every 2 months	every 2 months
Conductivity, pH	weekly	weekly	weekly
Alkalinity and acidity	monthly	monthly	monthly
Sulphate (d)	monthly	weekly	weekly
Oil and grease	every 2 months	every 2 months	every 2 months
Ammonia (t), nitrate/nitrite, phosphorus (t)	-	every 3 years (conducted during low flow period (August to early September)	
Rainbow Trout Bioassay (Oncorhynchus mykiss)	-	1 time/year (conducted during fall first flush event)	

ii) Culvert, at Middle Quinsam Lake Road – WC (EMS # E207411)

Parameters	No Decant Flow	WD Decant Flow <0.054 m^3/s	WD Decant Flow >0.054 m^3/s
TSS	monthly (when culvert flowing)	monthly (when culvert flowing)	every 2 weeks (when culvert flowing)
Conductivity, pH	weekly	weekly	weekly
Hardness, metals (t) and (d)	-	every 2 months	every 2 months
Sulphate (d)	monthly	monthly	monthly

iii) 2-North Portal Sump Effluent – 2N-P-Sump (EMS # E283433)

Parameters	No Decant Flow	WD Decant Flow <0.054 m^3/s	WD Decant Flow >0.054 m^3/s
Conductivity, pH	weekly	weekly	weekly
Alkalinity and acidity	-	monthly	monthly
Hardness, metals (t) and (d), sulphate, (d)	monthly	monthly	monthly

iv) Additional Sites Monitoring Schedule

Parameters	2-North Pit Sump CCR Cover (WP)	South Dyke Sump (SDS)
EMS #	E207412	E292126
TSS	monthly	-
Conductivity, pH	weekly	weekly
Alkalinity and acidity	monthly	quarterly
Hardness, metals (t) and (d)	monthly	quarterly
Sulphate (d)	monthly	quarterly

Date issued: December 23, 1987
Date amended: June 23, 2015
(most recent)

Luc Lachance, P.Eng.
for Director, *Environmental Management Act*
Permit Number: 7008

4.1.2 South Coal Mining Operation

i) Decant – SPD (EMS # E218582)

Parameters	No Decant Flow	Decant SPC Flow <0.046 m^3/s	Decant SPC Flow >0.046 m^3/s
Flow	continuous	continuous	continuous
TSS (24 Hour Composite Sample, See 4.3.1)	monthly	weekly	daily
Conductivity, pH	weekly	weekly	weekly
Hardness, metals (t) and (d), alkalinity and acidity, oil and grease	every 2 months	every 2 months	every 2 months
Sulphate (d)	monthly	weekly	weekly
Ammonia (t), nitrate/nitrite, phosphorus (t)	-	every 3 years (conducted during low flow period (August to early September)	
Rainbow Trout Bioassay (Oncorhynchus mykiss)	-	1 time/year (conducted during fall first flush event)	

ii) Culvert, Downstream End at Access Road – SPC (EMS #E217014)

Parameters	No Decant Flow	SPD Decant Flow <0.046 m^3/s	SPD Decant Flow >0.046 m^3/s
TSS	monthly (when culvert flowing)	monthly (when culvert flowing)	every 2 weeks (when culvert flowing)
Hardness, metals (t) and (d)	every 2 months	every 2 months	every 2 months
Conductivity, pH	weekly	weekly	weekly
Alkalinity and acidity, sulphate (d)	monthly	monthly	monthly

Date issued: December 23, 1987
Date amended: June 23, 2015
(most recent)

Luc Lachance, P.Eng.
for Director, *Environmental Management Act*
Permit Number: 7008

iii) South Pit Main Sump Water – 3S (EMS # E217015)

Parameters	No Decant Flow	SPD Decant Flow $<0.046\ m^3/s$	SPD Decant Flow $>0.046\ m^3/s$
Hardness, metals (t) and (d)	every 2 months	every 2 months	every 2 months
Conductivity, pH	weekly	weekly	weekly
Alkalinity and acidity, sulphate (d)	monthly	monthly	monthly

iv) Additional Monitoring Sites Schedule (2S, 3S77, 4S-Lo)

Parameters	2 South Pit In Pit Water Cover (2S)	1977 Bulk Sample Pit (3S77)	Culvert Downstream of 4 South Access Road (4S-Lo)
EMS #	E292127	E292128	E292129
Flow	Continuous (inflow and outflow)	-	-
TSS	-	-	-
Conductivity, pH	weekly	weekly	weekly
Alkalinity and acidity	monthly	quarterly	monthly
Hardness, metals (t) and (d), sulphate (d)	monthly	quarterly	monthly (when flowing)

4.1.3 Block 242 Coal Mining Operation

i) Decant (EMS # E225796)

Parameters	No Decant Flow	Decant Flow
TSS (24 Hour Composite Sample, See 4.3.1),	monthly	weekly
Alkalinity and acidity, hardness, metals (t) and (d), Oil and Grease	every 2 months	monthly
Sulphate (d), pH, conductivity	monthly	monthly
Ammonia (t), nitrate/nitrite, phosphorus (t)	-	every 3 years (conducted during low flow period (August to early September)
Rainbow Trout Bioassay (Oncorhynchus mykiss)	-	1 time/year (conducted during fall first flush event)

ii) Underground Settling Pond Effluent (EMS # E225797)

Parameters	No Decant Flow	Decant Flow
pH	monthly	weekly
Alkalinity and acidity, metals (t) and (d), sulphate (d)	monthly	monthly
Ammonia (t), nitrate/nitrite, phosphorus (t)	every 2 months	every 2 months

4.1.4 7 South Mining Operation

i) Decant – 7SSD (EMS # E292069)

Parameters	No Decant Flow	Decant Flow
Flow	Continuous	Continuous
TSS	monthly – from the ponded water	daily
Hardness, metals (t) and (d)	monthly – from the ponded water	weekly
pH, conductivity, alkalinity and acidity, sulphate (d), organic carbon (d)	monthly – from the ponded water	weekly
Ammonia (t), nitrate/nitrite, phosphorus (t)	-	every 3 years (conducted during low flow period (August to early September)
Rainbow Trout Bioassay (Oncorhynchus mykiss)	-	2 time/year (conducted during fall first flush event and in the spring freshet)

ii) 7 South Adit Sump – 7S-Sump (EMS # E292110)

Parameters	7 South Adit Sump (7S-Sump)
TSS	daily when pumping to 7S Settling Pond
Conductivity, pH, alkalinity and acidity	weekly when pumping to 7S Settling Pond
Hardness, metals (t) and (d)	weekly when pumping to 7S Settling Pond
Sulphate (d)	weekly when pumping to 7S Settling Pond

Legend:

(t) = total
(d) = dissolved

Note 1: For monitoring tied to decant flow, the decant flow referenced at the column heading must

be established for a minimum of 15 minutes before the corresponding monitoring regime is required. All samples are grab samples unless specified otherwise within the matrices.

Note 2: When the flows referenced at the column heading are established according to Note 1 the corresponding monitoring regime will be required, as specified in the matrices, and be continued for at least one specified period following the recession of the flow below the tabled level.

Note 3: Decant samples required under Subsections 4.1.1 i), 4.2.1 i), 4.3.1 i) and Subsection 4.4.1 i) during periods of no decant flow shall be taken at a point in each settling pond adjacent to the decant.

4.2 Receiving Environment Monitoring Sites and Monitoring Requirements

4.2.1 Initial Dilution Zone Monitoring Sites

i) Long Lake Entrance – LLE

Parameters	Long Lake Entrance (LLE)
EMS #	E292130
Flow	weekly
TSS	monthly
Conductivity, pH, alkalinity and acidity	monthly
Hardness, metals (t) and (d)	monthly
Ammonia (t), nitrate/nitrite, phosphorus (t)	monthly
Sulphate (d)	weekly

Document : 2015 06 23 Tables PE 7008 - Section 4.1.1, 4.1.2, 4.1.3, 4.1.4.pdf
Document comment: Attached Document for Tables in Sections 4.1.1, 4.1.2, 4.1.3, 4.1.4

be established for a minimum of 15 minutes before the corresponding monitoring regime is required. All samples are grab samples unless specified otherwise within the matrices.

Note 2: When the flows referenced at the column heading are established according to Note 1 the corresponding monitoring regime will be required, as specified in the matrices, and be continued for at least one specified period following the recession of the flow below the tabled level.

Note 3: Decant samples required under Subsections 4.1.1 i), 4.2.1 i), 4.3.1 i) and Subsection 4.4.1 i) during periods of no decant flow shall be taken at a point in each settling pond adjacent to the decant.

4.2 Receiving Environment Monitoring Sites and Monitoring Requirements

4.2.1 Initial Dilution Zone Monitoring Sites

i) Long Lake Entrance – LLE

Parameters	Long Lake Entrance (LLE)
EMS #	E292130
Flow	weekly
TSS	monthly
Conductivity, pH, alkalinity and acidity	monthly
Hardness, metals (t) and (d)	monthly
Ammonia (t), nitrate/nitrite, phosphorus (t)	monthly
Sulphate (d)	weekly

ii) Road Crossing bridge on Stream 1 above the Lower Wetland – 7S (EMS # E292109)*

Parameters	No Decant Flow	Decant Flow
Flow	Continuous	Continuous
TSS	monthly – when there is flow at surface	weekly – when there is flow at surface
Hardness, metals (t) and (d)	monthly – when there is flow at surface	weekly – when there is flow at surface
Conductivity, pH	monthly	weekly
Alkalinity and acidity, sulphate (d), organic carbon (d)	monthly	monthly
7 day *Ceriodaphnia dubia* chronic toxicity test	-	2 time/year (conducted during fall first flush event and in the spring freshet)

*Sampling at 7SSD and 7S is to be conducted concurrently to allow for data interpretation and mass balance calculations.

4.2.2 Seep Monitoring Sites

i) Long Lake Seeps (LLS)

Parameters	Long Lake Seep (LLS)
EMS #	E292131
Flow	weekly
TSS	monthly
Conductivity, pH, alkalinity and acidity	monthly
Hardness, metals (t) and (d)	monthly
Sulphate (d)	monthly

4.2.3 Receiving Water (Streams and Lakes) Monitoring Sites

Streams	Lakes
North Mining Operation	
Quinsam River at Argonaut Road (WA) (EMS # 0126402) Outflow from Middle Quinsam Lake (WB) (EMS # 0900504)	Middle Quinsam Lake Centre (EMS # E206618)
South Mining Operation	
Long Lake Outlet (LLO) (EMS # E219412) No Name Lake Outlet (NNO) (EMS # E217017)	Long Lake at Centre (LLM) (EMS # E206619) No Name Lake (NNL) (EMS # E217018)
Block 242 Mining Operation	
Iron River upstream of 242 influence (EMS #E225798) Iron River downstream of 242 influence (EMS # E225808)	Lower Quinsam Lake (LQL) (EMS # E292118)
7-South Mining Operation (Areas 1 to 4)	
Quinsam River upstream of 7 South Mining Operation (QRDS1) (EMS # E286930) Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113) Lower Wetland Outlet at the confluence of Quinsam River (LWO) (EMS # E292112)	Lower Quinsam Lake (LQL) (EMS # E292118)
7-South Area 5 Mining Operation	
Iron River upstream of mining operations (IR1) (EMS #E297230) Iron River upstream of 7SA5 (IR6) (EMS # E297231) Iron River downstream of 7SA5 and 242 inputs (IR8) (EMS # E297232) Quinsam River downstream of confluence with Iron River (IRQR) (EMS # E299256)	Lower Quinsam Lake (LQL) (EMS # E292118)

4.2.4 Sediment and Benthic Monitoring Sites

Lake and Wetland Monitoring Sites	
No Name Lake (NNL)	No Name Lake Inlet, NNLI (EMS # E224246) No Name Lake Deep, NNLD (EMS # E217018) No Name Lake Near Seep (EMS # E292114) No Name Lake Outlet (EMS # E217017)
Middle Quinsam Lake (MQL)	Middle Quinsam Lake Inlet (EMS # E206901) Middle Quinsam Lake Deep (EMS # E292115) Middle Quinsam Lake Near Seep (EMS # E292116) Middle Quinsam Lake Outlet (EMS # 0900504)
Lower Quinsam Lake (LQL)	Lower Quinsam Lake Inlet (EMS # E292117) Lower Quinsam Lake Deep 1 (EMS # E29118) Lower Quinsam Lake Deep 2 (EMS # E292119) Lower Quinsam Lake Outlet (EMS # E292120)
Long Lake (LL)	Long Lake Inlet (EMS # E292121) Long Lake Deep (EMS # E292122) Long Lake Near Seep (EMS # E292123) Long Lake Outlet (EMS # E219412)
Gooseneck Lake (GNL)	Middle Gooseneck Lake (EMS # 1132502)
Lower Wetland	Lower Wetland Inlet (EMS # E292124) Lower Wetland Middle (EMS # E292125) Lower Wetland Outlet (EMS # E292112)
Stream Monitoring Sites	
Quinsam River at Argonaut Road (WA)	(EMS # 0126402)
Quinsam River upstream of 7 South Mining Operation (QRDS1)	(EMS # E286930)
Quinsam River downstream of 7 South Mining Operation (7SQR)	(EMS # E292113)

i) The permittee shall submit proposed sediment monitoring locations in the 7-South Area 5 receiving environment to the Director by October 1, 2014 for approval.

ii) Near seep sediment monitoring applicable to No Name Lake and Middle Quinsam Lake seeps sites consist of a set of three samples equally spaced on a 5 m triangular grid. Long Lake near seep sediment monitoring sites consist of a set of six samples equally spaced on a 5 m triangular grid.

4.2.5 Stream Monitoring Requirements

i) General Requirements Applicable to All Sites Defined Under Section 4.2.3

Parameters	Schedule
Flow, total suspended solids (TSS), hardness, total and dissolved metals, conductivity, pH, alkalinity and acidity, sulphate (d)	5 in 30 (3 times/year)*
Ammonia (t), nitrate/nitrite, phosphorus (t)	every 3 years (conducted during low flow period (August to early September)

Legend:
(t) = total
(d) = dissolved
*5 in 30 refers to 5 weekly samples collected within a 30 day period

ii) Long Lake Outlet sampling requirement for dissolved sulphate is weekly until Long Lake Seep Treatment plant is authorized.

iii) Quinsam River upstream of 7 South Mining Operation (QRDS1) sampling requirements for sulphate (d) is weekly for a period approved by the Director following commissioning of the 7-South mining operation discharge.

iv) Flow is only required at WB, LLO, WA and IR8.

v) Iron River monitoring shall include monthly sampling to supplement the 5 in 30 sampling. The Director may allow cessation of monthly sampling (retaining 5 in 30 sampling), if the permittee can identify the yearly periods of worst-case water quality to the satisfaction of the Director. The earliest that monthly sampling shall be considered for cessation is 2016.

4.2.6 Lake Monitoring Requirements

i) General Requirements Applicable to All Sites Defined Under Section 4.2.3

Parameters	Annual Schedule
(1) Temperature, conductivity, pH, dissolved Oxygen (DO), saturation, oxidation reduction potential (ORP)	5 in 30* (3 times/year, spring turnover, stratification period and fall turnover)
(2) Turbidity	5 in 30* (3 times/year, spring turnover, stratification period and fall turnover)
(2) Phosphorus (t), alkalinity	One sampling event concurrent to a 5 in 30* event (3 times/year, spring turnover, stratification period and fall turnover)
(2) Hardness, total and dissolved metals, sulphate (d)	5 in 30* (3 times/year, spring turnover, stratification period and fall turnover)
BIOLOGICAL MONITORING	
(3) chlorophyll "a" (4) Phytoplankton (5) Zooplankton	One sampling event concurrent to a 5 in 30* event (3 times/year, spring turnover, stratification period and fall turnover)

Legend:

(t) = total
(d) = dissolved
*5 in 30 refers to 5 weekly samples collected within a 30 day period

(1) Profile at 1 metre intervals from surface to bottom
(2) Four depths: 1 metre, 4 metres, 9 metres, and 1 metre from bottom
(3) One depth: 1 metre below surface
(4) One depth: 1 metre below surface; analyzed for count and identification
(5) 10 metre vertical tow; analyzed for count and identification

ii) Lower Quinsam Lake monitoring shall be done according to Subsection 4.2.6 for a period approved by the Director following commissioning of the 7-

South mining operation discharge.

4.2.7 Sediment and Benthic Monitoring Requirements

i) General requirements applicable to all sites defined under section 4.2.4

Parameters
LAKE WATER CHEMISTRY PROFILE
Temp, DO, specific conductivity, pH, ORP
WATER CHEMISTRY
Hardness, turbidity, sulphate (d), metals (t) and (d), polycyclic aromatic hydrocarbons Mid lake sites – grab samples at two depths: near bottom and surface of lake for all sites except for deep sites where an additional sample will be collected at 5 m below surface Stream sites, wetlands and lake inlet/outlets – grab samples just below surface
SEDIMENT CHEMISTRY
moisture, pH, particle size, total organic carbon (TOC), total metals, polycyclic aromatic hydrocarbons
BIOLOGICAL MONITORING
Benthic invertebrates at all stream monitoring sites listed in subsection 4.2.4, as per Canadian Aquatic Biomonitoring Network (CABIN) methodology
Benthic community taxonomy and count for all lake and wetland monitoring sites listed in subsection 4.2.4

ii) The monitoring program described in 4.2.7 may be conducted over two consecutive years, with upper and lower watershed sites sampled in respective years. Under this program, monitoring site WB (EMS # 0900504) shall serve as the lowest site in the upper watershed.

iii) Sediment and benthic monitoring cycles are required every 3 to 5 years. The first assessment will be completed in 2015-2016. Following the first monitoring cycle, the sediment and biological monitoring program will be revised based on the outcomes of previous years' assessments. The permittee will submit the results of the sediment and biological monitoring program along with recommendations for the subsequent monitoring cycle by an appropriately qualified professional. Recommendations will be reviewed and approved and/or modified by the director.

Document : 2015 06 23 Tables PE 7008 - Section 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6.pdf
Document comment: Attached Document for Tables in Sections 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6

Img : Photo (82).jpg

Img comment: Photo 1 - Settling Pond 4 pond decant with water depth below the 1.0 m mark.

Img : Photo (35).jpg

Img comment: Photo 2 - Settling Pond 1 with some algae growth on the surface.

Img : Photo (33).jpg

Img comment: Photo 3 - LLE with some algae growth on the surface

Img : Photo (25).jpg

Img comment: Photo 4 - groundwater seep near groundwater well QU11-09 flow path to Quinsam River - this part of the path was near the head where it was fist observed coming out of the ground

Img : Photo (28).jpg

Img comment: Photo 5 - flow path of groundwater seep near groundwater well QU11-09 - this part of the path was close to the River but puddles did not reach the river

Img : Photo (60).jpg

Img comment: Photo 6 - LLSM Seep flow path taken from up gradient

Img : 2021-08-19 Jason Photo (1).jpg

Img comment: Photo 7 - LLSM Seep flow path with mud and the flow appearing to end here

Img : Photo (71).jpg

Img comment: Photo 8 - LLS Seep weir

Img : 2021-08-19 Jason Photo (6).jpg
Img comment: Photo 9 - LLS Seep weir

Img : Photo (72).jpg

Img comment: Photo 10 - LLS flow path down gradient of the weir, close to Long lake, covered in vegetation