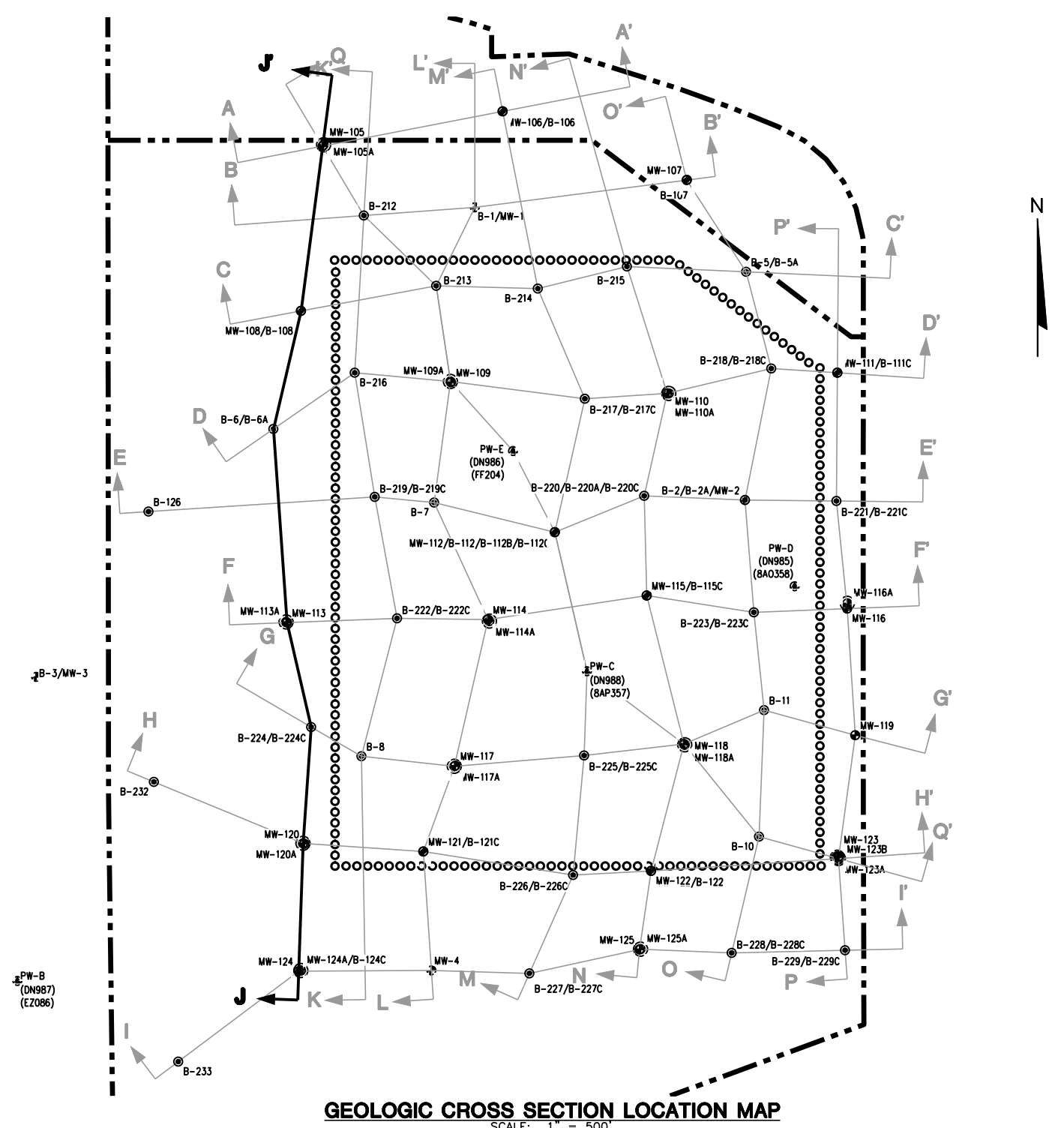
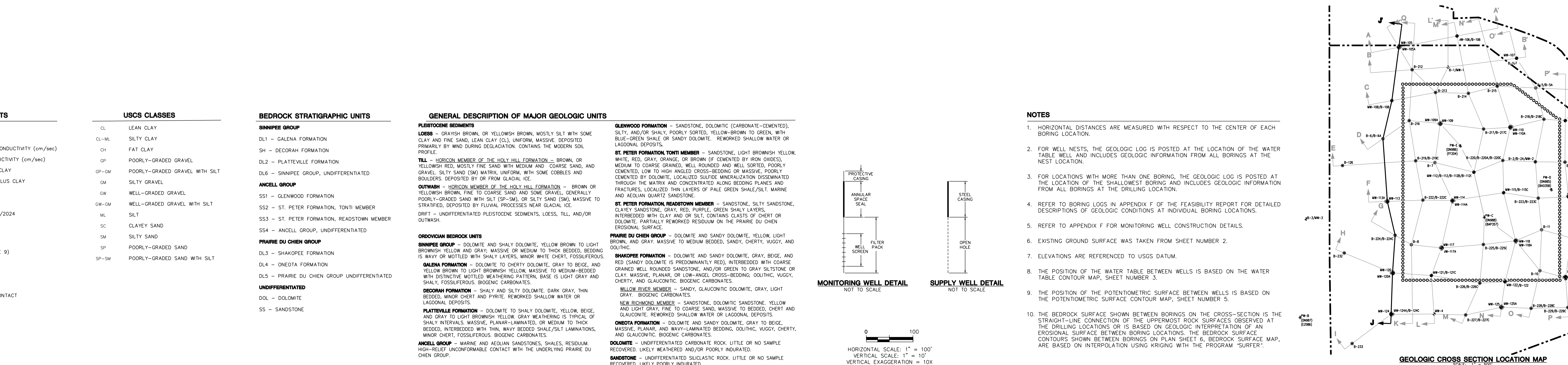
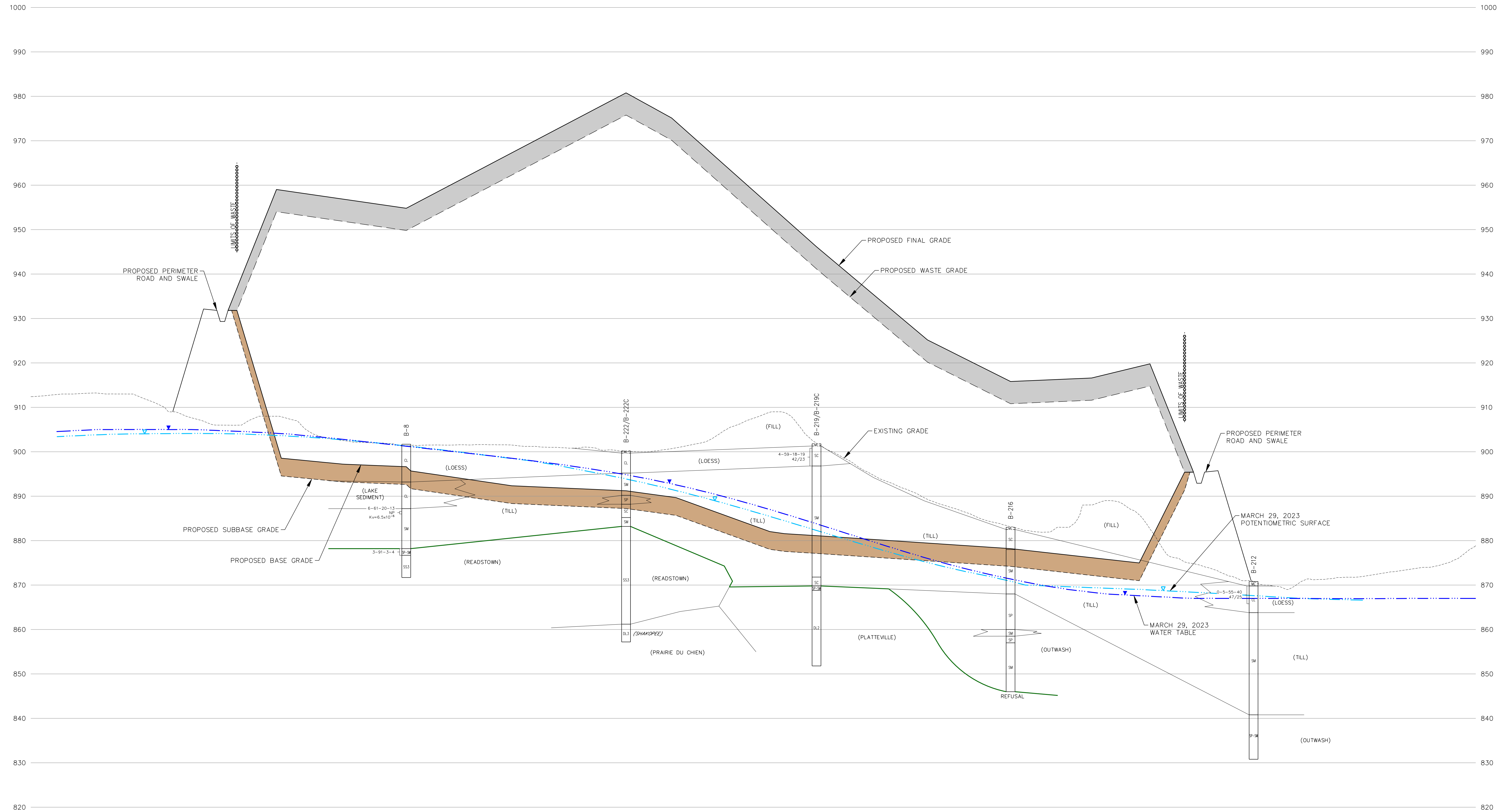




K

K'



SYMBOLS AND TEST RESULTS

60.7/22.6	LIQUID LIMIT/PLASTICITY INDEX
NP	NON-PLASTIC
K _v	LABORATORY VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)
K _h	FIELD HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
0-30-42-28	PERCENT GRAVEL, SAND, SILT, AND CLAY
0-87-13	PERCENT GRAVEL, SAND, AND SILT PLUS CLAY
72-5	PERCENT GRAVEL AND SAND
NS	NOT SAMPLED
(11.036.67)	GROUNDWATER ELEVATION ON 03/29/2024 (FEET ABOVE MEAN SEA LEVEL)
(NW)	NOT MEASURED
	WATER TABLE (SEE NOTE 8)
	POTENTIOMETRIC SURFACE (SEE NOTE 9)
	EXISTING GROUND (SPRING 2017)
	GEOLOGIC CONTACT
	UNCERTAIN GEOLOGIC CONTACT
	INFERRED GRADATIONAL GEOLOGIC CONTACT
	TOP OF BEDROCK (SEE NOTE 10)
	PROPOSED FINAL COVER SYSTEM
	PROPOSED COMPOSITE LINER SYSTEM

USCS CLASSES

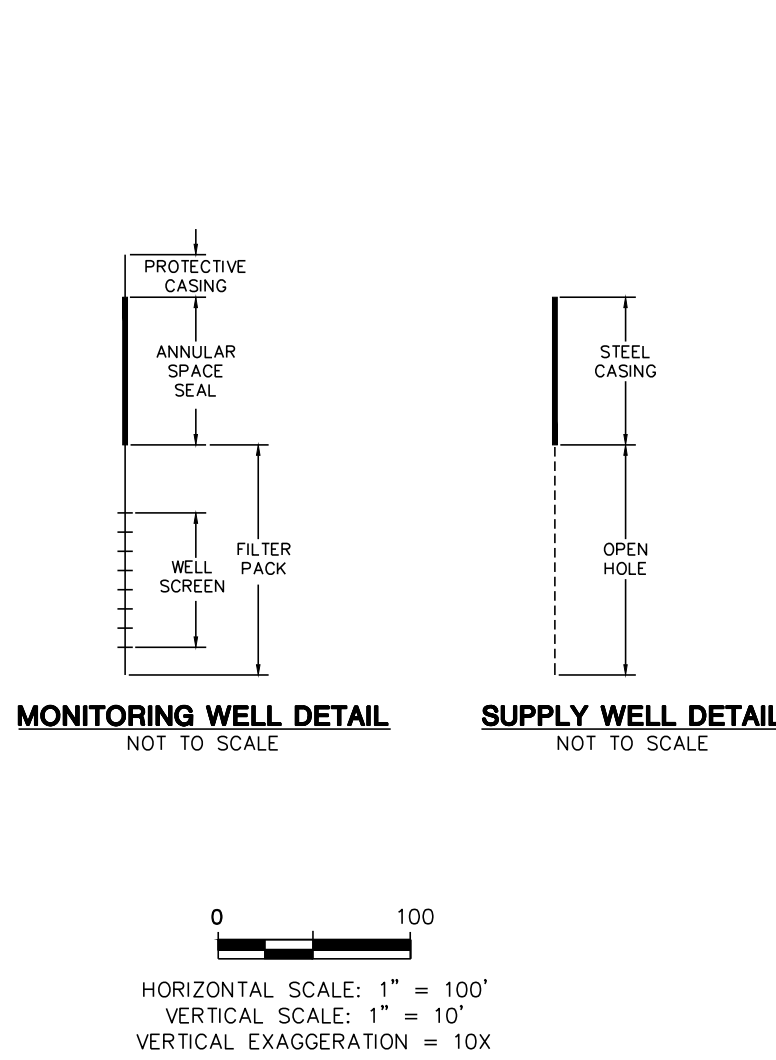
CL	LEAN CLAY
CL-ML	SILTY CLAY
CH	FAT CLAY
GP	POORLY-GRADED GRAVEL
GP-GM	POORLY-GRADED GRAVEL WITH SILT
GM	SILTY GRAVEL
GW	WELL-GRADED GRAVEL
GW-GM	WELL-GRADED GRAVEL WITH SILT
ML	SILT
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY-GRADED SAND
SP-SM	POORLY-GRADED SAND WITH SILT

BEDROCK STRATIGRAPHIC UNITS

SINNIPEE GROUP	
DL1	- GALENA FORMATION
SH	- DECORAH FORMATION
DL2	- PLATTEVILLE FORMATION
DL6	- SINNIPEE GROUP, UNDIFFERENTIATED
ANCELL GROUP	
SS1	- GLENWOOD FORMATION
SS2	- ST. PETER FORMATION, TONTI MEMBER
SS3	- ST. PETER FORMATION, READSTOWN MEMBER
SS4	- ANCELL GROUP, UNDIFFERENTIATED
PRAIRIE DU CHIEN GROUP	
DL3	- SHAKOPEE FORMATION
DL4	- ONEOTA FORMATION
DL5	- PRAIRIE DU CHIEN GROUP UNDIFFERENTIATED
UNDIFFERENTIATED	
DOL	- DOLOMITE
SS	- SANDSTONE

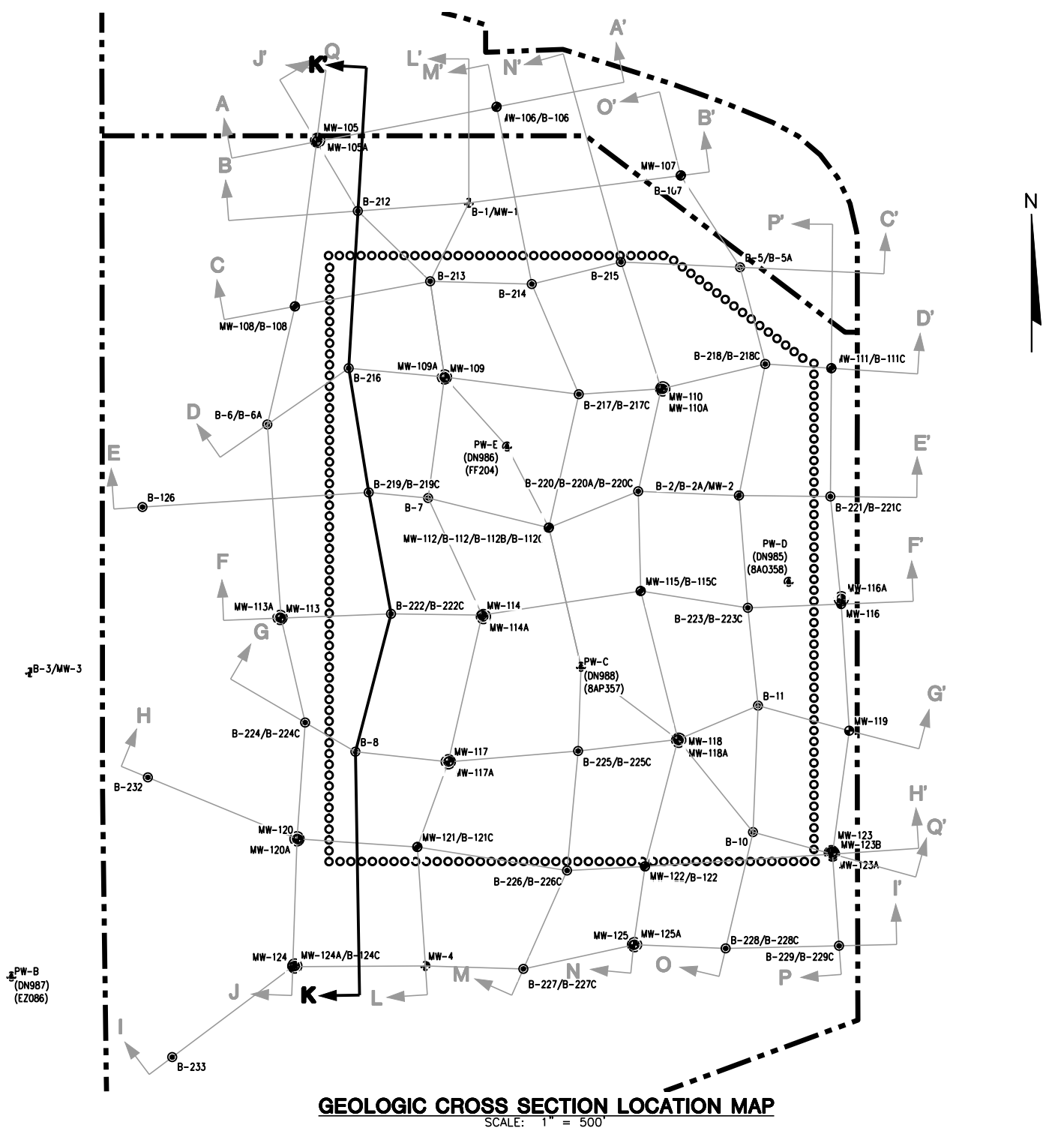
GENERAL DESCRIPTION OF MAJOR GEOLOGIC UNITS

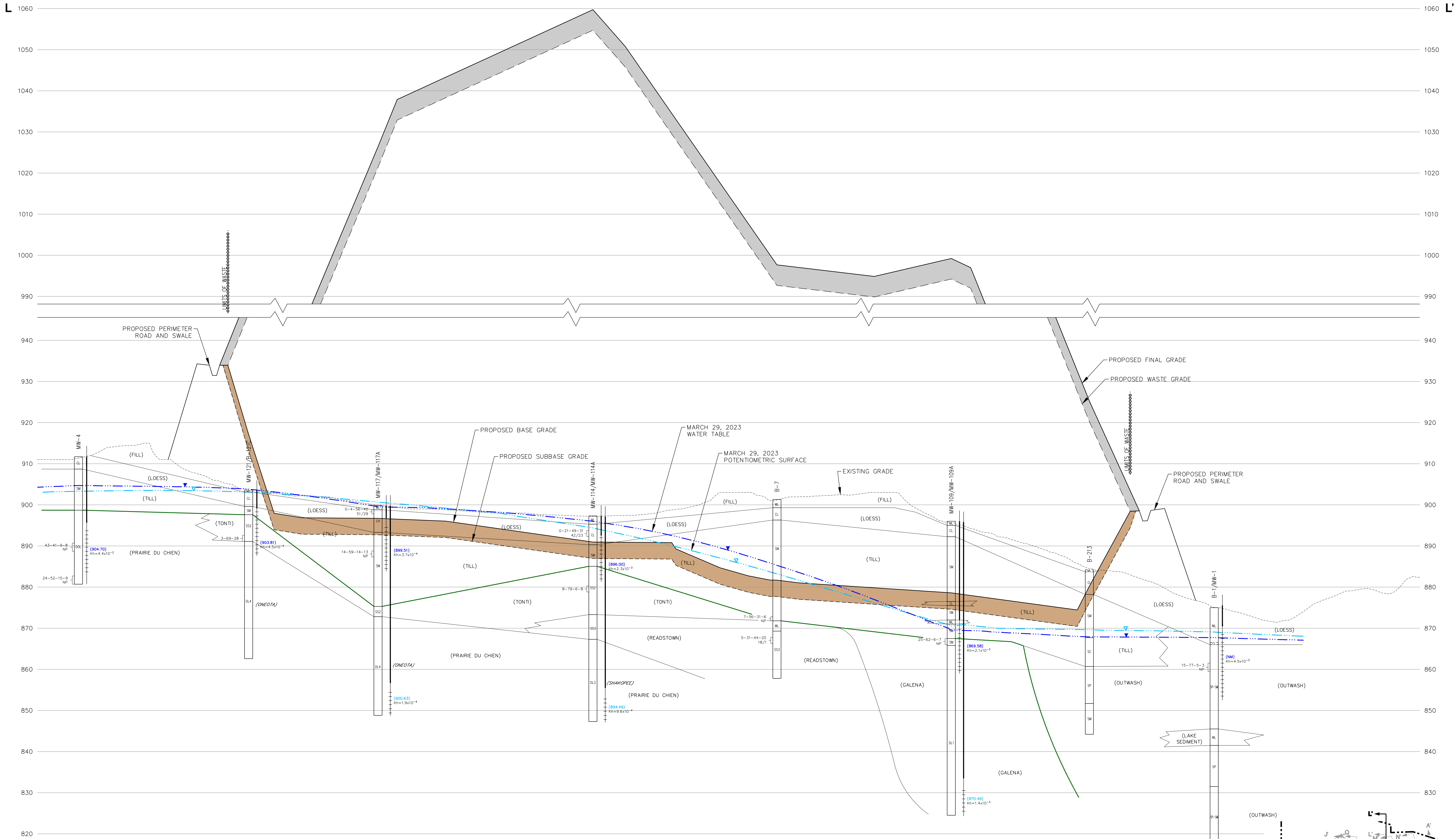
PLEISTOCENE SEDIMENTS
LOESS - GRAYISH BROWN, OR YELLOWISH BROWN, MOSTLY SILT WITH SOME CLAY AND FINE SAND, LEAN CLAY (CL), UNIFORM, MASSIVE. DEPOSITED PRIMARILY BY WIND DURING DEGLACIATION. CONTAINS THE MODERN SOIL PROFILE.
TILL - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN, OR YELLOWISH RED, MOSTLY FINE SAND WITH MEDIUM AND COARSE SAND, AND GRAVEL, SILTY SAND (SM) MATRIX, UNIFORM, WITH SOME COBBLES AND Boulders, DEPOSITED BY OR FROM GLACIAL ICE.
OUTWASH - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN OR YELLOWISH BROWN, FINE TO COARSE SAND AND SOME GRAVEL, GENERALLY POORLY-GRADED SAND WITH SILT (SP-SM), OR SILTY SAND (SM), MASSIVE TO STRATIFIED, DEPOSITED BY FLUVIAL PROCESSES NEAR GLACIAL ICE.
READSTOWN - UNDIFFERENTIATED PLEISTOCENE SEDIMENTS, LOESS, TILL, AND/OR OUTWASH.
OROVICAN BEDROCK UNITS
SINNIPEE GROUP - DOLOMITE AND SHALY DOLOMITE, YELLOW BROWN TO LIGHT BROWNISH YELLOW AND GRAY, MASSIVE OR MEDIUM TO THICK BEDDED, BEDDING IS WAVY OR MOTTLLED WITH SHALY LAYERS, MINOR WHITE CHERT, FOSSILIFEROUS.
GALENA FORMATION - DOLOMITE TO CHERTY DOLOMITE, GRAY TO BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDDED, WITH DISTINCTIVE MOTTLLED WEATHERING PATTERN, BASE IS LIGHT GRAY AND SHALY, FOSSILIFEROUS, BIOGENIC CARBONATES.
DECORAH FORMATION - SHALY AND SILTY DOLOMITE, DARK GRAY, THIN BEDDED, MINOR CHERT AND PYRITE, REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.
PLATTEVILLE FORMATION - DOLOMITE TO SHALY DOLOMITE, YELLOW, BEIGE, AND GRAY TO LIGHT BROWNISH YELLOW, GRAY WEATHERING IS TYPICAL OF SHALY INTERVALS, MASSIVE, PLANAR-LAMINATED, OR MEDIUM TO THICK BEDDED, INTERBEDDED WITH THIN, WAVY BEDDED SHALE/SILT LAMINATIONS, MINOR CHERT, FOSSILIFEROUS, BIOGENIC CARBONATES.
ANCELL GROUP - MARINE AND AEGEAN SANDSTONES, SHALES, RESIDUUM, HIGH-RELIEF UNCONFORMABLE CONTACT WITH THE UNDERLYING PRAIRIE DU CHIEN GROUP.
SHAKOPEE FORMATION - SANDSTONE, DOLOMITIC (CARBONATE-CEMENTED), SILTY, AND/OR SHALY, POORLY SORTED, YELLOW-BROWN TO GREEN, WITH BLUE-GREEN SHALE OR SANDY DOLOMITE. REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.
ST. PETER FORMATION TONTI MEMBER - SANDSTONE, LIGHT BROWNISH YELLOW, WHITE, RED, GRAY, ORANGE, OR BROWN (IF CEMENTED BY IRON OXIDES), MEDIUM TO COARSE GRAINED, WELL-ROUNDED AND WELL-SORTED, POORLY CEMENTED, LOW TO HIGH ANGLED CROSS-BEDDING OR MASSIVE, POORLY CEMENTED BY DOLOMITE, LOCALIZED SULFIDE MINERALIZATION DISSEMINATED THROUGHOUT THE MATRIX AND CONCENTRATED ALONG BEDDING PLANES AND FRACTURES, LOCALIZED THIN LAYERS OF PALE GREEN SHALE/SILT, MARINE AND AEGEAN QUARTZ SANDSTONE.
ST. PETER FORMATION READSTOWN MEMBER - SANDSTONE, SILTY SANDSTONE, CLAYEY SANDSTONE, GRAY, RED, PURPLE, GREEN SHALY LAYERS, INTERBEDDED WITH CLAY AND/OR SILT, CONTAINS CLASTS OF CHERT OR DOLOMITE, PARTIALLY REWORKED RESIDUUM ON THE PRAIRIE DU CHIEN EROSIONAL SURFACE.
PRAIRIE DU CHIEN GROUP - DOLOMITE AND SANDY DOLOMITE, YELLOW, LIGHT BROWN, AND GRAY, MASSIVE TO MEDIUM BEDDED, SANDY, CHERTY, VUGGY, AND OUTLITH.
SHAKOPEE FORMATION - DOLOMITE AND SANDY DOLOMITE, GRAY, BEIGE, AND RED (SANDY DOLOMITE IS PREDOMINANTLY RED), INTERBEDDED WITH COARSE GRAINED WELL-ROUNDED SANDSTONE, AND/OR GREEN TO GRAY SILTSTONE OR CLAY, MASSIVE, PLANAR, OR LOW-ANGLED CROSS-BEDDING, OUTLITH, VUGGY, CHERTY, AND GLAUCONITIC, BIOGENIC CARBONATES.
WILLOW RIVER MEMBER - SANDY, GLAUCONITIC DOLOMITE, GRAY, LIGHT GRAY, BIOGENIC CARBONATES.
NEW RICHMOND MEMBER - SANDSTONE, DOLOMITIC SANDSTONE, YELLOW AND LIGHT GRAY, FINE TO COARSE SAND, MASSIVE TO BEDDED, CHERT AND GLAUCONITE, REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.
ONEOTA FORMATION - DOLOMITE AND SANDY DOLOMITE, GRAY TO BEIGE, MASSIVE, PLANAR, AND WAVY-LAMINATED BEDDING, OUTLITH, VUGGY, CHERTY, AND GLAUCONITIC, BIOGENIC CARBONATES.
DOLOMITE - UNDIFFERENTIATED CARBONATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY WEATHERED AND/OR POORLY INDURATED.
SANDSTONE - UNDIFFERENTIATED SILICATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY POORLY INDURATED.



NOTES

- HORIZONTAL DISTANCES ARE MEASURED WITH RESPECT TO THE CENTER OF EACH BORING LOCATION.
- FOR WELL NESTS, THE GEOLOGIC LOG IS POSTED AT THE LOCATION OF THE WATER TABLE WELL AND INCLUDES GEOLOGIC INFORMATION FROM ALL BORINGS AT THE NEST LOCATION.
- FOR LOCATIONS WITH MORE THAN ONE BORING, THE GEOLOGIC LOG IS POSTED AT THE LOCATION OF THE SHALLOWEST BORING AND INCLUDES GEOLOGIC INFORMATION FROM ALL BORINGS AT THE DRILLING LOCATION.
- REFER TO BORING LOGS IN APPENDIX F OF THE FEASIBILITY REPORT FOR DETAILED DESCRIPTIONS OF GEOLOGIC CONDITIONS AT INDIVIDUAL BORING LOCATIONS.
- REFER TO APPENDIX F FOR MONITORING WELL CONSTRUCTION DETAILS.
- EXISTING GROUND SURFACE WAS TAKEN FROM SHEET NUMBER 2.
- ELEVATIONS ARE REFERENCED TO USGS DATUM.
- THE POSITION OF THE WATER TABLE BETWEEN WELLS IS BASED ON THE WATER TABLE CONTOUR MAP, SHEET NUMBER 3.
- THE POSITION OF THE POTENTIOMETRIC SURFACE BETWEEN WELLS IS BASED ON THE POTENTIOMETRIC SURFACE CONTOUR MAP, SHEET NUMBER 5.
- THE BEDROCK SURFACE SHOWN BETWEEN BORINGS ON THE CROSS-SECTION IS THE STRAIGHT-LINE CONNECTION OF THE UPPERMOST ROCK SURFACES OBSERVED AT THE DRILLING LOCATIONS OR IS BASED ON GEOLOGIC INTERPRETATION OF AN EROSIONAL SURFACE BETWEEN BORING LOCATIONS. THE BEDROCK SURFACE CONTOURS SHOWN BETWEEN BORINGS ON PLAN SHEET 6, BEDROCK SURFACE MAP, ARE BASED ON INTERPOLATION USING KRIGING WITH THE PROGRAM "SURFER".





SYMBOLS AND TEST RESULTS	
40.7/22.6	LIQUID LIMIT/PLASTICITY INDEX
NP	NON-PLASTIC
Kv	LABORATORY VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kh	FIELD HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
0-30-42-28	PERCENT GRAVEL, SAND, SILT, AND CLAY
0-87-13	PERCENT GRAVEL, SAND, AND SILT PLUS CLAY
72-5	PERCENT GRAVEL AND SAND
NS	NOT SAMPLED
(1103.67)	GROUNDWATER ELEVATION ON 03/29/2024 (FEET ABOVE MEAN SEA LEVEL)
(NW)	NOT MEASURED
---	POTENTIOMETRIC SURFACE (SEE NOTE 9)
---	EXISTING GROUND (SPRING 2017)
---	GEOLOGIC CONTACT
---	UNCERTAIN GEOLOGIC CONTACT
---	INFERRED GRADATIONAL GEOLOGIC CONTACT
---	TOP OF BEDROCK (SEE NOTE 10)
---	PROPOSED FINAL COVER SYSTEM
---	PROPOSED COMPOSITE LINER SYSTEM

USCS CLASSES	
CL	LEAN CLAY
CL-ML	SILTY CLAY
CH	FAT CLAY
GP	POORLY-GRADED GRAVEL
GP-GM	POORLY-GRADED GRAVEL WITH SILT
GM	SILTY GRAVEL
GW	WELL-GRADED GRAVEL
GW-GM	WELL-GRADED GRAVEL WITH SILT
ML	SILT
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY-GRADED SAND
SP-SM	POORLY-GRADED SAND WITH SILT

BEDROCK STRATIGRAPHIC UNITS	
SINNIPEE GROUP	
DL1	GALENA FORMATION
SH	DECORAH FORMATION
DL2	PLATTEVILLE FORMATION
DL6	SINNIPEE GROUP, UNDIFFERENTIATED
ANCELL GROUP	
SS1	GLENWOOD FORMATION
SS2	ST. PETER FORMATION, TONTI MEMBER
SS3	ST. PETER FORMATION, READSTOWN MEMBER
SS4	ANCELL GROUP, UNDIFFERENTIATED
PRAIRIE DU CHIEN GROUP	
DL3	SHAKOPEE FORMATION
DL4	ONEOTA FORMATION
DL5	PRAIRIE DU CHIEN GROUP UNDIFFERENTIATED
UNDIFFERENTIATED	
DOL	DOLomite
SS	SANDSTONE

GENERAL DESCRIPTION OF MAJOR GEOLOGIC UNITS

PLEISTOCENE SEDIMENTS

LOESS - GRAYISH BROWN, OR YELLOWISH BROWN, MOSTLY SILT WITH SOME CLAY AND FINE SAND, LEAN CLAY (CL), UNIFORM, MASSIVE. DEPOSITED PRIMARILY BY WIND DURING DEGLACIATION. CONTAINS THE MODERN SOIL PROFILE.

TILL - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN, OR YELLOWISH RED, MOSTLY FINE SAND WITH MEDIUM AND COARSE SAND, AND GRAVEL, SILTY SAND (SM) MATRIX, UNIFORM, WITH SOME COBBLES AND BOLDERS, DEPOSITED BY OR FROM GLACIAL ICE.

OUTWASH - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN OR YELLOWISH BROWN, FINE TO COARSE SAND AND SOME GRAVEL, GENERALLY POORLY-GRADED SAND WITH SILT (SP-SM), OR SILTY SAND (SM), MASSIVE TO STRATIFIED, DEPOSITED BY FLUVIAL PROCESSES NEAR GLACIAL ICE.

DRIFT - UNDIFFERENTIATED PLEISTOCENE SEDIMENTS, LOESS, TILL, AND/OR OUTWASH.

OROVICAN BEDROCK UNITS

SINNIPEE GROUP - DOLomite and SHALY DOLomite, YELLOW BROWN TO LIGHT BROWNISH YELLOW AND GRAY, MASSIVE TO MEDIUM TO THICK BEDDED, BEDDING IS WAVY OR MOTTLED WITH SHALY LAYERS, MINOR WHITE CHERT, FOSSILIFEROUS.

GALENA FORMATION - DOLomite TO CHERTY DOLomite, GRAY TO BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDDED, WITH DISTINCTIVE MOTTLED WEATHERING PATTERN, BASE IS LIGHT GRAY AND SHALY, FOSSILIFEROUS, BIOGENIC CARBONATES.

DECORAH FORMATION - SHALY AND SILTY DOLomite, DARK GRAY, THIN BEDDED, MINOR CHERT AND PYRITE, REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.

PLATTEVILLE FORMATION - DOLomite TO SHALY DOLomite, YELLOW, BEIGE, AND GRAY TO LIGHT BROWNISH YELLOW, GRAY WEATHERING IS TYPICAL OF SHALY INTERVALS, MASSIVE, PLANAR-LAMINATED, OR MEDIUM TO THICK BEDDED, INTERBEDDED WITH THIN, WAVY BEDDED SHALE/SILT LAMINATIONS, MINOR CHERT, FOSSILIFEROUS, BIOGENIC CARBONATES.

ANCELL GROUP - MARINE AND AELIAN SANDSTONES, SHALES, RESIDUUM, HIGH-RELIEF UNCONFORMABLE CONTACT WITH THE UNDERLYING PRAIRIE DU CHIEN GROUP.

GLENWOOD FORMATION - SANDSTONE, DOLomite (CARBONATE-CEMENTED), SILTY, AND/OR SHALY, POORLY SORTED, YELLOW-BROWN TO GREEN, WITH BLUE-GREEN SHALE OR SANDY DOLomite. REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.

ST. PETER FORMATION TONTI MEMBER - SANDSTONE, LIGHT BROWNISH YELLOW, WHITE, RED, GRAY, ORANGE, OR BROWN (IF CEMENTED BY IRON OXIDES), MEDIUM TO COARSE GRAINED, WELL-ROUNDED AND WELL-SORTED, POORLY CEMENTED, LOW TO HIGH ANGLED CROSS-BEDDING OR MASSIVE, POORLY CEMENTED BY DOLomite, LOCALIZED SULFIDE MINERALIZATION DISSEMINATED THROUGHOUT THE MATRIX AND CONCENTRATED ALONG BEDDING PLANES AND FRACTURES, LOCALIZED THIN LAYERS OF PALE GREEN SHALE/SILT, MARINE AND AELIAN QUARTZ SANDSTONE.

ST. PETER FORMATION READSTOWN MEMBER - SANDSTONE, SILTY SANDSTONE, CLAYEY SANDSTONE, GRAY, RED, PURPLE, GREEN SHALY LAYERS, INTERBEDDED WITH CLAY AND OR SILT, CONTAINS CLASTS OF CHERT OR DOLomite, PARTIALLY REWORKED RESIDUUM ON THE PRAIRIE DU CHIEN EROSIONAL SURFACE.

PRAIRIE DU CHIEN GROUP - DOLomite and SANDY DOLomite, LIGHT, LIGHT BROWN, AND GRAY, MASSIVE TO MEDIUM BEDDED, SANDY, CHERTY, VUGGY, AND DOLITHIC.

SHAKOPEE FORMATION - DOLomite and SANDY DOLomite, GRAY TO BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDDED, GRANED WELL-ROUNDED SANDSTONE, AND/OR GREEN TO GRAY SILTSTONE OR CLAY, MASSIVE, PLANAR, OR LOW-ANGLED CROSS-BEDDED, DOLITHIC, VUGGY, CHERTY, AND CLAUCAUTIC, BIOGENIC CARBONATES.

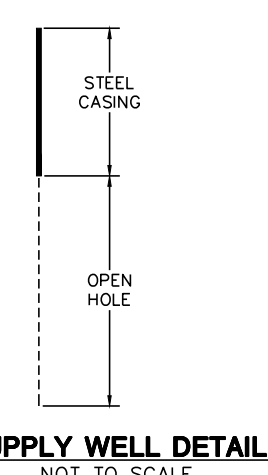
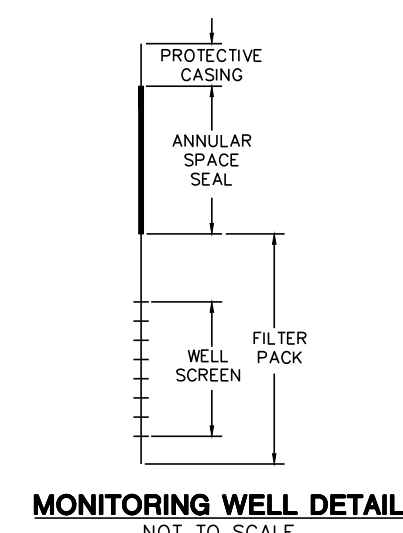
WILLOW RIVER MEMBER - SANDY, CLAUCAUTIC DOLomite, LIGHT, LIGHT GRAY, BIOGENIC CARBONATES.

NEW RICHMOND MEMBER - SANDSTONE, DOLomite SANDSTONE, YELLOW AND LIGHT GRAY, FINE TO COARSE SAND, MASSIVE TO BEDDED, CHERT AND GLAUCAUTIC, REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.

ONEOTA FORMATION - DOLomite and SANDY DOLomite, GRAY TO BEIGE, MASSIVE, PLANAR, AND WAVY-LAMINATED BEDDING, DOLITHIC, VUGGY, CHERTY, AND CLAUCAUTIC, BIOGENIC CARBONATES.

DOLomite - UNDIFFERENTIATED CARBONATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY WEATHERED AND/OR POORLY INDURATED.

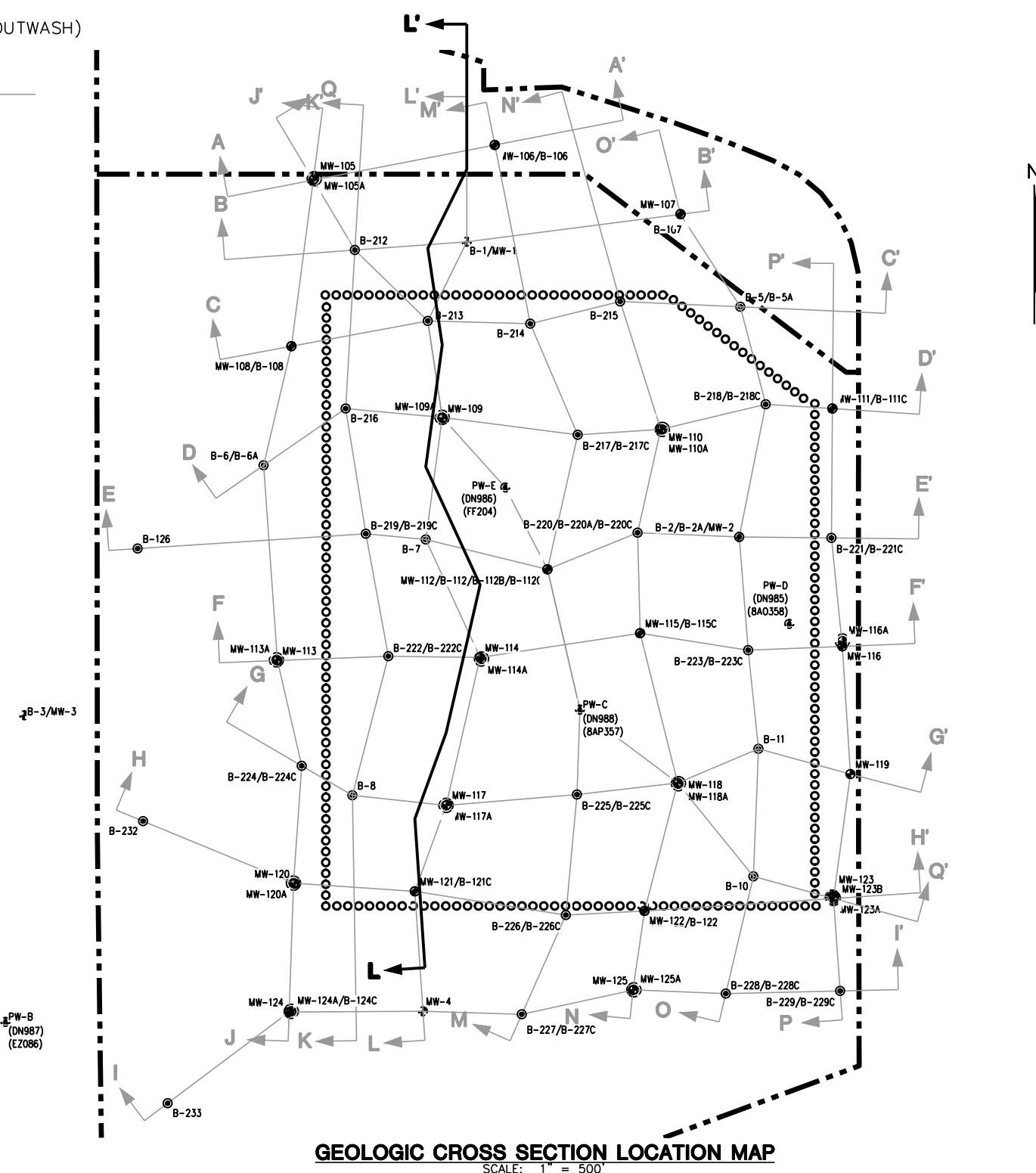
SANDSTONE - UNDIFFERENTIATED SILICATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY POORLY INDURATED.

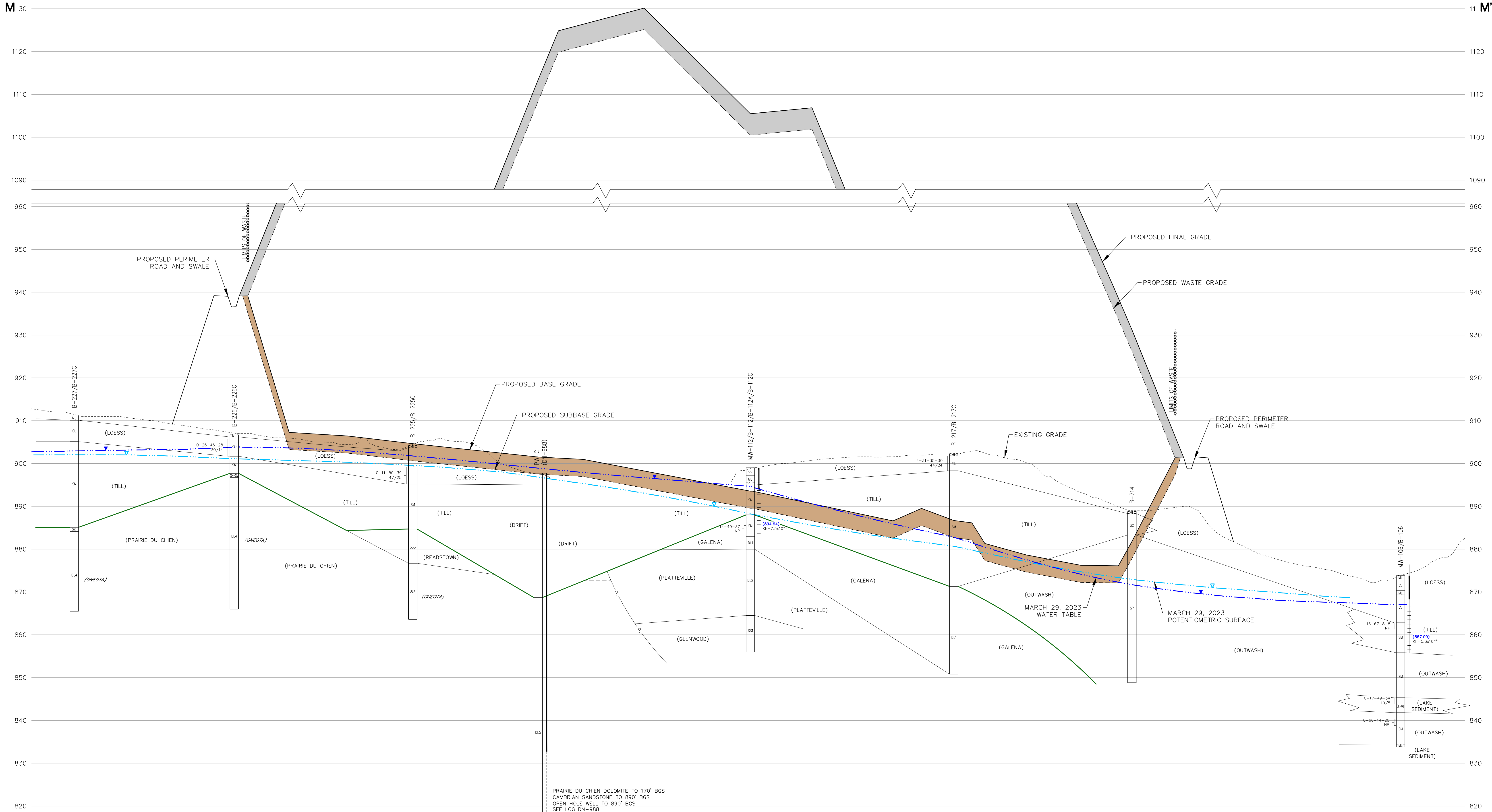


0 100
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'
VERTICAL EXAGGERATION = 10X

NOTES

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- REFER TO BORING LOGS IN APPENDIX F OF THE FEASIBILITY REPORT FOR DETAILED DESCRIPTIONS OF GEOLOGIC CONDITIONS AT INDIVIDUAL BORING LOCATIONS.
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- THE BEDROCK SURFACE SHOWN BETWEEN BORINGS ON THE CROSS-SECTION IS THE STRAIGHT-LINE CONNECTION OF THE UPPERMOST ROCK SURFACES OBSERVED AT THE DRILLING LOCATIONS OR IS BASED ON GEOLOGIC INTERPRETATION OF AN EROSIONAL SURFACE BETWEEN BORING LOCATIONS. THE BEDROCK SURFACE CONTOURS SHOWN BETWEEN BORINGS ON PLAN SHEET 6, BEDROCK SURFACE MAP, ARE BASED ON INTERPOLATION USING KRIGING WITH THE PROGRAM "SURFER".





SYMBOLS AND TEST RESULTS	
40.7/22.6	LIQUID LIMIT/PLASTICITY INDEX
NP	NON-PLASTIC
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(1038.67)	GROUNDWATER ELEVATION ON 03/29/2024 (FEET ABOVE MEAN SEA LEVEL)
(NW)	NOT MEASURED
	WATER TABLE (SEE NOTE 8)
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	GEOLOGIC CONTACT
	UNCERTAIN GEOLOGIC CONTACT
	INFERRED GRADATIONAL GEOLOGIC CONTACT
	TOP OF BEDROCK (SEE NOTE 10)
	PROPOSED FINAL COVER SYSTEM
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USCS CLASSES	
CL	LEAN CLAY
CL-ML	SILTY CLAY
CH	FAT CLAY
GP	POORLY-GRADED GRAVEL
GP-GM	POORLY-GRADED GRAVEL WITH SILT
GM	SILTY GRAVEL
GW	WELL-GRADED GRAVEL
GW-GM	WELL-GRADED GRAVEL WITH SILT
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SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY-GRADED SAND
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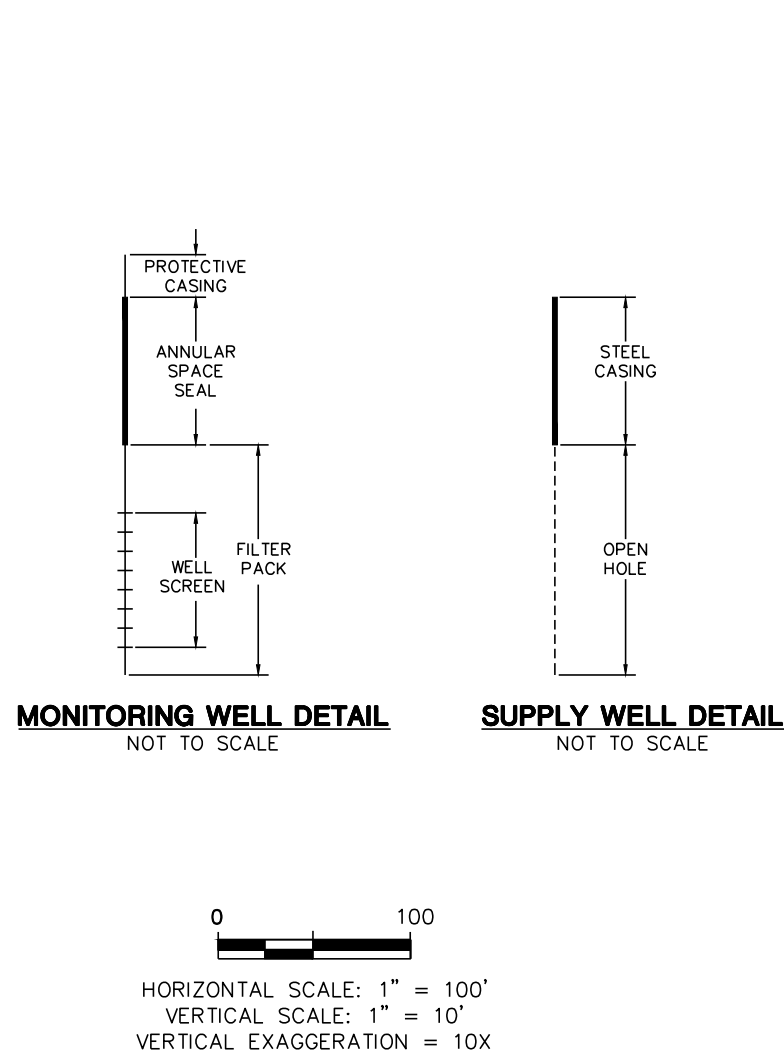
BEDROCK STRATIGRAPHIC UNITS	
SINNIPEE GROUP	
DL1	GALENA FORMATION
SH	DECORAH FORMATION
DL2	PLATTEVILLE FORMATION
DL6	SINNIPEE GROUP, UNDIFFERENTIATED
ANCELL GROUP	
SS1	GLENWOOD FORMATION
SS2	ST. PETER FORMATION, TONTI MEMBER
SS3	ST. PETER FORMATION, READSTOWN MEMBER
SS4	ANCELL GROUP, UNDIFFERENTIATED
PRAIRIE DU CHIEN GROUP	
DL3	SHAKOPEE FORMATION
DL4	ONOTA FORMATION
DL5	PRAIRIE DU CHIEN GROUP UNDIFFERENTIATED
UNDIFFERENTIATED	
DOL	DOLOMITE
SS	SANDSTONE

GENERAL DESCRIPTION OF MAJOR GEOLOGIC UNITS

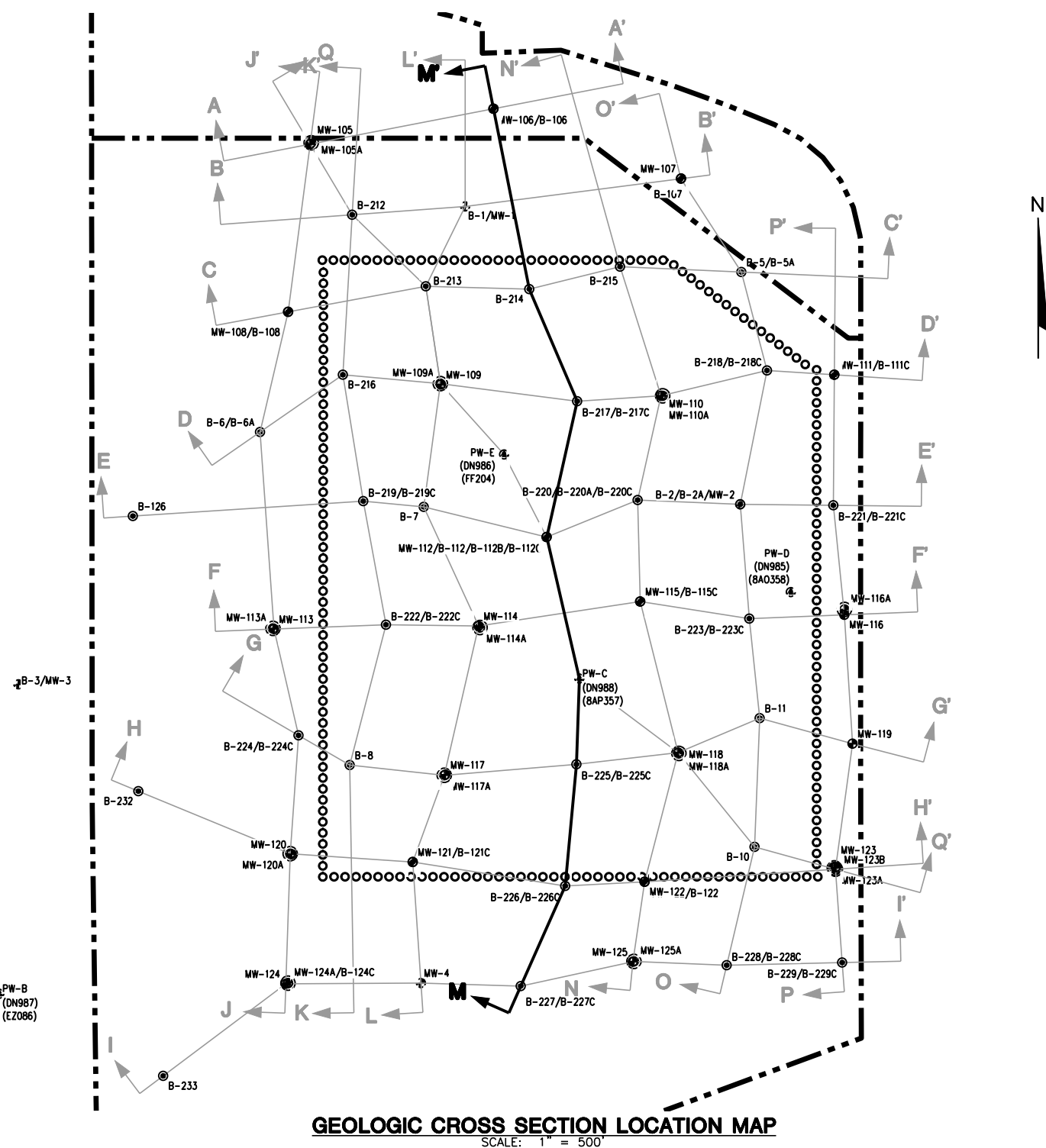
PLEISTOCENE SEDIMENTS
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TILL - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN, OR YELLOWISH RED, MOSTLY FINE SAND WITH MEDIUM AND COARSE SAND, AND GRAVEL, SILTY SAND (SM) MATRIX, UNIFORM, WITH SOME COBBLES AND Boulders, DEPOSITED BY OR FROM GLACIAL ICE.
OUTWASH - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN OR YELLOWISH BROWN, FINE TO COARSE SAND AND SOME GRAVEL, GENERALLY POORLY-GRADED SAND WITH SILT (SP-SM), OR SILTY SAND (SM), MASSIVE TO STRATIFIED, DEPOSITED BY FLUVIAL PROCESSES NEAR GLACIAL ICE.

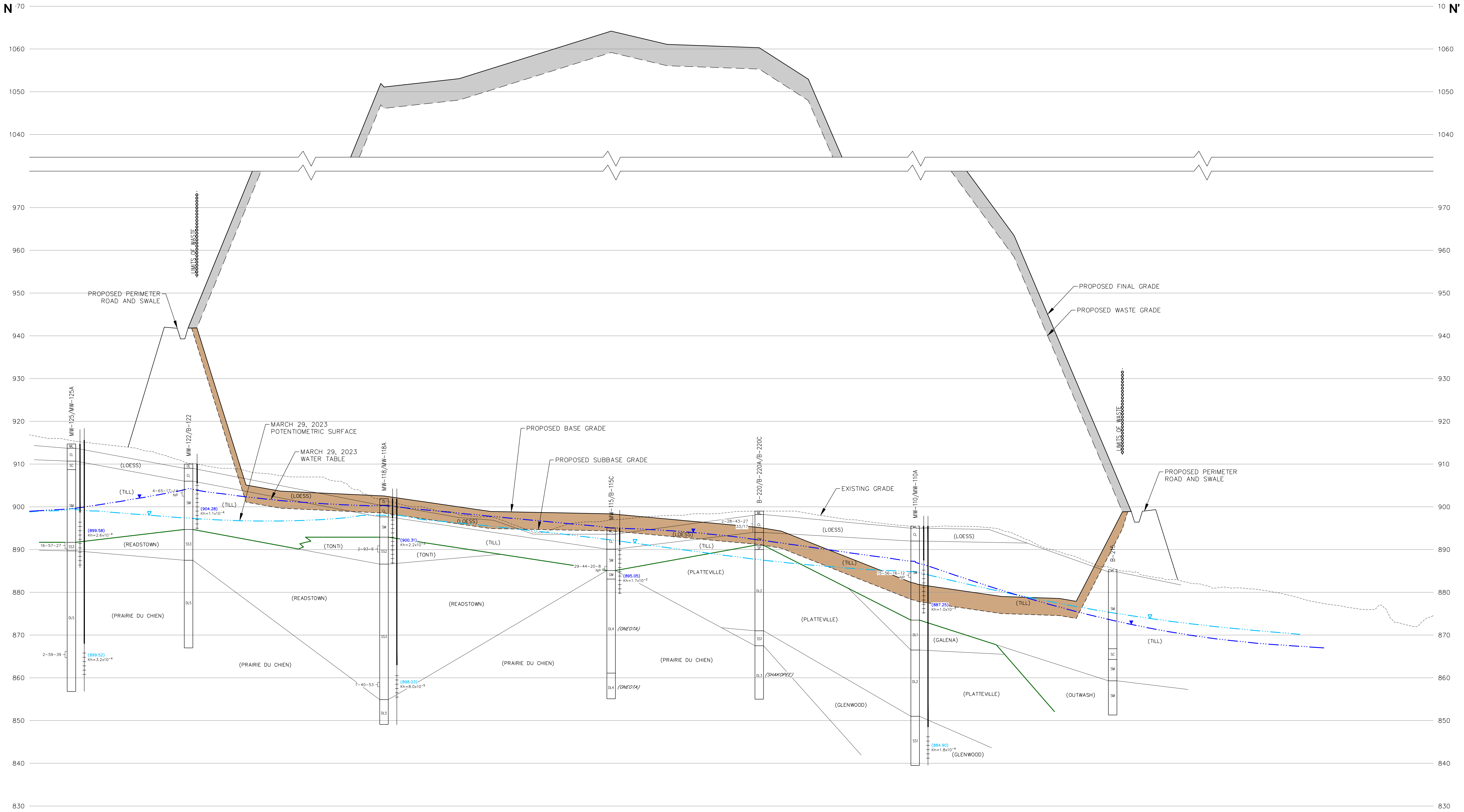
OROVICHIAN BEDROCK UNITS
SINNIPEE GROUP - DOLOMITE AND SHALY DOLOMITE, YELLOW BROWN TO LIGHT BROWNISH YELLOW AND GRAY, MASSIVE OR MEDIUM TO THICK BEDDED, BEDDING IS WAVY OR MOTTLLED WITH SHALY LAYERS, MINOR WHITE CHERT, FOSSILIFEROUS.
GALENA FORMATION - DOLOMITE TO CHERTY DOLOMITE, GRAY TO BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDDED, WITH DISTINCTIVE MOTTLED WEATHERING PATTERN, BASE IS LIGHT GRAY AND SHALY, FOSSILIFEROUS, BIOGENIC CARBONATES.
DECORAH FORMATION - SHALY AND SILTY DOLOMITE, DARK GRAY, THIN BEDDED, MINOR CHERT AND PYRITE, REWORKED SHALLOW WATER OR LACIOAL DEPOSITS.
PLATTEVILLE FORMATION - DOLOMITE TO SHALY DOLOMITE, YELLOW, BEIGE, AND GRAY TO LIGHT BROWNISH YELLOW, GRAY WEATHERING IS TYPICAL OF SHALY INTERVALS, MASSIVE, PLANAR-LAMINATED, OR MEDIUM TO THICK BEDDED, INTERBEDDED WITH THIN, WAVY BEDDED SHALE/SILT LAMINATIONS, MINOR CHERT, FOSSILIFEROUS, BIOGENIC CARBONATES.
ANCELL GROUP - MARINE AND AEGEAN SANDSTONES, SHALES, RESIDUUM, HIGH-RELIEF UNCONFORMABLE CONTACT WITH THE UNDERLYING PRAIRIE DU CHIEN GROUP.

GLENWOOD FORMATION - SANDSTONE, DOLOMITE (CARBONATE-CEMENTED), SILTY, AND/OR SHALY, POORLY SORTED, YELLOW-BROWN TO GREEN, WITH BLUE-GREEN SHALE OR SANDY DOLOMITE. REWORKED SHALLOW WATER OR LACIOAL DEPOSITS.
ST. PETER FORMATION TONTI MEMBER - SANDSTONE, LIGHT BROWNISH YELLOW, WHITE, RED, GRAY, ORANGE, OR BROWN (IF CEMENTED BY IRON OXIDES), MEDIUM TO COARSE GRAINED, WELL-SORTED, ORDER, AND WELL-SORTED, POORLY CEMENTED, LOW TO HIGH ANGLED CROSS-BEDDING OR MASSIVE, POORLY CEMENTED BY DOLOMITE, LOCALIZED SULFIDE MINERALIZATION DISSIPATED THROUGH THE MATRIX AND CONCENTRATED ALONG BEDDING PLANES AND FRACTURES, LOCALIZED THIN LAYERS OF PALE GREEN SHALE/SILT, MARINE AND AEGEAN QUARTZ SANDSTONE.
ST. PETER FORMATION READSTOWN MEMBER - SANDSTONE, SILTY SANDSTONE, CLAYEY SANDSTONE, GRAY, RED, PURPLE, GREEN SHALY LAYERS, INTERBEDDED WITH CLAY AND OR SILT, CONTAINS CLASTS OF CHERT OR DOLOMITE, PARTIALLY REWORKED RESIDUUM ON THE PRAIRIE DU CHIEN EROSIONAL SURFACE.
PRAIRIE DU CHIEN GROUP - DOLOMITE AND SANDY DOLOMITE, YELLOW, LIGHT BROWN, AND GRAY, MASSIVE TO MEDIUM BEDDED, SANDY, CHERTY, VUGGY, AND OOLITHIC.
SHAKOPEE FORMATION - DOLOMITE AND SANDY DOLOMITE, GRAY, BEIGE, AND RED (SANDY DOLOMITE IS PREDOMINANTLY RED), INTERBEDDED WITH COARSE GRAINED WELL-ROUNDED SANDSTONE, AND/OR GREEN TO GRAY SILTSTONE OR CLAY, MASSIVE, PLANAR, OR LOW-ANGLED CROSS-BEDDING, OOLITHIC, VUGGY, CHERTY, AND GLAUCONITE, BIOGENIC CARBONATES.
WILLOW RIVER MEMBER - SANDY, GLAUCONITE DOLOMITE, GRAY, LIGHT GRAY, BROOKING CARBONATES.
NEW RICHMOND MEMBER - SANDSTONE, DOLOMITE SANDSTONE, YELLOW AND LIGHT GRAY, FINE TO COARSE SAND, MASSIVE TO BEDDED, CHERT AND GLAUCONITE, REWORKED SHALLOW WATER OR LACIOAL DEPOSITS.
ONOTA FORMATION - DOLOMITE AND SANDY DOLOMITE, GRAY TO BEIGE, MASSIVE, PLANAR, AND WAVY-LAMINATED BEDDING, OOLITHIC, VUGGY, CHERTY, AND GLAUCONITE, BIOGENIC CARBONATES.
DOLOMITE - UNDIFFERENTIATED CARBONATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY WEATHERED AND/OR POORLY INDURATED.
SANDSTONE - UNDIFFERENTIATED SILICATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY POORLY INDURATED.



- NOTES**
- HORIZONTAL DISTANCES ARE MEASURED WITH RESPECT TO THE CENTER OF EACH BORING LOCATION.
 - FOR WELL NESTS, THE GEOLOGIC LOG IS POSTED AT THE LOCATION OF THE WATER TABLE WELL AND INCLUDES GEOLOGIC INFORMATION FROM ALL BORINGS AT THE NEST LOCATION.
 - FOR LOCATIONS WITH MORE THAN ONE BORING, THE GEOLOGIC LOG IS POSTED AT THE LOCATION OF THE SHALLOWEST BORING AND INCLUDES GEOLOGIC INFORMATION FROM ALL BORINGS AT THE DRILLING LOCATION.
 - REFER TO BORING LOGS IN APPENDIX F OF THE FEASIBILITY REPORT FOR DETAILED DESCRIPTIONS OF GEOLOGIC CONDITIONS AT INDIVIDUAL BORING LOCATIONS.
 - REFER TO APPENDIX F FOR MONITORING WELL CONSTRUCTION DETAILS.
 - EXISTING GROUND SURFACE WAS TAKEN FROM SHEET NUMBER 2.
 - ELEVATIONS ARE REFERENCED TO USGS DATUM.
 - THE POSITION OF THE WATER TABLE BETWEEN WELLS IS BASED ON THE WATER TABLE CONTOUR MAP, SHEET NUMBER 3.
 - THE POSITION OF THE POTENTIOMETRIC SURFACE BETWEEN WELLS IS BASED ON THE POTENTIOMETRIC SURFACE CONTOUR MAP, SHEET NUMBER 5.
 - THE BEDROCK SURFACE SHOWN BETWEEN BORINGS ON THE CROSS-SECTION IS THE STRAIGHT-LINE CONNECTION OF THE UPPERMOST ROCK SURFACES OBSERVED AT THE DRILLING LOCATIONS OR IS BASED ON GEOLOGIC INTERPRETATION OF AN EROSIONAL SURFACE BETWEEN BORING LOCATIONS. THE BEDROCK SURFACE CONTOURS SHOWN BETWEEN BORINGS ON PLAN SHEET 6, BEDROCK SURFACE MAP, ARE BASED ON INTERPOLATION USING KRIGING WITH THE PROGRAM 'SURFER'.





SYMBOLS AND TEST RESULTS	
40.7/22.6	LIQUID LIMIT/PLASTICITY INDEX
NP	NON-PLASTIC
K _v	LABORATORY VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)
K _h	FIELD HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
0-30-42-28	PERCENT GRAVEL, SAND, SILT, AND CLAY
0-87-13	PERCENT GRAVEL, SAND, AND SILT PLUS CLAY
72-5	PERCENT GRAVEL AND SAND
NS	NOT SAMPLED
(1038.67)	GROUNDWATER ELEVATION ON 03/29/2024 (FEET ABOVE MEAN SEA LEVEL)
(NW)	NOT MEASURED
	WATER TABLE (SEE NOTE 8)
	POTENTIOMETRIC SURFACE (SEE NOTE 9)
	EXISTING GROUND (SPRING 2017)
	GEOLOGIC CONTACT
	UNCERTAIN GEOLOGIC CONTACT
	INFERRED GRADATIONAL GEOLOGIC CONTACT
	TOP OF BEDROCK (SEE NOTE 10)
	PROPOSED FINAL COVER SYSTEM
	PROPOSED COMPOSITE LINER SYSTEM

USCS CLASSES	
CL	LEAN CLAY
CL-ML	SILTY CLAY
CH	FAT CLAY
GP	POORLY-GRADED GRAVEL
GP-GM	POORLY-GRADED GRAVEL WITH SILT
GM	SILTY GRAVEL
GW	WELL-GRADED GRAVEL
GW-GM	WELL-GRADED GRAVEL WITH SILT
ML	SILT
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY-GRADED SAND
SP-SM	POORLY-GRADED SAND WITH SILT

BEDROCK STRATIGRAPHIC UNITS	
SINNIPEE GROUP	
DL1	GALENA FORMATION
SH	DECORAH FORMATION
DL2	PLATTEVILLE FORMATION
DL6	SINNIPEE GROUP, UNDIFFERENTIATED
ANCELL GROUP	
SS1	GLENWOOD FORMATION
SS2	ST. PETER FORMATION, TONTI MEMBER
SS3	ST. PETER FORMATION, READSTOWN MEMBER
SS4	ANCELL GROUP, UNDIFFERENTIATED
PRAIRIE DU CHIEN GROUP	
DL3	SHAKOPEE FORMATION
DL4	ONEOTA FORMATION
DL5	PRAIRIE DU CHIEN GROUP UNDIFFERENTIATED
UNDIFFERENTIATED	
DOL	DOLOMITE
SS	SANDSTONE

GENERAL DESCRIPTION OF MAJOR GEOLOGIC UNITS

PLEISTOCENE SEDIMENTS

LOESS - GRAYISH BROWN OR YELLOWISH BROWN, MOSTLY SILT WITH SOME CLAY AND FINE SAND, LEAN CLAY (CL), UNIFORM, MASSIVE. DEPOSITED PRIMARILY BY WIND DURING DEGLACIATION. CONTAINS THE MODERN SOIL PROFILE.

TILL - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN OR YELLOWISH RED, MOSTLY FINE SAND WITH MEDIUM TO THICK BEDED, POORLY CEMENTED, LOW TO HIGH ANGLED CROSS-BEDDING OR MASSIVE, POORLY CEMENTED BY DOLOMITE, LOCATED SUPERIOR MINERALIZATION DISSIPATED THROUGH THE MATRIX AND CONCENTRATED ALONG BEDDING PLANES AND FRACTURES, LOCALIZED THIN LAYERS OF PALE GREEN SHALE/SILT, MARINE AND AEGEAN QUARTZ SANDSTONE.

OUTWASH - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN OR YELLOWISH BROWN, FINE TO COARSE SAND AND SOME GRAVEL, GENERALLY POORLY-GRADED SAND WITH SILT (SP-SM), OR SILTY SAND (SM), MASSIVE TO STRATIFIED, DEPOSITED BY FLUVIAL PROCESSES NEAR GLACIAL ICE DRIFT - UNDIFFERENTIATED PLEISTOCENE SEDIMENTS, LOESS, TILL, AND/OR OUTWASH.

OROVICAN BEDROCK UNITS

SINNIPEE GROUP - DOLOMITE AND SHALY DOLOMITE, YELLOW BROWN TO LIGHT BROWNISH YELLOW AND GRAY, MASSIVE OR MEDIUM TO THICK BEDED, BEDDING IS WAVY OR MOTTLER WITH SHALY LAYERS, MINOR WHITE CHERT, FOSSILIFEROUS.

GALENA FORMATION - DOLOMITE TO CHERTY DOLOMITE, GRAY TO BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDED, WITH DISTINCTIVE MOTTLER WEATHERING PATTERN, BASE IS LIGHT GRAY AND SHALY, FOSSILIFEROUS, BIOGENIC CARBONATES.

DECORAH FORMATION - SHALY AND SILTY DOLOMITE, DARK GRAY, THIN BEDED, MINOR CHERT AND PYRITE, REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.

PLATTEVILLE FORMATION - DOLOMITE TO SHALY DOLOMITE, YELLOW, BEIGE, AND GRAY TO LIGHT BROWNISH YELLOW, GRAY WEATHERING IS TYPICAL OF SHALY INTERVALS, MASSIVE, PLANAR-LAMINATED, OR MEDIUM TO THICK BEDED, INTERBEDDED WITH THIN, WAVY BEDED SHALE/SILT LAMINATIONS, MINOR CHERT, FOSSILIFEROUS, BIOGENIC CARBONATES.

ANCELL GROUP - MARINE AND AEGEAN SANDSTONES, SHALES, RESIDUUM, HIGH-RELIEF UNCONFORMABLE CONTACT WITH THE UNDERLYING PRAIRIE DU CHIEN GROUP.

GLENWOOD FORMATION - SANDSTONE, DOLOMITE (CARBONATE-CEMENTED), SILTY, AND/OR SHALY, POORLY SORTED, YELLOW-BROWN TO GREEN, WITH BLUE-GREEN SHALE OR SANDY DOLOMITE. REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.

ST. PETER FORMATION TONTI MEMBER - SANDSTONE, LIGHT BROWNISH YELLOW, WHITE, RED, GRAY, ORANGE, OR BROWN (IF CEMENTED BY IRON OXIDES), MEDIUM TO COARSE GRAINED, WELL-ROUNDED AND WELL-SORTED, POORLY CEMENTED, LOW TO HIGH ANGLED CROSS-BEDDING OR MASSIVE, POORLY CEMENTED BY DOLOMITE, LOCATED SUPERIOR MINERALIZATION DISSIPATED THROUGH THE MATRIX AND CONCENTRATED ALONG BEDDING PLANES AND FRACTURES, LOCALIZED THIN LAYERS OF PALE GREEN SHALE/SILT, MARINE AND AEGEAN QUARTZ SANDSTONE.

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PRAIRIE DU CHIEN GROUP - DOLOMITE AND SANDY DOLOMITE, YELLOW, LIGHT BROWN, AND GRAY, MASSIVE TO MEDIUM BEDED, SANDY, CHERTY, VUGGY, AND OUTWASH.

SHAKOPEE FORMATION - DOLOMITE AND SANDY DOLOMITE, GRAY, BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDED, WITH DISTINCTIVE MOTTLER WEATHERING PATTERN, BASE IS LIGHT GRAY AND SHALY, FOSSILIFEROUS, BIOGENIC CARBONATES.

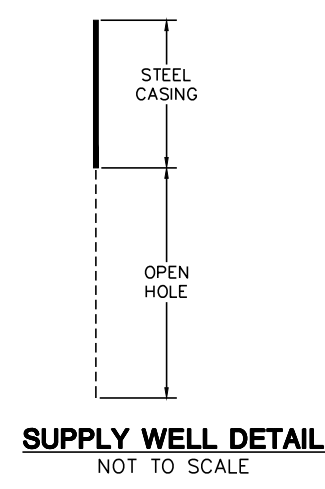
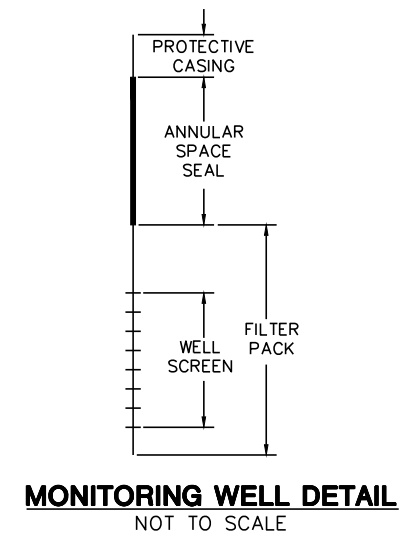
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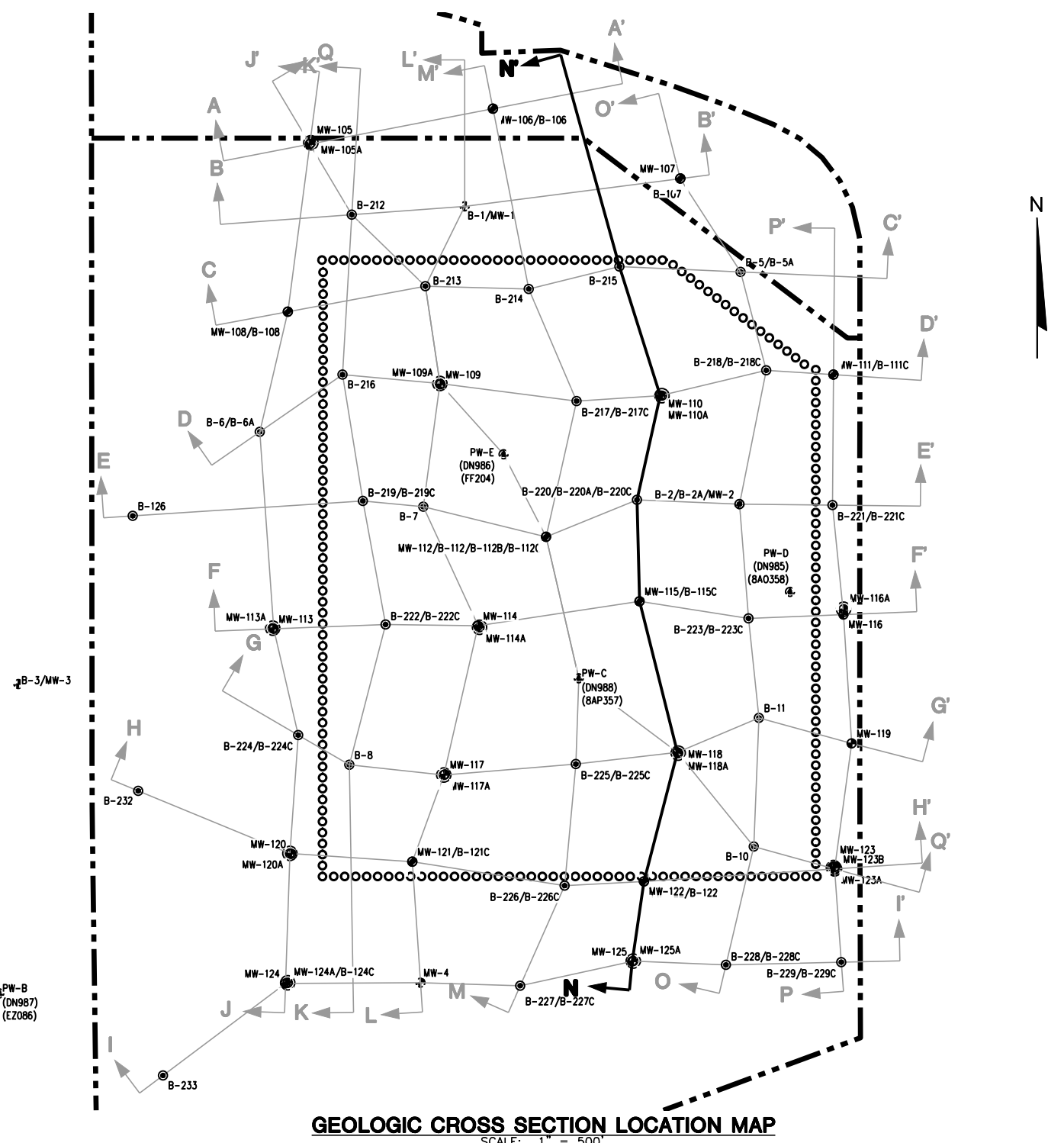
ONEOTA FORMATION - DOLOMITE AND SANDY DOLOMITE, GRAY TO BEIGE, MASSIVE, PLANAR, AND WAVY-LAMINATED BEDDING, OUTWASH, VUGGY, CHERTY, AND GLAUCONITIC, BIOGENIC CARBONATES.

DOLOMITE - UNDIFFERENTIATED CARBONATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY WEATHERED AND/OR POORLY INDURATED.

SANDSTONE - UNDIFFERENTIATED SILICATE ROCK, LITTLE OR NO SAMPLE RECOVERED, LIKELY POORLY INDURATED.



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SYMBOLS AND TEST RESULTS	
40.7/22.6	LIQUID LIMIT/PLASTICITY INDEX
NP	NON-PLASTIC
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K _h	FIELD HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
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0-87-13	PERCENT GRAVEL, SAND, AND SILT PLUS CLAY
72-5	PERCENT GRAVEL AND SAND
NS	NOT SAMPLED
(1,038.67)	GROUNDWATER ELEVATION ON 03/29/2024 (FEET ABOVE MEAN SEA LEVEL)
(NW)	NOT MEASURED
	WATER TABLE (SEE NOTE 8)
	POTENTIOMETRIC SURFACE (SEE NOTE 9)
	EXISTING GROUND (SPRING 2017)
	GEOLOGIC CONTACT
	UNCERTAIN GEOLOGIC CONTACT
	INFERRED GRADATIONAL GEOLOGIC CONTACT
	TOP OF BEDROCK (SEE NOTE 10)
	PROPOSED FINAL COVER SYSTEM
	PROPOSED COMPOSITE LINER SYSTEM

USCS CLASSES	
CL	LEAN CLAY
CL-ML	SILTY CLAY
CH	FAT CLAY
GP	POORLY-GRADED GRAVEL
GP-GM	POORLY-GRADED GRAVEL WITH SILT
GM	SILTY GRAVEL
GW	WELL-GRADED GRAVEL
GW-GM	WELL-GRADED GRAVEL WITH SILT
ML	SILT
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY-GRADED SAND
SP-SM	POORLY-GRADED SAND WITH SILT

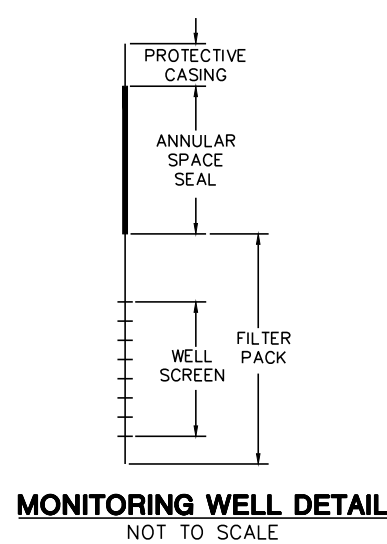
BEDROCK STRATIGRAPHIC UNITS	
SINNIPEE GROUP	
DL1	GALENA FORMATION
SH	DECORAH FORMATION
DL2	PLATTEVILLE FORMATION
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SS1	GLENWOOD FORMATION
SS2	ST. PETER FORMATION, TONTI MEMBER
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PRAIRIE DU CHIEN GROUP	
DL3	SHAKOPEE FORMATION
DL4	ONEOTA FORMATION
DL5	PRAIRIE DU CHIEN GROUP UNDIFFERENTIATED
UNDIFFERENTIATED	
DOL	DOLomite
SS	SANDSTONE

GENERAL DESCRIPTION OF MAJOR GEOLOGIC UNITS

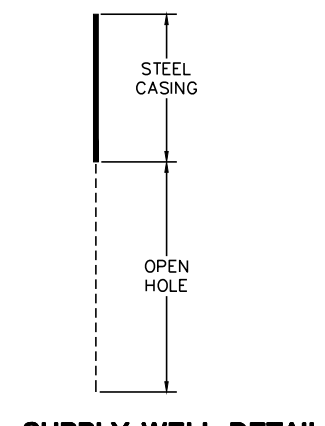
PLEISTOCENE SEDIMENTS
LOESS - GRAYISH BROWN, OR YELLOWISH BROWN, MOSTLY SILT WITH SOME CLAY AND FINE SAND, LEAN CLAY (CL), UNIFORM, MASSIVE. DEPOSITED PRIMARILY BY WIND DURING DEGLACIATION. CONTAINS THE MODERN SOIL PROFILE.
TILL - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN, OR YELLOWISH RED, MOSTLY FINE SAND WITH MEDIUM TO THICK BEDDED, POORLY GRADED, SILTY SAND (SM) MATRIX, UNIFORM, WITH SOME COBBLES AND BouldERS, DEPOSITED BY OR FROM GLACIAL ICE.
OUTWASH - HORIZON MEMBER OF THE HOLY HILL FORMATION - BROWN OR YELLOWISH BROWN, FINE TO COARSE SAND AND SOME GRAVEL, GENERALLY POORLY-GRADED SAND WITH SILT (SP-SM), OR SILTY SAND (SM), MASSIVE TO STRATIFIED, DEPOSITED BY FLUVIAL PROCESSES NEAR GLACIAL ICE.

OROVICHIAN BEDROCK UNITS
SINNIPEE GROUP - DOLomite AND SHALY DOLomite, YELLOW BROWN TO LIGHT BROWNISH YELLOW AND GRAY, MASSIVE OR MEDIUM TO THICK BEDDED, BEDDING IS WAVY OR MOTTLED WITH SHALY LAYERS, MINOR WHITE CHERT, FOSSILIFEROUS.
GALENA FORMATION - DOLomite TO CHERTY DOLomite, GRAY TO BEIGE, AND YELLOW BROWN TO LIGHT BROWNISH YELLOW, MASSIVE TO MEDIUM-BEDDED, WITH DISTINCTIVE MOTTLED WEATHERING PATTERN, BASE IS LIGHT GRAY AND SHALY, FOSSILIFEROUS, BIOGENIC CARBONATES.
DECORAH FORMATION - SHALY AND SILTY DOLomite, DARK GRAY, THIN BEDDED, MINOR CHERT AND PYRITE, REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.
PLATTEVILLE FORMATION - DOLomite TO SHALY DOLomite, YELLOW, BEIGE, AND GRAY TO LIGHT BROWNISH YELLOW, GRAY WEATHERING IS TYPICAL OF SHALY INTERVALS, MASSIVE, PLANAR-LAMINATED, OR MEDIUM TO THICK BEDDED, INTERBEDDED WITH THIN, WAVY BEDDED SHALE/SILT LAMINATIONS, MINOR CHERT, FOSSILIFEROUS, BIOGENIC CARBONATES.
ANCELL GROUP - MARINE AND AEGEAN SANDSTONES, SHALES, RESIDUUM, HIGH-RELIEF UNCONFORMABLE CONTACT WITH THE UNDERLYING PRAIRIE DU CHIEN GROUP.

GLLENWOOD FORMATION - SANDSTONE, DOLomite (CARBONATE-CEMENTED), SILTY, AND/OR SHALY, POORLY SORTED, YELLOW-BROWN TO GREEN, WITH BLUE-GREEN SHALE OR SANDY DOLomite. REWORKED SHALLOW WATER OR LAGOONAL DEPOSITS.
ST. PETER FORMATION TONTI MEMBER - SANDSTONE, LIGHT BROWNISH YELLOW, WHITE, RED, GRAY, ORANGE, OR BROWN (IF CEMENTED BY IRON OXIDES), MEDIUM TO COARSE GRAINED, WELL-SORTED, ORDERED AND WELL-SORTED, POORLY CEMENTED, LOW TO HIGH ANGLED CROSS-BEDDING OR MASSIVE, POORLY CEMENTED BY DOLomite, LOCALIZED SULFIDE MINERALIZATION DISSIPATED THROUGHOUT THE MATRIX AND CONCENTRATED ALONG BEDDING PLANES AND FRACTURES, LOCALIZED THIN LAYERS OF PALE GREEN SHALE/SILT, MARINE AND AEGEAN QUARTZ SANDSTONE.
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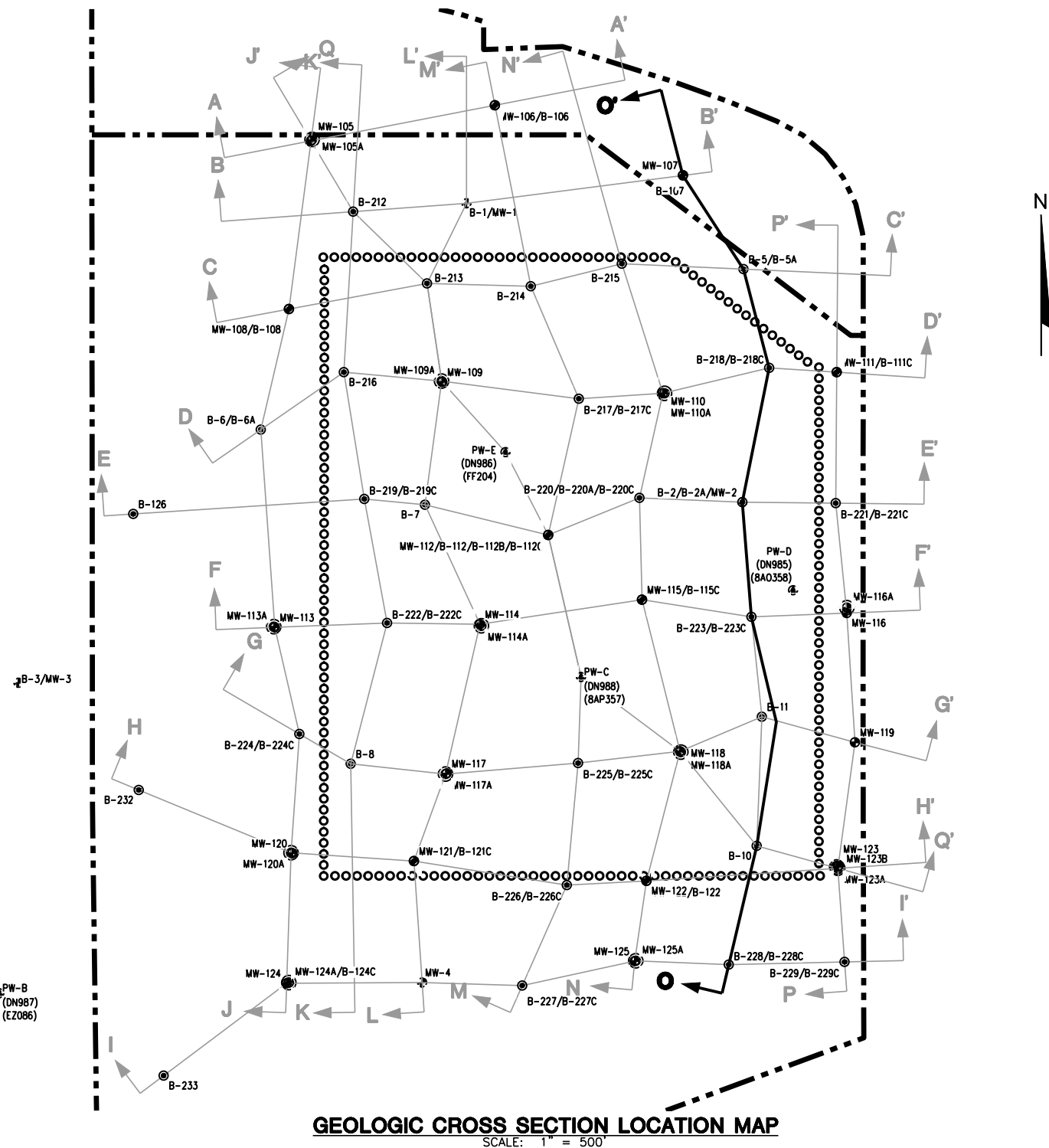
MONITORING WELL DETAIL
NOT TO SCALE



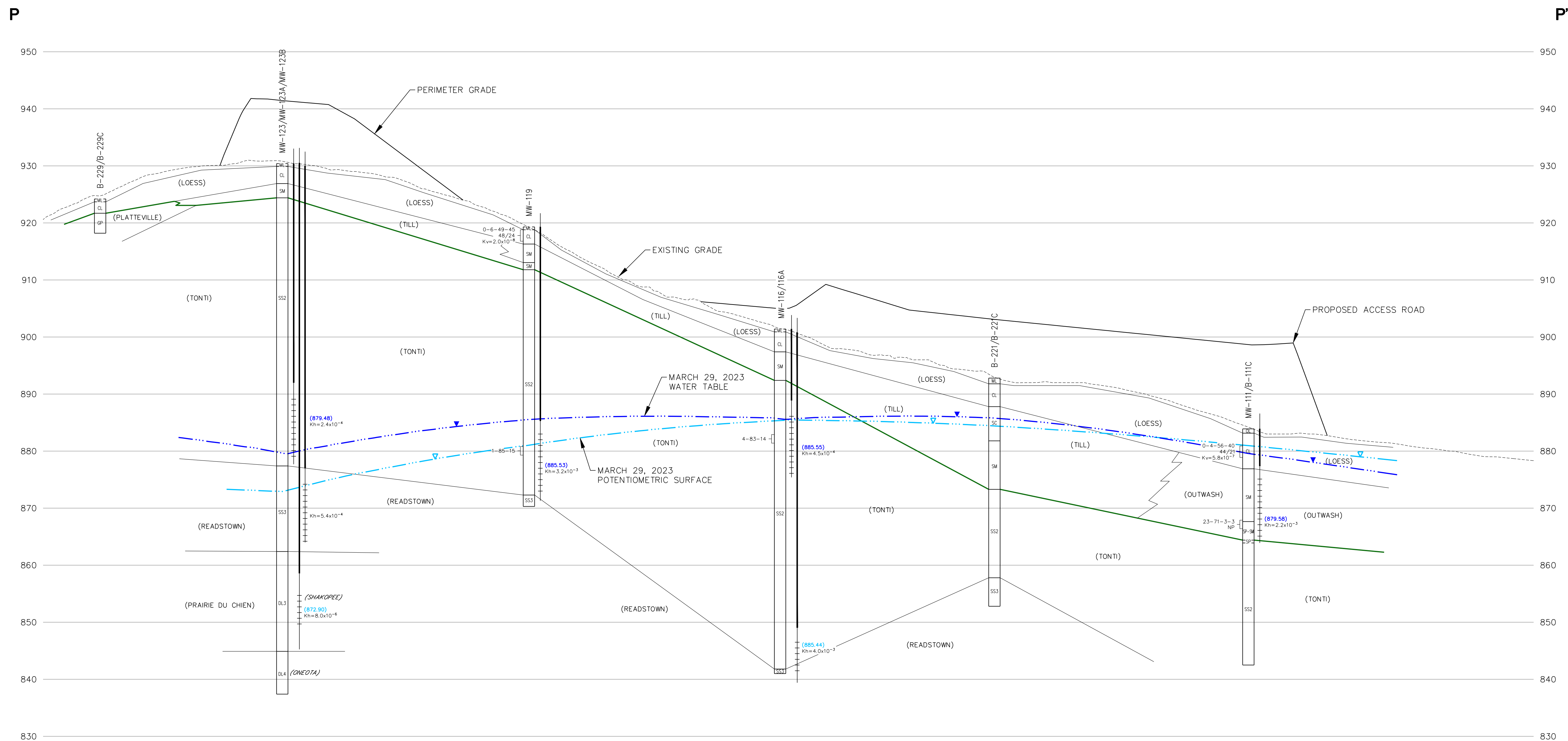
SUPPLY WELL DETAIL
NOT TO SCALE

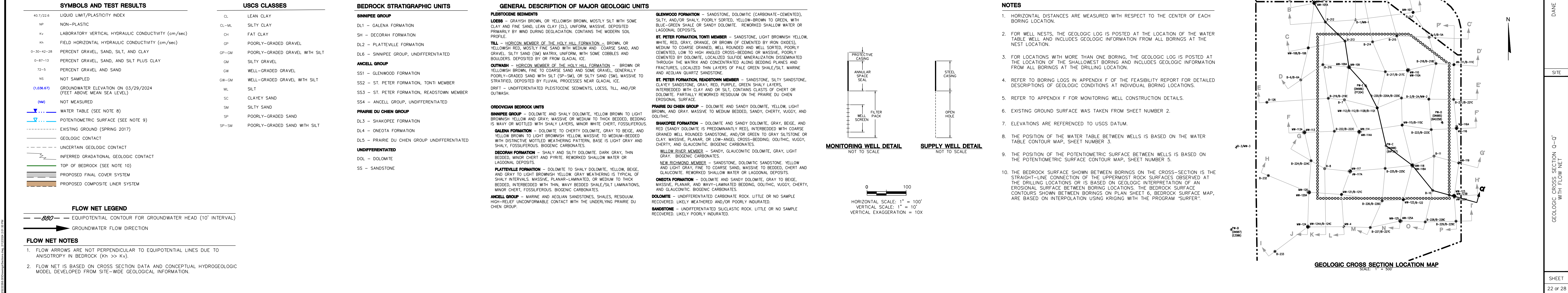
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'
VERTICAL EXAGGERATION = 10X

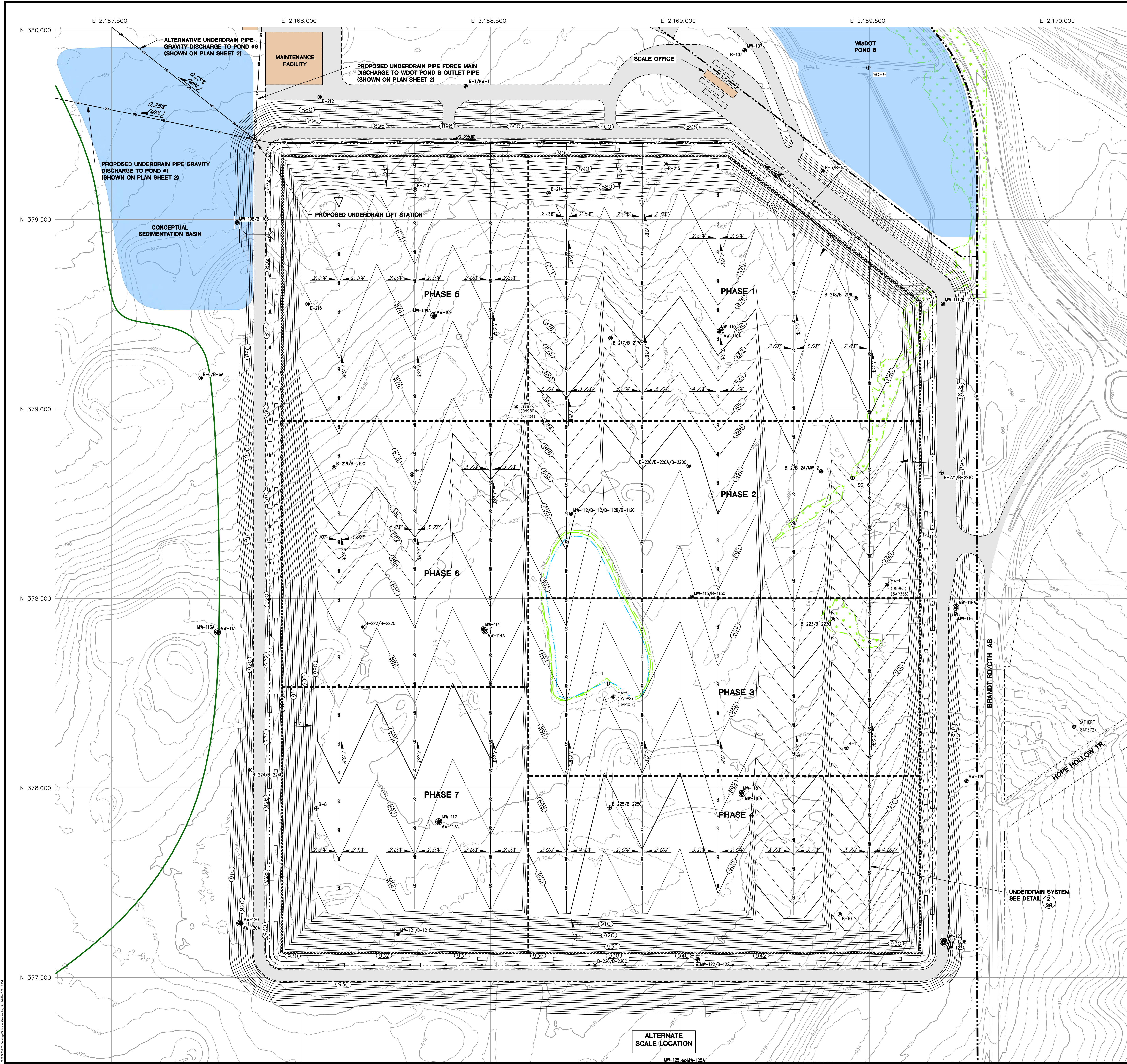
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 - THE POSITION OF THE WATER TABLE BETWEEN WELLS IS BASED ON THE WATER TABLE CONTOUR MAP, SHEET NUMBER 3.
 - THE POSITION OF THE POTENTIOMETRIC SURFACE BETWEEN WELLS IS BASED ON THE POTENTIOMETRIC SURFACE CONTOUR MAP, SHEET NUMBER 5.
 - THE BEDROCK SURFACE SHOWN BETWEEN BORINGS ON THE CROSS-SECTION IS THE STRAIGHT-LINE CONNECTION OF THE UPPERMOST ROCK SURFACES OBSERVED AT THE DRILLING LOCATIONS OR IS BASED ON GEOLOGIC INTERPRETATION OF AN EROSIONAL SURFACE BETWEEN BORING LOCATIONS. THE BEDROCK SURFACE CONTOURS SHOWN BETWEEN BORINGS ON PLAN SHEET 6, BEDROCK SURFACE MAP, ARE BASED ON INTERPOLATION USING KRIGING WITH THE PROGRAM "SURFER".



GEOLOGIC CROSS SECTION LOCATION MAP

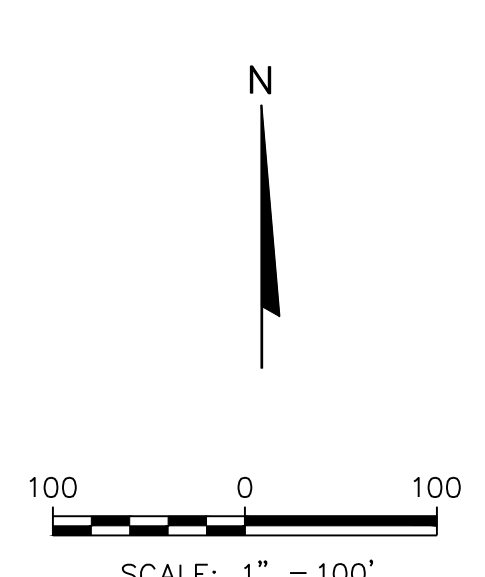
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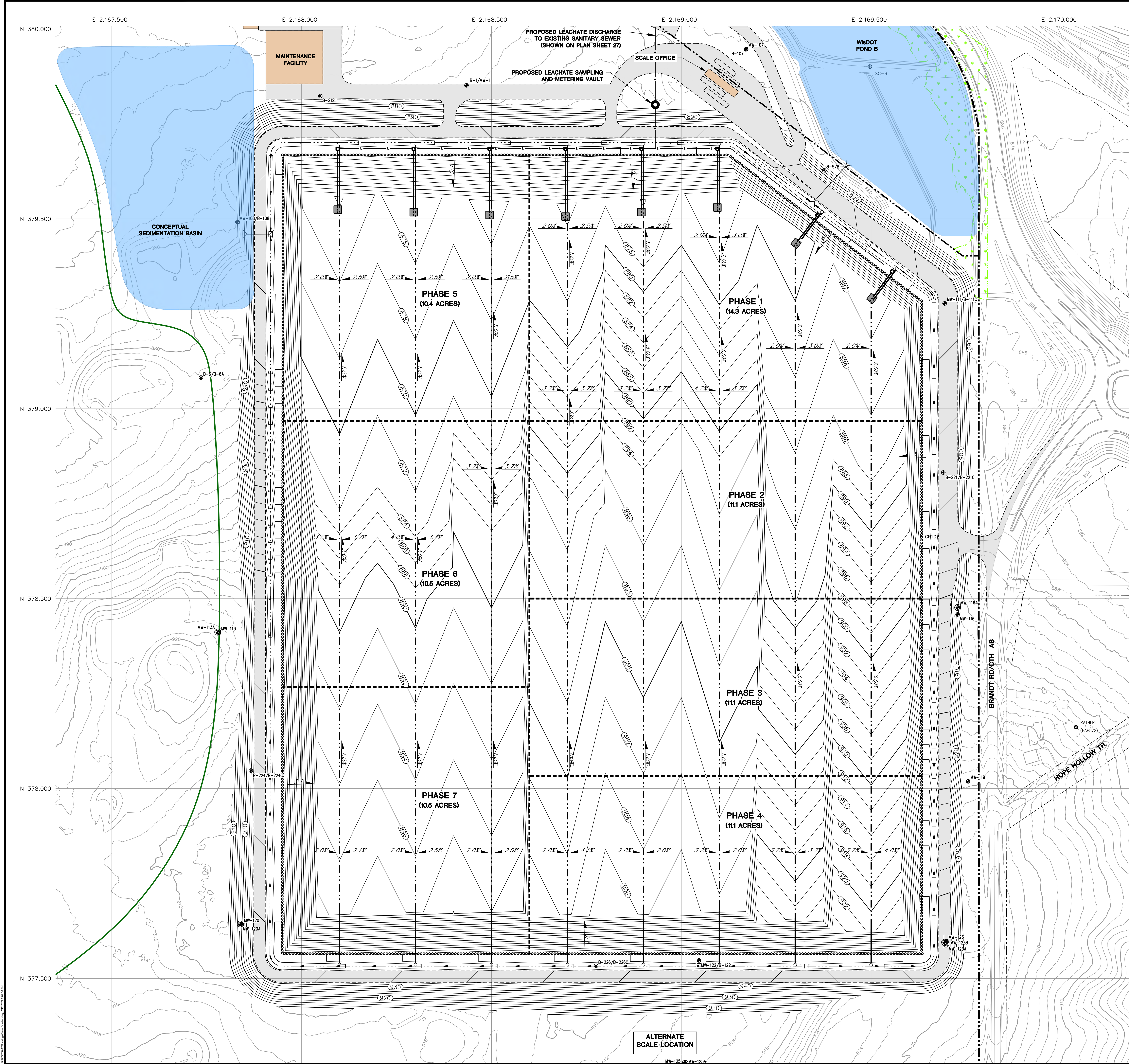




- LEGEND
- PROJECT PROPERTY LINE
 - PROPERTY PARCEL LINE
 - PROPOSED LIMITS OF WASTE
 - PROPOSED PHASE LIMIT
 - EXISTING GRADE (2' CONTOUR)
 - EXISTING GRADE (10' CONTOUR)
 - EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - EXISTING STREAM/EDGE OF WATER
 - EXISTING WETLAND
 - EXISTING WATER SUPPLY WELL (APPROXIMATE LOCATION)
 - EXISTING SOIL BORING
 - EXISTING WATER TABLE MONITORING WELL
 - EXISTING PIEZOMETER
 - EXISTING STAFF GAUGE
 - LIMITS OF PROPOSED 18-HOLE GOLF COURSE
 - PROPOSED UNDERDRAIN LINE
 - PROPOSED SLOPE AND DIRECTION
 - PROPOSED GRADE (2' CONTOUR)
 - PROPOSED GRADE (10' CONTOUR)
 - PROPOSED PERIMETER SWALE
 - PROPOSED PERIMETER/ACCESS ROAD
 - PROPOSED CULVERT

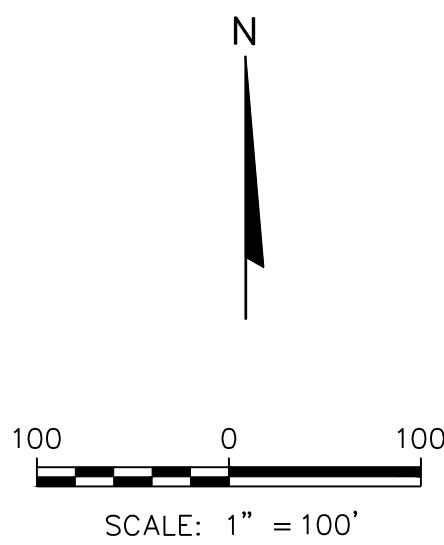
- NOTES:
- SEE SHEET 2, EXISTING CONDITIONS, FOR ADDITIONAL LEGEND ITEMS AND BASE MAP NOTES.
 - PROPOSED CONTOURS WITHIN LIMITS OF WASTE REPRESENT BOTTOM OF CLAY LINER (SUBBASE GRADES). UNDERCUTS FOR LEACHATE COLLECTION LINES AND SUMPS ARE NOT SHOWN.
 - WISDOT POND B WILL BE MODIFIED WITH THE PROPOSED LANDFILL. PROPER APPROVALS WILL BE OBTAINED PRIOR TO MODIFICATION. PRELIMINARY STORM WATER MODELING SUPPORTS THE PROPOSED REDUCTION TO POND B FOOTPRINT.
 - WETLANDS AND GOLF COURSE POND SHOWN WITHIN PROPOSED LIMITS OF GRADING ARE ARTIFICIAL AND NON-JURISDICTIONAL AND THEREFORE NOT SUBJECT TO REGULATORY AUTHORITY REGARDING CHAPTER 30 OR 281, WS. STATS. (REFER TO CORRESPONDENCE IN APPENDIX B OF THE FEASIBILITY REPORT).

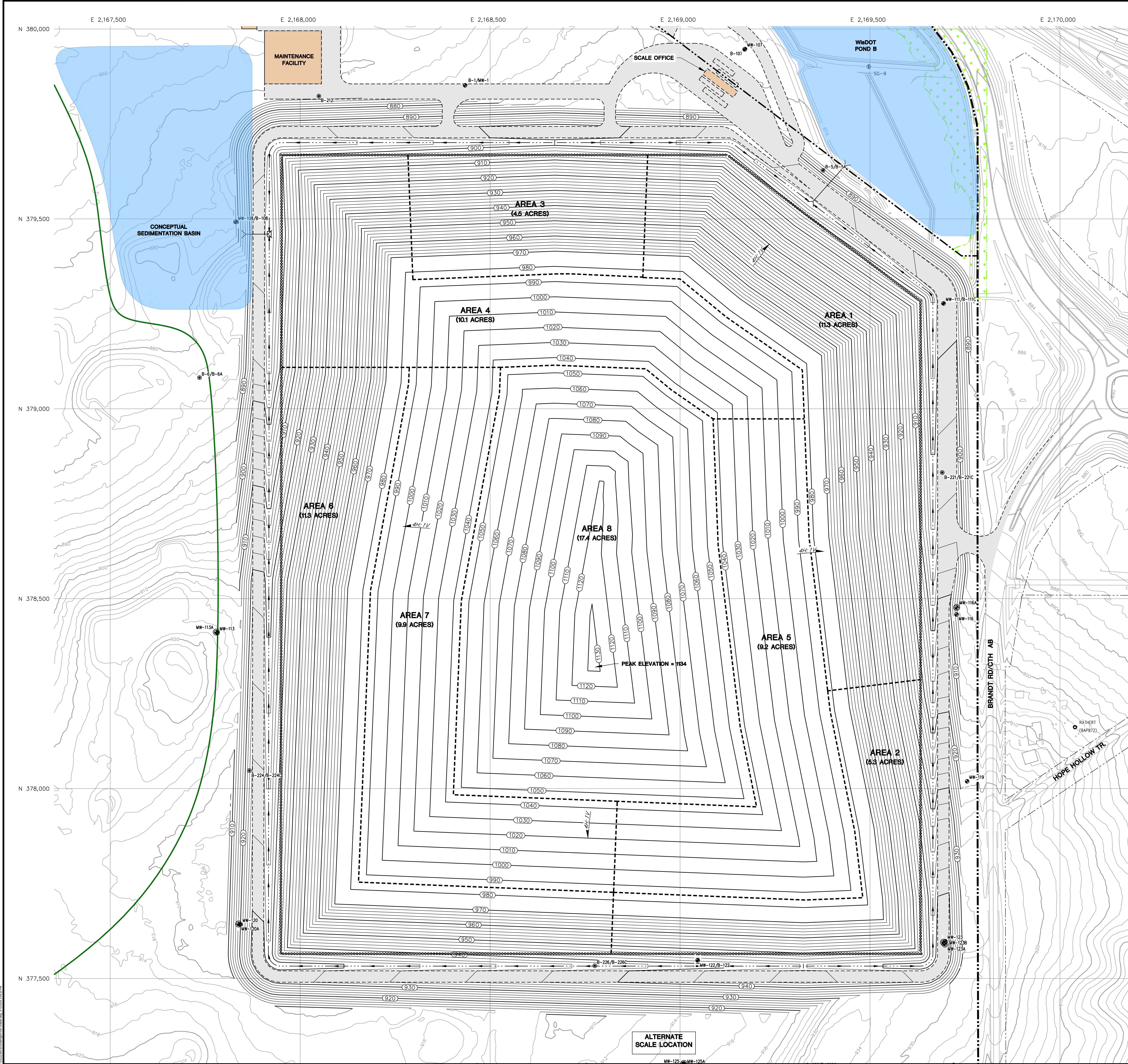




- LEGEND
- PROJECT PROPERTY LINE
 - PROPERTY PARCEL LINE
 - PROPOSED LIMITS OF WASTE
 - PROPOSED PHASE LIMIT
 - EXISTING GRADE (2' CONTOUR)
 - EXISTING GRADE (10' CONTOUR)
 - EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - EXISTING STREAM/EDGE OF WATER
 - EXISTING WETLAND
 - EXISTING WATER SUPPLY WELL (APPROXIMATE LOCATION)
 - EXISTING SOIL BORING
 - EXISTING WATER TABLE MONITORING WELL
 - EXISTING PIEZOMETER
 - EXISTING STAFF GAUGE
 - LIMITS OF PROPOSED 18-HOLE GOLF COURSE
 - PROPOSED LEACHATE COLLECTION LINE
 - PROPOSED LEACHATE COLLECTION LINE CLEANOUT
 - PROPOSED LEACHATE INCLINED RISER PIPE AND VAULT
 - PROPOSED LEACHATE LINE (GRAVITY OR FORCEMAIN)
 - PROPOSED LEACHATE COLLECTION SUMP
 - PROPOSED SLOPE AND DIRECTION
 - PROPOSED GRADE (2' CONTOUR)
 - PROPOSED GRADE (10' CONTOUR)
 - PROPOSED PERIMETER SWALE
 - PROPOSED PERIMETER/ACCESS ROAD
 - PROPOSED CULVERT

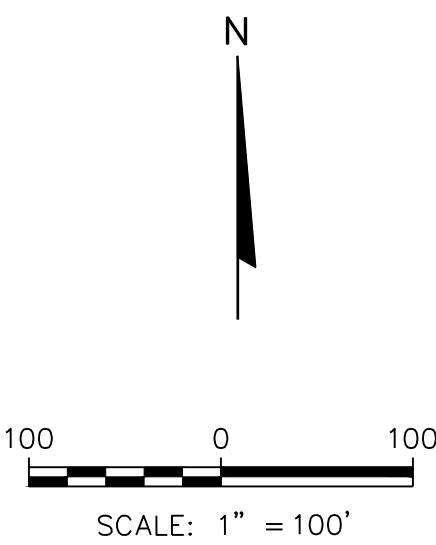
- NOTES:
- SEE SHEET 2, EXISTING CONDITIONS, FOR ADDITIONAL LEGEND ITEMS AND BASE MAP NOTES.
 - PROPOSED CONTOURS WITHIN LIMITS OF WASTE REPRESENT TOP OF CLAY LINER (BASE GRADES). UNDERCUTS FOR LEACHATE COLLECTION LINES AND SUMPS ARE NOT SHOWN.

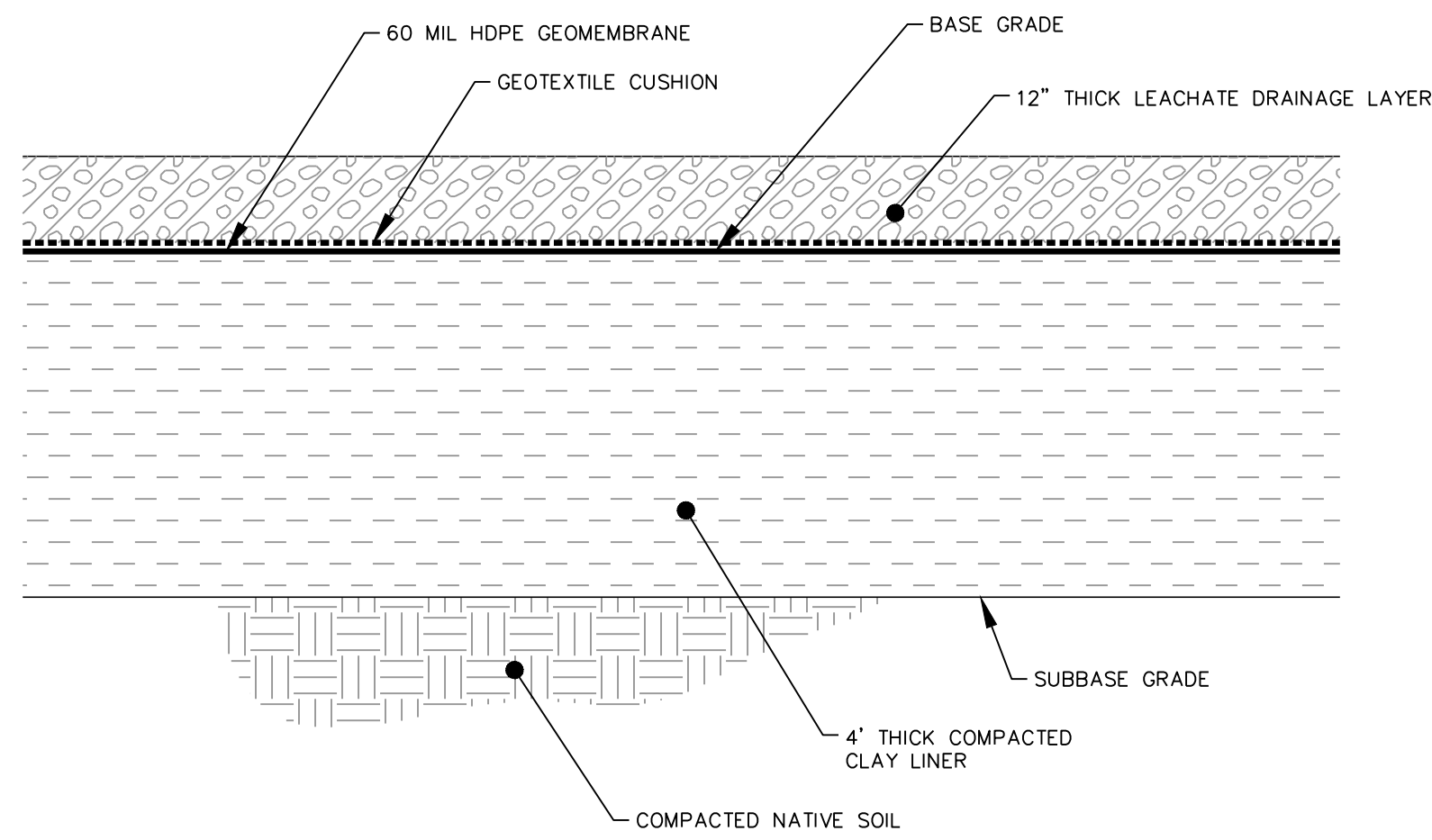




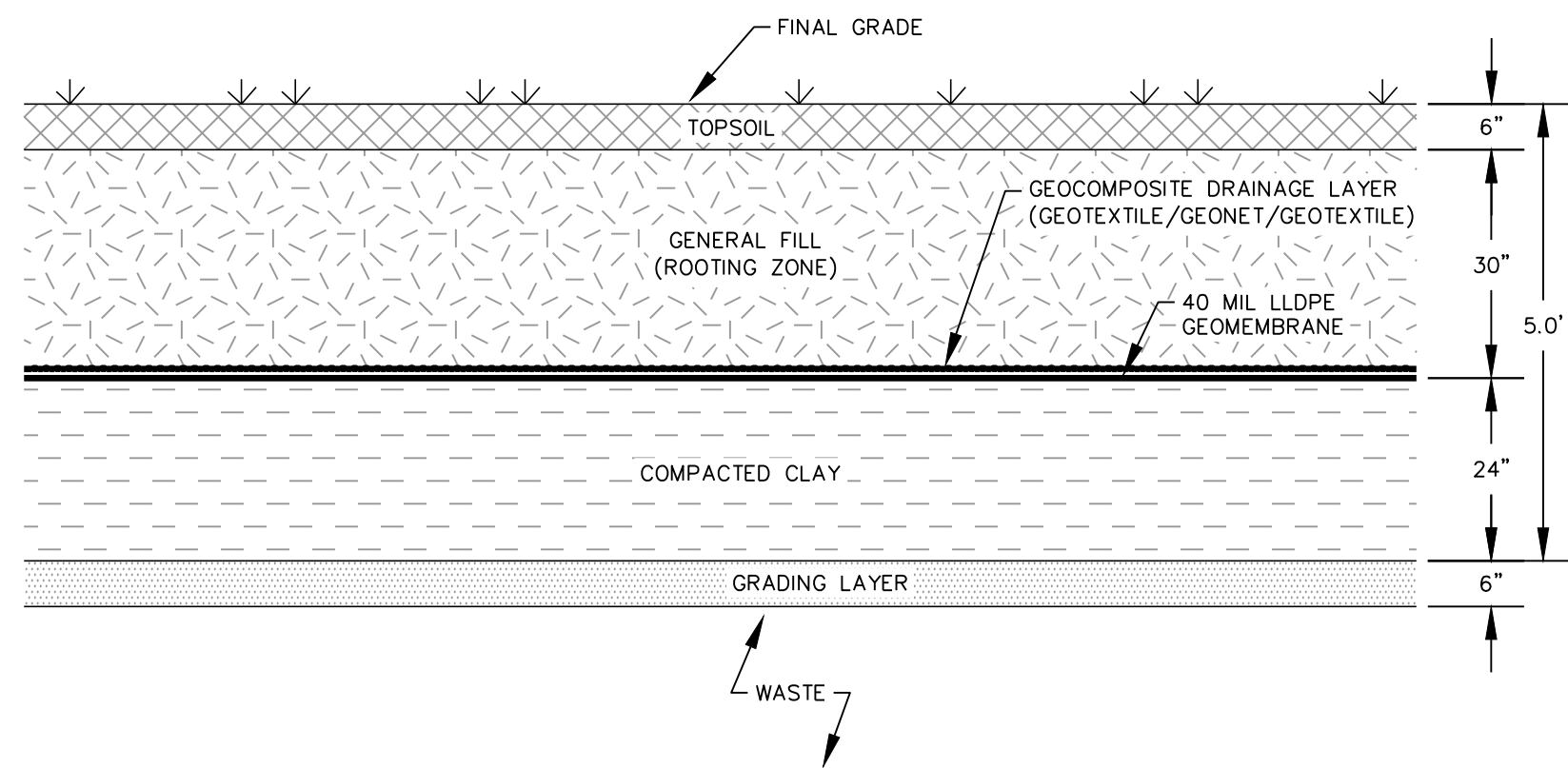
- LEGEND
- PROJECT PROPERTY LINE
 - PROPERTY PARCEL LINE
 - PROPOSED LIMITS OF WASTE
 - PROPOSED CLOSURE AREA LIMIT
 - EXISTING GRADE (2' CONTOUR)
 - EXISTING GRADE (10' CONTOUR)
 - EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - EXISTING STREAM/EDGE OF WATER
 - EXISTING WETLAND
 - EXISTING WATER SUPPLY WELL (APPROXIMATE LOCATION)
 - EXISTING SOIL BORING
 - EXISTING WATER TABLE MONITORING WELL
 - EXISTING PIEZOMETER
 - EXISTING STAFF GAUGE
 - LIMITS OF PROPOSED 18-HOLE GOLF COURSE
 - PROPOSED GRADE (2' CONTOUR)
 - PROPOSED GRADE (10' CONTOUR)
 - PROPOSED TOP OF WASTE GRADE (2' CONTOUR)
 - PROPOSED TOP OF WASTE GRADE (10' CONTOUR)
 - PROPOSED SLOPE AND DIRECTION
 - PROPOSED PERMETER SWALE
 - PROPOSED PERMETER/ACCESS ROAD
 - PROPOSED CULVERT

- NOTES:
- SEE SHEET 2, EXISTING CONDITIONS, FOR ADDITIONAL LEGEND ITEMS AND BASE MAP NOTES.
 - PROPOSED CONTOURS WITHIN LIMITS OF WASTE REPRESENT TOP OF FINAL COVER GRADES. ABOVE ELEVATION 970, ONLY 10' CONTOURS ARE SHOWN FOR CLARITY.
 - FINAL COVER SEQUENCING IS PRELIMINARY AND WILL BE FURTHER DEFINED AS PART OF THE PLAN OF OPERATION.

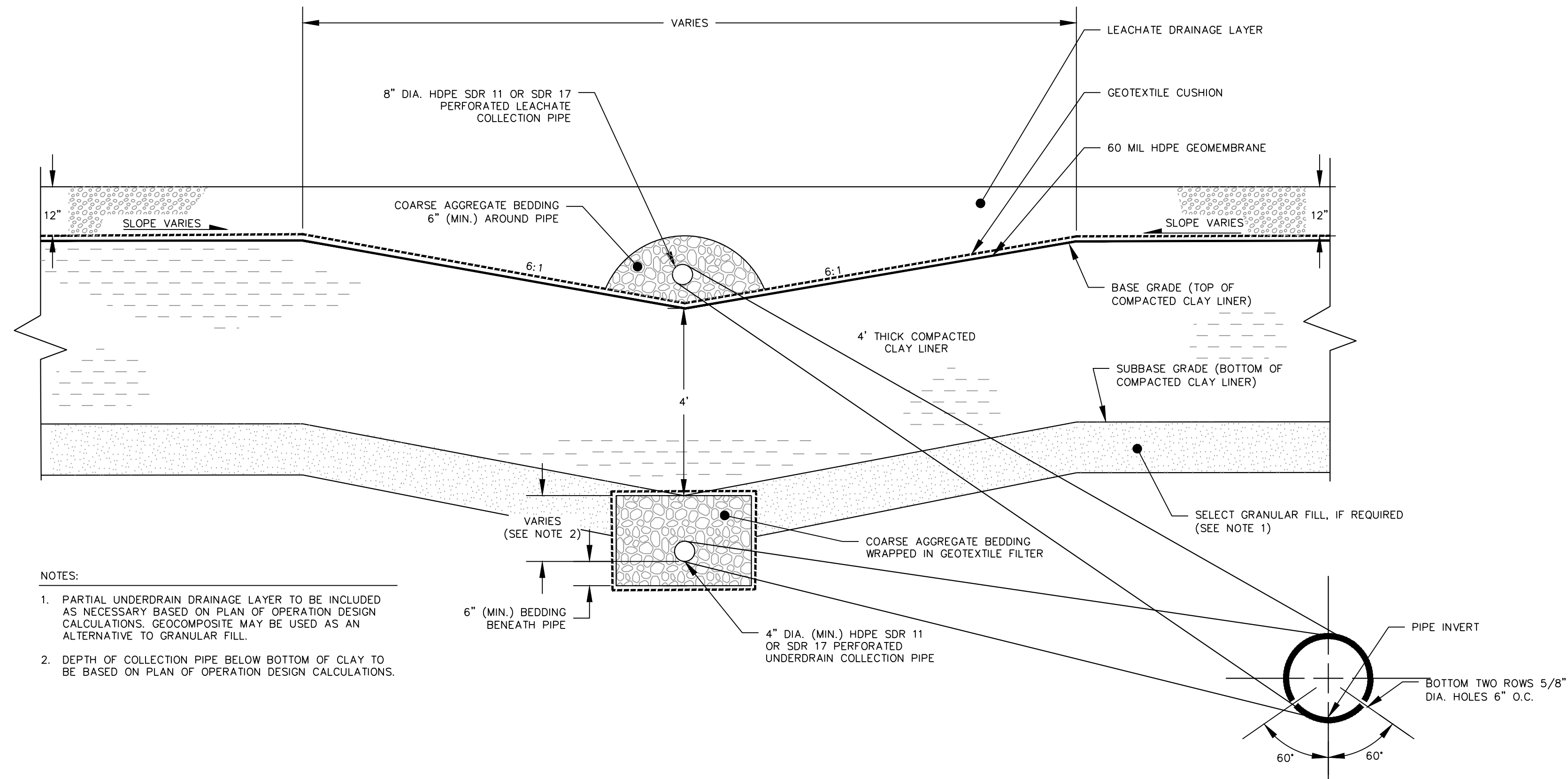




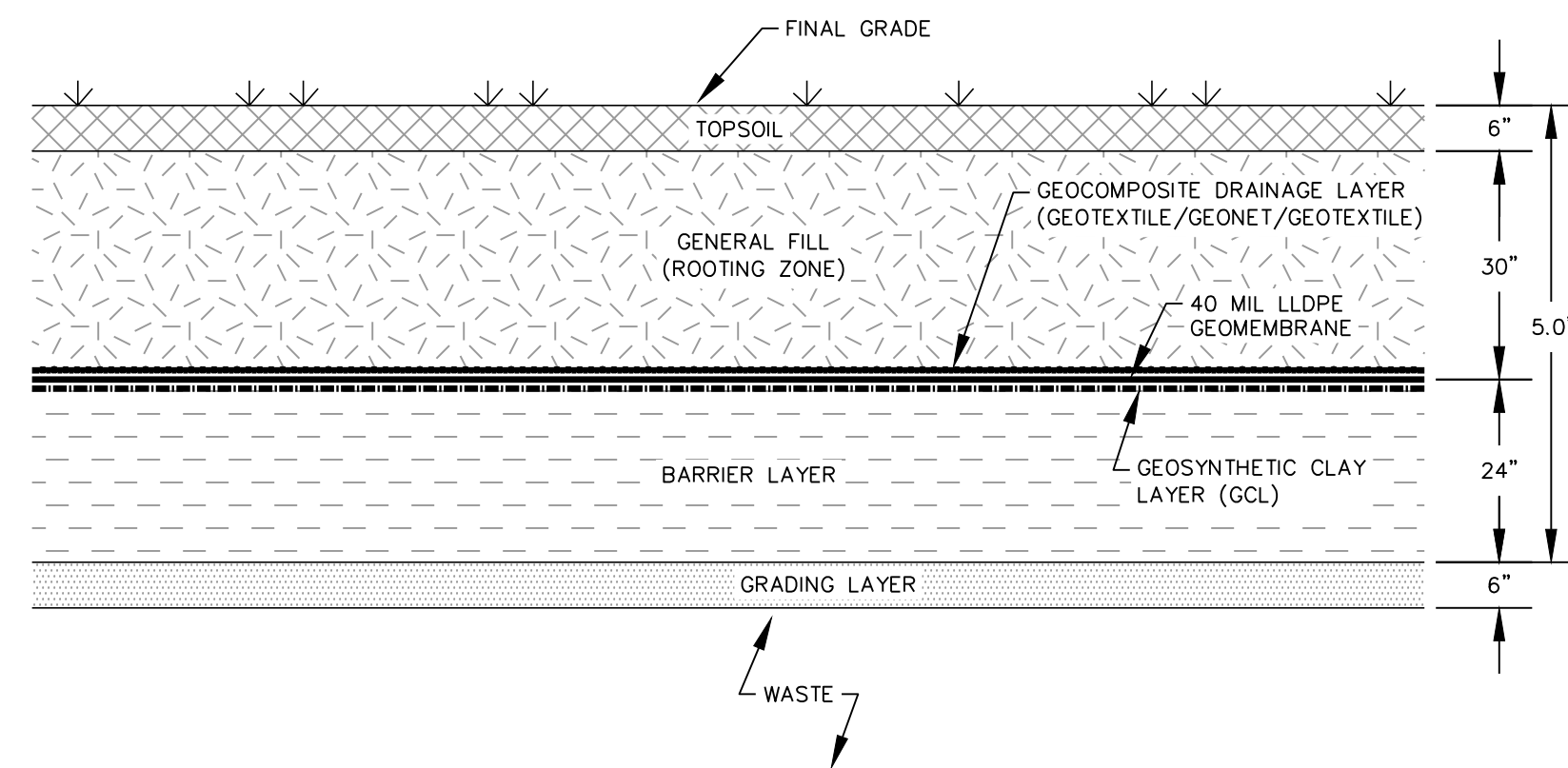
1
28 **COMPOSITE LINER**
SCALE: 1" = 2'



3
28 **COMPACTED CLAY FINAL COVER**
SCALE: 1" = 2'



2
28 **COMPOSITE LINER/ LEACHATE COLLECTION AND UNDERDRAIN SYSTEM**
(NOT TO SCALE)



4
28 **GCL FINAL COVER**
SCALE: 1" = 2'

- NOTES:
- PARTIAL UNDERDRAIN DRAINAGE LAYER TO BE INCLUDED AS NECESSARY BASED ON PLAN OF OPERATION DESIGN CALCULATIONS. GEOCOMPOSITE MAY BE USED AS AN ALTERNATIVE TO GRANULAR FILL.
 - DEPTH OF COLLECTION PIPE BELOW BOTTOM OF CLAY TO BE BASED ON PLAN OF OPERATION DESIGN CALCULATIONS.