Memorandum



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March 27, 2024

- TO: Molly Gardner Wisconsin Department of Natural Resources
- CC: Leland Roberts and Laura Vedral Rio Tinto Steve Donohue – Foth Infrastructure & Environment, LLC Bill Adams – Red Cap Consulting Bob Gensemer, Jennifer Lynch, and Ashley Romero – GEI Consultants, Inc.
- FR: Nick Glander, Mark Ciardelli, and Sharon Kozicki Foth Infrastructure & Environment, LLC
- RE: Fall 2023 Stream C Sampling Results Summary Reclaimed Flambeau Mine, Ladysmith, Wisconsin

1. Introduction

Foth Infrastructure & Environment, LLC (Foth) and GEI Consultants, Inc. (GEI) prepared a plan to evaluate Stream C, located on the Reclaimed Flambeau Mine site in Ladysmith, WI (see Figure 1). The Stream C Evaluation Work Plan – Revision 1 (Work Plan) (Foth and GEI, 2023) was submitted to the Wisconsin Department of Natural Resources (Department) on September 1, 2023.

This memorandum presents the activities and results from the fall 2023 Stream C monitoring.

2. Scope of Work

Due to the dry climatic conditions and lack of flow, the anticipated work, as outlined in the *Work Plan* (Foth and GEI, 2023), most of the fall scope of work was cancelled for 2023. The only task that was conducted in fall 2023 was flow monitoring. The monitoring locations are shown on Figure 2.

Notification to postpone the fall 2023 work was accepted by the Department on October 13, 2023.

The scope of work outlined in the Work Plan will resume in spring 2024.

2.1 Flow

Flow monitoring consisted of visual observations and flow rate determination. Visual observations were documented using a combination of field notes, pictures, and videos.

When there was flow, the flow rate was manually monitored near the mouth of Stream C with a hand-held velocimeter unit, which records velocity and depth at multiple locations at a stream cross-section and automatically calculates flow rate. The location of flow monitoring near the

mouth of Stream C, at SW-STM, was established during the first event based on field observations; and the same location was used during subsequent flow monitoring. Its location is shown on Figure 2.

Flow rates were monitored with a hand-held velocimeter unit at the Highway 27 (Hwy 27) and Copper Park Lane culverts until dedicated pressure transducers were installed to continuously monitor the pressure/flow. The pressure transducers were installed on May 17, 2023, in the existing staff gauge brackets at the two culverts and set to record water depth every 15 minutes. Pressure-to-flow conversion was accomplished with a combination of continuous depth monitoring and known flow hydraulics associated with the culvert characteristics using the standard operating procedure (SOP) established in the *Work Plan*.

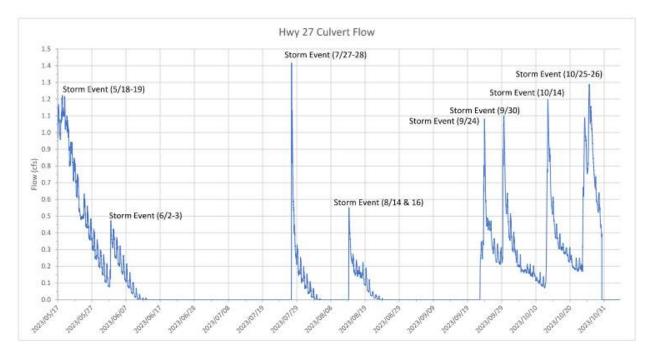
The results are presented in Section 3.

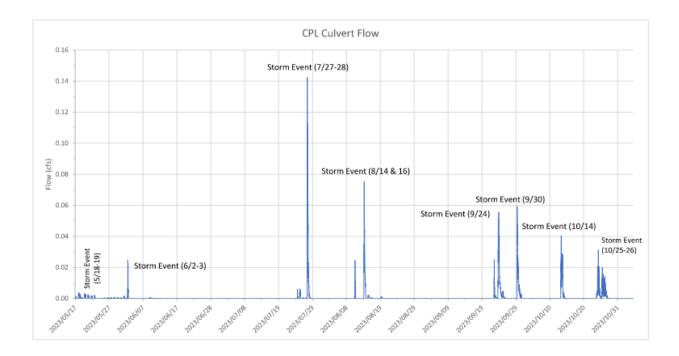
3. Fall 2023 Stream C Activities

3.1 Flow Inspections

Flow observations are completed on a bi-monthly schedule. The field forms for these events are provided in Attachment 1. Flow was manually monitored during flow inspection events at both the upstream or inlet side of each culvert and at SW-STM. The flow results are provided on the respective inspection form in Attachment 1. Some events did not have manual flow results due to flow being too low to be measured with the propellers of a velocimeter.

Transducers were installed at the upstream or inlet side of the culverts at both Hwy 27 and Copper Park Lane culverts. The transducers started collecting data on May 17, 2023. The two flow charts from installation through November 4, 2023, are provided below.





Some points to note are as follows:

- Due to dry weather conditions, flow was noted to have stopped at Hwy 27 on June 11, 2023 through July 2, August 4 through August 14, and August 23 through September 24.
- The daily cycling observed in the Hwy 27 culvert is most likely explained by a temperature-related effect related to evapotranspiration.
- No daily cycling is observed at the Copper Park Lane culvert. This is likely because there
 is no standing water in or adjacent to this culvert; therefore, evapotranspiration effects
 are not as prominent.
- The fall storm events noted show a maximum flow of about 1.42 cubic feet per second (cfs) in the Hwy 27 culvert and are relatively short-lived with the majority of flow dissipating after 24 hours.
- The Copper Park Lane culvert shows low flow during the runoff events, and events last for only a few hours at most. The maximum flow noted was about 0.143 cfs. Zero flow is observed during non-event periods.
- The flow observed at Copper Park Lane during storm events compared to Hwy 27 suggests that flow dissipates (infiltrates, evaporates, gets lost to storage, etc.) between the two culverts.

4. Future Sampling Events

Due to the lack of qualifying rain events and flow in Stream C, the fall events have been postponed until 2024. The next Stream C sampling event will commence in spring 2024 following a qualifying rain event.

5. References

Foth Infrastructure & Environment, LLC, 2020. *Quality Assurance Project Plan* for the Long-Term Care Monitoring for the Reclaimed Flambeau Mine. August 10, 2020.

Foth Infrastructure & Environment, LLC and GEI Consultants, Inc., 2023. Steam C Evaluation Work Plan – Revision 1. September 1, 2023.

Attachments

| Figure 1 | Site Location Map |
|--------------|-------------------------------|
| Figure 2 | Stream C Evaluation Locations |
| Attachment 1 | Flow Inspection Forms |

Figures



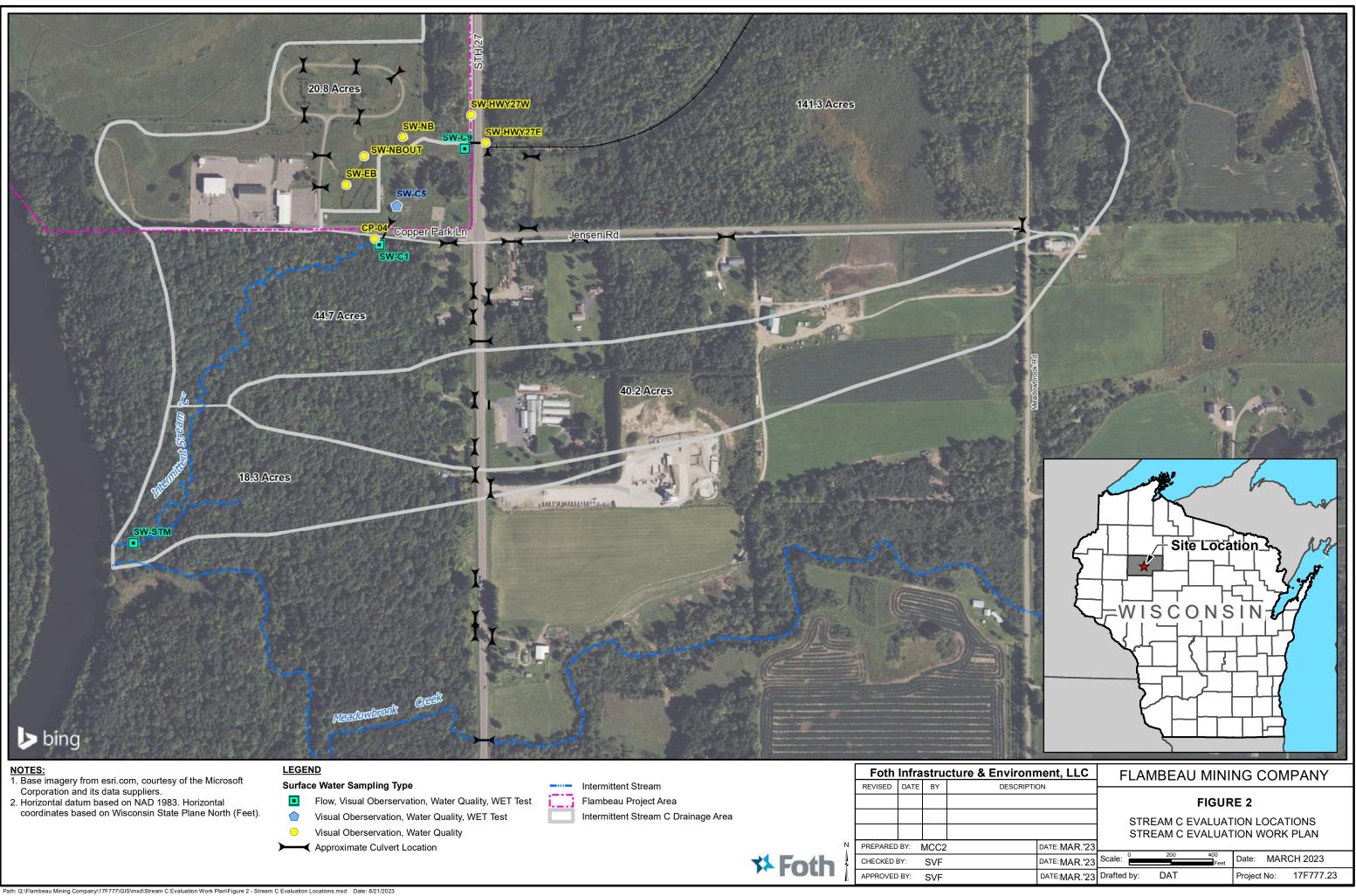
- NOTES: 1. Base imagery from esri.com, courtesy of the Microsoft Corporation and its data suppliers.
- 2. Horizontal datum based on NAD 1983. Horizontal coordinates based on Wisconsin State Plane North (Feet).

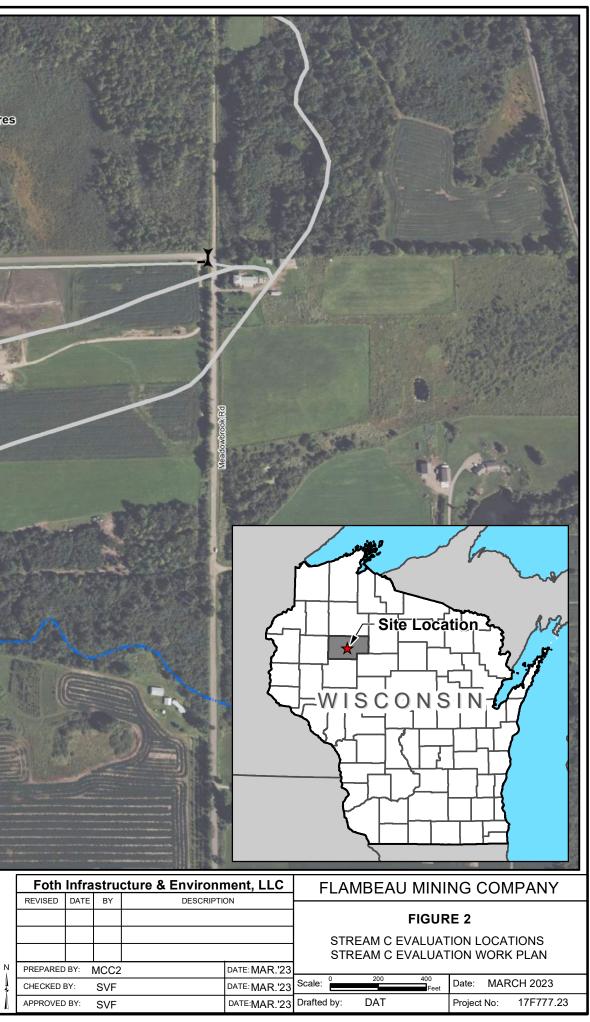
LEGEND

- Surface Water Sampling Locations
- Groundwater Wells MONITORED FOR WATER LEVELS ONLY ▲
- Groundwater Wells
- \bigcirc Flambeau River Surface Water Monitoring Location
- Approximate Culvert Location ≻
- Approximate Rail Spur -----
- Intermittent Stream
- Flambeau Project Area
 - Intermittent Stream C Drainage Area
- 🗱 Foth

| REVISED | DATE | BY | |
|-----------|------|------|--|
| | | | |
| | | | |
| | | | |
| PREPARED | BY: | MCC2 | |
| CHECKED B | 3Y: | SVF | |
| APPROVED | BY: | SVF | |

| Environment, LLC | FLAMBEAU MIN | ING COMPANY |
|------------------|-----------------------------|-----------------------|
| | FIGU | |
| | SITE LAY STREAM C EVALUA | |
| DATE: MAR.'23 | | |
| DATE: MAR.'23 | Scale: 0 350 700 Feet | |
| DATE:MAR.'23 | Drafted by: DAT | Project No: 17F777.23 |





Attachment 1

Flow Inspection Forms

pw:\Flambeau Mining\0017F777\4000 Regulatory Agency Correspondence\2023 Stream C Fall Results\M- Stream C - Fall Sampling Results Summary.docx



| Client: | Flambeau Mining Company | Scope ID | 17F777.23 | | | | |
|----------|----------------------------------|----------------------------|----------------------------|--|--|--|--|
| Project: | Stream C – Flow Monitoring | Prepared by: | Jim Engelhardt/Merjent | | | | |
| Date: | July 28, 2023 | July 28, 2023 Time: 1 | | | | | |
| Weather: | 82°, Sunny, 5 mph southwest wind | , 1.80 in. precip event or | n evening of July 27, 2023 | | | | |

Stream C flow observed July 28, 2023, following a 1.80 inch precipitation event starting on the evening of July 27, 2023 through the morning of July 28, 2023. This precipitation event follows a period of multiple smaller precipitation events that have saturated the ground surface and lead to moderate runoff over the site. Flow was observed at both the upstream and downstream ends of the culvert under Copper Park Lane and at both the upstream ends of the culvert under Hwy 27. An attempt at measuring the flow velocity at both the upstream ends of the two culverts was not successful as the propeller on velocity meter either didn't register to the small amount of flow or the water was too shallow to properly spin the meter. At the request of Sharon Kosicki with Foth, Temperature, pH and specific conductance was measured at the upstream ends of the Copper Park Lane and Hwy 27 culverts. Conditions at SW-STM were also observed and a flow measurement was obtained. Conditions within the basin near sampling point SW-NBOUT was also observed. The west side ditch along Hwy 27 north of the culvert is heavily vegetated with approximately 6 inches of standing water. Pockets of standing water are present within the two basins, and it appears that water is moving continuously through these areas. Surface water sampling was not conducted, and the next round will be conducted in the Fall of 2023. Photographs of site conditions and surface water chemistry and flow measurements are attached.

| Client's N | lame: | | Site Location: | | Project No. |
|------------|------------|-------|----------------|--|-------------|
| Flambea | au Mine Co | mpany | FMC - Stream C | | 17F777.23 |

| INU. | Date: 28-23 | No. 3 | Date: 7-28-23 | |
|---|------------------------|--|-------------------------------|--|
| Direction P Taken: North | hoto | Direction Taken: Southw | | |
| Photo Take Jim Engelf | | | Taken By: ngelhardt | |
| Description Upstream en culvert under Copper Park | nd of er | Descrip Downstr (west) e culvert u 27. | ream | |
| INU. | Date: -28-23 | Photo No. 4 | Date: 7-28-23 | |
| Direction P Taken: Southwest | | Direction Taken: Northea | | |
| Photo Take Jim Engelf | | Photo Jim Er | Taken By: ngelhardt | |
| Description Downstream of culvert un Copper Park | n end Ider | Descrip Upstrea end of c under S | ım (east) culvert | |

| Client's N Flambea | lame: au Mine Co | ompany | Site Location: FMC - Stream C | | | | Project No. 17F777.23 |
|---|-----------------------------------|-----------|--|---------------------------------|-------------------------------|------------------------|------------------------------|
| Photo No. 5 | Date: 7-28-23 | | | Photo No. 7 | Date: 7-28-23 | | |
| Directio Taken: North | n Photo | | | Direction Taken: Southw | on Photo vest | | |
| | aken By: Igelhardt | N. Market | | | Faken By: ngelhardt | | |
| Description: Ditch along West side of Hwy 27 north of culvert. | | | Description: Stream C downstream of the Cooper Park Lane culvert. | | | | |
| Photo No. 6 | Date: 7-28-23 | | | Photo No. 8 | Date: 7-28-23 | and the | |
| Directio Taken: East | n Photo | | | Direction Taken: Northea | | Marine descent and the | |
| | Photo Taken By: Jim Engelhardt | | A SA AND | Photo Taken B Jim Engelhardt | | | |
| Description: Upstream end of culvert under Hwy 27. | | | Photo Taken By: Jim Engelhardt Description: Standing water near sample point | | | | |

| Client's Name: | | Site Location: | | | Project No. |
|--|---------|----------------|--------|---|-------------|
| Flambeau Mine | Company | FMC - Stream C | | | 17F777.23 |
| Photo No. 9Date: 7-28-23Direction Photo Taken: EastPhoto Taken By Jim EngelhardtDescription: View upstream from SW-C1. | | | Jim En | est aken By: gelhardt tion: vnstream | |
| Photo No. 10Date: 7-28-2Direction Photo Taken: SouthPhoto Taken By Jim EngelhardtDescription: Flow at SW-C1. | | | | aken By: gelhardt tion: Steam C n of the u River | |

| Client's N Flambea | lame: au Mine Co | ompany | Site Location: FMC - Stream C | | | Project No. 17F777.23 |
|--|---------------------------------------|--------|----------------------------------|--------------------------------|-------------------------------------|------------------------------|
| Photo No. 13 Directio | Date: 7-20-23 | | | Photo No. 15 Directio | Date: 7-20-23 | |
| Taken: South | | | | Taken: Notheas | | |
| | aken By: ngelhardt | | | | Taken By: ngelhardt | |
| Descrip Flow in S upstrean Flambea confluen | Steam C m of the au River | | | at SW-S | wnstream TM at the nce of the | |
| Photo No. 14 | Date: 7-20-23 | | | Photo No. 16 | Date: 7-20-23 | |
| | on Photo | | | | on Photo | |
| | aken By: ngelhardt | | | | faken By: ngelhardt | |
| | tion: m end of inder Hwy | | | SW-STM confluer | stream at | |



| t: | Flambeau Mining Co | S |
|---------|---------------------------------|---|
| ct: | Flambeau Stream C - Flow Monit. | |
| red by: | Jim Engelhardt | |
| ced by: | | |

Scope ID.: 17F777.23

Date: 07/28/23 Date:

SUMMARY OF FIELD PARAMETERS

| Location | Sample Date | Sample Time | pH (SU) | Specific Conductance (mS/cm) | Temperature (⁰ C) | Depth (Ft.) | Velocity (Ft./s) | Odor (visual) | Turbidity (visual) | Color (visual) |
|----------------|-------------|-------------|------------|------------------------------------|----------------------------------|----------------|---------------------|------------------|-----------------------|-------------------|
| Hwy27 Culvert | 7/28/2023 | 1615 | 6.44 | 0.170 | 24.50 | 0.94 | * | Organic | Slight | Stained lt. Brown |
| Copper Culvert | 7/28/2023 | 1645 | 6.10 | 0.210 | 22.10 | 0.13 | * | None | None | Stained lt. Brown |
| SW-STM | 7/28/2023 | 1530 | \sim | ~ | ~ | 0.33 | 0.36 | None | None | Stained lt. Brown |

Note:

ORP = Oxidation Reduction Potential µmhos/cm = micromhos/centimeter SU = Standard Unit mV = Millivolts °C = Degrees Celsius NA = not applicable $(\sim) = Not measured$



| Client: | Flambeau Mining Company | Scope ID | 17F777.23 |
|----------|--|----------------------------|-------------------------------|
| Project: | Stream C – Flow Monitoring | Prepared by: | Jim Engelhardt/Merjent |
| Date: | August 15, 2023 | Time: | 1230 |
| Weather: | 86°, Partly Sunny, 5 mph southwes 2023 | t wind, 1.02 in. precip ev | vent on evening of August 13, |

Stream C flow observed August 15, 2023, following a 1.02-inch precipitation event starting on the evening of August 13, 2023 through the morning of August 14, 2023. This precipitation event follows a period of very little precipitation with events rarely exceeding a few 10ths of an inch. Flow was observed at both the upstream and downstream ends of the culvert under Copper Park Lane and at both the upstream and downstream ends of the culvert under Copper Park Lane and at both the upstream and downstream ends of the culvert under Hwy 27. An attempt at measuring the flow velocity at both the upstream ends of the two culverts was not successful as the propeller on velocity meter either didn't register to the small amount of flow or the water was too shallow for it to properly spin the velocimeter. The west side ditch along Hwy 27 north of the downstream end of the culvert is heavily vegetated with approximately 4 to 6 inches of standing water. Conditions within the basin near sampling point SW-NBOUT was also observed and standing water continues to be present in this area. Pockets of standing water are still present within the two basins, and it appears that water is moving continuously through these areas. Conditions at SW-STM were also observed and a flow measurement was also not obtained due to shallow water conditions. Photographs of site conditions, water quality and water depths are attached.

| Client's Name: | | Site Location: | | | | Project No. |
|-----------------------------------|------------|----------------|------------------|-------------------------------|----------------|---|
| Flambeau Mine | Company | FMC - Stream C | | | | 17F777.23 |
| Photo | | | Photo | | | |
| No. Date: 1 8-15-23 | | | No. 3 | Date: 8-15-23 | till a blick . | ***** |
| Direction Photo | | | | on Photo | | he del |
| Taken: North | | | Taken: Southw | | | |
| Photo Taken By Jim Engelhardt | | | | Faken By: ngelhardt | | |
| Description: | | | Descrip | otion: | | March Berger |
| Upstream end of | | | Downst | | | |
| culvert under Copper Park Lane | Figs State | | (west) e | nd of Inder Hwy | | |
| | | | 07 | | | · 1781 · 181 · 184 · 18 |

| Photo Date: No. 8-15-23 | Photo Date: No. 8-15-23 | |
|--|---|--|
| Direction Photo Taken: Southwest | Direction Photo Taken: Northeast | |
| Photo Taken By: Jim Engelhardt | Photo Taken By: Jim Engelhardt | |
| Description: Downstream end of culvert under Copper Park Lane. | Description: Upstream (east) end of culvert under STH 27. | |

(west) end of culvert under Hwy 27.

https://merjent1-my.sharepoint.com/personal/jim_engelhardt_merjent_com/Documents/Desktop/Flambeau Mine Monitoring/Photos/230815/230815/240815_Photo_Log.docx

| Client's N Flambea | lame: au Mine Co | ompany | Site Location: FMC - Stream | Site Location: FMC - Stream C | | | Project No. 17F777.23 |
|---|---------------------------------------|-------------|--------------------------------|--|-------------------------------|--|------------------------------|
| Photo No. 5 | Date: 8-15-23 | | 4.4 | Photo No. 7 | Date: 8-15-23 | and the second sec | |
| Directio Taken: North | on Photo | | t de lan | Direction Taken: Southw | o n Photo rest | | |
| | aken By: ngelhardt | *********** | | | Taken By: ngelhardt | | |
| Descrip Ditch alo side of ⊢ north of | ong West Iwy 27 | | | Descrip Stream downstr the Coo Lane cu | C eam of per Park | | |
| Photo No. 6 Directio Taken: East | Date: 8-15-23 | | | Photo No. 8 Directio Taken: Northea | Date: 8-15-23 on Photo | | |
| | aken By: ngelhardt | | | | Faken By: ngelhardt | | |
| Descrip Upstrear culvert u 27. | tion: m end of inder Hwy | | | Standing near sar SW-NBC | g water nple point | | |

| Client's N | lame: | | Site Location: | | | Project No. |
|-------------------------------|-------------------------------------|--------|----------------|--|---------------------------------|-------------|
| lambea | au Mine Co | ompany | FMC - Stream C | | | 17F777.23 |
| Photo No. 9 | Date: 8-15-23 | | | Photo No. 11 | Date: 8-15-23 | |
| Directio Faken: West | n Photo | | | Direction Taken: South | on Photo | |
| | aken By: Igelhardt | | | | T aken By: ngelhardt | |
| SW-STM | stream at I at the Ice of the | | | Descrip Flow in S upstrear Flambea confluer | Steam C m of the au River | |
| Photo No. 10 | Date: 8-15-23 | | | Photo No. 12 | Date: 8-15-23 | |
| Directio Faken: Northea | n Photo | | | Direction Taken: North | on Photo | |
| | aken By: Igelhardt | | | | Taken By: ngelhardt | |
| SW-STM confluen | stream at | | | | Steam C m of the au River | |



 Client:
 Flambeau Mining Co
 Sc

 Project:
 Flambeau Stream C - Flow Monit.
 Sc

 Prepared by:
 Jim Engelhardt
 Sc

 Checked by:
 Sc
 Sc

Scope ID.: 17F777.23

Date: 08/15/23 Date:

SUMMARY OF FIELD PARAMETERS

| Location | Sample Date | Sample Time | pH (SU) | Specific Conductance (mS/cm) | Temperature (⁰ C) | Depth (inches) | Velocity (Ft./s) | Odor (type) | Turbidity (visual) | Color (visual) |
|----------------|-------------|-------------|------------|------------------------------------|----------------------------------|-------------------|---------------------|----------------|-----------------------|-------------------|
| Hwy27 Culvert | 8/15/2023 | 1350 | ~ | ~ | ~ | 11.24 | * | Organic | Slight | Stained lt. Brown |
| Copper Culvert | 8/15/2023 | 1256 | ~ | ~ | ~ | 0.51 | * | None | None | Stained lt. Brown |
| SW-STM | 8/15/2023 | 1410 | ~ | ~ | ~ | 0.64 | * | None | None | Stained lt. Brown |

Note:

ORP = Oxidation Reduction Potential µmhos/cm = micromhos/centimeter SU = Standard Unit mV = Millivolts °C = Degrees Celsius NA = not applicable $(\sim) = Not measured$



| Client: | Flambeau Mining Company | Scope ID | 17F777.23 |
|----------|------------------------------------|----------------------------|-------------------------------|
| Project: | Stream C – Flow Monitoring | Prepared by: | Jim Engelhardt/Merjent |
| Date: | August 29, 2023 | Time: | 1300 |
| Weather: | 74°, Partly Sunny, 5 mph West wind | d, 0.30 in. precip event o | on evening of August 28, 2023 |

Stream C flow observed August 29, 2023, following a 0.03-inch precipitation event starting on the evening of August 28, 2023. This precipitation event follows a period of little to no precipitation since the previous monitoring round in mid-August. No flow was observed at the upstream end of the culvert under Copper Park Lane. A small amount of flow was observed on the downstream end of the Copper Lane culvert but it was not coming from the culvert itself. It appeared that water was slowly seeping in around the west side of the culvert. Whether this was shallow groundwater flow or leakage around the perimeter of the culvert is unknown. Standing water was present in the ditch on the upstream end of the Hwy 27 culvert but no flow was observed or measured at this location. The west side ditch along Hwy 27 north of the downstream end of the culvert is heavily vegetated with approximately 2 inches of standing water. Conditions within the basin near sampling point SW-NBOUT was also observed and standing water are still present within the two basins, and it appears that water is not moving through these areas at this time. Conditions at SW-STM were also observed and no water was observed in the waterway. Photographs of site conditions, water quality and water depths are attached.

| Client's Na | ame: | | Site Location: | | | Project | No. |
|-------------|------------|--------|----------------|-------|-------|---------|-----|
| Flambea | au Mine Co | ompany | FMC - Stream C | | | 17F77 | |
| Photo | Date: | | | Photo | | | |
| | | | | | Date: | | |

| 18-29-23Direction Photo Taken: NorthPhoto Taken By: Jim EngelhardtDescription: Upstream end of culvert under Copper Park Lane. | 38-29-23Direction Photo Taken: SouthwestSouthwestPhoto Taken By: Jim EngelhardtDescription: Downstream (west) end of culvert under Hwy 27. | |
|--|---|--|
| Photo No. 2Date: 8-29-23Direction Photo Taken: SouthwestSouthwestPhoto Taken By: Jim EngelhardtDescription: Downstream end of culvert under Copper Park Lane. | Photo No. 4Date: 8-29-23Direction Photo Taken: NortheastNortheastPhoto Taken By: Jim EngelhardtDescription: Upstream (east) end of culvert under STH 27. | |

| Client's Name: Flambeau Mine Company | Site Location: FMC - Stream C | Project No. 17F777.23 |
|---|--|--------------------------|
| Photo No. Date: 5 8-29-23 | Photo No. Date: 7 8-29-23 | |
| Direction Photo Taken: North | Direction Photo Taken: Southwest | |
| Photo Taken By: Jim Engelhardt | Photo Taken By: Jim Engelhardt | |
| Description: Ditch along West side of Hwy 27 north of culvert. | Description: Stream C downstream of the Cooper Park Lane culvert. | |
| Photo No. 6Date: 8-29-23Direction Photo Taken: EastImage: Constraint of the second s | Photo Date: No. 8 B Direction Photo Direction Photo Taken: Northeast Northeast | |
| Photo Taken By: Jim Engelhardt | Photo Taken By: Jim Engelhardt | |
| Description: Upstream end of culvert under Hwy 27. | Description: Standing water near sample point SW-NBOUT. | |

| | oth | | | | | Photographic Lo |
|---|-------------------------------------|--------|----------------------------------|--|--------|--------------------------|
| Client's N Flambe | au Mine Co | ompany | Site Location: FMC - Stream C | | | Project No. 17F777.23 |
| Photo No. 9 | Date: 8-29-23 | | | Photo Date: No. 8-29-23 | A BLAN | N II WE |
| Directic Taken: West | on Photo | | | Direction Photo Taken: South | | |
| | Faken By: ngelhardt | | | Photo Taken By: Jim Engelhardt | | |
| SW-STM | stream at 1 at the nce of the | | | Description: Flow in Steam C upstream of the Flambeau River confluence. | | |
| Photo No. 10 | Date: 8-29-23 | | | Photo Date: No. 8-29-23 | | |
| Directic Taken: Northea | on Photo ast | | | Direction Photo Taken: North | | |
| | Faken By: ngelhardt | | | Photo Taken By: Jim Engelhardt | | |
| SW-STM | stream at 1 at the nce of the | | | Description: Flow in Steam C upstream of the Flambeau River confluence. | | |



Scope ID.: 17F777.23

Date: 08/29/23 Date:

SUMMARY OF FIELD PARAMETERS

| Location | Sample Date | Sample Time | pH (SU) | Specific Conductance (mS/cm) | Temperature (⁰ C) | Depth (inches) | Velocity (Ft./s) | Odor (type) | Turbidity (visual) | Color (visual) |
|----------------|-------------|-------------|------------|------------------------------------|----------------------------------|-------------------|---------------------|----------------|-----------------------|-------------------|
| Hwy27 Culvert | 8/29/2023 | 1300 | ~ | ~ | ~ | 6.12 | * | Organic | Slight | Stained lt. Brown |
| Copper Culvert | 8/29/2023 | 1402 | ~ | ~ | ~ | 0.00 | * | NA | NA | NA |
| SW-STM | 8/29/2023 | 1450 | ~ | ~ | ~ | 0.00 | * | NA | NA | NA |

Note:

ORP = Oxidation Reduction Potential µmhos/cm = micromhos/centimeter SU = Standard Unit mV = Millivolts °C = Degrees Celsius NA = not applicable $(\sim) = Not measured$



| Client: | Flambeau Mining Company | Scope ID | 17F777.23 | | | | | |
|----------|---------------------------------|---|------------------------|--|--|--|--|--|
| Project: | Stream C – Flow Monitoring | Prepared by: | Jim Engelhardt/Merjent | | | | | |
| Date: | September 15, 2023 | Time: | 1300 | | | | | |
| Weather: | 67°, Overcast, 15 mph West Sout | 67°, Overcast, 15 mph West Southwest wind, 0.04 in. precip event in the early afternoon | | | | | | |
| | of September 15, 2023 | | | | | | | |

Stream C flow observed September 15, 2023, following a 0.04-inch precipitation event starting in the early afternoon of September 15, 2023. An email was sent to Molly Gardner with the WDNR inviting her to observe site conditions and field monitoring, but she was unable to make it work with her schedule. Another invitation will be sent prior to the next monitoring round. This precipitation event follows a period of little to no precipitation since the previous monitoring round in late August. No flow was observed at the upstream end of the culvert under Copper Park Lane. A small amount of flow was observed on the downstream end of the Copper Lane culvert but, like it was on the previous monitoring event, it was not coming from the culvert itself. It appeared that water was slowly seeping in around the west side of the culvert. Whether this was shallow groundwater flow or leakage around the perimeter of the culvert is unknown. Shallow standing water (0.25 ft.) was present in the ditch on the East or upstream end of the Hwy 27 culvert but no flow was observed or able to be measured at this location. The west side ditch along Hwy 27 north of the downstream end of the culvert is heavily vegetated with no measurable standing water. Conditions within the basin near sampling point SW-NBOUT was also observed and standing water continues to be present in this area but is once again considerably lower than the previous visit. Pockets of diminishing standing water are still present within the two basins, and it appears that water is still not moving through these areas at this time. Conditions at SW-STM were also observed and no water was observed in the waterway. Photographs of site conditions, water quality and water depths are attached.

| Client's Name: | Site Location: | Project No. |
|-----------------------|----------------|-------------|
| Flambeau Mine Company | FMC - Stream C | 17F777.23 |

| Photo No. 1 | Date: 9-15-23 | Photo No. 3 | Date: 9-15-23 | |
|-------------------------------|-------------------------------|---|-------------------------------|---|
| Direction Taken: North | on Photo | Direction Taken: Southw | o n Photo est | |
| | Taken By: ngelhardt | | Taken By: ngelhardt | |
| culvert u | m end of | Descrip Downstr (west) e culvert u 27. | ream | |
| Photo No. 2 | Date: 9-15-23 | Photo No. 4 | Date: 9-15-23 | |
| Direction Taken: Southw | on Photo est | Direction Taken: Northea | on Photo | |
| | Taken By: ngelhardt | | Taken By: ngelhardt | Contraction of the second s |
| of culver | eam end | Descrip Upstreal end of c under S | m (east) ulvert | |

| Client's N Flambe | Name: au Mine Co | ompany | Site Location: FMC - Stream C | | | | | | |
|--|---------------------------------------|-----------------|----------------------------------|--|-------------------------------|--|------------|--|--|
| Photo No. 5 | Date: 9-15-23 | | A A A | Photo No. 7 | Date: 9-15-23 | | | | |
| Directio Taken: North | on Photo | | | Direction Taken: Southw | o n Photo est | | | | |
| | Taken By: ngelhardt | Constant of the | | Photo Taken By: Jim Engelhardt | | | A dear and | | |
| Description: Ditch along West side of Hwy 27 north of culvert. | | | | Descrip Stream downstr the Coop Lane cul | C eam of oer Park | | | | |
| Photo No. 6 | Date: 9-15-23 | | | Photo No. 8 | Date: 9-15-23 | | | | |
| Directio Taken: East | on Photo | | | Direction Taken: North | on Photo | | | | |
| | T aken By: ngelhardt | | | | Taken By: ngelhardt | | | | |
| | tion: m end of inder Hwy | | | culvert u | m m end of | | | | |

| Client's N Flambe | Name: au Mine Co | ompany | Site Location: FMC - Stream C | | | | Project No. 17F777.23 |
|---|-------------------------------|--------|----------------------------------|------------------------------|---|-----|--------------------------|
| Photo No. 9 | Date: 9-15-23 | | | Photo No. 11 | Date: 9-15-23 | | |
| Directic Taken: West | on Photo | | | Direction Taken: South | on Photo | | |
| | Faken By: ngelhardt | | | | Faken By: ngelhardt | 3 2 | |
| Description: View upstream at SW-STM at the confluence of the Flambeau River. | | | | | otion: Steam C m of the au River nce. | | |
| Photo No. 10 | Date: 9-15-23 | | | Photo No. 12 | Date: 9-15-23 | | |
| Directio Taken: Northea | on Photo | | | Direction Taken: North | on Photo | | |
| | Faken By: ngelhardt | | | | Faken By: ngelhardt | | |
| SW-STN confluer | stream at | | | | Steam C m of the au River | | |



| t: | Flambeau Mining Co | Scor |
|---------|---------------------------------|------|
| ct: | Flambeau Stream C - Flow Monit. | |
| red by: | Jim Engelhardt |] |
| ked by: | |] |

ope ID.: 17F777.23

Date: 09/15/23 Date:

SUMMARY OF FIELD PARAMETERS

| Location | Sample Date | Sample Time | pH (SU) | Specific Conductance (mS/cm) | Temperature (⁰ C) | Depth (inches) | Velocity (Ft./s) | Odor (type) | Turbidity (visual) | Color (visual) |
|----------------|-------------|-------------|------------|------------------------------------|----------------------------------|-------------------|---------------------|----------------|-----------------------|-------------------|
| Hwy27 Culvert | 9/15/2023 | 1415 | ~ | ~ | ~ | 3.02 | * | Organic | Slight | Stained lt. Brown |
| Copper Culvert | 9/15/2023 | 1505 | ~ | ~ | ~ | 0.00 | * | NA | NA | NA |
| SW-STM | 9/15/2023 | 1610 | ~ | ~ | ~ | 0.00 | * | NA | NA | NA |

Note:

ORP = Oxidation Reduction Potential µmhos/cm = micromhos/centimeter SU = Standard Unit mV = Millivolts °C = Degrees Celsius NA = not applicable $(\sim) = Not measured$



| Client: | Flambeau Mining Company | Scope ID | 17F777.23 |
|----------|----------------------------------|---------------------------|-------------------------------|
| Project: | Stream C – Flow Monitoring | Prepared by: | Jim Engelhardt/Merjent |
| Date: | September 25, 2023 | Time: | 1330 |
| Weather: | 63°, Overcast, 10 mph West wind, | 3.25 in. multi day precip | itation event tapering off on |
| | the morning of September 25, 202 | 3 | |

Stream C flow observed September 25, 2023, following a 3.25-inch multi day precipitation event starting in the early afternoon of September 22, 2023 and ending the morning of September 25, 2023. An email was sent to Molly Gardner with the WDNR inviting her to observe site conditions and field monitoring but was unable to make it work with a busy work schedule. Another invitation will be sent prior to the next monitoring round. This multi day precipitation event follows a period of little precipitation since the previous monitoring round two weeks earlier. Flow was observed at the upstream end of the culvert under Copper Park Lane measuring 3.36 inches in depth and 0.7 fps of flow. A small amount of flow was observed on the downstream end of the Copper Lane culvert. Standing water measuring 13.3 in. was present in the ditch on the East/upstream end of the Hwy 27 culvert but no measurable flow was able to be measured at this location. The west side ditch along Hwy 27 north of the downstream end of the culvert is heavily vegetated with approximately 6 in. standing water. Conditions within the basin near sampling point SW-NBOUT was also observed and standing water continues to be present in this area but is noticeably higher than the previous visit. Conditions at SW-STM were also observed with water depths of 2.21 in. and flow measured at 0.6 fps. Photographs of site conditions and water quality are attached.

| Client's Name: | Site Location: | Project No. |
|-----------------------|----------------|-------------|
| Flambeau Mine Company | FMC - Stream C | 17F777.23 |

| Photo No. 1 | Date: 9-25-23 | Photo No. 3 | Date: 9-25-23 | |
|--|-----------------------------|---|------------------------------|--|
| Direction Taken: North | n Photo | Direction Taken: Southw | on Photo est | |
| | aken By: gelhardt | | aken By: Igelhardt | |
| Descript Upstream culvert ur Copper P | n end of | Descrip Downstr (west) ei culvert u 27. | eam | |
| Photo No. 2 | Date: 9-25-23 | Photo No. 4 | Date: 9-25-23 | |
| Direction Taken: Southwe | | Direction Taken: Northea | on Photo | |
| | aken By: gelhardt | | aken By: Igelhardt | |
| Descript Downstre of culvert Copper P | eam end | Descrip Upstreat end of c under S ⁻ | m (east) ulvert | |

| Client's Na Flambeau | | ompany | Site Location: FMC - Stream C | | | Project No. 17F777.23 | | | |
|---|-------------------------|--------|----------------------------------|--|-----------------------------------|------------------------------|--|--|--|
| Photo No. 5 | Date: 9-25-23 | | N. P. P. | Photo No. 7 | Date: 9-25-23 | | | | |
| Direction Taken: North | Photo | | - Aller | Direction Taken: Southw | on Photo vest | | | | |
| Photo Ta Jim Eng | | | | | Faken By: ngelhardt | ALC: NO. | | | |
| Description: Ditch along West side of Hwy 27 north of culvert. | | | | Descrip Stream downstr the Coo Lane cu | C eam of per Park | | | | |
| Photo No. 6 | Date: 9-25-23 | | | Photo No. 8 | Date: 9-25-23 | | | | |
| Direction Taken: East | Photo | | | Direction Taken: North | on Photo | | | | |
| Photo Ta Jim Eng | | | | | Photo Taken By: Jim Engelhardt | | | | |
| Jim Engelhardt Description: Upstream end of culvert under Hwy 27. | | | | culvert ı | n m end of | | | | |

| Client's Name: Flambeau Mine | Company | Site Location: FMC - Stream C | | | Project No. 17F777.23 |
|---|---------|----------------------------------|----------------------------|---------------------------------|------------------------------|
| Photo No. 9Date: 9-25-23Direction Photo Taken: WestPhoto Taken By Jim EngelhardtDescription: | | | Taken: South Photo T | Steam C n of the nu River | |
| Photo No. 10Date: 9-25-23Direction Photo Taken: NortheastPhoto Taken By Jim EngelhardtDescription: View upstream at SW-STM at the confluence of the Flambeau River. | | | Taken: North Photo T | Steam C n of the au River | |



Scope ID.: 17F777.23

Date: 09/25/23 Date:

SUMMARY OF FIELD PARAMETERS

| Location | Sample Date | Sample Time | pH (SU) | Specific Conductance (mS/cm) | Temperature (⁰ C) | Depth (inches) | Velocity (Ft./s) | Odor (type) | Turbidity (visual) | Color (visual) |
|----------------|-------------|-------------|------------|------------------------------------|----------------------------------|-------------------|---------------------|----------------|-----------------------|-------------------|
| Hwy27 Culvert | 9/25/2023 | 1510 | ~ | ~ | ~ | 13.30 | * | Organic | Slight | Stained lt. Brown |
| Copper Culvert | 9/25/2023 | 1605 | ~ | ~ | ~ | 3.36 | 0.70 | Organic | None | Stained lt. Brown |
| SW-STM | 9/25/2023 | 1715 | ~ | ~ | ~ | 2.21 | 0.60 | None | None | Stained lt. Brown |

Note:

ORP = Oxidation Reduction Potential µmhos/cm = micromhos/centimeter SU = Standard Unit mV = Millivolts °C = Degrees Celsius NA = not applicable $(\sim) = Not measured$



| Client: | Flambeau Mining Company | Scope ID | 17F777.23 |
|----------|-----------------------------------|----------------------------|-----------------------------|
| Project: | Stream C – Flow Monitoring | Prepared by: | Jim Engelhardt/Merjent |
| Date: | October 14, 2023 | Time: | 1410 |
| Weather: | 54°, Overcast, 6 mph West wind, 1 | .55 in. multi day precipit | ation event through mid-day |
| | of October 14, 2023 | | |

Stream C flow observed October 14, 2023, following a 1.55-inch multi-day precipitation event starting in the early morning of October 13, 2023 and ending in the early afternoon of October 14, 2023. This precipitation event follows a period of several small precipitation events since the previous monitoring round in late September. Flow was observed at the upstream end of the culvert under Copper Park Lane measuring 2.66 inches in depth and 0.5 fps of flow. Standing water measuring 13.75 in. was observed in the ditch on the East/upstream end of the Hwy 27 culvert but no measurable flow was obtained at this location. The west side ditch along Hwy 27 north of the downstream end of the culvert is heavily vegetated with approximately 6-7 in. of standing water continues to be present in this area but appears to be dropping due to the visual water mark on the vegetation. Conditions at SW-STM were also observed with water depths of 5.22 in. and flow measured at 0.6 fps. Photographs of site conditions and water quality are attached.

| Client's Name: | : | Site Location: | Project No. |
|----------------|--------------|----------------|-------------|
| Flambeau M | line Company | FMC - Stream C | 17F777.23 |

| No. 1 | Date: 10-14-23 | No. 3 | Date: 10-14-23 | |
|-------------------------------|-------------------------------|--|-------------------------------|---------------|
| Direction Taken: North | on Photo | Direction Taken: Southw | o n Photo rest | |
| | Faken By: ngelhardt | | Faken By: ngelhardt | |
| culvert u | m end of | Description: Downstream (west) end of culvert under Hwy 27. | | |
| Photo No. 2 | Date: 10-14-23 | Photo No. 4 | Date: 10-14-23 | |
| Direction Taken: Southw | on Photo vest | Direction Taken: Northea | | |
| | Faken By: ngelhardt | | Faken By: ngelhardt | Carlo Alexand |
| of culve | ream end | Descrip Upstrea end of c under S | m (east) ulvert | |

| Client's N Flambe | Name: au Mine Co | ompany | Site Location: FMC - Stream C | | | | Project No. 17F777.23 |
|--|--------------------------|----------|--|-------------------------------|--|-----------------|------------------------------|
| Photo No. 5 | Date: 10-14-23 | 2.30% | | Photo No. 7 | Date: 10-14-23 | | |
| Directic Taken: North | on Photo | | 1. Maria | Direction Taken: Southw | on Photo vest | A - P - A - MAN | |
| Photo Taken By: Jim Engelhardt | | | Photo Taken By: Jim Engelhardt | | | and the set | |
| Description: Ditch along West side of Hwy 27 north of culvert. | | | | | o tion: C ream of per Park Ivert. | | |
| Photo No. 6 | Date: 10-14-23 | | | Photo No. 8 | Date: 10-14-23 | | |
| Directic Taken: East | on Photo | | | Direction Taken: North | on Photo | The Law Sta | |
| Photo Taken By: Jim EngelhardtImage: Second | | A Partie | Photo Taken By: Jim Engelhardt | | And South Street, Stre | THE ALLER | |
| | | | | culvert u | m m end of | | |

| Client's N Flambe | Name: au Mine Co | ompany | Site Location: FMC - Stream C | | | | Project No. 17F777.23 |
|--|-----------------------------------|--------|---|---|---------------------------------|--------|------------------------------|
| Photo No. 9 | Date: 10-14-23 | | | Photo No. 11 | Date: 10-14-23 | | |
| Directic Taken: West | on Photo | | | Direction Taken: South | on Photo | - b | |
| | Photo Taken By: Jim Engelhardt | | | Photo Taken By: Jim Engelhardt | | | |
| Description: View upstream at SW-STM at the confluence of the Flambeau River. | | | | Descrip Flow in S upstrear Flambea confluer | Steam C m of the au River | | |
| Photo No. 10 | Date: 10-14-23 | | | Photo No. 12 | Date: 10-14-23 | MAR LE | - 11/ |
| | on Photo | | | | on Photo | | |
| | Photo Taken By: Jim Engelhardt | | Photo Taken By: Jim Engelhardt | | | | |
| Description: View upstream at SW-STM at the confluence of the Flambeau River. | | | Description: Flow in Steam C upstream of the Flambeau River confluence. | | | | |



| t: | Flambeau Mining Co | Sco |
|---------|---------------------------------|-----|
| ct: | Flambeau Stream C - Flow Monit. | |
| red by: | Jim Engelhardt | |
| ked by: | | |

cope ID.: 17F777.23

Date: 10/14/23 Date:

SUMMARY OF FIELD PARAMETERS

| Location | Sample Date | Sample Time | pH (SU) | Specific Conductance (mS/cm) | Temperature (⁰ C) | Depth (inches) | Velocity (Ft./s) | Odor (type) | Turbidity (visual) | Color (visual) |
|----------------|-------------|-------------|------------|------------------------------------|----------------------------------|-------------------|---------------------|----------------|-----------------------|-------------------|
| Hwy27 Culvert | 10/14/2023 | 1405 | ~ | ~ | ~ | 13.75 | * | Organic | Slight | Stained lt. Brown |
| Copper Culvert | 10/14/2023 | 1440 | ~ | ~ | ~ | 2.66 | 0.5 | None | None | Stained lt. Brown |
| SW-STM | 10/14/2023 | 1535 | ~ | ~ | ~ | 5.22 | 0.6 | None | None | Stained lt. Brown |

Note:

ORP = Oxidation Reduction Potential µmhos/cm = micromhos/centimeter SU = Standard Unit mV = Millivolts °C = Degrees Celsius NA = not applicable $(\sim) = Not measured$