

Phase 1



1991 AERIAL PHOTO SOURCE: ALBERTA ENVIRONMENT AND PARKS AIR PHOTO DISTRIBUTION (AS4162-053)

LEGEND

⊙ WELL CENTRE
(NOT PRESENT)

NOTES:

LOCATIONS ARE APPROXIMATE.

0 50 100 200m
Scale 1 : 5000

**1991 HISTORICAL AERIAL PHOTO
(PRE-DISTURBANCE)**

Date:	19-FEB-20	Drawn by:	CD	Revised by:	CD
File name:		Requested by:	CT	Approved by:	CT
					Figure: 2



LEGEND

 WELL CENTRE

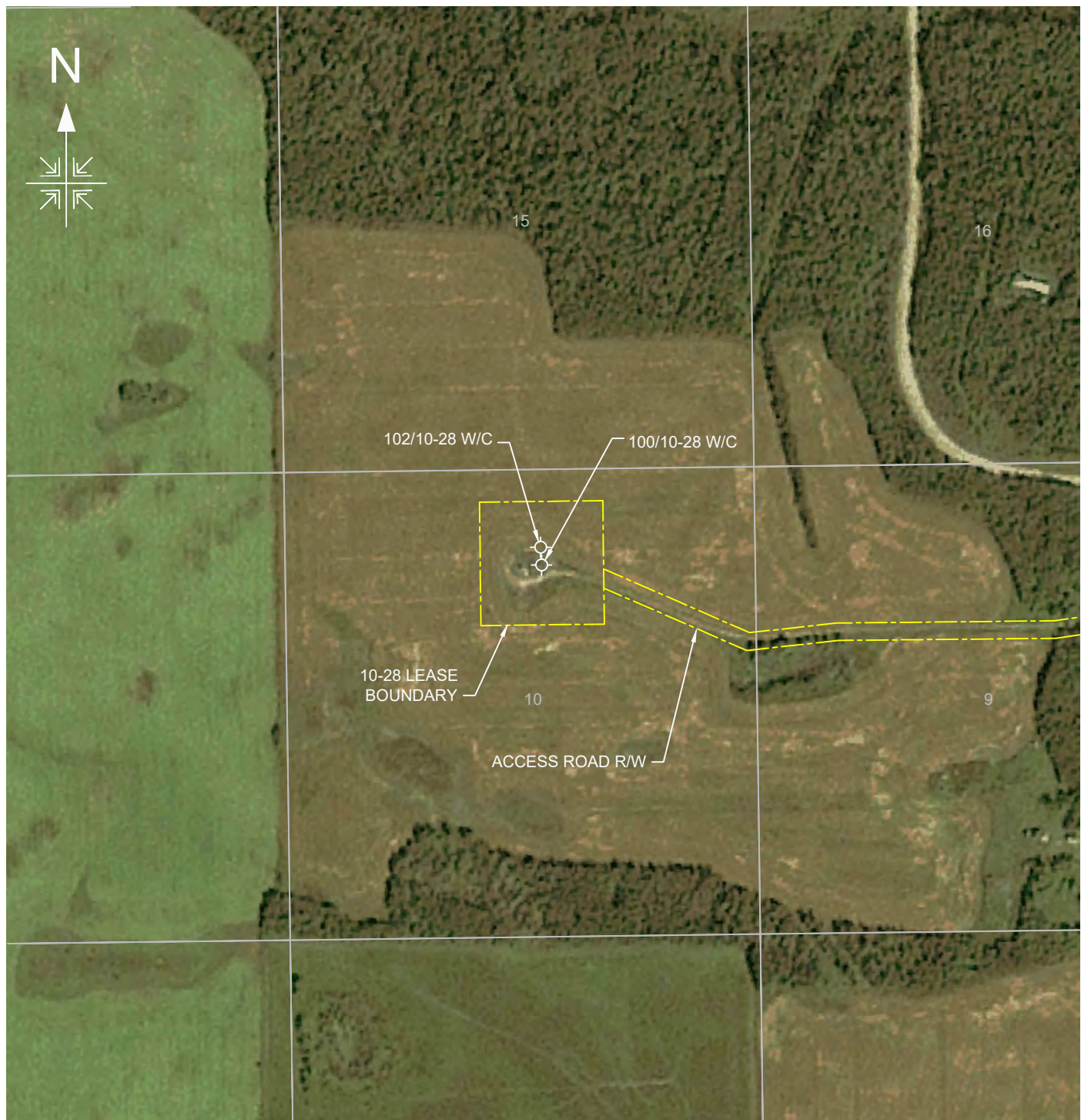
NOTES:

LOCATIONS ARE APPROXIMATE.

0 50 100 200m
Scale 1 : 5000

2006 HISTORICAL AERIAL PHOTO

Date:	05-FEB-20	Drawn by:	LH/CD	Revised by:	-
File name:		Requested by:	CT	Approved by:	CT
					Figure: 5



LEGEND

⊙ WELL CENTRE

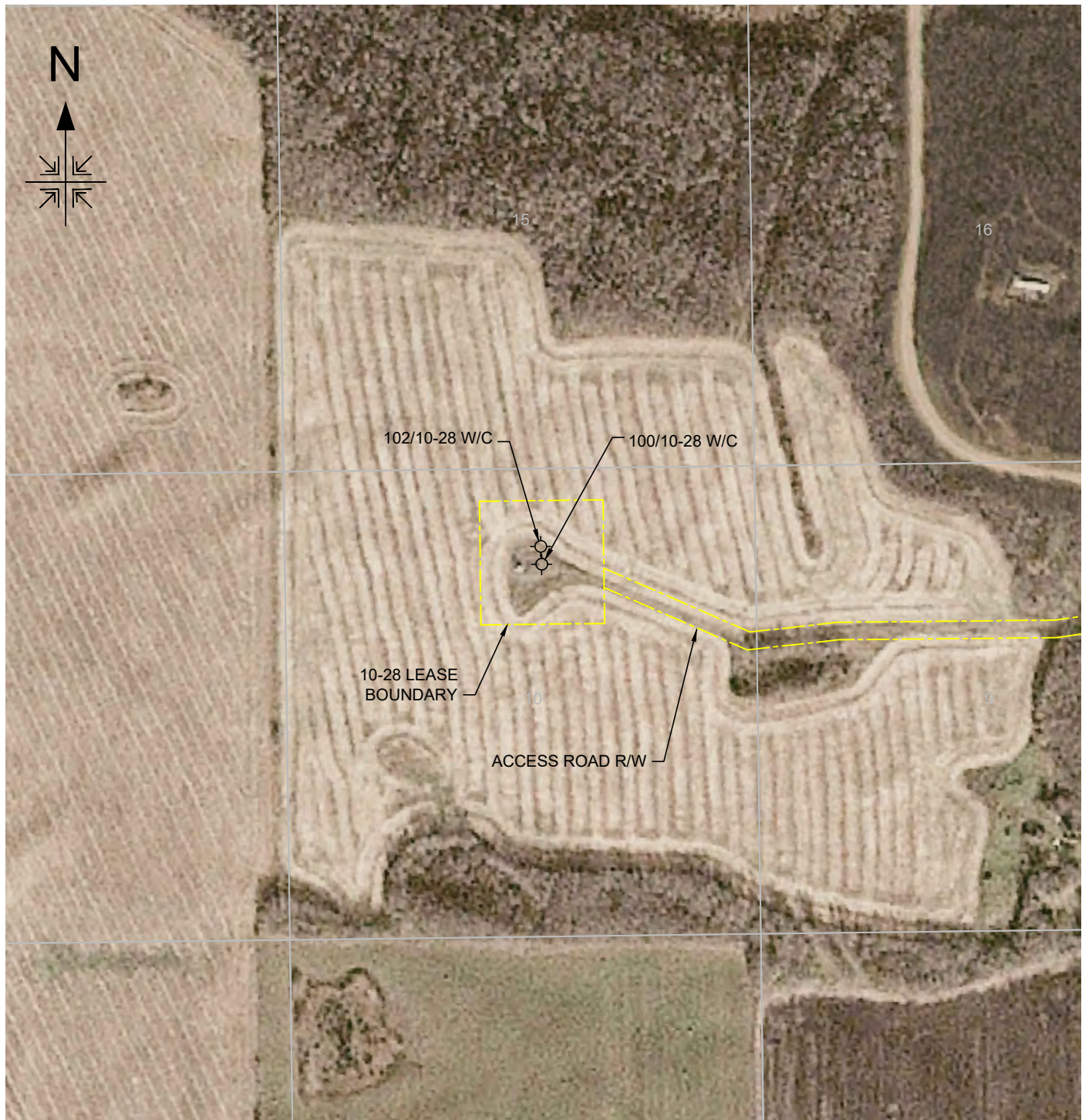
NOTES:

LOCATIONS ARE APPROXIMATE.

0 50 100 200m
Scale 1 : 5000

2013 HISTORICAL AERIAL PHOTO

Date:	05-FEB-20	Drawn by:	CD	Revised by:	-
File name:		Requested by:	CT	Approved by:	CT
					Figure: 7



LEGEND

 WELL CENTRE

NOTES:

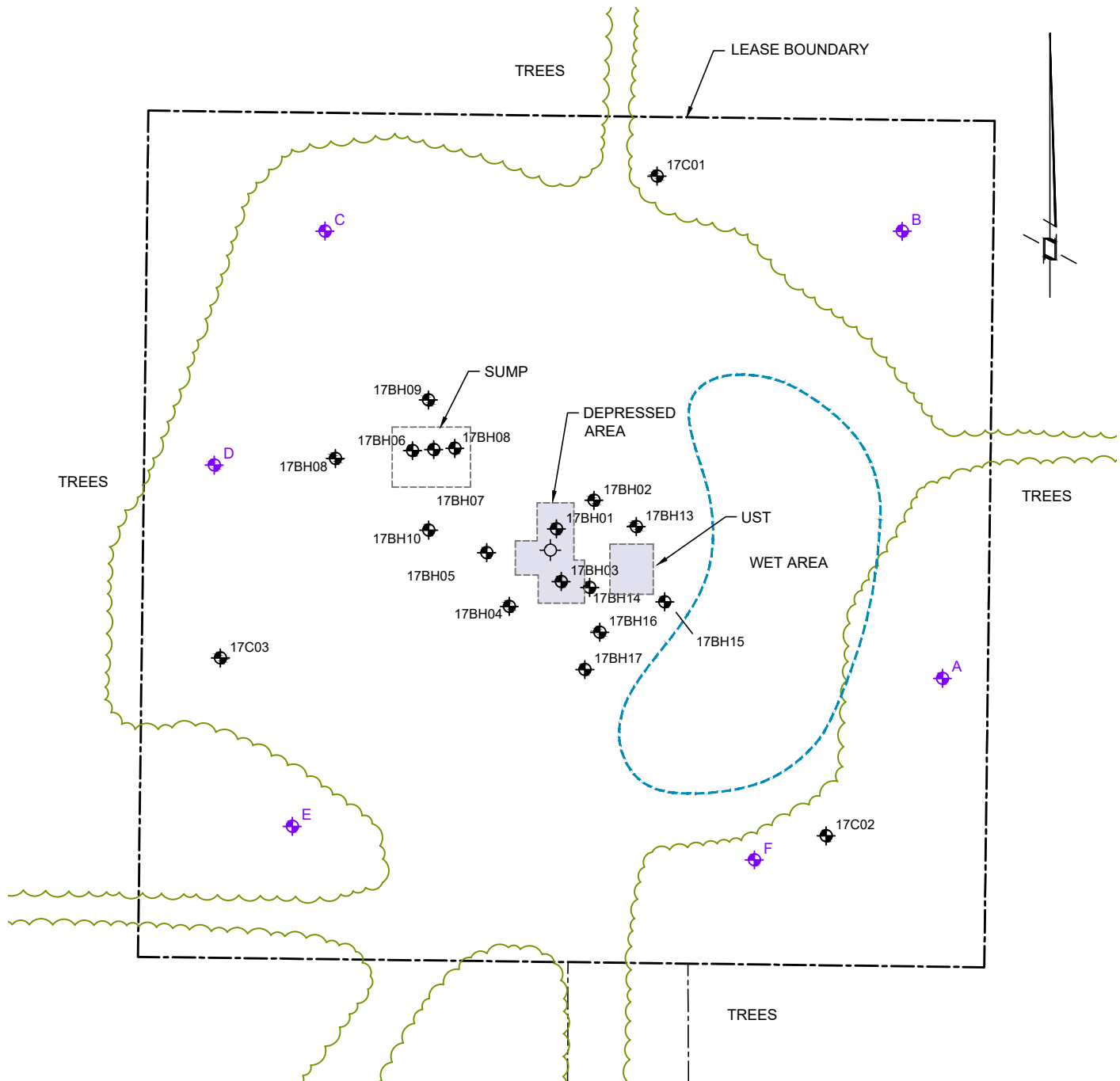
LOCATIONS ARE APPROXIMATE.

0 50 100 200m
Scale 1 : 5000

2019 HISTORICAL AERIAL PHOTO

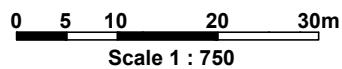
Date:	05-FEB-20	Drawn by:	CD	Revised by:	-
File name:		Requested by:	CT	Approved by:	CT
					Figure: 9

Phase 2



NOTES:

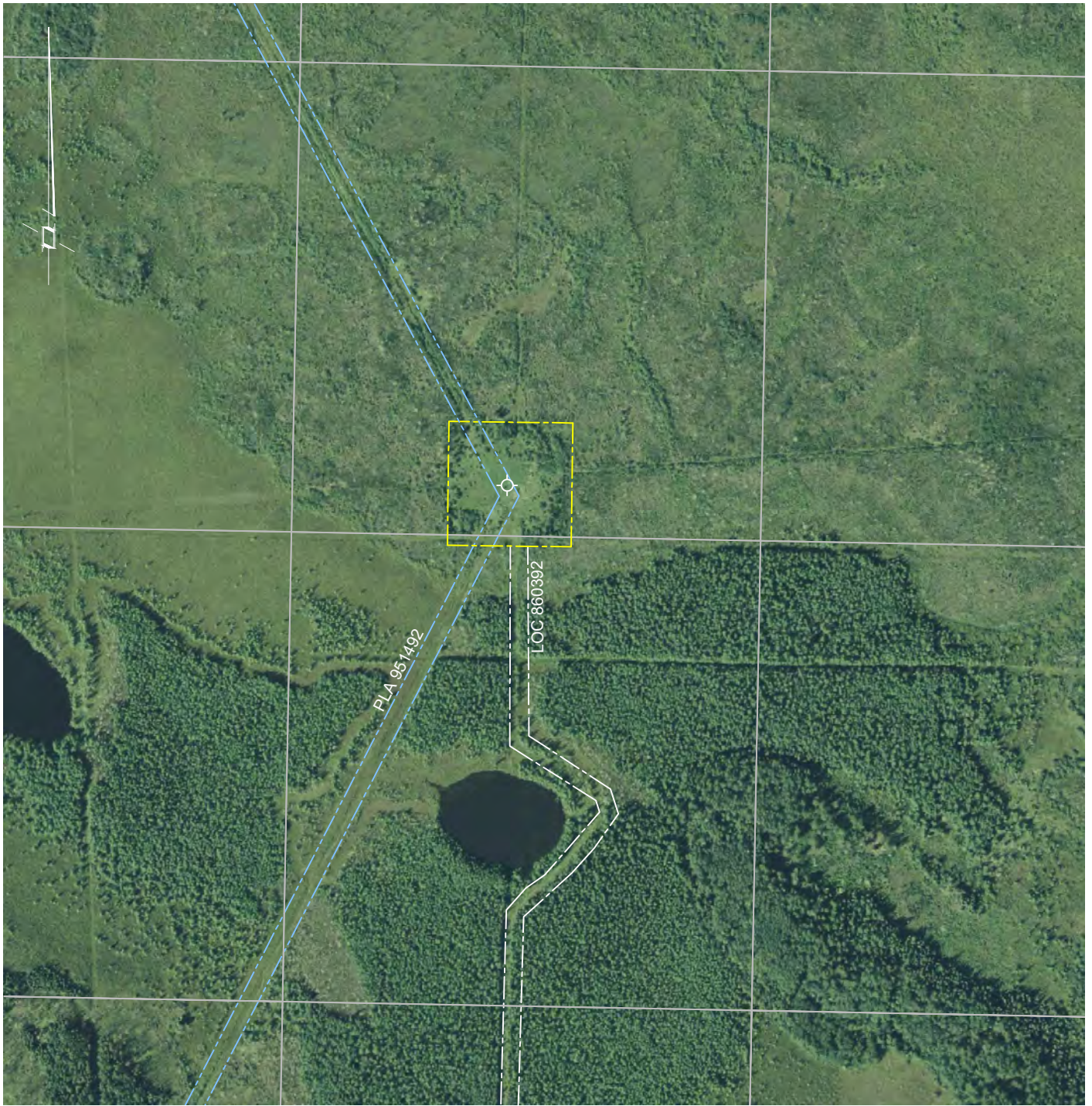
LOCATIONS ARE APPROXIMATE.



LEGEND

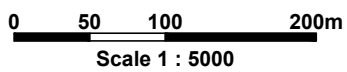
- BOREHOLE LOCATION
- FLARE PIT SEARCH BOREHOLE
- 10-04 WELL CENTRE
- FORMER FEATURE
- DEPRESSED AREA (APPROX. 0.5m DEEP DUE TO RECLAMATION/EXCAVATION)

SITE DIAGRAM



NOTES:

LOCATIONS ARE APPROXIMATE.

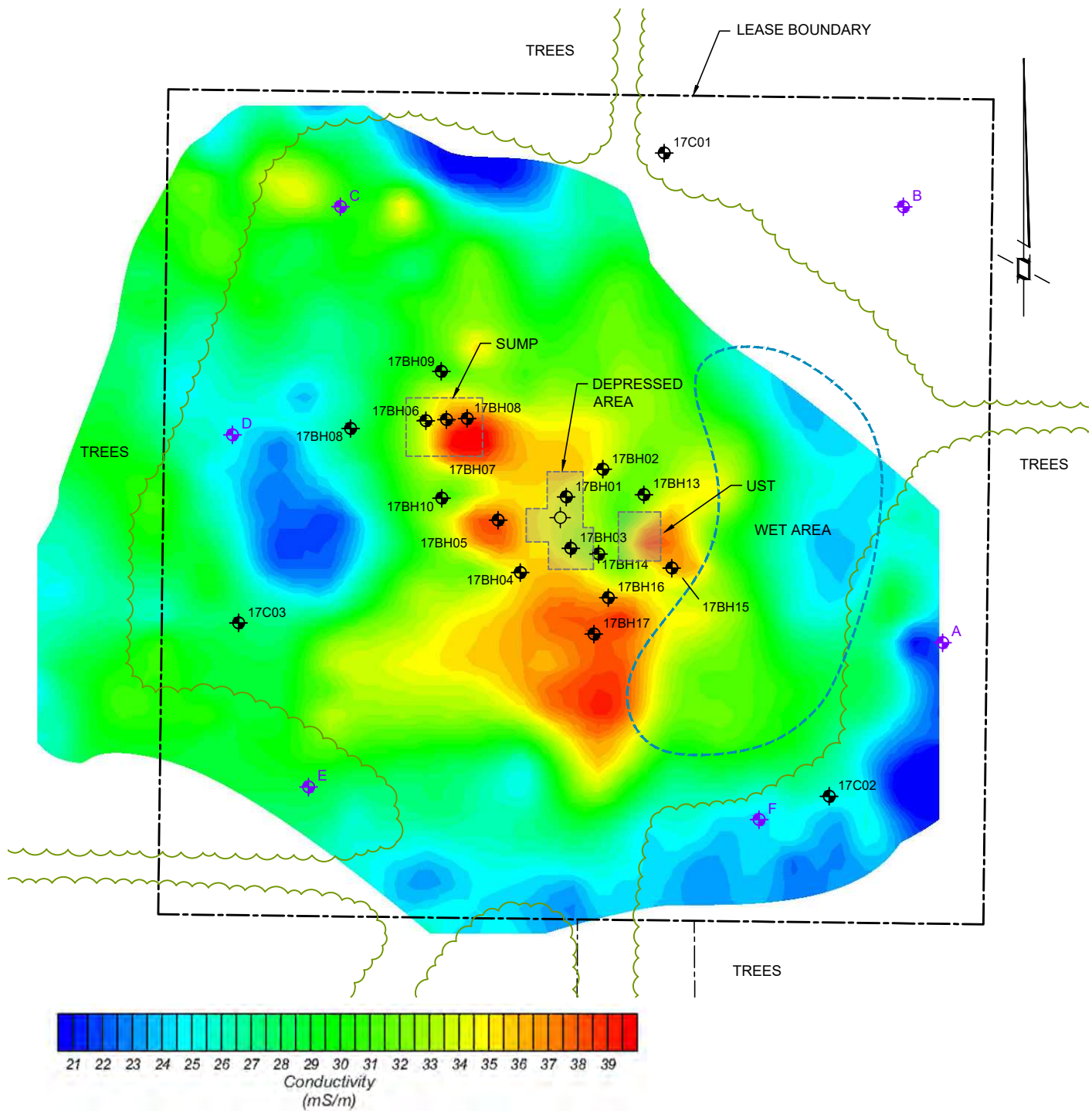


LEGEND

⊕ WELL CENTRE

--- PIPELINE ROW
(SOURCE: ABADATA)

QUARTER SECTION DETAIL



NOTES:

LOCATIONS ARE APPROXIMATE.

JUNE 13, 2017 EM31 SURVEY
CONDUCTED BY AKS GEOSCIENCE.

0 5 10 20 30m
Scale 1 : 750

LEGEND



BOREHOLE LOCATION



FLARE PIT SEARCH BOREHOLE



10-04 WELL CENTRE

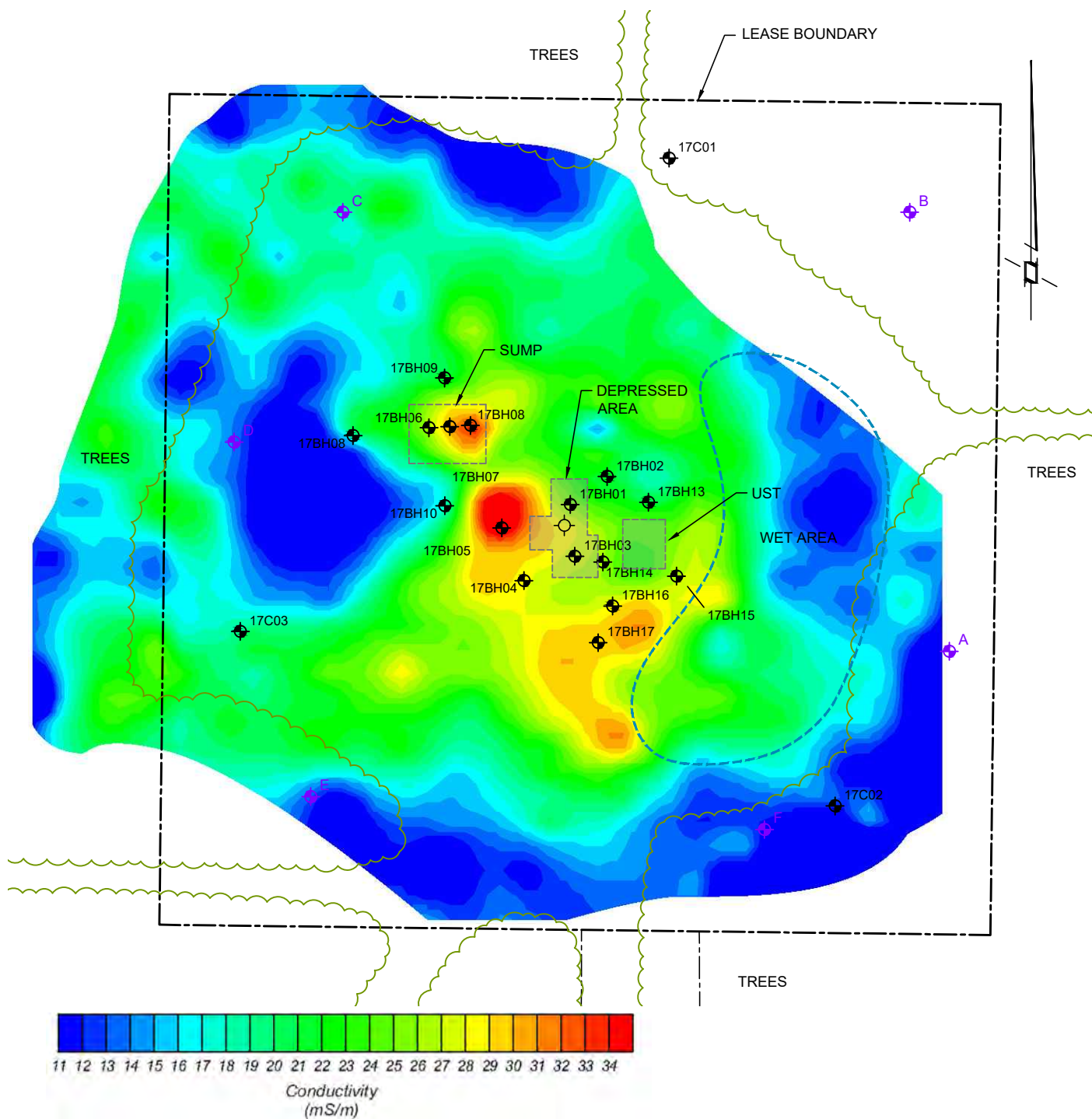


FORMER FEATURE



DEPRESSED AREA (APPROX. 0.5m DEEP DUE
TO RECLAMATION/EXCAVATION)

EM31 APPARENT CONDUCTIVITY SURVEY



NOTES:

LOCATIONS ARE APPROXIMATE.

JUNE 13, 2017 EM38 SURVEY
CONDUCTED BY AKS GEOSCIENCE.

0 5 10 20 30m
Scale 1 : 750

LEGEND

- BOREHOLE LOCATION
- FLARE PIT SEARCH BOREHOLE
- 10-04 WELL CENTRE

FORMER FEATURE

DEPRESSED AREA (APPROX. 0.5m DEEP DUE TO RECLAMATION/EXCAVATION)

EM38 APPARENT CONDUCTIVITY SURVEY

Remediation



NOTES:

LOCATIONS ARE APPROXIMATE.

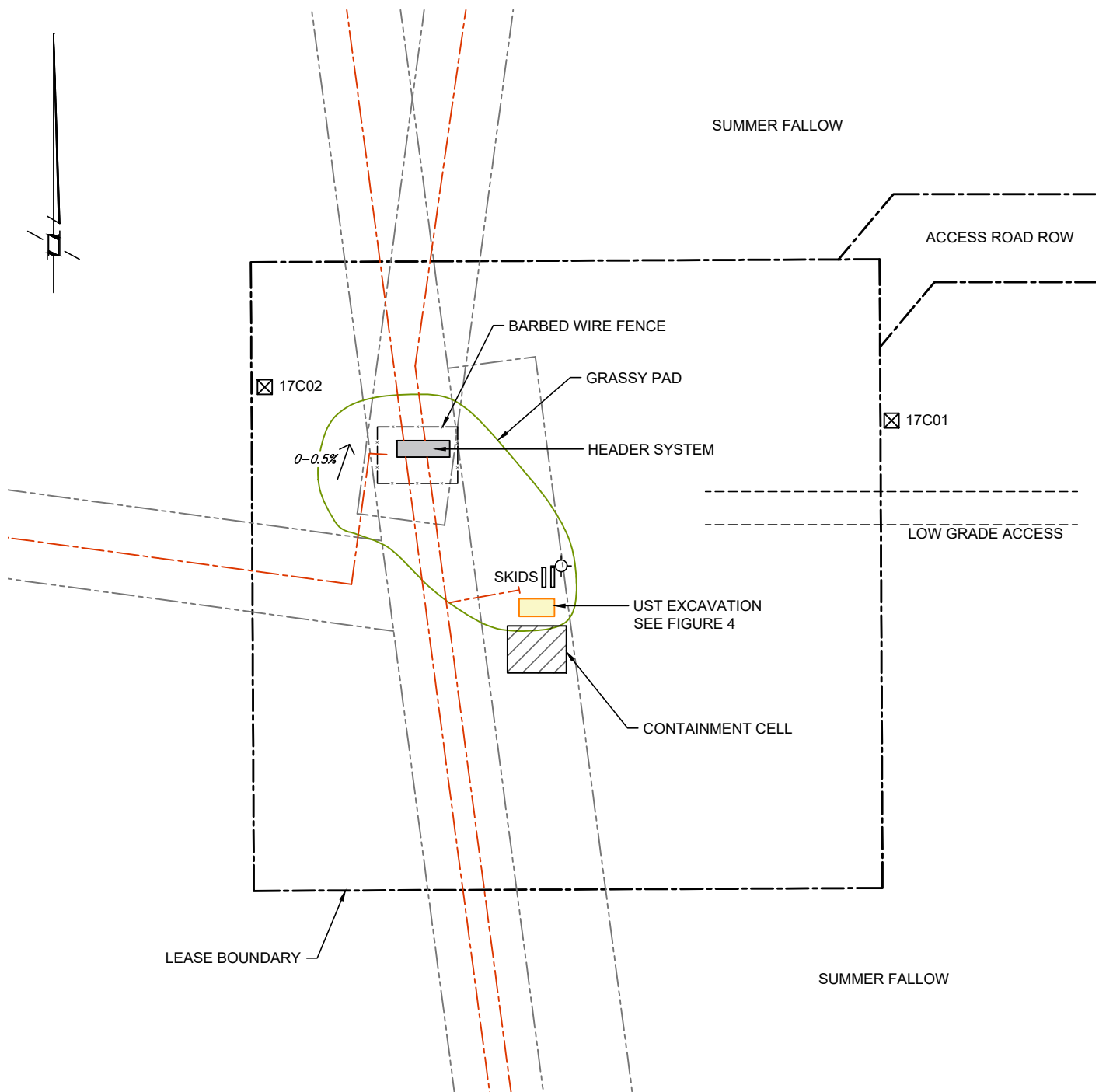
0 50 100 200m
Scale 1 : 5000

LEGEND

-  WELL CENTRE
-  DISPOSITION
(SOURCE: ABADATA)

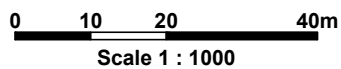
QUARTER SECTION DETAIL

Date:	06-OCT-17	Drawn by:	LH	Figure:	2
File name:		Requested by:	MG		



NOTES:

LOCATIONS ARE APPROXIMATE.

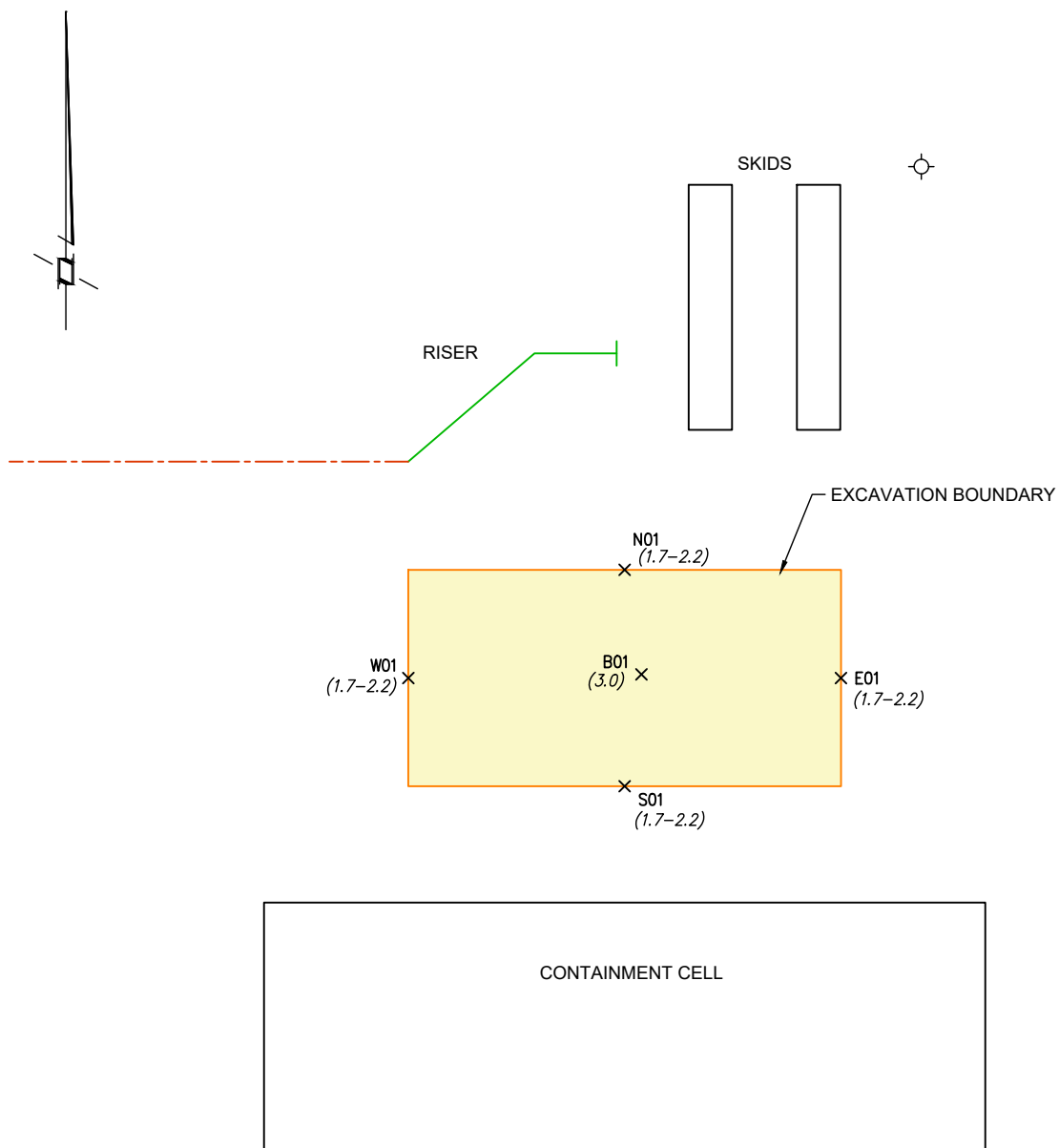


LEGEND

- 100/10-06 WELL CENTRE
- CONTROL TEST PIT
- CNRL UNDERGROUND PIPELINE
- DISPOSITION (SOURCE: ABADATA)
- GROUND SLOPE DIRECTION & GRADIENT

SITE DIAGRAM

Date:	04-DEC-17	Drawn by:	LH	Figure:	3
File name:		Requested by:	MG		



NOTES:

LOCATIONS ARE APPROXIMATE.

0 1 2 4m
Scale 1 : 100

LEGEND

- × CONFIRMATORY SOIL SAMPLE
- ⊗ 100/10-06 WELL CENTRE
- (1.7-2.2) SAMPLE DEPTH (mbgl)
- UNDERGROUND PIPELINE

UST EXCAVATION DIAGRAM

Date:	06-OCT-17	Drawn by:	LH	Figure:	4
File name:		Requested by:	MG		

Reclamation



LEGEND

-  WELL CENTRE
 DISPOSITION
 (SOURCE: ABADATA)

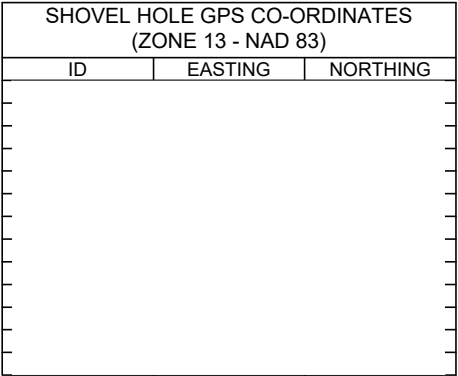
NOTES:

LOCATIONS ARE APPROXIMATE.

0 50 100 200m
 Scale 1 : 5000

QUARTER SECTION DETAIL

Date:	Drawn by: CD	Revised by: -
File name:	Requested by:	Approved by:
		Figure: 2



Groundwater Flow Map



0 25 50 100m
Scale 1 : 2000

LEGEND

 SITE

DRAFT

AERIAL OVERVIEW

Date:	Drawn by: LH		Figure: 2
File name:	Requested by:		

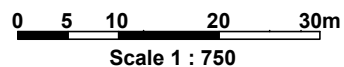


LEGEND

- ⊙ MONITORING WELL
- PROPERTY LINE
- SITE BUILDING
- GRASS
- SIDEWALK
- _{pp} UTILITY POLE
- ☀ LIGHT STANDARD
- CATCH BASIN

NOTES:

LOCATIONS ARE APPROXIMATE.



DRAFT

SITE DIAGRAM

Date:	Drawn by: LH		Figure: 3
File name:	Requested by:		



LEGEND

- ⊙ MONITORING WELL
- 95.77 GROUNDWATER ELEVATION (mard)
- 96.25 — GROUNDWATER ELEVATION CONTOUR (mard)
- INTERPRETED GROUNDWATER FLOW DIRECTION

NOTES:

LOCATIONS ARE APPROXIMATE.

DRAFT

2019 GROUNDWATER FLOW MAP

0 5 10 20m
Scale 1 : 400

Date:

Drawn by:
LH

File name:

Requested by:

Figure:

4

Conceptual Site Model

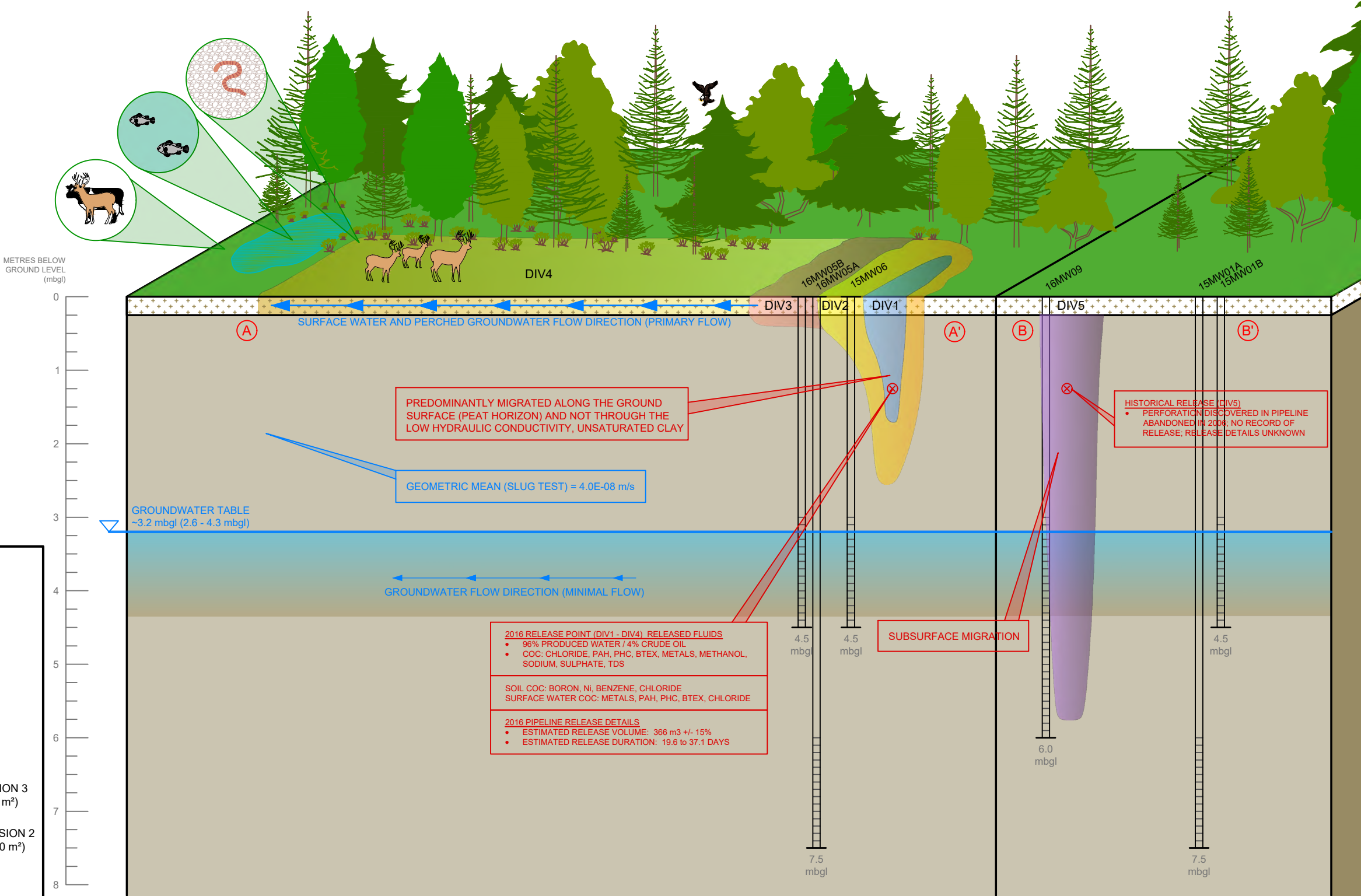
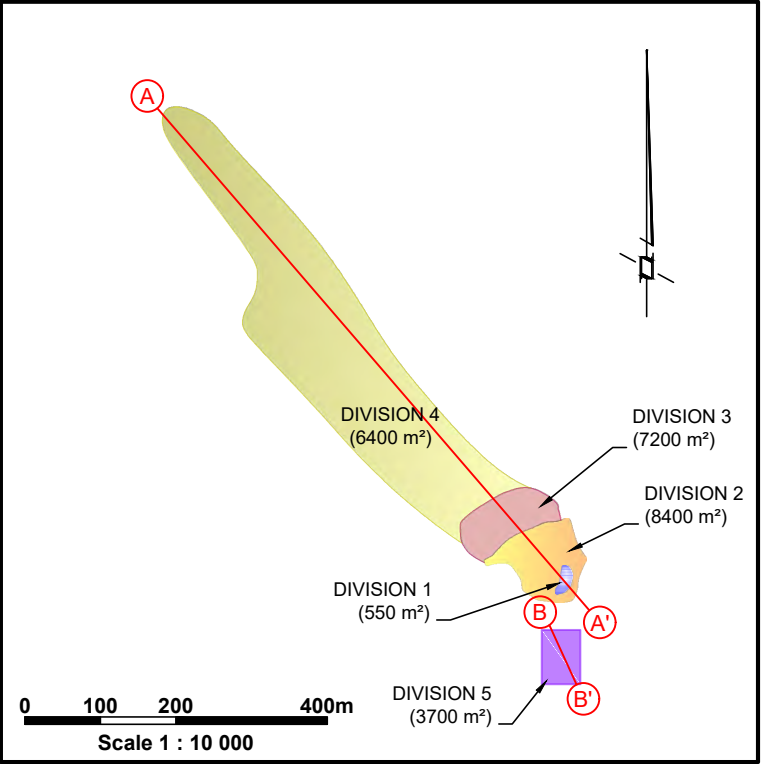
- LEGEND
- ORGANICS / SURFACE WATER
8-42 cm (AVG 26.6 cm)
 - CLAY TO SILTY CLAY
 - PIPELINE (DEPTH ~1.2-1.4 mbgl)

ECOLOGICAL EXPOSURE PATHWAYS

- ECOLOGICAL DIRECT SOIL CONTACT
- NUTRIENT ENERGY AND RECYCLING
- WILDLIFE SOIL AND FOOD INGESTION
- WILDLIFE WATERING
- FRESHWATER AQUATIC LIFE
- DENE THA FIRST NATION TRADITIONAL USE
- LIVESTOCK SOIL AND FOOD INGESTION**
- LIVESTOCK WATERING**

**WHERE WILDLIFE GUIDELINES DON'T EXIST

LAND USE: NATURAL AREAS
ECOSITE TYPE: SHRUBBY FEN
MOISTURE REGIME: HYGRIC TO SUBHYDRIC
SOIL TEXTURE: FINE

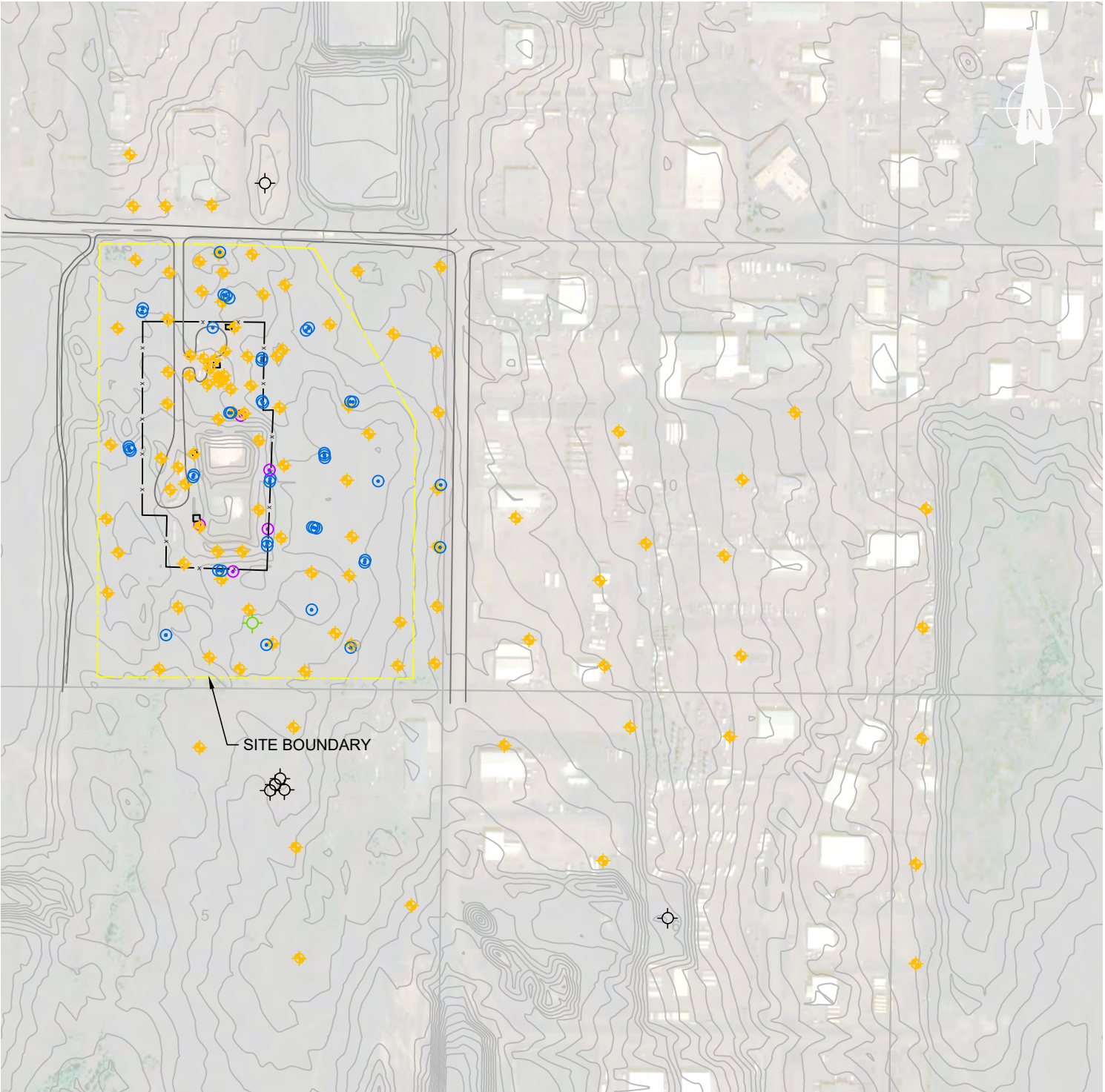


CONCEPTUAL SITE MODEL - INITIAL SITE CHARACTERIZATION

NOT TO SCALE

Date:	Drawn by:	Requested by:	Figure: 1

Geological Cross-Sections



logo

Legend

- Borehole
- Monitoring Well
- Extraction Well
- Well Centre
- Well Centre (to be drilled)

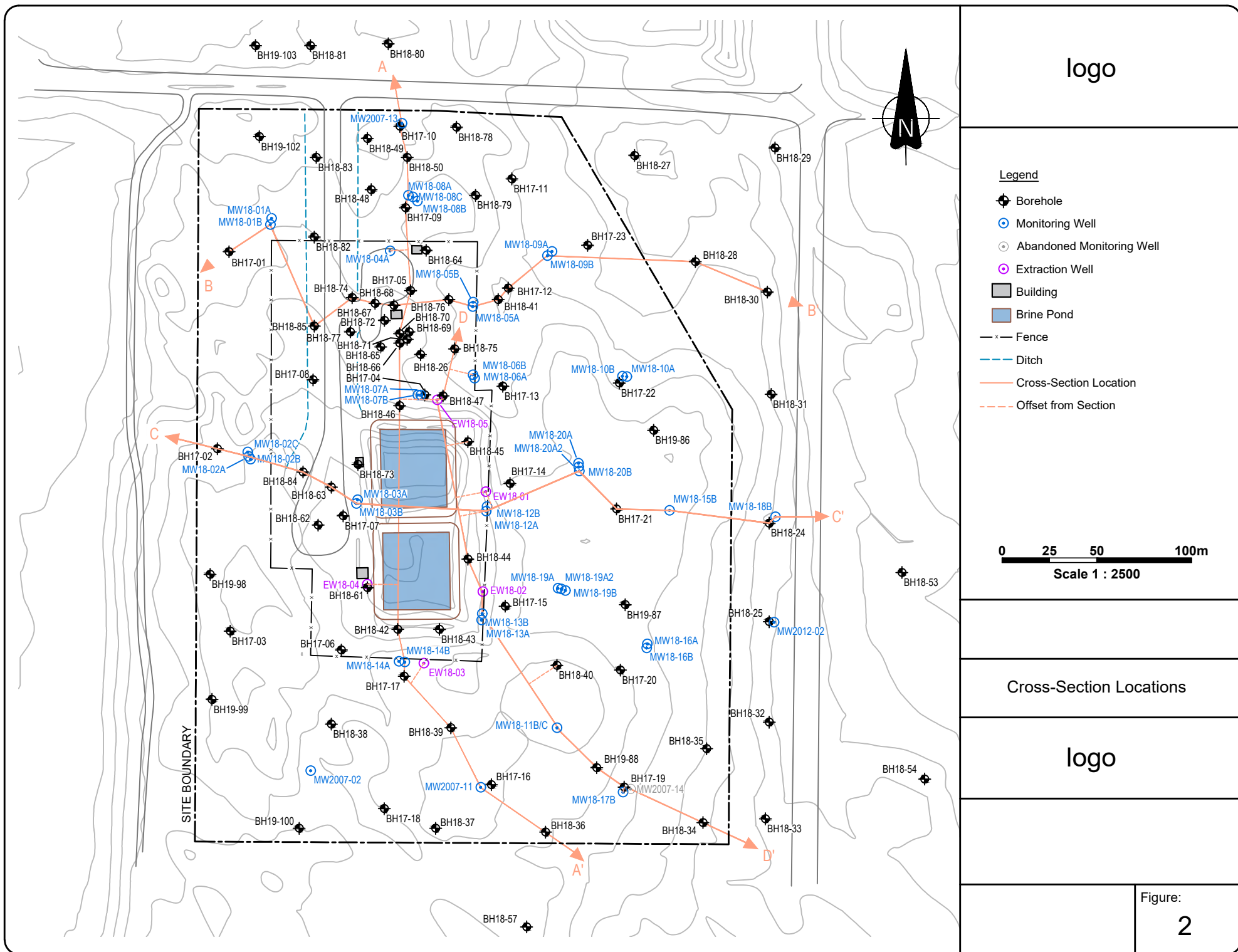
0 10 20 40m
Scale 1 : 1000

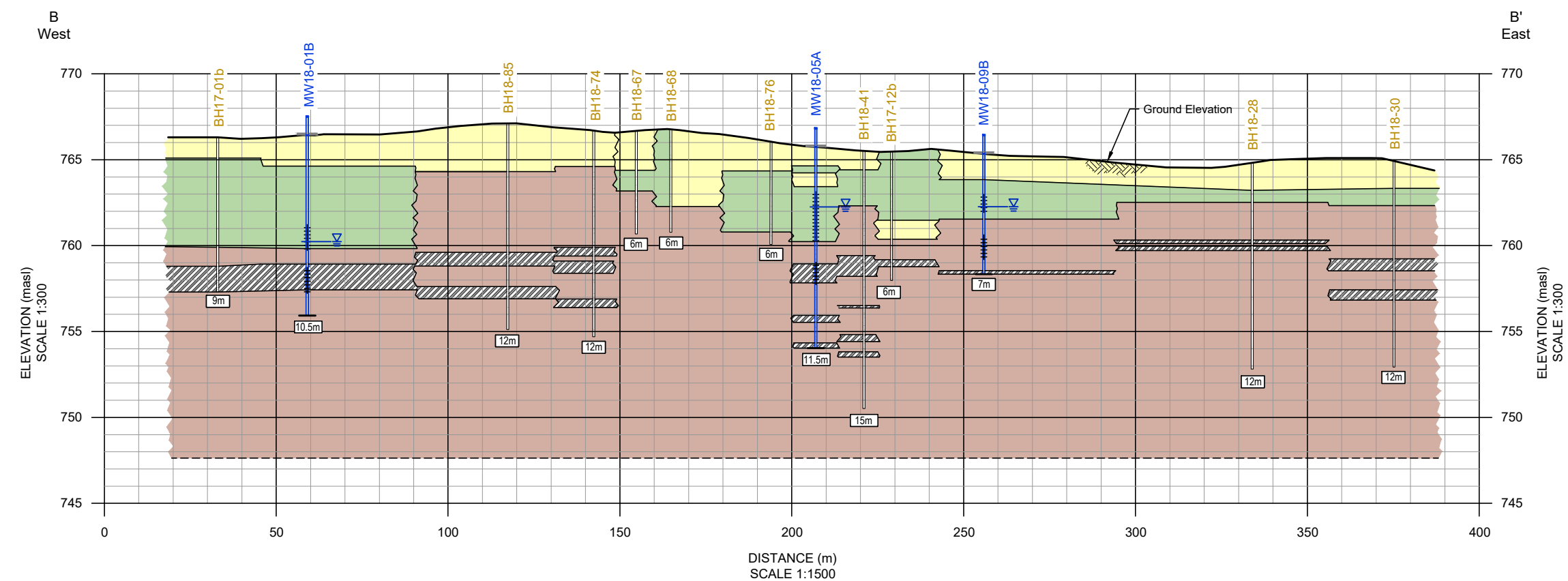
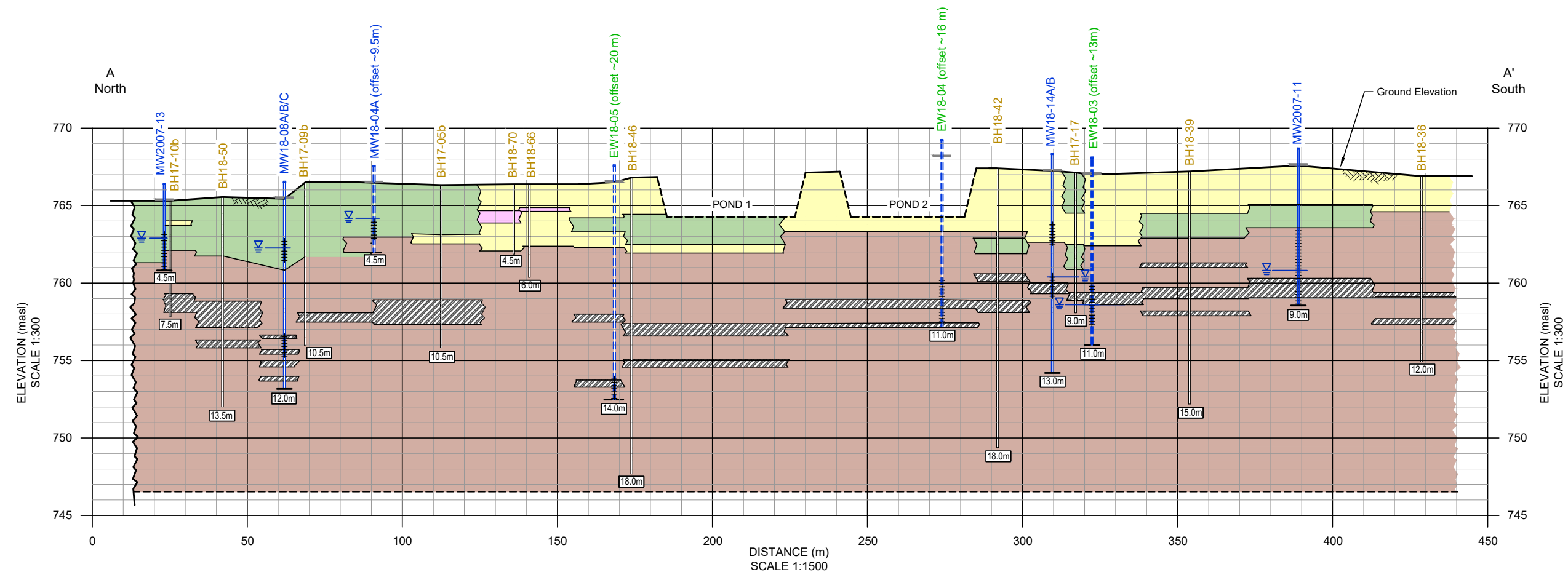
Site Overview

logo

Figure:

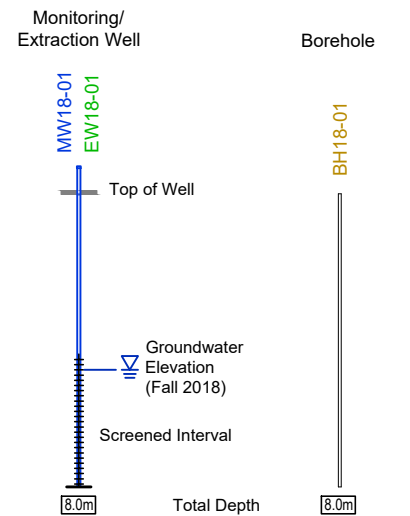
1





logo

Legend



Lithology

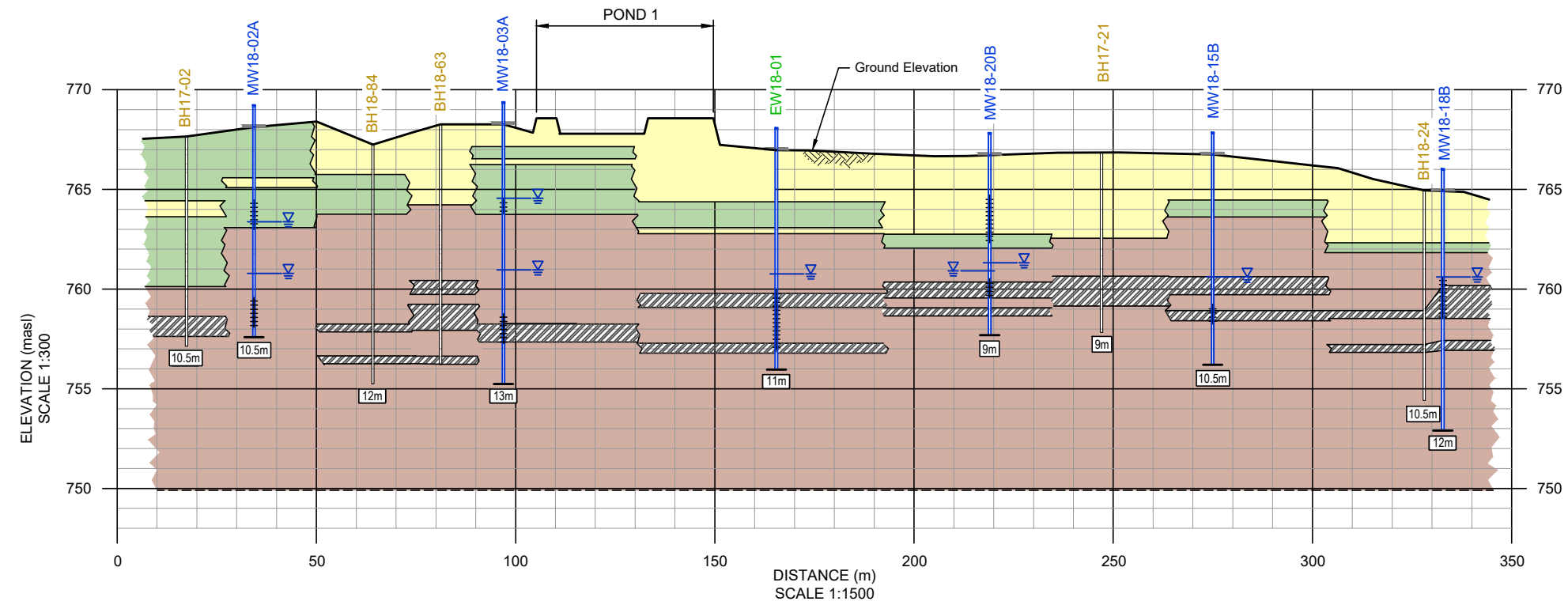
- Sand
- Clay
- Bedrock
- Coal
- Sump

DRAWING SHOULD BE PRINTED ON 11x17 PAPER FOR ACCURATE SCALING.

Geological Cross-Sections
A-A' and B-B'

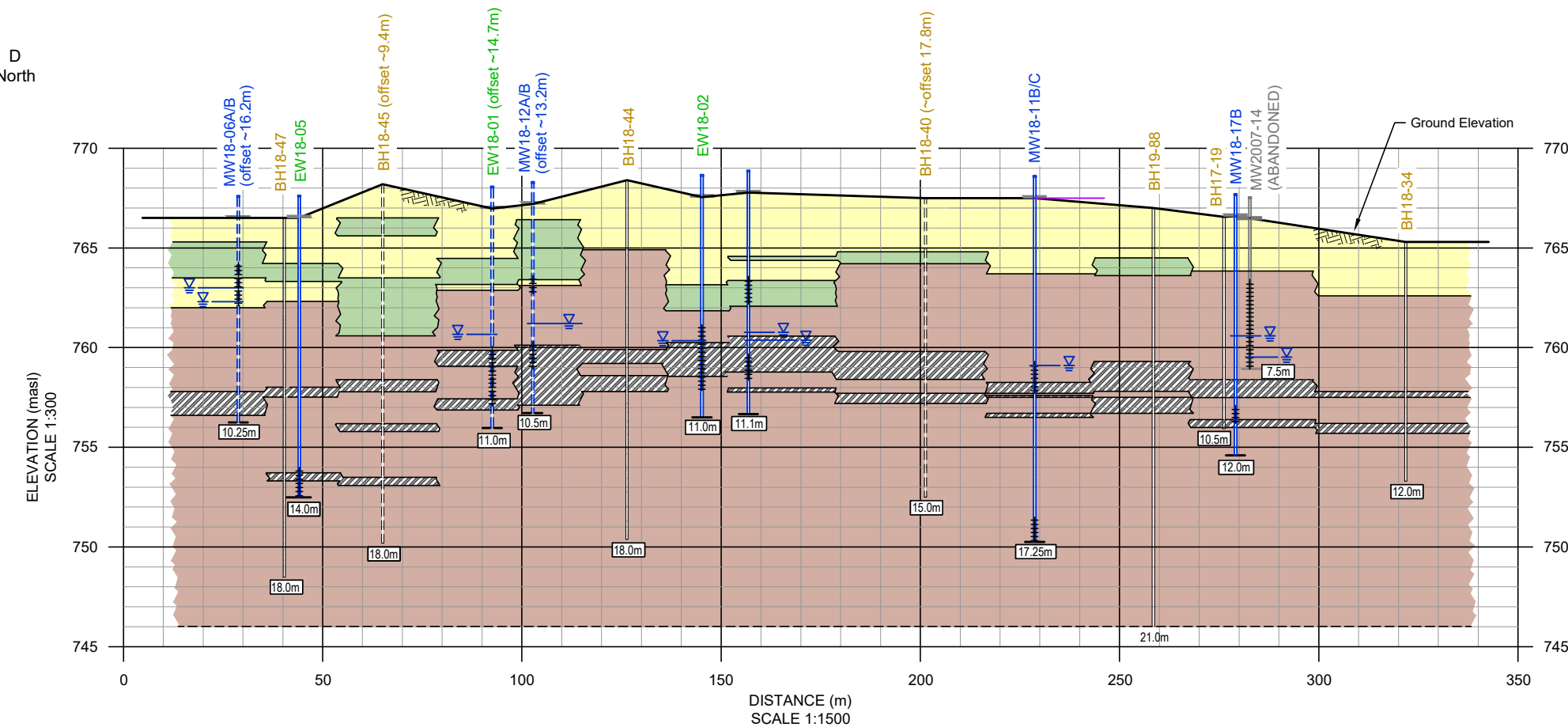
logo

C
West



C'
East

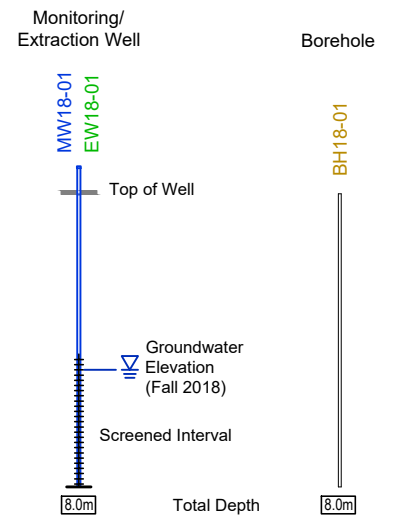
D
North



D'
South

logo

Legend



Lithology

- Sand
- Clay
- Bedrock
- Coal

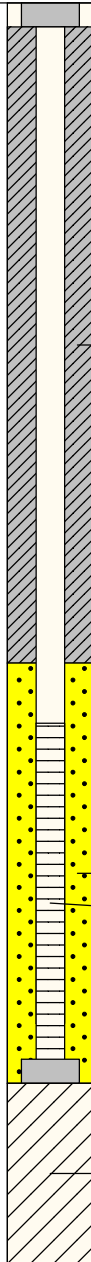
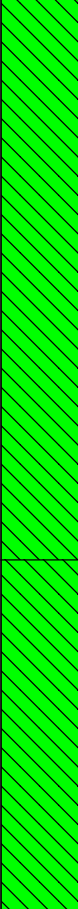
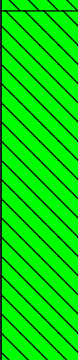
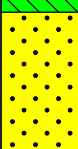
DRAWING SHOULD BE PRINTED ON 11x17 PAPER FOR ACCURATE SCALING.

Geological Cross-Sections
C-C' and D-D'

logo

Logs

			CLIENT:		PROJECT: Phase II ESA		BOREHOLE LOG			
			PROJECT #:		LOCATION:		19BH-04/19MW-04			
SUBSURFACE PROFILE					SAMPLE		FIELD SCREEN		WELL CONSTRUCTION	
DEPTH (m)	TEXTURE	LITHOLOGY DESCRIPTION			INTERVAL (m)	TYPE	VOC (ppm)	EC (dS/m)	WELL COMPLETION DETAILS	

0		T	Topsoil	0-0.5		0			Bentonite Chips
		C	Clay: Some gravel, trace silt and sand, dark brown, moist, firm, low plastic, mottled light and dark brown, fill.	0.5-1.0		10			
1				1.0-1.5		20			
			4.0 m - mottled grey and black, hydrocarbon odour.	1.5-2.0		90			
2				2.0-2.5		50			
				2.5-3.0		45			
3				3.0-3.5		30			
				3.5-4.0		60			
4				4.0-4.5	Grab	250			
		S	Clay: Trace silt and clay, light brown, moist, massive, firm, medium plastic, till.	4.5-5.0		30			
5				5.0-5.5		60			
				5.5-6.0		40			
6				6.0-6.5		60			
				6.5-7.0		75			
7				7.0-7.5		55			
		S	Sand: Some gravel, light grey, wet, loose, some grey mottling.	7.5-8.0		60			
8				8.0-8.5	Grab				
		C		8.5-9.0					
9				9.0-9.5	Grab				
			Clay: Some gravel, trace silt and sand; dark brown, wet, massive, medium plastic, till.	9.5-10.0					
10									

DRILLING & COMPLETIONS	DRILLER:	SURVEY	Ground Elevation (m): N/A	Notes:
	DRILLING METHOD: Solid-stem auger		Top of Casing Elevation (m): N/A	
	BOREHOLE DIAMETER: 6"		Datum: NAD 83	
	WELL DIAMETER: 2"		Northing:	
	DRILL DATE:		Easting:	
	LOGGED BY:			

