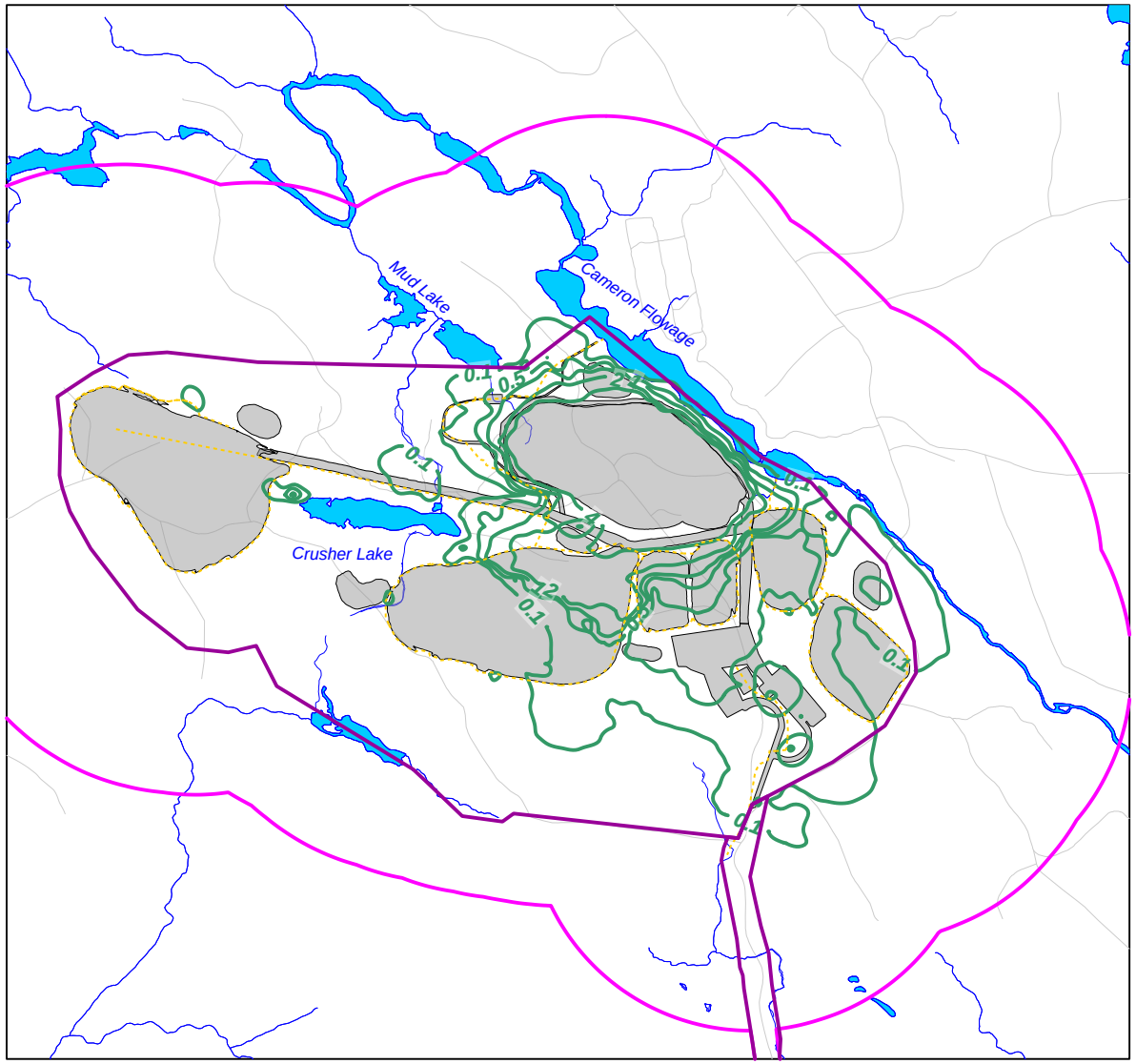


LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- 0.1 — SIMULATED DRAWDOWN (m)
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

0 220 440 660m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

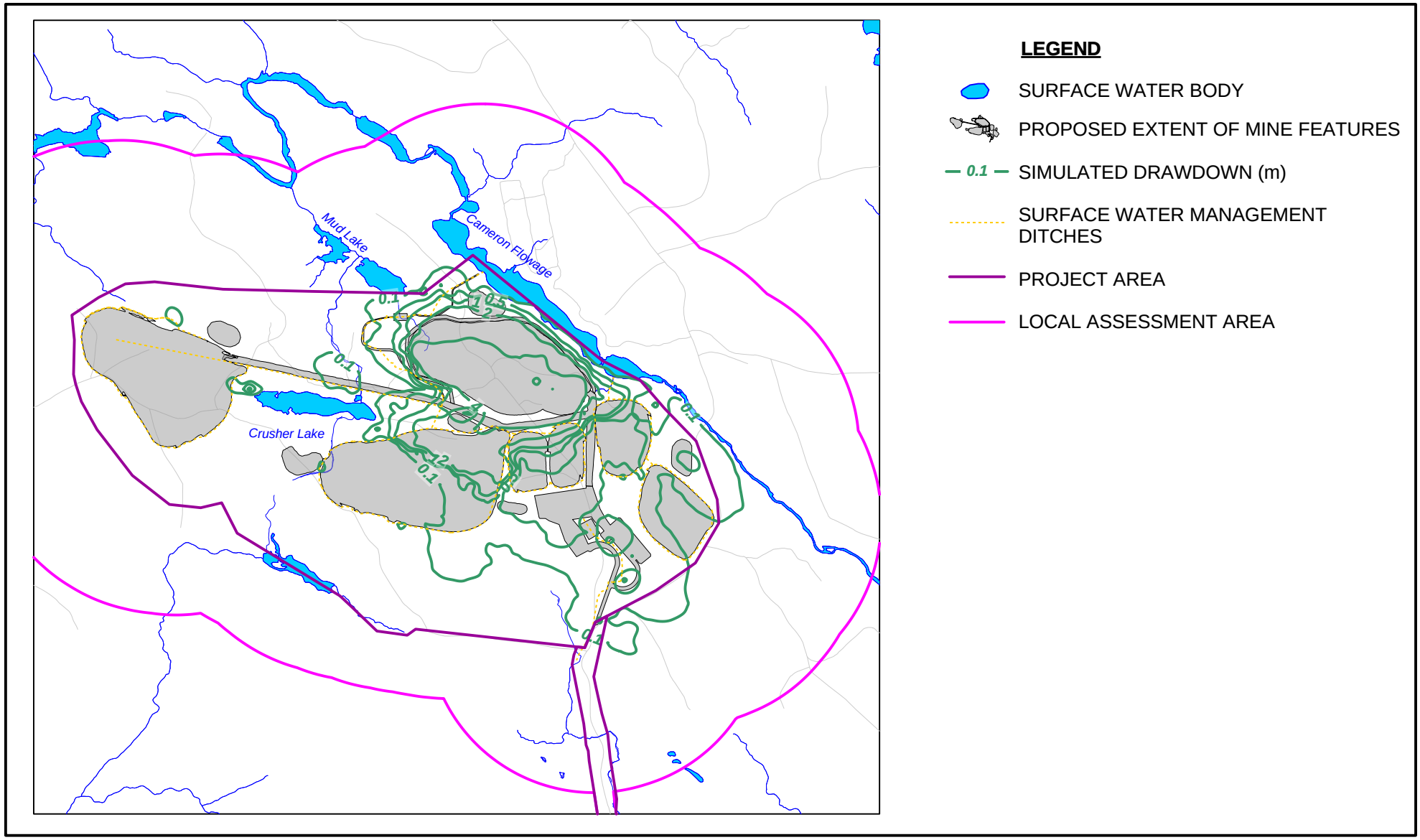
SIMULATED DRAWDOWN EOM - BASE CASE CONDITION

088664-020

February 20, 2019

FIGURE 7.1a

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.1 - Simulated Drawdown Base Case Condition - EOM.srf



0 220 440 660m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

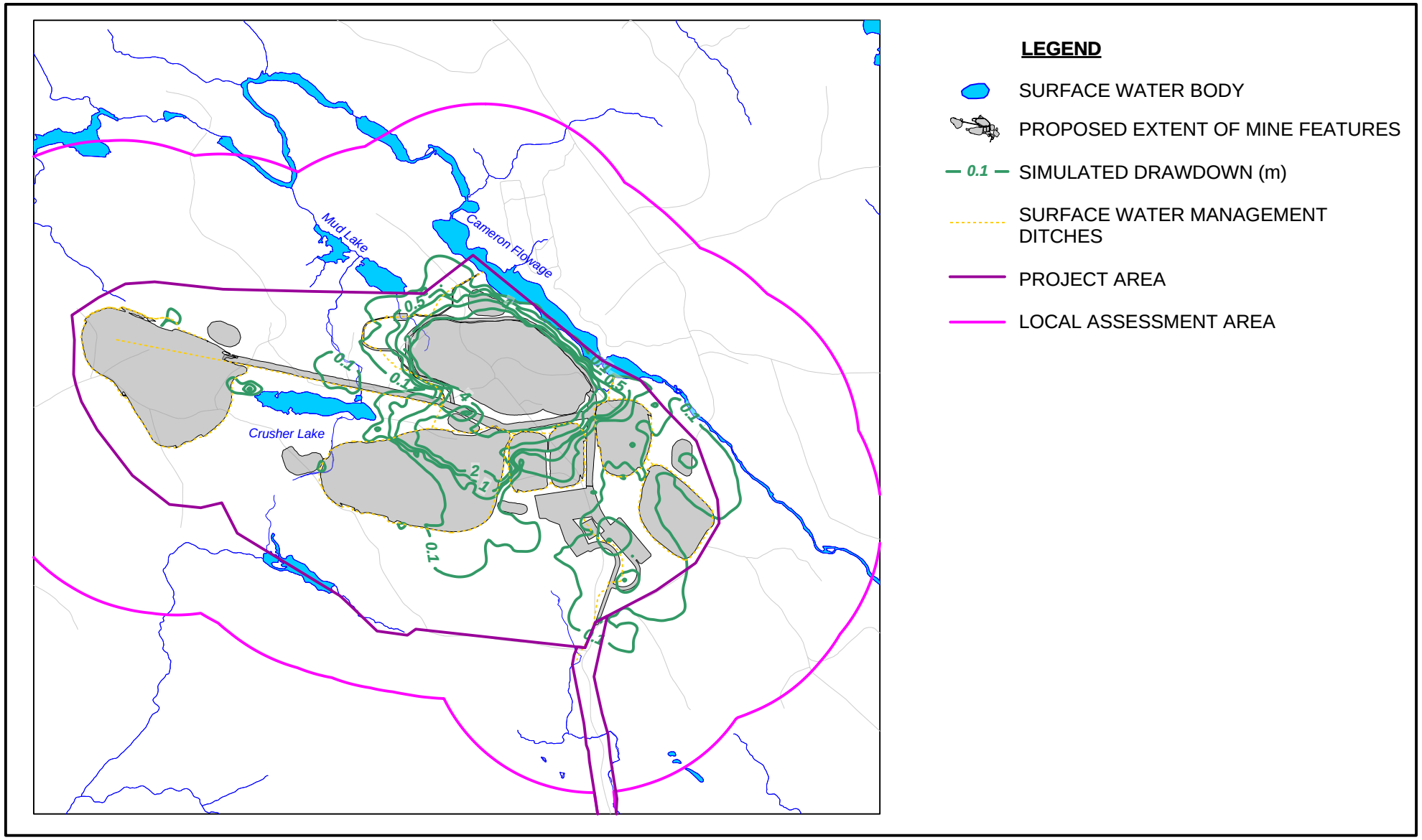
088664-020

February 20, 2019

SIMULATED DRAWDOWN PC - BASE CASE CONDITION

FIGURE 7.1b

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.1 - Simulated Drawdown Base Case Condition - PC.srf



0 220 440 660m

N

GHD

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

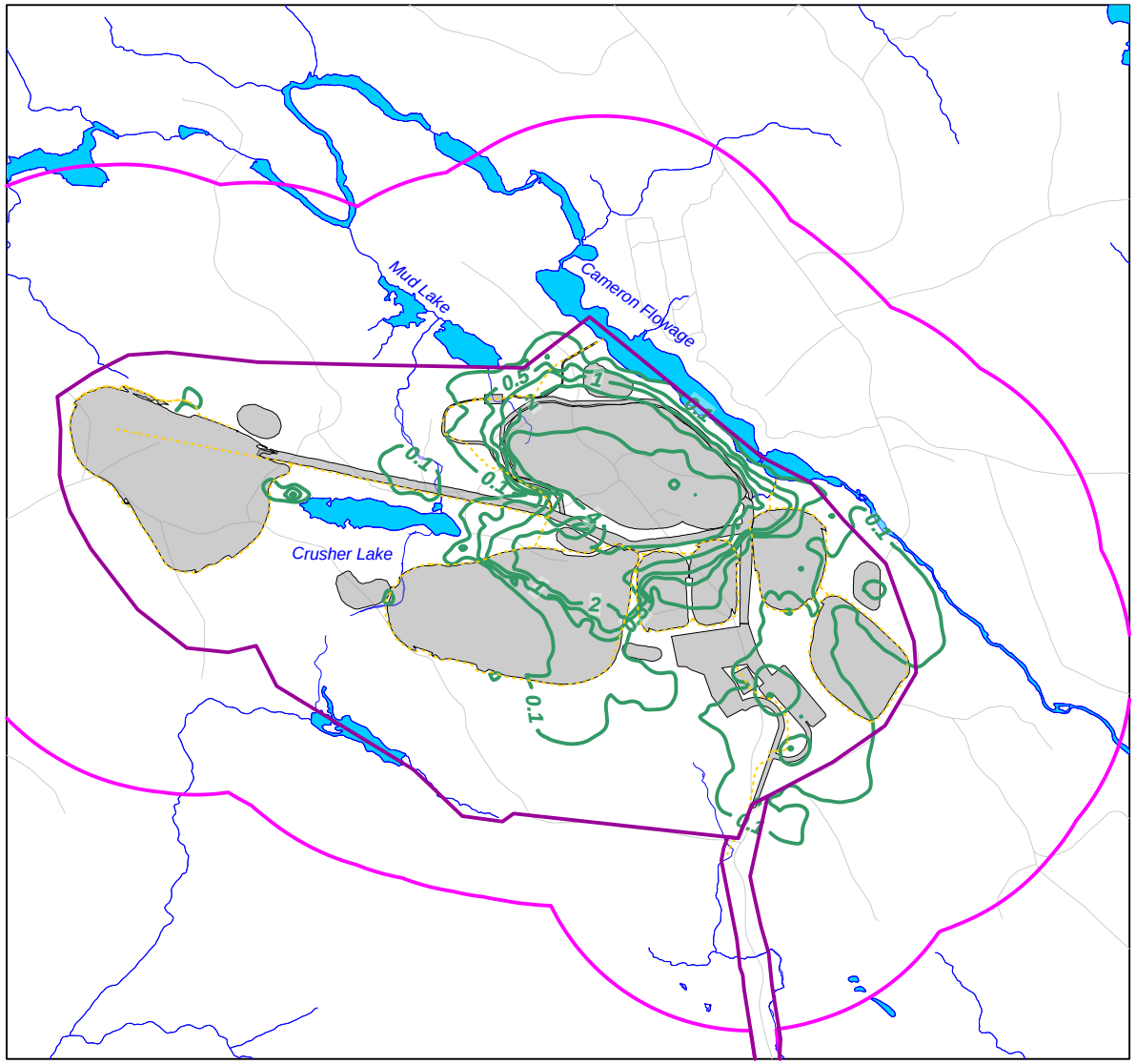
SIMULATED DRAWDOWN EOM - DRY CONDITION

088664-020

February 20, 2019

FIGURE 7.2a

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.2 - Simulated Drawdown Dry Condition - EOM.srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- 0.1 — SIMULATED DRAWDOWN (m)
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

0 220 440 660m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

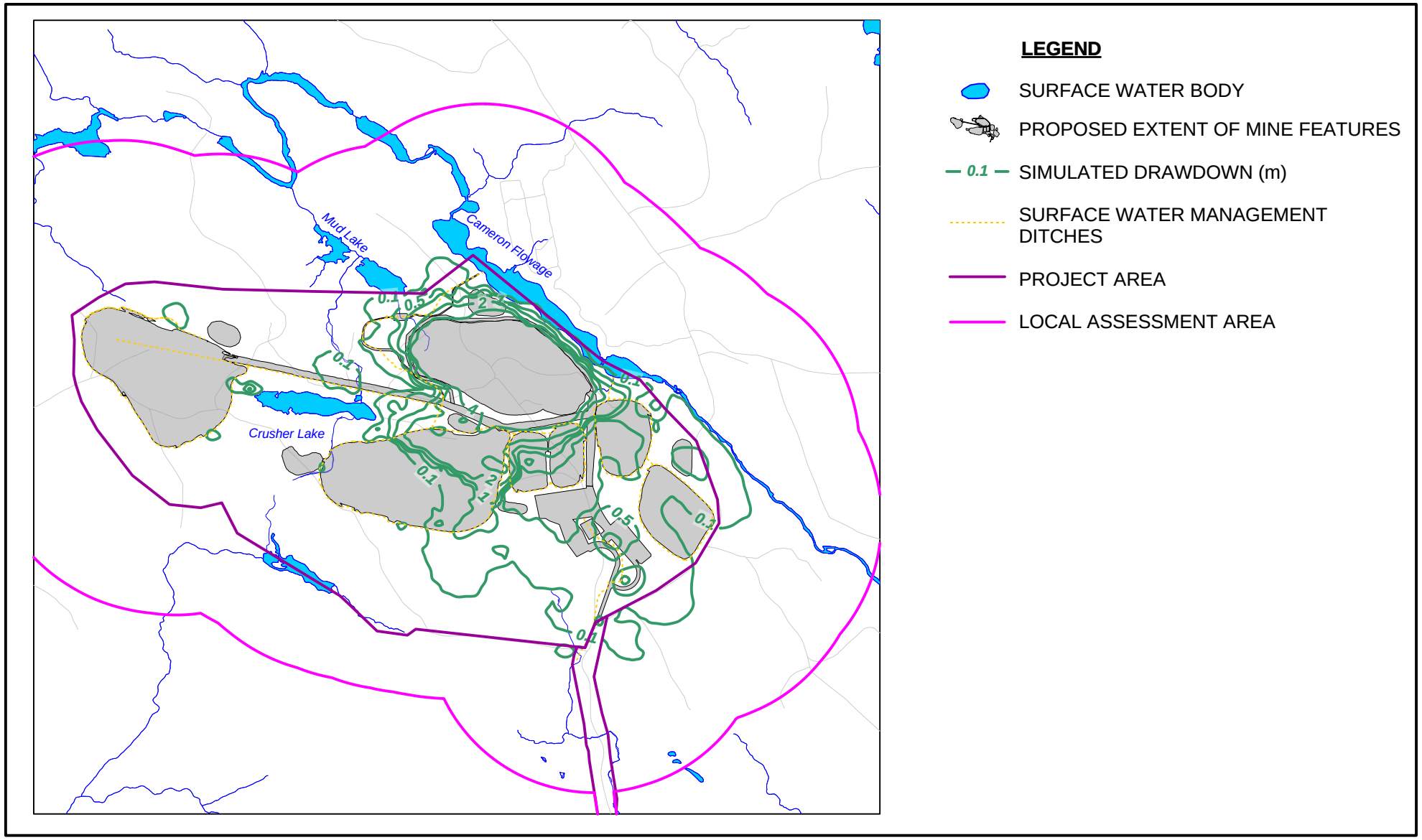
SIMULATED DRAWDOWN PC - DRY CONDITION

088664-020

February 20, 2019

FIGURE 7.2b

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.2 - Simulated Drawdown Dry Condition - PC.srf



0 220 440 660m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

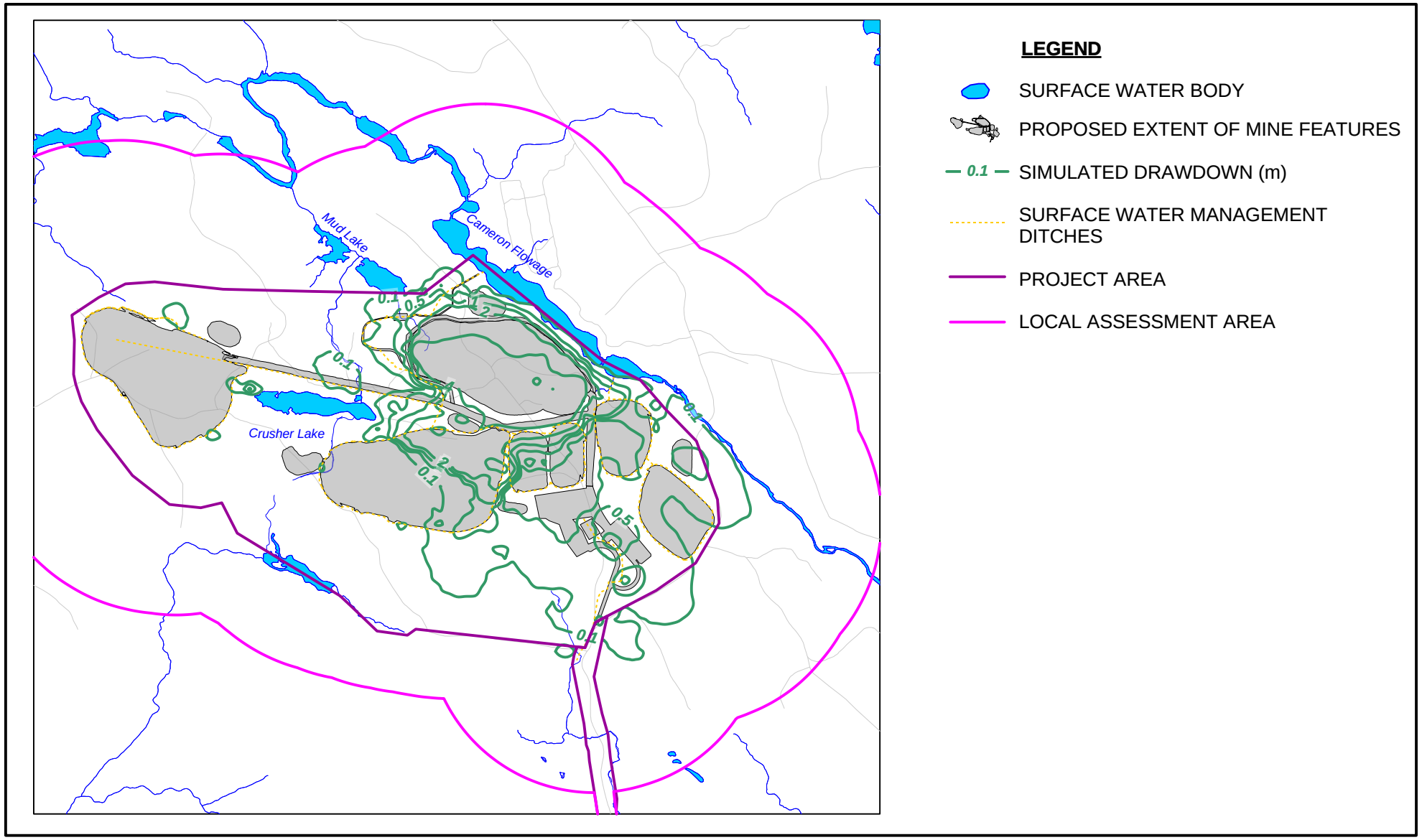
088664-020

February 20, 2019

SIMULATED DRAWDOWN EOM - WET CONDITION

FIGURE 7.3a

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.3 - Simulated Drawdown Wet Condition - EOM.srf



0 220 440 660m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

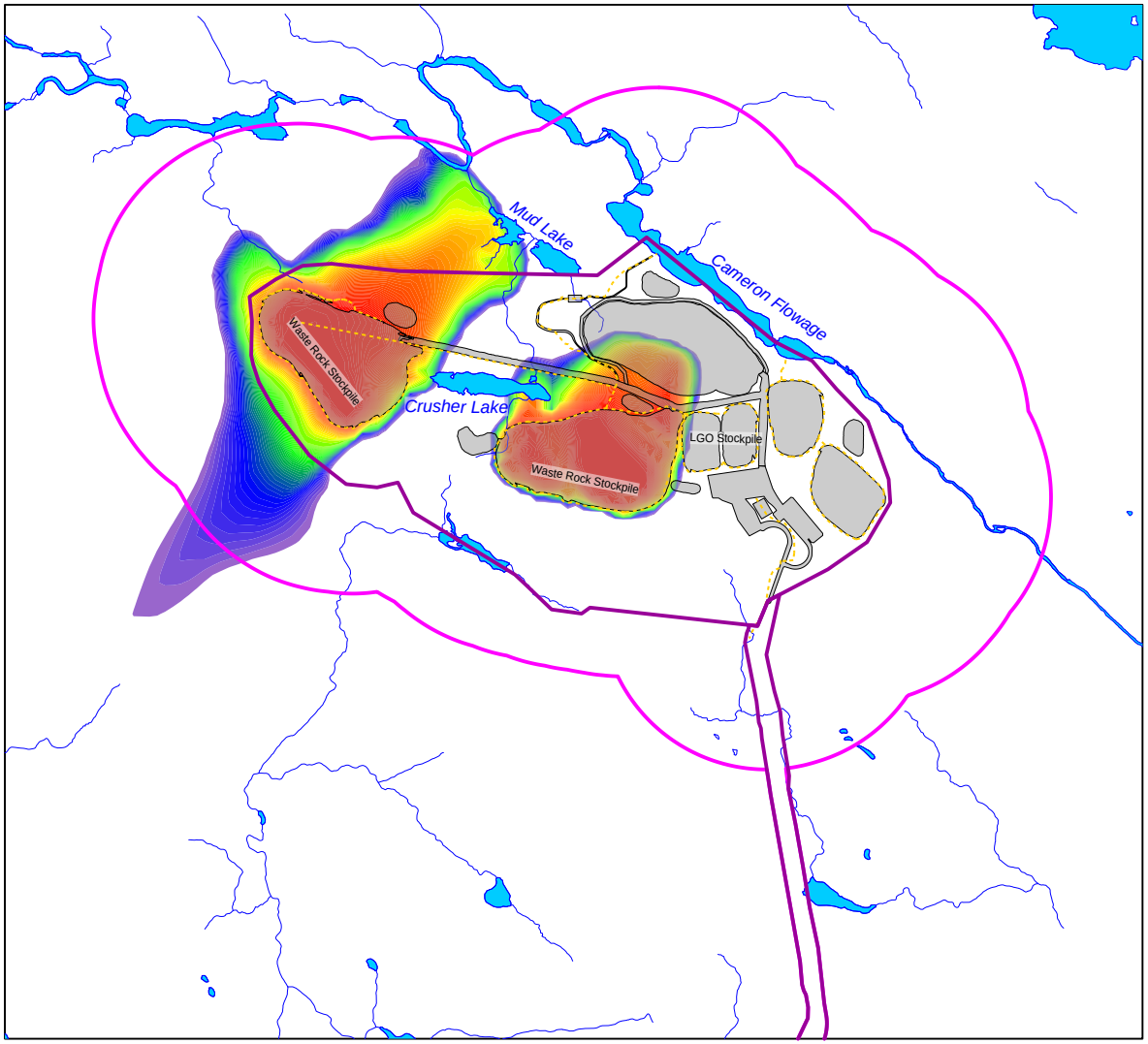
088664-020

February 20, 2019

SIMULATED DRAWDOWN PC - WET CONDITION

FIGURE 7.3b

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.3 - Simulated Drawdown Wet Condition - PC.srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 — 0.1 — 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

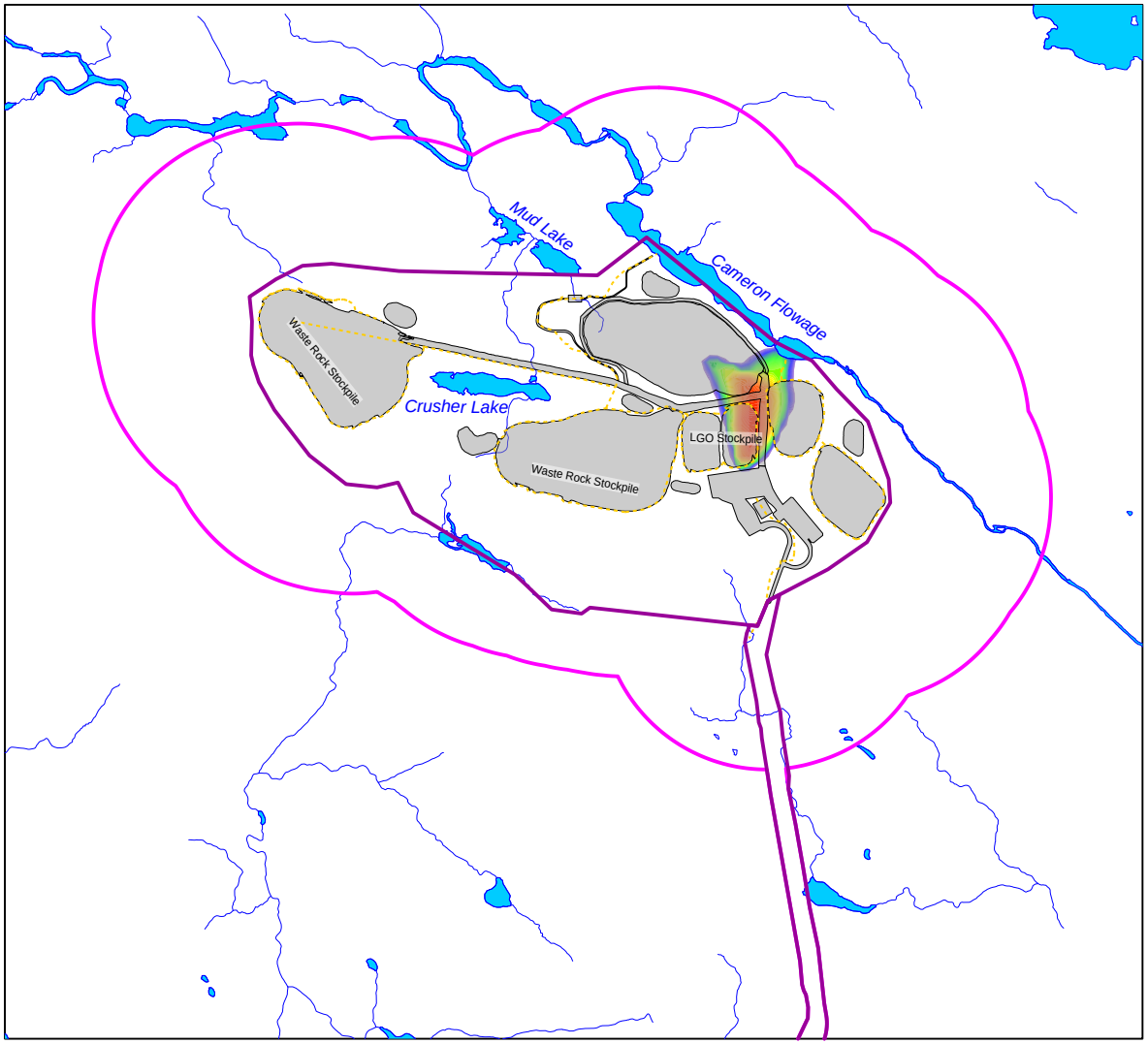
SIMULATED CONCENTRATION
WASTE ROCK STOCKPILES (EOM - BASE CASE CONDITION)

088664-020

February 20, 2019

FIGURE 7.4

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.4 - Simulated Concentration Waste Rock Stockpiles (EOM – July, 2018 Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 0.1 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

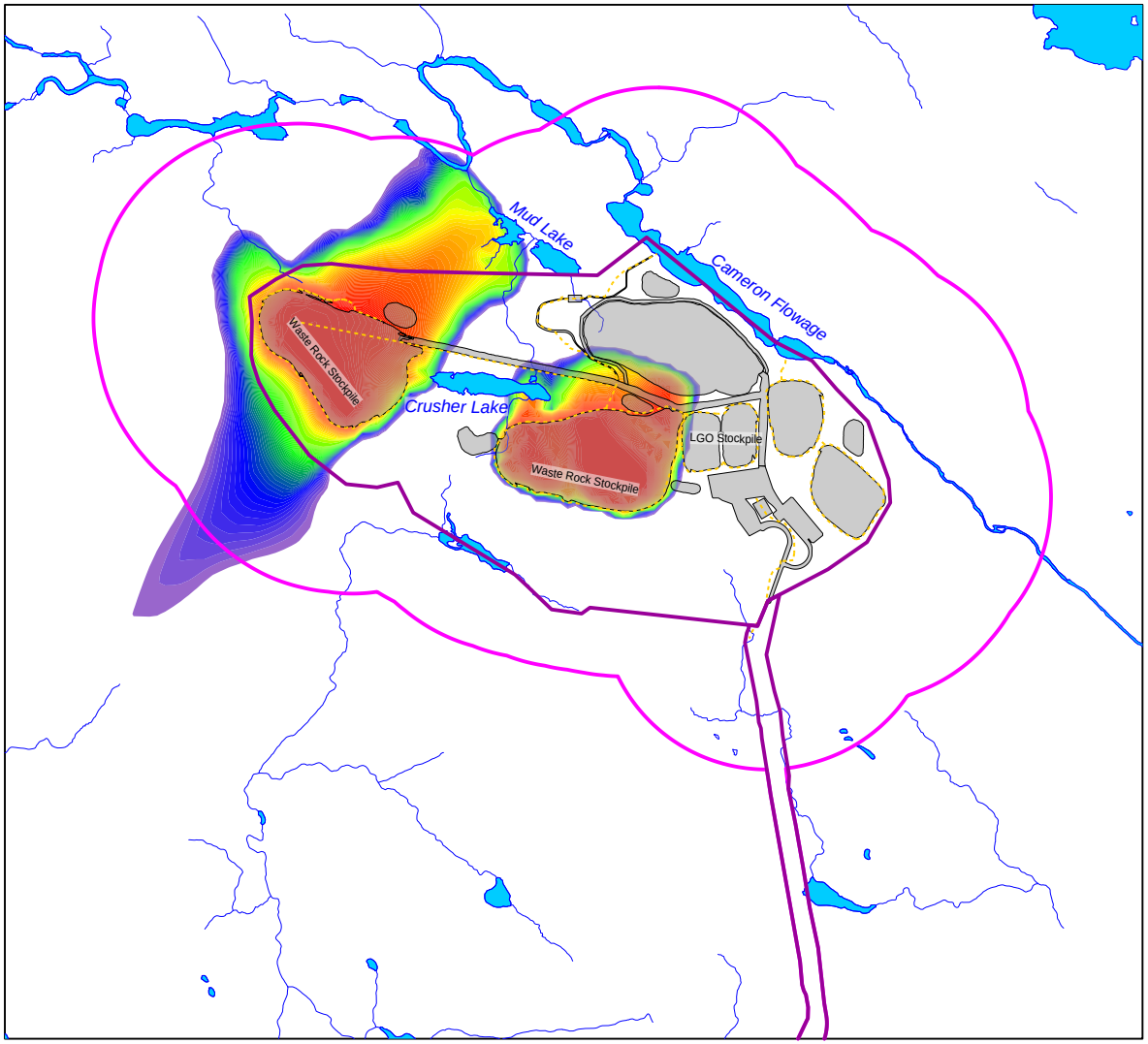
SIMULATED CONCENTRATION
LGO STOCKPILES (EOM - BASE CASE CONDITION)

088664-020

February 20, 2019

FIGURE 7.5

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.5 - Simulated Concentration LGO Stockpiles (EOM – July, 2018 Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 — 0.1 — 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

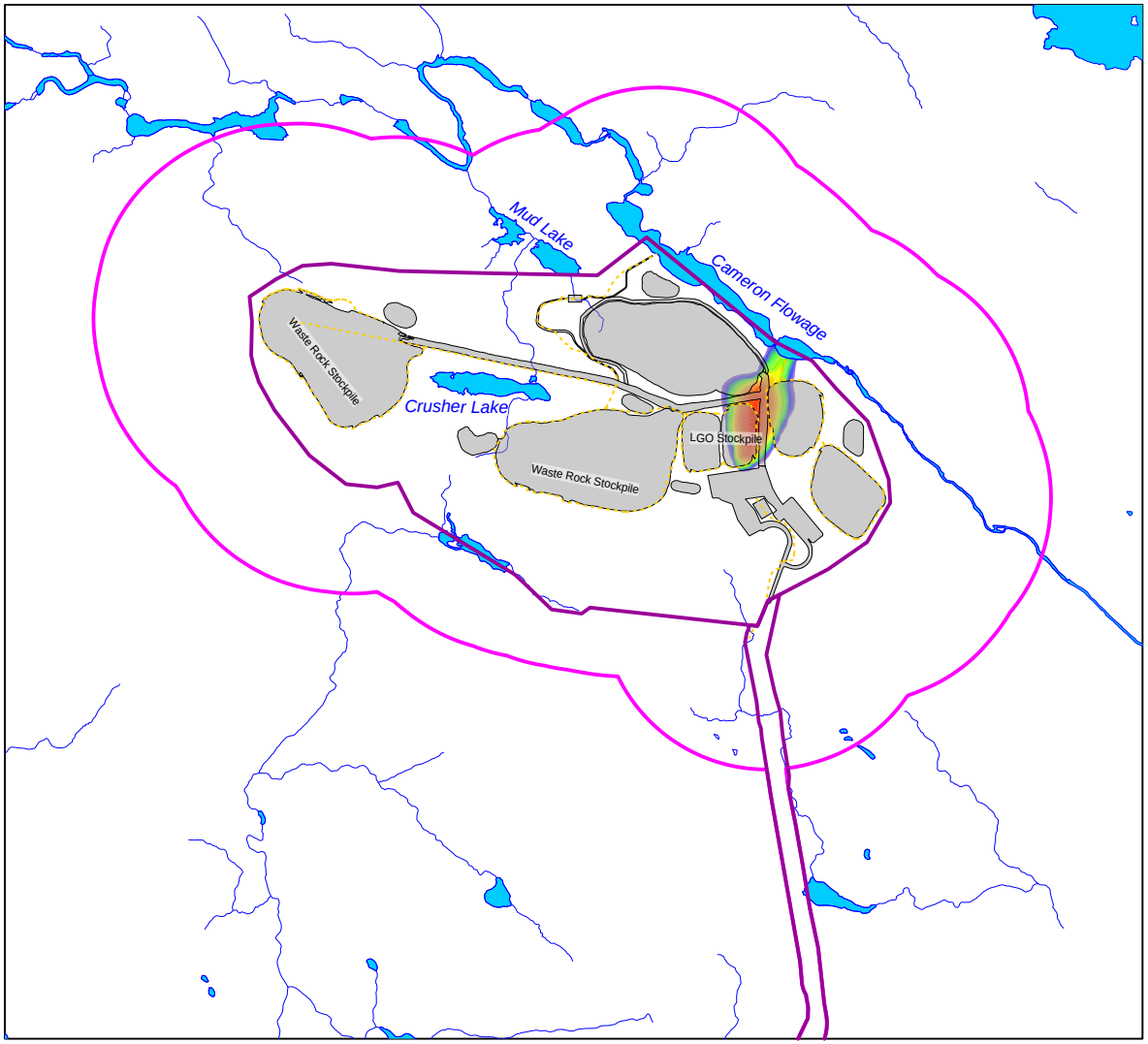
SIMULATED CONCENTRATION
WASTE ROCK STOCKPILES (PC - BASE CASE CONDITION)

088664-020

February 20, 2019

FIGURE 7.6

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.6 - Simulated Concentration Waste Rock Stockpiles (PC – July, 2018 Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 0.1 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

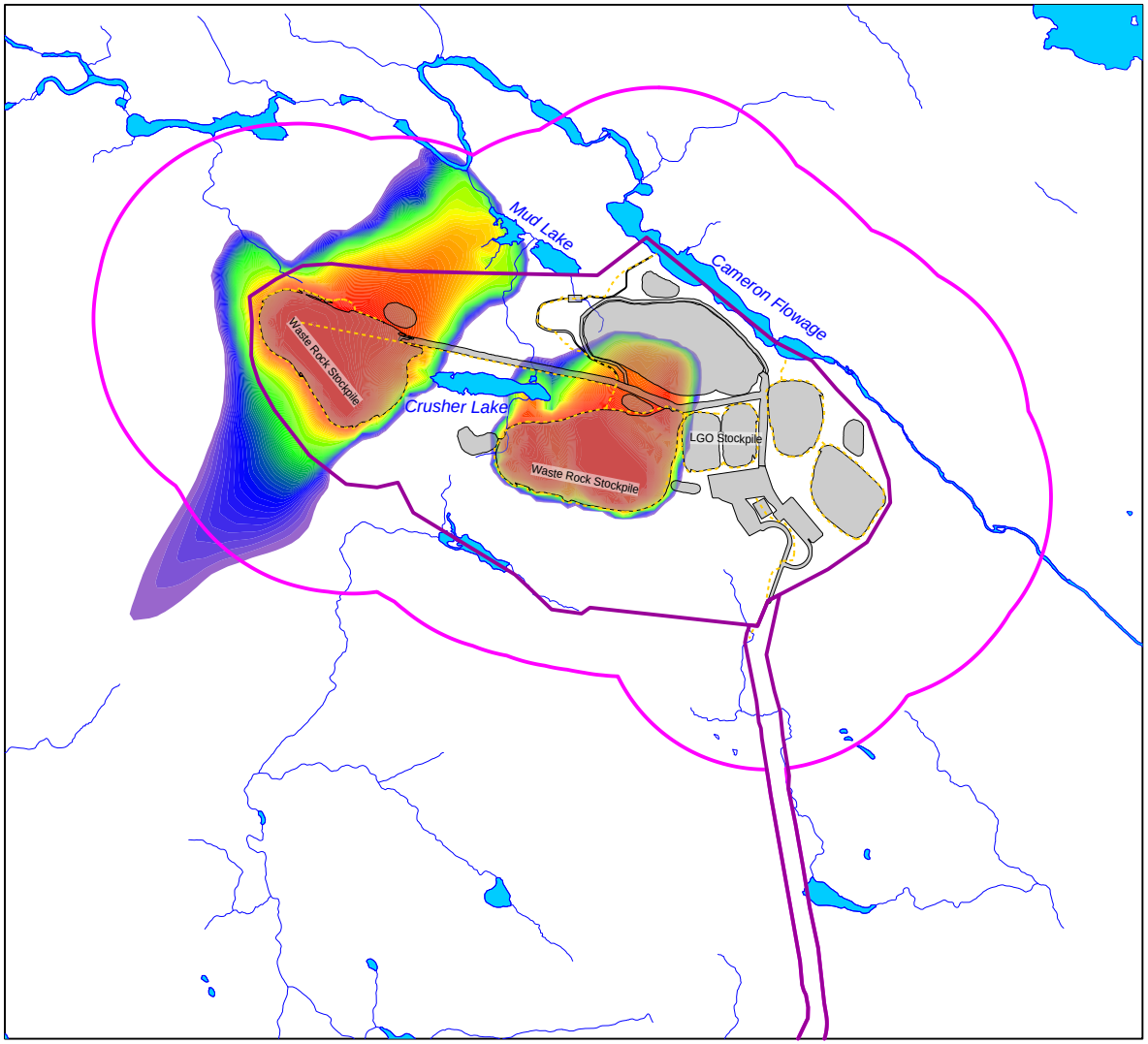
SIMULATED CONCENTRATION
LGO STOCKPILES (PC - BASE CASE CONDITION)

088664-020

February 20, 2019

FIGURE 7.7

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.7 - Simulated Concentration LGO Stockpiles (PC – July, 2018 Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 — 0.1 — 1

0 300 600 900m

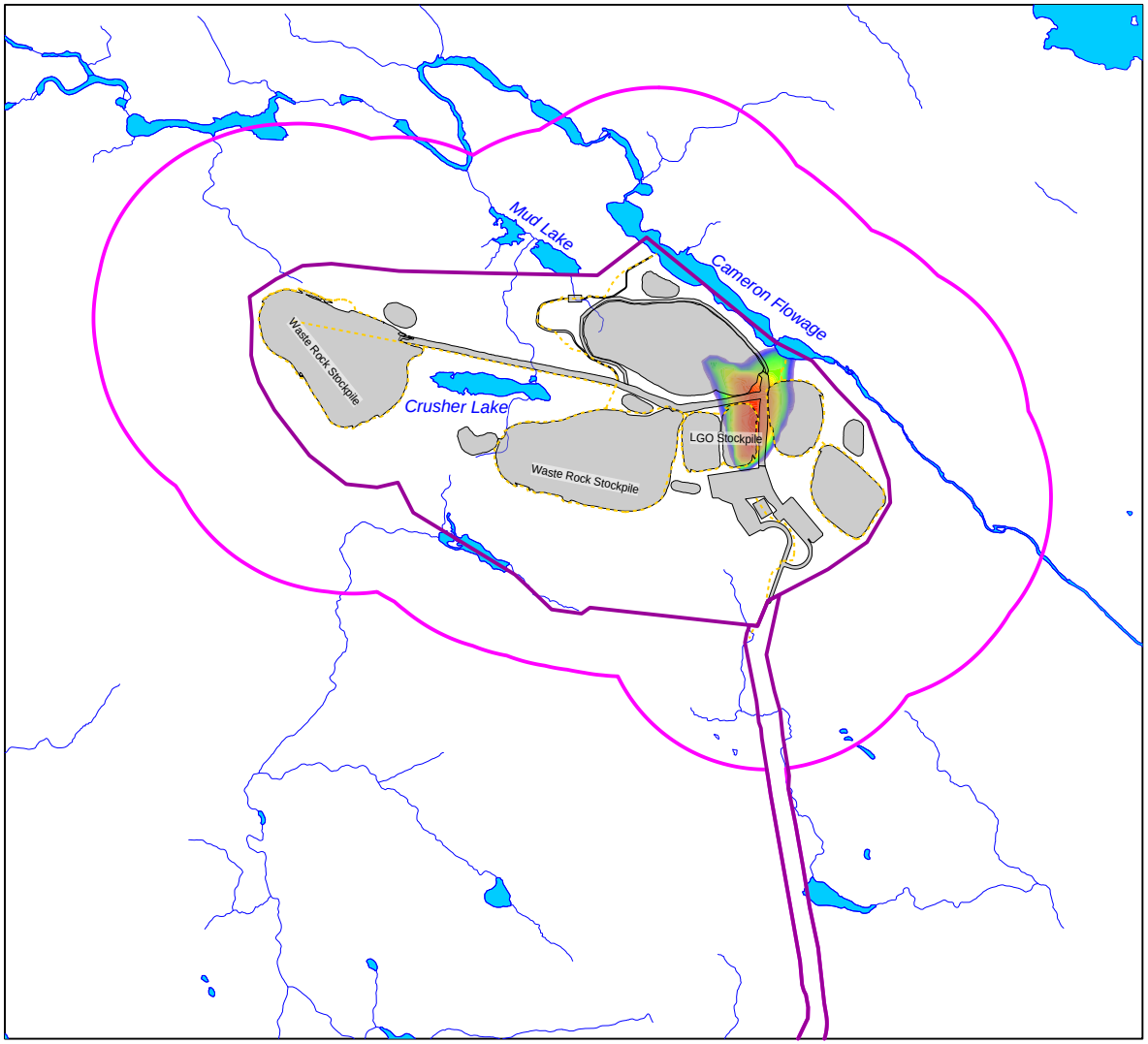
ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

SIMULATED CONCENTRATION
WASTE ROCK STOCKPILES (EOM - DRY CONDITION)

088664-020
February 20, 2019

FIGURE 7.8

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.8 - Simulated Concentration Waste Rock Stockpiles (EOM – Dry Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 0.1 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

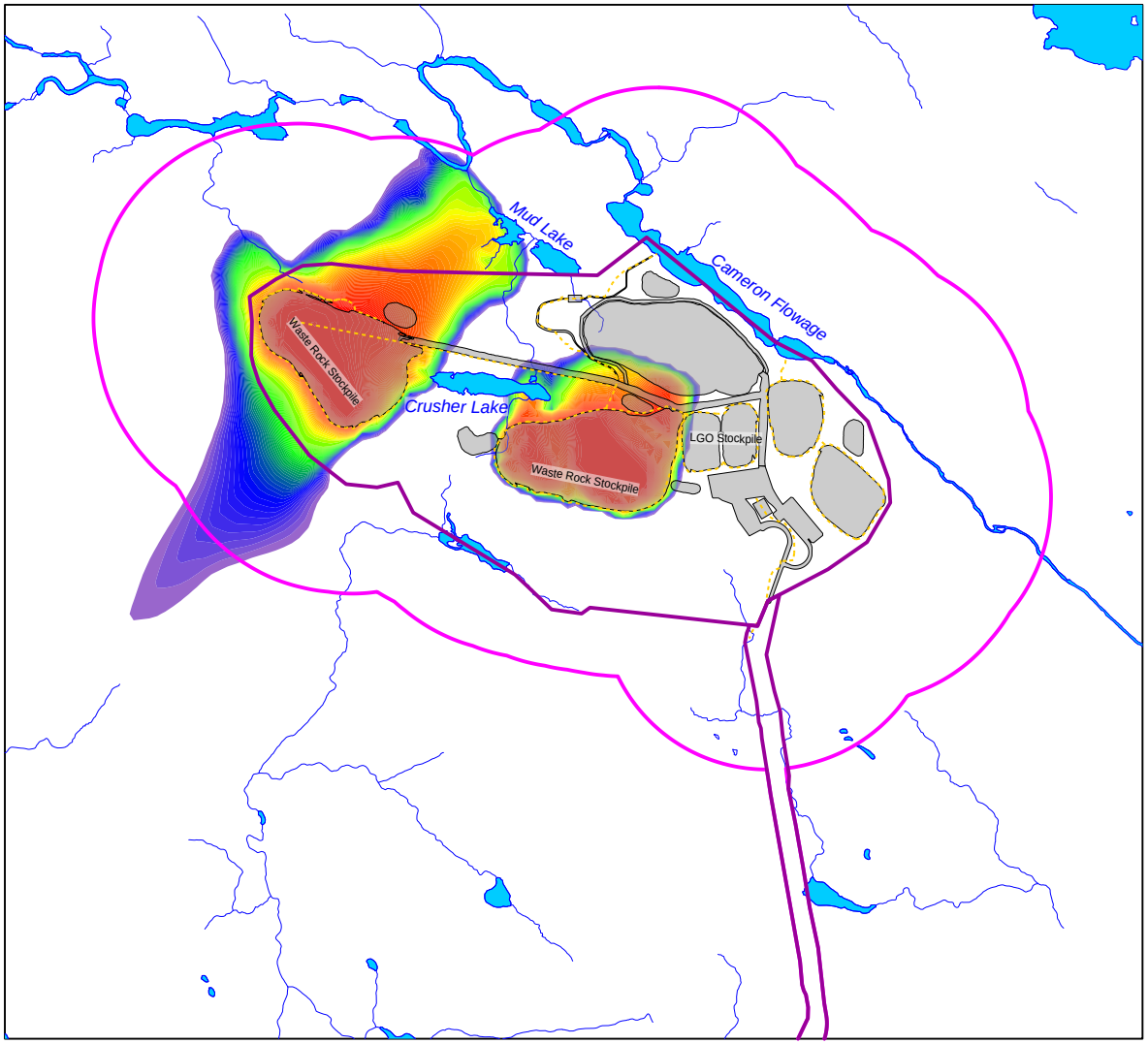
SIMULATED CONCENTRATION
LGO STOCKPILES (EOM - DRY CONDITION)

088664-020

February 20, 2019

FIGURE 7.9

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.9 - Simulated Concentration LGO Stockpiles (EOM – Dry Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 0.1 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

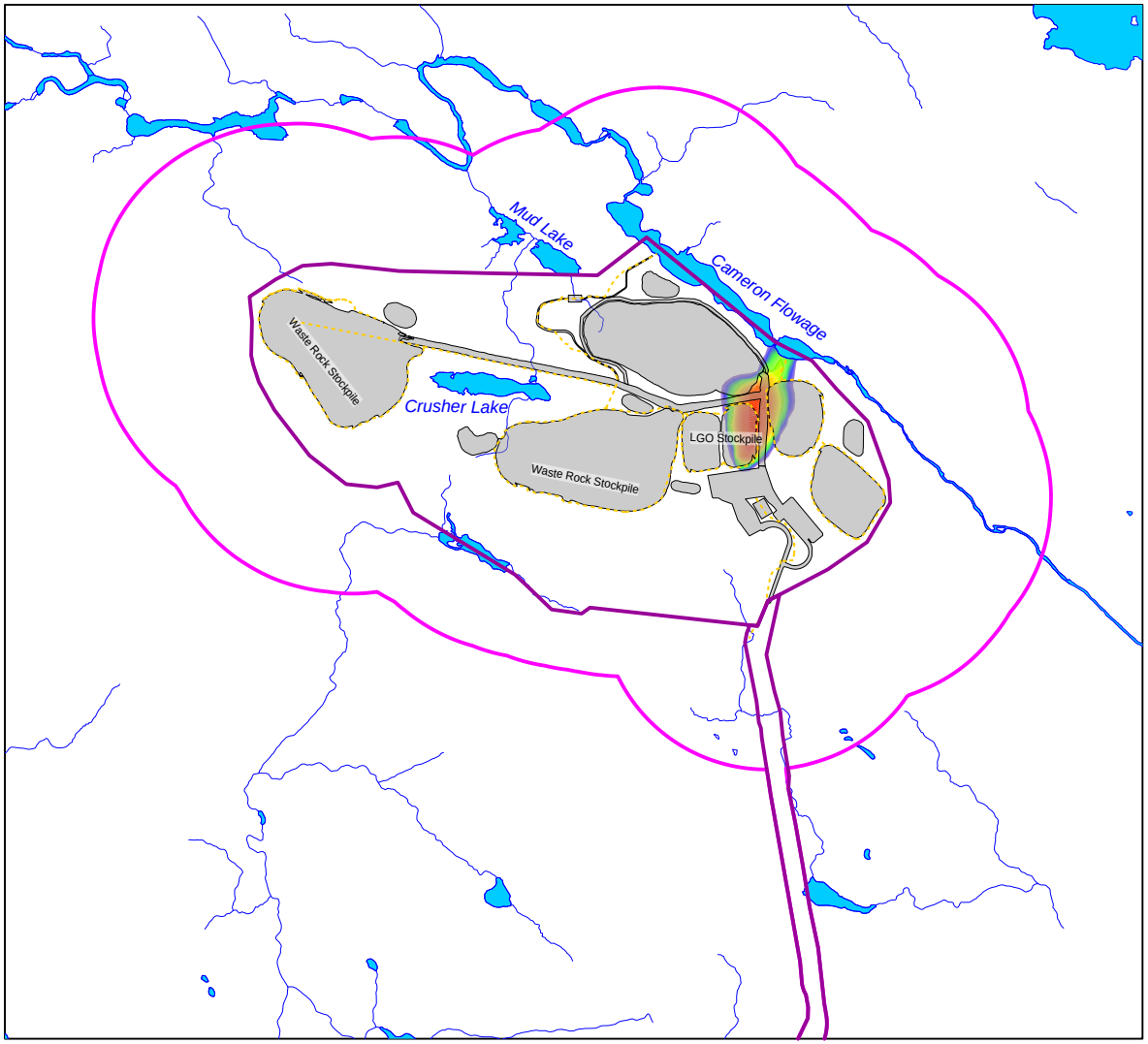
SIMULATED CONCENTRATION
WASTE ROCK STOCKPILES (PC - DRY CONDITION)

088664-020

February 20, 2019

FIGURE 7.10

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.10 - Simulated Concentration Waste Rock Stockpiles (PC – Dry Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 0.1 1

0 300 600 900m

N

GHD

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

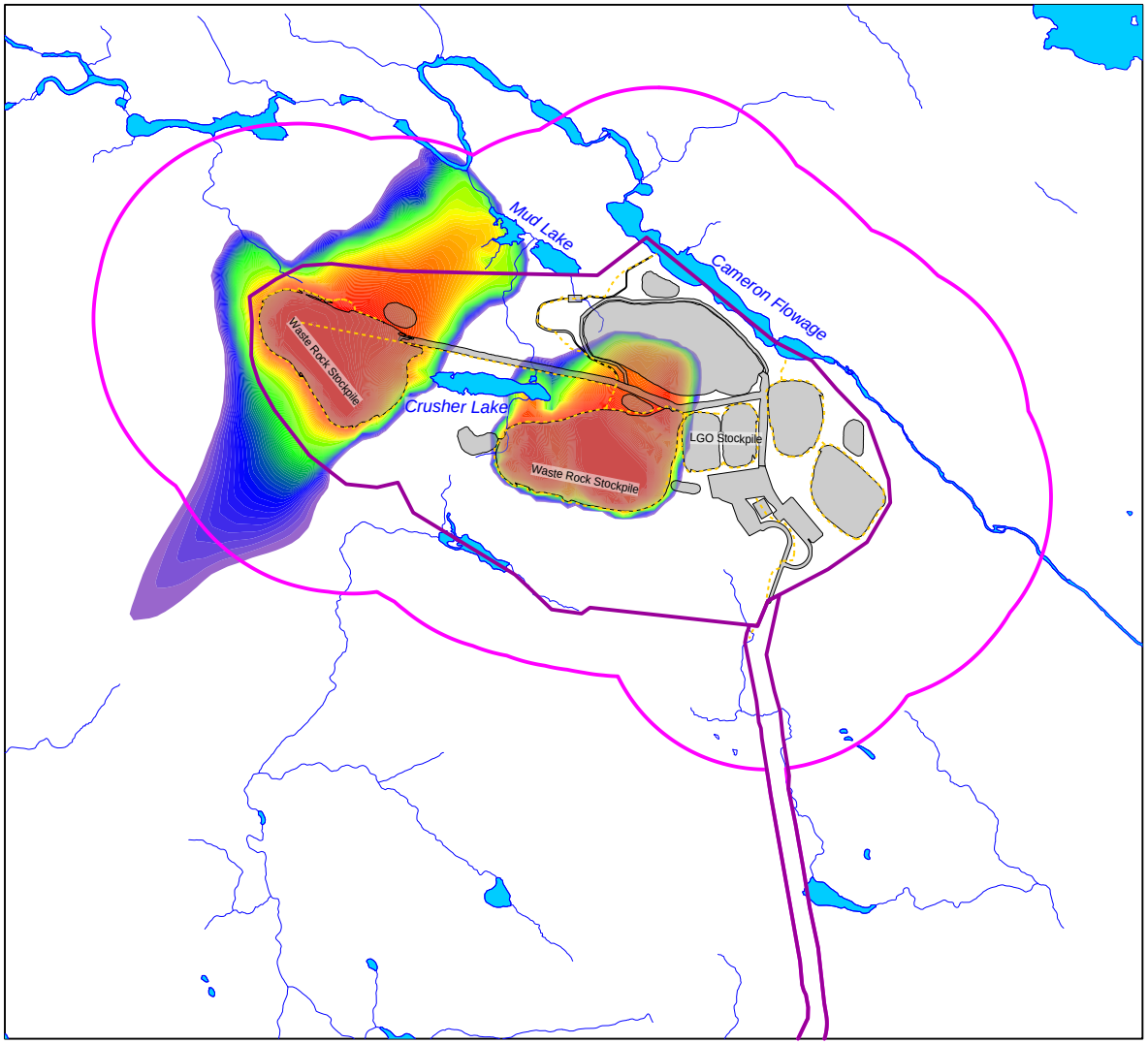
SIMULATED CONCENTRATION
LGO STOCKPILES (PC - DRY CONDITION)

088664-020

February 20, 2019

FIGURE 7.11

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.11 - Simulated Concentration LGO Stockpiles (PC – Dry Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 — 0.1 — 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

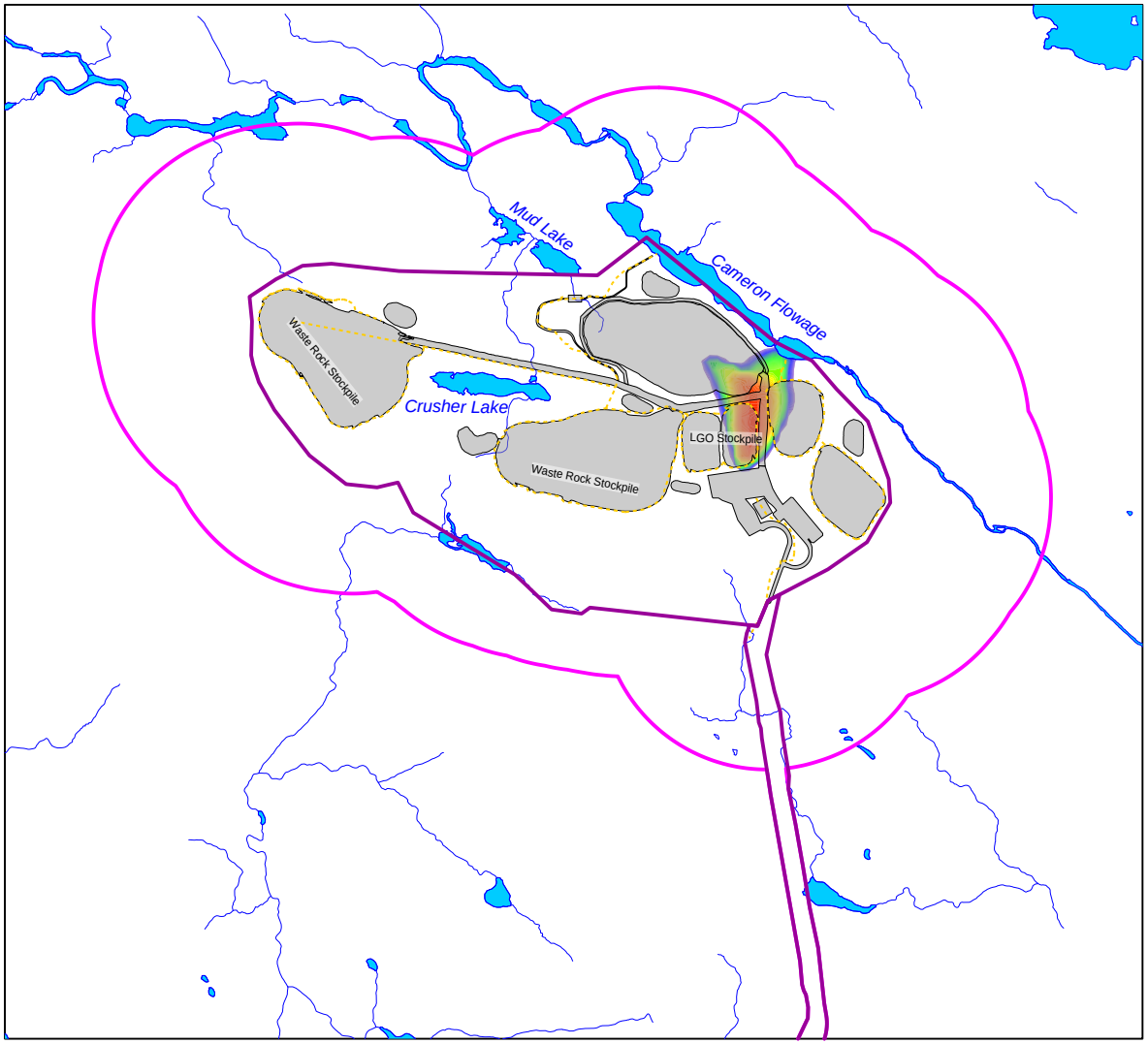
SIMULATED CONCENTRATION
WASTE ROCK STOCKPILES (EOM - WET CONDITION)

088664-020

February 20, 2019

FIGURE 7.12

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.12 - Simulated Concentration Waste Rock Stockpiles (EOM – Wet Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 0.1 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

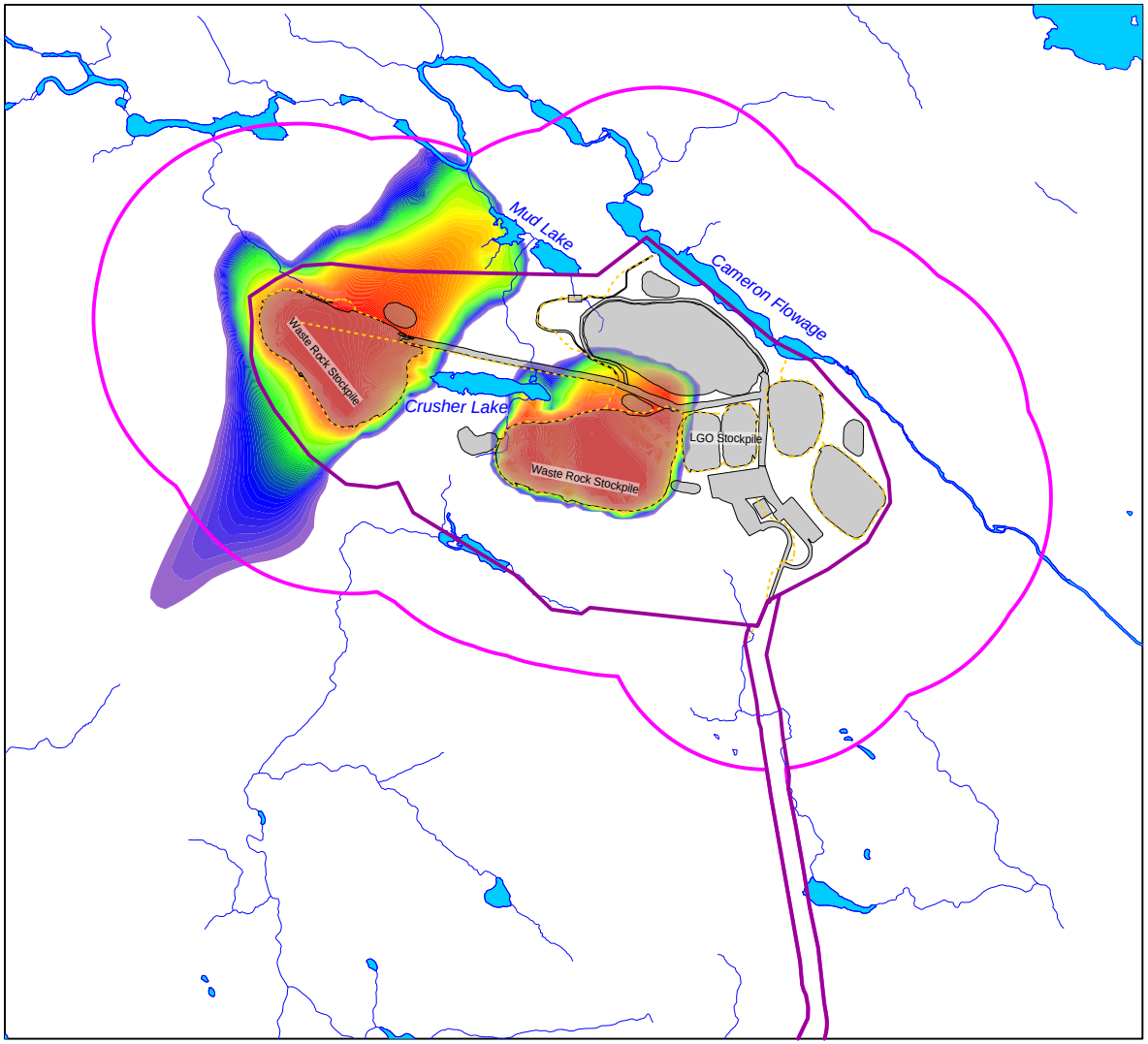
SIMULATED CONCENTRATION
LGO STOCKPILES (EOM - WET CONDITION)

088664-020

February 20, 2019

FIGURE 7.13

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.13 - Simulated Concentration LGO Stockpiles (EOM – Wet Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 — 0.1 — 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

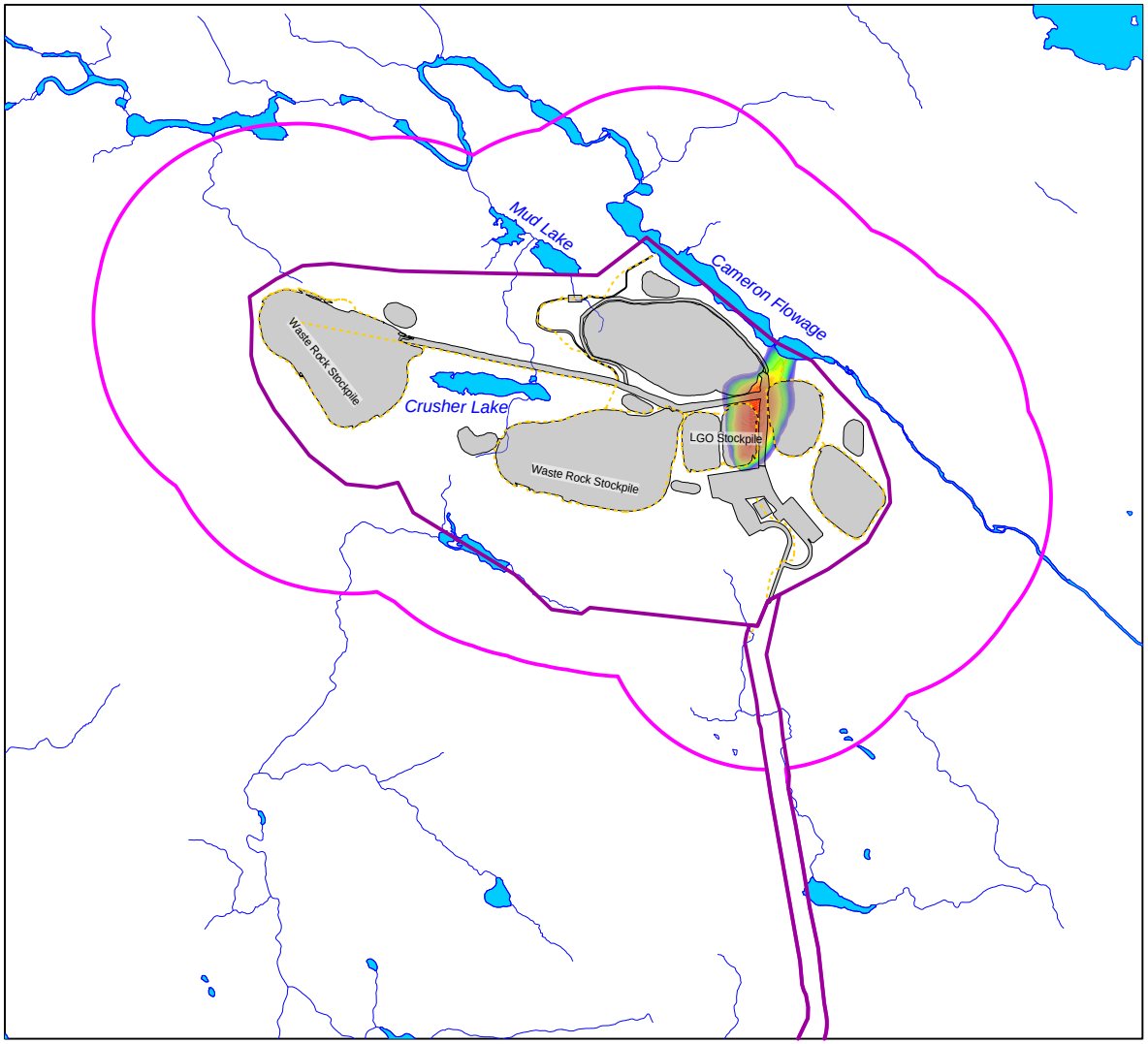
SIMULATED CONCENTRATION
WASTE ROCK STOCKPILES (PC - WET CONDITION)

088664-020

February 20, 2019

FIGURE 7.14

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.14 - Simulated Concentration Waste Rock Stockpiles (PC – Wet Condition).srf



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- SURFACE WATER MANAGEMENT DITCHES
- PROJECT AREA
- LOCAL ASSESSMENT AREA

MAXIMUM SIMULATED UNIT CONCENTRATION CONTOURED IN MODEL LAYER 1

0.01 — 0.1 — 1

0 300 600 900m

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

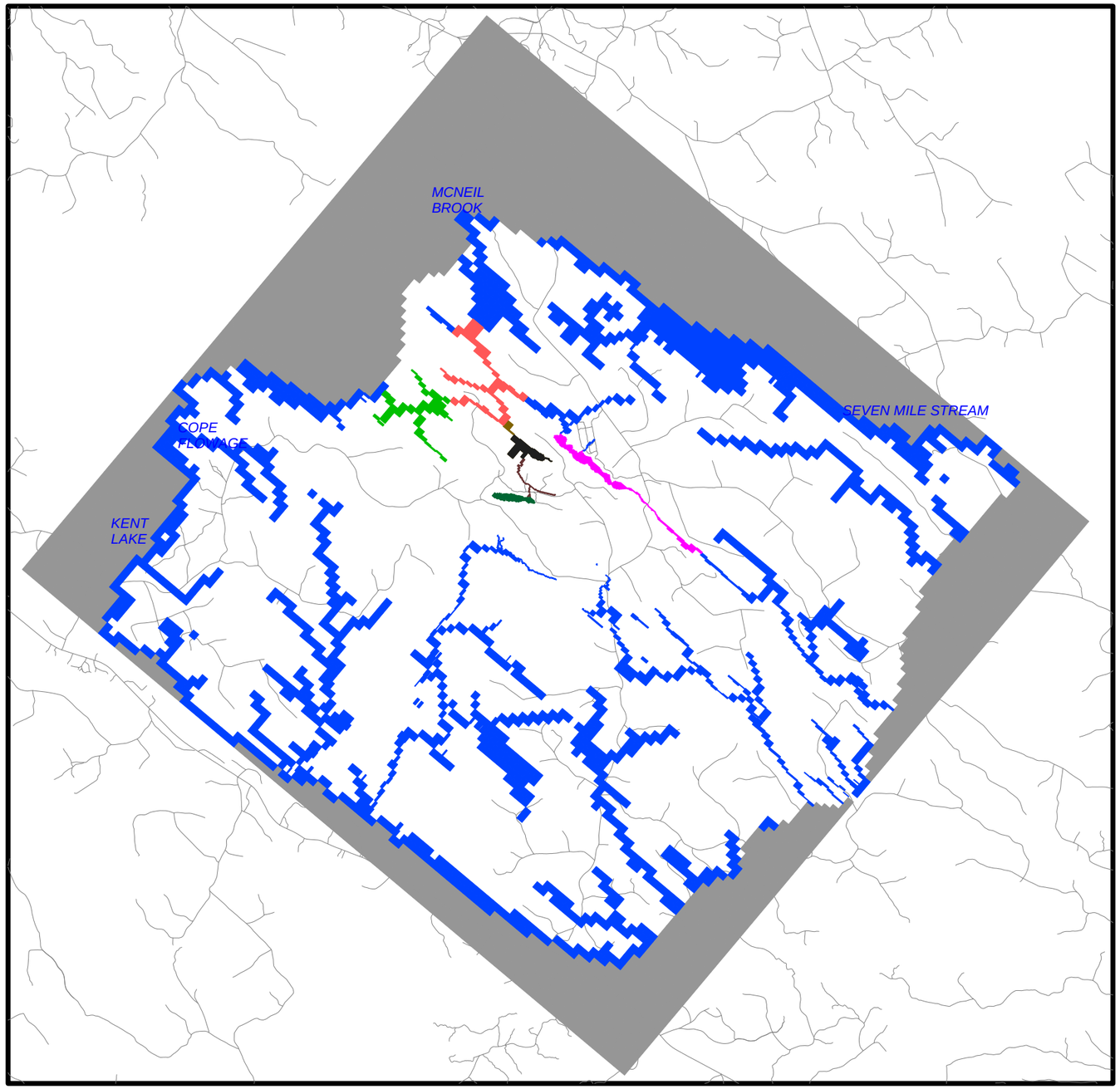
SIMULATED CONCENTRATION
LGO STOCKPILES (PC - WET CONDITION)

088664-020

February 20, 2019

FIGURE 7.15

HEG file: Z:\HEG\088664\DOCUMENTATION\Results Summary\Figures\Figure 7.15 - Simulated Concentration LGO Stockpiles (PC – Wet Condition).srf



LEGEND

- SURFACE WATER BODY
- ROAD
- SECONDARY WATERSHED DIVIDE
- TERTIARY WATERSHED DIVIDE
- REACH 1
- REACH 2
- REACH 3
- REACH 4
- REACH 5
- REACH 6
- REACH 7
- REACH 8

0 700 1,400 2,100m

N

GHD

ATLANTIC GOLD CORPORATION
MARINETTE, NOVA SCOTIA
BEAVER DAM MINE

088664-020

February 20, 2019

RIVER REACHES

FIGURE 7.16

HEG file: Z:\HEG\088664\DOCUMENTATION\RPT\088664-RPT-9\FIGURES\Figure 7.16 - River Reaches.srf

Tables

Table 2.1

Overburden Slug Test Hydraulic Conductivity Results
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Overburden Thickness[(1)] (m)	Monitoring Well Screened (m BGS)
MW-02A	overburden	Bouwer-Rice/Falling Head	1.8E-05	5.10	3.20
MW-02A	overburden	Bouwer-Rice/Rising Head	1.7E-05	5.10	3.20
MW-12A	overburden	Bouwer-Rice/Rising Head	8.8E-07	20.78	3.51
MW-12A	overburden	Dagan/Rising Head	8.9E-07	20.78	3.51
MW-14A	overburden	Bouwer-Rice/Falling Head	9.7E-07	18.10	3.80
MW-14A	overburden	Bouwer-Rice/Rising Head	6.1E-07	18.10	3.80
MW-14A	overburden	Bouwer-Rice/Falling Head	1.2E-06	18.10	3.80
MW-14A	overburden	Bouwer-Rice/Rising Head	9.4E-07	18.10	3.80
MW-17A	overburden	Bouwer-Rice/Falling Head	6.7E-06	4.67	2.67
MW-17A	overburden	Bouwer-Rice/Rising Head	2.1E-06	4.67	2.67
MW-19A	overburden	Bouwer-Rice/Rising Head	8.5E-05	4.72	2.67
MW-19A	overburden	Springer-Gelhar/Rising Head	1.7E-04	4.72	2.67
MW-19A	overburden	Dagan/Rising Head	7.7E-05	4.72	2.67
MW-19A	overburden	Bouwer-Rice/Rising Head	1.1E-04	4.72	2.67
MW-19A	overburden	Springer-Gelhar/Rising Head	3.8E-04	4.72	2.67
MW-19A	overburden	Dagan/Rising Head	9.3E-05	4.72	2.67
		Geometric Mean	1.0E-05		
		Minimum Value	6.1E-07		
		Maximum Value	3.8E-04		

Notes:

m/s Metres per second
m BGS Metres below ground surface
(1) Where the tested well did not contact bedrock, the overburden thickness is taken as the average of the overburden thickness encountered at each well within a given well nest that contacted bedrock.

Table 2.2

Shallow Bedrock Hydraulic Conductivity Testing Results
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Depth Below Top of Bedrock to Midpoint of Test Interval (m)
MW-05C	Greywacke	Packer Test	5.0E-07	1.4
MW-16A	Overburden/Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Falling Head	7.2E-06	2.0
MW-16A	Overburden/Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.9E-06	2.0
MW-04A	Bedrock - Greywacke	Bouwer-Rice/Falling Head	1.0E-04	2.6
MW-04A	Bedrock - Greywacke	Springer-Gelhar/Rising Head	1.6E-04	2.6
MW-07A	Bedrock - Greywacke	Bouwer-Rice/Falling Head	5.7E-07	2.8
MW-07A	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.0E-05	2.8
MW-21A	Bedrock - Greywacke	Bouwer-Rice/Falling Head	3.4E-06	2.8
MW-21A	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.9E-06	2.8
MW-20A	Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Falling Head	3.7E-05	2.8
MW-20A	Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.4E-05	2.8
MW-05A	Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.6E-06	2.9
MW-05A	Weathered Bedrock/Bedrock - Greywacke	Dagan/Rising Head	1.7E-06	2.9
MW-05A	Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.8E-06	2.9
MW-05A	Weathered Bedrock/Bedrock - Greywacke	Dagan/Rising Head	4.4E-06	2.9
MW-18A	Bedrock - Greywacke	Bouwer-Rice/Falling Head	4.7E-05	2.9
MW-18A	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.6E-05	2.9
MW-17B	Weathered Upper Bedrock - Greywacke	Bouwer-Rice/Falling Head	5.0E-05	3.0
MW-17B	Weathered Upper Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.5E-05	3.0
MW-17B	Weathered Upper Bedrock - Greywacke	Bouwer-Rice/Falling Head	2.6E-05	3.0
MW-17B	Weathered Upper Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.8E-05	3.0
MW-11A	Bedrock - Greywacke	Bouwer-Rice/Falling Head	2.8E-06	3.3
MW-11A	Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.6E-05	3.3
MW-07C	Greywacke	Packer Test	2.1E-06	3.4
MW-12B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	8.2E-07	3.5
MW-12B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	9.4E-07	3.5
MW-05C	Greywacke	Packer Test	8.3E-08	4.4
MW-09A	Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Falling Head	9.8E-07	4.5
MW-09A	Weathered Bedrock/Bedrock - Greywacke	Bouwer-Rice/Rising Head	8.3E-07	4.5
MW-07C	Greywacke	Packer Test	1.3E-06	6.4
MW-14B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	7.7E-08	6.5
MW-14B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.5E-08	6.5
MW-05C	Greywacke	Packer Test	4.3E-07	7.5
MW-09C	Greywacke	Packer Test	1.3E-07	7.7
BD85-016	Greywacke, Quartzite	Packer Test	8.0E-07	8.2
MW-17C	Bedrock - Greywacke	Bouwer-Rice/Falling Head	6.4E-06	8.7
MW-17C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.6E-06	8.7
MW-02B	Bedrock - Granite	Bouwer-Rice/Falling Head	5.0E-07	8.9
MW-02B	Bedrock - Granite	Bouwer-Rice/Rising Head	4.2E-07	8.9
MW-05C	Greywacke	Packer Test	3.8E-07	10.5
MW-07C	Greywacke	Packer Test	4.6E-07	10.7
MW-09C	Greywacke	Packer Test	2.7E-07	10.8
MW-18B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	7.0E-07	11.1
MW-18B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.7E-07	11.1
MW-07B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	1.3E-07	11.2
MW-07B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.2E-07	11.2
BD14-188	Greywacke Hanging wall	Packer Test	1.0E-08	11.3
MW-16B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	5.1E-07	11.4
MW-16B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.1E-07	11.4
BD85-029	Argillite	Packer Test	4.7E-07	11.5
MW-21B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	9.3E-07	11.8
MW-21B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.5E-07	11.8
MW-11B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	3.2E-07	11.8
MW-11B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.4E-07	11.8
BD85-005	Argillite	Packer Test	5.2E-07	12.0
BD85-016	Quartzite	Packer Test	1.6E-06	12.2

Table 2.2

Shallow Bedrock Hydraulic Conductivity Testing Results
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Depth Below Top of Bedrock to Midpoint of Test Interval (m)
MW-04B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	2.0E-05	12.3
MW-04B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.4E-05	12.3
BD85-090	Quartzite	Packer Test	3.1E-08	12.5
MW-22B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	1.8E-06	12.8
MW-22B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.3E-06	12.8
MW-05B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	9.6E-06	12.9
MW-05B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	8.2E-06	12.9
MW-09B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	3.0E-08	13.0
MW-09B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.3E-08	13.0
MW-01B	Bedrock - Greywacke	Bouwer-Rice/Falling Head	2.3E-07	13.1
MW-01B	Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.5E-07	13.1
BD85-013	Greywacke	Packer Test	2.0E-08	13.3
BD85-082	Greywacke	Packer Test	3.6E-08	13.5
MW-05C	Greywacke	Packer Test	8.2E-07	13.6
BD85-007	Argillite	Packer Test	4.7E-08	13.6
MW-07C	Greywacke	Packer Test	3.3E-09	13.7
MW-09C	Greywacke	Packer Test	5.5E-09	13.9
MW-18C	Overburden/Weathered Bedrock - Greywacke	Bouwer-Rice/Falling Head	1.5E-08	15.1
MW-18C	Overburden/Weathered Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.1E-08	15.1
BD85-016	Quartzite	Packer Test	4.9E-08	16.2
BD85-005	Argillite	Packer Test	9.0E-08	16.2
MW-05C	Greywacke	Packer Test	1.6E-07	16.6
BD85-090	Greywacke	Packer Test	3.0E-08	16.7
MW-07C	Greywacke	Packer Test	7.4E-08	16.8
MW-09C	Greywacke	Packer Test	1.7E-09	16.9
BD85-013	Greywacke, Quartzite	Packer Test	2.4E-08	17.0
BD85-043	Quartzite	Packer Test	8.3E-09	17.4
BD85-082	Greywacke	Packer Test	1.1E-06	17.7
BD85-007	Argillite, Quartzite	Packer Test	1.1E-08	17.8
MW-09C	Greywacke	Packer Test	1.1E-08	20.0
BD85-005	Argillite	Packer Test	1.8E-07	20.4
BD85-090	Greywacke, Quartzite	Packer Test	2.4E-08	20.8
BD85-029	Greywacke	Packer Test	9.9E-08	21.1
MW-14C	Bedrock - Greywacke	Bouwer-Rice/Falling Head	2.7E-07	21.5
MW-14C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.6E-07	21.5
MW-14C	Bedrock - Greywacke	Bouwer-Rice/Falling Head	5.0E-06	21.5
MW-14C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.3E-07	21.5
BD85-043	Greywacke, Argillite	Packer Test	2.6E-08	21.7
BD85-082	Quartzite / Fault	Packer Test	1.9E-06	21.8
BD85-007	Quartzite	Packer Test	8.4E-07	22.0
		Geometric Mean	5.6E-07	
		Minimum Value	1.7E-09	
		Maximum Value	1.6E-04	

Notes:

m	Metres
m/s	Metres per second
1.0E-08	Hydraulic conductivity test result did not provide an exact hydraulic conductivity value, but indicated that the hydraulic conductivity is less than the specified value.

Table 2.3

Deep Bedrock Hydraulic Conductivity Testing Results
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Depth Below Top of Bedrock to Midpoint of Test Interval (m)
MW-07C	Greywacke	Packer Test	4.3E-08	22.9
MW-11C	Greywacke	Slug Test	1.0E-10	23.3
MW-19C	Bedrock - Greywacke	Bouwer-Rice/Falling Head	3.7E-06	24.2
MW-19C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.3E-06	24.2
BD85-090	Greywacke, Quartzite	Packer Test	8.1E-08	24.9
MW-09C	Greywacke	Packer Test	3.5E-09	26.0
MW-07D	Greywacke	Bouwer-Rice/Falling Head	3.0E-07	26.4
MW-07D	Greywacke	Bouwer-Rice/Rising Head	2.9E-07	26.4
MW-22C	Bedrock - Greywacke	Bouwer-Rice/Falling Head	5.0E-07	26.4
MW-22C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	4.2E-07	26.4
BD85-082	Greywacke	Packer Test	8.0E-07	27.3
MW-05D	Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.2E-07	28.0
MW-05D	Bedrock - Greywacke	Bouwer-Rice/Rising Head	1.0E-07	28.0
MW-09D	Bedrock - Greywacke	Bouwer-Rice/Falling Head	3.0E-08	28.1
MW-09D	Bedrock - Greywacke	Bouwer-Rice/Rising Head	2.4E-08	28.1
MW-03C	Bedrock - Greywacke	Bouwer-Rice/Falling Head	5.4E-06	28.1
MW-03C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.6E-06	28.1
MW-07C	Greywacke	Packer Test	4.4E-09	29.0
BD85-029	Greywacke	Packer Test	9.4E-07	29.7
BD14-188	Greywacke Hanging wall	Packer Test	5.0E-09	32.0
MW-09C	Greywacke	Packer Test	4.5E-09	32.1
BD85-083	Greywacke / Fault	Packer Test	1.5E-08	34.3
BD85-029	Greywacke	Packer Test	9.0E-08	35.3
BD85-082	Quartzite	Packer Test	6.1E-07	36.8
MW-05C	Greywacke	Packer Test	6.8E-09	37.9
BD85-082	Quartzite	Packer Test	4.6E-07	40.9
MW-07C	Greywacke	Packer Test	2.2E-08	41.2
MW-09C	Greywacke	Packer Test	7.2E-10	41.3
BD85-083	Greywacke / Fault	Packer Test	1.0E-08	43.2
BD85-043	Greywacke	Packer Test	1.0E-06	43.2
BD85-005	Greywacke	Packer Test	1.4E-06	43.8
MW-05C	Greywacke	Packer Test	2.3E-09	44.0
MW-07C	Greywacke	Packer Test	2.8E-08	44.2
MW-05C	Greywacke	Packer Test	7.9E-10	47.1
BD85-043	Greywacke	Packer Test	2.3E-07	47.5
MW-09C	Greywacke	Packer Test	1.2E-08	50.4
BD85-007	Greywacke / Fault	Packer Test	2.0E-09	51.2
BD85-083	Greywacke / Fault	Packer Test	1.2E-09	52.1

Table 2.3

Deep Bedrock Hydraulic Conductivity Testing Results
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Depth Below Top of Bedrock to Midpoint of Test Interval (m)
MW-07C	Greywacke	Packer Test	2.0E-07	53.4
MW-05C	Greywacke	Packer Test	1.0E-08	56.2
BD85-043	Greywacke	Packer Test	2.7E-09	57.6
MW-05C	Bedrock - Greywacke	Bouwer-Rice/Rising Head	3.4E-08	57.8
BD85-007	Greywacke	Packer Test	5.4E-07	59.5
MW-09C	Greywacke	Packer Test	4.2E-09	59.6
BD85-043	Greywacke	Packer Test	3.4E-09	61.9
BD85-016	Greywacke, Argillite	Packer Test	2.5E-07	65.3
BD85-013	Greywacke, Argillite	Packer Test	5.8E-08	65.4
BD85-083	Argillite	Packer Test	7.1E-09	65.4
BD85-013	Argillite	Packer Test	4.1E-08	69.1
BD85-016	Greywacke, Argillite	Packer Test	3.0E-07	69.2
BD85-013	Argillite	Packer Test	2.8E-08	72.7
BD85-016	-	Packer Test	3.9E-07	73.2
BD85-083	Greywacke, Argillite	Packer Test	2.7E-08	74.3
BD85-013	Argillite	Packer Test	2.5E-08	76.4
BD85-013	Argillite	Packer Test	4.3E-08	80.2
BD85-007	Argillite	Packer Test	3.0E-08	80.5
BD85-029	Greywacke, Argillite	Packer Test	4.9E-08	92.9
BD85-029	Greywacke	Packer Test	1.6E-08	97.1
BD14-188	Fault	Packer Test	1.0E-08	100.5
BD85-043	Greywacke	Packer Test	1.0E-09	109.3
BD85-043	Greywacke	Packer Test	7.6E-10	113.6
BD85-043	Greywacke	Packer Test	2.6E-09	118.0
BD85-043	Greywacke, Argillite	Packer Test	1.6E-09	122.3
BD85-043	Argillite	Packer Test	5.5E-10	126.5
BD14-188	Foot wall	Packer Test	2.0E-09	128.5
BD85-043	Argillite	Packer Test	3.7E-10	130.9
BD14-188	Foot wall	Packer Test	4.0E-10	150.0
		Geometric Mean	2.9E-08	
		Minimum Value	1.0E-10	
		Maximum Value	5.4E-06	

Notes:

m	Metres
m/s	Metres per second
2.0E-09	Hydraulic conductivity test result did not provide an exact hydraulic conductivity value, but indicated that the hydraulic conductivity is less than the specified value

Table 2.4

Bedrock Packer Test Results by Lithology and Structure
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Depth Below Top of Bedrock to Midpoint of Test Interval (m)
Greywacke				
MW-05C	Greywacke	Packer Test	5.0E-07	1.4
MW-07C	Greywacke	Packer Test	2.1E-06	3.4
MW-05C	Greywacke	Packer Test	8.3E-08	4.4
MW-07C	Greywacke	Packer Test	1.3E-06	6.4
MW-05C	Greywacke	Packer Test	4.3E-07	7.5
MW-09C	Greywacke	Packer Test	1.3E-07	7.7
MW-05C	Greywacke	Packer Test	3.8E-07	10.5
MW-07C	Greywacke	Packer Test	4.6E-07	10.7
MW-09C	Greywacke	Packer Test	2.7E-07	10.8
BD85-013	Greywacke	Packer Test	2.0E-08	13.3
BD85-082	Greywacke	Packer Test	3.6E-08	13.5
MW-05C	Greywacke	Packer Test	8.2E-07	13.6
MW-07C	Greywacke	Packer Test	3.3E-09	13.7
MW-09C	Greywacke	Packer Test	5.5E-09	13.9
MW-05C	Greywacke	Packer Test	1.6E-07	16.6
BD85-090	Greywacke	Packer Test	3.0E-08	16.7
MW-07C	Greywacke	Packer Test	7.4E-08	16.8
MW-09C	Greywacke	Packer Test	1.7E-09	16.9
BD85-082	Greywacke	Packer Test	1.1E-06	17.7
MW-09C	Greywacke	Packer Test	1.1E-08	20.0
BD85-029	Greywacke	Packer Test	9.9E-08	21.1
MW-07C	Greywacke	Packer Test	4.3E-08	22.9
MW-11C	Greywacke	Packer Test	1.0E-10	23.3
MW-09C	Greywacke	Packer Test	3.5E-09	26.0
BD85-082	Greywacke	Packer Test	8.0E-07	27.3
MW-07C	Greywacke	Packer Test	4.4E-09	29.0
BD85-029	Greywacke	Packer Test	9.4E-07	29.7
MW-09C	Greywacke	Packer Test	4.5E-09	32.1
BD85-029	Greywacke	Packer Test	9.0E-08	35.3
MW-05C	Greywacke	Packer Test	6.8E-09	37.9
MW-07C	Greywacke	Packer Test	2.2E-08	41.2
MW-09C	Greywacke	Packer Test	7.2E-10	41.3
BD85-043	Greywacke	Packer Test	1.0E-06	43.2
BD85-005	Greywacke	Packer Test	1.4E-06	43.8
MW-05C	Greywacke	Packer Test	2.3E-09	44.0
MW-07C	Greywacke	Packer Test	2.8E-08	44.2
MW-05C	Greywacke	Packer Test	7.9E-10	47.1
BD85-043	Greywacke	Packer Test	2.3E-07	47.5
MW-09C	Greywacke	Packer Test	1.2E-08	50.4
MW-07C	Greywacke	Packer Test	2.0E-07	53.4
MW-05C	Greywacke	Packer Test	1.0E-08	56.2
BD85-043	Greywacke	Packer Test	2.7E-09	57.6
BD85-007	Greywacke	Packer Test	5.4E-07	59.5
MW-09C	Greywacke	Packer Test	4.2E-09	59.6
BD85-043	Greywacke	Packer Test	3.4E-09	61.9
BD85-029	Greywacke	Packer Test	1.6E-08	97.1
BD85-043	Greywacke	Packer Test	1.0E-09	109.3
BD85-043	Greywacke	Packer Test	7.6E-10	113.6
BD85-043	Greywacke	Packer Test	2.6E-09	118.0
BD14-188	Greywacke Hanging wall	Packer Test	1.0E-08	11.3
BD14-188	Greywacke Hanging wall	Packer Test	5.0E-09	32.0
BD85-016	Greywacke, Quartzite	Packer Test	8.0E-07	8.2
BD85-013	Greywacke, Quartzite	Packer Test	2.4E-08	17.0
BD85-090	Greywacke, Quartzite	Packer Test	2.4E-08	20.8
BD85-090	Greywacke, Quartzite	Packer Test	8.1E-08	24.9
		Greywacke Geometric Mean	3.4E-08	
		Greywacke Minimum Value	1.0E-10	
		Greywacke Maximum Value	2.1E-06	

Table 2.4

Bedrock Packer Test Results by Lithology and Structure
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Lithology / Structure	Hydraulic Test Method/Type	Hydraulic Conductivity (m/s)	Depth Below Top of Bedrock to Midpoint of Test Interval (m)
Argillite				
BD85-029	Argillite	Packer Test	4.7E-07	11.5
BD85-005	Argillite	Packer Test	5.2E-07	12.0
BD85-007	Argillite	Packer Test	4.7E-08	13.6
BD85-005	Argillite	Packer Test	9.0E-08	16.2
BD85-005	Argillite	Packer Test	1.8E-07	20.4
BD85-083	Argillite	Packer Test	7.1E-09	65.4
BD85-013	Argillite	Packer Test	4.1E-08	69.1
BD85-013	Argillite	Packer Test	2.8E-08	72.7
BD85-013	Argillite	Packer Test	2.5E-08	76.4
BD85-013	Argillite	Packer Test	4.3E-08	80.2
BD85-007	Argillite	Packer Test	3.0E-08	80.5
BD85-043	Argillite	Packer Test	5.5E-10	126.5
BD85-043	Argillite	Packer Test	3.7E-10	130.9
BD85-007	Argillite, Quartzite	Packer Test	1.1E-08	17.8
		Argillite Geometric Mean	2.7E-08	
		Argillite Minimum Value	3.7E-10	
		Argillite Maximum Value	5.2E-07	
Mud Lake Fault Zone				
BD14-188	Fault	Packer Test	1.0E-08	100.5
BD85-082	Quartzite / Fault	Packer Test	1.9E-06	21.8
BD85-083	Greywacke / Fault	Packer Test	1.5E-08	34.3
BD85-083	Greywacke / Fault	Packer Test	1.0E-08	43.2
BD85-007	Greywacke / Fault	Packer Test	2.0E-09	51.2
BD85-083	Greywacke / Fault	Packer Test	1.2E-09	52.1
		Mud Lake Fault Geometric Mean	1.4E-08	
		Mud Lake Fault Minimum Value	1.2E-09	
		Mud Lake Fault Maximum Value	1.9E-06	
categorized Lithologies				
BD85-016	-	Packer Test	3.9E-07	73.2
BD85-016	Quartzite	Packer Test	1.6E-06	12.2
BD85-090	Quartzite	Packer Test	3.1E-08	12.5
BD85-016	Quartzite	Packer Test	4.9E-08	16.2
BD85-043	Quartzite	Packer Test	8.3E-09	17.4
BD85-007	Quartzite	Packer Test	8.4E-07	22.0
BD85-082	Quartzite	Packer Test	6.1E-07	36.8
BD85-082	Quartzite	Packer Test	4.6E-07	40.9
BD14-188	Foot wall	Packer Test	2.0E-09	128.5
BD14-188	Foot wall	Packer Test	4.0E-10	150.0
reywacke and Argillite				
BD85-043	Greywacke, Argillite	Packer Test	2.6E-08	21.7
BD85-016	Greywacke, Argillite	Packer Test	2.5E-07	65.3
BD85-013	Greywacke, Argillite	Packer Test	5.8E-08	65.4
BD85-016	Greywacke, Argillite	Packer Test	3.0E-07	69.2
BD85-083	Greywacke, Argillite	Packer Test	2.7E-08	74.3
BD85-029	Greywacke, Argillite	Packer Test	4.9E-08	92.9
BD85-043	Greywacke, Argillite	Packer Test	1.6E-09	122.3

Notes:

m	Metres
m/s	Metres per second
2.0E-09	Hydraulic conductivity test result did not provide an exact hydraulic conductivity value, but indicated that the hydraulic conductivity is less than the specified value

Calculated Correlation Coefficients[1] for Observed Groundwater Elevations between Touquoy and Beaver Dam Mine Site Monitoring Locations
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	OPM1A	OPM1B	OPM2A	OPM2B	OPM3A	OPM3B	OPM4A	OPM4B	OPM5A	OPM5B	OPM6A	OPM6B	OPM7A	OPM7B	Maximum Correlation
MW-01A	0.94	0.93	0.92	0.93	0.90	0.94	0.75	0.76	0.64	0.86	0.94	0.95	0.86	0.86	0.95
MW-01B	0.90	0.89	0.94	0.92	0.90	0.90	0.80	0.84	0.80	0.89	0.93	0.93	0.86	0.87	0.94
MW-01C	0.93	0.93	0.93	0.94	0.92	0.92	0.72	0.76	0.66	0.90	0.95	0.95	0.87	0.87	0.95
MW-02A	0.62	0.61	0.65	0.60	0.56	0.67	0.60	0.51	0.44	0.52	0.63	0.64	0.56	0.57	0.67
MW-02B	0.79	0.77	0.72	0.75	0.71	0.76	0.45	0.45	0.32	0.88	0.79	0.79	0.62	0.63	0.88
MW-03A	0.98	0.99	0.90	0.94	0.93	0.98	0.86	0.87	0.73	0.78	0.97	0.97	0.94	0.93	0.99
MW-03B	0.72	0.72	0.80	0.74	0.69	0.74	0.72	0.70	0.70	0.73	0.75	0.76	0.66	0.68	0.80
MW-03C	0.84	0.84	0.89	0.86	0.83	0.85	0.80	0.82	0.80	0.82	0.86	0.87	0.80	0.80	0.89
MW-04A	0.88	0.87	0.86	0.83	0.80	0.89	0.77	0.71	0.57	0.71	0.87	0.87	0.80	0.80	0.89
MW-04B	0.98	0.98	0.88	0.94	0.93	0.97	0.86	0.84	0.66	0.69	0.97	0.97	0.93	0.93	0.98
MW-05A	0.94	0.95	0.86	0.89	0.87	0.92	0.91	0.89	0.78	0.67	0.93	0.93	0.90	0.89	0.95
MW-05B	0.95	0.95	0.87	0.90	0.88	0.93	0.91	0.89	0.77	0.66	0.94	0.94	0.90	0.90	0.95
MW-05C	0.95	0.95	0.87	0.89	0.89	0.93	0.85	0.81	0.65	0.71	0.93	0.93	0.90	0.89	0.95
MW-05D	0.91	0.91	0.93	0.93	0.92	0.88	0.74	0.80	0.71	0.88	0.93	0.93	0.86	0.87	0.93
MW-07A	0.46	0.46	0.50	0.51	0.49	0.51	0.67	0.66	0.75	0.34	0.51	0.52	0.53	0.54	0.75
MW-07B	0.73	0.73	0.78	0.74	0.71	0.74	0.75	0.72	0.71	0.63	0.77	0.77	0.69	0.70	0.78
MW-07C	0.56	0.56	0.73	0.64	0.58	0.50	0.81	0.80	0.85	0.78	0.61	0.61	0.60	0.56	0.85
MW-07D	0.75	0.75	0.80	0.77	0.74	0.77	0.82	0.81	0.82	0.61	0.78	0.79	0.75	0.75	0.82
MW-09A	0.98	0.97	0.90	0.95	0.95	0.95	0.81	0.83	0.68	0.77	0.97	0.97	0.93	0.93	0.98
MW-09B	0.88	0.87	0.87	0.86	0.85	0.87	0.70	0.72	0.57	0.69	0.87	0.87	0.84	0.82	0.88
MW-09C	0.84	0.83	0.64	0.74	0.80	0.84	0.60	0.61	0.35	0.34	0.79	0.80	0.78	0.79	0.84
MW-09D	0.77	0.77	0.91	0.79	0.80	0.75	0.57	0.64	0.55	0.73	0.79	0.79	0.74	0.74	0.91
MW-11A	0.99	0.99	0.86	0.92	0.92	0.97	0.87	0.86	0.70	0.71	0.96	0.96	0.93	0.92	0.99
MW-11B	0.98	0.98	0.92	0.93	0.92	0.98	0.88	0.86	0.70	0.73	0.97	0.97	0.93	0.92	0.98
MW-11C	0.94	0.94	0.78	0.86	0.87	0.90	0.71	0.70	0.43	0.47	0.91	0.91	0.84	0.82	0.94
MW-12A	0.97	0.97	0.89	0.90	0.89	0.98	0.89	0.84	0.66	0.65	0.95	0.95	0.92	0.91	0.98
MW-12B	0.95	0.95	0.74	0.86	0.87	0.92	0.81	0.79	0.59	0.61	0.91	0.90	0.90	0.88	0.95
MW-14A	0.35	0.34	0.35	0.40	0.35	0.42	0.43	0.37	0.42	0.34	0.40	0.41	0.34	0.35	0.43
MW-14B	0.90	0.90	0.48	0.78	0.74	0.94	0.89	0.67	0.29	0.08	0.86	0.87	0.79	0.78	0.94
MW-14C	0.89	0.89	0.74	0.83	0.82	0.91	0.83	0.74	0.52	0.56	0.87	0.87	0.82	0.82	0.91
MW-16A	0.98	0.97	0.89	0.95	0.93	0.97	0.83	0.82	0.65	0.69	0.97	0.97	0.93	0.92	0.98
MW-16B	0.97	0.97	0.88	0.93	0.91	0.97	0.86	0.83	0.66	0.64	0.96	0.96	0.93	0.92	0.97

Calculated Correlation Coefficients[1] for Observed Groundwater Elevations between Touquoy and Beaver Dam Mine Site Monitoring Locations
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	OPM1A	OPM1B	OPM2A	OPM2B	OPM3A	OPM3B	OPM4A	OPM4B	OPM5A	OPM5B	OPM6A	OPM6B	OPM7A	OPM7B	Maximum Correlation
MW-17A	0.94	0.94	0.94	0.91	0.88	0.96	0.87	0.81	0.65	0.61	0.94	0.94	0.90	0.89	0.96
MW-17B	0.97	0.96	0.94	0.95	0.93	0.97	0.86	0.84	0.69	0.69	0.97	0.97	0.92	0.92	0.97
MW-17C	0.97	0.97	0.93	0.95	0.93	0.97	0.88	0.86	0.71	0.66	0.97	0.97	0.93	0.92	0.97
MW-18A	0.98	0.98	0.87	0.93	0.93	0.96	0.86	0.86	0.69	0.70	0.96	0.96	0.93	0.92	0.98
MW-18B	0.98	0.98	0.88	0.95	0.94	0.96	0.79	0.83	0.70	0.85	0.97	0.97	0.92	0.91	0.98
MW-18C	0.95	0.95	0.88	0.94	0.94	0.91	0.75	0.81	0.68	0.82	0.95	0.95	0.90	0.90	0.95
MW-19A	0.98	0.98	0.91	0.94	0.94	0.97	0.88	0.90	0.76	0.76	0.97	0.97	0.95	0.94	0.98
MW-19B	0.78	0.78	0.89	0.84	0.84	0.72	0.46	0.65	0.59	0.88	0.82	0.81	0.74	0.75	0.89
MW-19C	0.86	0.85	0.91	0.92	0.92	0.81	0.57	0.73	0.68	0.94	0.90	0.90	0.81	0.83	0.94
MW-20A	0.94	0.94	0.96	0.93	0.91	0.95	0.85	0.85	0.74	0.78	0.95	0.95	0.90	0.90	0.96
MW-20B	0.96	0.95	0.85	0.91	0.89	0.94	0.64	0.63	0.41	0.86	0.94	0.94	0.83	0.82	0.96
MW-21A	0.96	0.96	0.87	0.92	0.90	0.96	0.83	0.80	0.64	0.70	0.95	0.95	0.90	0.90	0.96
MW-21B	0.95	0.95	0.94	0.96	0.94	0.95	0.81	0.83	0.69	0.75	0.96	0.97	0.91	0.91	0.97
MW-21C	0.85	0.85	0.92	0.90	0.87	0.86	0.73	0.75	0.74	0.97	0.89	0.90	0.80	0.81	0.97
MW-22A	0.40	0.39	0.63	0.53	0.50	0.44	0.54	0.56	0.71	0.64	0.48	0.49	0.45	0.47	0.71
MW-22B	0.09	0.09	0.30	0.20	0.18	0.10	0.43	0.43	0.65	0.27	0.16	0.16	0.21	0.21	0.65
MW-22C	0.72	0.72	0.75	0.76	0.75	0.71	0.85	0.84	0.87	0.72	0.74	0.74	0.75	0.73	0.87

Note:

(1) A relationship between two variables. The strength of a correlation is measured by correlation coefficient. The positive correlation is where the two variables react in the same way, increasing or decreasing together.

Table 6.2

Model Calibration Targets and Residuals - Base Case
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Model Layer	Observed Groundwater Elevation[1] (m AMSL)	Simulated Groundwater Elevation (m AMSL)	Residual[2] (m)
MW-01A	2	147.73	149.30	-1.58
MW-01B	2	147.42	149.34	-1.92
MW-01C	3	147.86	149.17	-1.32
MW-02A	1	149.98	149.40	0.58
MW-02B	2	148.99	149.38	-0.40
MW-03A	2	163.66	165.02	-1.36
MW-03B	2	163.12	165.09	-1.96
MW-03C	3	163.05	164.58	-1.54
MW-04A	2	163.15	163.41	-0.26
MW-04B	2	163.43	163.42	0.01
MW-05A	2	140.48	140.22	0.26
MW-05B	2	140.49	140.30	0.19
MW-05C	4	141.19	141.19	0.00
MW-05D	3	140.86	140.82	0.04
MW-07A	2	129.42	129.50	-0.08
MW-07B	2	129.50	129.51	-0.01
MW-07C	4	129.35	131.09	-1.74
MW-07D	3	129.45	130.05	-0.60
MW-09A	2	130.66	131.01	-0.35
MW-09B	2	130.53	131.00	-0.47
MW-09C	4	129.86	130.73	-0.88
MW-09D	3	130.53	130.87	-0.34
MW-11A	2	147.16	146.97	0.19
MW-11B	2	145.61	146.67	-1.06
MW-11C	2	146.82	146.77	0.04
MW-12A	1	145.93	145.07	0.86
MW-12B	2	141.64	140.05	1.59
MW-14A	1	135.47	135.19	0.28
MW-14B	2	135.23	135.37	-0.14
MW-14C	3	135.92	135.90	0.02
MW-16A	2	151.13	151.09	0.03
MW-16B	2	151.40	151.07	0.33
MW-17A	1	151.75	151.92	-0.17
MW-17B	2	151.84	151.79	0.04
MW-17C	2	151.49	151.81	-0.31
MW-18A	2	146.08	146.14	-0.06
MW-18B	2	146.02	146.13	-0.12
MW-18C	2	146.26	146.14	0.12
MW-19A	1	132.08	132.15	-0.08
MW-19B	2	132.12	132.18	-0.06
MW-19C	3	132.16	132.28	-0.12

Table 6.2

Model Calibration Targets and Residuals - Base Case
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Model Layer	Observed Groundwater Elevation[1] (m AMSL)	Simulated Groundwater Elevation (m AMSL)	Residual[2] (m)
MW-20A	2	149.87	150.03	-0.16
MW-20B	2	150.15	150.04	0.11
MW-21A	2	154.93	154.67	0.26
MW-21B	2	152.07	154.63	-2.56
MW-21C	3	147.13	154.67	-7.53
MW-22A	2	137.69	138.63	-0.94
MW-22B	2	137.80	138.60	-0.80
MW-22C	3	137.79	138.63	-0.84

Notes:

m	Metres
m AMSL	Metres above mean sea level
0.58	Positive groundwater elevation residual - over prediction of observed groundwater elevation
-1.58	Negative groundwater elevation residual - under prediction of observed groundwater elevation
(1)	Observed on July 18, 2018.
(2)	Residual is calculated as observed groundwater elevation minus the simulated groundwater elevation.

Table 6.3

Model Calibration Targets and Residuals - Dry Condition
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Model Layer	Observed Groundwater Elevation[1] (m AMSL)	Simulated Groundwater Elevation (m AMSL)	Residual[2] (m)
MW-01A	2	147.53	149.27	-1.74
MW-01B	2	147.16	149.31	-2.16
MW-01C	3	147.65	149.14	-1.49
MW-02A	1	149.28	149.33	-0.05
MW-02B	2	148.52	149.32	-0.80
MW-03A	2	163.08	164.90	-1.82
MW-03B	2	163.07	164.97	-1.90
MW-03C	3	163.35	164.47	-1.12
MW-04A	2	162.43	163.38	-0.95
MW-04B	2	162.77	163.38	-0.61
MW-05A	2	139.75	140.20	-0.45
MW-05B	2	139.80	140.29	-0.48
MW-05C	4	140.90	141.16	-0.26
MW-05D	3	140.51	140.80	-0.29
MW-07A	2	129.10	129.49	-0.39
MW-07B	2	129.41	129.51	-0.10
MW-07C	4	129.17	131.07	-1.91
MW-07D	3	129.28	130.05	-0.77
MW-09A	2	130.21	130.94	-0.73
MW-09B	2	130.41	130.94	-0.52
MW-09C	4	129.63	130.68	-1.05
MW-09D	3	130.06	130.81	-0.76
MW-11A	2	146.19	146.60	-0.41
MW-11B	2	144.97	146.30	-1.33
MW-11C	2	146.12	146.40	-0.28
MW-12A	1	144.99	144.47	0.52
MW-12B	2	140.49	139.61	0.88
MW-14A	1	136.09	134.93	1.16
MW-14B	2	135.23	135.11	0.12
MW-14C	3	135.86	135.66	0.20
MW-16A	2	150.70	150.90	-0.20
MW-16B	2	150.97	150.88	0.10
MW-17A	1	151.45	151.83	-0.39
MW-17B	2	151.53	151.71	-0.18
MW-17C	2	151.16	151.72	-0.57
MW-18A	2	145.52	146.01	-0.50
MW-18B	2	145.43	146.01	-0.58
MW-18C	2	145.74	146.02	-0.28
MW-19A	1	131.58	132.15	-0.57
MW-19B	2	131.60	132.17	-0.57
MW-19C	3	131.63	132.27	-0.64

Table 6.3

Model Calibration Targets and Residuals - Dry Condition
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Model Layer	Observed Groundwater Elevation[1] (m AMSL)	Simulated Groundwater Elevation (m AMSL)	Residual[2] (m)
MW-20A	2	149.33	149.93	-0.60
MW-20B	2	149.56	149.94	-0.38
MW-21A	2	154.77	154.66	0.11
MW-21B	2	151.62	154.62	-3.00
MW-21C	3	147.11	154.66	-7.54
MW-22A	2	137.82	138.60	-0.77
MW-22B	2	137.66	138.57	-0.91
MW-22C	3	137.66	138.60	-0.94

Notes:

m	Metres
m AMSL	Metres above mean sea level
0.52	Positive groundwater elevation residual - over prediction of observed groundwater elevation
-1.74	Negative groundwater elevation residual - under prediction of observed groundwater elevation
(1)	Observed on September 5, 2018.
(2)	Residual is calculated as observed groundwater elevation minus the simulated groundwater elevation.

Table 6.4

Model Calibration Targets and Residuals - Wet Condition
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Model Layer	Observed Groundwater Elevation[1] (m AMSL)	Simulated Groundwater Elevation (m AMSL)	Residual[2] (m)
MW-01A	2	148.57	149.40	-0.84
MW-01B	2	148.26	149.44	-1.18
MW-01C	3	148.70	149.27	-0.57
MW-02A	1	150.82	149.61	1.21
MW-02B	2	149.83	149.59	0.24
MW-03A	2	164.50	165.35	-0.85
MW-03B	2	163.96	165.42	-1.45
MW-03C	3	163.89	164.91	-1.02
MW-04A	2	163.99	163.54	0.45
MW-04B	2	164.27	163.55	0.72
MW-05A	2	141.32	140.27	1.05
MW-05B	2	141.34	140.35	0.98
MW-05C	4	142.03	141.28	0.76
MW-05D	3	141.70	140.89	0.82
MW-07A	2	130.26	129.50	0.76
MW-07B	2	130.34	129.51	0.83
MW-07C	4	130.19	131.13	-0.94
MW-07D	3	130.30	130.07	0.23
MW-09A	2	131.50	131.20	0.30
MW-09B	2	131.37	131.19	0.18
MW-09C	4	130.70	130.91	-0.21
MW-09D	3	131.37	131.05	0.32
MW-11A	2	148.00	148.13	-0.13
MW-11B	2	146.45	147.84	-1.39
MW-11C	2	147.66	147.94	-0.29
MW-12A	1	146.77	147.03	-0.26
MW-12B	2	142.49	141.51	0.97
MW-14A	1	136.31	136.05	0.26
MW-14B	2	136.07	136.22	-0.15
MW-14C	3	136.76	136.69	0.07
MW-16A	2	151.97	151.79	0.18
MW-16B	2	152.24	151.76	0.48
MW-17A	1	152.59	152.20	0.39
MW-17B	2	152.68	152.07	0.61
MW-17C	2	152.34	152.08	0.25
MW-18A	2	146.92	146.60	0.32
MW-18B	2	146.86	146.60	0.25
MW-18C	2	147.10	146.62	0.48
MW-19A	1	132.92	132.18	0.73
MW-19B	2	132.96	132.21	0.75
MW-19C	3	133.00	132.31	0.69

Table 6.4

Model Calibration Targets and Residuals - Wet Condition
Atlantic Gold Corporation
Marinette, Nova Scotia

Monitoring Well ID	Model Layer	Observed Groundwater Elevation[1] (m AMSL)	Simulated Groundwater Elevation (m AMSL)	Residual[2] (m)
MW-20A	2	150.71	150.36	0.36
MW-20B	2	150.99	150.36	0.63
MW-21A	2	155.77	154.70	1.07
MW-21B	2	152.91	154.66	-1.75
MW-21C	3	147.97	154.70	-6.73
MW-22A	2	138.54	138.75	-0.21
MW-22B	2	138.64	138.72	-0.08
MW-22C	3	138.63	138.75	-0.11

Notes:

m	Metres
m AMSL	Metres above mean sea level
1.21	Positive groundwater elevation residual - over prediction of observed groundwater elevation
-0.84	Negative groundwater elevation residual - under prediction of observed groundwater elevation
(1)	Inferred wet condition developed using seasonal variation in water levels observed at Touquoy
(2)	Residual is calculated as observed groundwater elevation minus the simulated groundwater elevation.

Table 6.5

Calibrated Parameter Values
Atlantic Gold Corporation
Marinette, Nova Scotia

Parameter	Units	Parameter Value	Observed Parameter Range	
			Maximum (m/s)	Minimum (m/s)
Average Overburden K_H[(1)]	m/s	1.40E-04	3.82E-04	6.08E-07
Shallow Greywacke K_H[(1)]	m/s	4.25E-07	1.57E-04	1.67E-09
Deep Greywacke K_H[(1)]	m/s	3.33E-09	5.44E-06	1.00E-10
Shallow Granite K_H[(1)]	m/s	3.71E-07	1.57E-04	1.67E-09
Deep Granite K_H[(1)]	m/s	3.34E-09	5.44E-06	1.00E-10
Shallow Argillite K_H[(1)]	m/s	3.70E-07	1.57E-04	1.67E-09
Deep Argillite K_H[(1)]	m/s	3.32E-09	5.44E-06	1.00E-10
Shallow Mud Lake Fault Zone K_H[(1)]	m/s	3.69E-07	1.57E-04	1.67E-09
Deep Mud Lake Fault Zone K_H[(1)]	m/s	3.32E-09	5.44E-06	1.00E-10
Shallow Cameron Flowage Fault Zone K_H[(1)]	m/s	4.25E-07	1.57E-04	1.67E-09
Deep Cameron Flowage Fault Zone K_H[(1)]	m/s	3.33E-09	5.44E-06	1.00E-10
River Conductivity K_H[(1)]	m/s	2.44E-04	3.82E-04	6.08E-07
Dry Condition Recharge	mm/yr	209	77	377
Base Case Condition Recharge	mm/yr	219	77	377
Wet Condition Recharge	mm/yr	250	77	377

Notes:

m/s Metres per second
mm/yr Millimetres per year
(1) K is hydraulic conductivity.

Table 6.6

Model Calibration Sensitivity Analysis
Atlantic Gold Corporation
Marinette, Nova Scotia

Sensitivity Analysis Simulation No.	Parameter	Units	Parameter Value For Sensitivity Simulation	Dry Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Dry Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)	Base Case Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Base Case Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)	Wet Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Wet Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)
1.1	Overburden K_H	m/d	33.0048	177.58	72.53%	190.86	108.06%	209.44	197.81%
1.2	Overburden K_H	m/d	26.04396513	151.02	46.72%	159.24	73.59%	167.59	138.30%
1.3	Overburden K_H	m/d	19.08313027	120.77	17.33%	121.46	32.41%	115.81	64.67%
-	Overburden K_H	m/d	12.1222954	102.93	-	91.73	-	70.33	-
1.4	Overburden K_H	m/d	8.0990436	167.82	63.05%	148.00	61.34%	133.90	90.39%
1.5	Overburden K_H	m/d	4.0757918	690.47	570.83%	674.39	635.17%	799.31	1036.57%
1.6	Overburden K_H	m/d	0.05254	1430326.28	1389539.80%	1562989.18	1703746.14%	2057479.67	2925531.59%
2.1	Shallow Greywacke KH	m/d	4.323456	2127.60	1967.08%	2295.80	2402.70%	2587.10	3578.72%
2.2	Shallow Greywacke KH	m/d	2.89453457	1962.84	1807.00%	2117.90	2208.77%	2369.00	3268.60%
2.3	Shallow Greywacke KH	m/d	1.46561314	1590.99	1445.73%	1716.70	1771.41%	1890.20	2587.77%
-	Shallow Greywacke KH	m/d	0.03669171	102.93	-	91.73	-	70.33	-
2.4	Shallow Greywacke KH	m/d	0.02447266	132.21	28.45%	110.65	20.62%	97.05	38.01%
2.5	Shallow Greywacke KH	m/d	0.01225361	290.27	182.01%	262.49	186.15%	317.97	352.14%
2.6	Shallow Greywacke KH	m/d	0.00003456	3682.24	3477.49%	23307.00	25307.43%	5294.00	7427.80%
3.1	Deep Greywacke KH	m/d	0.16416	1574.52	1429.73%	1655.10	1704.26%	1724.80	2352.58%
3.2	Deep Greywacke KH	m/d	0.109535818	1235.39	1100.25%	1296.70	1313.56%	1330.10	1791.33%
3.3	Deep Greywacke KH	m/d	0.054911636	699.30	579.41%	734.18	700.34%	723.90	929.35%
-	Deep Greywacke KH	m/d	0.000287454	102.93	-	91.73	-	70.33	-
3.4	Deep Greywacke KH	m/d	0.000194516	102.25	-0.66%	90.76	-1.07%	69.67	-0.94%
3.5	Deep Greywacke KH	m/d	0.000101578	101.00	-1.87%	89.22	-2.74%	68.69	-2.33%
3.6	Deep Greywacke KH	m/d	0.00000864	97.67	-5.11%	85.72	-6.56%	66.93	-4.83%
4.1	Shallow Granite KH	m/d	4.323456	111.91	8.73%	111.40	21.44%	107.60	53.00%
4.2	Shallow Granite KH	m/d	2.892978207	108.44	5.36%	107.00	16.64%	101.59	44.46%
4.3	Shallow Granite KH	m/d	1.462500413	103.36	0.42%	100.17	9.20%	91.47	30.06%
-	Shallow Granite KH	m/d	0.03202262	102.93	-	91.73	-	70.33	-
4.4	Shallow Granite KH	m/d	0.021359933	103.33	0.39%	91.98	0.27%	70.32	-0.01%
4.5	Shallow Granite KH	m/d	0.010697247	103.81	0.86%	92.30	0.61%	70.39	0.09%
4.6	Shallow Granite KH	m/d	0.00003456	105.46	2.46%	93.66	2.10%	71.20	1.24%
5.1	Deep Granite KH	m/d	0.16416	96.41	-6.33%	91.69	-0.05%	80.29	14.17%
5.2	Deep Granite KH	m/d	0.109536141	95.26	-7.45%	89.13	-2.83%	75.51	7.38%
5.3	Deep Granite KH	m/d	0.054912281	95.34	-7.37%	87.24	-4.90%	70.56	0.33%
-	Deep Granite KH	m/d	0.000288422	102.93	-	91.73	-	70.33	-
5.4	Deep Granite KH	m/d	0.000195161	103.75	0.80%	92.55	0.89%	71.05	1.02%
5.5	Deep Granite KH	m/d	0.000101901	104.97	1.99%	93.76	2.21%	72.12	2.55%
5.6	Deep Granite KH	m/d	0.00000864	107.00	3.96%	95.79	4.42%	73.91	5.10%
6.1	Shallow Argillite KH	m/d	4.323456	111.05	7.89%	107.57	17.26%	86.80	23.42%
6.2	Shallow Argillite KH	m/d	2.892967007	110.43	7.29%	106.75	16.37%	85.85	22.07%
6.3	Shallow Argillite KH	m/d	1.462478013	109.06	5.96%	104.92	14.38%	83.81	19.18%
-	Shallow Argillite KH	m/d	0.03198902	102.93	-	91.73	-	70.33	-
6.4	Shallow Argillite KH	m/d	0.021337533	105.56	2.56%	93.34	1.75%	73.08	3.92%
6.5	Shallow Argillite KH	m/d	0.010686047	113.45	10.22%	99.37	8.33%	81.09	15.31%
6.6	Shallow Argillite KH	m/d	0.00003456	144.76	40.64%	126.44	37.83%	113.89	61.95%
7.1	Deep Argillite KH	m/d	0.16416	101.04	-1.84%	90.98	-0.82%	69.84	-0.69%
7.2	Deep Argillite KH	m/d	0.109535688	101.13	-1.74%	90.98	-0.82%	69.83	-0.71%
7.3	Deep Argillite KH	m/d	0.054911376	101.34	-1.54%	91.00	-0.79%	69.84	-0.69%
-	Deep Argillite KH	m/d	0.000287065	102.93	-	91.73	-	70.33	-

Table 6.6

Model Calibration Sensitivity Analysis
Atlantic Gold Corporation
Marinette, Nova Scotia

Sensitivity Analysis Simulation No.	Parameter	Units	Parameter Value For Sensitivity Simulation	Dry Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Dry Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)	Base Case Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Base Case Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)	Wet Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Wet Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)
7.4	Deep Argillite KH	m/d	0.000194256	102.98	0.05%	91.75	0.02%	70.31	-0.02%
7.5	Deep Argillite KH	m/d	0.000101448	103.05	0.12%	91.76	0.03%	70.29	-0.06%
7.6	Deep Argillite KH	m/d	0.00000864	103.16	0.23%	91.74	0.01%	70.23	-0.13%
8.1	Shallow Mud Lake Fault Zone K_H	m/d	4.323456	120.46	17.03%	114.33	24.63%	91.04	29.46%
8.2	Shallow Mud Lake Fault Zone K_H	m/d	2.892938383	117.20	13.86%	110.88	20.87%	87.31	24.15%
8.3	Shallow Mud Lake Fault Zone K_H	m/d	1.462420767	112.83	9.62%	106.25	15.83%	82.79	17.73%
-	Shallow Mud Lake Fault Zone K_H	m/d	0.03190315	102.93	-	91.73	-	70.33	-
8.4	Shallow Mud Lake Fault Zone K_H	m/d	0.021280287	102.81	-0.12%	90.44	-1.41%	70.04	-0.40%
8.5	Shallow Mud Lake Fault Zone K_H	m/d	0.010657423	104.52	1.55%	89.87	-2.03%	72.80	3.52%
8.6	Shallow Mud Lake Fault Zone K_H	m/d	0.00003456	140.26	36.27%	120.57	31.44%	130.98	86.25%
9.1	Deep Mud Lake Fault Zone K_H	m/d	0.16416	109.03	5.93%	98.65	7.54%	74.61	6.08%
9.2	Deep Mud Lake Fault Zone K_H	m/d	0.109535599	107.06	4.01%	96.75	5.47%	73.30	4.23%
9.3	Deep Mud Lake Fault Zone K_H	m/d	0.054911199	104.85	1.87%	94.49	3.01%	71.87	2.20%
-	Deep Mud Lake Fault Zone K_H	m/d	0.000286798	102.93	-	91.73	-	70.33	-
9.4	Deep Mud Lake Fault Zone K_H	m/d	0.000194079	102.87	-0.06%	91.64	-0.10%	70.28	-0.06%
9.5	Deep Mud Lake Fault Zone K_H	m/d	0.000101359	102.65	-0.27%	91.38	-0.38%	70.18	-0.20%
9.6	Deep Mud Lake Fault Zone K_H	m/d	0.00000864	100.88	-1.99%	89.58	-2.35%	69.77	-0.79%
10.1	Shallow Cameron Flowage Fault Zone K_H	m/d	4.323456	115.97	12.67%	107.40	17.08%	83.52	18.77%
10.2	Shallow Cameron Flowage Fault Zone K_H	m/d	2.89453457	114.52	11.26%	105.61	15.13%	81.63	16.07%
10.3	Shallow Cameron Flowage Fault Zone K_H	m/d	1.46561314	111.98	8.79%	102.41	11.64%	78.57	11.72%
-	Shallow Cameron Flowage Fault Zone K_H	m/d	0.03669171	102.93	-	91.73	-	70.33	-
10.4	Shallow Cameron Flowage Fault Zone K_H	m/d	0.02447266	102.32	-0.59%	91.11	-0.68%	70.13	-0.28%
10.5	Shallow Cameron Flowage Fault Zone K_H	m/d	0.01225361	101.55	-1.34%	90.23	-1.64%	70.26	-0.09%
10.6	Shallow Cameron Flowage Fault Zone K_H	m/d	0.00003456	103.76	0.81%	91.02	-0.77%	77.50	10.20%
11.1	Deep Cameron Flowage Fault Zone K_H	m/d	0.16416	103.67	0.72%	94.05	2.53%	72.46	3.04%
11.2	Deep Cameron Flowage Fault Zone K_H	m/d	0.109535818	103.02	0.09%	93.13	1.52%	71.81	2.11%
11.3	Deep Cameron Flowage Fault Zone K_H	m/d	0.054911636	102.20	-0.71%	91.88	0.16%	71.00	0.95%
-	Deep Cameron Flowage Fault Zone K_H	m/d	0.000287454	102.93	-	91.73	-	70.33	-
11.4	Deep Cameron Flowage Fault Zone K_H	m/d	0.000194516	102.97	0.04%	91.78	0.06%	70.34	0.02%
11.5	Deep Cameron Flowage Fault Zone K_H	m/d	0.000101578	103.01	0.08%	91.84	0.12%	70.36	0.05%
11.6	Deep Cameron Flowage Fault Zone K_H	m/d	0.00000864	103.17	0.24%	92.12	0.42%	70.55	0.31%

Table 6.6

Model Calibration Sensitivity Analysis
Atlantic Gold Corporation
Marinette, Nova Scotia

Sensitivity Analysis Simulation No.	Parameter	Units	Parameter Value For Sensitivity Simulation	Dry Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Dry Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)	Base Case Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Base Case Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)	Wet Condition: Sensitivity Simulation RSS_{SENS} (ft^2)	Wet Condition: Percent Change in RSS From Calibrated Model ΔRSS_{SENS} (1) (%)
12.1	River Conductivity K_H	m/d	33.0048	102.92	-0.01%	91.73	-0.01%	70.33	0.00%
12.2	River Conductivity K_H	m/d	29.01956667	102.92	0.00%	91.73	0.00%	70.33	0.00%
12.3	River Conductivity K_H	m/d	25.03433333	102.92	0.00%	91.73	0.00%	70.33	0.00%
-	River Conductivity K_H	m/d	21.0491	102.93	-	91.73	-	70.33	-
12.4	River Conductivity K_H	m/d	14.05024661	102.94	0.01%	91.74	0.01%	70.33	0.00%
12.5	River Conductivity K_H	m/d	7.051393227	102.95	0.02%	91.75	0.02%	70.32	-0.01%
12.6	River Conductivity K_H	m/d	0.05253984	107.22	4.17%	94.17	2.66%	69.59	-1.05%
13.1	Dry Condition Recharge	mm/yr	481.913355	1133.41	1001.17%	91.73	0.00%	70.33	0.00%
13.2	Dry Condition Recharge	mm/yr	320.8790866	310.80	201.96%	91.73	0.00%	70.33	0.00%
13.3	Dry Condition Recharge	mm/yr	265.0071158	163.93	59.27%	91.73	0.00%	70.33	0.00%
-	Dry Condition Recharge	mm/yr	209.135145	102.93	-	91.73	-	70.33	-
13.4	Dry Condition Recharge	mm/yr	164.9348738	119.30	15.91%	91.73	0.00%	70.33	0.00%
13.5	Dry Condition Recharge	mm/yr	120.7346026	197.81	92.18%	91.73	0.00%	70.33	0.00%
13.6	Dry Condition Recharge	mm/yr	76.53433147	376.54	265.83%	91.73	0.00%	70.33	0.00%
14.1	Base Case Recharge	mm/yr	427.099138	102.93	0.00%	656.94	616.14%	70.33	0.00%
14.2	Base Case Recharge	mm/yr	324.0425659	102.93	0.00%	247.53	169.84%	70.33	0.00%
14.3	Base Case Recharge	mm/yr	271.3340745	102.93	0.00%	131.88	43.77%	70.33	0.00%
-	Base Case Recharge	mm/yr	218.625583	102.93	-	91.73	-	70.33	-
14.4	Base Case Recharge	mm/yr	171.2618325	102.93	0.00%	124.74	35.98%	70.33	0.00%
14.5	Base Case Recharge	mm/yr	123.898082	102.93	0.00%	230.29	151.04%	70.33	0.00%
14.6	Base Case Recharge	mm/yr	76.53433147	102.93	0.00%	453.27	394.12%	70.33	0.00%
15.1	Wet Condition Recharge	mm/yr	376.7510574	102.93	0.00%	91.73	0.00%	284.48	304.52%
15.2	Wet Condition Recharge	mm/yr	334.6138298	102.93	0.00%	91.73	0.00%	169.22	140.62%
15.3	Wet Condition Recharge	mm/yr	292.4766021	102.93	0.00%	91.73	0.00%	96.00	36.50%
-	Wet Condition Recharge	mm/yr	250.3393745	102.93	-	91.73	-	70.33	-
15.4	Wet Condition Recharge	mm/yr	192.4043602	102.93	0.00%	91.73	0.00%	119.29	69.62%
15.5	Wet Condition Recharge	mm/yr	134.4693458	102.93	0.00%	91.73	0.00%	273.92	289.50%
15.6	Wet Condition Recharge	mm/yr	76.53433147	102.93	0.00%	91.73	0.00%	600.87	754.41%

Notes:

ft^2	Square feet
m/d	Metres per day
mm/yr	Millimetres per year
RSS	Residual Sum of Squares
	Results for calibrated model
	The RSS for a given model improves by over 1% relative to the calibrated model

(1) Change in RSS from calibrated model is calculated as RSS_{SENS} minus RSS_{CALIB}. A negative change represents a reduction in the RSS from that of the calibrated model.

Table 7.1

Source Concentrations
Atlantic Gold Corporation
Marinette, Nova Scotia

Facility	Case	Scenario	Sulphate mg/L	Al mg/L	Ag mg/L	As mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L	Hg mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Ni mg/L	Pb mg/L	Sb mg/L	Se mg/L	Tl mg/L	U mg/L	Zn mg/L
Waste Rock Stockpiles	Base Case	EOM	444	0.0295	0.0001	0.0865	274.5186	0.0000	0.0011	0.0005	0.0010	0.0250	0.0000	24.0789	0.1553	0.0223	0.0028	0.0007	0.0031	0.0024	0.0001	0.0281	0.0025
Waste Rock Stockpiles	Upper Case	EOM	701	0.0590	0.0001	0.1310	365.8934	0.0000	0.0016	0.0007	0.0020	0.0500	0.0000	38.2505	0.2206	0.0833	0.0041	0.0014	0.0087	0.0053	0.0001	0.0434	0.0050
Waste Rock Stockpiles	Base Case	PC	977	0.2381	0.0027	0.5482	622.1994	0.0007	0.0042	0.0010	0.1131	0.1225	0.0000	46.4597	0.3966	0.0305	0.0102	0.0017	0.0050	0.0045	0.0004	0.2705	0.1794
Waste Rock Stockpiles	Upper Case	PC	1396	8.8055	0.0028	0.8303	851.7777	0.0018	0.0058	0.0015	0.6866	0.4363	0.0000	81.0540	0.5644	0.1143	0.0152	0.0037	0.0137	0.0101	0.0004	0.4110	0.2048
LGO Stockpile	Base Case	EOM	168	0.0295	0.0001	0.0865	73.0941	0.0000	0.0007	0.0032	0.0010	0.0250	0.0000	9.9419	0.4905	0.0006	0.0077	0.0002	0.0413	0.0107	0.0001	0.0008	0.0025
LGO Stockpile	Upper Case	EOM	260	0.0590	0.0001	0.1310	122.0083	0.0000	0.0015	0.0035	0.0020	0.0500	0.0000	13.6154	0.7949	0.0024	0.0087	0.0002	0.0512	0.0118	0.0001	0.0022	0.0050
LGO Stockpile	Base Case	PC	362	0.2381	0.0016	0.5482	100.4555	0.0040	0.0023	0.0064	0.0175	0.1225	0.0000	7.3591	1.2114	0.0008	0.0257	0.0005	0.0655	0.0205	0.0018	0.0092	0.0823
LGO Stockpile	Upper Case	PC	559	8.8055	0.0018	0.8303	163.2317	0.0043	0.0049	0.0070	0.0443	0.4363	0.0000	21.6628	1.9633	0.0034	0.0291	0.0006	0.0813	0.0225	0.0020	0.0235	0.1340

Note:

mg/L Milligrams per liter

Table 7.2

Predicted Pit Inflow Rates by Hydrostratigraphic Unit
Atlantic Gold Corporation
Marinette, Nova Scotia

Hydrostratigraphic Unit	Model Layer	Layer Thickness (m)	Dry Condition Pit Inflow (m^3/d)	Base Case Condition Pit Inflow (m^3/d)	Wet Condition Pit Inflow (m^3/d)
Overburden	1	Variable	-130	-131	-134
Shallow Bedrock	2	22	-317	-322	-337
Deep Bedrock	3 to 10	160	-185	-184	-204
		Total	**-631**	**-636**	**-676**

Notes:

m Metres
m^3/d Cubic metres per day

Table 7.3

Estimated Pit Infill Rate
Atlantic Gold Corporation
Marinette, Nova Scotia

Top of Stage Elevation (masl)	Pit Lake Area at Stage Elevation (m^2)	Total Pit Volume Below Stage Elevation (m^3)	Volume of Stage (m^3)	Surface Water Runoff Area Above Stage Elevation (m^2)	Groundwater Inflow Rate into Pit (m^3/d)	Direct Precipitation Minus Lake Evaporation (m^3/d)	Surface Water Runoff Into Pit (m^3/d)	Surface Water Ditch Inflow Rate (m^3/d)	Total Infill Rate at Stage Elevation (m^3/d)	Time to Fill Stage (days)
127	250,679	15,922,102	1,687,804	99,321	495	579	314	1,588	2,976	567
120	233,141	14,234,298	2,187,114	116,859	606	538	369	1,588	3,102	705
110	205,312	12,047,184	1,981,502	144,688	621	474	457	1,588	3,141	631
100	189,323	10,065,681	1,756,416	160,677	624	437	508	1,588	3,158	556
90	163,450	8,309,266	1,568,610	186,550	627	377	590	1,588	3,182	493
80	150,309	6,740,655	1,389,077	199,691	629	347	631	1,588	3,196	435
70	127,595	5,351,578	1,213,936	222,405	631	295	703	1,588	3,217	377
60	115,159	4,137,642	1,033,354	234,841	632	266	743	1,588	3,229	320
50	90,705	3,104,288	819,778	259,295	633	209	820	1,588	3,251	252
40	74,025	2,284,510	645,775	275,975	634	171	873	1,588	3,266	198
30	55,930	1,638,735	514,447	294,070	635	129	930	1,588	3,282	157
20	46,784	1,124,288	392,866	303,216	635	108	959	1,588	3,290	119
10	32,266	731,422	282,261	317,734	636	74	1,005	1,588	3,303	85
0	24,826	449,162	202,926	325,174	636	57	1,028	1,588	3,310	61
-10	15,949	246,236	133,603	334,051	636	37	1,056	1,588	3,317	40
-20	10,808	112,633	74,494	339,192	636	25	1,072	1,588	3,322	22
-30	4,632	38,139	38,139	345,368	636	11	1,092	1,588	3,327	11
							Total Pit Infill Time (Days)			**5,031**
							Total Pit Infill Time (Years)			**13.8**

Notes:

masl	Metres above sea level
m^2	Square metres
m^3	Cubic metres
m^3/d	Cubic metres per day

Table 7.4

Simulated Change in Baseflow
Atlantic Gold Corporation
Marinette, Nova Scotia

Calibration Condtion	Simulated Reduction in Baseflow at EOM (m^3/d)	Simulated Reduction in Baseflow at PC (m^3/d)
Base Case	1464	1337
Dry	1414	1287
Wet	1634	1508

Note:

m^3/d Cubic metres per day

Table 7.5a

Simulated Maximum Groundwater Concentration Discharging to Surface Water - EOM
Atlantic Gold Corporation
Marinette, Nova Scotia

Metal	Tier 2 PSS guideline (mg/L)	Max. Observed Background Concentration (mg/L)	Base Case Condition		Dry Condition		Wet Condition	
			Base Case Max. Simulated Concentration (mg/L)	Upper Case Max. Simulated Concentration (mg/L)	Base Case Max. Simulated Concentration (mg/L)	Upper Case Max. Simulated Concentration (mg/L)	Base Case Max. Simulated Concentration (mg/L)	Upper Case Max. Simulated Concentration (mg/L)
Sulphate	-	140	167.03	263.51	171.18	270.06	154.78	244.19
Al	0.05	0.43	0.011	0.022	0.011	0.023	0.010	0.021
Ag	0.001	0.00071	0.000019	0.000038	0.000019	0.000039	0.000017	0.000035
As	0.05	0.23	0.0325	0.0492	0.0333	0.0505	0.0301	0.0456
Ca	-	100	103.18	137.53	105.75	140.94	95.62	127.44
Cd	0.0001	0.00065	0.0000068	0.0000135	0.0000069	0.0000139	0.0000063	0.0000125
Co	0.1	0.0043	0.00043	0.00060	0.00044	0.00062	0.00040	0.00056
Cr	-	0.0062	0.00020	0.00028	0.00020	0.00028	0.00018	0.00026
Cu	0.02	0.01	0.00038	0.00075	0.00039	0.00077	0.00035	0.00070
Fe	3	5.1	0.00940	0.01879	0.00963	0.01926	0.00871	0.01742
Hg	0.00026	0.0013	0.0000024	0.0000049	0.0000025	0.0000050	0.0000023	0.0000045
Mg	-	8.6	9.05	14.38	9.28	14.73	8.39	13.32
Mn	8.2	1.3	0.0583601	0.0829071	0.0598096	0.0849663	0.0540800	0.0768267
Mo	0.73	0.019	0.0083743	0.0313211	0.0085823	0.0320991	0.0077601	0.0290240
Ni	0.25	0.011	0.0010411	0.0015408	0.0010670	0.0015791	0.0009647	0.0014278
Pb	0.01	0.0005*	0.0002445	0.0005396	0.0002505	0.0005531	0.0002265	0.0005001
Sb	0.2	0.0016	0.0011610	0.0032595	0.0011898	0.0033404	0.0010758	0.0030204
Se	0.01	0.001*	0.0008851	0.0019872	0.0009071	0.0020366	0.0008202	0.0018415
Tl	0.008	0.0001*	0.0000188	0.0000376	0.0000193	0.0000385	0.0000174	0.0000348
U	3	0.0087	0.0105573	0.0163239	0.0108195	0.0167294	0.0097830	0.0151267
Zn	0.3	0.091	0.0009397	0.0018793	0.0009630	0.0019260	0.0008708	0.0017415

Note:

mg/L Milligrams per liter
* Non-detect value where constituent was below the detection limit
0.0505 Exceeds Tier 2 PSS, but below max observed background concentration

Table 7.5b

Simulated Maximum Groundwater Concentration Discharging to Surface Water - PC
Atlantic Gold Corporation
Marinette, Nova Scotia

Metal	Tier 2 PSS guideline (mg/L)	Max. Observed Background Concentration (mg/L)	Base Case Condition		Dry Condition		Wet Condition	
			Base Case Max. Simulated Concentration (mg/L)	Upper Case Max. Simulated Concentration (mg/L)	Base Case Max. Simulated Concentration (mg/L)	Upper Case Max. Simulated Concentration (mg/L)	Base Case Max. Simulated Concentration (mg/L)	Upper Case Max. Simulated Concentration (mg/L)
Sulphate	-	140	367.42	524.89	376.53	537.91	340.39	486.27
Al	0.05	0.43	0.090	3.311	0.092	3.393	0.083	3.068
Ag	0.001	0.00071	0.001008	0.001042	0.001033	0.001068	0.000934	0.000966
As	0.05	0.23	0.2062	0.3122	0.2113	0.3200	0.1910	0.2893
Ca	-	100	233.97	320.30	239.77	328.24	216.76	296.74
Cd	0.0001	0.00065	0.0002584	0.0006853	0.0002648	0.0007023	0.0002394	0.0006349
Co	0.1	0.0043	0.00158	0.00218	0.00162	0.00223	0.00146	0.00202
Cr	-	0.0062	0.00039	0.00061	0.00040	0.00058	0.00037	0.00062
Cu	0.02	0.01	0.04254	0.25821	0.04359	0.26461	0.03941	0.23921
Fe	3	5.1	0.04606	0.16407	0.04720	0.16814	0.04267	0.15200
Hg	0.00026	0.0013	0.0000024	0.0000048	0.0000024	0.0000049	0.0000022	0.0000044
Mg	-	8.6	17.47	30.48	17.90	31.24	16.19	28.24
Mn	8.2	1.3	0.1491492	0.2122197	0.1528473	0.2174817	0.1381750	0.1966049
Mo	0.73	0.019	0.0114822	0.0429694	0.0117669	0.0440349	0.0106373	0.0398078
Ni	0.25	0.011	0.0038526	0.0057086	0.0039481	0.0058502	0.0035691	0.0052886
Pb	0.01	0.0005*	0.0006329	0.0013853	0.0006485	0.0014197	0.0005863	0.0012834
Sb	0.2	0.0016	0.0018695	0.0070138	0.0019158	0.0067649	0.0017319	0.0071851
Se	0.01	0.001*	0.0016861	0.0037904	0.0017279	0.0038844	0.0015621	0.0035115
Tl	0.008	0.0001*	0.0001377	0.0001707	0.0001411	0.0001700	0.0001275	0.0001749
U	3	0.0087	0.1017224	0.1545544	0.1042446	0.1583866	0.0942378	0.1431825
Zn	0.3	0.091	0.0674429	0.0770155	0.0691151	0.0789251	0.0624806	0.0713489

Note:

mg/L	Milligrams per liter
*	Non-detect value where constituent was below the detection limit
0.090	Exceeds Tier 2 PSS, but below max observed background concentration
3.311	Exceeds Tier 2 PSS and max observed background concentration

Table 7.6

Sensitivity Analysis of Simulated Pit Inflow Rate Relative to Calibrated Wet Condition
Atlantic Gold Corporation
Marinette, Nova Scotia

Sensitivity Analysis Scenario Under Wet Conditions	Pit Inflow (m^3/d)	Percent Increase in Pit Inflow	Increase in RSS[1]	Description of Sensitivity Analysis Scenario
Pit Conductance	-686	2%	N/A[2]	Pit conductance increased from 1000 to 2000
MLF-1	-695	3%	10%	Hydraulic conductivity of Mud Lake Fault increased by an order of magnitude
MLF-2	-824	22%	27%	Hydraulic conductivity of Mud Lake Fault increased by two orders of magnitude
CFF-2	-677	0%	19%	Hydraulic conductivity of Cameron Flowage Fault increased by two orders of magnitude
Deep Argillite	-686	2%	0%	Hydraulic conductivity of deep argillite unit increased by an order of magnitude
Deep Greywacke	-854	26%	15%	Hydraulic conductivity of deep greywacke unit increased by an order of magnitude
Shallow Argillite	-713	5%	9%	Hydraulic conductivity of shallow argillite unit increased by an order of magnitude
Shallow Greywacke[3]	-1628	141%	3706%	Hydraulic conductivity of shallow greywacke unit increased by an order of magnitude

Notes:

m^3/d Cubic metres per day
(1) Percent increase in Residual Sum of Square Errors (RSS) relative to the calibrated wet condition model.
(2) The wet calibrated model targets correspond to pre-development conditions, therefore it is not applicable to compare a post-development condition with pre-development calibration targets.
(3) Calibration statistics deteriorate significantly indicating that increasing the conductivity of the weathered fractured greywacke unit by an order of magnitude is not supported by observed groundwater elevation.

Table 7.7a

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Sulphate
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	5.12E+00	3.83E-09	1.31E+02	3.77E+02	1.99E+02	1.09E+02	5.98E+01	4.72E+01	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	5.13E+00	5.15E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.94E+01	4.52E+01	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	5.07E+00	1.16E-08	1.17E+02	3.40E+02	1.94E+02	1.10E+02	5.83E+01	4.22E+01	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	5.13E+00	2.05E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	5.13E+00	2.79E-10	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	5.13E+00	5.29E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	5.13E+00	4.97E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	5.19E+00	6.61E-09	1.28E+02	3.67E+02	1.98E+02	1.09E+02	5.94E+01	4.55E+01	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	5.25E+00	7.45E-09	1.28E+02	3.67E+02	1.98E+02	1.09E+02	5.94E+01	4.57E+01	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	5.31E+00	8.02E-09	1.28E+02	3.67E+02	1.99E+02	1.09E+02	5.95E+01	4.57E+01	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	5.13E+00	5.14E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.94E+01	4.52E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	5.13E+00	4.94E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	5.13E+00	5.43E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	5.13E+00	5.43E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.52E+01	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	5.13E+00	5.42E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.93E+01	4.42E+01	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	5.01E+00	6.00E-09	1.38E+02	3.62E+02	2.15E+02	1.09E+02	5.80E+01	8.40E+01	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	5.13E+00	5.17E-09	1.27E+02	3.67E+02	1.98E+02	1.09E+02	5.94E+01	4.52E+01	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	7.31E+00	4.66E+01	1.87E+02	5.38E+02	2.84E+02	1.55E+02	8.55E+01	6.74E+01	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	7.33E+00	4.83E+01	1.82E+02	5.25E+02	2.83E+02	1.56E+02	8.48E+01	6.46E+01	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	7.24E+00	4.94E+01	1.67E+02	4.86E+02	2.77E+02	1.57E+02	8.33E+01	6.04E+01	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	7.33E+00	2.49E+01	1.82E+02	5.24E+02	2.83E+02	1.56E+02	8.47E+01	6.46E+01	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	7.33E+00	3.06E+00	1.82E+02	5.24E+02	2.83E+02	1.56E+02	8.47E+01	6.46E+01	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	7.33E+00	4.73E+01	1.82E+02	5.24E+02	2.82E+02	1.56E+02	8.47E+01	6.46E+01	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	7.33E+00	4.45E+01	1.82E+02	5.24E+02	2.83E+02	1.56E+02	8.47E+01	6.46E+01	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	7.41E+00	4.87E+01	1.83E+02	5.24E+02	2.83E+02	1.56E+02	8.48E+01	6.49E+01	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	7.49E+00	4.90E+01	1.83E+02	5.24E+02	2.83E+02	1.56E+02	8.49E+01	6.52E+01	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	7.58E+00	4.98E+01	1.82E+02	5.25E+02	2.84E+02	1.56E+02	8.50E+01	6.53E+01	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	7.33E+00	4.82E+01	1.82E+02	5.25E+02	2.83E+02	1.56E+02	8.48E+01	6.46E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	7.33E+00	4.45E+01	1.82E+02	5.24E+02	2.83E+02	1.56E+02	8.47E+01	6.46E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	7.33E+00	4.85E+01	1.82E+02	5.24E+02	2.82E+02	1.56E+02	8.47E+01	6.46E+01	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	7.33E+00	4.84E+01	1.82E+02	5.24E+02	2.82E+02	1.56E+02	8.47E+01	6.46E+01	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	7.33E+00	4.83E+01	1.82E+02	5.24E+02	2.83E+02	1.56E+02	8.47E+01	6.31E+01	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	7.16E+00	5.49E+01	1.97E+02	5.17E+02	3.08E+02	1.56E+02	8.29E+01	1.20E+02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	7.33E+00	4.83E+01	1.82E+02	5.25E+02	2.83E+02	1.56E+02	8.48E+01	6.46E+01	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-89.54%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

- No applicable CCME FWAL or NS EQS Tier 2 PSS, therefore pit lake concentrations were not developed

Table 7.7b

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Al
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	Reach 2 Base Case (mg/L)	Reach 3 Base Case (mg/L)	Reach 4 Base Case (mg/L)	Reach 5 Base Case (mg/L)	Reach 6 Base Case (mg/L)	Reach 7 Base Case (mg/L)	Reach 8 Base Case (mg/L)	Description
Calibrated Models									
Dry Condition	1.25E-03	9.34E-13	3.19E-02	9.17E-02	4.84E-02	2.65E-02	1.46E-02	1.15E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.25E-03	1.25E-12	3.11E-02	8.95E-02	4.82E-02	2.66E-02	1.45E-02	1.10E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.23E-03	2.83E-12	2.85E-02	8.29E-02	4.73E-02	2.68E-02	1.42E-02	1.03E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.25E-03	5.01E-13	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.25E-03	6.81E-14	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.25E-03	1.29E-12	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.25E-03	1.21E-12	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.26E-03	1.61E-12	3.11E-02	8.94E-02	4.82E-02	2.66E-02	1.45E-02	1.11E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.28E-03	1.81E-12	3.12E-02	8.94E-02	4.83E-02	2.66E-02	1.45E-02	1.11E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.29E-03	1.95E-12	3.11E-02	8.95E-02	4.84E-02	2.66E-02	1.45E-02	1.11E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.25E-03	7.72E-03	3.11E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Full pit lake level set to 128 masl
Pit_129	1.25E-03	1.16E-02	3.12E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Full pit lake level set to 129 masl
CFF_K_1S	1.25E-03	1.25E-12	3.11E-02	8.95E-02	4.82E-02	2.66E-02	1.45E-02	1.10E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.25E-03	1.20E-12	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.25E-03	1.32E-12	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.25E-03	1.32E-12	3.10E-02	8.94E-02	4.82E-02	2.65E-02	1.44E-02	1.10E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.25E-03	1.32E-12	3.10E-02	8.94E-02	4.82E-02	2.66E-02	1.44E-02	1.08E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.22E-03	1.46E-12	3.35E-02	8.82E-02	5.25E-02	2.67E-02	1.41E-02	2.05E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.25E-03	1.26E-12	3.11E-02	8.95E-02	4.82E-02	2.66E-02	1.45E-02	1.10E-02	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	4.61E-02	7.33E-01	1.18E+00	3.39E+00	1.79E+00	9.80E-01	5.39E-01	4.25E-01	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	4.63E-02	7.60E-01	1.15E+00	3.31E+00	1.78E+00	9.83E-01	5.35E-01	4.08E-01	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	4.57E-02	7.78E-01	1.05E+00	3.07E+00	1.75E+00	9.93E-01	5.25E-01	3.81E-01	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	4.63E-02	3.93E-01	1.15E+00	3.31E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	4.63E-02	4.82E-02	1.15E+00	3.31E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	4.63E-02	7.45E-01	1.15E+00	3.30E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	4.63E-02	7.01E-01	1.15E+00	3.30E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	4.68E-02	7.67E-01	1.15E+00	3.31E+00	1.78E+00	9.83E-01	5.35E-01	4.10E-01	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	4.73E-02	7.72E-01	1.15E+00	3.31E+00	1.79E+00	9.84E-01	5.36E-01	4.12E-01	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	4.78E-02	7.83E-01	1.15E+00	3.31E+00	1.79E+00	9.84E-01	5.36E-01	4.12E-01	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	4.63E-02	8.00E-01	1.15E+00	3.31E+00	1.78E+00	9.81E-01	5.34E-01	4.08E-01	Full pit lake level set to 128 masl
Pit_129	4.63E-02	9.71E-01	1.16E+00	3.31E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Full pit lake level set to 129 masl
CFF_K_1S	4.63E-02	7.59E-01	1.15E+00	3.31E+00	1.78E+00	9.83E-01	5.35E-01	4.08E-01	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	4.63E-02	7.00E-01	1.15E+00	3.31E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	4.63E-02	7.63E-01	1.15E+00	3.30E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	4.63E-02	7.61E-01	1.15E+00	3.30E+00	1.78E+00	9.82E-01	5.34E-01	4.08E-01	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	4.63E-02	7.60E-01	1.15E+00	3.31E+00	1.78E+00	9.84E-01	5.34E-01	3.98E-01	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	4.52E-02	8.64E-01	1.24E+00	3.26E+00	1.94E+00	9.86E-01	5.23E-01	7.57E-01	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	4.63E-02	7.60E-01	1.15E+00	3.31E+00	1.78E+00	9.83E-01	5.35E-01	4.08E-01	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-70.69%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

9.17E-02 Exceeds Tier 2 PSS, but below maximum observed background concentration
7.33E-01 Exceeds Tier 2 PSS and maximum observed background concentration

Table 7.7c

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Ag
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	1.40E-05	1.05E-14	3.59E-04	1.03E-03	5.45E-04	2.98E-04	1.64E-04	1.29E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.41E-05	1.41E-14	3.50E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.24E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.39E-05	3.18E-14	3.21E-04	9.34E-04	5.32E-04	3.02E-04	1.60E-04	1.16E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.41E-05	5.64E-15	3.50E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.24E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.41E-05	7.66E-16	3.50E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.24E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.41E-05	1.45E-14	3.50E-04	1.01E-03	5.42E-04	2.99E-04	1.63E-04	1.24E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.41E-05	1.36E-14	3.50E-04	1.01E-03	5.42E-04	2.99E-04	1.63E-04	1.24E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.42E-05	1.81E-14	3.51E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.25E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.44E-05	2.04E-14	3.51E-04	1.01E-03	5.44E-04	2.99E-04	1.63E-04	1.25E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.46E-05	2.20E-14	3.50E-04	1.01E-03	5.45E-04	3.00E-04	1.63E-04	1.25E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.41E-05	3.15E-04	3.50E-04	1.01E-03	5.42E-04	2.99E-04	1.63E-04	1.24E-04	Full pit lake level set to 128 masl
Pit_129	1.41E-05	4.75E-04	3.52E-04	1.01E-03	5.42E-04	2.99E-04	1.63E-04	1.24E-04	Full pit lake level set to 129 masl
CFF_K_1S	1.41E-05	1.41E-14	3.50E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.24E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.41E-05	1.36E-14	3.50E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.24E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.41E-05	1.49E-14	3.50E-04	1.01E-03	5.42E-04	2.99E-04	1.63E-04	1.24E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.41E-05	1.49E-14	3.50E-04	1.01E-03	5.42E-04	2.99E-04	1.63E-04	1.24E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.41E-05	1.49E-14	3.49E-04	1.01E-03	5.43E-04	3.00E-04	1.63E-04	1.21E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.38E-05	1.65E-14	3.78E-04	9.93E-04	5.91E-04	3.00E-04	1.59E-04	2.30E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.41E-05	1.42E-14	3.50E-04	1.01E-03	5.43E-04	2.99E-04	1.63E-04	1.24E-04	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	1.45E-05	1.50E-04	3.72E-04	1.07E-03	5.63E-04	3.09E-04	1.70E-04	1.34E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.46E-05	1.56E-04	3.62E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.44E-05	1.60E-04	3.32E-04	9.66E-04	5.50E-04	3.13E-04	1.65E-04	1.20E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.46E-05	8.05E-05	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.46E-05	9.89E-06	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.46E-05	1.53E-04	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.46E-05	1.44E-04	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.47E-05	1.57E-04	3.63E-04	1.04E-03	5.62E-04	3.09E-04	1.68E-04	1.29E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.49E-05	1.58E-04	3.63E-04	1.04E-03	5.63E-04	3.10E-04	1.69E-04	1.30E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.51E-05	1.61E-04	3.62E-04	1.04E-03	5.63E-04	3.10E-04	1.69E-04	1.30E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.46E-05	5.98E-04	3.62E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Full pit lake level set to 128 masl
Pit_129	1.46E-05	9.01E-04	3.64E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Full pit lake level set to 129 masl
CFF_K_1S	1.46E-05	1.56E-04	3.62E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.46E-05	1.43E-04	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.46E-05	1.56E-04	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.46E-05	1.56E-04	3.61E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.46E-05	1.56E-04	3.61E-04	1.04E-03	5.61E-04	3.10E-04	1.68E-04	1.25E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.42E-05	1.77E-04	3.91E-04	1.03E-03	6.11E-04	3.10E-04	1.65E-04	2.38E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.46E-05	1.56E-04	3.62E-04	1.04E-03	5.61E-04	3.09E-04	1.68E-04	1.28E-04	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-13.57%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

1.03E-03 Exceeds Tier 2 PSS and maximum observed background concentration

Table 7.7d

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - As
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	2.87E-03	2.15E-12	7.35E-02	2.11E-01	1.11E-01	6.10E-02	3.36E-02	2.65E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.88E-03	2.89E-12	7.15E-02	2.06E-01	1.11E-01	6.12E-02	3.33E-02	2.54E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.84E-03	6.51E-12	6.56E-02	1.91E-01	1.09E-01	6.18E-02	3.27E-02	2.37E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.88E-03	1.15E-12	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.88E-03	1.57E-13	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.88E-03	2.97E-12	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.88E-03	2.79E-12	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.91E-03	3.71E-12	7.17E-02	2.06E-01	1.11E-01	6.12E-02	3.33E-02	2.55E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.94E-03	4.18E-12	7.18E-02	2.06E-01	1.11E-01	6.13E-02	3.34E-02	2.56E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.98E-03	4.50E-12	7.16E-02	2.06E-01	1.11E-01	6.13E-02	3.34E-02	2.57E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.88E-03	6.64E-02	7.17E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Full pit lake level set to 128 masl
Pit_129	2.88E-03	1.00E-01	7.19E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Full pit lake level set to 129 masl
CFF_K_1S	2.88E-03	2.88E-12	7.15E-02	2.06E-01	1.11E-01	6.12E-02	3.33E-02	2.54E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.88E-03	2.77E-12	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.88E-03	3.05E-12	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.88E-03	3.04E-12	7.15E-02	2.06E-01	1.11E-01	6.11E-02	3.33E-02	2.54E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.88E-03	3.04E-12	7.13E-02	2.06E-01	1.11E-01	6.13E-02	3.33E-02	2.48E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.81E-03	3.37E-12	7.73E-02	2.03E-01	1.21E-01	6.14E-02	3.26E-02	4.71E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.88E-03	2.90E-12	7.15E-02	2.06E-01	1.11E-01	6.12E-02	3.33E-02	2.54E-02	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	4.35E-03	6.91E-02	1.11E-01	3.20E-01	1.69E-01	9.24E-02	5.09E-02	4.01E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	4.36E-03	7.16E-02	1.08E-01	3.12E-01	1.68E-01	9.27E-02	5.04E-02	3.84E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	4.31E-03	7.34E-02	9.93E-02	2.89E-01	1.65E-01	9.36E-02	4.95E-02	3.59E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	4.36E-03	3.70E-02	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	4.36E-03	4.55E-03	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	4.36E-03	7.03E-02	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	4.36E-03	6.61E-02	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	4.41E-03	7.23E-02	1.09E-01	3.12E-01	1.68E-01	9.27E-02	5.04E-02	3.86E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	4.46E-03	7.28E-02	1.09E-01	3.12E-01	1.69E-01	9.28E-02	5.05E-02	3.88E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	4.51E-03	7.39E-02	1.09E-01	3.12E-01	1.69E-01	9.28E-02	5.05E-02	3.89E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	4.36E-03	1.20E-01	1.09E-01	3.12E-01	1.68E-01	9.25E-02	5.04E-02	3.84E-02	Full pit lake level set to 128 masl
Pit_129	4.36E-03	1.81E-01	1.09E-01	3.12E-01	1.68E-01	9.25E-02	5.04E-02	3.84E-02	Full pit lake level set to 129 masl
CFF_K_1S	4.36E-03	7.15E-02	1.08E-01	3.12E-01	1.68E-01	9.27E-02	5.04E-02	3.84E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	4.36E-03	6.60E-02	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	4.36E-03	7.19E-02	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	4.36E-03	7.18E-02	1.08E-01	3.12E-01	1.68E-01	9.26E-02	5.04E-02	3.84E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	4.36E-03	7.17E-02	1.08E-01	3.12E-01	1.68E-01	9.28E-02	5.04E-02	3.75E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	4.26E-03	8.15E-02	1.17E-01	3.08E-01	1.83E-01	9.30E-02	4.93E-02	7.14E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	4.36E-03	7.17E-02	1.08E-01	3.12E-01	1.68E-01	9.27E-02	5.04E-02	3.84E-02	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-42.06%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

7.35E-02	Exceeds Tier 2 PSS, but below maximum observed background concentration
3.20E-01	Exceeds Tier 2 PSS and maximum observed background concentration

Table 7.7e

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Ca
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	3.26E+00	2.44E-09	8.34E+01	2.40E+02	1.26E+02	6.93E+01	3.81E+01	3.00E+01	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	3.27E+00	3.28E-09	8.12E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	3.23E+00	7.39E-09	7.44E+01	2.17E+02	1.24E+02	7.02E+01	3.71E+01	2.69E+01	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	3.27E+00	1.31E-09	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	3.27E+00	1.78E-10	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	3.27E+00	3.37E-09	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	3.27E+00	3.16E-09	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	3.30E+00	4.21E-09	8.14E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.89E+01	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	3.34E+00	4.74E-09	8.15E+01	2.34E+02	1.26E+02	6.95E+01	3.79E+01	2.91E+01	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	3.38E+00	5.11E-09	8.13E+01	2.34E+02	1.26E+02	6.95E+01	3.79E+01	2.91E+01	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	3.27E+00	3.27E-09	8.12E+01	2.34E+02	1.26E+02	6.95E+01	3.78E+01	2.88E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	3.27E+00	3.15E-09	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	3.27E+00	3.46E-09	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.77E+01	2.88E+01	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	3.27E+00	3.45E-09	8.11E+01	2.34E+02	1.26E+02	6.94E+01	3.77E+01	2.88E+01	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	3.27E+00	3.45E-09	8.10E+01	2.34E+02	1.26E+02	6.95E+01	3.77E+01	2.81E+01	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	3.19E+00	3.82E-09	8.77E+01	2.30E+02	1.37E+02	6.97E+01	3.70E+01	5.35E+01	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	3.27E+00	3.29E-09	8.12E+01	2.34E+02	1.26E+02	6.94E+01	3.78E+01	2.88E+01	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	4.46E+00	1.36E+01	1.14E+02	3.28E+02	1.73E+02	9.48E+01	5.22E+01	4.11E+01	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	4.47E+00	1.41E+01	1.11E+02	3.20E+02	1.72E+02	9.51E+01	5.18E+01	3.94E+01	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	4.42E+00	1.44E+01	1.02E+02	2.97E+02	1.69E+02	9.61E+01	5.08E+01	3.68E+01	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	4.47E+00	7.28E+00	1.11E+02	3.20E+02	1.72E+02	9.50E+01	5.17E+01	3.94E+01	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	4.47E+00	8.94E-01	1.11E+02	3.20E+02	1.72E+02	9.50E+01	5.17E+01	3.94E+01	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	4.47E+00	1.38E+01	1.11E+02	3.20E+02	1.72E+02	9.50E+01	5.17E+01	3.94E+01	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	4.47E+00	1.30E+01	1.11E+02	3.20E+02	1.72E+02	9.50E+01	5.17E+01	3.94E+01	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	4.52E+00	1.42E+01	1.11E+02	3.20E+02	1.73E+02	9.51E+01	5.17E+01	3.96E+01	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	4.57E+00	1.43E+01	1.12E+02	3.20E+02	1.73E+02	9.52E+01	5.18E+01	3.98E+01	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	4.63E+00	1.45E+01	1.11E+02	3.20E+02	1.73E+02	9.52E+01	5.19E+01	3.99E+01	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	4.47E+00	1.41E+01	1.11E+02	3.20E+02	1.72E+02	9.51E+01	5.18E+01	3.94E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	4.47E+00	1.30E+01	1.11E+02	3.20E+02	1.72E+02	9.50E+01	5.17E+01	3.94E+01	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	4.47E+00	1.41E+01	1.11E+02	3.20E+02	1.72E+02	9.49E+01	5.17E+01	3.94E+01	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	4.47E+00	1.41E+01	1.11E+02	3.20E+02	1.72E+02	9.49E+01	5.17E+01	3.94E+01	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	4.47E+00	1.41E+01	1.11E+02	3.20E+02	1.72E+02	9.52E+01	5.17E+01	3.85E+01	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	4.37E+00	1.60E+01	1.20E+02	3.15E+02	1.88E+02	9.54E+01	5.06E+01	7.32E+01	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	4.47E+00	1.41E+01	1.11E+02	3.20E+02	1.72E+02	9.51E+01	5.18E+01	3.94E+01	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-95.00%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

- No applicable CCME FWAL or NS EQS Tier 2 PSS, therefore pit lake concentrations were not developed

Table 7.7f

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Cd
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	3.60E-06	2.70E-15	9.21E-05	2.65E-04	1.40E-04	7.65E-05	4.21E-05	3.32E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	3.61E-06	3.62E-15	8.97E-05	2.58E-04	1.39E-04	7.67E-05	4.17E-05	3.18E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	3.56E-06	8.16E-15	8.22E-05	2.39E-04	1.36E-04	7.75E-05	4.10E-05	2.97E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	3.61E-06	1.44E-15	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	3.61E-06	1.96E-16	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	3.61E-06	3.72E-15	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	3.61E-06	3.49E-15	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	3.65E-06	4.65E-15	8.99E-05	2.58E-04	1.39E-04	7.67E-05	4.17E-05	3.20E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	3.69E-06	5.24E-15	9.00E-05	2.58E-04	1.39E-04	7.68E-05	4.18E-05	3.21E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	3.73E-06	5.64E-15	8.98E-05	2.58E-04	1.40E-04	7.68E-05	4.18E-05	3.22E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	3.61E-06	8.37E-05	8.98E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Full pit lake level set to 128 masl
Pit_129	3.61E-06	1.26E-04	9.01E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Full pit lake level set to 129 masl
CFF_K_1S	3.61E-06	3.62E-15	8.97E-05	2.58E-04	1.39E-04	7.67E-05	4.18E-05	3.18E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	3.61E-06	3.48E-15	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	3.61E-06	3.82E-15	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	3.61E-06	3.82E-15	8.96E-05	2.58E-04	1.39E-04	7.66E-05	4.17E-05	3.18E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	3.61E-06	3.81E-15	8.94E-05	2.58E-04	1.39E-04	7.68E-05	4.17E-05	3.11E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	3.53E-06	4.22E-15	9.68E-05	2.54E-04	1.52E-04	7.69E-05	4.08E-05	5.91E-05	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	3.61E-06	3.64E-15	8.96E-05	2.58E-04	1.39E-04	7.67E-05	4.17E-05	3.18E-05	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	9.54E-06	3.62E-04	2.44E-04	7.02E-04	3.70E-04	2.03E-04	1.12E-04	8.80E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	9.57E-06	3.75E-04	2.38E-04	6.85E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	9.45E-06	3.84E-04	2.18E-04	6.35E-04	3.62E-04	2.06E-04	1.09E-04	7.88E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	9.57E-06	1.94E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	9.57E-06	2.38E-05	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	9.57E-06	3.68E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	9.57E-06	3.46E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	9.68E-06	3.79E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.48E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	9.79E-06	3.81E-04	2.39E-04	6.85E-04	3.70E-04	2.04E-04	1.11E-04	8.52E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	9.90E-06	3.87E-04	2.38E-04	6.85E-04	3.70E-04	2.04E-04	1.11E-04	8.53E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	9.57E-06	3.95E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Full pit lake level set to 128 masl
Pit_129	9.57E-06	4.85E-04	2.39E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Full pit lake level set to 129 masl
CFF_K_1S	9.57E-06	3.75E-04	2.38E-04	6.85E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	9.57E-06	3.46E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	9.57E-06	3.77E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	9.57E-06	3.76E-04	2.38E-04	6.84E-04	3.69E-04	2.03E-04	1.11E-04	8.43E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	9.57E-06	3.76E-04	2.37E-04	6.84E-04	3.69E-04	2.04E-04	1.11E-04	8.24E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	9.35E-06	4.27E-04	2.57E-04	6.75E-04	4.02E-04	2.04E-04	1.08E-04	1.57E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	9.57E-06	3.76E-04	2.38E-04	6.85E-04	3.69E-04	2.03E-04	1.11E-04	8.44E-05	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-29.28%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

2.65E-04	Exceeds Tier 2 PSS, but below maximum observed background concentration
7.02E-04	Exceeds Tier 2 PSS and maximum observed background concentration

Table 7.7g

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Co
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	2.20E-05	1.65E-14	5.62E-04	1.62E-03	8.53E-04	4.67E-04	2.57E-04	2.02E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.20E-05	2.21E-14	5.47E-04	1.58E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.18E-05	4.98E-14	5.02E-04	1.46E-03	8.33E-04	4.73E-04	2.50E-04	1.81E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.20E-05	8.82E-15	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.20E-05	1.20E-15	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.20E-05	2.27E-14	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.20E-05	2.13E-14	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.23E-05	2.84E-14	5.49E-04	1.58E-03	8.50E-04	4.68E-04	2.55E-04	1.95E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.25E-05	3.20E-14	5.50E-04	1.58E-03	8.52E-04	4.69E-04	2.55E-04	1.96E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.28E-05	3.44E-14	5.48E-04	1.58E-03	8.53E-04	4.69E-04	2.55E-04	1.96E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.20E-05	5.81E-04	5.49E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Full pit lake level set to 128 masl
Pit_129	2.20E-05	8.76E-04	5.50E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Full pit lake level set to 129 masl
CFF_K_1S	2.20E-05	2.21E-14	5.47E-04	1.58E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.20E-05	2.12E-14	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.20E-05	2.33E-14	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.20E-05	2.33E-14	5.47E-04	1.57E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.20E-05	2.33E-14	5.46E-04	1.57E-03	8.49E-04	4.69E-04	2.54E-04	1.90E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.15E-05	2.58E-14	5.91E-04	1.55E-03	9.25E-04	4.70E-04	2.49E-04	3.61E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.20E-05	2.22E-14	5.47E-04	1.58E-03	8.49E-04	4.68E-04	2.55E-04	1.94E-04	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	3.03E-05	4.04E-04	7.76E-04	2.23E-03	1.18E-03	6.45E-04	3.55E-04	2.79E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	3.04E-05	4.19E-04	7.55E-04	2.18E-03	1.17E-03	6.46E-04	3.52E-04	2.68E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	3.00E-05	4.29E-04	6.92E-04	2.02E-03	1.15E-03	6.53E-04	3.45E-04	2.50E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	3.04E-05	2.16E-04	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	3.04E-05	2.66E-05	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	3.04E-05	4.10E-04	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	3.04E-05	3.86E-04	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	3.07E-05	4.23E-04	7.57E-04	2.17E-03	1.17E-03	6.46E-04	3.52E-04	2.69E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	3.11E-05	4.25E-04	7.59E-04	2.18E-03	1.18E-03	6.47E-04	3.52E-04	2.71E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	3.14E-05	4.32E-04	7.57E-04	2.18E-03	1.18E-03	6.47E-04	3.52E-04	2.71E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	3.04E-05	1.10E-03	7.57E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Full pit lake level set to 128 masl
Pit_129	3.04E-05	1.66E-03	7.59E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Full pit lake level set to 129 masl
CFF_K_1S	3.04E-05	4.18E-04	7.55E-04	2.18E-03	1.17E-03	6.46E-04	3.52E-04	2.68E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	3.04E-05	3.86E-04	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	3.04E-05	4.20E-04	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	3.04E-05	4.19E-04	7.55E-04	2.17E-03	1.17E-03	6.45E-04	3.51E-04	2.68E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	3.04E-05	4.19E-04	7.53E-04	2.17E-03	1.17E-03	6.47E-04	3.51E-04	2.62E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.97E-05	4.76E-04	8.16E-04	2.14E-03	1.28E-03	6.48E-04	3.44E-04	4.98E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	3.04E-05	4.19E-04	7.55E-04	2.18E-03	1.17E-03	6.46E-04	3.52E-04	2.68E-04	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-23.80%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7h

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Cr
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	5.49E-06	4.11E-15	1.40E-04	4.04E-04	2.13E-04	1.17E-04	6.42E-05	5.06E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	5.51E-06	5.52E-15	1.37E-04	3.94E-04	2.12E-04	1.17E-04	6.37E-05	4.85E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	5.44E-06	1.24E-14	1.25E-04	3.65E-04	2.08E-04	1.18E-04	6.25E-05	4.53E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	5.51E-06	2.20E-15	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	5.51E-06	3.00E-16	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	5.51E-06	5.67E-15	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	5.51E-06	5.33E-15	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	5.56E-06	7.09E-15	1.37E-04	3.94E-04	2.12E-04	1.17E-04	6.37E-05	4.88E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	5.63E-06	7.99E-15	1.37E-04	3.94E-04	2.13E-04	1.17E-04	6.38E-05	4.90E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	5.69E-06	8.60E-15	1.37E-04	3.94E-04	2.13E-04	1.17E-04	6.38E-05	4.90E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	5.51E-06	5.51E-15	1.37E-04	3.94E-04	2.12E-04	1.17E-04	6.37E-05	4.85E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	5.51E-06	5.30E-15	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	5.51E-06	5.83E-15	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	5.51E-06	5.82E-15	1.37E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.85E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	5.50E-06	5.82E-15	1.36E-04	3.93E-04	2.12E-04	1.17E-04	6.36E-05	4.74E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	5.38E-06	6.43E-15	1.48E-04	3.88E-04	2.31E-04	1.17E-04	6.23E-05	9.01E-05	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	5.51E-06	5.55E-15	1.37E-04	3.94E-04	2.12E-04	1.17E-04	6.37E-05	4.85E-05	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	7.66E-06	5.84E-04	1.96E-04	5.64E-04	2.98E-04	1.63E-04	8.97E-05	7.07E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	7.69E-06	6.05E-04	1.91E-04	5.51E-04	2.96E-04	1.63E-04	8.90E-05	6.78E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	7.59E-06	6.20E-04	1.75E-04	5.10E-04	2.91E-04	1.65E-04	8.73E-05	6.33E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	7.69E-06	3.13E-04	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	7.69E-06	3.84E-05	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	7.69E-06	5.94E-04	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	7.69E-06	5.58E-04	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	7.77E-06	6.11E-04	1.92E-04	5.50E-04	2.97E-04	1.63E-04	8.89E-05	6.81E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	7.86E-06	6.15E-04	1.92E-04	5.50E-04	2.97E-04	1.64E-04	8.91E-05	6.84E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	7.95E-06	6.24E-04	1.91E-04	5.50E-04	2.98E-04	1.64E-04	8.91E-05	6.85E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	7.69E-06	6.05E-04	1.91E-04	5.51E-04	2.96E-04	1.63E-04	8.90E-05	6.78E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	7.69E-06	5.58E-04	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	7.69E-06	6.08E-04	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	7.69E-06	6.07E-04	1.91E-04	5.49E-04	2.96E-04	1.63E-04	8.88E-05	6.78E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	7.69E-06	6.06E-04	1.90E-04	5.50E-04	2.96E-04	1.64E-04	8.88E-05	6.62E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	7.51E-06	6.89E-04	2.06E-04	5.42E-04	3.23E-04	1.64E-04	8.70E-05	1.26E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	7.69E-06	6.06E-04	1.91E-04	5.51E-04	2.96E-04	1.63E-04	8.90E-05	6.78E-05	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.69%	13.74%	-65.92%	-9.06%	-46.67%	-72.92%	-85.28%	-79.22%	Percent change relative to maximum simulated concentration using calibrated models

Note:

- No applicable CCME FWAL or NS EQS Tier 2 PSS, therefore pit lake concentrations were not developed

Table 7.7i

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Cu
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	5.92E-04	4.44E-13	1.52E-02	4.36E-02	2.30E-02	1.26E-02	6.93E-03	5.46E-03	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	5.94E-04	5.96E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.87E-03	5.23E-03	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	5.87E-04	1.34E-12	1.35E-02	3.94E-02	2.25E-02	1.28E-02	6.75E-03	4.89E-03	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	5.94E-04	2.38E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	5.94E-04	3.23E-14	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	5.94E-04	6.12E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	5.94E-04	5.75E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	6.01E-04	7.66E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.87E-03	5.26E-03	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	6.07E-04	8.62E-13	1.48E-02	4.25E-02	2.30E-02	1.26E-02	6.88E-03	5.29E-03	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	6.14E-04	9.29E-13	1.48E-02	4.25E-02	2.30E-02	1.26E-02	6.89E-03	5.29E-03	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	5.94E-04	1.35E-02	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.23E-03	Full pit lake level set to 128 masl
Pit_129	5.94E-04	2.04E-02	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.23E-03	Full pit lake level set to 129 masl
CFF_K_1S	5.94E-04	5.95E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.87E-03	5.24E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	5.94E-04	5.72E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	5.94E-04	6.29E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	5.94E-04	6.28E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.24E-03	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	5.94E-04	6.28E-13	1.47E-02	4.25E-02	2.29E-02	1.26E-02	6.86E-03	5.11E-03	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	5.80E-04	6.94E-13	1.59E-02	4.19E-02	2.49E-02	1.27E-02	6.72E-03	9.72E-03	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	5.94E-04	5.99E-13	1.48E-02	4.25E-02	2.29E-02	1.26E-02	6.87E-03	5.24E-03	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	3.59E-03	3.68E-03	9.20E-02	2.65E-01	1.40E-01	7.64E-02	4.21E-02	3.31E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	3.61E-03	3.82E-03	8.96E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.18E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	3.56E-03	3.91E-03	8.21E-02	2.39E-01	1.36E-01	7.74E-02	4.10E-02	2.97E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	3.61E-03	1.97E-03	8.95E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.18E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	3.61E-03	2.42E-04	8.95E-02	2.58E-01	1.39E-01	7.65E-02	4.17E-02	3.18E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	3.61E-03	3.74E-03	8.95E-02	2.58E-01	1.39E-01	7.65E-02	4.17E-02	3.18E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	3.61E-03	3.52E-03	8.95E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.18E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	3.65E-03	3.85E-03	8.98E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.19E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	3.69E-03	3.88E-03	9.00E-02	2.58E-01	1.39E-01	7.67E-02	4.18E-02	3.21E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	3.73E-03	3.94E-03	8.97E-02	2.58E-01	1.40E-01	7.67E-02	4.18E-02	3.21E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	3.61E-03	8.17E-02	8.98E-02	2.58E-01	1.39E-01	7.65E-02	4.17E-02	3.18E-02	Full pit lake level set to 128 masl
Pit_129	3.61E-03	1.23E-01	9.01E-02	2.58E-01	1.39E-01	7.65E-02	4.17E-02	3.18E-02	Full pit lake level set to 129 masl
CFF_K_1S	3.61E-03	3.81E-03	8.96E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.18E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	3.61E-03	3.52E-03	8.95E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.18E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	3.61E-03	3.83E-03	8.95E-02	2.58E-01	1.39E-01	7.65E-02	4.17E-02	3.18E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	3.61E-03	3.83E-03	8.95E-02	2.58E-01	1.39E-01	7.65E-02	4.17E-02	3.18E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	3.61E-03	3.82E-03	8.93E-02	2.58E-01	1.39E-01	7.67E-02	4.16E-02	3.10E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	3.52E-03	4.34E-03	9.68E-02	2.54E-01	1.51E-01	7.69E-02	4.08E-02	5.90E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	3.61E-03	3.82E-03	8.96E-02	2.58E-01	1.39E-01	7.66E-02	4.17E-02	3.18E-02	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-52.35%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

4.36E-02 Exceeds Tier 2 PSS and maximum observed background concentration

Table 7.7j

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Fe
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	6.41E-04	4.80E-13	1.64E-02	4.72E-02	2.49E-02	1.36E-02	7.50E-03	5.91E-03	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	6.43E-04	6.45E-13	1.60E-02	4.61E-02	2.48E-02	1.37E-02	7.44E-03	5.67E-03	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	6.35E-04	1.45E-12	1.46E-02	4.27E-02	2.43E-02	1.38E-02	7.31E-03	5.30E-03	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	6.43E-04	2.58E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	6.43E-04	3.50E-14	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	6.43E-04	6.63E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	6.43E-04	6.23E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	6.50E-04	8.29E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.44E-03	5.70E-03	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	6.58E-04	9.33E-13	1.60E-02	4.60E-02	2.49E-02	1.37E-02	7.45E-03	5.72E-03	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	6.65E-04	1.01E-12	1.60E-02	4.60E-02	2.49E-02	1.37E-02	7.46E-03	5.73E-03	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	6.43E-04	2.37E-02	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Full pit lake level set to 128 masl
Pit_129	6.43E-04	3.57E-02	1.61E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Full pit lake level set to 129 masl
CFF_K_1S	6.43E-04	6.44E-13	1.60E-02	4.61E-02	2.48E-02	1.37E-02	7.44E-03	5.67E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	6.43E-04	6.20E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	6.43E-04	6.81E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	6.43E-04	6.80E-13	1.60E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.67E-03	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	6.43E-04	6.80E-13	1.59E-02	4.60E-02	2.48E-02	1.37E-02	7.43E-03	5.54E-03	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	6.28E-04	7.52E-13	1.73E-02	4.54E-02	2.70E-02	1.37E-02	7.28E-03	1.05E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	6.43E-04	6.48E-13	1.60E-02	4.61E-02	2.48E-02	1.37E-02	7.44E-03	5.67E-03	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	2.28E-03	3.63E-02	5.85E-02	1.68E-01	8.87E-02	4.86E-02	2.67E-02	2.11E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.29E-03	3.76E-02	5.69E-02	1.64E-01	8.83E-02	4.87E-02	2.65E-02	2.02E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.26E-03	3.86E-02	5.22E-02	1.52E-01	8.66E-02	4.92E-02	2.60E-02	1.89E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.29E-03	1.95E-02	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.29E-03	2.39E-03	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.29E-03	3.69E-02	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.29E-03	3.47E-02	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.32E-03	3.80E-02	5.71E-02	1.64E-01	8.84E-02	4.87E-02	2.65E-02	2.03E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.34E-03	3.82E-02	5.72E-02	1.64E-01	8.86E-02	4.87E-02	2.65E-02	2.04E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.37E-03	3.88E-02	5.70E-02	1.64E-01	8.87E-02	4.88E-02	2.66E-02	2.04E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.29E-03	8.17E-02	5.70E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Full pit lake level set to 128 masl
Pit_129	2.29E-03	1.23E-01	5.72E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Full pit lake level set to 129 masl
CFF_K_1S	2.29E-03	3.76E-02	5.69E-02	1.64E-01	8.83E-02	4.87E-02	2.65E-02	2.02E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.29E-03	3.47E-02	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.29E-03	3.78E-02	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.29E-03	3.77E-02	5.69E-02	1.64E-01	8.83E-02	4.86E-02	2.65E-02	2.02E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.29E-03	3.77E-02	5.68E-02	1.64E-01	8.83E-02	4.88E-02	2.65E-02	1.97E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.24E-03	4.28E-02	6.15E-02	1.62E-01	9.62E-02	4.89E-02	2.59E-02	3.75E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.29E-03	3.77E-02	5.69E-02	1.64E-01	8.83E-02	4.87E-02	2.65E-02	2.02E-02	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-24.99%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7k

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Hg
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	3.33E-08	2.49E-17	8.52E-07	2.45E-06	1.29E-06	7.08E-07	3.89E-07	3.07E-07	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	3.34E-08	3.35E-17	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	3.30E-08	7.55E-17	7.60E-07	2.21E-06	1.26E-06	7.17E-07	3.79E-07	2.75E-07	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	3.34E-08	1.34E-17	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	3.34E-08	1.82E-18	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	3.34E-08	3.44E-17	8.29E-07	2.39E-06	1.29E-06	7.08E-07	3.86E-07	2.94E-07	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	3.34E-08	3.23E-17	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	3.37E-08	4.30E-17	8.31E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.96E-07	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	3.41E-08	4.84E-17	8.33E-07	2.39E-06	1.29E-06	7.10E-07	3.87E-07	2.97E-07	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	3.45E-08	5.22E-17	8.31E-07	2.39E-06	1.29E-06	7.10E-07	3.87E-07	2.97E-07	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	3.34E-08	4.91E-06	8.31E-07	2.39E-06	1.29E-06	7.08E-07	3.86E-07	2.94E-07	Full pit lake level set to 128 masl
Pit_129	3.34E-08	7.40E-06	8.34E-07	2.39E-06	1.29E-06	7.08E-07	3.86E-07	2.94E-07	Full pit lake level set to 129 masl
CFF_K_1S	3.34E-08	3.34E-17	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	3.34E-08	3.22E-17	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	3.34E-08	3.53E-17	8.29E-07	2.39E-06	1.29E-06	7.08E-07	3.86E-07	2.94E-07	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	3.34E-08	3.53E-17	8.29E-07	2.39E-06	1.29E-06	7.08E-07	3.86E-07	2.94E-07	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	3.34E-08	3.53E-17	8.27E-07	2.39E-06	1.29E-06	7.10E-07	3.85E-07	2.87E-07	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	3.26E-08	3.90E-17	8.96E-07	2.35E-06	1.40E-06	7.12E-07	3.78E-07	5.46E-07	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	3.34E-08	3.36E-17	8.29E-07	2.39E-06	1.29E-06	7.09E-07	3.86E-07	2.94E-07	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	6.65E-08	1.06E-06	1.70E-06	4.90E-06	2.58E-06	1.42E-06	7.79E-07	6.13E-07	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	6.68E-08	1.10E-06	1.66E-06	4.78E-06	2.57E-06	1.42E-06	7.72E-07	5.88E-07	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	6.59E-08	1.12E-06	1.52E-06	4.43E-06	2.52E-06	1.43E-06	7.58E-07	5.50E-07	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	6.68E-08	5.67E-07	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	6.68E-08	6.96E-08	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	6.68E-08	1.08E-06	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	6.68E-08	1.01E-06	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	6.75E-08	1.11E-06	1.66E-06	4.77E-06	2.58E-06	1.42E-06	7.72E-07	5.91E-07	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	6.83E-08	1.11E-06	1.67E-06	4.78E-06	2.58E-06	1.42E-06	7.73E-07	5.94E-07	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	6.90E-08	1.13E-06	1.66E-06	4.78E-06	2.58E-06	1.42E-06	7.74E-07	5.95E-07	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	6.68E-08	3.67E-05	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Full pit lake level set to 128 masl
Pit_129	6.68E-08	5.54E-05	1.67E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Full pit lake level set to 129 masl
CFF_K_1S	6.68E-08	1.10E-06	1.66E-06	4.78E-06	2.57E-06	1.42E-06	7.72E-07	5.88E-07	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	6.68E-08	1.01E-06	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	6.68E-08	1.10E-06	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	6.68E-08	1.10E-06	1.66E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.88E-07	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	6.68E-08	1.10E-06	1.65E-06	4.77E-06	2.57E-06	1.42E-06	7.71E-07	5.75E-07	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	6.52E-08	1.25E-06	1.79E-06	4.71E-06	2.80E-06	1.42E-06	7.55E-07	1.09E-06	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	6.68E-08	1.10E-06	1.66E-06	4.78E-06	2.57E-06	1.42E-06	7.72E-07	5.88E-07	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	1058.31%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7l

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Mg
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	2.43E-01	1.82E-10	6.23E+00	1.79E+01	9.44E+00	5.17E+00	2.85E+00	2.24E+00	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.44E-01	2.45E-10	6.06E+00	1.75E+01	9.40E+00	5.19E+00	2.82E+00	2.15E+00	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.41E-01	5.52E-10	5.56E+00	1.62E+01	9.22E+00	5.24E+00	2.77E+00	2.01E+00	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.44E-01	9.77E-11	6.06E+00	1.74E+01	9.40E+00	5.18E+00	2.82E+00	2.15E+00	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.44E-01	1.33E-11	6.06E+00	1.74E+01	9.41E+00	5.18E+00	2.82E+00	2.15E+00	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.44E-01	2.51E-10	6.06E+00	1.74E+01	9.40E+00	5.18E+00	2.82E+00	2.15E+00	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.44E-01	2.36E-10	6.06E+00	1.74E+01	9.40E+00	5.18E+00	2.82E+00	2.15E+00	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.47E-01	3.14E-10	6.08E+00	1.74E+01	9.42E+00	5.18E+00	2.82E+00	2.16E+00	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.49E-01	3.54E-10	6.09E+00	1.75E+01	9.43E+00	5.19E+00	2.83E+00	2.17E+00	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.52E-01	3.81E-10	6.07E+00	1.75E+01	9.44E+00	5.19E+00	2.83E+00	2.17E+00	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	2.44E-01	2.44E-10	6.06E+00	1.75E+01	9.40E+00	5.19E+00	2.82E+00	2.15E+00	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.44E-01	2.35E-10	6.06E+00	1.74E+01	9.40E+00	5.18E+00	2.82E+00	2.15E+00	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.44E-01	2.58E-10	6.06E+00	1.74E+01	9.40E+00	5.18E+00	2.82E+00	2.15E+00	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.44E-01	2.58E-10	6.06E+00	1.74E+01	9.40E+00	5.18E+00	2.82E+00	2.15E+00	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.44E-01	2.58E-10	6.05E+00	1.74E+01	9.40E+00	5.19E+00	2.82E+00	2.10E+00	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.38E-01	2.85E-10	6.55E+00	1.72E+01	1.02E+01	5.20E+00	2.76E+00	3.99E+00	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.44E-01	2.46E-10	6.06E+00	1.75E+01	9.40E+00	5.19E+00	2.82E+00	2.15E+00	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	**Upper Case (mg/L)**	**Upper Case (mg/L)**	**Upper Case (mg/L)**	**Upper Case (mg/L)**	**Upper Case (mg/L)**	**Upper Case (mg/L)**	**Upper Case (mg/L)**	
Calibrated Models									
Dry Condition	4.24E-01	1.80E+00	1.09E+01	3.12E+01	1.65E+01	9.02E+00	4.96E+00	3.91E+00	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	4.26E-01	1.87E+00	1.06E+01	3.05E+01	1.64E+01	9.05E+00	4.92E+00	3.75E+00	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	4.20E-01	1.91E+00	9.70E+00	2.82E+01	1.61E+01	9.14E+00	4.84E+00	3.50E+00	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	4.26E-01	9.66E-01	1.06E+01	3.04E+01	1.64E+01	9.04E+00	4.92E+00	3.75E+00	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	4.26E-01	1.19E-01	1.06E+01	3.04E+01	1.64E+01	9.04E+00	4.92E+00	3.75E+00	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	4.26E-01	1.83E+00	1.06E+01	3.04E+01	1.64E+01	9.04E+00	4.92E+00	3.75E+00	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	4.26E-01	1.72E+00	1.06E+01	3.04E+01	1.64E+01	9.04E+00	4.92E+00	3.75E+00	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	4.30E-01	1.89E+00	1.06E+01	3.04E+01	1.64E+01	9.05E+00	4.92E+00	3.77E+00	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	4.35E-01	1.90E+00	1.06E+01	3.05E+01	1.65E+01	9.06E+00	4.93E+00	3.79E+00	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	4.40E-01	1.93E+00	1.06E+01	3.05E+01	1.65E+01	9.06E+00	4.93E+00	3.79E+00	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	-	-	-	-	-	-	-	-	Full pit lake level set to 128 masl
Pit_129	-	-	-	-	-	-	-	-	Full pit lake level set to 129 masl
CFF_K_1S	4.26E-01	1.87E+00	1.06E+01	3.05E+01	1.64E+01	9.05E+00	4.92E+00	3.75E+00	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	4.26E-01	1.72E+00	1.06E+01	3.04E+01	1.64E+01	9.04E+00	4.92E+00	3.75E+00	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	4.26E-01	1.88E+00	1.06E+01	3.04E+01	1.64E+01	9.03E+00	4.92E+00	3.75E+00	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	4.26E-01	1.87E+00	1.06E+01	3.04E+01	1.64E+01	9.03E+00	4.92E+00	3.75E+00	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	4.26E-01	1.87E+00	1.05E+01	3.04E+01	1.64E+01	9.06E+00	4.92E+00	3.66E+00	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	4.16E-01	2.13E+00	1.14E+01	3.00E+01	1.79E+01	9.08E+00	4.81E+00	6.97E+00	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	4.26E-01	1.87E+00	1.06E+01	3.05E+01	1.64E+01	9.05E+00	4.92E+00	3.75E+00	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-93.03%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Note:

- No applicable CCME FWAL or NS EQS Tier 2 PSS, therefore pit lake concentrations were not developed

Table 7.7m

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Mn
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	2.08E-03	1.56E-12	5.32E-02	1.53E-01	8.06E-02	4.42E-02	2.43E-02	1.91E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.08E-03	2.09E-12	5.17E-02	1.49E-01	8.03E-02	4.43E-02	2.41E-02	1.84E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.06E-03	4.71E-12	4.74E-02	1.38E-01	7.88E-02	4.47E-02	2.37E-02	1.71E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.08E-03	8.34E-13	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.08E-03	1.13E-13	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.08E-03	2.15E-12	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.08E-03	2.02E-12	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.11E-03	2.68E-12	5.19E-02	1.49E-01	8.04E-02	4.43E-02	2.41E-02	1.85E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.13E-03	3.02E-12	5.20E-02	1.49E-01	8.05E-02	4.43E-02	2.41E-02	1.85E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.15E-03	3.26E-12	5.18E-02	1.49E-01	8.06E-02	4.43E-02	2.41E-02	1.86E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.08E-03	6.22E-02	5.19E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Full pit lake level set to 128 masl
Pit_129	2.08E-03	9.36E-02	5.20E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Full pit lake level set to 129 masl
CFF_K_1S	2.08E-03	2.09E-12	5.18E-02	1.49E-01	8.03E-02	4.43E-02	2.41E-02	1.84E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.08E-03	2.01E-12	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.08E-03	2.21E-12	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.08E-03	2.20E-12	5.17E-02	1.49E-01	8.03E-02	4.42E-02	2.41E-02	1.84E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.08E-03	2.20E-12	5.16E-02	1.49E-01	8.03E-02	4.43E-02	2.41E-02	1.79E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.04E-03	2.43E-12	5.59E-02	1.47E-01	8.75E-02	4.44E-02	2.36E-02	3.41E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.08E-03	2.10E-12	5.17E-02	1.49E-01	8.03E-02	4.43E-02	2.41E-02	1.84E-02	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	2.95E-03	1.63E-01	7.56E-02	2.17E-01	1.15E-01	6.28E-02	3.46E-02	2.72E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.96E-03	1.69E-01	7.36E-02	2.12E-01	1.14E-01	6.30E-02	3.43E-02	2.61E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.93E-03	1.74E-01	6.75E-02	1.97E-01	1.12E-01	6.36E-02	3.37E-02	2.44E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.96E-03	8.75E-02	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.96E-03	1.08E-02	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.96E-03	1.66E-01	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.96E-03	1.56E-01	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	3.00E-03	1.71E-01	7.38E-02	2.12E-01	1.14E-01	6.30E-02	3.43E-02	2.63E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	3.03E-03	1.72E-01	7.39E-02	2.12E-01	1.15E-01	6.31E-02	3.43E-02	2.64E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	3.06E-03	1.75E-01	7.38E-02	2.12E-01	1.15E-01	6.31E-02	3.44E-02	2.64E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.96E-03	1.94E-01	7.38E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Full pit lake level set to 128 masl
Pit_129	2.96E-03	2.92E-01	7.40E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Full pit lake level set to 129 masl
CFF_K_1S	2.96E-03	1.69E-01	7.36E-02	2.12E-01	1.14E-01	6.30E-02	3.43E-02	2.61E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.96E-03	1.56E-01	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.96E-03	1.70E-01	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.96E-03	1.70E-01	7.36E-02	2.12E-01	1.14E-01	6.29E-02	3.42E-02	2.61E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.96E-03	1.70E-01	7.34E-02	2.12E-01	1.14E-01	6.31E-02	3.42E-02	2.55E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.90E-03	1.93E-01	7.95E-02	2.09E-01	1.24E-01	6.32E-02	3.35E-02	4.85E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.96E-03	1.70E-01	7.36E-02	2.12E-01	1.14E-01	6.30E-02	3.43E-02	2.61E-02	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	37.39%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7n

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Mo
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	1.60E-04	1.20E-13	4.09E-03	1.18E-02	6.21E-03	3.40E-03	1.87E-03	1.47E-03	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.60E-04	1.61E-13	3.98E-03	1.15E-02	6.18E-03	3.41E-03	1.86E-03	1.41E-03	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.58E-04	3.63E-13	3.65E-03	1.06E-02	6.06E-03	3.44E-03	1.82E-03	1.32E-03	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.60E-04	6.42E-14	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.60E-04	8.73E-15	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.60E-04	1.65E-13	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.60E-04	1.55E-13	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.62E-04	2.07E-13	3.99E-03	1.15E-02	6.19E-03	3.41E-03	1.85E-03	1.42E-03	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.64E-04	2.33E-13	4.00E-03	1.15E-02	6.20E-03	3.41E-03	1.86E-03	1.43E-03	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.66E-04	2.51E-13	3.99E-03	1.15E-02	6.21E-03	3.41E-03	1.86E-03	1.43E-03	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.60E-04	3.98E-03	3.99E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Full pit lake level set to 128 masl
Pit_129	1.60E-04	6.00E-03	4.01E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Full pit lake level set to 129 masl
CFF_K_1S	1.60E-04	1.61E-13	3.98E-03	1.15E-02	6.18E-03	3.41E-03	1.86E-03	1.41E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.60E-04	1.54E-13	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.60E-04	1.70E-13	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.60E-04	1.70E-13	3.98E-03	1.15E-02	6.18E-03	3.40E-03	1.85E-03	1.41E-03	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.60E-04	1.69E-13	3.97E-03	1.15E-02	6.18E-03	3.41E-03	1.85E-03	1.38E-03	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.57E-04	1.87E-13	4.30E-03	1.13E-02	6.73E-03	3.42E-03	1.81E-03	2.62E-03	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.60E-04	1.62E-13	3.98E-03	1.15E-02	6.18E-03	3.41E-03	1.86E-03	1.41E-03	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	5.98E-04	2.86E-04	1.53E-02	4.40E-02	2.32E-02	1.27E-02	7.00E-03	5.51E-03	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	6.00E-04	2.96E-04	1.49E-02	4.30E-02	2.31E-02	1.28E-02	6.94E-03	5.29E-03	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	5.93E-04	3.03E-04	1.37E-02	3.98E-02	2.27E-02	1.29E-02	6.82E-03	4.94E-03	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	6.00E-04	1.53E-04	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	6.00E-04	1.88E-05	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	6.00E-04	2.90E-04	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	6.00E-04	2.73E-04	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	6.07E-04	2.99E-04	1.49E-02	4.29E-02	2.32E-02	1.28E-02	6.94E-03	5.32E-03	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	6.14E-04	3.01E-04	1.50E-02	4.29E-02	2.32E-02	1.28E-02	6.95E-03	5.34E-03	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	6.20E-04	3.05E-04	1.49E-02	4.30E-02	2.32E-02	1.28E-02	6.96E-03	5.35E-03	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	6.00E-04	1.53E-02	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Full pit lake level set to 128 masl
Pit_129	6.00E-04	2.30E-02	1.50E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Full pit lake level set to 129 masl
CFF_K_1S	6.00E-04	2.96E-04	1.49E-02	4.30E-02	2.31E-02	1.28E-02	6.94E-03	5.29E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	6.00E-04	2.73E-04	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	6.00E-04	2.97E-04	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	6.00E-04	2.97E-04	1.49E-02	4.29E-02	2.31E-02	1.27E-02	6.93E-03	5.29E-03	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	6.00E-04	2.96E-04	1.49E-02	4.29E-02	2.31E-02	1.28E-02	6.93E-03	5.16E-03	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	5.86E-04	3.37E-04	1.61E-02	4.23E-02	2.52E-02	1.28E-02	6.79E-03	9.82E-03	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	6.00E-04	2.96E-04	1.49E-02	4.30E-02	2.31E-02	1.28E-02	6.94E-03	5.29E-03	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-46.40%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7o

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Ni
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	5.36E-05	4.02E-14	1.37E-03	3.95E-03	2.08E-03	1.14E-03	6.28E-04	4.94E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	5.38E-05	5.40E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	5.31E-05	1.22E-13	1.23E-03	3.57E-03	2.03E-03	1.16E-03	6.11E-04	4.43E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	5.38E-05	2.15E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	5.38E-05	2.93E-15	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	5.38E-05	5.55E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	5.38E-05	5.21E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	5.44E-05	6.93E-14	1.34E-03	3.85E-03	2.08E-03	1.14E-03	6.22E-04	4.77E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	5.50E-05	7.81E-14	1.34E-03	3.85E-03	2.08E-03	1.14E-03	6.23E-04	4.79E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	5.56E-05	8.41E-14	1.34E-03	3.85E-03	2.08E-03	1.15E-03	6.24E-04	4.79E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	5.38E-05	1.50E-03	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Full pit lake level set to 128 masl
Pit_129	5.38E-05	2.27E-03	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Full pit lake level set to 129 masl
CFF_K_1S	5.38E-05	5.39E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	5.38E-05	5.18E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	5.38E-05	5.70E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	5.38E-05	5.69E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	5.38E-05	5.68E-14	1.33E-03	3.85E-03	2.07E-03	1.14E-03	6.21E-04	4.63E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	5.26E-05	6.29E-14	1.44E-03	3.79E-03	2.26E-03	1.15E-03	6.09E-04	8.80E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	5.38E-05	5.42E-14	1.34E-03	3.85E-03	2.07E-03	1.14E-03	6.22E-04	4.74E-04	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	7.95E-05	2.42E-03	2.03E-03	5.85E-03	3.09E-03	1.69E-03	9.30E-04	7.33E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	7.98E-05	2.51E-03	1.98E-03	5.71E-03	3.07E-03	1.69E-03	9.22E-04	7.03E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	7.87E-05	2.57E-03	1.82E-03	5.29E-03	3.01E-03	1.71E-03	9.06E-04	6.56E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	7.98E-05	1.30E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	7.98E-05	1.60E-04	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	7.98E-05	2.46E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	7.98E-05	2.32E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	8.06E-05	2.54E-03	1.99E-03	5.70E-03	3.08E-03	1.69E-03	9.22E-04	7.06E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	8.15E-05	2.55E-03	1.99E-03	5.70E-03	3.08E-03	1.70E-03	9.24E-04	7.09E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	8.24E-05	2.59E-03	1.98E-03	5.71E-03	3.09E-03	1.70E-03	9.24E-04	7.10E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	7.98E-05	2.86E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Full pit lake level set to 128 masl
Pit_129	7.98E-05	4.31E-03	1.99E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Full pit lake level set to 129 masl
CFF_K_1S	7.98E-05	2.51E-03	1.98E-03	5.71E-03	3.07E-03	1.69E-03	9.22E-04	7.03E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	7.98E-05	2.32E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	7.98E-05	2.52E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	7.98E-05	2.52E-03	1.98E-03	5.70E-03	3.07E-03	1.69E-03	9.21E-04	7.03E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	7.97E-05	2.52E-03	1.98E-03	5.70E-03	3.07E-03	1.70E-03	9.21E-04	6.86E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	7.79E-05	2.86E-03	2.14E-03	5.62E-03	3.35E-03	1.70E-03	9.02E-04	1.30E-03	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	7.98E-05	2.52E-03	1.98E-03	5.71E-03	3.07E-03	1.69E-03	9.22E-04	7.03E-04	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-24.51%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7p

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Pb
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	8.81E-06	6.60E-15	2.26E-04	6.49E-04	3.42E-04	1.87E-04	1.03E-04	8.12E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	8.84E-06	8.87E-15	2.20E-04	6.33E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	8.73E-06	2.00E-14	2.01E-04	5.86E-04	3.34E-04	1.90E-04	1.00E-04	7.28E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	8.84E-06	3.54E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	8.84E-06	4.81E-16	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	8.84E-06	9.11E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	8.84E-06	8.56E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	8.94E-06	1.14E-14	2.20E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.83E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	9.04E-06	1.28E-14	2.21E-04	6.32E-04	3.42E-04	1.88E-04	1.02E-04	7.86E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	9.14E-06	1.38E-14	2.20E-04	6.33E-04	3.42E-04	1.88E-04	1.02E-04	7.87E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	8.84E-06	2.47E-04	2.20E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Full pit lake level set to 128 masl
Pit_129	8.84E-06	3.72E-04	2.21E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Full pit lake level set to 129 masl
CFF_K_1S	8.84E-06	8.85E-15	2.20E-04	6.33E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	8.84E-06	8.52E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	8.84E-06	9.36E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	8.84E-06	9.35E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	8.84E-06	9.34E-15	2.19E-04	6.32E-04	3.41E-04	1.88E-04	1.02E-04	7.61E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	8.63E-06	1.03E-14	2.37E-04	6.23E-04	3.71E-04	1.88E-04	1.00E-04	1.45E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	8.84E-06	8.91E-15	2.20E-04	6.33E-04	3.41E-04	1.88E-04	1.02E-04	7.79E-05	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	1.93E-05	4.83E-05	4.94E-04	1.42E-03	7.49E-04	4.10E-04	2.26E-04	1.78E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.94E-05	5.01E-05	4.81E-04	1.39E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.91E-05	5.13E-05	4.41E-04	1.28E-03	7.31E-04	4.15E-04	2.20E-04	1.59E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.94E-05	2.59E-05	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.94E-05	3.18E-06	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.94E-05	4.92E-05	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.94E-05	4.62E-05	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.96E-05	5.06E-05	4.82E-04	1.38E-03	7.47E-04	4.11E-04	2.24E-04	1.71E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.98E-05	5.09E-05	4.83E-04	1.38E-03	7.48E-04	4.12E-04	2.24E-04	1.72E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.00E-05	5.17E-05	4.81E-04	1.38E-03	7.49E-04	4.12E-04	2.24E-04	1.72E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.94E-05	4.57E-04	4.82E-04	1.38E-03	7.46E-04	4.11E-04	2.23E-04	1.70E-04	Full pit lake level set to 128 masl
Pit_129	1.94E-05	6.89E-04	4.83E-04	1.38E-03	7.46E-04	4.11E-04	2.23E-04	1.70E-04	Full pit lake level set to 129 masl
CFF_K_1S	1.94E-05	5.00E-05	4.81E-04	1.39E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.94E-05	4.62E-05	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.24E-04	1.70E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.94E-05	5.03E-05	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.23E-04	1.70E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.94E-05	5.02E-05	4.80E-04	1.38E-03	7.46E-04	4.11E-04	2.23E-04	1.70E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.94E-05	5.02E-05	4.79E-04	1.38E-03	7.46E-04	4.12E-04	2.23E-04	1.67E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.89E-05	5.70E-05	5.19E-04	1.36E-03	8.12E-04	4.13E-04	2.19E-04	3.17E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.94E-05	5.02E-05	4.81E-04	1.39E-03	7.46E-04	4.11E-04	2.24E-04	1.71E-04	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-50.26%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7q

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Sb
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	2.60E-05	1.95E-14	6.66E-04	1.92E-03	1.01E-03	5.54E-04	3.05E-04	2.40E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.61E-05	2.62E-14	6.49E-04	1.87E-03	1.01E-03	5.55E-04	3.02E-04	2.30E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.58E-05	5.90E-14	5.95E-04	1.73E-03	9.87E-04	5.61E-04	2.97E-04	2.15E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.61E-05	1.05E-14	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.61E-05	1.42E-15	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.61E-05	2.69E-14	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.61E-05	2.53E-14	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.64E-05	3.36E-14	6.50E-04	1.87E-03	1.01E-03	5.55E-04	3.02E-04	2.31E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.67E-05	3.79E-14	6.51E-04	1.87E-03	1.01E-03	5.55E-04	3.02E-04	2.32E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.70E-05	4.08E-14	6.50E-04	1.87E-03	1.01E-03	5.56E-04	3.03E-04	2.33E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.61E-05	6.84E-04	6.50E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Full pit lake level set to 128 masl
Pit_129	2.61E-05	1.03E-03	6.52E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Full pit lake level set to 129 masl
CFF_K_1S	2.61E-05	2.62E-14	6.49E-04	1.87E-03	1.01E-03	5.55E-04	3.02E-04	2.30E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.61E-05	2.52E-14	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.61E-05	2.76E-14	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.61E-05	2.76E-14	6.48E-04	1.87E-03	1.01E-03	5.54E-04	3.02E-04	2.30E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.61E-05	2.76E-14	6.47E-04	1.87E-03	1.01E-03	5.56E-04	3.02E-04	2.25E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.55E-05	3.05E-14	7.01E-04	1.84E-03	1.10E-03	5.57E-04	2.95E-04	4.27E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.61E-05	2.63E-14	6.49E-04	1.87E-03	1.01E-03	5.55E-04	3.02E-04	2.30E-04	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	7.18E-05	6.76E-03	1.84E-03	5.29E-03	2.79E-03	1.53E-03	8.40E-04	6.62E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	7.21E-05	7.01E-03	1.79E-03	5.16E-03	2.78E-03	1.53E-03	8.34E-04	6.35E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	7.12E-05	7.19E-03	1.64E-03	4.78E-03	2.72E-03	1.55E-03	8.19E-04	5.93E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	7.21E-05	3.62E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	7.21E-05	4.45E-04	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	7.21E-05	6.88E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	7.21E-05	6.47E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.33E-04	6.35E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	7.29E-05	7.08E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.33E-04	6.38E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	7.37E-05	7.13E-03	1.80E-03	5.15E-03	2.79E-03	1.53E-03	8.35E-04	6.41E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	7.45E-05	7.23E-03	1.79E-03	5.16E-03	2.79E-03	1.53E-03	8.35E-04	6.42E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	7.21E-05	7.38E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Full pit lake level set to 128 masl
Pit_129	7.21E-05	8.99E-03	1.80E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Full pit lake level set to 129 masl
CFF_K_1S	7.21E-05	7.00E-03	1.79E-03	5.16E-03	2.78E-03	1.53E-03	8.34E-04	6.35E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	7.21E-05	6.46E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.33E-04	6.35E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	7.21E-05	7.04E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	7.21E-05	7.03E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.35E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	7.21E-05	7.02E-03	1.79E-03	5.15E-03	2.78E-03	1.53E-03	8.32E-04	6.20E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	7.04E-05	7.98E-03	1.93E-03	5.08E-03	3.03E-03	1.54E-03	8.15E-04	1.18E-03	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	7.21E-05	7.02E-03	1.79E-03	5.16E-03	2.78E-03	1.53E-03	8.34E-04	6.35E-04	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.94%	28.19%	-72.43%	-26.44%	-56.86%	-78.09%	-88.09%	-83.19%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7r

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Se
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	2.35E-05	1.76E-14	6.01E-04	1.73E-03	9.11E-04	4.99E-04	2.75E-04	2.16E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.36E-05	2.36E-14	5.85E-04	1.69E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.33E-05	5.32E-14	5.36E-04	1.56E-03	8.90E-04	5.06E-04	2.68E-04	1.94E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.36E-05	9.43E-15	5.85E-04	1.68E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.36E-05	1.28E-15	5.85E-04	1.68E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.36E-05	2.43E-14	5.85E-04	1.68E-03	9.07E-04	5.00E-04	2.72E-04	2.08E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.36E-05	2.28E-14	5.85E-04	1.68E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.38E-05	3.03E-14	5.87E-04	1.68E-03	9.09E-04	5.00E-04	2.72E-04	2.09E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.41E-05	3.42E-14	5.88E-04	1.68E-03	9.10E-04	5.01E-04	2.73E-04	2.10E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.43E-05	3.68E-14	5.86E-04	1.69E-03	9.11E-04	5.01E-04	2.73E-04	2.10E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.36E-05	6.25E-04	5.86E-04	1.68E-03	9.07E-04	5.00E-04	2.72E-04	2.08E-04	Full pit lake level set to 128 masl
Pit_129	2.36E-05	9.41E-04	5.88E-04	1.68E-03	9.07E-04	5.00E-04	2.72E-04	2.08E-04	Full pit lake level set to 129 masl
CFF_K_1S	2.36E-05	2.36E-14	5.85E-04	1.69E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.36E-05	2.27E-14	5.85E-04	1.68E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.36E-05	2.49E-14	5.85E-04	1.68E-03	9.07E-04	5.00E-04	2.72E-04	2.08E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.36E-05	2.49E-14	5.85E-04	1.68E-03	9.07E-04	5.00E-04	2.72E-04	2.08E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.36E-05	2.49E-14	5.83E-04	1.68E-03	9.08E-04	5.01E-04	2.72E-04	2.03E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.30E-05	2.75E-14	6.32E-04	1.66E-03	9.89E-04	5.02E-04	2.66E-04	3.85E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.36E-05	2.37E-14	5.85E-04	1.69E-03	9.08E-04	5.00E-04	2.72E-04	2.08E-04	Applied geologic model developed by Atlantic Gold
	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	5.28E-05	1.88E-03	1.35E-03	3.88E-03	2.05E-03	1.12E-03	6.17E-04	4.86E-04	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	5.30E-05	1.94E-03	1.32E-03	3.79E-03	2.04E-03	1.13E-03	6.12E-04	4.66E-04	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	5.23E-05	1.99E-03	1.21E-03	3.51E-03	2.00E-03	1.14E-03	6.01E-04	4.36E-04	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	5.30E-05	1.01E-03	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.12E-04	4.66E-04	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	5.30E-05	1.23E-04	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.12E-04	4.66E-04	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	5.30E-05	1.91E-03	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.12E-04	4.66E-04	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	5.30E-05	1.79E-03	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.12E-04	4.66E-04	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	5.35E-05	1.96E-03	1.32E-03	3.79E-03	2.04E-03	1.12E-03	6.12E-04	4.69E-04	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	5.41E-05	1.98E-03	1.32E-03	3.79E-03	2.05E-03	1.13E-03	6.13E-04	4.71E-04	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	5.47E-05	2.01E-03	1.32E-03	3.79E-03	2.05E-03	1.13E-03	6.14E-04	4.72E-04	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	5.30E-05	2.05E-03	1.32E-03	3.78E-03	2.04E-03	1.12E-03	6.11E-04	4.66E-04	Full pit lake level set to 128 masl
Pit_129	5.30E-05	2.51E-03	1.32E-03	3.78E-03	2.04E-03	1.12E-03	6.11E-04	4.66E-04	Full pit lake level set to 129 masl
CFF_K_1S	5.30E-05	1.94E-03	1.32E-03	3.79E-03	2.04E-03	1.13E-03	6.12E-04	4.66E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	5.30E-05	1.79E-03	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.12E-04	4.66E-04	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	5.30E-05	1.95E-03	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.11E-04	4.66E-04	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	5.30E-05	1.95E-03	1.31E-03	3.78E-03	2.04E-03	1.12E-03	6.12E-04	4.66E-04	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	5.29E-05	1.95E-03	1.31E-03	3.78E-03	2.04E-03	1.13E-03	6.11E-04	4.56E-04	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	5.17E-05	2.21E-03	1.42E-03	3.73E-03	2.22E-03	1.13E-03	5.99E-04	8.66E-04	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	5.30E-05	1.95E-03	1.32E-03	3.79E-03	2.04E-03	1.13E-03	6.12E-04	4.67E-04	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-33.83%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7s

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - TI
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	1.92E-06	1.44E-15	4.91E-05	1.41E-04	7.44E-05	4.08E-05	2.24E-05	1.77E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.92E-06	1.93E-15	4.78E-05	1.38E-04	7.41E-05	4.09E-05	2.22E-05	1.69E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.90E-06	4.35E-15	4.38E-05	1.28E-04	7.27E-05	4.13E-05	2.18E-05	1.58E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.92E-06	7.70E-16	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.92E-06	1.05E-16	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.92E-06	1.98E-15	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.92E-06	1.86E-15	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.94E-06	2.48E-15	4.79E-05	1.38E-04	7.42E-05	4.09E-05	2.22E-05	1.70E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.97E-06	2.79E-15	4.80E-05	1.38E-04	7.43E-05	4.09E-05	2.23E-05	1.71E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.99E-06	3.01E-15	4.78E-05	1.38E-04	7.44E-05	4.09E-05	2.23E-05	1.71E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.92E-06	5.28E-05	4.79E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Full pit lake level set to 128 masl
Pit_129	1.92E-06	7.96E-05	4.80E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Full pit lake level set to 129 masl
CFF_K_1S	1.92E-06	1.93E-15	4.78E-05	1.38E-04	7.41E-05	4.09E-05	2.22E-05	1.69E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.92E-06	1.85E-15	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.92E-06	2.04E-15	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.92E-06	2.03E-15	4.77E-05	1.37E-04	7.41E-05	4.08E-05	2.22E-05	1.69E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.92E-06	2.03E-15	4.76E-05	1.37E-04	7.41E-05	4.09E-05	2.22E-05	1.65E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.88E-06	2.25E-15	5.16E-05	1.36E-04	8.07E-05	4.10E-05	2.17E-05	3.15E-05	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.92E-06	1.94E-15	4.78E-05	1.38E-04	7.41E-05	4.09E-05	2.22E-05	1.69E-05	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	2.31E-06	1.65E-04	5.91E-05	1.70E-04	8.97E-05	4.91E-05	2.70E-05	2.13E-05	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.32E-06	1.71E-04	5.76E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.29E-06	1.75E-04	5.28E-05	1.54E-04	8.76E-05	4.98E-05	2.63E-05	1.91E-05	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.32E-06	8.82E-05	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.32E-06	1.08E-05	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.32E-06	1.67E-04	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.32E-06	1.57E-04	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.34E-06	1.72E-04	5.77E-05	1.66E-04	8.94E-05	4.92E-05	2.68E-05	2.05E-05	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.37E-06	1.73E-04	5.78E-05	1.66E-04	8.96E-05	4.93E-05	2.68E-05	2.06E-05	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.40E-06	1.76E-04	5.77E-05	1.66E-04	8.97E-05	4.93E-05	2.69E-05	2.06E-05	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.32E-06	1.80E-04	5.77E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Full pit lake level set to 128 masl
Pit_129	2.32E-06	2.19E-04	5.79E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Full pit lake level set to 129 masl
CFF_K_1S	2.32E-06	1.70E-04	5.76E-05	1.66E-04	8.93E-05	4.93E-05	2.68E-05	2.04E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.32E-06	1.57E-04	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.32E-06	1.71E-04	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.32E-06	1.71E-04	5.75E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.32E-06	1.71E-04	5.74E-05	1.66E-04	8.93E-05	4.93E-05	2.68E-05	1.99E-05	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.26E-06	1.94E-04	6.22E-05	1.63E-04	9.73E-05	4.94E-05	2.62E-05	3.79E-05	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.32E-06	1.71E-04	5.76E-05	1.66E-04	8.93E-05	4.92E-05	2.68E-05	2.04E-05	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.60%	28.35%	-63.57%	-2.80%	-42.99%	-71.05%	-84.26%	-77.79%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7t

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - U
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	1.42E-03	1.06E-12	3.63E-02	1.04E-01	5.50E-02	3.01E-02	1.66E-02	1.31E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.42E-03	1.43E-12	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.40E-03	3.21E-12	3.24E-02	9.42E-02	5.37E-02	3.05E-02	1.61E-02	1.17E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.42E-03	5.69E-13	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.42E-03	7.73E-14	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.42E-03	1.46E-12	3.53E-02	1.02E-01	5.47E-02	3.02E-02	1.64E-02	1.25E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.42E-03	1.38E-12	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.44E-03	1.83E-12	3.54E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.26E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.45E-03	2.06E-12	3.54E-02	1.02E-01	5.49E-02	3.02E-02	1.65E-02	1.26E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.47E-03	2.22E-12	3.54E-02	1.02E-01	5.50E-02	3.02E-02	1.65E-02	1.27E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.42E-03	3.19E-02	3.54E-02	1.02E-01	5.47E-02	3.02E-02	1.64E-02	1.25E-02	Full pit lake level set to 128 masl
Pit_129	1.42E-03	4.80E-02	3.55E-02	1.02E-01	5.47E-02	3.02E-02	1.64E-02	1.25E-02	Full pit lake level set to 129 masl
CFF_K_1S	1.42E-03	1.42E-12	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.42E-03	1.37E-12	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.42E-03	1.50E-12	3.53E-02	1.02E-01	5.47E-02	3.02E-02	1.64E-02	1.25E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.42E-03	1.50E-12	3.53E-02	1.02E-01	5.47E-02	3.02E-02	1.64E-02	1.25E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.42E-03	1.50E-12	3.52E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.22E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.39E-03	1.66E-12	3.81E-02	1.00E-01	5.97E-02	3.03E-02	1.61E-02	2.32E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.42E-03	1.43E-12	3.53E-02	1.02E-01	5.48E-02	3.02E-02	1.64E-02	1.25E-02	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	2.15E-03	1.96E-03	5.51E-02	1.58E-01	8.35E-02	4.58E-02	2.52E-02	1.98E-02	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	2.16E-03	2.03E-03	5.36E-02	1.55E-01	8.32E-02	4.59E-02	2.50E-02	1.90E-02	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	2.13E-03	2.08E-03	4.92E-02	1.43E-01	8.16E-02	4.64E-02	2.45E-02	1.78E-02	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	2.16E-03	1.05E-03	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	2.16E-03	1.29E-04	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	2.16E-03	1.99E-03	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	2.16E-03	1.87E-03	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	2.18E-03	2.05E-03	5.38E-02	1.54E-01	8.33E-02	4.59E-02	2.50E-02	1.91E-02	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	2.21E-03	2.06E-03	5.39E-02	1.54E-01	8.34E-02	4.59E-02	2.50E-02	1.92E-02	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	2.23E-03	2.10E-03	5.37E-02	1.55E-01	8.35E-02	4.59E-02	2.50E-02	1.92E-02	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	2.16E-03	4.92E-02	5.37E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Full pit lake level set to 128 masl
Pit_129	2.16E-03	7.41E-02	5.39E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Full pit lake level set to 129 masl
CFF_K_1S	2.16E-03	2.03E-03	5.36E-02	1.55E-01	8.32E-02	4.59E-02	2.50E-02	1.90E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	2.16E-03	1.87E-03	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	2.16E-03	2.04E-03	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	2.16E-03	2.04E-03	5.36E-02	1.54E-01	8.32E-02	4.58E-02	2.49E-02	1.90E-02	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	2.16E-03	2.03E-03	5.35E-02	1.54E-01	8.32E-02	4.59E-02	2.49E-02	1.86E-02	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	2.11E-03	2.31E-03	5.79E-02	1.52E-01	9.06E-02	4.60E-02	2.44E-02	3.53E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	2.16E-03	2.03E-03	5.36E-02	1.55E-01	8.32E-02	4.59E-02	2.50E-02	1.90E-02	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-52.09%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Table 7.7u

Sensitivity Analysis of Simulated Groundwater Concentrations Discharging to Surface Water - Zn
Atlantic Gold Corporation
Marinette, Nova Scotia

	Reach 1 Base Case (mg/L)	**Reach 2** Base Case (mg/L)	**Reach 3** Base Case (mg/L)	**Reach 4** Base Case (mg/L)	**Reach 5** Base Case (mg/L)	**Reach 6** Base Case (mg/L)	**Reach 7** Base Case (mg/L)	**Reach 8** Base Case (mg/L)	**Description**
Calibrated Models									
Dry Condition	9.39E-04	7.04E-13	2.40E-02	6.91E-02	3.65E-02	2.00E-02	1.10E-02	8.66E-03	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	9.42E-04	9.45E-13	2.34E-02	6.74E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	9.30E-04	2.13E-12	2.15E-02	6.25E-02	3.56E-02	2.02E-02	1.07E-02	7.75E-03	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	9.42E-04	3.77E-13	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	9.42E-04	5.13E-14	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	9.42E-04	9.71E-13	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	9.42E-04	9.12E-13	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	9.52E-04	1.21E-12	2.35E-02	6.74E-02	3.64E-02	2.00E-02	1.09E-02	8.34E-03	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	9.63E-04	1.37E-12	2.35E-02	6.74E-02	3.64E-02	2.00E-02	1.09E-02	8.38E-03	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	9.74E-04	1.47E-12	2.34E-02	6.74E-02	3.65E-02	2.00E-02	1.09E-02	8.39E-03	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	9.42E-04	2.20E-02	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Full pit lake level set to 128 masl
Pit_129	9.42E-04	3.31E-02	2.35E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Full pit lake level set to 129 masl
CFF_K_1S	9.42E-04	9.44E-13	2.34E-02	6.74E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	9.42E-04	9.07E-13	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	9.42E-04	9.97E-13	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	9.42E-04	9.96E-13	2.34E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	9.42E-04	9.95E-13	2.33E-02	6.73E-02	3.63E-02	2.00E-02	1.09E-02	8.11E-03	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	9.20E-04	1.10E-12	2.53E-02	6.64E-02	3.96E-02	2.01E-02	1.07E-02	1.54E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	9.42E-04	9.49E-13	2.34E-02	6.74E-02	3.63E-02	2.00E-02	1.09E-02	8.30E-03	Applied geologic model developed by Atlantic Gold

	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	Upper Case (mg/L)	
Calibrated Models									
Dry Condition	1.07E-03	1.11E-02	2.74E-02	7.89E-02	4.16E-02	2.28E-02	1.25E-02	9.88E-03	Base case model calibrated to September 5, 2018 observed groundwater elevations
Base Case Condition	1.08E-03	1.16E-02	2.67E-02	7.70E-02	4.15E-02	2.29E-02	1.24E-02	9.48E-03	Base case model calibrated to July 18, 2018 observed groundwater elevations
Wet Condition	1.06E-03	1.18E-02	2.45E-02	7.13E-02	4.07E-02	2.31E-02	1.22E-02	8.86E-03	Base case model calibrated to wet condition target dataset
Uncertainty Analysis Scenario									
MLF_K_1S	1.08E-03	5.97E-03	2.67E-02	7.69E-02	4.15E-02	2.28E-02	1.24E-02	9.48E-03	Shallow Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2S	1.08E-03	7.34E-04	2.67E-02	7.69E-02	4.15E-02	2.28E-02	1.24E-02	9.48E-03	Shallow Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
MLF_K_1D	1.08E-03	1.13E-02	2.67E-02	7.69E-02	4.14E-02	2.28E-02	1.24E-02	9.48E-03	Deep Mud Lake Fault Zone conductivity increase by 1 order of magnitude
MLF_K_2D	1.08E-03	1.07E-02	2.67E-02	7.69E-02	4.15E-02	2.28E-02	1.24E-02	9.48E-03	Deep Mud Lake Fault Zone conductivity increase by 2 orders of magnitude
GWKE_1	1.09E-03	1.17E-02	2.68E-02	7.69E-02	4.15E-02	2.29E-02	1.24E-02	9.53E-03	Deep Greywacke unit conductivity set to 0.0001945 m/d
GWKE_2	1.10E-03	1.17E-02	2.68E-02	7.69E-02	4.16E-02	2.29E-02	1.25E-02	9.57E-03	Deep Greywacke unit conductivity set to 0.0001016 m/d
GWKE_3	1.11E-03	1.19E-02	2.68E-02	7.70E-02	4.16E-02	2.29E-02	1.25E-02	9.58E-03	Deep Greywacke unit conductivity set to 0.0000086 m/d
Pit_128	1.08E-03	3.30E-02	2.68E-02	7.69E-02	4.14E-02	2.28E-02	1.24E-02	9.48E-03	Full pit lake level set to 128 masl
Pit_129	1.08E-03	4.97E-02	2.69E-02	7.69E-02	4.14E-02	2.28E-02	1.24E-02	9.48E-03	Full pit lake level set to 129 masl
CFF_K_1S	1.08E-03	1.15E-02	2.67E-02	7.70E-02	4.15E-02	2.29E-02	1.24E-02	9.48E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2S	1.08E-03	1.06E-02	2.67E-02	7.69E-02	4.15E-02	2.28E-02	1.24E-02	9.48E-03	Shallow Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
CFF_K_1D	1.08E-03	1.16E-02	2.67E-02	7.69E-02	4.14E-02	2.28E-02	1.24E-02	9.48E-03	Deep Cameron Flowage Fault Zone conductivity increase by 1 order of magnitude
CFF_K_2D	1.08E-03	1.16E-02	2.67E-02	7.69E-02	4.14E-02	2.28E-02	1.24E-02	9.48E-03	Deep Cameron Flowage Fault Zone conductivity increase by 2 orders of magnitude
River_High_k	1.08E-03	1.16E-02	2.66E-02	7.69E-02	4.15E-02	2.29E-02	1.24E-02	9.26E-03	River boundary condition hydraulic conductivity set to 33.005 m/d
River_Low_k	1.05E-03	1.31E-02	2.89E-02	7.59E-02	4.52E-02	2.29E-02	1.22E-02	1.76E-02	River boundary condition hydraulic conductivity set to 0.0525 m/d
AG Geo Model	1.08E-03	1.16E-02	2.67E-02	7.70E-02	4.15E-02	2.29E-02	1.24E-02	9.48E-03	Applied geologic model developed by Atlantic Gold
Maximum Increase over Calibrated Models	-98.56%	-35.50%	-62.53%	0.00%	-41.35%	-70.22%	-83.81%	-77.15%	Percent change relative to maximum simulated concentration using calibrated models

Appendix A
3D Geologic Model

Appendix A 3D Presentation Package

GHD developed a 3D Visualization presentation package for the Beaver Dam Mine Site located in Marinette, Halifax County, Nova Scotia (Beaver Dam Mine Site). The presentation package includes an interface menu and three 4DIM (4-Dimensional Interactive Model) the Beaver Dam Mine Site geology:

Please follow instructions below to download and view the models.

1. Click on link http://ghd.2big4email.com/en/downloadfiles.aspx?param=SU8kIVg6KdMDviEVVgxbYweQuAleQuAl
2. The 3DV presentation has been zipped together and is named "**074846-00(PRES001)3DV_WA_3DPRESENTATION_2016-12-12.zip**". Copy this zip file to your Hard Drive (C:\).
3. Extract zip file to root of hard drive (folder name should look like C:**074846-00(PRES001)3DV_WA_3DPRESENTATION_2016-12-12**). Maintain folder structure, the presentation will not work if it is altered (no folders or subfolders can have spaces in the names).
4. Double click on interface menu file "3DVISUALIZATION.EXE". This will automatically load up an interface menu window on your screen; from this interface menu you can access the desired 4DIM model by double clicking on the model title and the 4DIM will automatically launch in a separate window. Basic controls for the 4D interactive model player are provided below. Following this, an image is provided of the interface menu that should appear after launching the file "3DVISUALIZATION.EXE".

Basic 4D Interactive Model Player Controls

Select your desired 4DIM animation (*.4d) by doubled clicking on the file. This will automatically open up the associated 4DIM file in a separate window called the 4DIM Player.

To ZOOM IN or OUT, hold down SHIFT and the left mouse button while moving the mouse forwards or backwards.

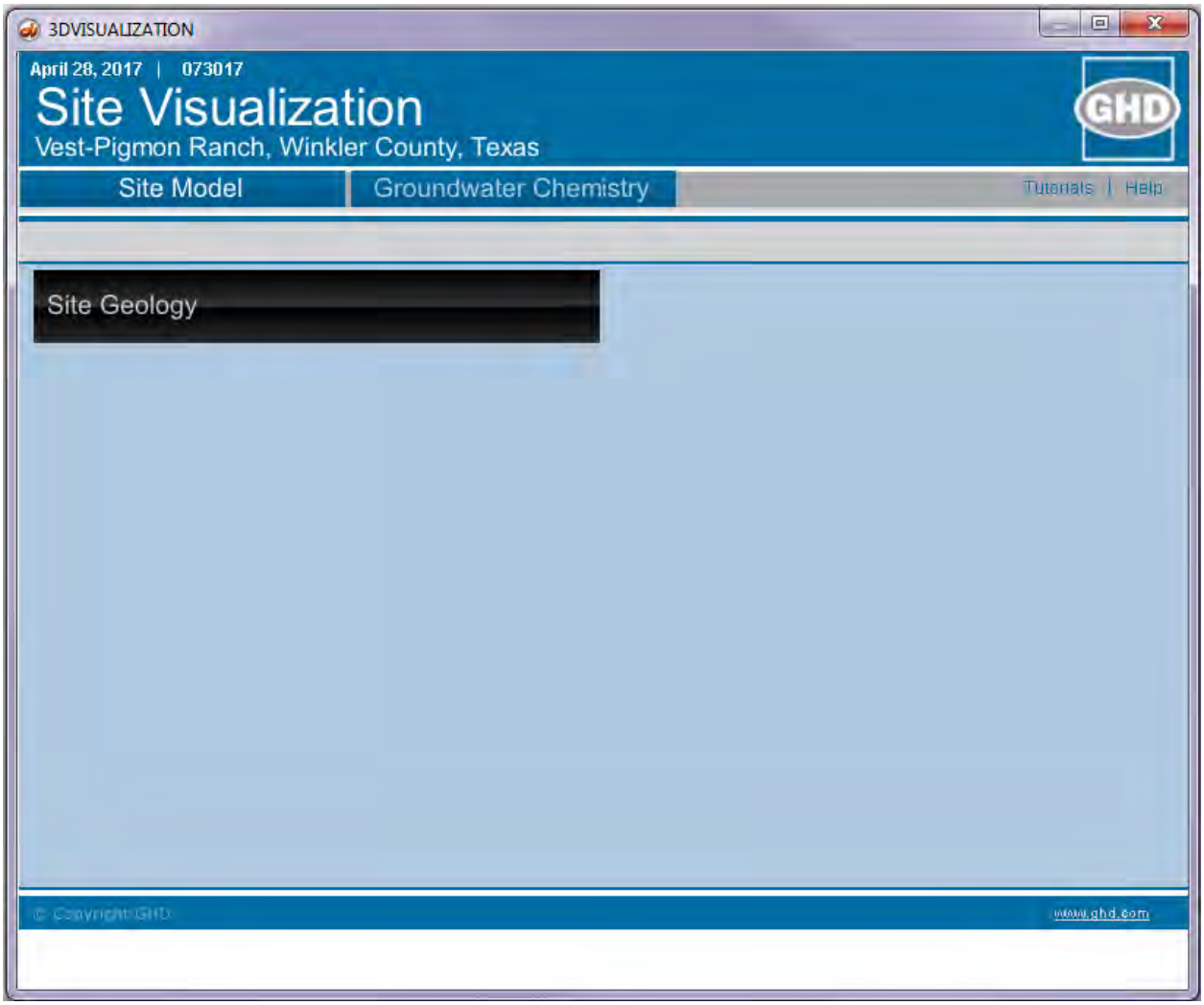
To PAN, hold down the right mouse button while moving the mouse.

To ROTATE the model, hold down the left mouse key while moving the mouse.

Additional player information may be accessed through the Help menu.

To CHANGE FRAMES, click on the  or  buttons located on the Current Frame slider bar (below) to move through the frames in the animation.

Interface Menu



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GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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