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250-777-1518
Date: 2021-07-24

Safety Plan - 2021-041-nupqu-elk-fish-passage

The latest version of this pdf can be downloaded [here](#).

A zip file which includes kml (google earth) and gpx (garmin) files of the sites to be potentially assessed can be downloaded [here](#). Georeferenced pdf maps can be accessed and downloaded [here](#).

| project_number | project_name |
|----------------|------------------------|
| 2021-041 | nupqu-elk-fish-passage |

Table 1: Crew members details and emergency contacts

| name | email | phone | satellite | emerg_name | emerg_email | emerg_phone |
|---------------|----------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------|--------------|
| Al Irvine | al@newgraphenvironment.com | 250-777-1518 | allanirvine75@inreach.garmin.com | Tara Stark | tara.stark@gmail.com | 250-505-9854 |
| Tammy Strauss | tamlee1@yahoo.com | 250-551-5958 | – | James Karthein | ridgeline-metalworks@yahoo.ca | 250-551-4776 |

Equipment Checklists

| Personal Equipment Checklist | • |
|--------------------------------|----------------|
| GPS | Ski poles |
| Sunscreen | water |
| Bugspray | food |
| Polarized glasses | gloves work |
| Bear Spray | glasses safety |
| phone/camera | headlamp |
| battery pack booster for phone | clinometer |
| Hat | field vest |
| first aid kit personal | note book |
| Waders | Extra clothes |
| Boots | rain gear |

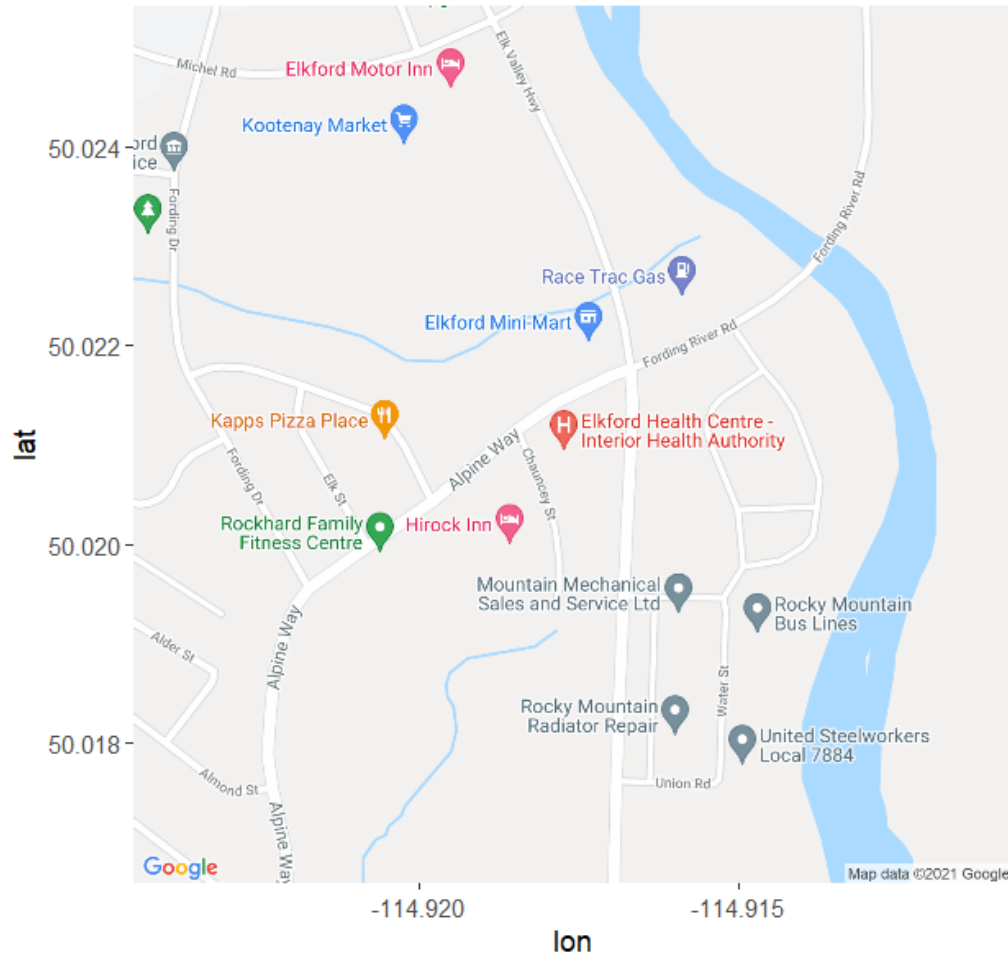
| Crew Equipment Checklist | • |
|-------------------------------|-------------------------------|
| Hand saw | Measuring board |
| Linesman Gloves x 3 | Scale |
| Backroads Mapbook | Permits |
| Locational maps | Fish ID book |
| Background Documents | Site Cards / Field Guide |
| radio road | Minnow Traps |
| Inreach | Catfood |
| Field Safety Plan | Flagging |
| first aid kit level 1 | Laptop w/basecamp |
| First Aid binder stocked | GPS cable |
| Throw bags | Lazer level |
| polaski | Assessment cards fish passage |
| shovel | UAV |
| fire extinguisher backpack | Flow meter |
| fire extinguisher pressurized | ATV |
| Oakton Multimeter | bucket rigid x 2 |

| | |
|------------------------|-------------------------------|
| Backpack Electrofisher | bucket foldable |
| stop nets x 4 | clove oil kit w/ instructions |
| salt blocks | gloves leather |
| loose salt | sharpies |
| dip nets x 2 | hand lens |
| tape measure hand | ATV gas |
| tape measure eslon | ATV lock |
| pilon x 2 | UAV battery charger |

Nearest Hospitals



Elk Valley Hospital - 1501 5 Ave, Fernie, BC V0B 1M0 - 250-423-4453



Elkford Health Centre - Interior Health Authority - 212 Alpine Way, Elkford, BC V0B 1H0 - 250-865-2247

Field Plan

Field work methods will result in products feeding reporting formats such as the [2020 deliverables](#) and will generally follow procedures in:

- [fish passage assessments](#)
- [habitat confirmations](#)

Presence/absence of fish, species composition/density and distribution limits can be useful for prioritizing which crossings are a best fit for fish passage restoration and help inform follow up

monitoring so electrofishing and minnowtrapping may be conducted. Standard Fish and Fish Habitat Inventory Standard Field Form [site cards](#) are used to gather habitat data.

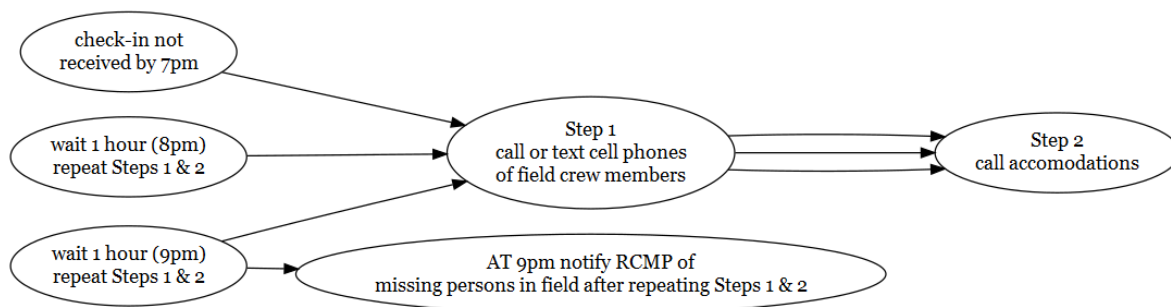
A summary of sites to be potentially assessed is included as Table [??](#) and an overview map of displaying potential sample locations is included as Figure 1.

Check In Procedures

Call, text or inreach Tara Stark (2505059854) each morning to share the plan for the day (i.e. name of roads and sites). Check in time is before 7 pm each evening although we regularly check in throughout the day (ex. at arrival to site, 1pm and 4pm) on the inreach or by text and report position/provide updates.

Procedures for Failed Check-In - for Check in person

Procedures are summarized in the following Figure. If phone call or inReach check-in is not received by 7pm send text to inreach units, call or text cell phones of field crew members. If no response please call accommodations then personal emergency contacts to see if they have heard anything. Wait 1 hour and text inreach, text or call cell phones and personal emergency contacts and accomodations again. Repeat after 2 hours (9 pm) - if no response then notify the RCMP of a missing persons in field.



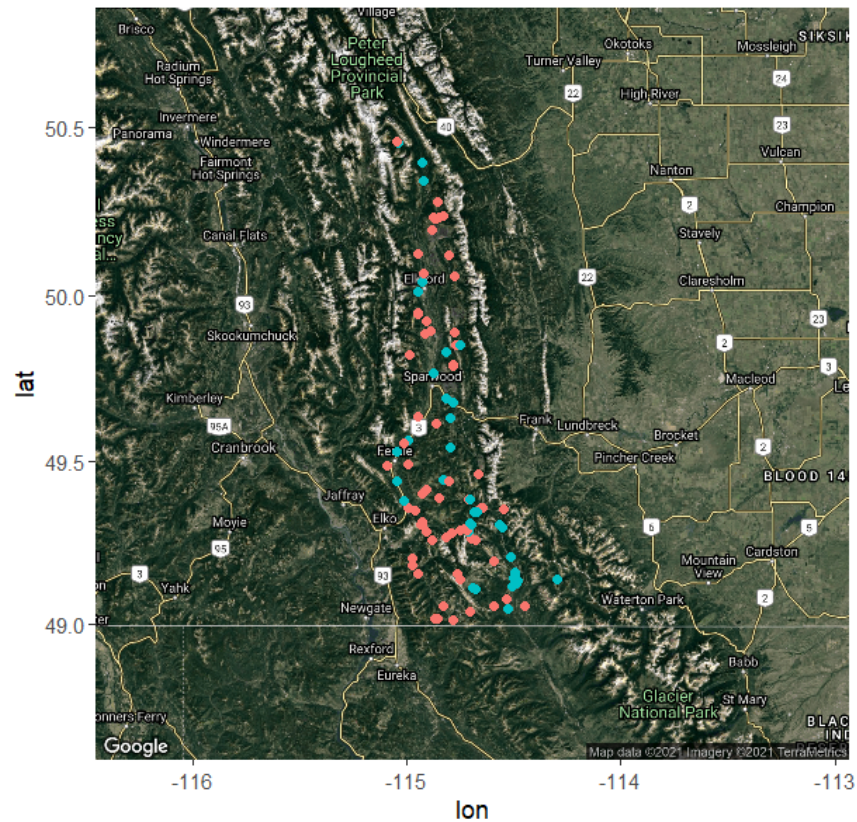


Figure 1. Map of potential sampling areas. High priority sites in red and moderate priority in green.

Table 2: CWF - Potential sample locations.

| id_xing | Stream | east | north | source | id_map | comments | sp_upstr |
|------------|-----------------|----------|---------|--------|----------|----------|-------------------|
| 61504 | Coal Creek | 645312.9 | 5483687 | cwf | 082G.113 | – | {BT,CT,CT/RB,WCT} |
| 197527 | Crossing Creek | 648724.3 | 5548196 | cwf | 082J.103 | – | {EB} |
| 1004600533 | Chauncey Creek | 656890.0 | 5554160 | cwf | 082J.103 | – | {WCT} |
| 1004600762 | Fording River | 651282.0 | 5562574 | cwf | 082J.103 | – | {WCT} |
| 1004601280 | – | 659427.0 | 5517583 | cwf | 082G.119 | – | {WCT} |
| 1004601704 | Morrissey Creek | 650166.0 | 5473852 | cwf | 082G.108 | – | – |
| 1004601984 | – | 654301.7 | 5458678 | cwf | 082G.108 | – | – |
| 1004601993 | Rabbit Creek | 656655.0 | 5431721 | cwf | 082G.103 | – | – |
| 1004601995 | Rabbit Creek | 655890.2 | 5431860 | cwf | 082G.103 | – | – |
| 1004602163 | Morrissey Creek | 651609.1 | 5475661 | cwf | 082G.113 | – | – |
| 1004602359 | Rabbit Creek | 655618.0 | 5431721 | cwf | 082G.103 | – | – |
| 1004602514 | Harmer Creek | 659393.0 | 5517830 | cwf | 082G.119 | – | {WCT} |
| 1004602646 | – | 647364.0 | 5452095 | cwf | 082G.108 | – | – |
| 1004602949 | Weigert Creek | 647247.0 | 5534524 | cwf | 082G.123 | – | – |
| 1004603334 | Fording River | 651460.9 | 5566706 | cwf | 082J.108 | – | {WCT} |
| 1004603413 | Henretta Creek | 654825.0 | 5567436 | cwf | 082J.108 | – | {WCT} |
| 1004603480 | Bean Creek | 650539.0 | 5464640 | cwf | 082G.108 | – | – |
| 1004603553 | Bighorn Creek | 663230.0 | 5447429 | cwf | 082G.104 | – | {DV} |
| 1004603791 | – | 660586.0 | 5461227 | cwf | 082G.109 | – | {WCT} |
| 1004603793 | Lodgepole Creek | 663619.0 | 5462235 | cwf | 082G.109 | – | {WCT} |
| 1004604677 | Henretta Creek | 652123.3 | 5566424 | cwf | 082J.108 | – | {WCT} |
| 1004604696 | Henretta Creek | 652346.1 | 5566461 | cwf | 082J.108 | – | {WCT} |
| 1004605216 | – | 647730.0 | 5449516 | cwf | 082G.103 | – | – |
| 1004605338 | – | 658388.0 | 5436172 | cwf | 082G.103 | – | – |
| 1004605499 | – | 650057.1 | 5463543 | cwf | 082G.108 | – | – |
| 1004605937 | – | 662247.0 | 5431294 | cwf | 082G.104 | – | – |
| 1004606007 | Weigert Creek | 647156.3 | 5534676 | cwf | 082G.123 | – | – |
| 1004606129 | – | 649481.2 | 5446732 | cwf | 082G.103 | – | {BT,CT,RB,WCT} |
| 1004606284 | Fording River | 652990.0 | 5571951 | cwf | 082J.108 | – | – |
| 1004606347 | Bean Creek | 650414.6 | 5463819 | cwf | 082G.108 | – | – |
| 1004606370 | Lodgepole Creek | 664905.1 | 5462562 | cwf | 082G.109 | – | {WCT} |
| 1004606398 | Lodgepole Creek | 665796.1 | 5462152 | cwf | 082G.109 | – | – |

| | | | | | | | |
|------------|----------------|----------|---------|-----|----------|---|----------|
| 1004606411 | – | 658765.0 | 5459547 | cwf | 082G.108 | – | {WCT} |
| 1004606926 | Bighorn Creek | 664112.2 | 5445241 | cwf | 082G.104 | – | – |
| 1004607022 | McCool Creek | 648168.1 | 5499879 | cwf | 082G.118 | – | {WCT} |
| 1004607449 | – | 659283.9 | 5547544 | cwf | 082J.104 | – | – |
| 1024706614 | Henretta Creek | 653180.2 | 5566732 | cwf | 082J.108 | – | {WCT} |
| 1024733953 | – | 652220.8 | 5461435 | cwf | 082G.108 | – | – |
| 1024734790 | Brûlé Creek | 649910.2 | 5528007 | cwf | 082G.123 | – | {RB,WCT} |
| 1024735049 | Weigert Creek | 650009.9 | 5531958 | cwf | 082G.123 | – | – |
| 1024735443 | Abruzzi Creek | 638867.1 | 5591423 | cwf | 082J.113 | – | {WCT} |

Table 3: 2020_field_planning - Potential sample locations.

| id_xing | Stream | east | north | source | id_map | comments | sp_upstr |
|---------|--------------|----------|---------|---------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 50060 | Harvey Creek | 666579.3 | 5461445 | 2020_planning | 082G.109 | Harvey Lake is 1ha lake upstream ~230m upstream of the crossing. | – |
| 50061 | Fuel Creek | 667651.2 | 5459223 | 2020_planning | 082G.109 | Large stream but dry during assessment. WCT known upstream and wetted at 50151 (ford) located 600m upstream. | {WCT} |
| 50063 | Kisoo Creek | 668960.5 | 5458806 | 2020_planning | 082G.109 | Relatively large channel width. Good flow and hab value rated high. | – |
| 50072 | – | 682784.9 | 5447731 | 2020_planning | 082G.104 | Small stream with good flow in photos. Assessment comments indicate good gravels. Very close to the mainstem of the Flathead. | – |
| 50073 | – | 682180.0 | 5446356 | 2020_planning | 082G.104 | Fairly steep. comments indicate "WCT found upstream by Artech in 1995 according to Habitat Wizard" | – |
| 50075 | – | 683797.4 | 5445297 | 2020_planning | 082G.104 | Smaller stream. | – |
| 50081 | – | 681879.8 | 5443723 | 2020_planning | 082G.104 | Large stream. Potential barrier. | – |
| 50084 | – | 680147.4 | 5439436 | 2020_planning | 082G.104 | Fish observed at outlet. Falls in FISS just downstream. Culvert appears passable to all life stages/species at time of survey but may be velocity barrier at higher flows. | – |

| | | | | | | | |
|-------|--------------|----------|---------|---------------|----------|----------------------------------------------------------------------------------------------------------------------|----------|
| 50085 | – | 680488.4 | 5435930 | 2020_planning | 082G.104 | Larger channel width habitat rated as high value. | – |
| 50086 | – | 680428.7 | 5435744 | 2020_planning | 082G.104 | Appears passable at most flows. Rocky mountain sculpin nearby and their swim speeds could be a consideration. | – |
| 50100 | – | 669510.1 | 5442206 | 2020_planning | 082G.104 | Larger stream but fairly steep with relatively low habitat gain potential. | – |
| 50101 | – | 669469.8 | 5442312 | 2020_planning | 082G.104 | Larger stream with good flow. Gradients model as >15 downstream so naturally occurring barriers are fairly likely. | – |
| 50102 | – | 668217.8 | 5442479 | 2020_planning | 082G.104 | Good flow but very steep then extremely steep upstream. | – |
| 50152 | – | 638002.9 | 5483401 | 2020_field | 082G.113 | – | – |
| 50181 | – | 648276.6 | 5468171 | 2020_field | 082G.108 | – | – |
| 50185 | – | 645679.3 | 5469020 | 2020_field | 082G.108 | – | – |
| 50261 | – | 669029.6 | 5481120 | 2020_field | 082G.114 | – | – |
| 50273 | Robert Creek | 657671.1 | 5506277 | 2020_planning | 082G.118 | Dry channel. Small stream. | – |
| 62120 | – | 676693.1 | 5464482 | 2020_planning | 082G.109 | Small potential habitat gain but assessment comments indicate good rearing habitat and good potential fix candidate. | – |
| 62265 | – | 647692.6 | 5578674 | 2020_planning | 082J.108 | Splits upstream and gets very steep. Grainger indicates "Good potential for fix. Rearing habitat upstream." | – |
| 62423 | Grave Creek | 660493.7 | 5524263 | 2020_field | 082G.124 | – | {RB,WCT} |
| 62425 | Grave Creek | 661478.0 | 5524388 | 2020_planning | 082G.124 | If this is the mainstem, habitat upstream at bridge appears mod to high value. | {WCT} |
| 62425 | Grave Creek | 661478.0 | 5524388 | 2020_planning | 082G.124 | Good flow in photos. Smaller channel width. Not on mapped stream location | {WCT} |
| 62425 | Grave Creek | 661478.0 | 5524388 | 2020_planning | 082G.124 | Smaller channel width. Stream incorrectly mapped. | {WCT} |
| 62426 | Grave Creek | 661662.7 | 5524440 | 2020_planning | 082G.124 | If this is the mainstem, habitat upstream at bridge appears mod to | |

| | | | | | | |
|-------------------------------------|---------------|----------|---------|---------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| high value. {WCT} | | | | | | |
| 62426 | Grave Creek | 661662.7 | 5524440 | 2020_planning | 082G.124 | Good flow in photos. Smaller channel width. Not on mapped stream location {WCT} |
| 62426 | Grave Creek | 661662.7 | 5524440 | 2020_planning | 082G.124 | Smaller channel width. Stream incorrectly mapped. {WCT} |
| 102994 | – | 659210.2 | 5499654 | 2020_planning | 082G.119 | Comments indicate partially embedded and backwatered. Other comments indicate good candidate for bridge. – |
| 197533 | Brûlé Creek | 651625.5 | 5528887 | 2020_field | 082G.123 | – {BT,DV,RB,WCT} |
| 197534 | Weigert Creek | 650147.8 | 5532049 | 2020_field | 082G.123 | – – |
| 197542 | Hartley Creek | 643536.7 | 5490723 | 2020_field | 082G.113 | – {DV,EB,WCT} |
| 197555 | – | 646737.2 | 5554528 | 2020_field | 082J.103 | – – |
| 197559 | Brûlé Creek | 651512.4 | 5528837 | 2020_field | 082G.123 | – {RB,WCT} |
| 1004600156 | – | 641368.8 | 5487802 | 2020_planning | 082G.113 | Industrial area with stream splitting 3 ways just upstream. {EB,LSU,SP,WCT} |
| WCT upstream with modelled low | | | | | | |
| 1004600264 | – | 666528.9 | 5472653 | 2020_planning | 082G.109 | gradient habitat. Smaller watershed though. {WCT} |
| 1004600267 | – | 666187.7 | 5472563 | 2020_planning | 082G.109 | Mottled Sculpin upstream. {BT,CBA} |
| Private agricultural land. Very low | | | | | | |
| 1004600621 | Quail Creek | 645057.0 | 5492118 | 2020_planning | 082G.113 | gradient so suspect passable at most flows. – |
| 1004601149 | – | 659817.1 | 5528849 | 2020_planning | 082G.124 | WCT upstream. {WCT} |
| 1004601582 | – | 641508.0 | 5477910 | 2020_planning | 082G.113 | Stream splits with numerous crossings upstream. – |
| 1004601687 | – | 670843.0 | 5469802 | 2020_planning | 082G.109 | Large amount of lower grade habitat modelled upstream. Survey site from Kokanee 2001 (http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=29) upstream 600m. – |
| Crossing appears to be likely | | | | | | |
| 1004602098 | – | 657221.1 | 5479085 | 2020_planning | 082G.113 | located 40m to north-east. Interior Reforestation sample site just upstream. No ecocat report link. – |

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|------------|-----------------|----------|---------|---------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1004602218 | – | 654343.0 | 5497892 | 2020_planning | 082G.118 | Large amount of potential habitat but suspect deactivated road. | {WCT} |
| | | | | | | Review before surveying. | |
| 1004602564 | – | 667163.0 | 5464077 | 2020_planning | 082G.109 | Steeper habitat upstream. | – |
| | | | | | | Kokanee 2001 (http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=29) report resident fish | |
| 1004602620 | – | 680897.0 | 5453543 | 2020_planning | 082G.109 | population does not have access to Flathead river at FISS site downstream. | – |
| 1004602726 | Flanders Brook | 697247.9 | 5446252 | 2020_planning | 082G.105 | Seems like road may be deactivated in aerial imagery. Recommend checking with local foresters. | – |
| | | | | | | Suspect deactivation from review | |
| 1004602869 | Couldrey Creek | 667844.0 | 5434398 | 2020_planning | 082G.104 | of aerial imagery. Large potential habitat gain. | – |
| 1004603040 | – | 648387.0 | 5545039 | 2020_planning | 082J.103 | Private land. | {EB,WCT} |
| 1004603432 | – | 639196.0 | 5591178 | 2020_planning | 082J.113 | Relatively steep. | – |
| 1004603477 | Burnham Creek | 675878.1 | 5436608 | 2020_planning | 082G.104 | Large watershed with WCT know upstream. Good candidate. | {WCT} |
| 1004603597 | – | 675469.0 | 5451829 | 2020_planning | 082G.104 | Step-pool system. Relatively larger watershed. BT close by. | – |
| 1004603725 | Pollock Creek | 678149.9 | 5469459 | 2020_planning | 082G.109 | Large stream. | {BT,WCT} |
| | | | | | | Decent amount of habitat upstream in 5-8% slope class. Road may be overgrown and/or deactivated by appearance of google satellite imagery. | |
| 1004603904 | – | 668900.0 | 5468357 | 2020_planning | 082G.109 | | – |
| 1004603908 | McLatchie Creek | 667049.0 | 5464485 | 2020_planning | 082G.109 | Steeper habitat upstream. | – |
| 1004604006 | Gardner Creek | 647065.1 | 5584911 | 2020_planning | 082J.108 | Primarily wetland type habitat upstream. | {BSU,BT,DV,LSU,MW,WCT} |
| 1004605451 | Nettie Creek | 686581.3 | 5436976 | 2020_planning | 082G.104 | Phase 1 required. WCT known upstream. Connected to Proctor Lake which has recorded RB. Large potential habitat gain. | {CC,WCT} |
| 1004605458 | – | 686473.0 | 5437250 | 2020_planning | 082G.104 | First order watershed. | – |
| 1004606501 | – | 668124.2 | 5468514 | 2020_planning | 082G.109 | Steeper stream. | – |

| | | | | | | | |
|------------|-----------------|----------|---------|---------------|----------|---------------------------------------------------------------------------------------------------|----------------|
| 1004606506 | – | 670699.0 | 5469925 | 2020_planning | 082G.109 | Extensive low gradient and wetland habitat upstream. | – |
| 1004606545 | Cummings Creek | 644862.0 | 5520738 | 2020_planning | 082G.123 | Very large watershed with multiple species noted upstream. | – |
| 1004606597 | – | 683097.0 | 5444416 | 2020_planning | 082G.104 | Stream splits to multiple channels just upstream with relatively small - low elevation watershed. | – |
| 1004606751 | Whiting Creek | 652940.4 | 5515013 | 2020_planning | 082G.118 | Railway. Appears potentially backwatered. | – |
| 1004606800 | – | 644278.7 | 5471741 | 2020_planning | 082G.108 | Large railway crossing structures in aerial photo. Suspect passable. | – |
| 1004606821 | Erickson Creek | 659887.7 | 5505156 | 2020_planning | 082G.119 | Immediately adjacent to mine | {BT,DV,EB,WCT} |
| 1004607003 | – | 659238.0 | 5489723 | 2020_planning | 082G.114 | Appears to be PSCIS 50225. | – |
| 1004607273 | Packhorse Creek | 677870.1 | 5463568 | 2020_planning | 082G.109 | Road looks overgrown in aerial imagery. Suspect ford. | {WCT} |
| 1004607406 | – | 659304.0 | 5478557 | 2020_planning | 082G.113 | WCT upsstream. Large habitat gain before next potential barrier. | {WCT} |
| 1004607464 | – | 682774.0 | 5448438 | 2020_planning | 082G.104 | Culvert documented in FISS. Survey sites upstream of crossing. | {WCT} |
| 1004607567 | – | 655995.0 | 5472834 | 2020_planning | 082G.108 | Fish upstream and down. | {TR} |
| 1100001086 | Harmer Creek | 657050.7 | 5522119 | 2020_planning | 082G.123 | If this is the mainstem, habitat upstream at bridge appears mod to high value. | {WCT} |
| 1100001086 | Harmer Creek | 657050.7 | 5522119 | 2020_planning | 082G.123 | Good flow in photos. Smaller channel width. Not on mapped stream location | {WCT} |
| 1100001086 | Harmer Creek | 657050.7 | 5522119 | 2020_planning | 082G.123 | Smaller channel width. Stream incorrectly mapped. | {WCT} |
| 1100002606 | Boivin Creek | 647275.1 | 5541987 | 2020_planning | 082J.103 | If this is the mainstem, habitat upstream at bridge appears mod to high value. | – |
| 1100002606 | Boivin Creek | 647275.1 | 5541987 | 2020_planning | 082J.103 | Good flow in photos. Smaller channel width. Not on mapped stream location | – |
| 1100002606 | Boivin Creek | 647275.1 | 5541987 | 2020_planning | 082J.103 | Smaller channel width. Stream incorrectly mapped. | – |