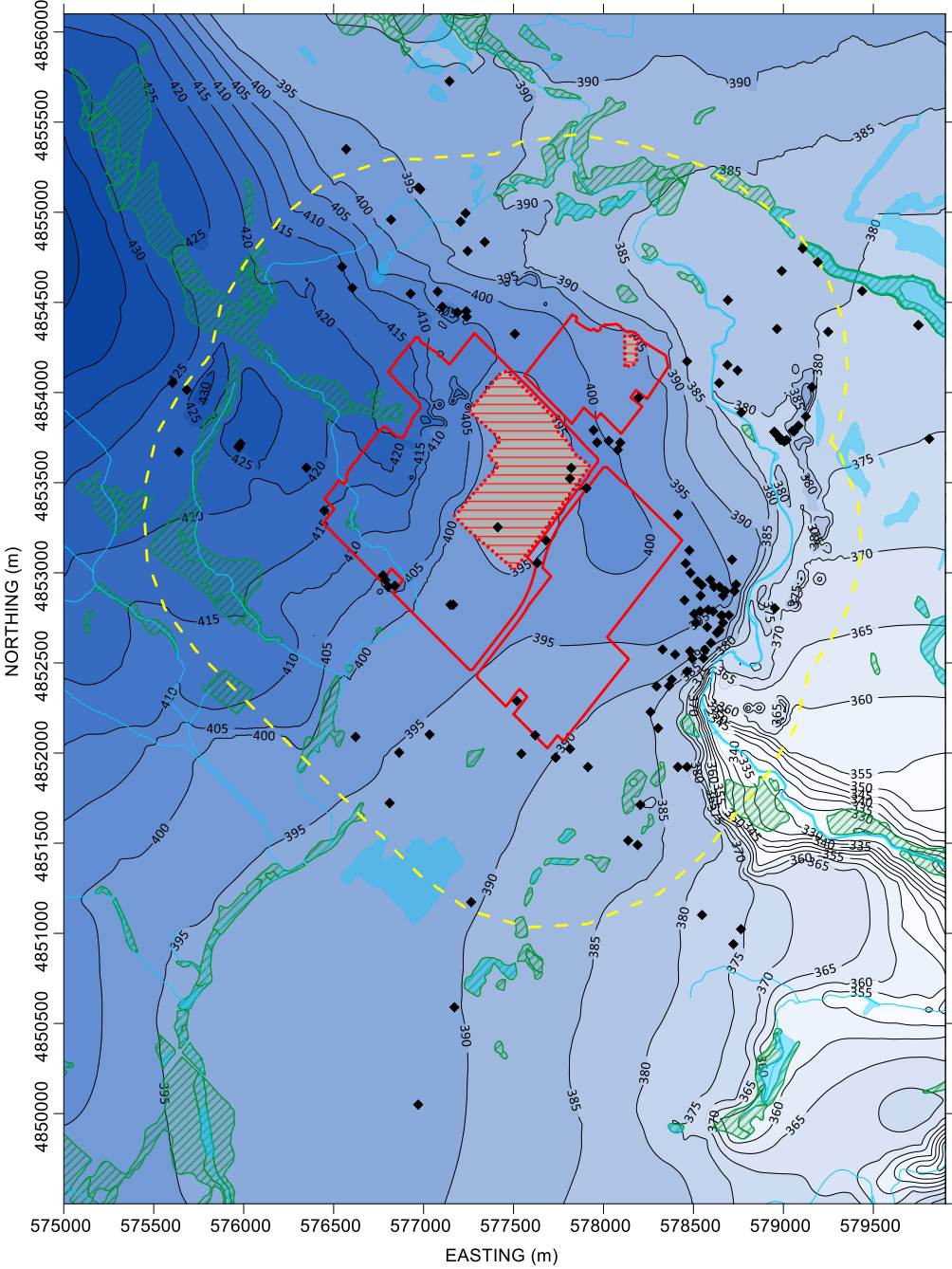
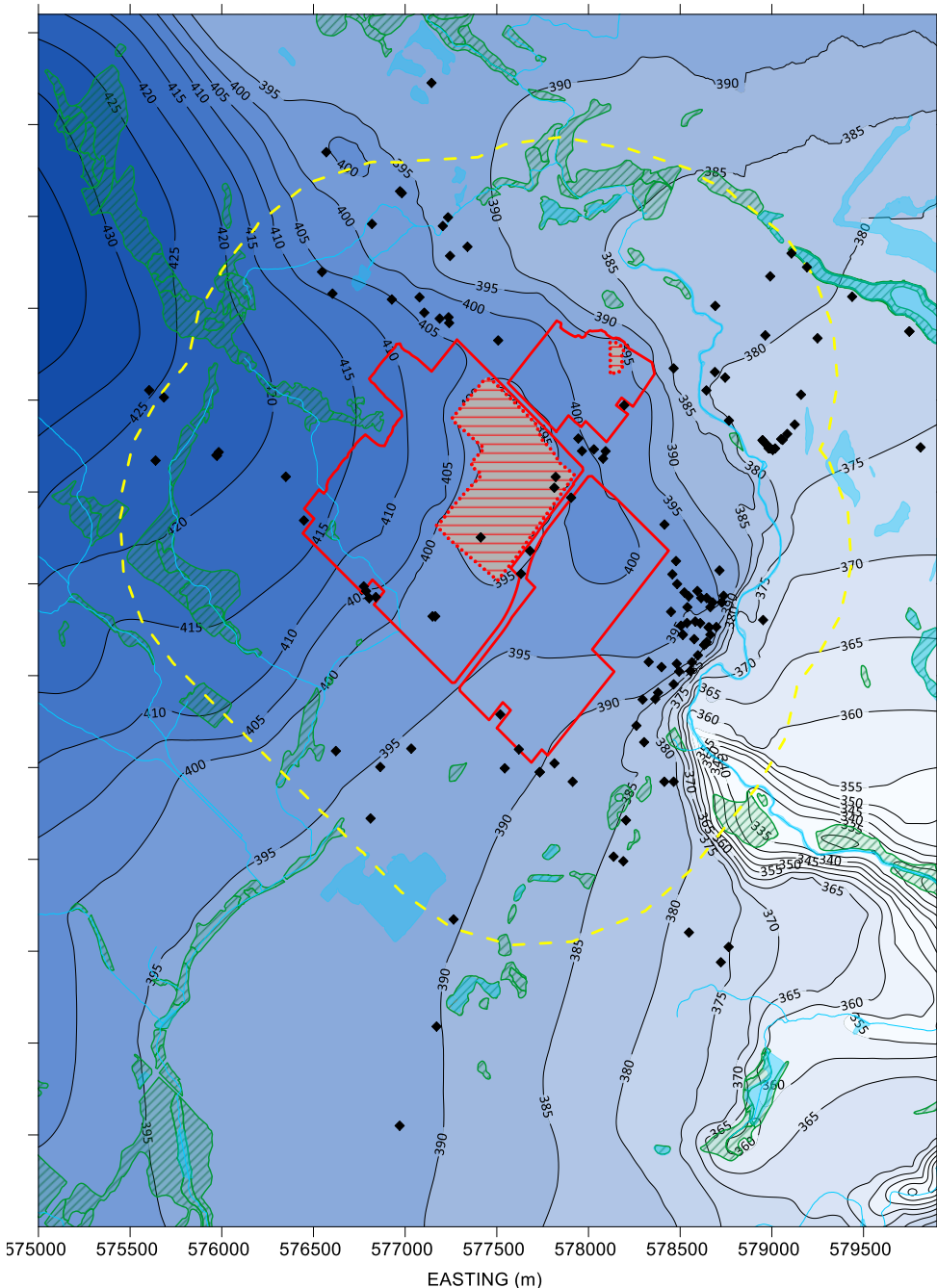


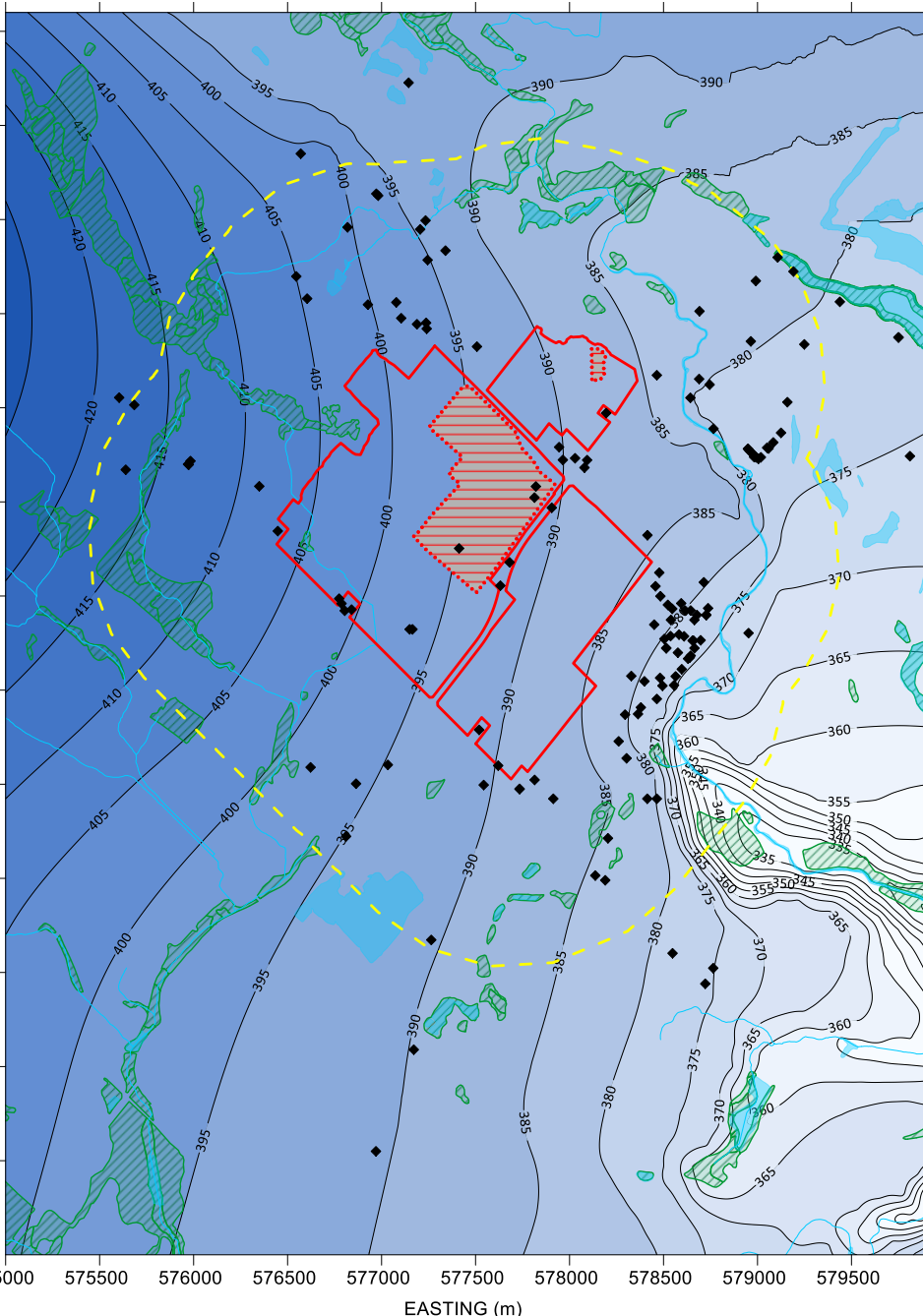
1. SIMULATED WATER TABLE ELEVATION (masl)



2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



HYDRAULIC HEAD (masl)



- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - WETLAND
  - 1KM BUFFER AROUND PROPERTY
  - MECP PRIVATE WELL LOCATION

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic head is shown at a contour interval of 5m
  2. Gasport formation head extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation head extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT  
**GOLDER**  
MEMBER OF WSP

YYYY-MM-DD 2023-07-20  
PREPARED HW  
DESIGN HW  
REVIEW SD  
APPROVED GS

PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
**PHASE 1 SIMULATED HYDRAULIC HEAD**

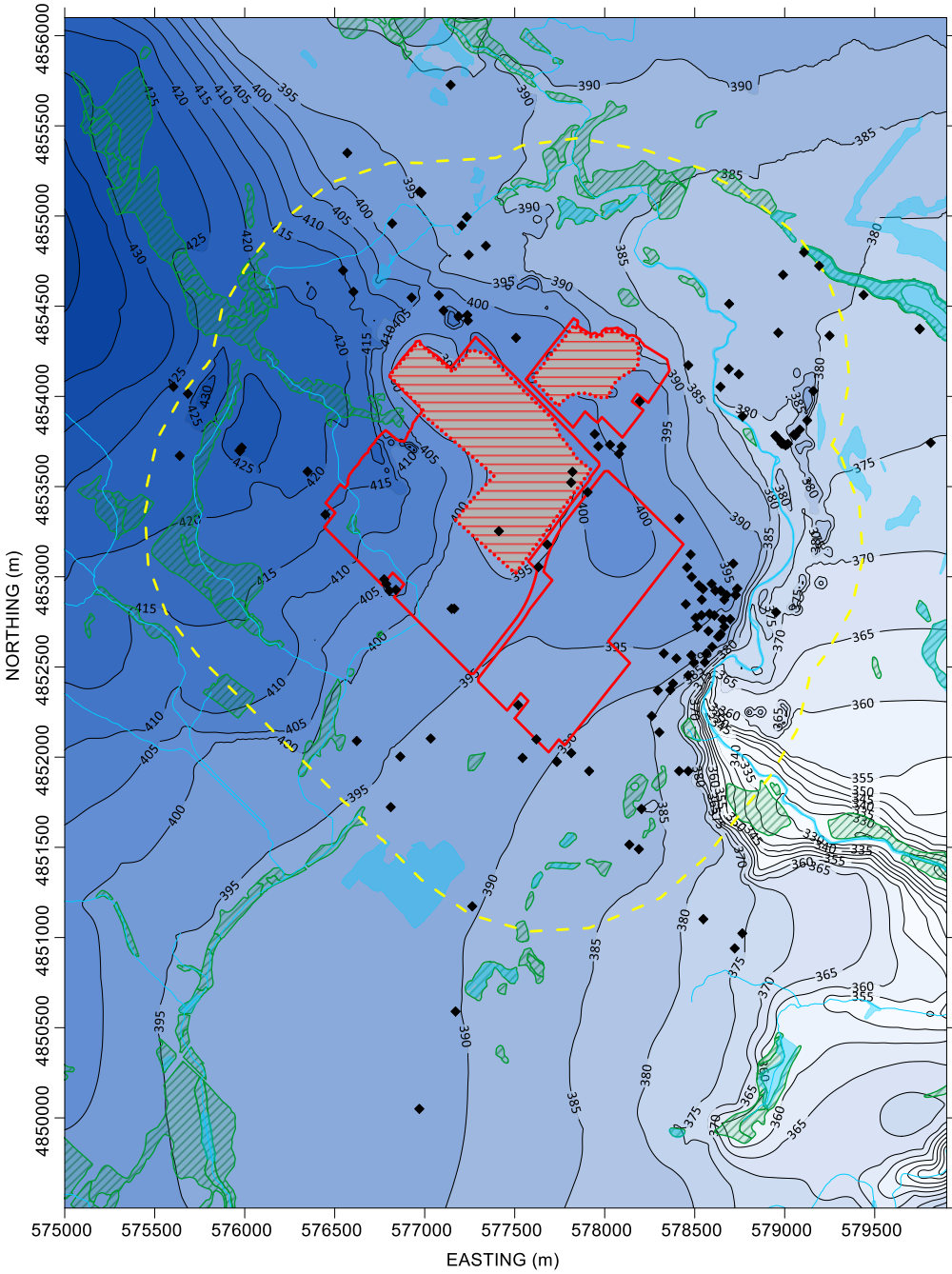
PROJECT No.  
19129150

Rev.  
0

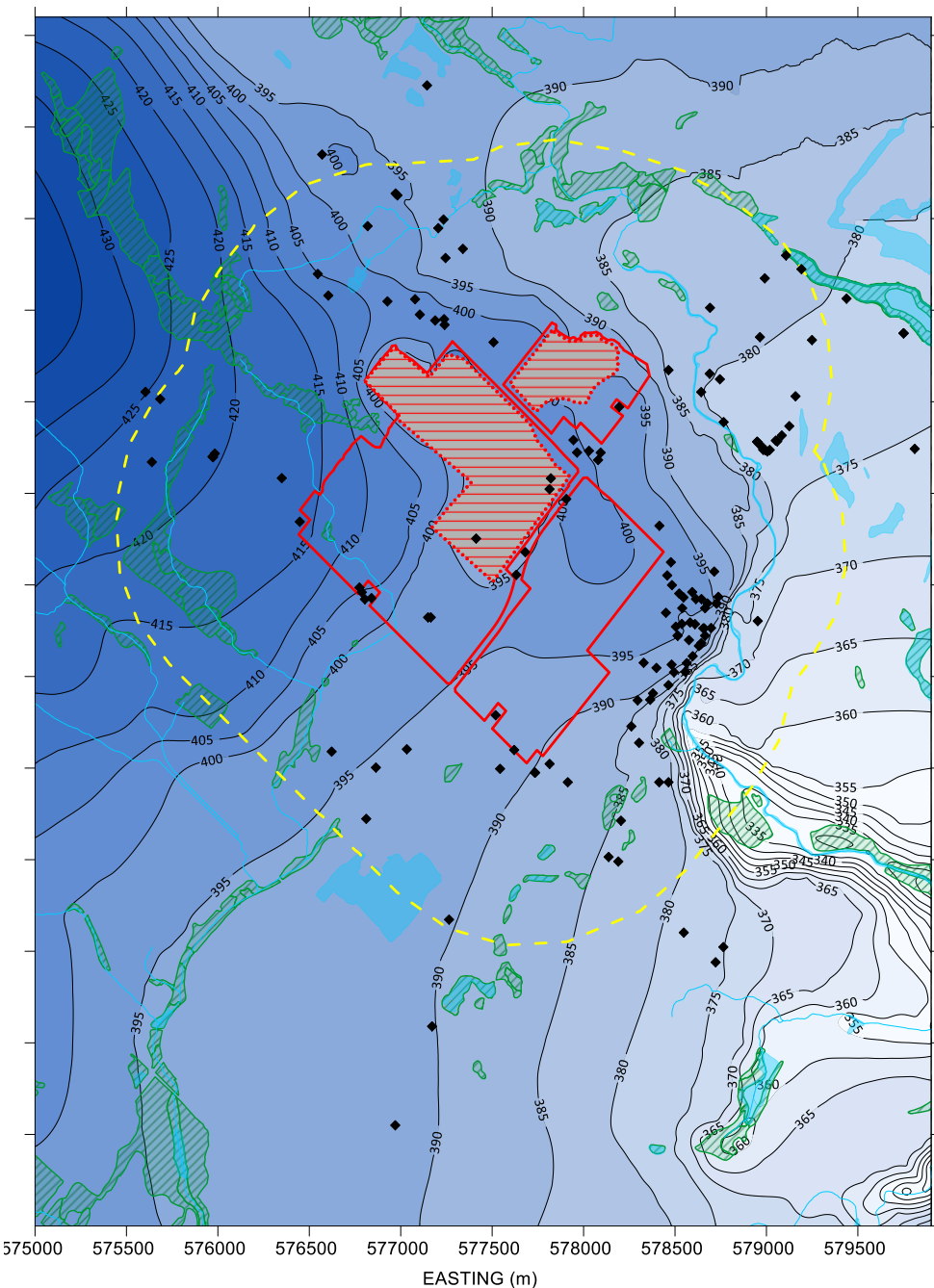
FIGURE  
8A



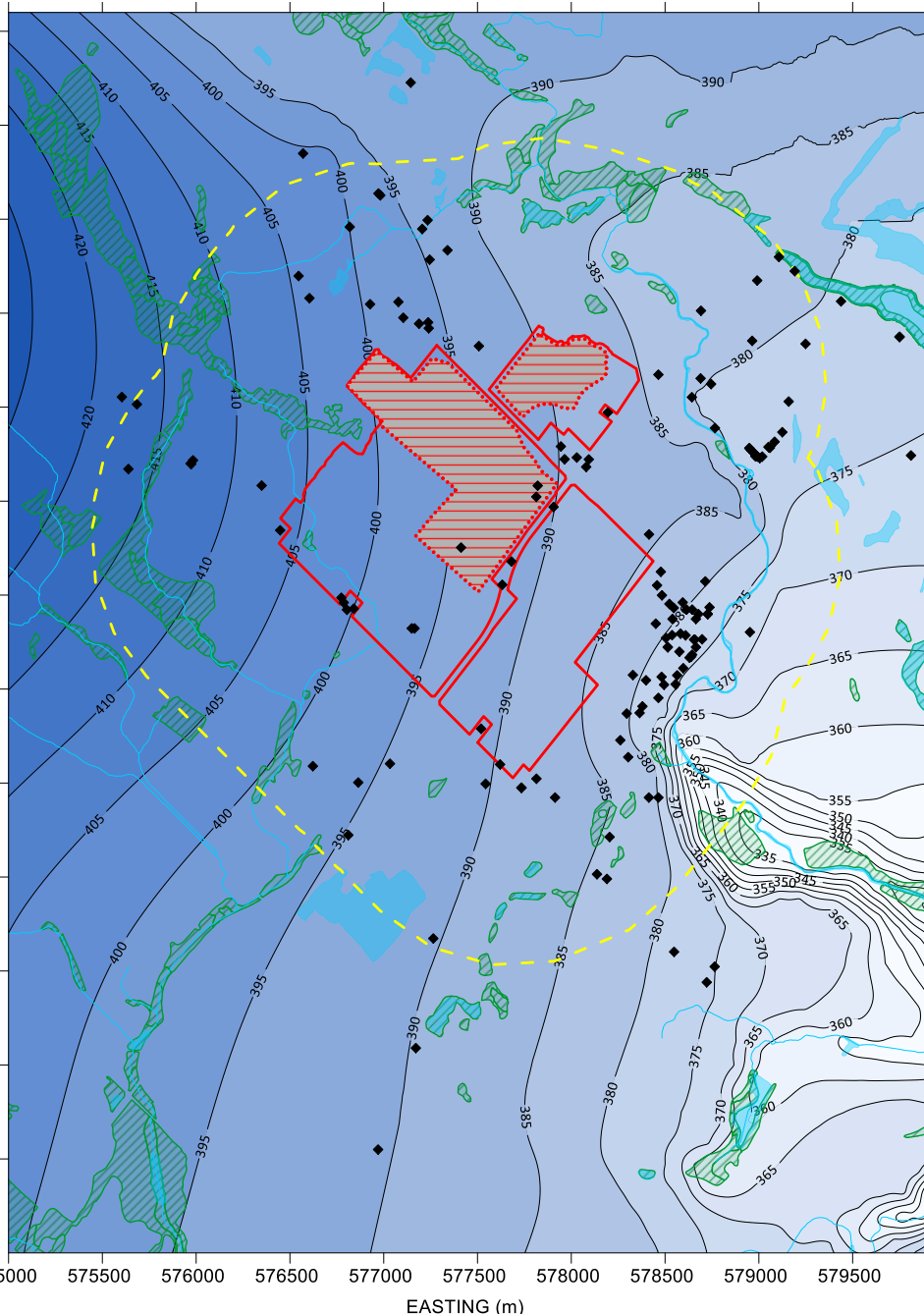
1. SIMULATED WATER TABLE ELEVATION (masl)



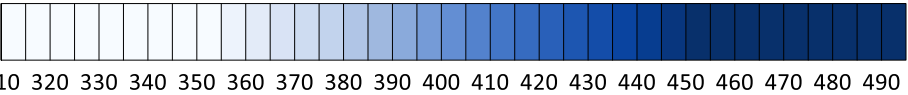
2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



HYDRAULIC HEAD (masl)



- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - WETLAND
  - 1KM BUFFER AROUND PROPERTY
  - MECP PRIVATE WELL LOCATION

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic head is shown at a contour interval of 5m
  2. Gasport formation head extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation head extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)



YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
PHASE 2 SIMULATED HYDRAULIC HEAD

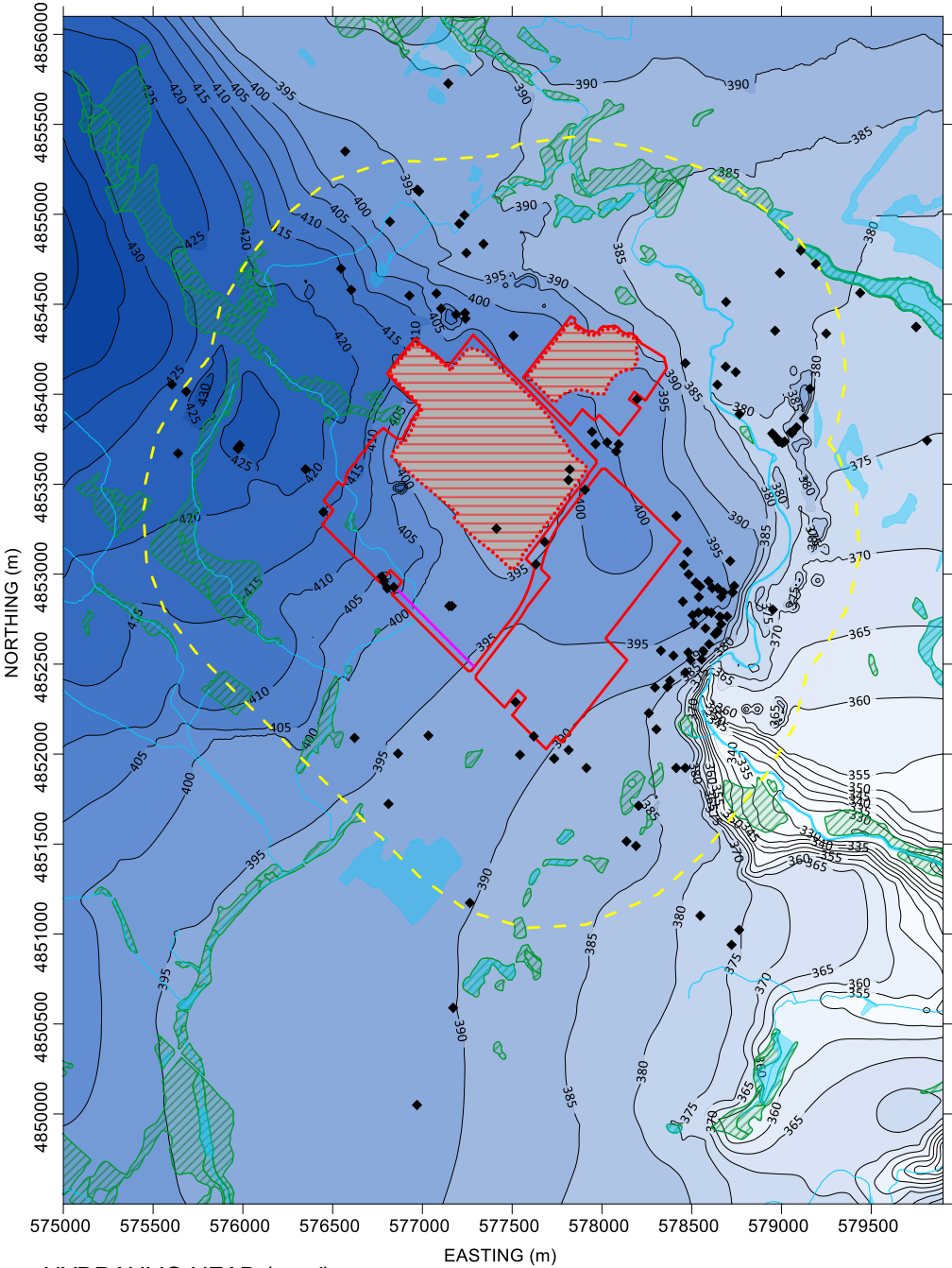
PROJECT No.  
19129150

Rev.  
0

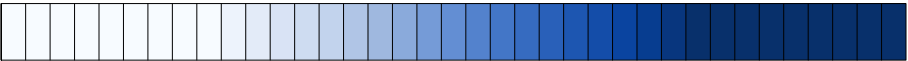
FIGURE  
8B



1. SIMULATED WATER TABLE ELEVATION (masl)



HYDRAULIC HEAD (masl)

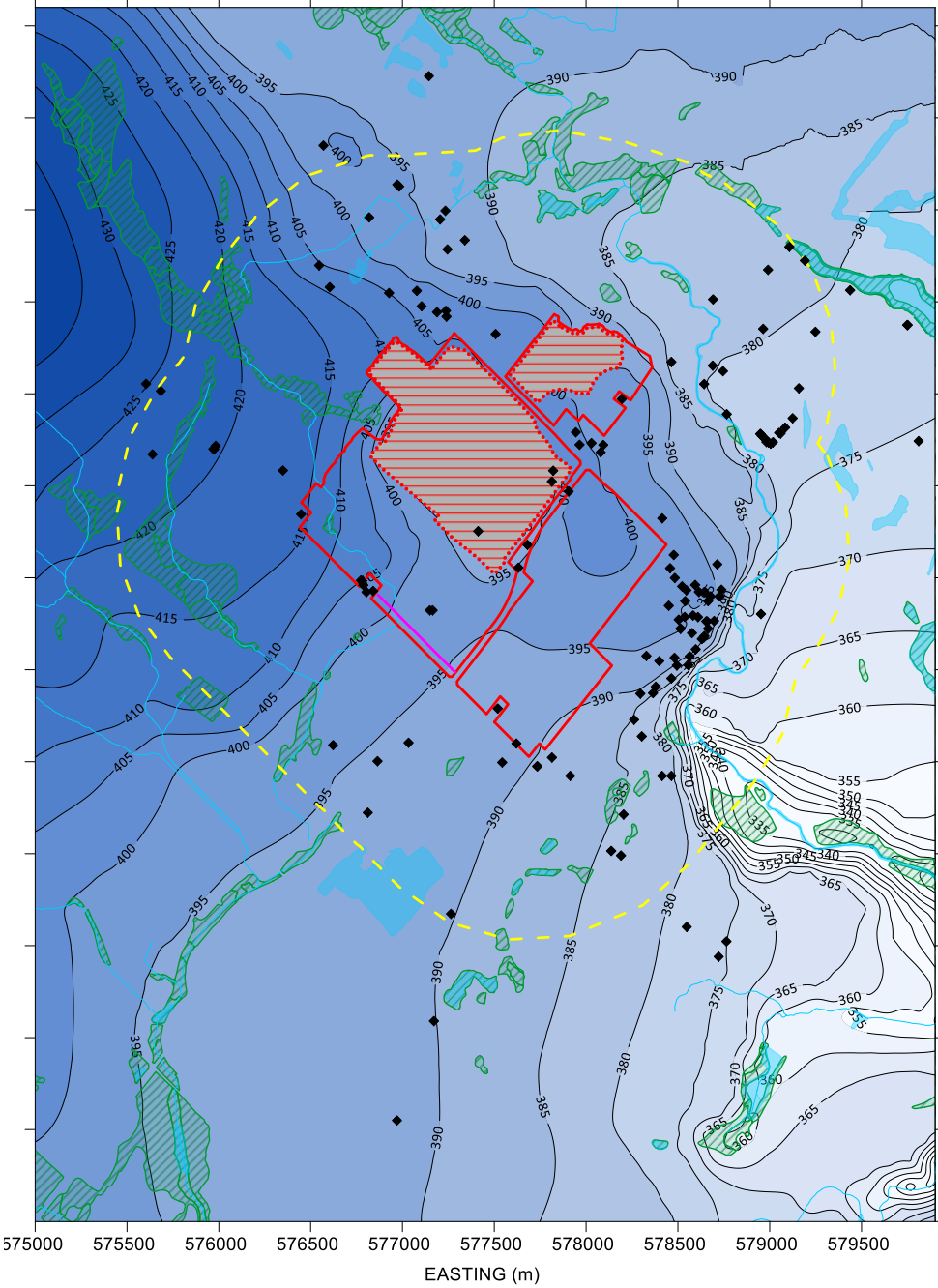


310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490

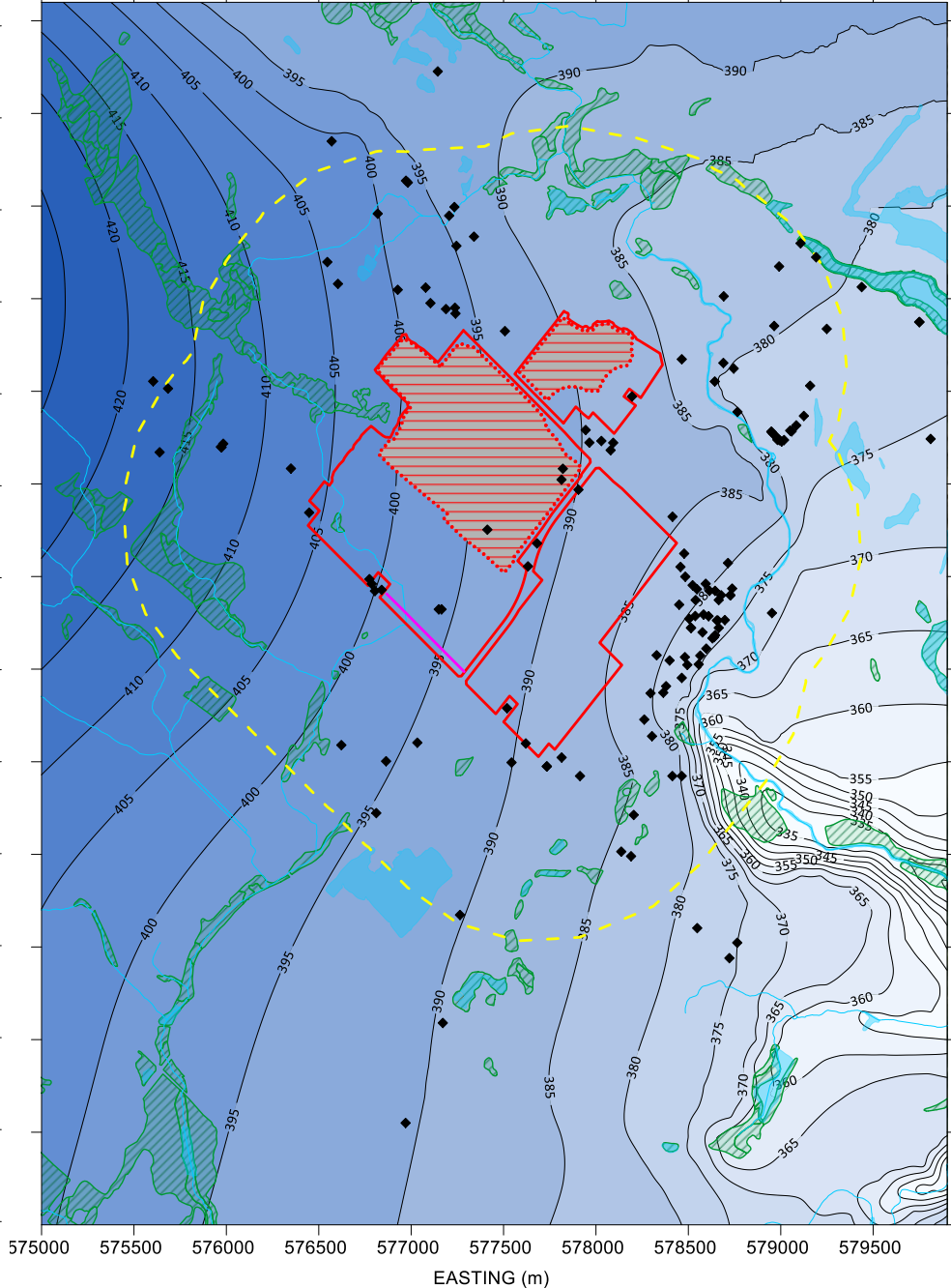
- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - WETLAND
  - 1KM BUFFER AROUND PROPERTY
  - MECP PRIVATE WELL LOCATION
  - SLURRY WALL/ GROUT ALIGNMENT

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



- NOTES
1. Simulated hydraulic head is shown at a contour interval of 5m
  2. Gasport formation head extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation head extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT	YYYY-MM-DD	2023-07-20
PREPARED	HW	
DESIGN	HW	
REVIEW	SD	
APPROVED	GS	



PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
PHASE 3 SIMULATED HYDRAULIC HEAD

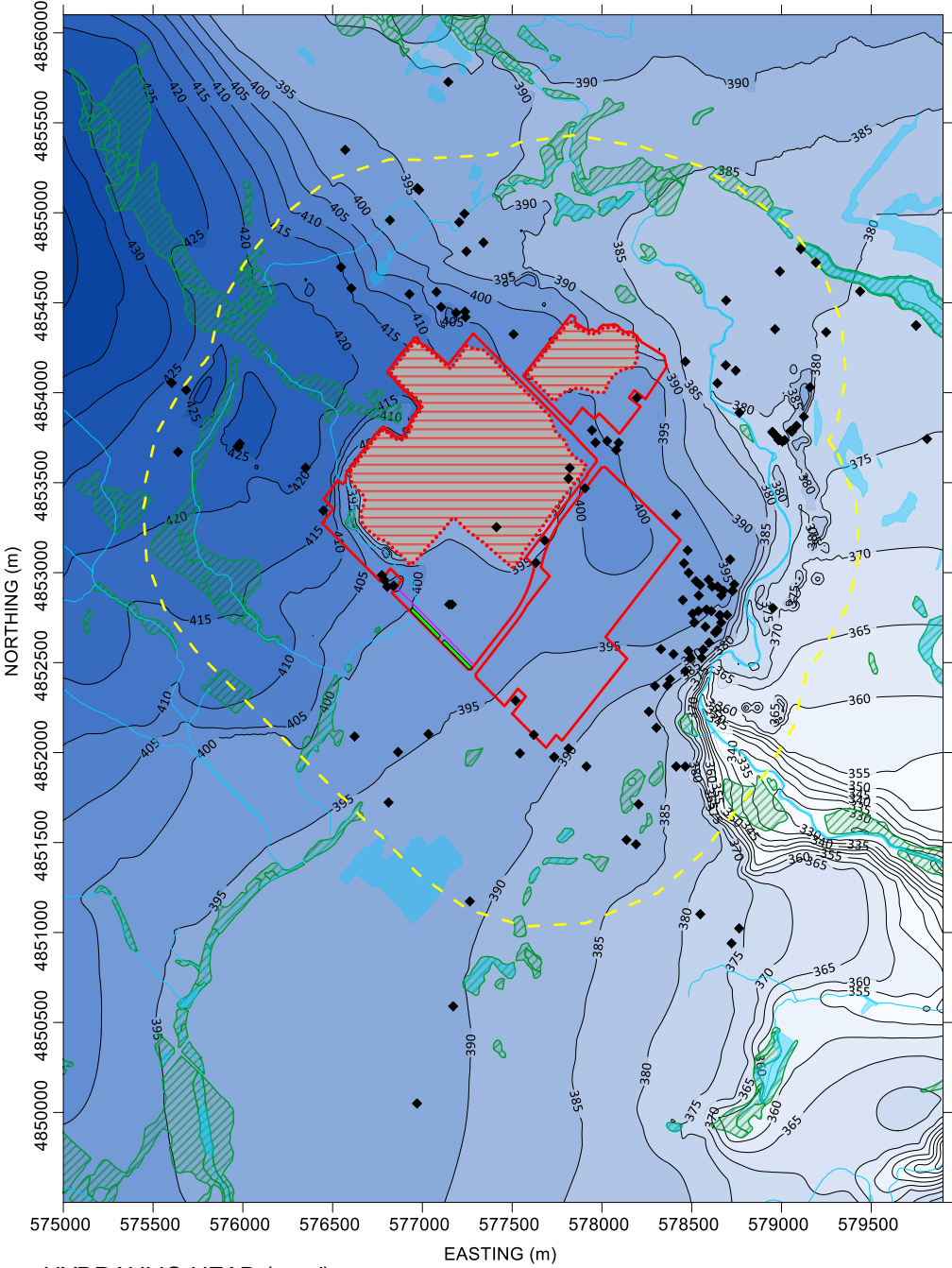
PROJECT No.  
19129150

Rev.  
0

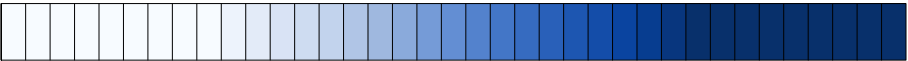
FIGURE  
8C



1. SIMULATED WATER TABLE ELEVATION (masl)

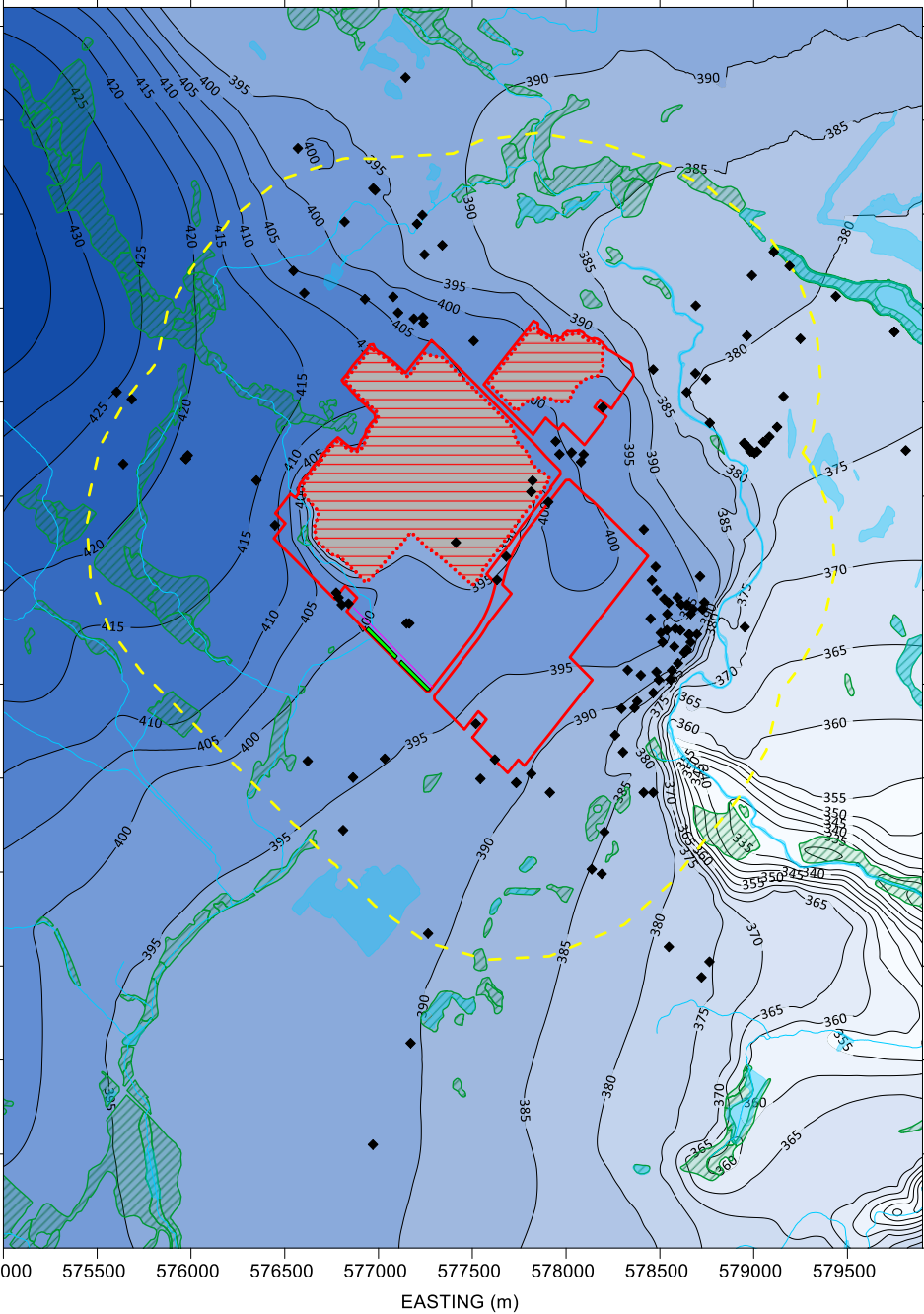


HYDRAULIC HEAD (masl)

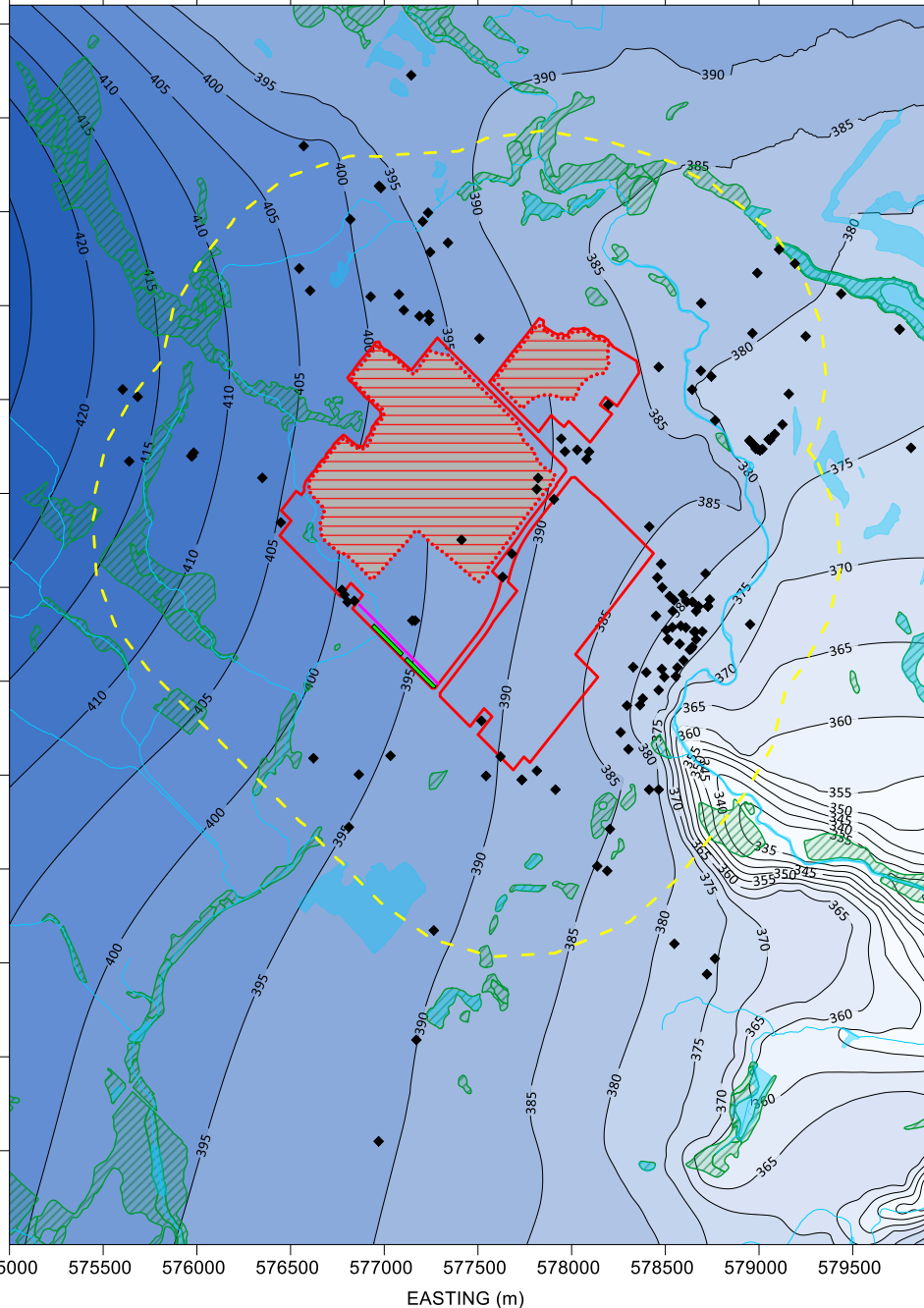


310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490

2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



LEGEND

- LAKES
- RIVERS/ STREAMS
- LICENSE LIMIT
- MODELLED EXTRACTION EXTENTS
- WETLAND
- 1KM BUFFER AROUND PROPERTY
- MECP PRIVATE WELL LOCATION
- SLURRY WALL/ GROUT ALIGNMENT
- INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

NOTES

1. Simulated hydraulic head is shown at a contour interval of 5m
2. Gasport formation head extracted from model slice 22 (base of Gasport)
3. Manitoulin/ Whirlpool formation head extracted from model slice 25
4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT

CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT



DATE

2023-07-20

PREPARED

HW

DESIGN

HW

REVIEW

SD

APPROVED

GS

PROJECT

CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE

PHASE 4 SIMULATED HYDRAULIC HEAD

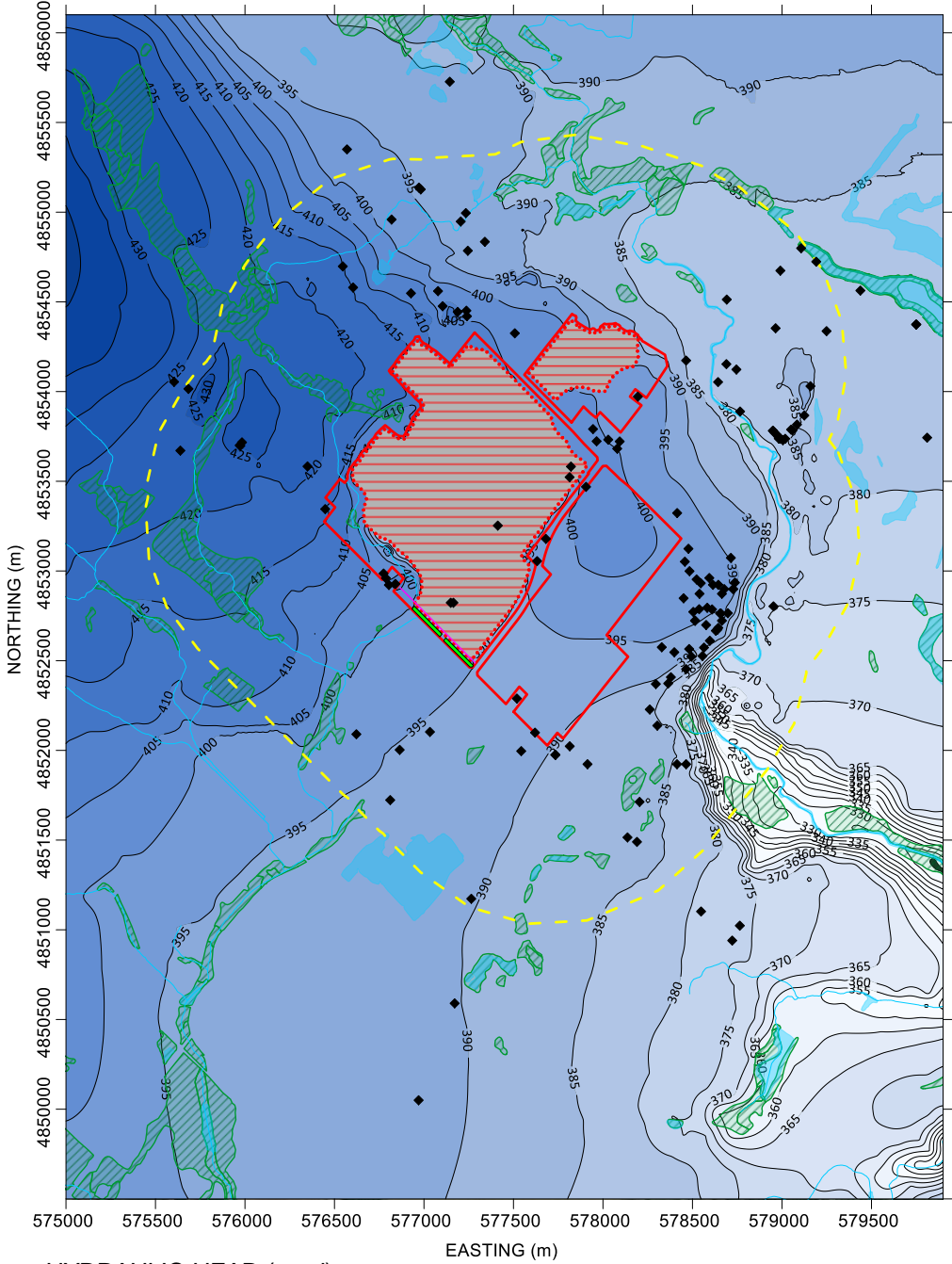
PROJECT No.  
19129150

Rev.  
0

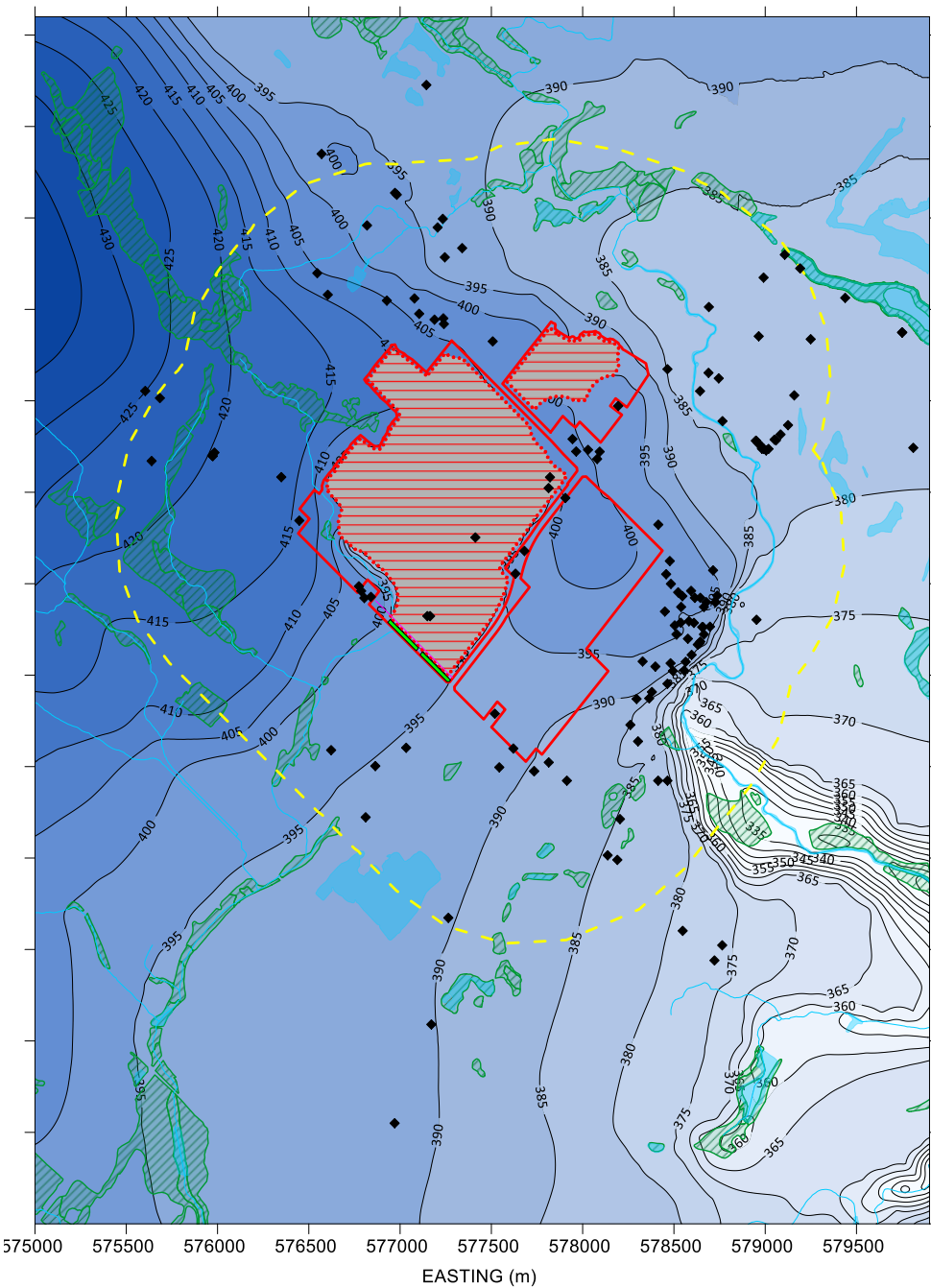
FIGURE  
8D



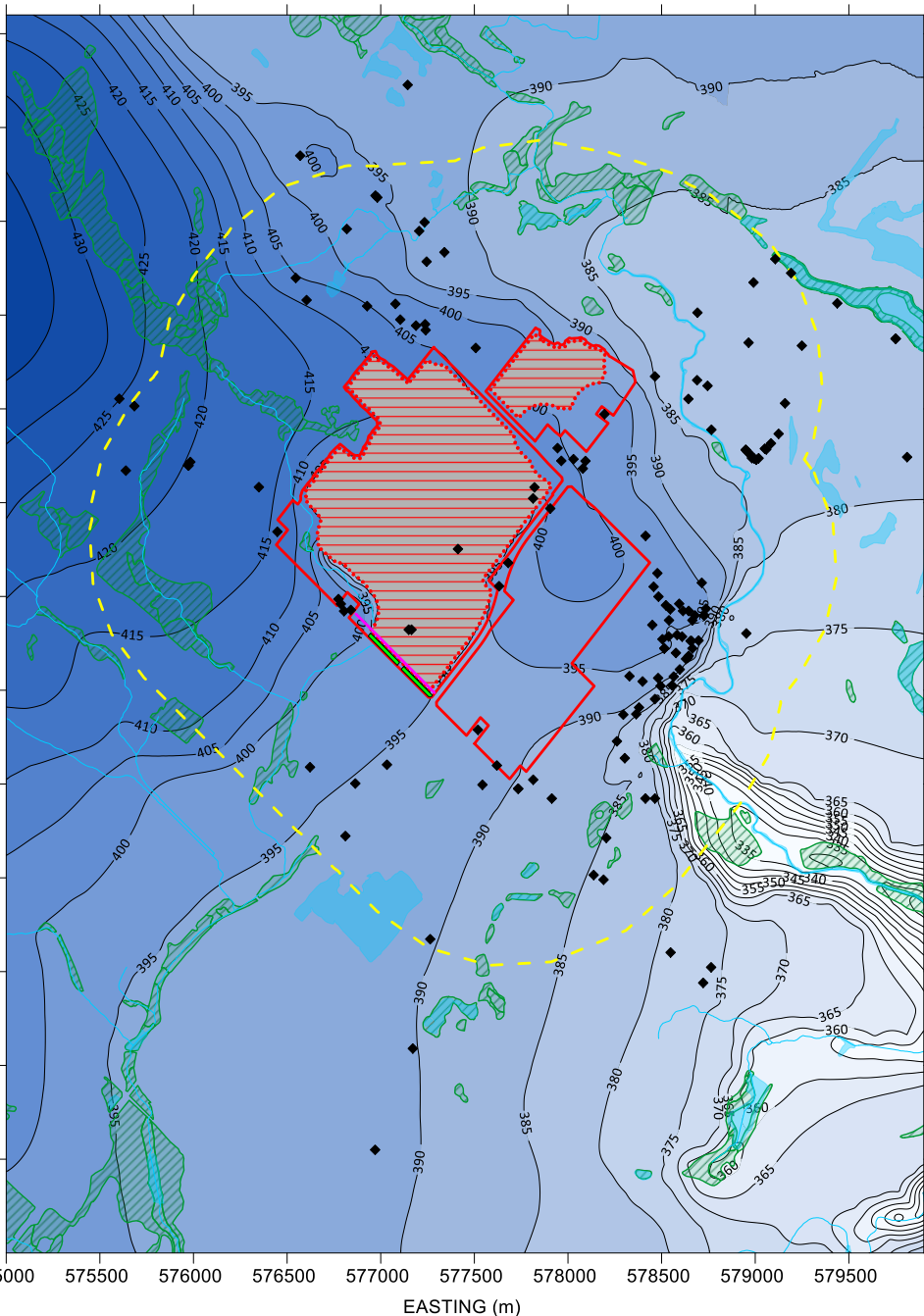
1. SIMULATED WATER TABLE ELEVATION (masl)



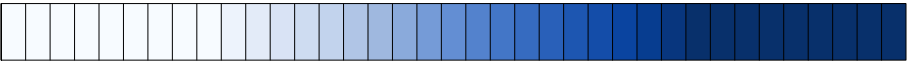
2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



HYDRAULIC HEAD (masl)



310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490

LEGEND

- LAKES
- RIVERS/ STREAMS
- LICENSE LIMIT
- MODELLED EXTRACTION EXTENTS
- WETLAND
- 1KM BUFFER AROUND PROPERTY
- MECP PRIVATE WELL LOCATION
- SLURRY WALL/ GROUT ALIGNMENT
- INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

NOTES

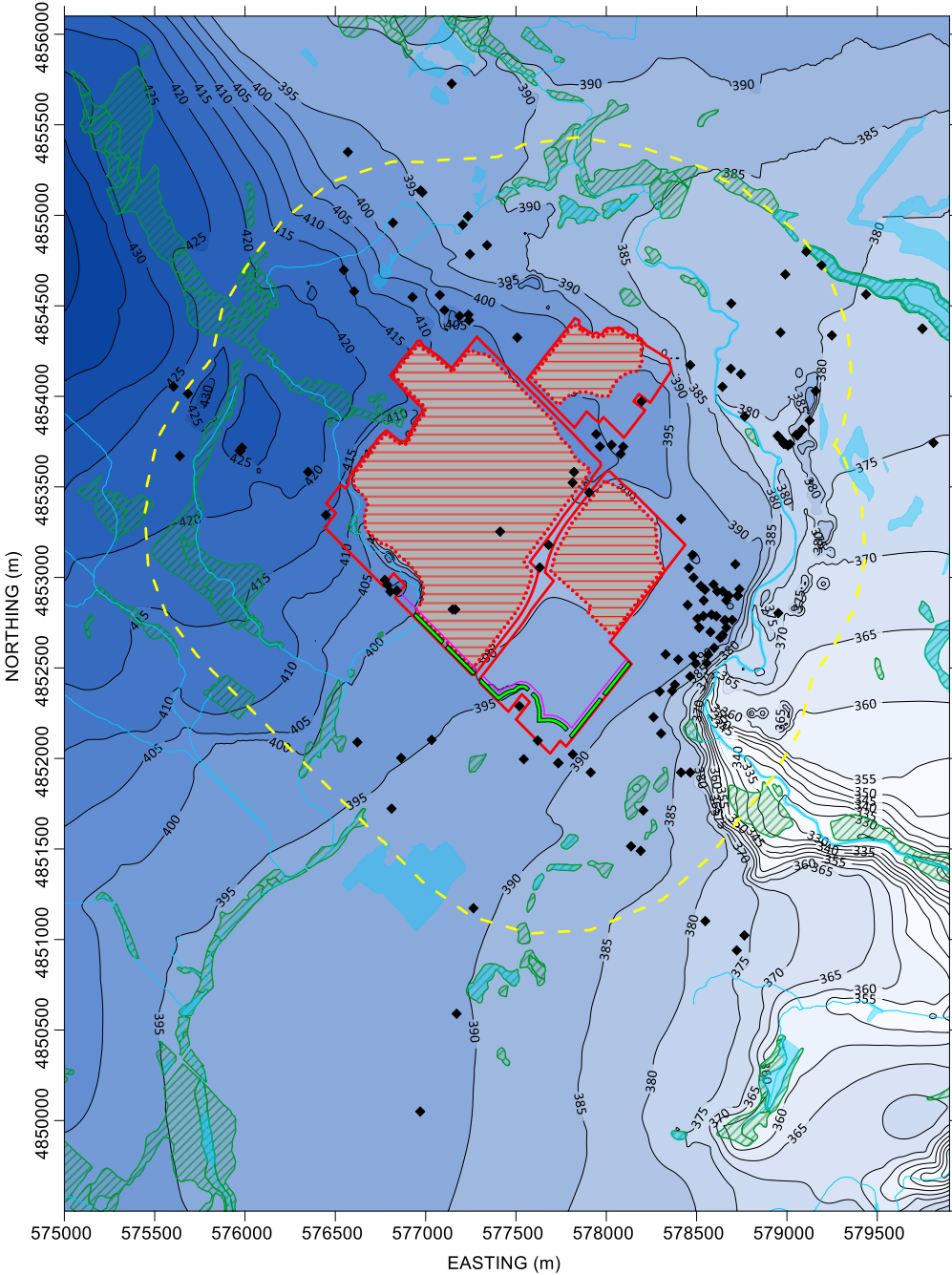
1. Simulated hydraulic head is shown at a contour interval of 5m
2. Gasport formation head extracted from model slice 22 (base of Gasport)
3. Manitoulin/ Whirlpool formation head extracted from model slice 25
4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT	
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)	
CONSULTANT	
YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

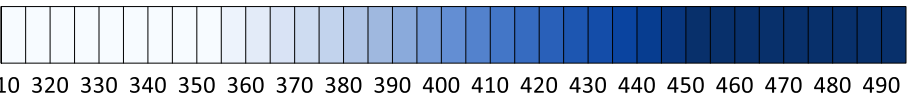
PROJECT	
CALEDON PIT AND QUARRY NUMERICAL MODELLING	
TITLE	
PHASE 5 SIMULATED HYDRAULIC HEAD	
PROJECT No.	19129150
Rev.	0



1. SIMULATED WATER TABLE ELEVATION (masl)



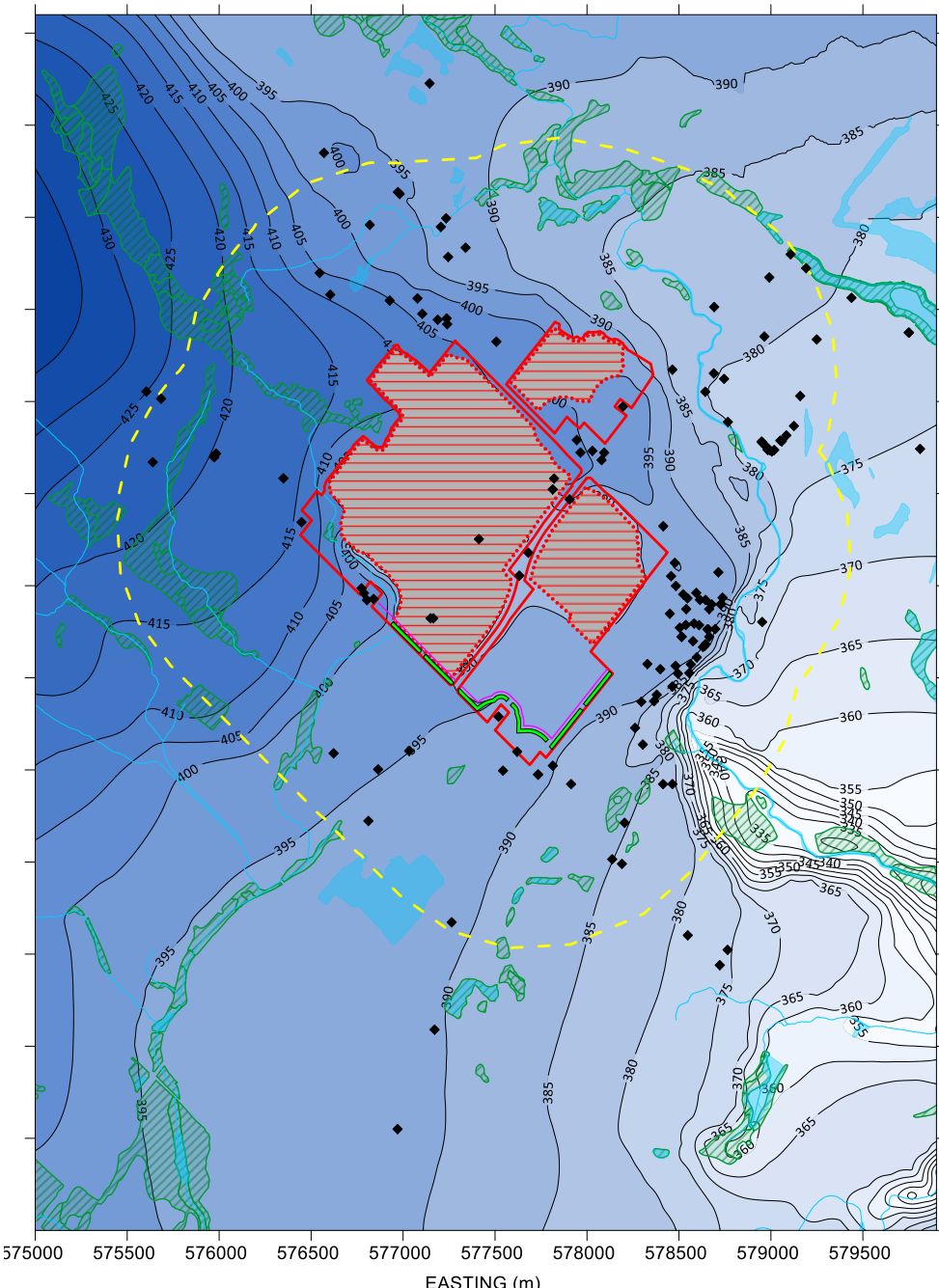
HYDRAULIC HEAD (masl)



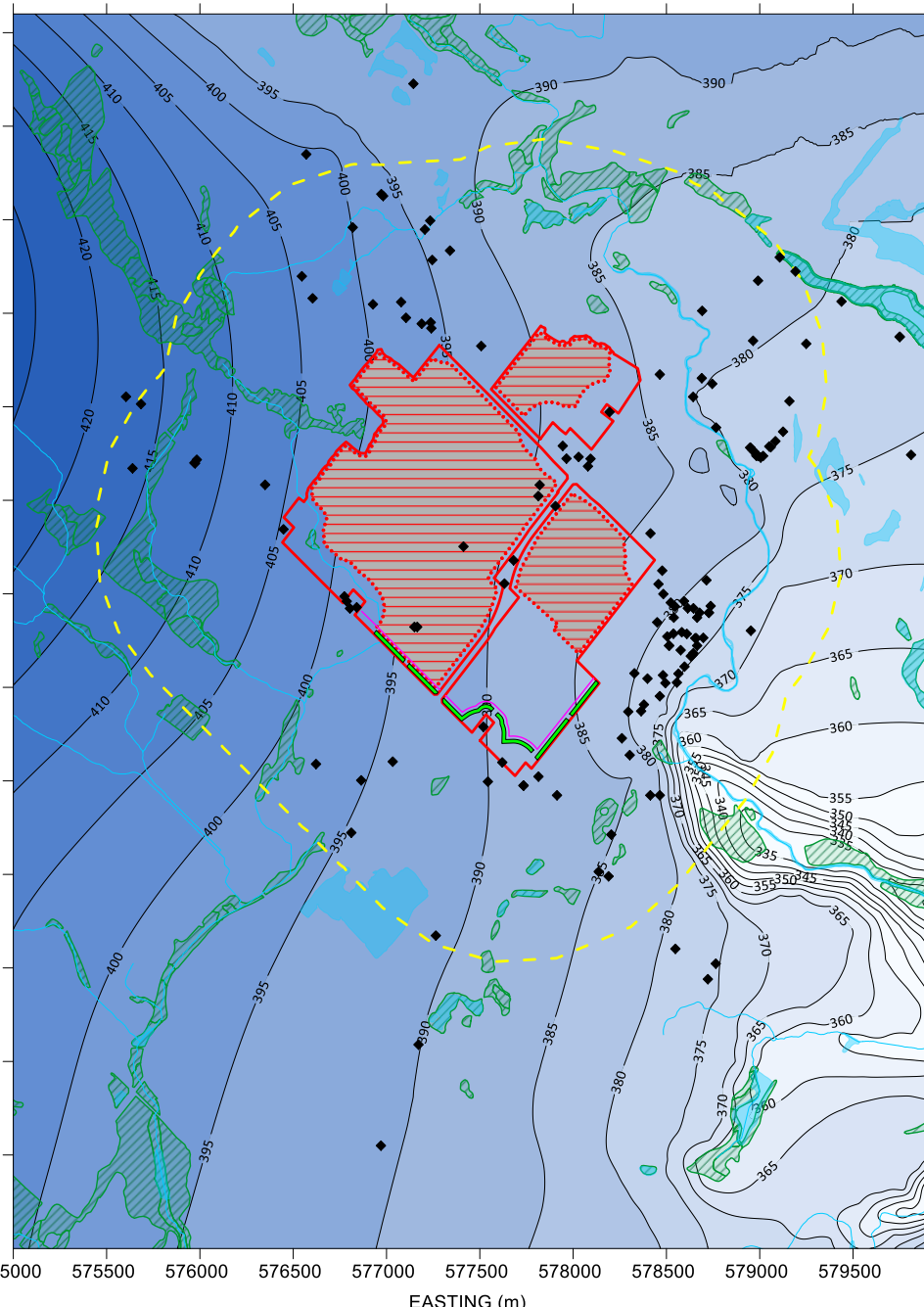
- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - WETLAND
  - 1KM BUFFER AROUND PROPERTY
  - MECP PRIVATE WELL LOCATION
  - SLURRY WALL/ GROUT ALIGNMENT
  - INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



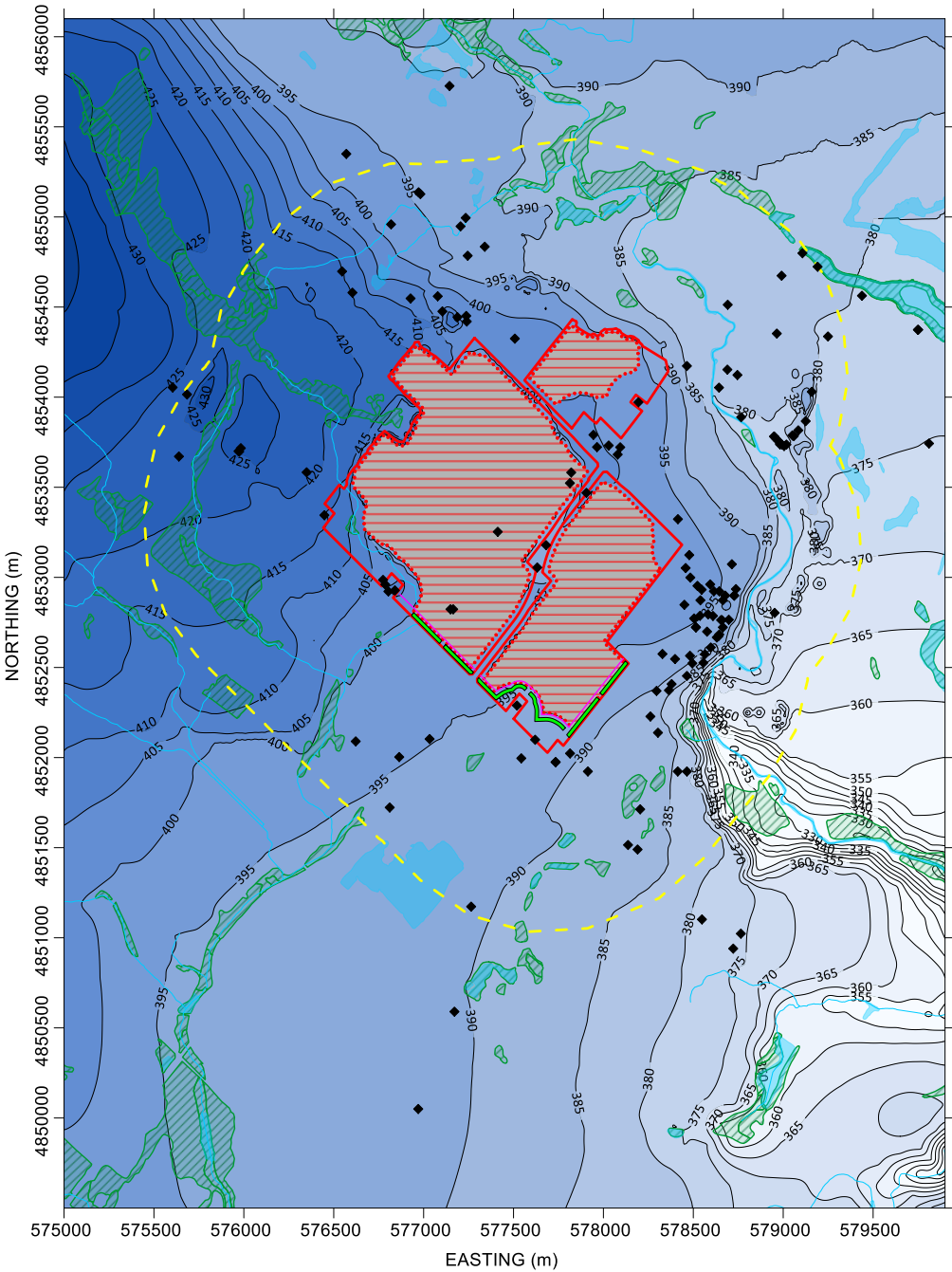
- NOTES
1. Simulated hydraulic head is shown at a contour interval of 5m
  2. Gasport formation head extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation head extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT	CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)	
CONSULTANT	YYYY-MM-DD	2023-07-20
PREPARED	HW	
DESIGN	HW	
REVIEW	SD	
APPROVED	GS	

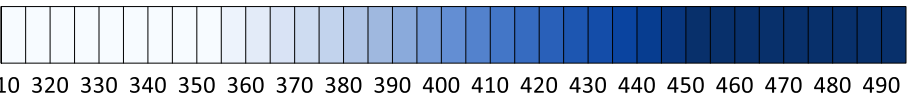
PROJECT	CALEDON PIT AND QUARRY NUMERICAL MODELLING	
TITLE	PHASE 6 SIMULATED HYDRAULIC HEAD	
PROJECT No.	19129150	Rev.
		0



1. SIMULATED WATER TABLE ELEVATION (masl)



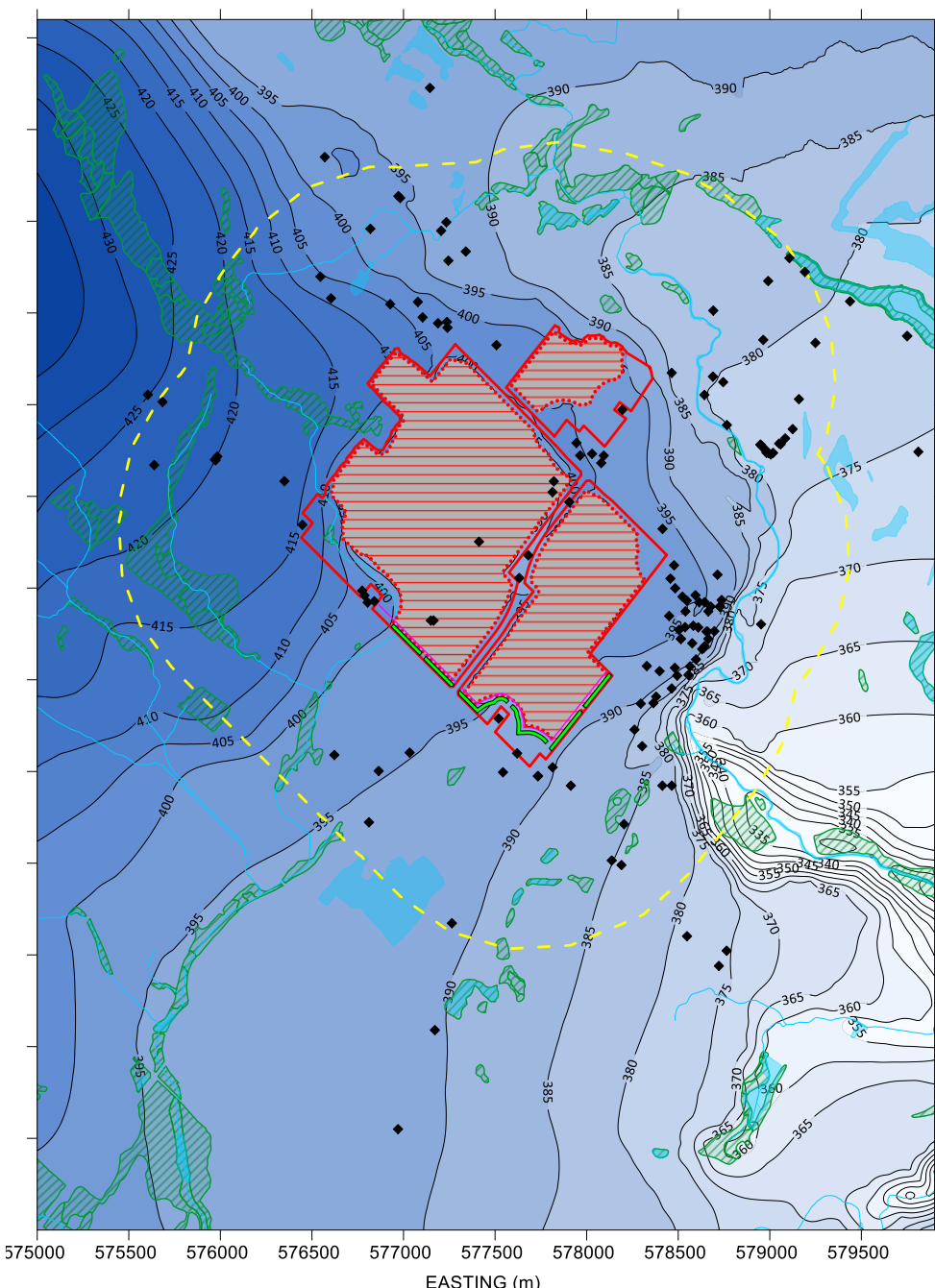
HYDRAULIC HEAD (masl)



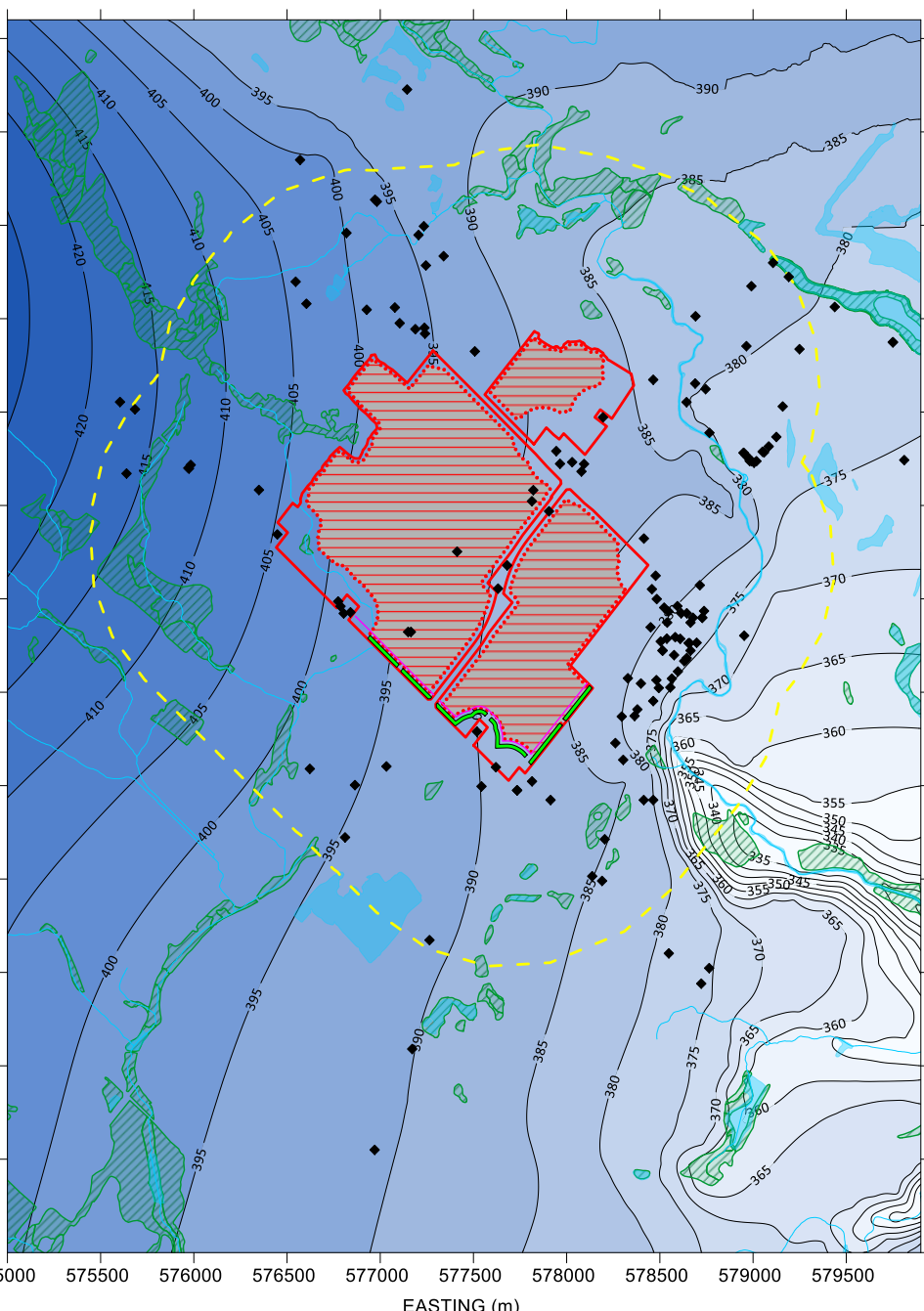
- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - WETLAND
  - 1KM BUFFER AROUND PROPERTY
  - MECP PRIVATE WELL LOCATION
  - SLURRY WALL/ GROUT ALIGNMENT
  - INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



- NOTES
1. Simulated hydraulic head is shown at a contour interval of 5m
  2. Gasport formation head extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation head extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT	YYYY-MM-DD	2023-07-20
PREPARED	HW	
DESIGN	HW	
REVIEW	SD	
APPROVED	GS	

PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
PHASE 7 SIMULATED HYDRAULIC HEAD

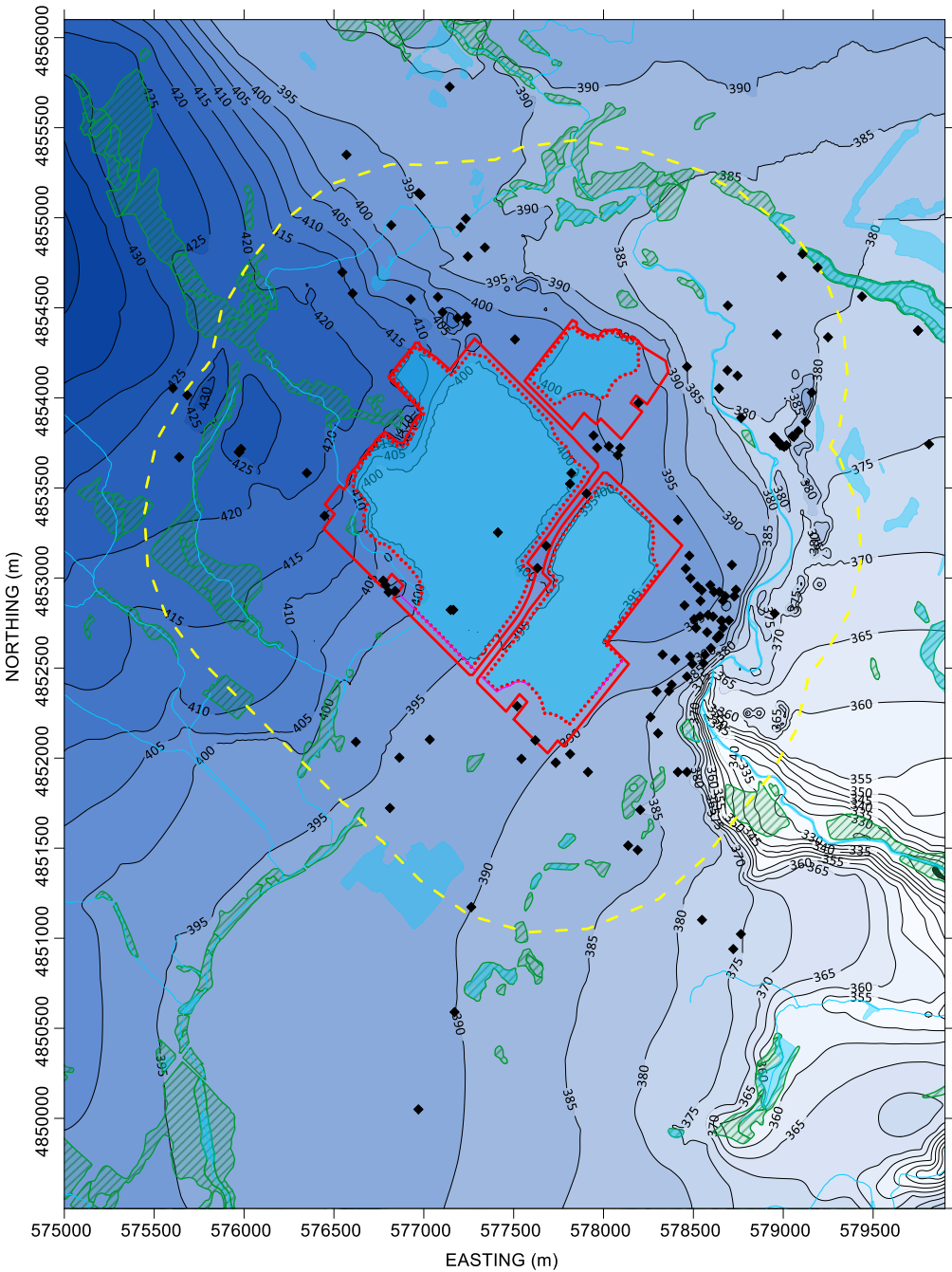
PROJECT No.  
19129150

Rev.  
0

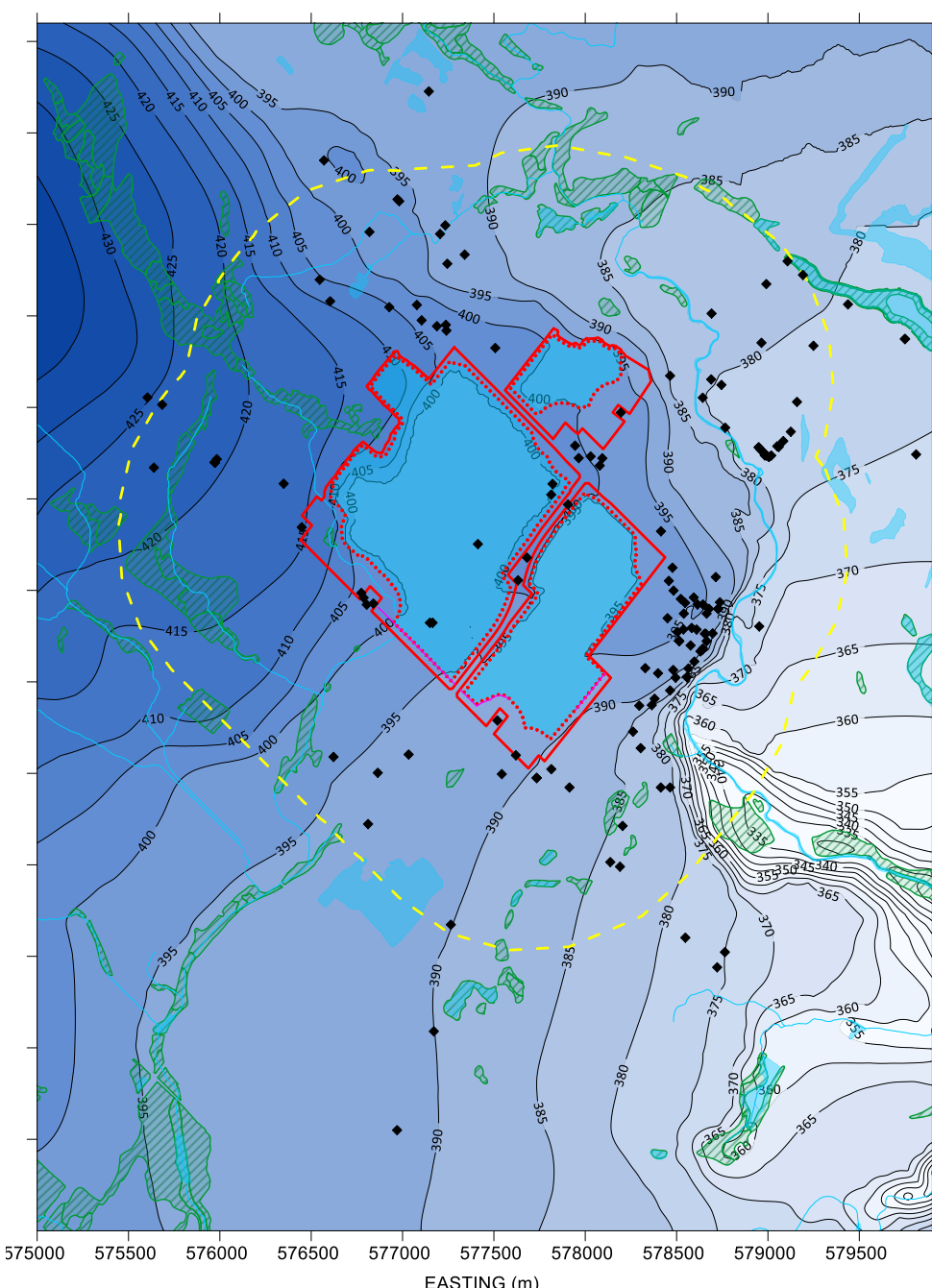
FIGURE  
8G



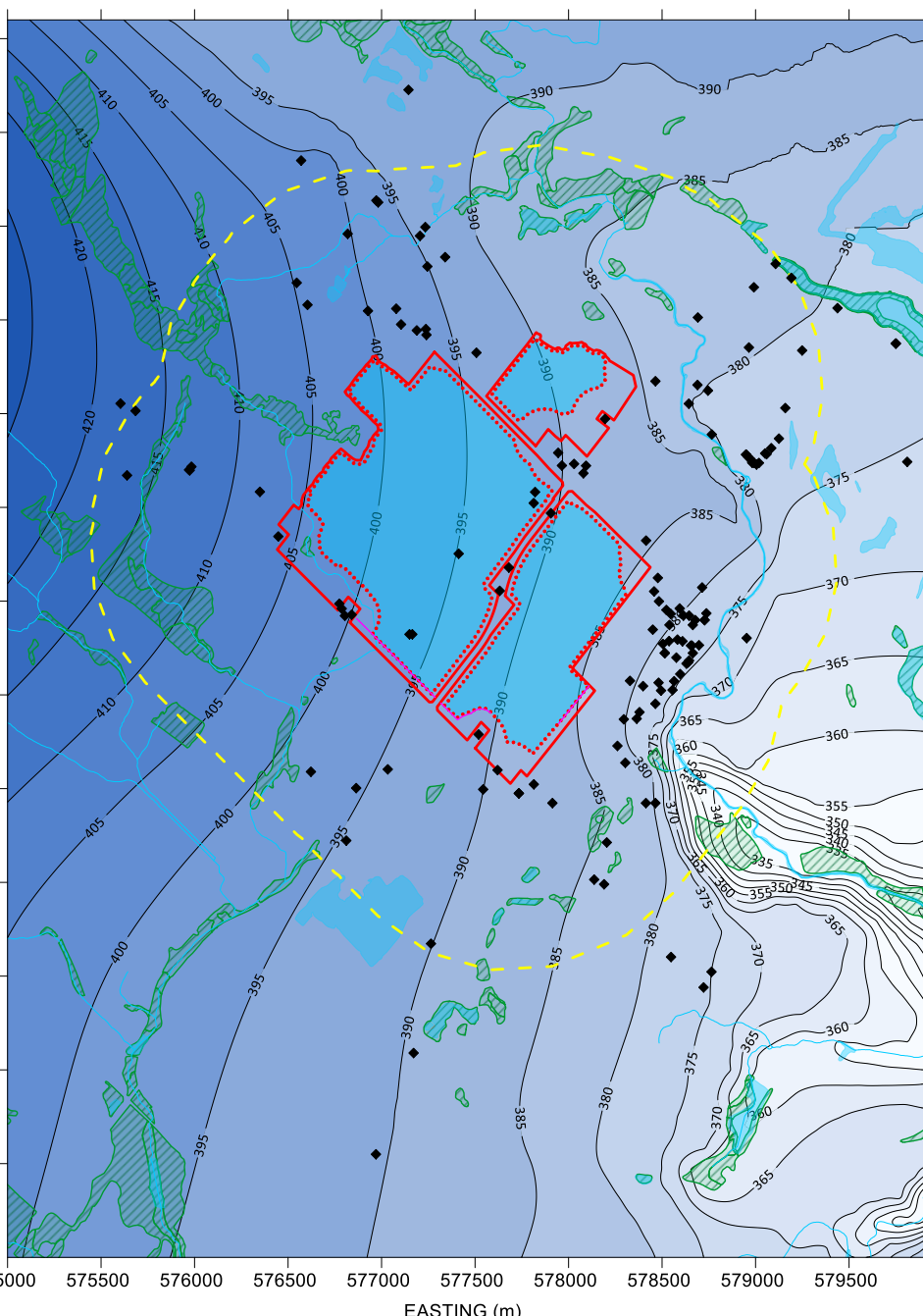
1. SIMULATED WATER TABLE ELEVATION (masl)



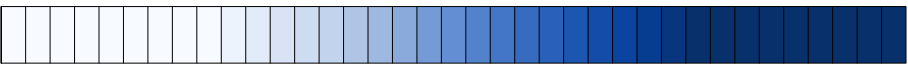
2. SIMULATED GASPORT FORMATION HEAD (masl)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION HEAD (masl)



HYDRAULIC HEAD (masl)



310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490

LEGEND

- |  |                             |  |                              |
|--|-----------------------------|--|------------------------------|
|  | LAKES                       |  | SLURRY WALL/ GROUT ALIGNMENT |
|  | RIVERS/ STREAMS             |  | INFILTRATION TRENCH          |
|  | LICENSE LIMIT               |  |                              |
|  | MODELLED EXTRACTION EXTENTS |  |                              |
|  | WETLAND                     |  |                              |
|  | 1KM BUFFER AROUND PROPERTY  |  |                              |
|  | MECP PRIVATE WELL LOCATION  |  |                              |

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

NOTES

1. Simulated hydraulic head is shown at a contour interval of 5m
2. Gasport formation head extracted from model slice 22 (base of Gasport)
3. Manitoulin/ Whirlpool formation head extracted from model slice 25
4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT

CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT



YYYY-MM-DD

PREPARED

DESIGN

REVIEW

APPROVED

2023-07-20

HW

HW

SD

GS

PROJECT

CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE

REHABILITATION SIMULATED HYDRAULIC HEAD

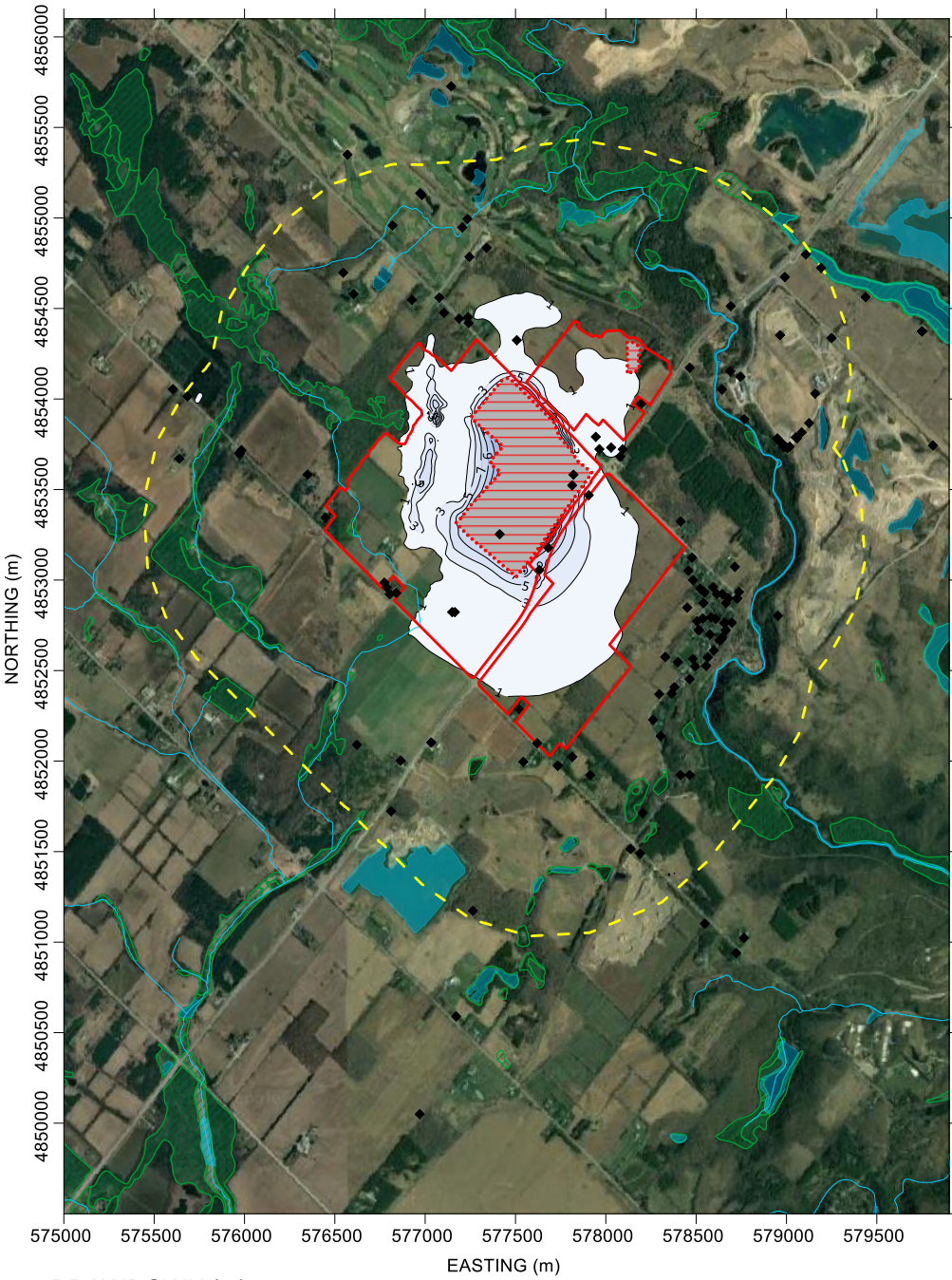
PROJECT No.  
19129150

Rev.  
0

FIGURE  
8H



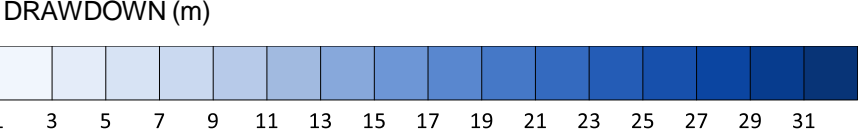
1. SIMULATED WATER TABLE DRAWDOWN (m)



2. SIMULATED GASPORT FORMATION DRAWDOWN (m)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - WETLAND
  - 1KM BUFFER AROUND PROPERTY
  - MECP PRIVATE WELL LOCATION

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic drawdown is shown at a contour interval of 2m
  2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNRF, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT  
**GOLDER**  
MEMBER OF WSP

YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

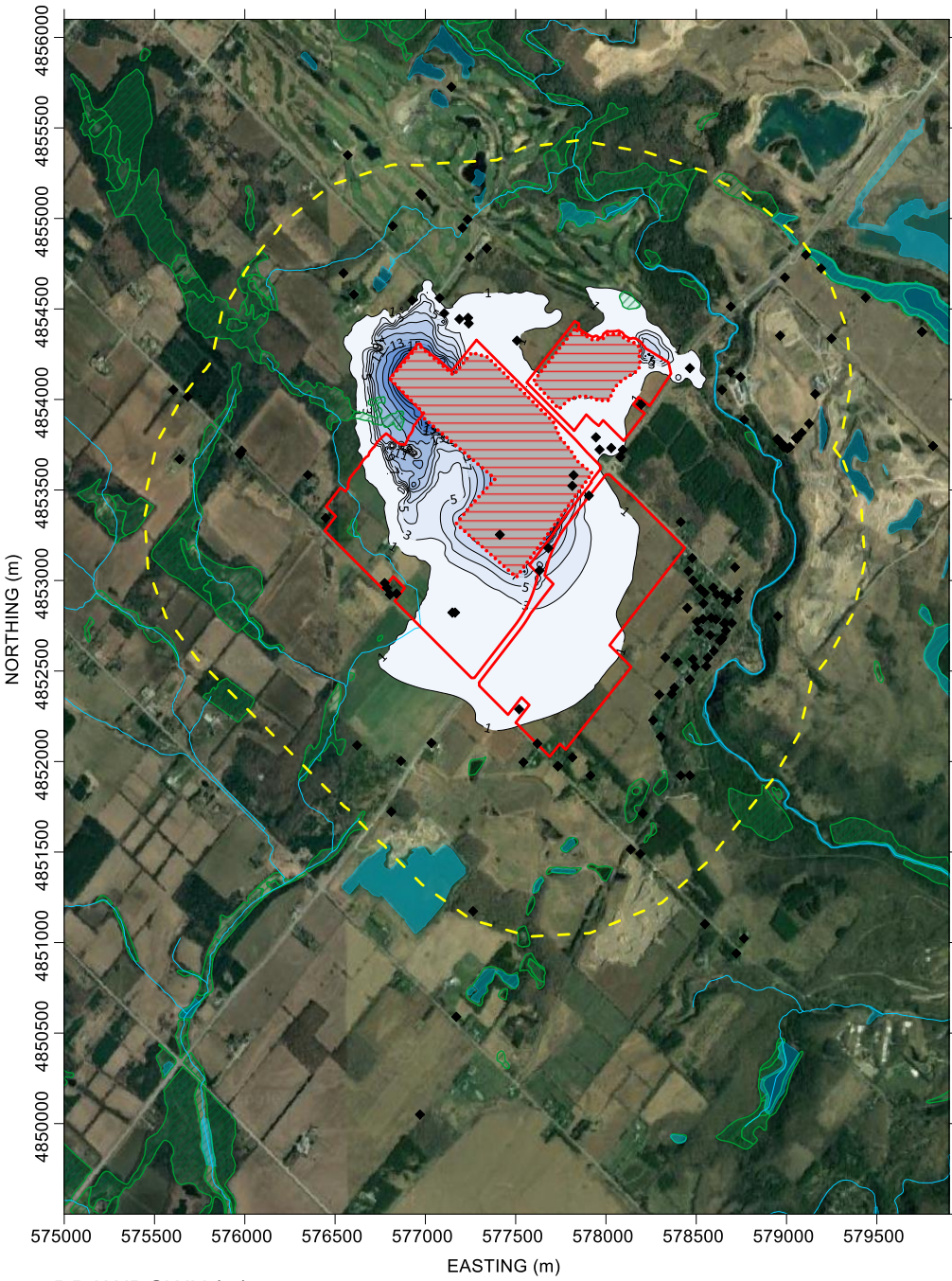
PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
**PHASE 1 SIMULATED DRAWDOWN**

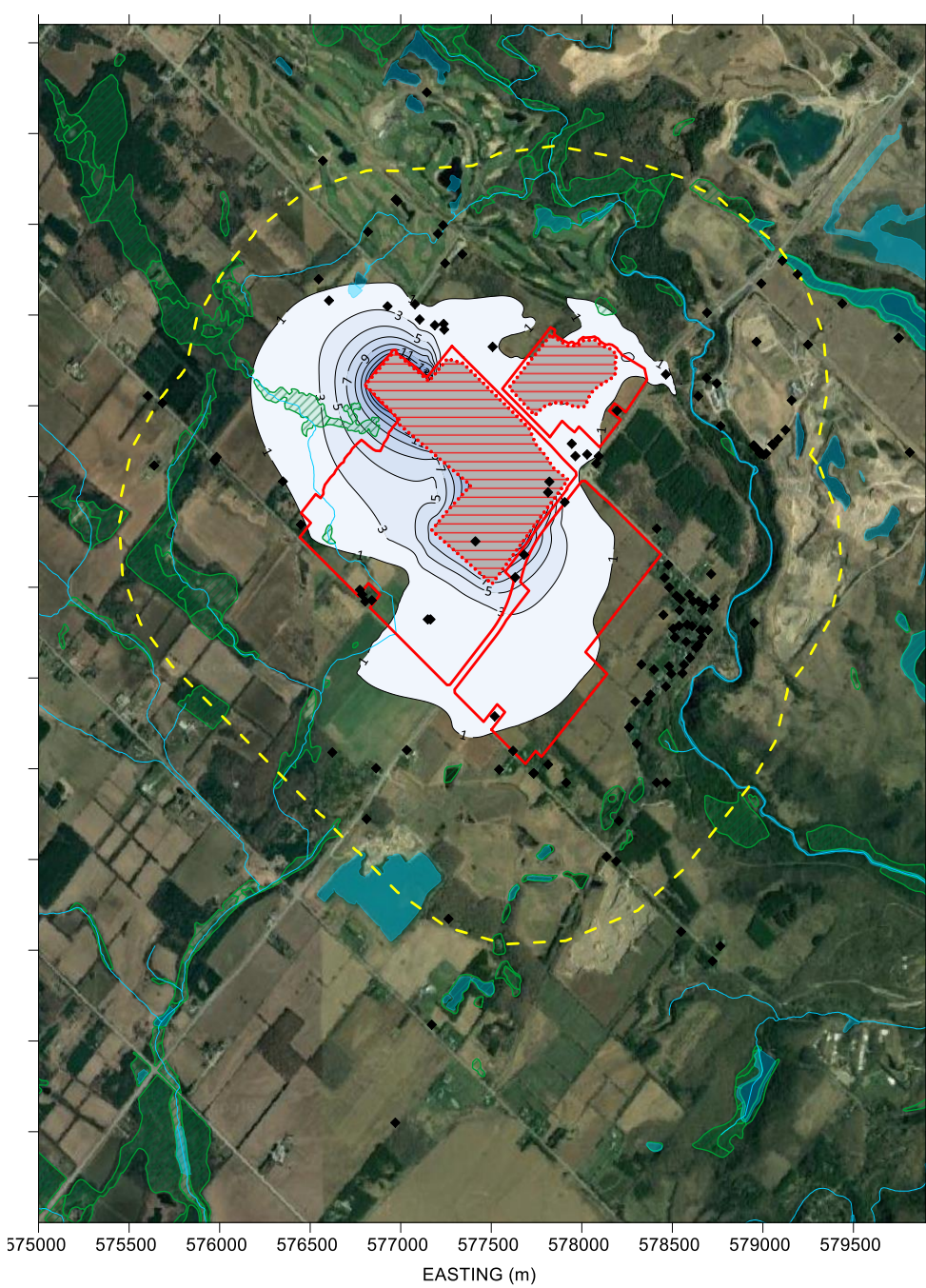
PROJECT No. 19129150	Rev. 0	FIGURE 9A
-------------------------	-----------	--------------



1. SIMULATED WATER TABLE DRAWDOWN (m)



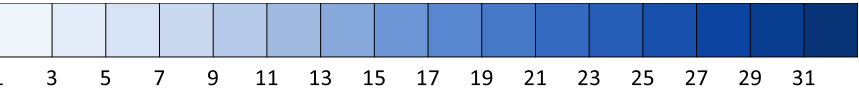
2. SIMULATED GASPORT FORMATION DRAWDOWN (m)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



DRAWDOWN (m)



LEGEND

- LAKES
- RIVERS/ STREAMS
- LICENSE LIMIT
- MODELLED EXTRACTION EXTENTS
- WETLAND
- 1KM BUFFER AROUND PROPERTY
- MECP PRIVATE WELL LOCATION

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

NOTES

1. Simulated hydraulic drawdown is shown at a contour interval of 2m
2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNRF, 2018)
5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT  
**GOLDER**  
MEMBER OF WSP

YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
**PHASE 2 SIMULATED DRAWDOWN**

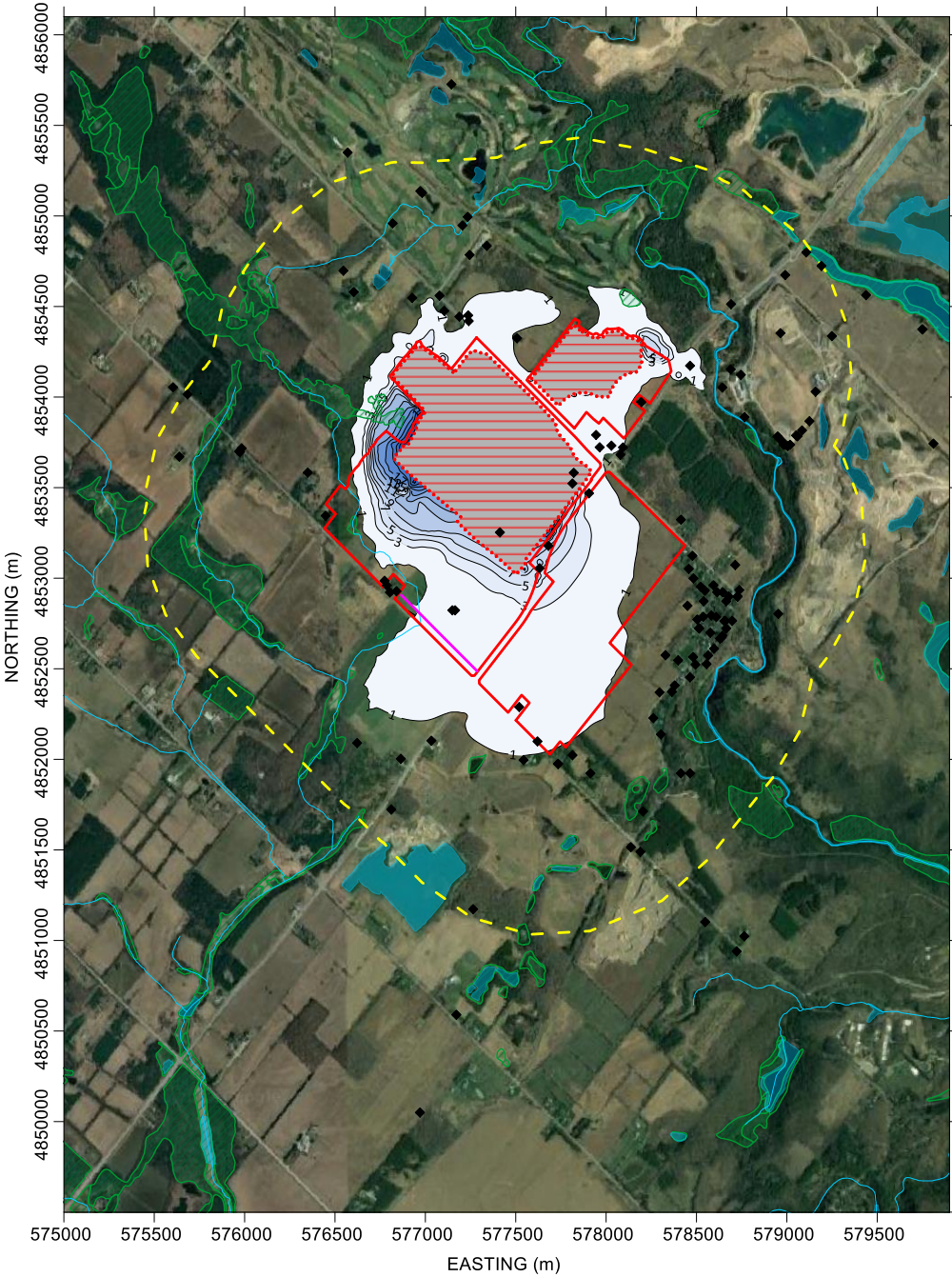
PROJECT No.  
19129150

Rev.  
0

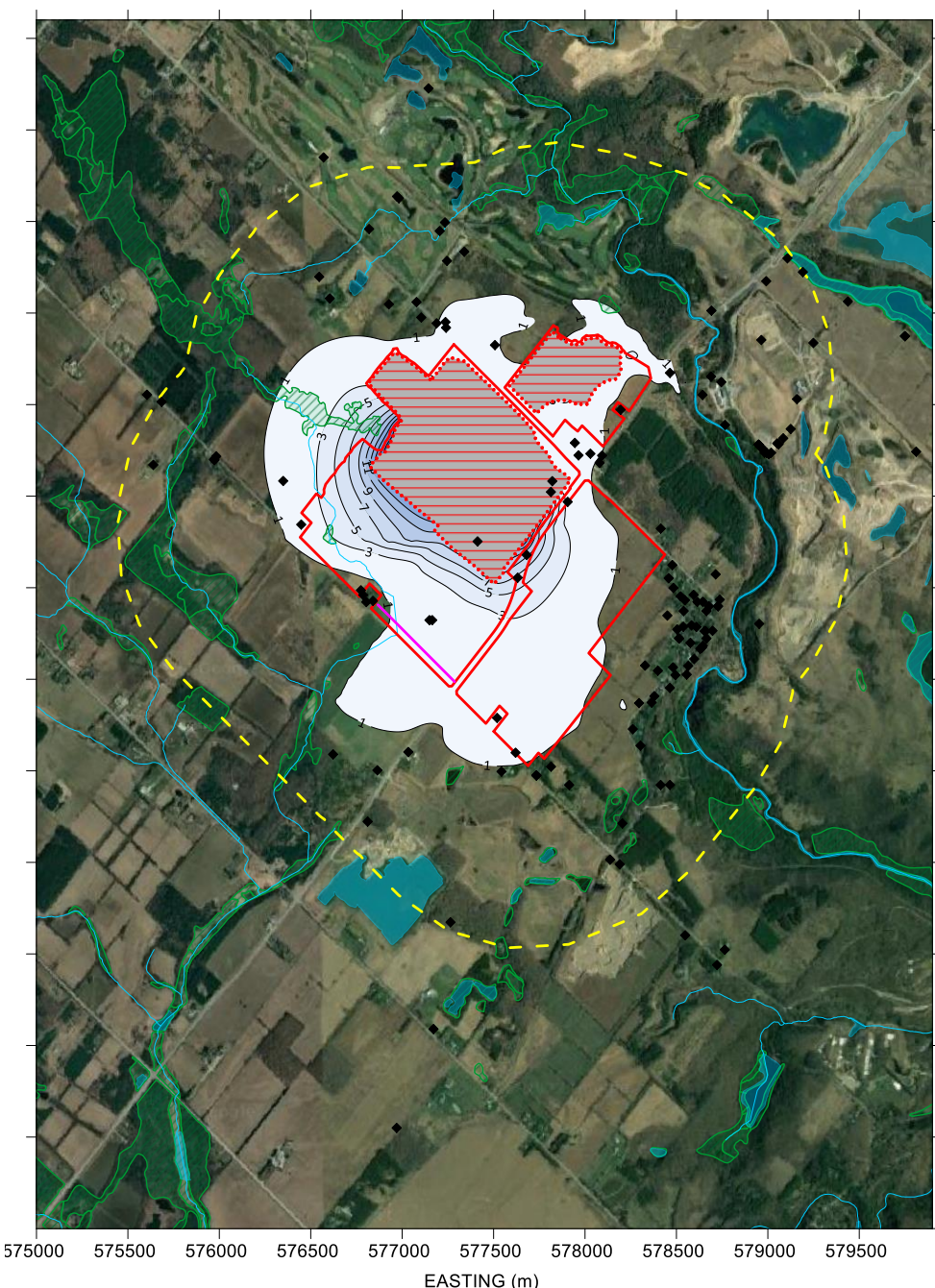
FIGURE  
9B



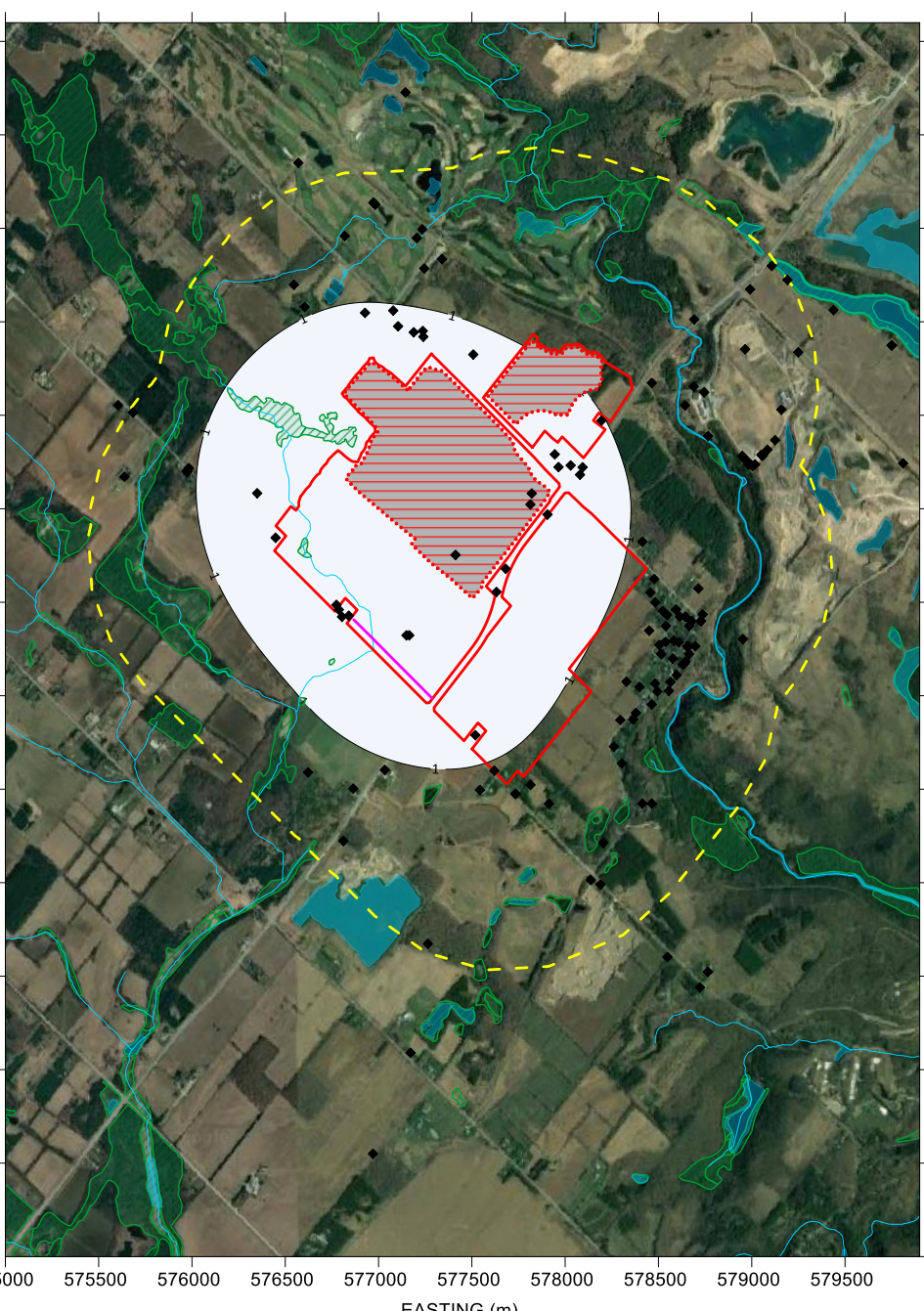
1. SIMULATED WATER TABLE DRAWDOWN (m)



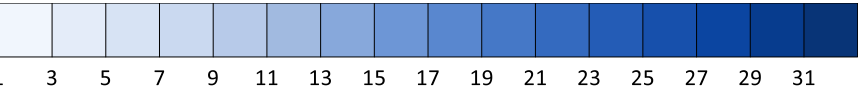
2. SIMULATED GASPORT FORMATION DRAWDOWN (m)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



DRAWDOWN (m)



LEGEND

- LAKES
- RIVERS/ STREAMS
- LICENSE LIMIT
- MODELLED EXTRACTION EXTENTS
- WETLAND
- 1KM BUFFER AROUND PROPERTY
- MECP PRIVATE WELL LOCATION
- SLURRY WALL/ GROUT ALIGNMENT

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

NOTES

1. Simulated hydraulic drawdown is shown at a contour interval of 2m
2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT	YYYY-MM-DD	2023-07-20
PREPARED	HW	
DESIGN	HW	
REVIEW	SD	
APPROVED	GS	



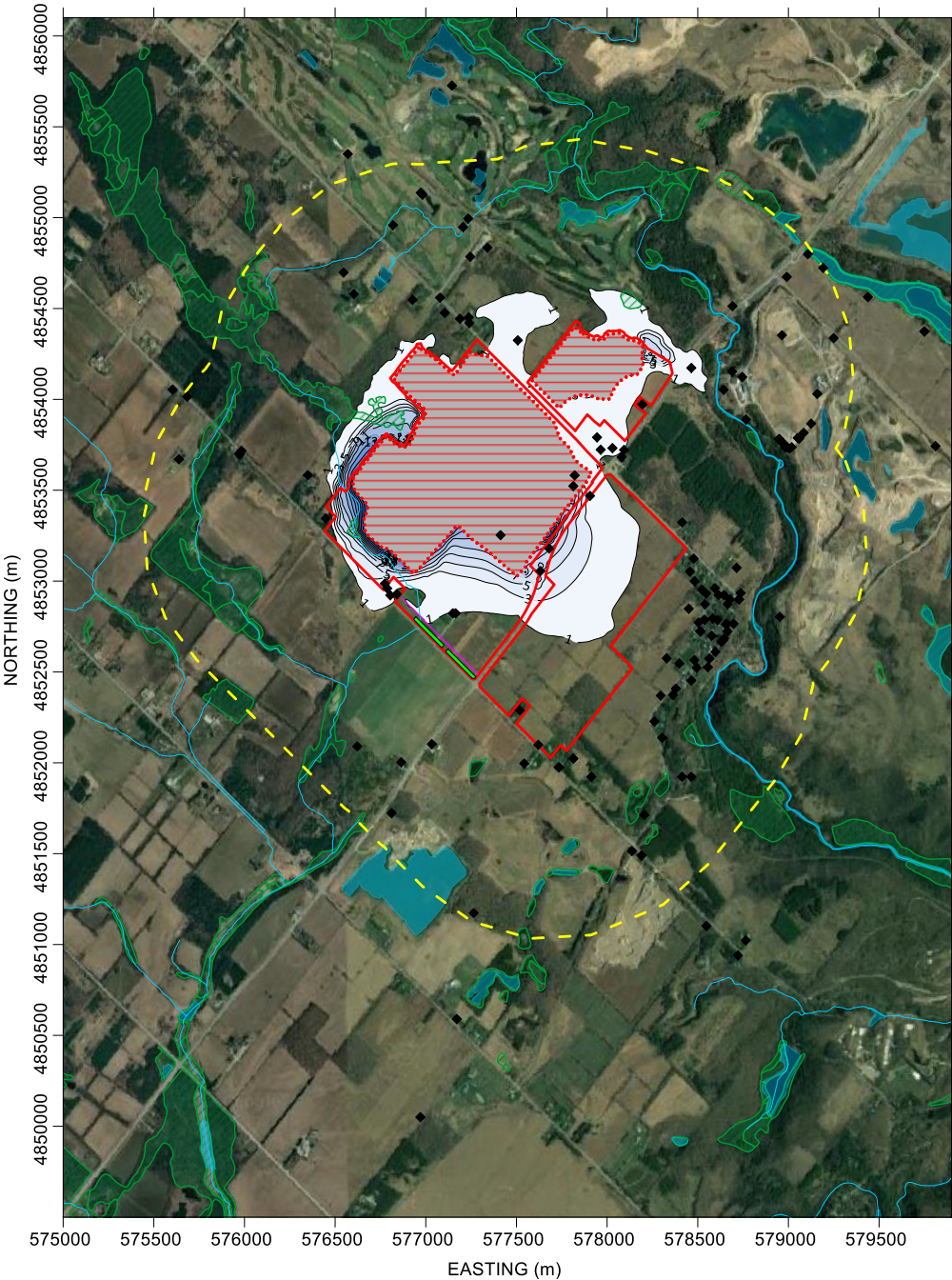
PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
PHASE 3 SIMULATED DRAWDOWN

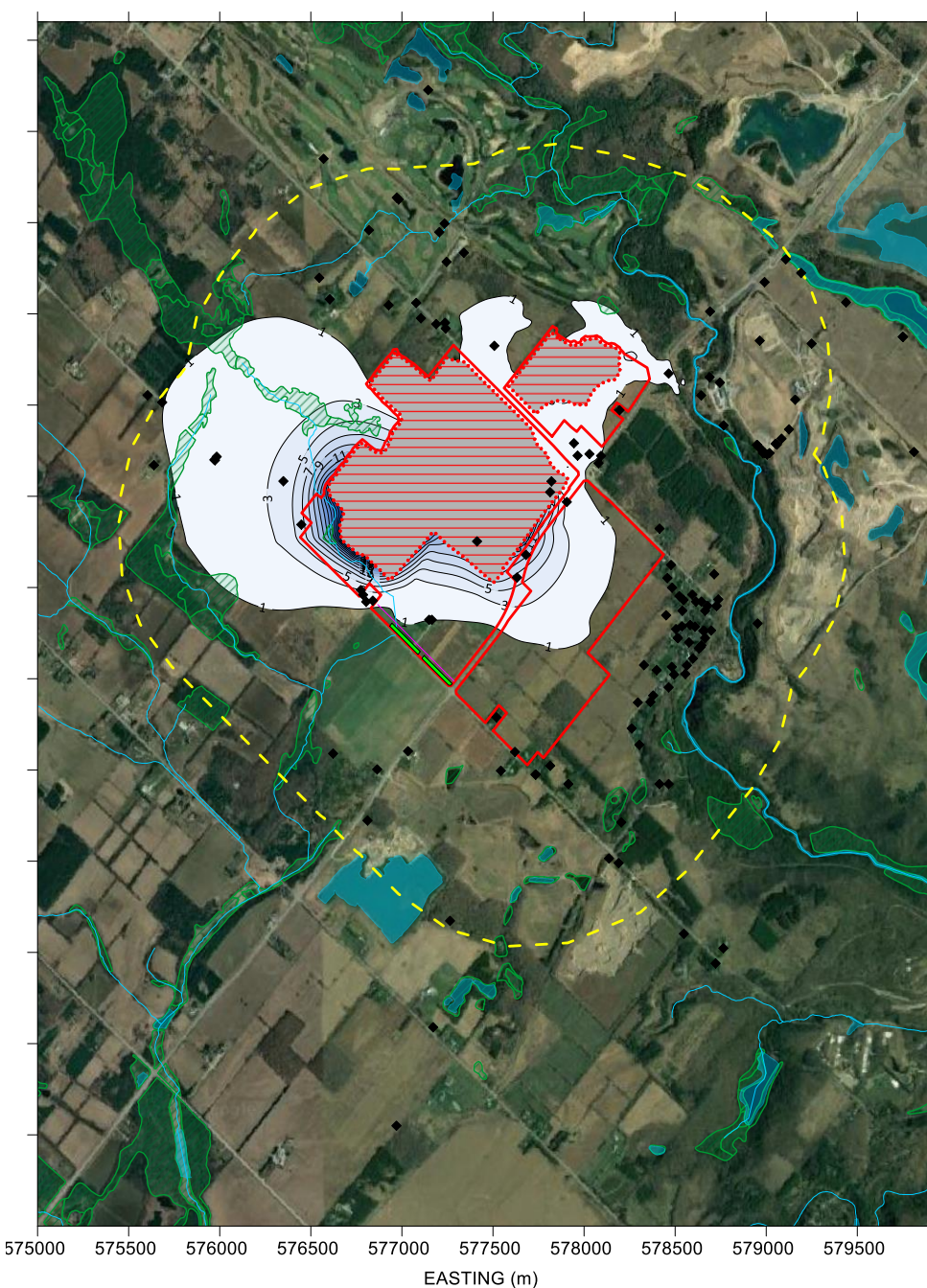
PROJECT No. 19129150  
Rev. 0  
FIGURE 9C



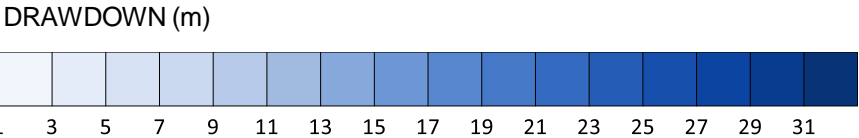
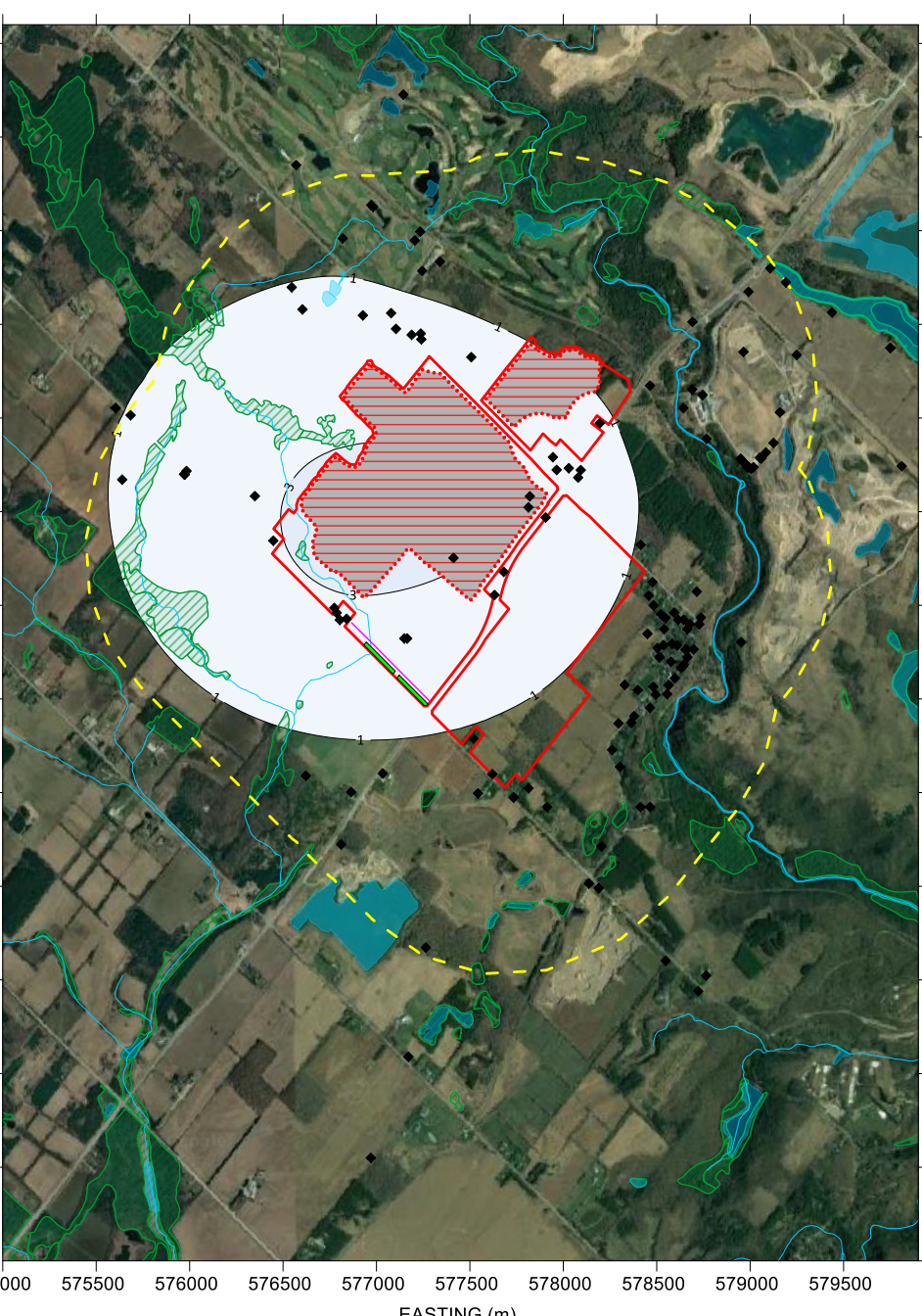
1. SIMULATED WATER TABLE DRAWDOWN (m)



2. SIMULATED GASPORT FORMATION DRAWDOWN (m)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



LEGEND

LAKES

RIVERS/ STREAMS

LICENSE LIMIT

MODELLED EXTRACTION EXTENTS

WETLAND

1KM BUFFER AROUND PROPERTY

MECP PRIVATE WELL LOCATION

SLURRY WALL/ GROUT ALIGNMENT

INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic drawdown is shown at a contour interval of 2m
  2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT

CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT

GOLDER  
MEMBER OF WSP

YYYY-MM-DD

2023-07-20

PREPARED

HW

DESIGN

HW

REVIEW

SD

APPROVED

GS

PROJECT

CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE

PHASE 4 SIMULATED DRAWDOWN

PROJECT No.

19129150

Rev.

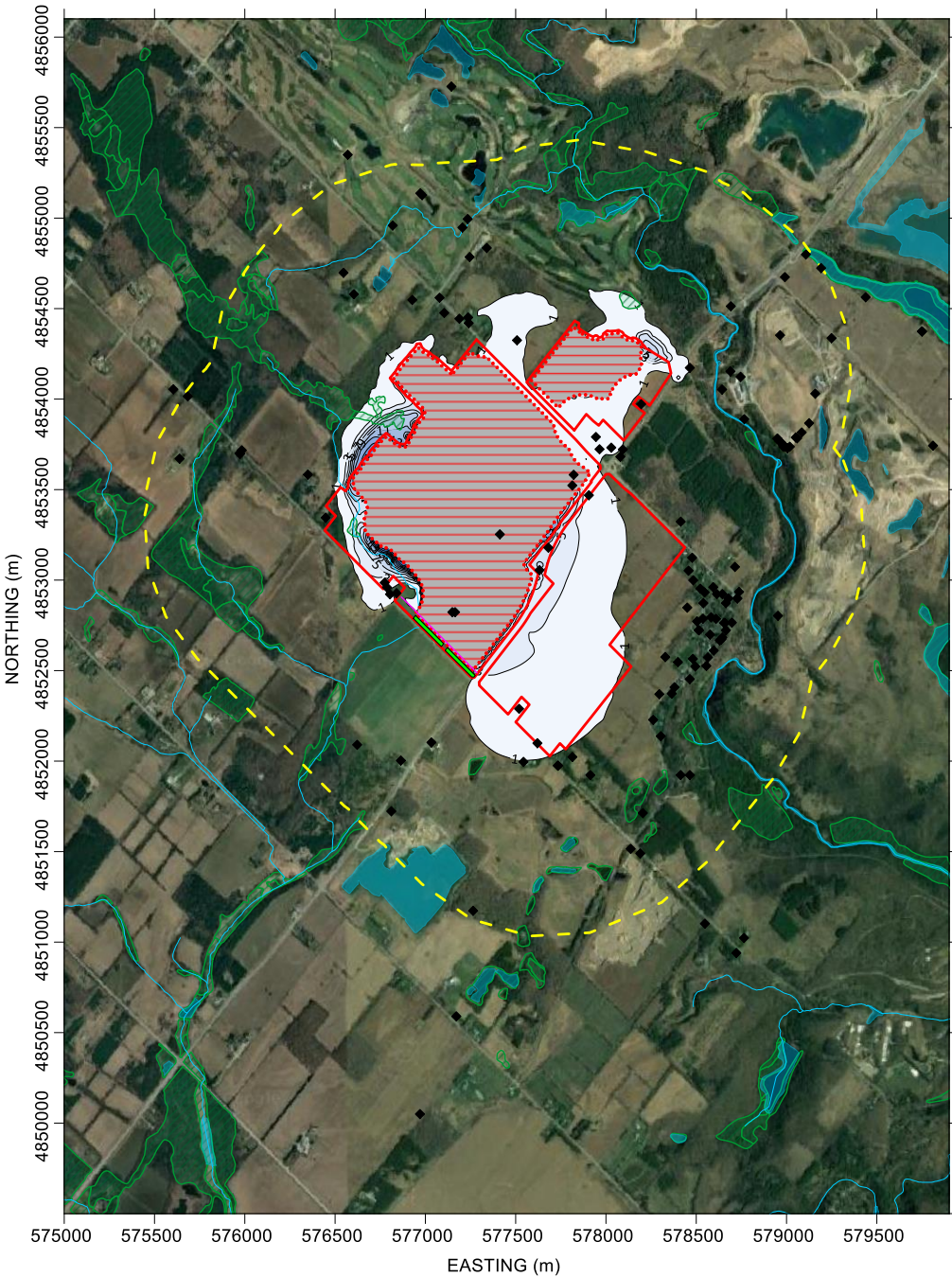
0

FIGURE

9D



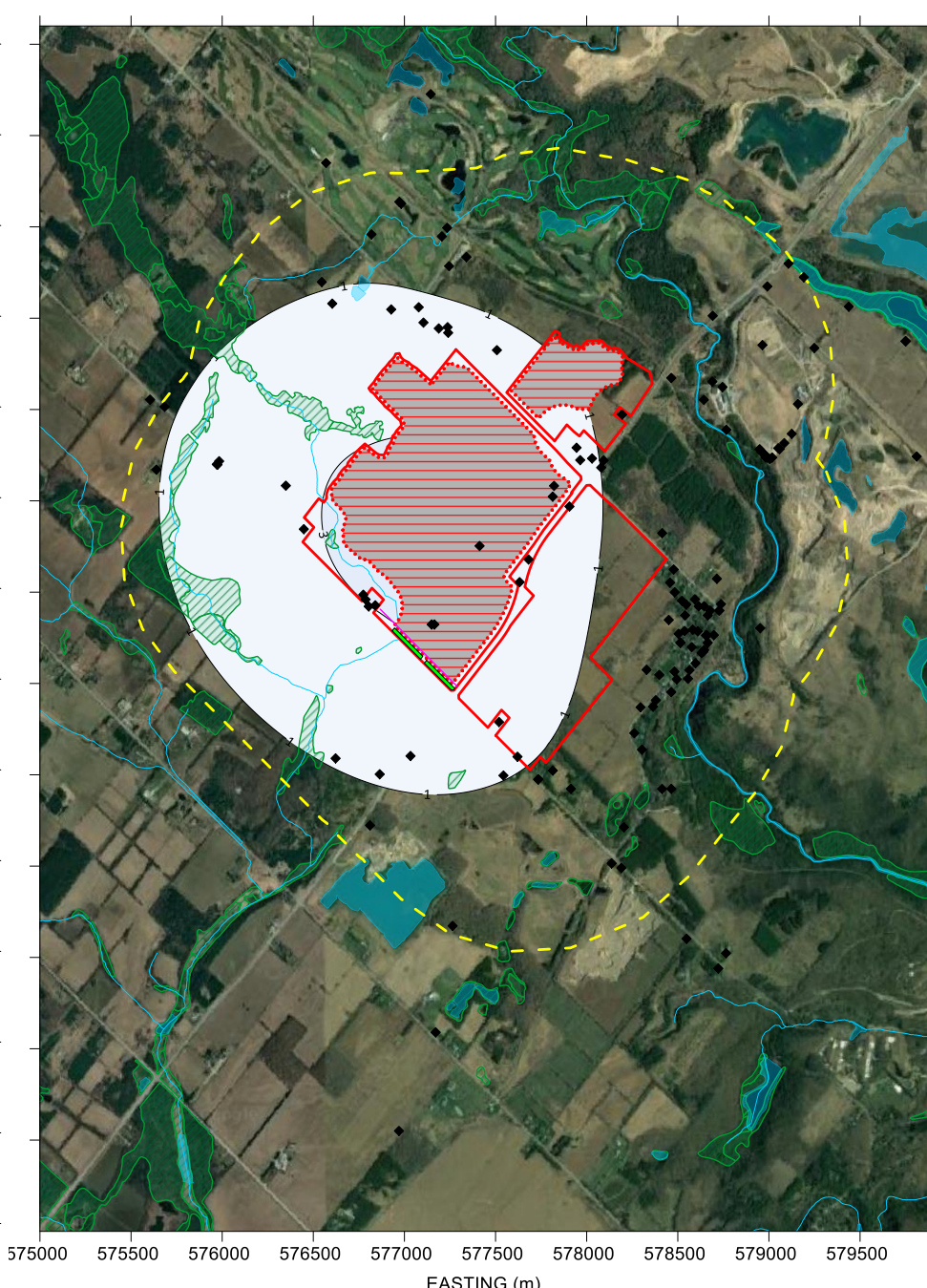
1. SIMULATED WATER TABLE DRAWDOWN (m)



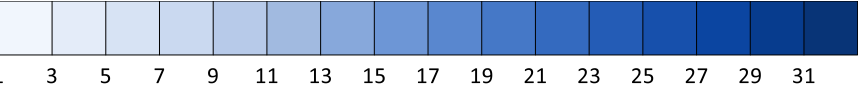
2. SIMULATED GASPORT FORMATION DRAWDOWN (m)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



DRAWDOWN (m)



LEGEND

- LAKES
- 
- RIVERS/ STREAMS

SLURRY WALL/ GROUT ALIGNMENT

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

NOTES

1. Simulated hydraulic drawdown is shown at a contour interval of 2m
2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT	YYYY-MM-DD	2023-07-20
PREPARED	HW	
DESIGN	HW	
REVIEW	SD	
APPROVED	GS	



PROJECT  
CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE  
PHASE 5 SIMULATED DRAWDOWN

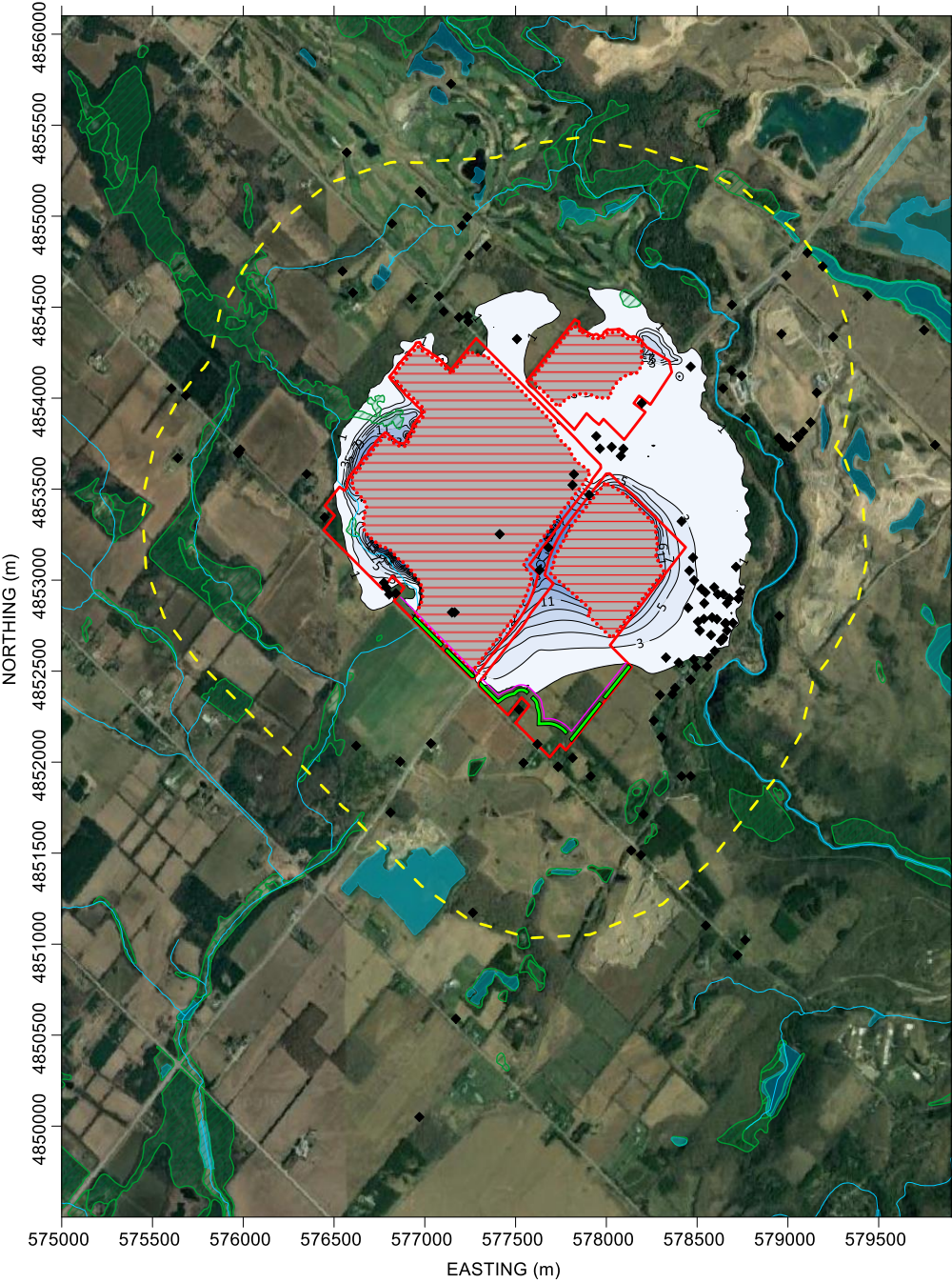
PROJECT No.  
19129150

Rev.  
0

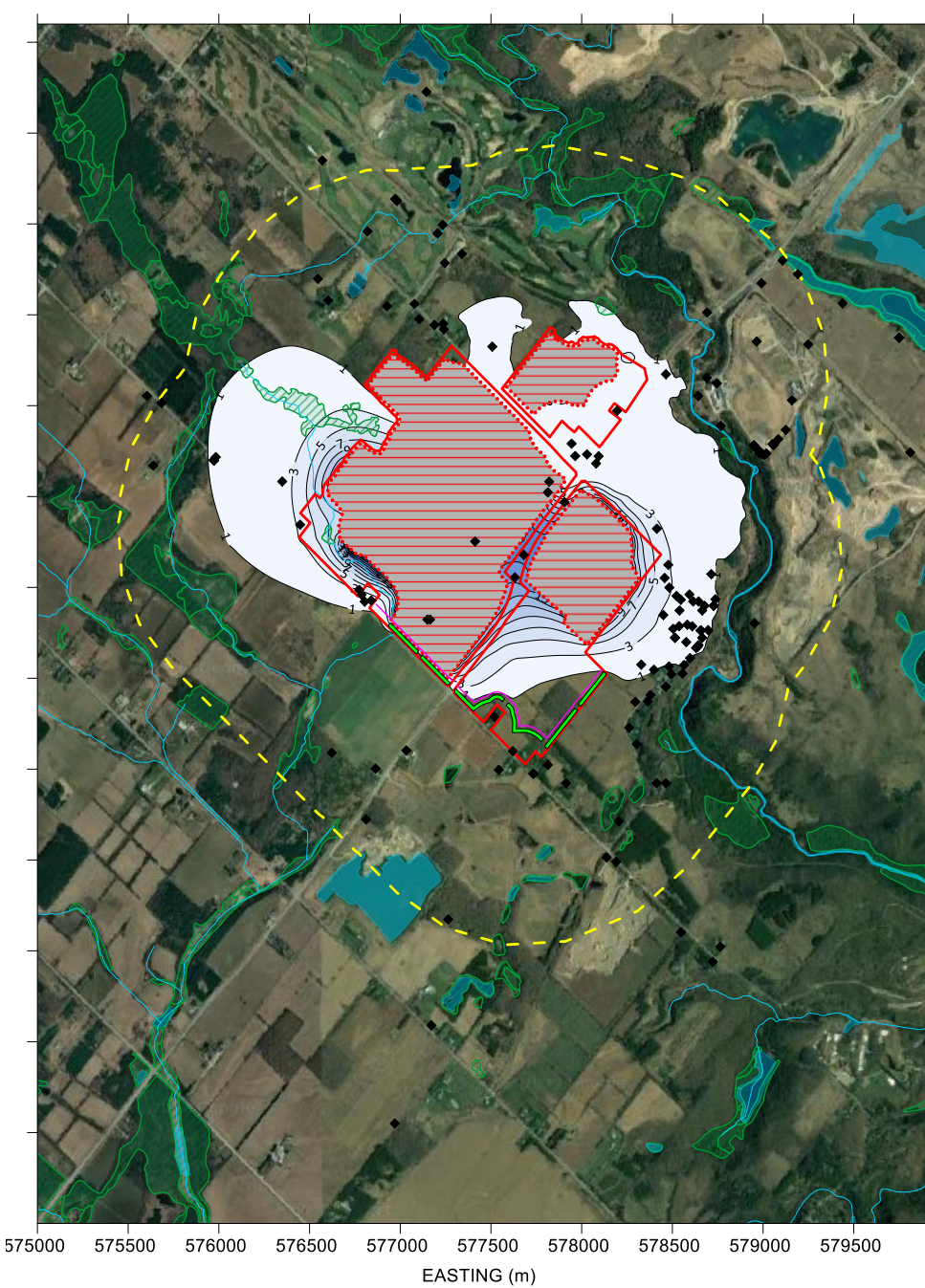
FIGURE  
9E



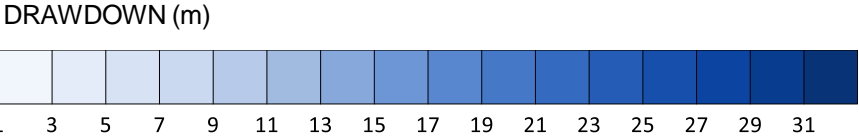
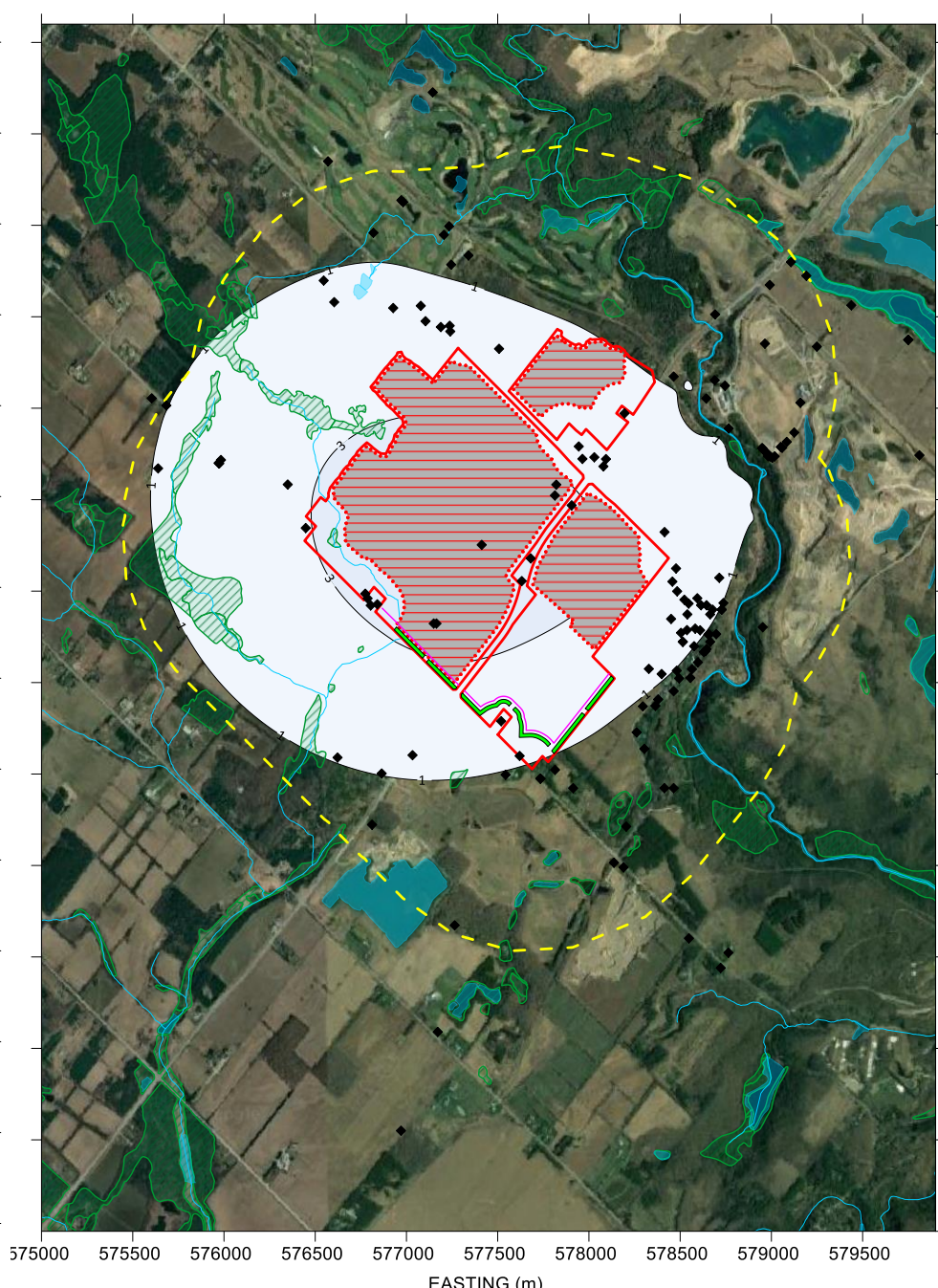
1. SIMULATED WATER TABLE DRAWDOWN (m)



2. SIMULATED GASPORT FORMATION DRAWDOWN (m)



3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



LEGEND	
	LAKES
	RIVERS/ STREAMS
	LICENSE LIMIT
	MODELLED EXTRACTION EXTENTS
	WETLAND
	1KM BUFFER AROUND PROPERTY
	MECP PRIVATE WELL LOCATION
	SLURRY WALL/ GROUT ALIGNMENT
	INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic drawdown is shown at a contour interval of 2m
  2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT	
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)	
CONSULTANT	
GOLDER MEMBER OF WSP	
YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

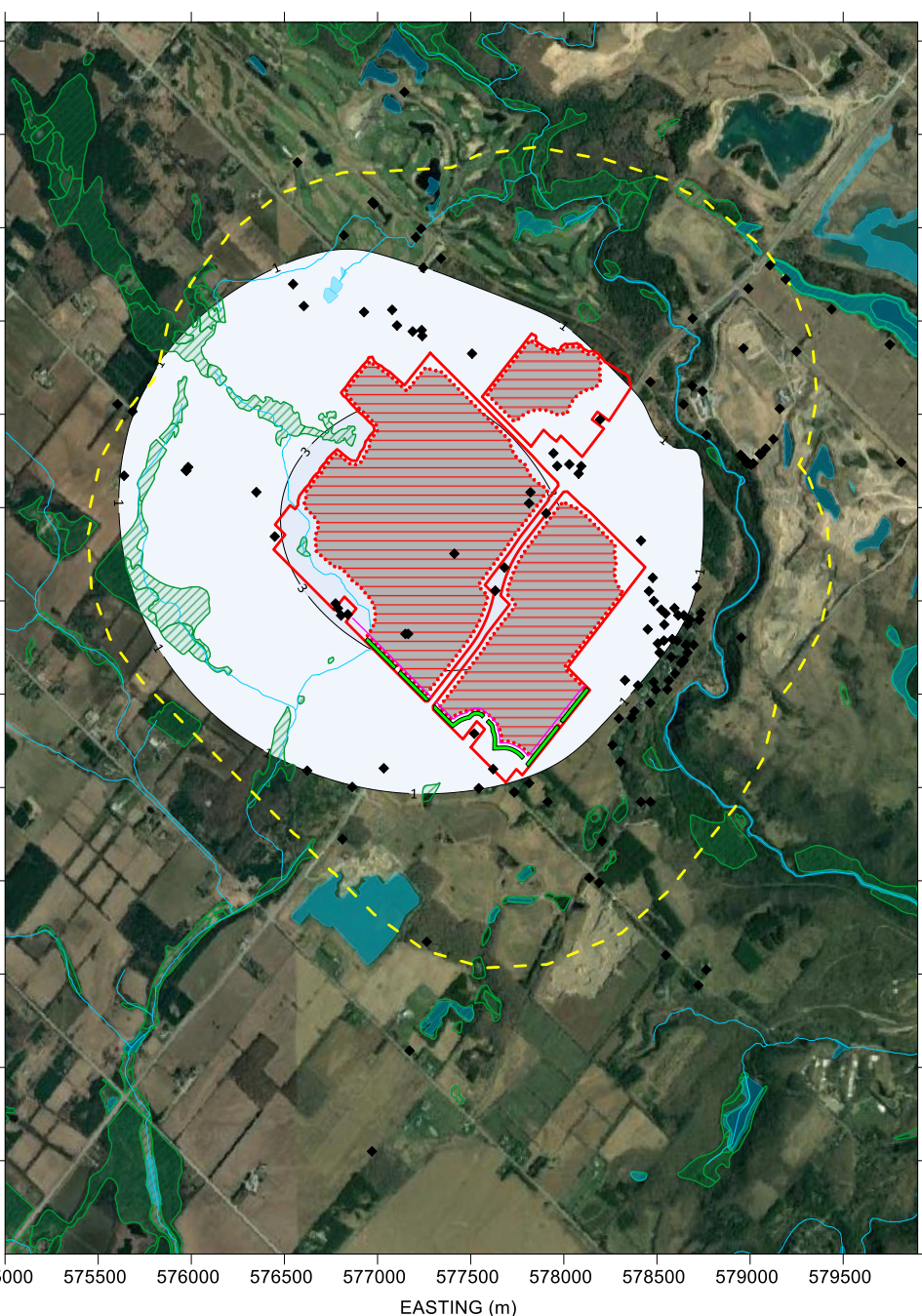
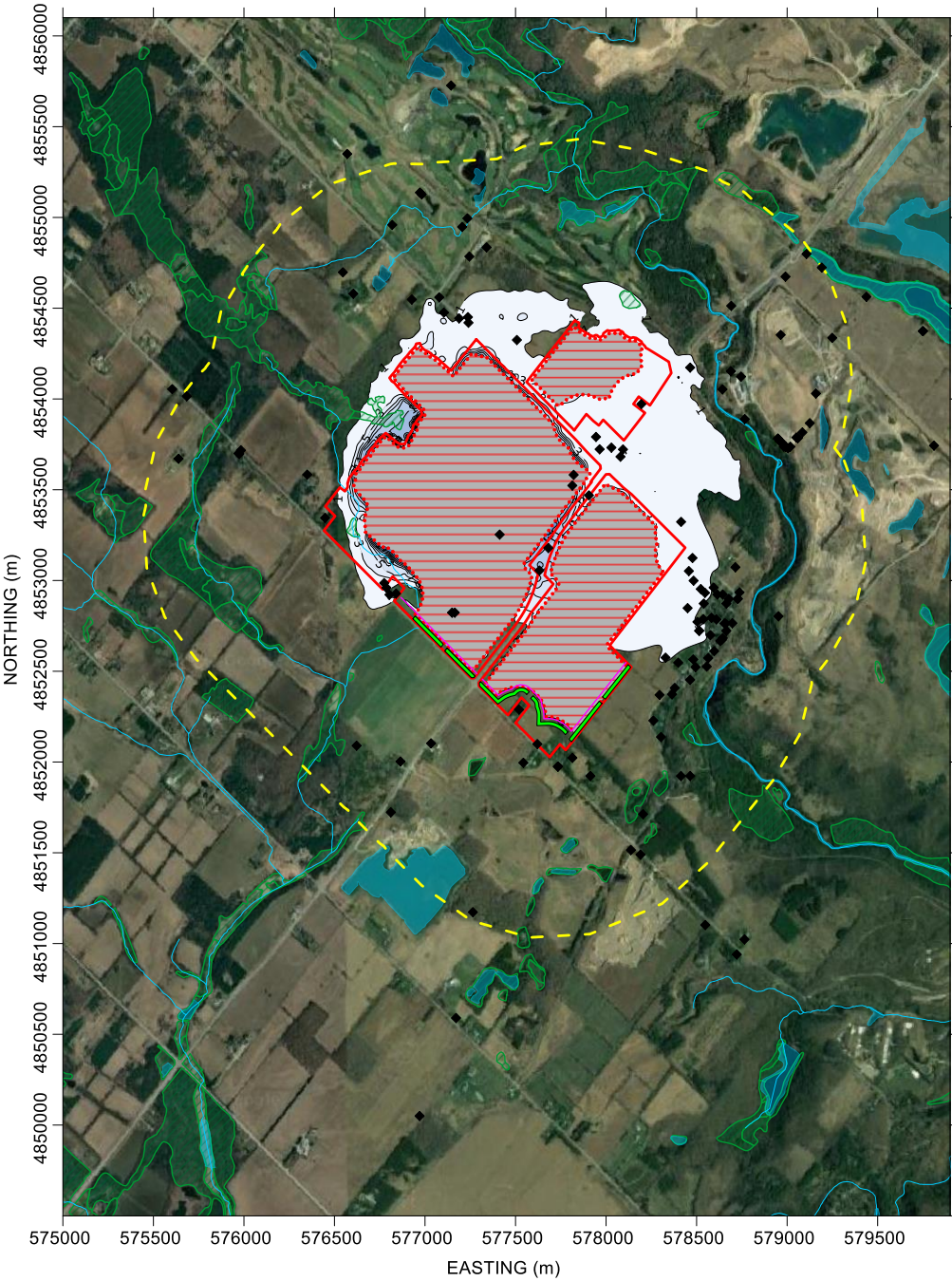
PROJECT	
CALEDON PIT AND QUARRY NUMERICAL MODELLING	
TITLE	
PHASE 6 SIMULATED DRAWDOWN	
PROJECT No.	19129150
Rev.	0



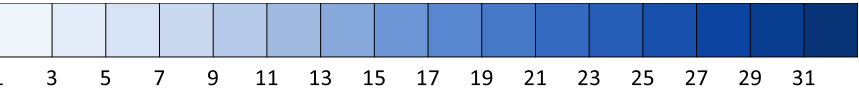
1. SIMULATED WATER TABLE DRAWDOWN (m)

2. SIMULATED GASPORT FORMATION DRAWDOWN (m)


3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)





DRAWDOWN (m)





LEGEND


 LAKES


 RIVERS/ STREAMS


 LICENSE LIMIT


 MODELLED EXTRACTION EXTENTS

 WETLAND

 1KM BUFFER AROUND PROPERTY

 MECP PRIVATE WELL LOCATION

 SLURRY WALL/ GROUT ALIGNMENT

 INFILTRATION TRENCH


Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic drawdown is shown at a contour interval of 2m
  2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT

CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT

 **GOLDER**  
MEMBER OF WSP

YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

PROJECT

CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE

**PHASE 7 SIMULATED DRAWDOWN**

PROJECT No.

19129150

Rev.

0

FIGURE

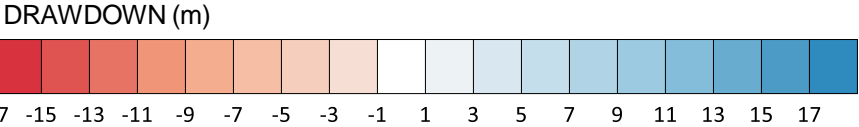
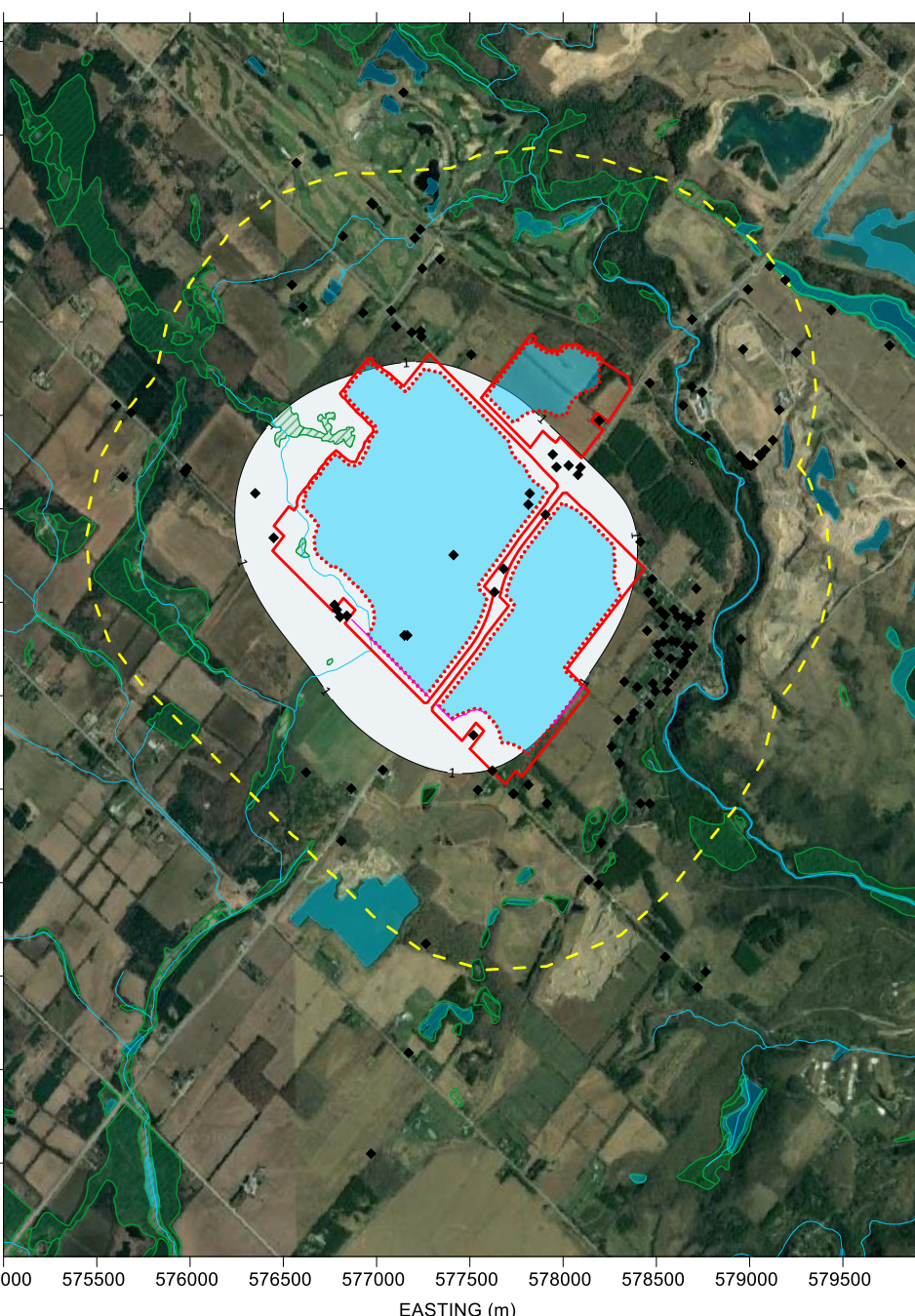
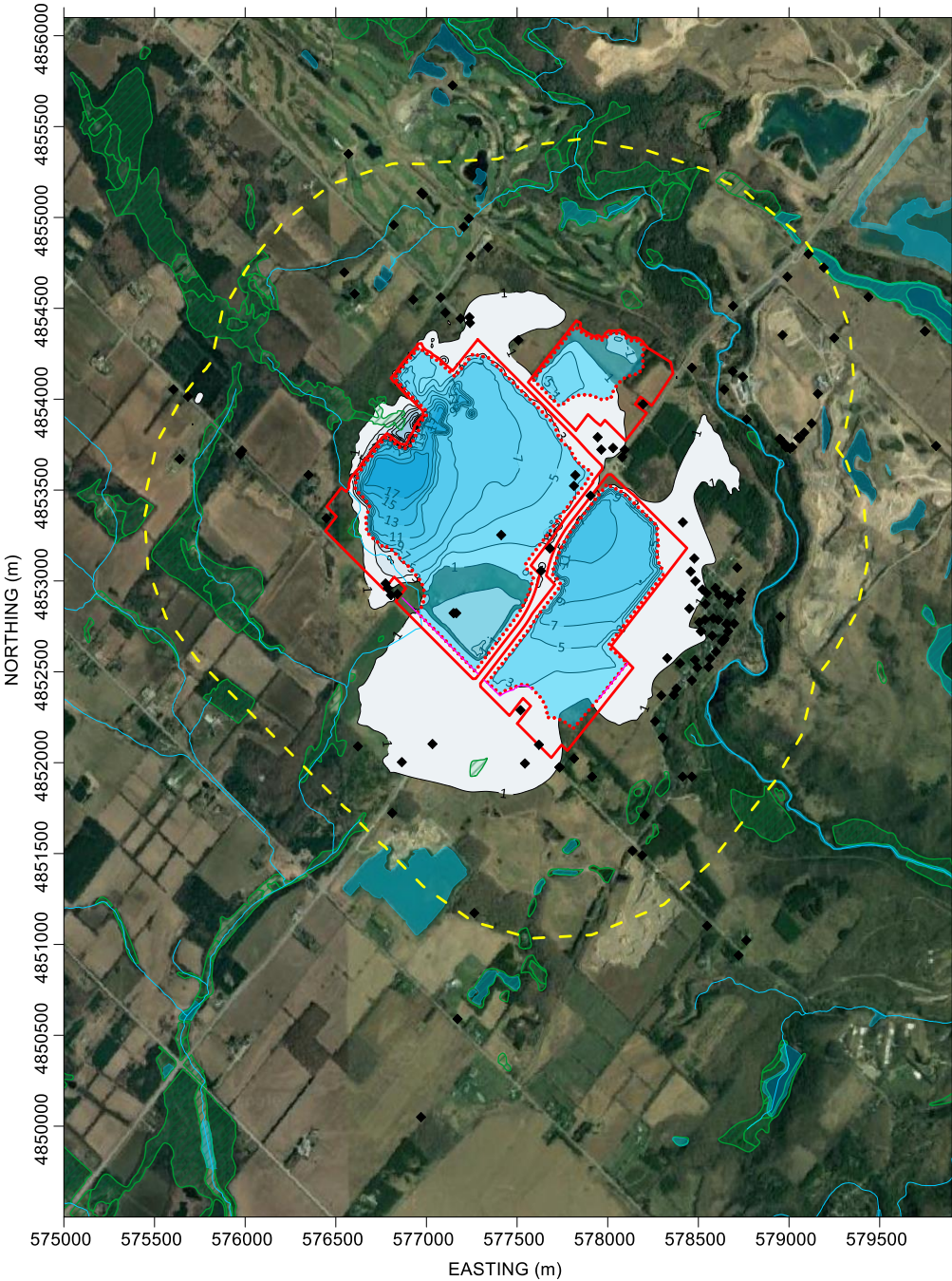
**9G**



1. SIMULATED WATER TABLE DRAWDOWN (m)

2. SIMULATED GASPORT FORMATION DRAWDOWN (m)

3. SIMULATED MANITOULIN/ WHIRLPOOL FORMATION DRAWDOWN (m)



LEGEND

LAKES

RIVERS/ STREAMS

LICENSE LIMIT

MODELLED EXTRACTION EXTENTS

WETLAND

1KM BUFFER AROUND PROPERTY

MECP PRIVATE WELL LOCATION

SLURRY WALL/ GROUT ALIGNMENT

INFILTRATION TRENCH

Phase of Operation	Years
1	1 to 8
2	9 to 13
3	14 to 17
4	18 to 22
5	23 to 26
6	27 to 32
7	33 to 38

- NOTES
1. Simulated hydraulic drawdown is shown at a contour interval of 2m
  2. Gasport formation drawdown extracted from model slice 22 (base of Gasport)
  3. Manitoulin/ Whirlpool formation drawdown extracted from model slice 25
  4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  5. Private wells shown are from the Ministry of Environment Conservation and Parks (MECP) Water Well Information System Database (MECP, 2021).

CLIENT

CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)

CONSULTANT

GOLDER

MEMBER OF WSP

YYYY-MM-DD

2023-07-20

PREPARED

HW

DESIGN

HW

REVIEW

SD

APPROVED

GS

PROJECT

CALEDON PIT AND QUARRY NUMERICAL MODELLING

TITLE

REHABILITATION SIMULATED DRAWDOWN

PROJECT No.

19129150

Rev.

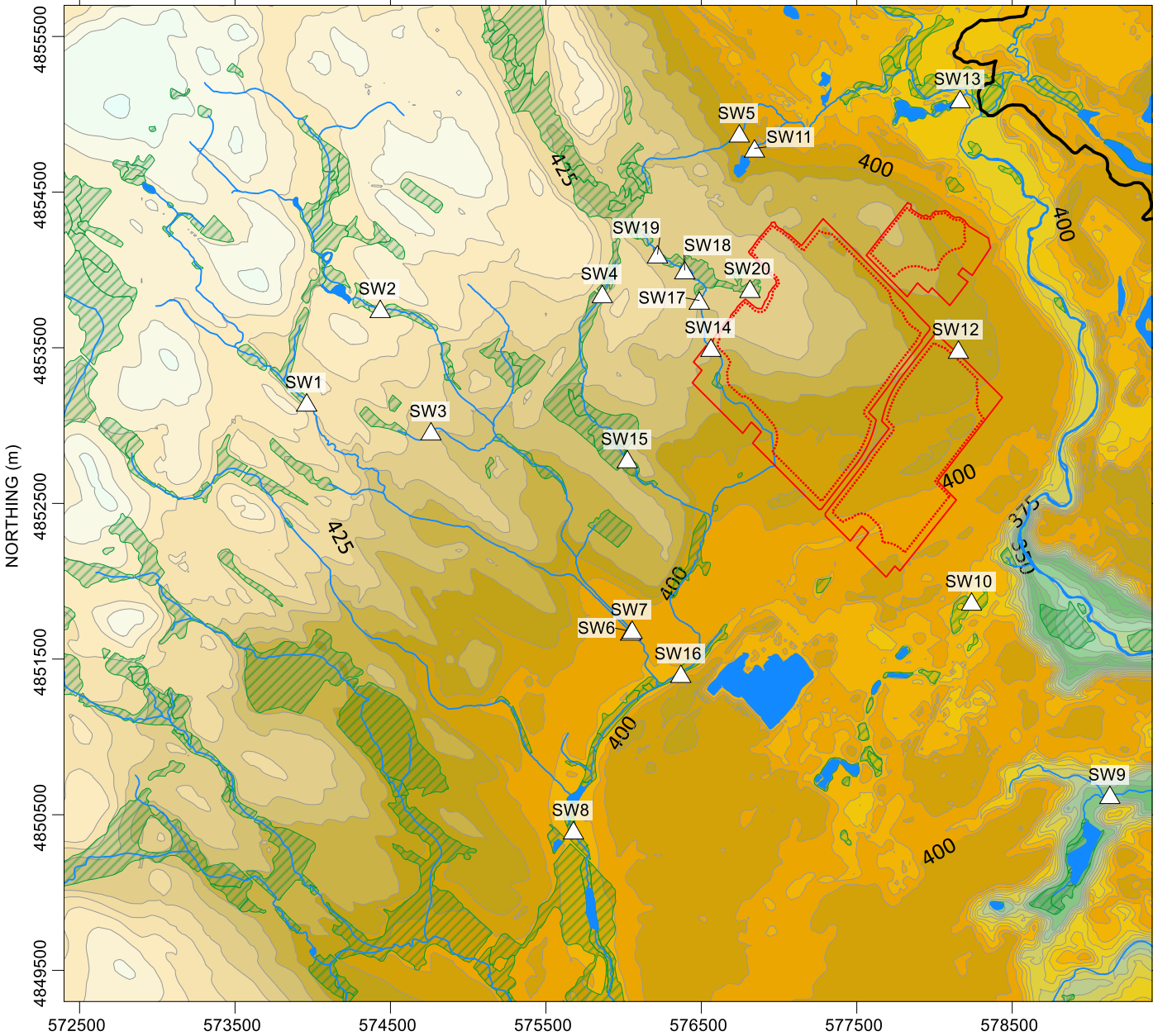
0

FIGURE

9H



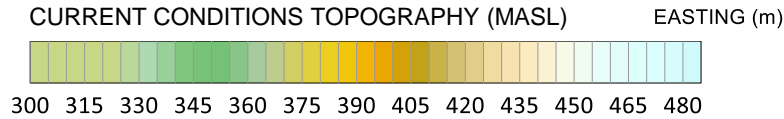
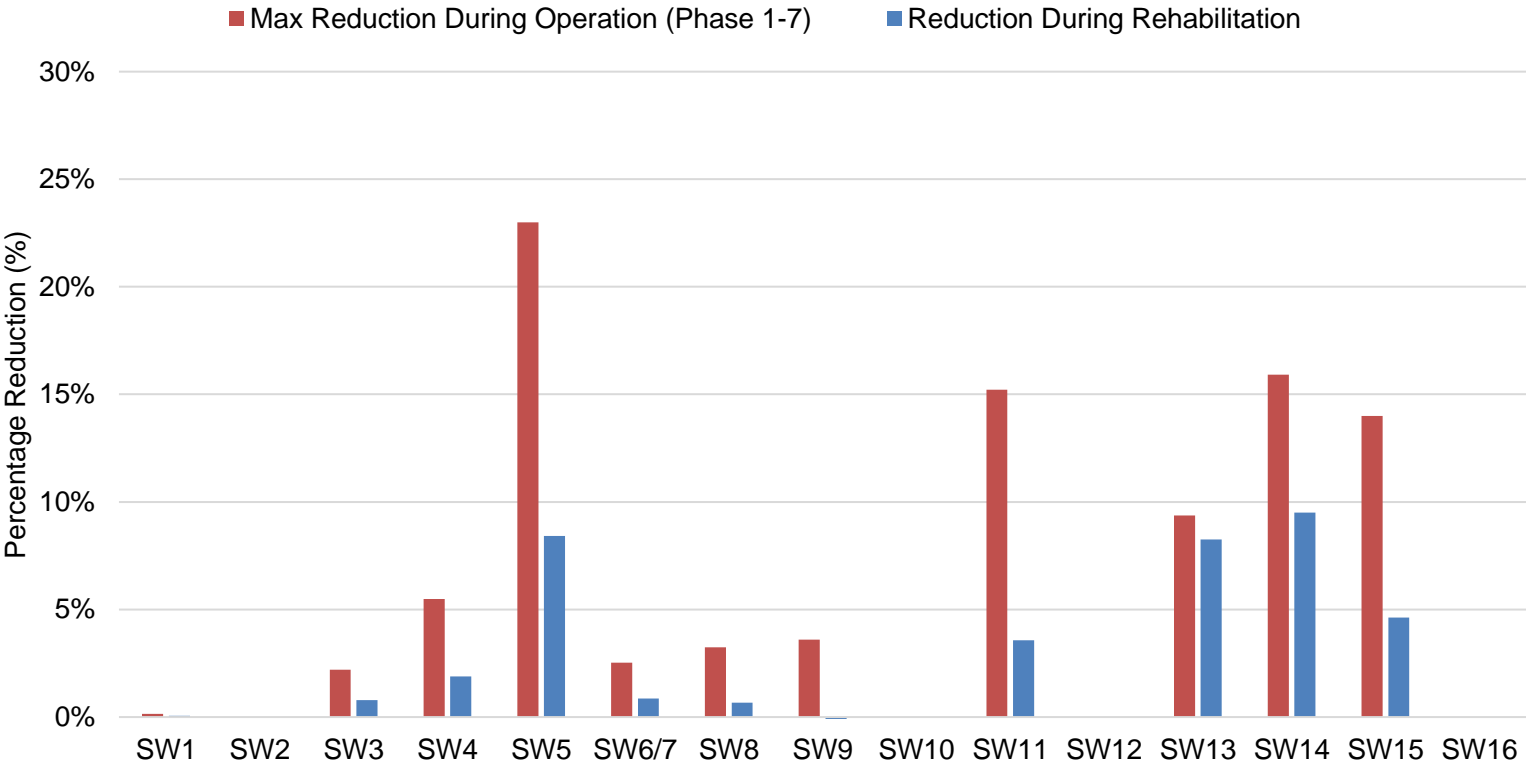
SURFACE WATER MONITORING STATIONS



SIMULATED REDUCTION IN SURFACE WATER FLOW THROUGH VARIOUS QUARRY PHASES AND AT REHABILITATION

Station	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Rehab
SW1	0%	0%	0%	0%	0%	0%	0%	0%
SW2	0%	0%	0%	0%	0%	0%	0%	0%
SW3	0%	-1%	-1%	-2%	-2%	-2%	-1%	-1%
SW4	0%	-2%	-2%	-5%	-4%	-4%	-3%	-2%
SW5	-2%	-18%	-12%	-23%	-16%	-16%	-14%	-8%
SW6/7	0%	-1%	-1%	-3%	-2%	-2%	-1%	-1%
SW8	-2%	-3%	-3%	-2%	-3%	-1%	-1%	-1%
SW9	-2%	-3%	-3%	0%	-4%	1%	0%	0%
SW10	0%	0%	0%	0%	0%	0%	0%	0%
SW11	-1%	-15%	-6%	-7%	-6%	-6%	-6%	-4%
SW12	0%	0%	0%	0%	0%	0%	0%	0%
SW13	-6%	-9%	-8%	-7%	-7%	-7%	-9%	-8%
SW14	-1%	-8%	-16%	-16%	-14%	-14%	-12%	-10%
SW15	-1%	-5%	-5%	-14%	-9%	-9%	-8%	-5%
SW16	0%	0%	0%	0%	0%	0%	0%	0%

SIMULATED PERCENT REDUCTION IN SURFACE WATER FLOW: MAXIMUM DURING OPERATION, AND REHABILITATION PHASES



- NOTES:
- 1. Simulated surface water flows for phases 1-7 and rehabilitation represent long term average (steady state) values
  - 2. Several surface water stations have a current conditions simulated flow of 0.00 L/s (SW2, SW10, SW12 and SW16), and continue to have a simulated flow of 0.00 L/s throughout quarry operation and rehabilitation

- LEGEND
- LAKES
  - RIVERS/ STREAMS
  - WETLAND
  - LICENSE LIMIT
  - MODELLED EXTRACTION EXTENTS
  - SURFACE WATER MONITORING STATION

- ADDITIONAL MAP NOTES
- 4. Source of spatial mapping of watercourses, waterbodies, and wetlands: Land Information Ontario (MNR, 2018)
  - 5. Source of Regional Topography dataset Ontario Ministry of Natural Resources and Forestry (MNR) Southwestern Ontario Orthophotography (SWOOP) 2019
  - 6. Source of Site Topography dataset provided by Firstbase Solutions (Spring 2021)
  - 7. Quarry license and modelled limit of extraction provided by MHBC (May, 2023)

CLIENT  
CBM AGGREGATES (CBM), A DIVISION OF ST. MARYS CEMENT INC. (CANADA)



YYYY-MM-DD	2023-07-20
PREPARED	HW
DESIGN	HW
REVIEW	SD
APPROVED	GS

PROJECT  
CALEDON PIT AND QUARRY

TITLE  
SIMULATED CHANGE IN SURFACE WATER FLOW AT MONITORING STATIONS





**[golder.com](http://golder.com)**