

# Independent Expert Engineering Investigation and Review Panel

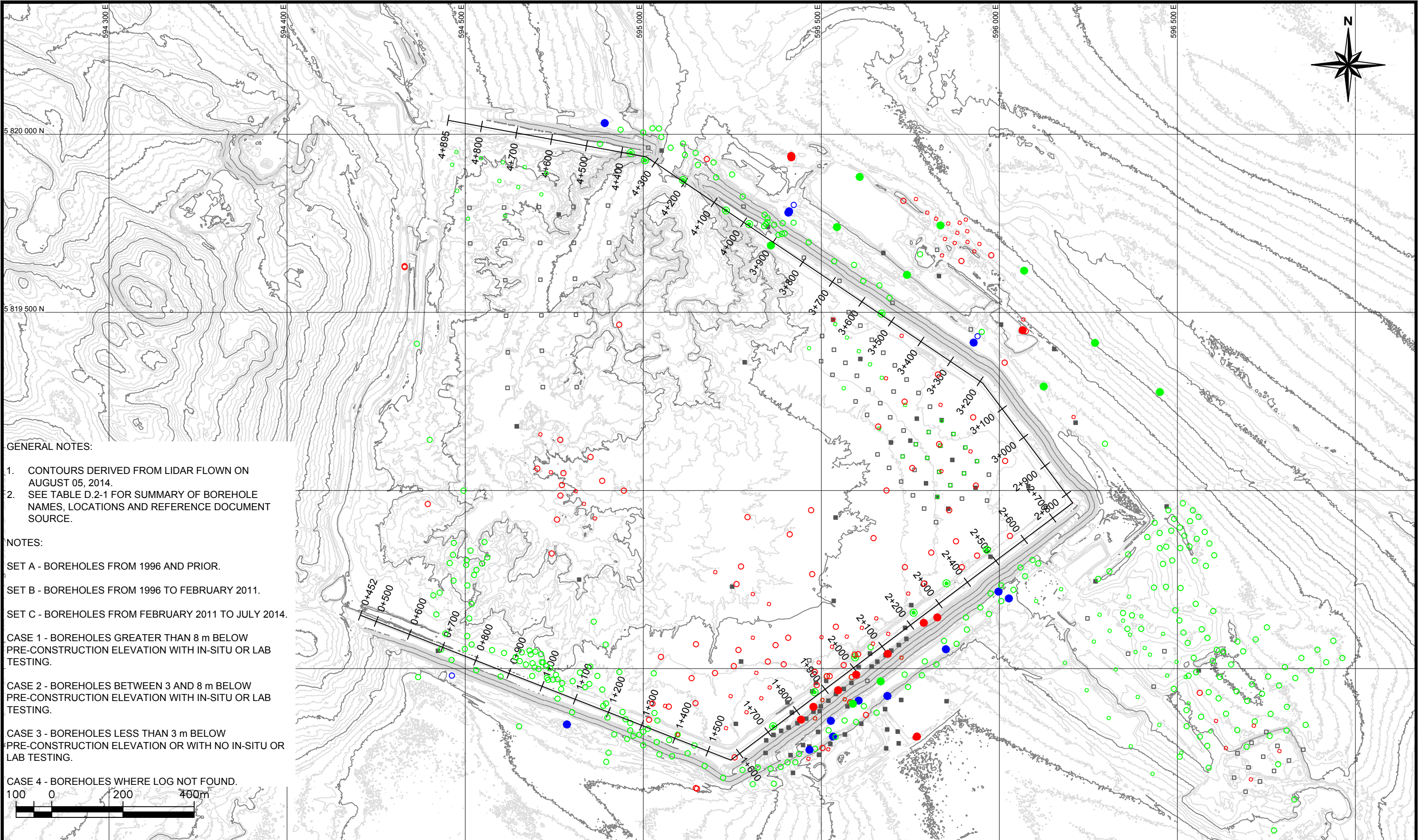
## Report on Mount Polley Tailings Storage Facility Breach

### Appendix D: DRAWINGS

|                                                                                                                         |                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Drawing D1:</b> Pre-breach Subsurface Investigation Summary                                                          | <b>Drawing D13:</b> Geological Section 3 - Complex                                         |
| <b>Drawing D2:</b> Subsurface Investigation 1996 and Prior                                                              | <b>Drawing D14:</b> Geological Section 7 - Simple                                          |
| <b>Drawing D3:</b> Locations Greater Than 3m Depth Pre-breach Subsurface Investigation With In-Situ or Lab Testing Data | <b>Drawing D15:</b> Geological Section 7 - Complex                                         |
| <b>Drawing D4:</b> Post-breach Subsurface Investigation Summary                                                         | <b>Drawing D16:</b> Upper Glaciolacustrine Thickness Contours with Post-breach Ortho Photo |
| <b>Drawing D5:</b> Pre-breach Subsurface Investigation in Breach Area                                                   | <b>Drawing D17:</b> Upper Glaciolacustrine Thickness Contours with Post-breach Topography  |
| <b>Drawing D6:</b> Geological Section 6 - Simple                                                                        | <b>Drawing D18:</b> Geotechnical Properties Summary Table                                  |
| <b>Drawing D7:</b> Geological Section 6 - Complex                                                                       | <b>Drawing D19:</b> Review of Field Sensitivity Using CPT Tip Resistance                   |
| <b>Drawing D8:</b> Geological Section 4 - Simple                                                                        | <b>Drawing D20:</b> Comparison of Interpreted CPT Data to Oedometer Data in Upper GLU      |
| <b>Drawing D9:</b> Geological Section 4 - Complex                                                                       | <b>Drawing D21:</b> Longitudinal Variation in CPT Tip Resistance                           |
| <b>Drawing D10:</b> Geological Section 5 - Simple                                                                       | <b>Drawing D22:</b> Upper GLU and Lower GLU                                                |
| <b>Drawing D11:</b> Geological Section 5 - Complex                                                                      | <b>Drawing D23:</b> GW96-1A / 1B Bore Hole Log                                             |
| <b>Drawing D12:</b> Geological Section 3 - Simple                                                                       | <b>Drawing D24:</b> VW11-10 Bore Hole Log                                                  |



FOLD



GENERAL NOTES:

- 1. CONTOURS DERIVED FROM LIDAR FLOWN ON AUGUST 05, 2014.
- 2. SEE TABLE D.2-1 FOR SUMMARY OF BOREHOLE NAMES, LOCATIONS AND REFERENCE DOCUMENT SOURCE.

NOTES:

- SET A - BOREHOLES FROM 1996 AND PRIOR.
- SET B - BOREHOLES FROM 1996 TO FEBRUARY 2011.
- SET C - BOREHOLES FROM FEBRUARY 2011 TO JULY 2014.
- CASE 1 - BOREHOLES GREATER THAN 8 m BELOW PRE-CONSTRUCTION ELEVATION WITH IN-SITU OR LAB TESTING.
- CASE 2 - BOREHOLES BETWEEN 3 AND 8 m BELOW PRE-CONSTRUCTION ELEVATION WITH IN-SITU OR LAB TESTING.
- CASE 3 - BOREHOLES LESS THAN 3 m BELOW PRE-CONSTRUCTION ELEVATION OR WITH NO IN-SITU OR LAB TESTING.

CASE 4 - BOREHOLES WHERE LOG NOT FOUND.



LEGEND:

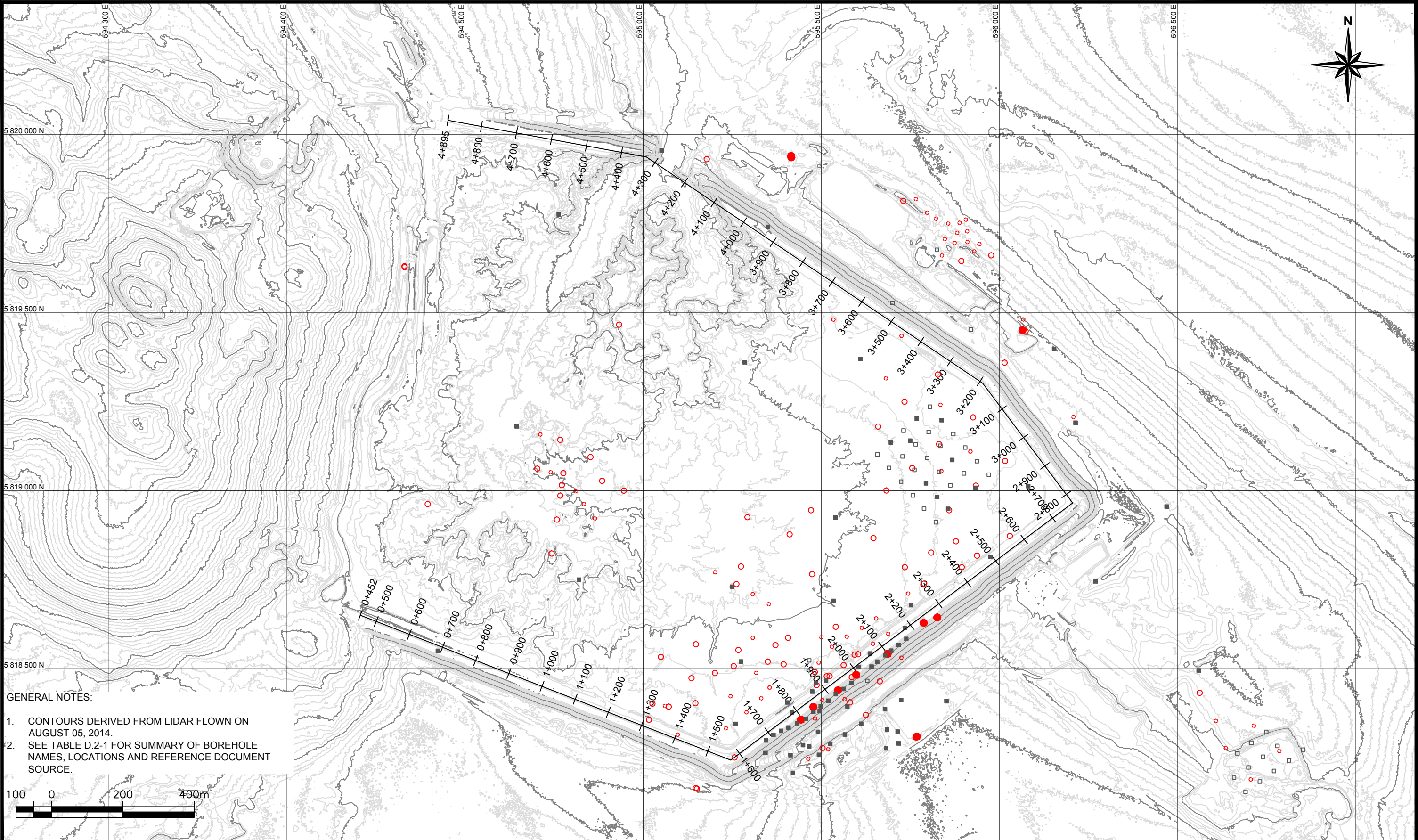
- |                 |                 |                 |                            |
|-----------------|-----------------|-----------------|----------------------------|
| ● SET A, CASE 1 | ● SET B, CASE 1 | ● SET C, CASE 1 | ■ TEST PIT (WITH LOG)      |
| ○ SET A, CASE 3 | ○ SET B, CASE 2 | ○ SET C, CASE 3 | □ TEST PIT (LOG NOT FOUND) |
| ○ SET A, CASE 4 | ○ SET B, CASE 3 | ○ SET C, CASE 4 |                            |
|                 | ○ SET B, CASE 4 |                 |                            |

PRE-BREACH SUBSURFACE INVESTIGATION SUMMARY

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

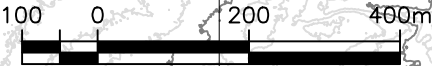
|                          |                |
|--------------------------|----------------|
| DESIGNED<br>PJW          | DRAWN<br>NAK   |
| APPROVED<br>D. VAN ZYL   |                |
| DATE<br>JANUARY 02, 2015 | DWG. No.<br>D1 |





GENERAL NOTES:

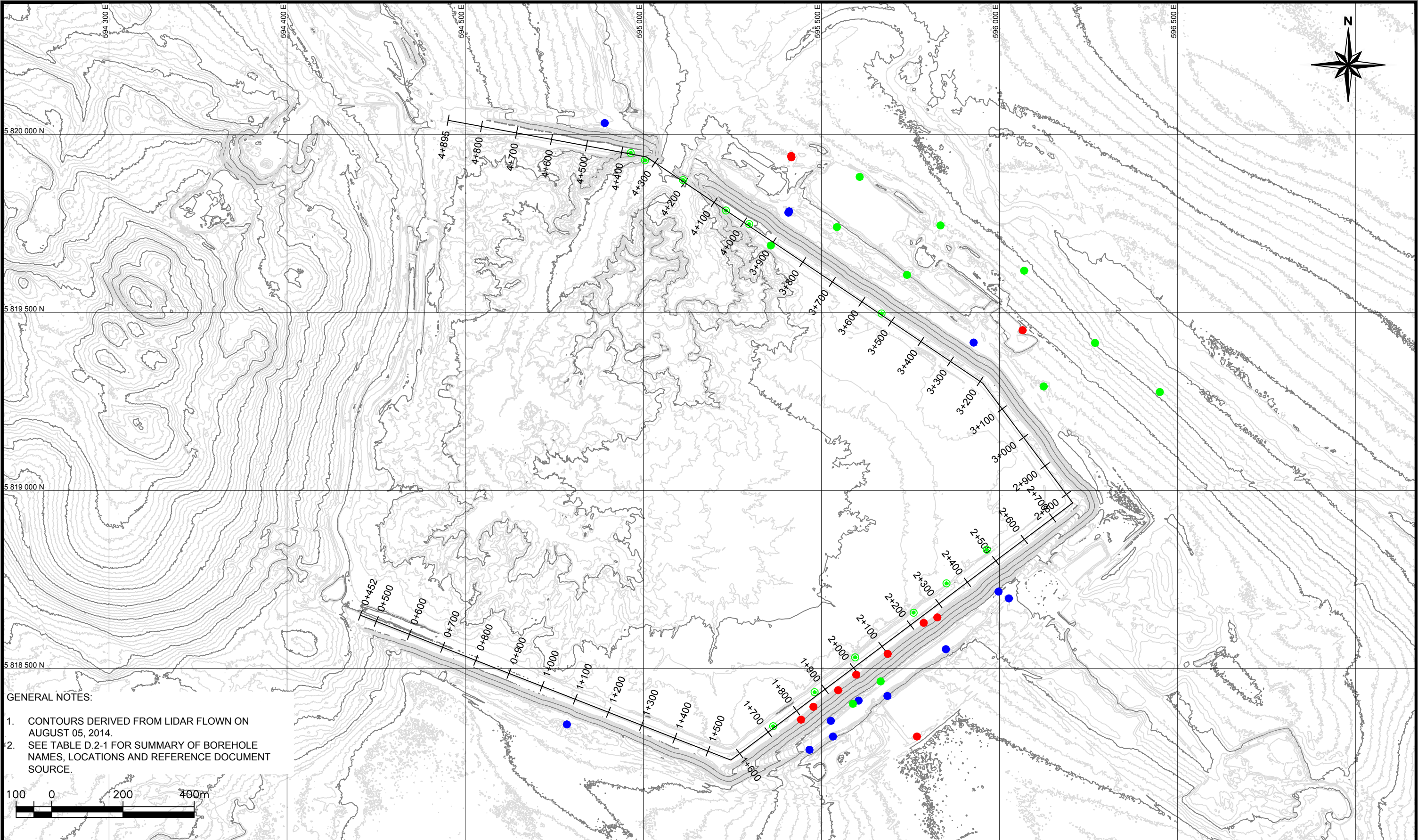
1. CONTOURS DERIVED FROM LIDAR FLOWN ON AUGUST 05, 2014.
2. SEE TABLE D.2-1 FOR SUMMARY OF BOREHOLE NAMES, LOCATIONS AND REFERENCE DOCUMENT SOURCE.



- LEGEND:
- 1996 AND PRIOR BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)
  - 1996 AND PRIOR BOREHOLE (LESS THAN 3 m DEEP OR NO IN-SITU OR LAB TESTING)
  - ◊ 1996 AND PRIOR BOREHOLE (LOG NOT FOUND)
  - 1996 AND PRIOR TEST PIT (WITH LOG)
  - 1996 AND PRIOR TEST PIT (LOG NOT FOUND)

|                                                                            |  |                  |          |
|----------------------------------------------------------------------------|--|------------------|----------|
| SUBSURFACE INVESTIGATION 1996 AND PRIOR                                    |  | DESIGNED         | DRAWN    |
|                                                                            |  | PJW              | NAK      |
| MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL |  | APPROVED         |          |
|                                                                            |  | D. VAN ZYL       |          |
|                                                                            |  | DATE             | DWG. No. |
|                                                                            |  | JANUARY 02, 2015 | D2       |





GENERAL NOTES:

- 1. CONTOURS DERIVED FROM LIDAR FLOWN ON AUGUST 05, 2014.
- 2. SEE TABLE D.2-1 FOR SUMMARY OF BOREHOLE NAMES, LOCATIONS AND REFERENCE DOCUMENT SOURCE.

- LEGEND:
- 1996 AND PRIOR BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)
  - 1996 - FEB 2011 BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)
  - 1996 - FEB 2011 BOREHOLE (BETWEEN 3 AND 8 m BELOW PRE-CONSTRUCTION ELEVATION WITH IN-SITU OR LAB TESTING)
  - FEB 2011 - JULY 2014 BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)

**PRE-BREACH SUBSURFACE INVESTIGATION  
LOCATIONS GREATER THAN 3m DEPTH  
WITH IN-SITU OR LAB TESTING DATA**

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|                          |                       |
|--------------------------|-----------------------|
| DESIGNED<br>P JW         | DRAWN<br>N AK         |
| APPROVED<br>D. VAN ZYL   |                       |
| DATE<br>JANUARY 02, 2015 | DWG. No.<br><b>D3</b> |





1. CONTOURS DERIVED FROM LIDAR  
FLOWN ON AUGUST 05, 2014.



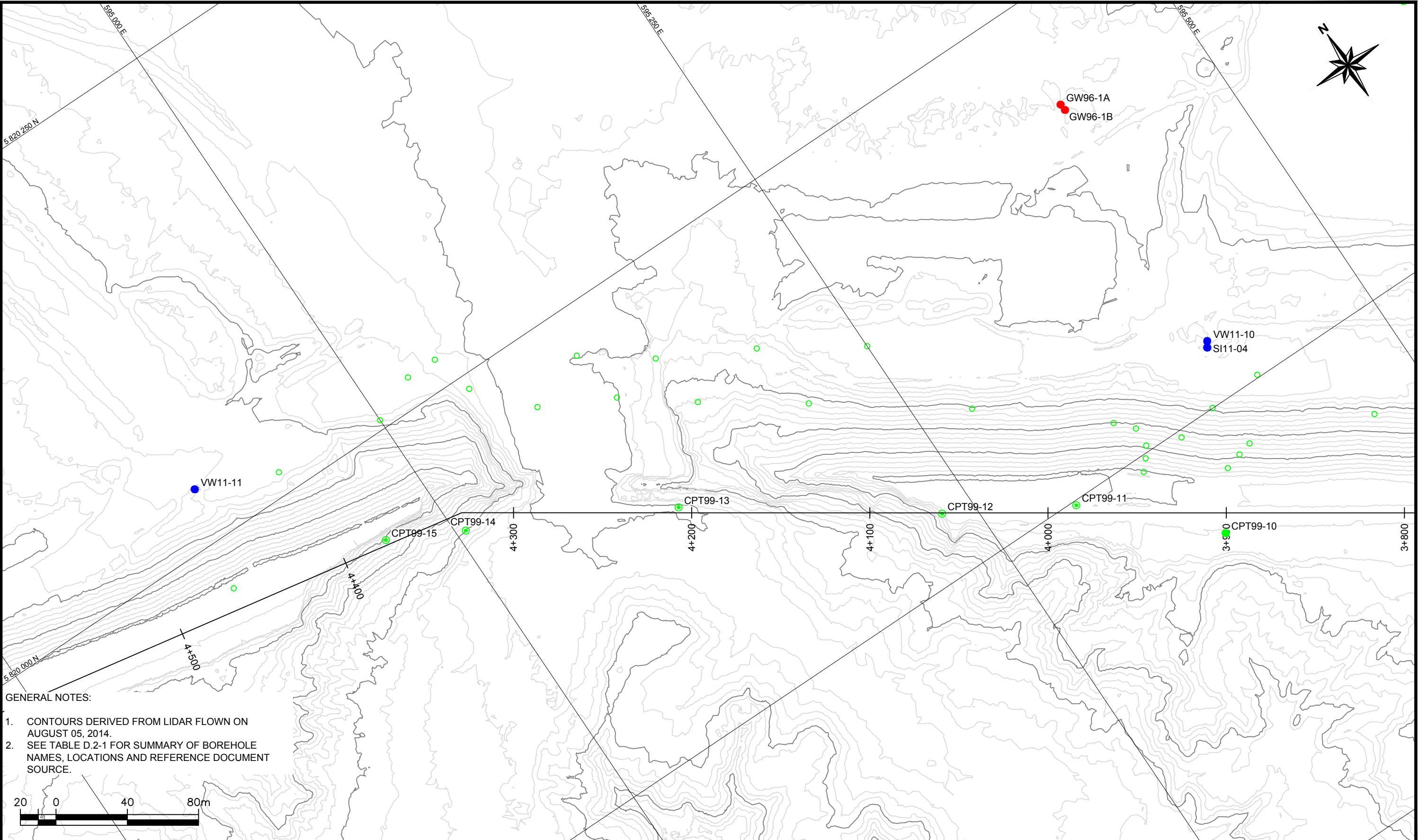
- PANEL INVESTIGATION LOCATION (SURVEYED POINT)
- PANEL INVESTIGATION LOCATION (CENTROID POINT)
- KCB INVESTIGATION LOCATION (SURVEYED POINT)
- KCB INVESTIGATION LOCATION (CENTROID POINT)
- PRE-BREACH INVESTIGATION LOCATION GREATER THAN 8 m DEEP WITH IN-SITU AND/OR LAB TESTING

— RESISTIVITY SURVEY LINE  
— SEISMIC SURVEY LINE

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

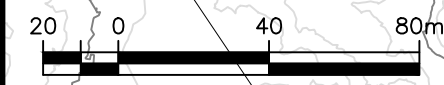
|                                  |                       |
|----------------------------------|-----------------------|
| DESIGNED<br><b>PJW</b>           | DRAWN<br><b>NAK</b>   |
| APPROVED<br><b>D. VAN ZYL</b>    |                       |
| DATE<br><b>DECEMBER 14, 2014</b> | DWG. No.<br><b>D4</b> |





GENERAL NOTES:

- 1. CONTOURS DERIVED FROM LIDAR FLOWN ON AUGUST 05, 2014.
- 2. SEE TABLE D.2-1 FOR SUMMARY OF BOREHOLE NAMES, LOCATIONS AND REFERENCE DOCUMENT SOURCE.

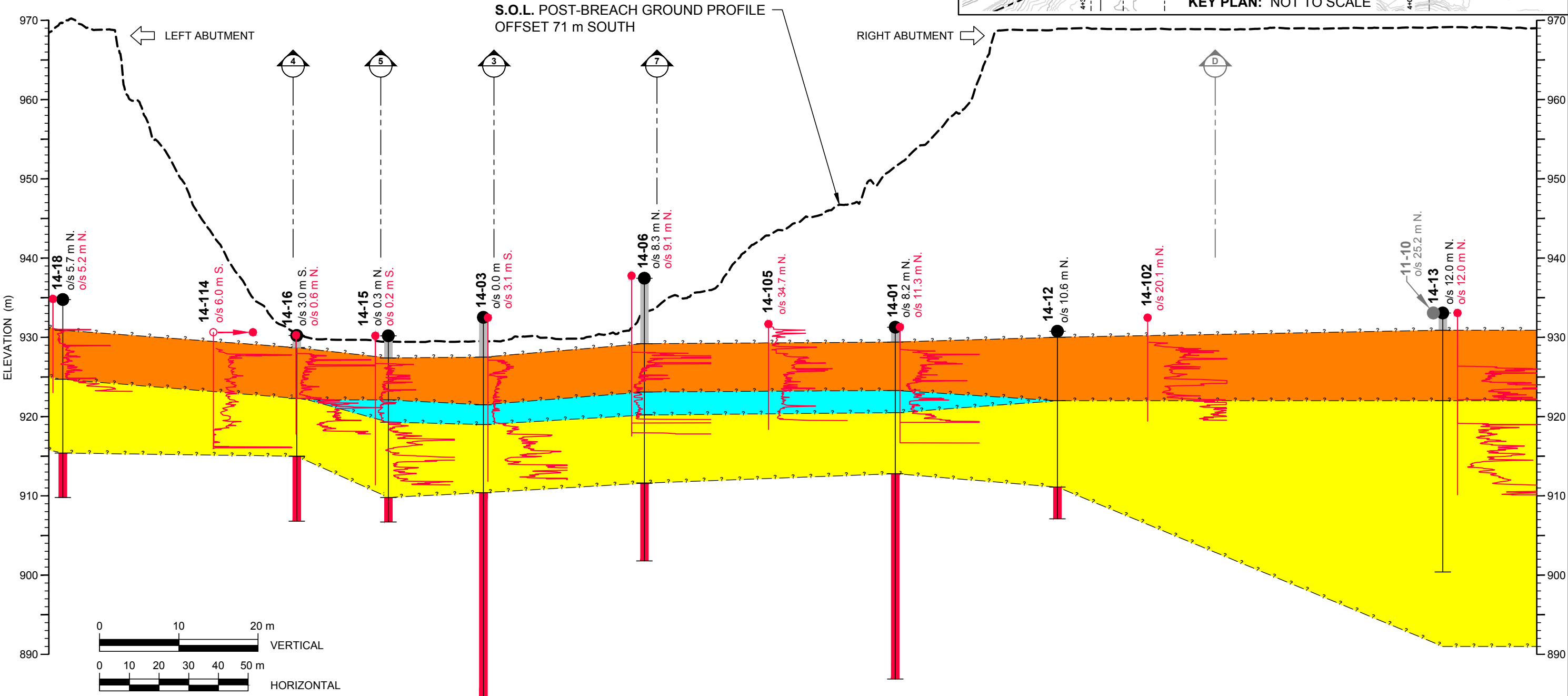


| LEGEND:                              |                                                                                                           |                                                                                                                                                  |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <span style="color: red;">●</span>   | 1996 AND PRIOR BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)                               | <span style="color: green;">○</span> 1996 - FEB 2011 BOREHOLE (LESS THAN 3 m BELOW PRE-CONSTRUCTION ELEVATION OR WITH NO IN-SITU OR LAB TESTING) |
| <span style="color: green;">●</span> | 1996 - FEB 2011 BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)                              | <span style="color: blue;">●</span> FEB 2011 - JULY 2014 BOREHOLE (GREATER THAN 8 m DEEP WITH IN-SITU OR LAB TESTING)                            |
| <span style="color: green;">○</span> | 1996 - FEB 2011 BOREHOLE (BETWEEN 3 AND 8 m BELOW PRE-CONSTRUCTION ELEVATION WITH IN-SITU OR LAB TESTING) |                                                                                                                                                  |

|                                                                                                                                                 |  |                          |                |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------|----------------|
| <b>PRE-BREACH SUBSURFACE INVESTIGATION<br/>IN BREACH AREA</b><br><br>MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL |  | DESIGNED<br>PJW          | DRAWN<br>NAK   |
|                                                                                                                                                 |  | APPROVED<br>D. VAN ZYL   |                |
|                                                                                                                                                 |  | DATE<br>JANUARY 06, 2015 | DWG. No.<br>D5 |



- NOTES:**
- 1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
  - 2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



- LEGEND:**
- **14-12** — DRILL HOLE
  - **14-10** — CPT

|                                 |              |  |                                                                    |
|---------------------------------|--------------|--|--------------------------------------------------------------------|
| MAJOR<br>STRATIGRAPHIC<br>UNITS | UPPER TILL   |  | LOWER BASAL TILL<br>LOWER GLU<br>GLACIOFLUVIAL<br>LOWER BASAL TILL |
|                                 | UPPER GLU    |  |                                                                    |
|                                 | LOWER TILLS  |  |                                                                    |
|                                 | WEAK BEDROCK |  |                                                                    |

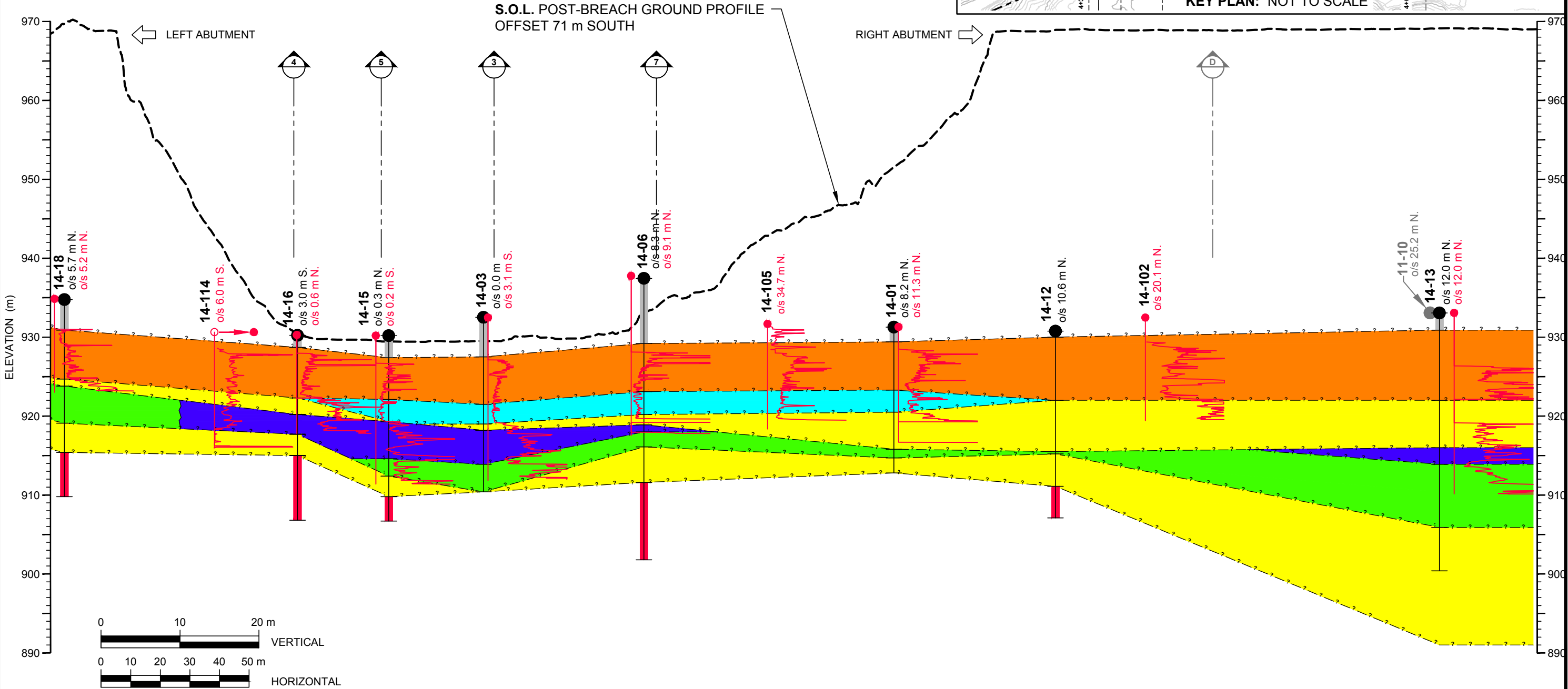
|                                                                            |                                      |  |
|----------------------------------------------------------------------------|--------------------------------------|--|
| STRATIGRAPHIC<br>SUB-UNITS                                                 | <b>GEOLOGICAL SECTION 6 - SIMPLE</b> |  |
|                                                                            |                                      |  |
|                                                                            |                                      |  |
|                                                                            |                                      |  |
| MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL |                                      |  |

|          |                   |          |           |
|----------|-------------------|----------|-----------|
| DESIGNED | CHS               | DRAWN    | DRB       |
| APPROVED | D. VAN ZYL        |          |           |
| DATE     | DECEMBER 22, 2014 | DWG. No. | <b>D6</b> |



NOTES:

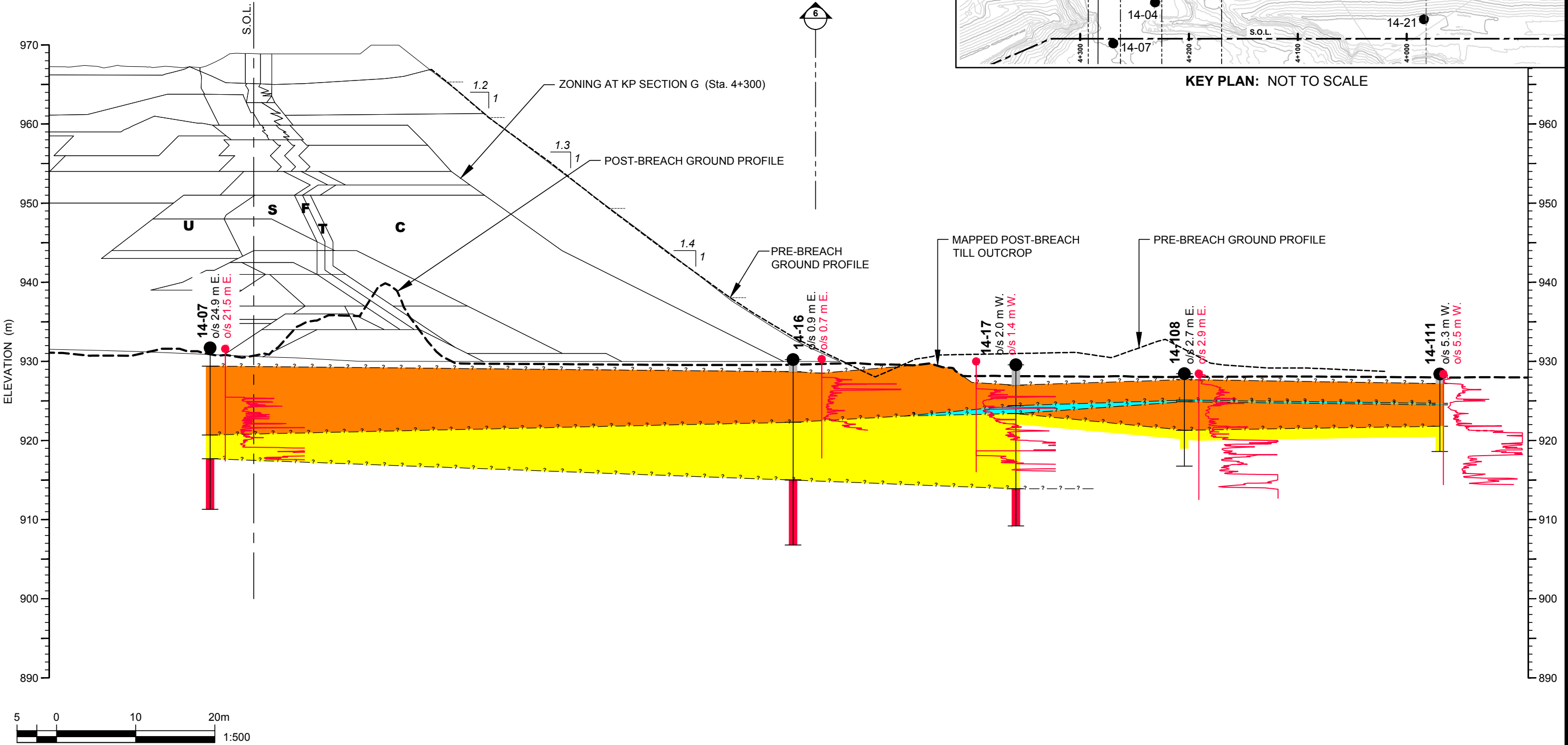
- 1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
- 2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.





NOTES:

- 1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
- 2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



LEGEND:

- 14-12 — DRILL HOLE
- 14-10 — CPT

**T** — TRANSITION  
**F** — CHIMNEY DRAIN  
**S** — CORE  
**C** — ROCK FILL  
**D** — DISTURBED ROCK FILL  
**U** — UPSTREAM SELECT FILL

MAJOR STRATIGRAPHIC UNITS

|              |  |                  |
|--------------|--|------------------|
| UPPER TILL   |  | LOWER BASAL TILL |
| UPPER GLU    |  | LOWER GLU        |
| LOWER TILLS  |  | GLACIOFLUVIAL    |
|              |  | LOWER BASAL TILL |
| WEAK BEDROCK |  |                  |

STRATIGRAPHIC SUB-UNITS

**GEOLOGICAL SECTION 4 - SIMPLE**

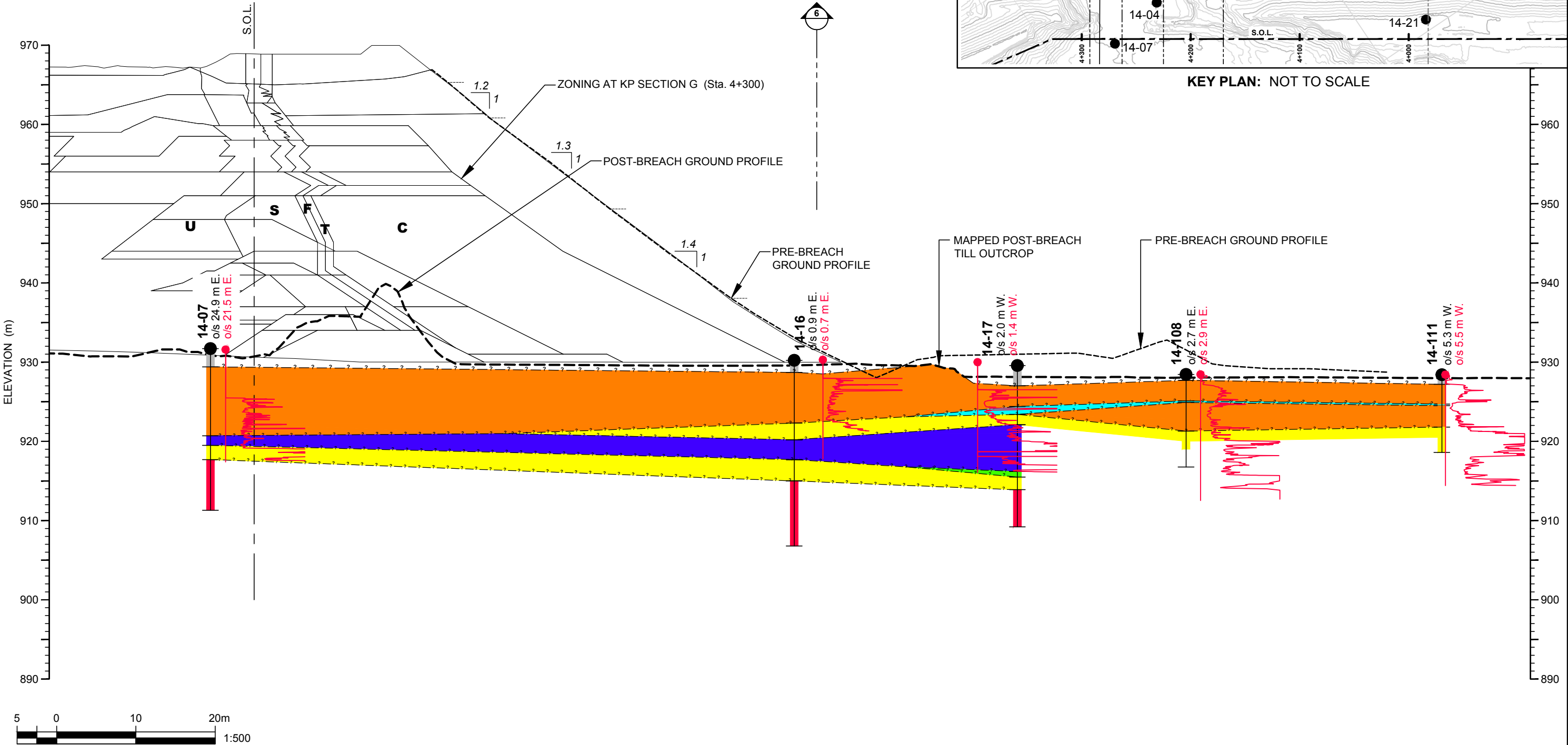
MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|          |                   |          |     |
|----------|-------------------|----------|-----|
| DESIGNED | CHS               | DRAWN    | DRB |
| APPROVED | D. VAN ZYL        |          |     |
| DATE     | DECEMBER 22, 2014 | DWG. No. | D8  |



NOTES:

- 1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
- 2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



LEGEND:

- 14-12 — DRILL HOLE
- 14-10 — CPT

**T** — TRANSITION  
**F** — CHIMNEY DRAIN  
**S** — CORE  
**C** — ROCK FILL  
**D** — DISTURBED ROCK FILL  
**U** — UPSTREAM SELECT FILL

MAJOR STRATIGRAPHIC UNITS

|              |  |                  |
|--------------|--|------------------|
| UPPER TILL   |  | LOWER BASAL TILL |
| UPPER GLU    |  | LOWER GLU        |
| LOWER TILLS  |  | GLACIOFLUVIAL    |
|              |  | LOWER BASAL TILL |
| WEAK BEDROCK |  |                  |

STRATIGRAPHIC SUB-UNITS

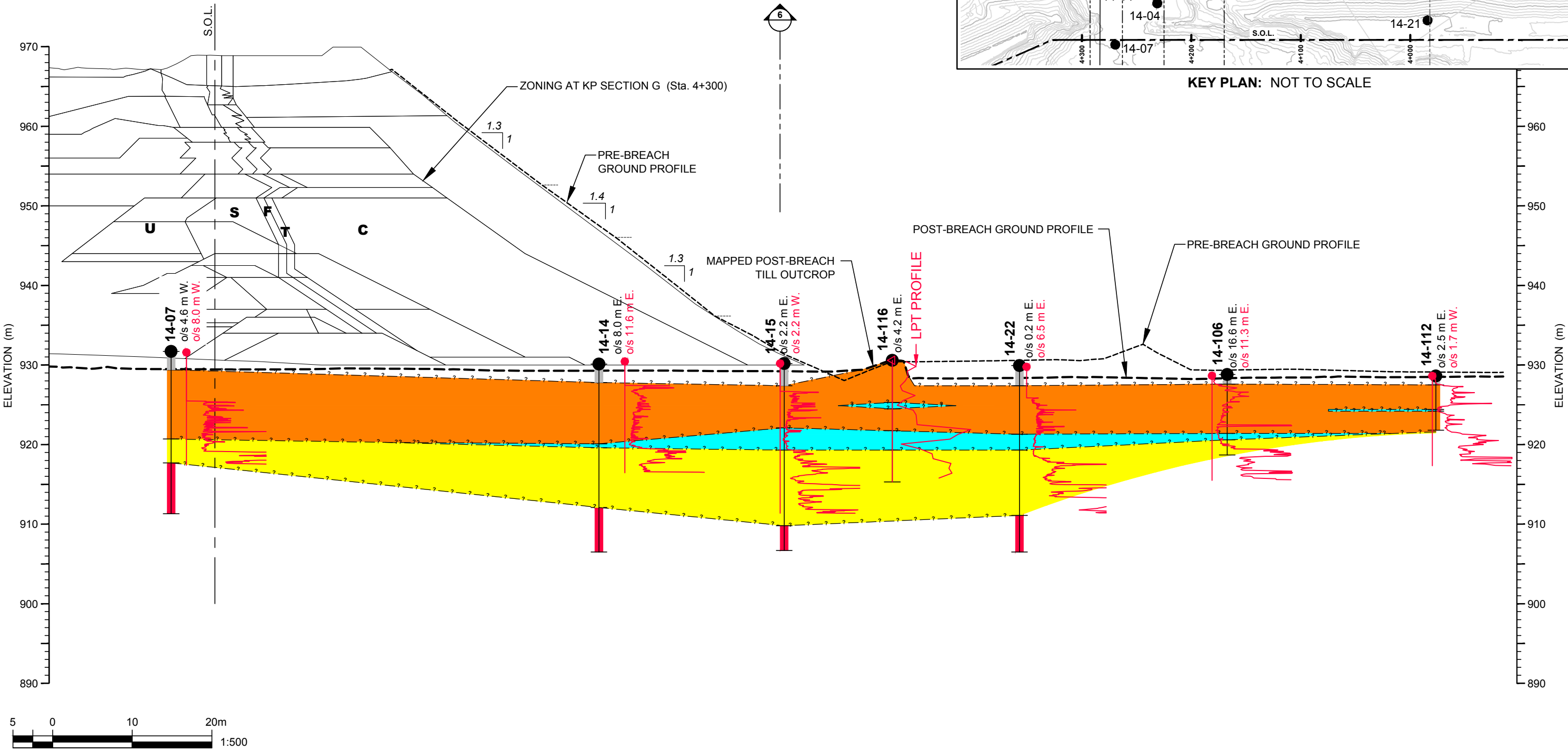
**GEOLOGICAL SECTION 4 - COMPLEX**

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|          |                   |       |           |
|----------|-------------------|-------|-----------|
| DESIGNED | CHS               | DRAWN | DRB       |
| APPROVED | D. VAN ZYL        |       |           |
| DATE     | DECEMBER 22, 2014 |       | DWG. No.  |
|          |                   |       | <b>D9</b> |



- NOTES:**
- 1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
  - 2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



**LEGEND:**

- 14-12 — DRILL HOLE
- 14-10 — CPT

**MAJOR STRATIGRAPHIC UNITS**

- T — TRANSITION
- F — CHIMNEY DRAIN
- S — CORE
- C — ROCK FILL
- D — DISTURBED ROCK FILL
- U — UPSTREAM SELECT FILL

**STRATIGRAPHIC SUB-UNITS**

- UPPER TILL
- UPPER GLU
- LOWER TILLS
- WEAK BEDROCK
- LOWER BASAL TILL
- LOWER GLU
- GLACIOFLUVIAL
- LOWER BASAL TILL

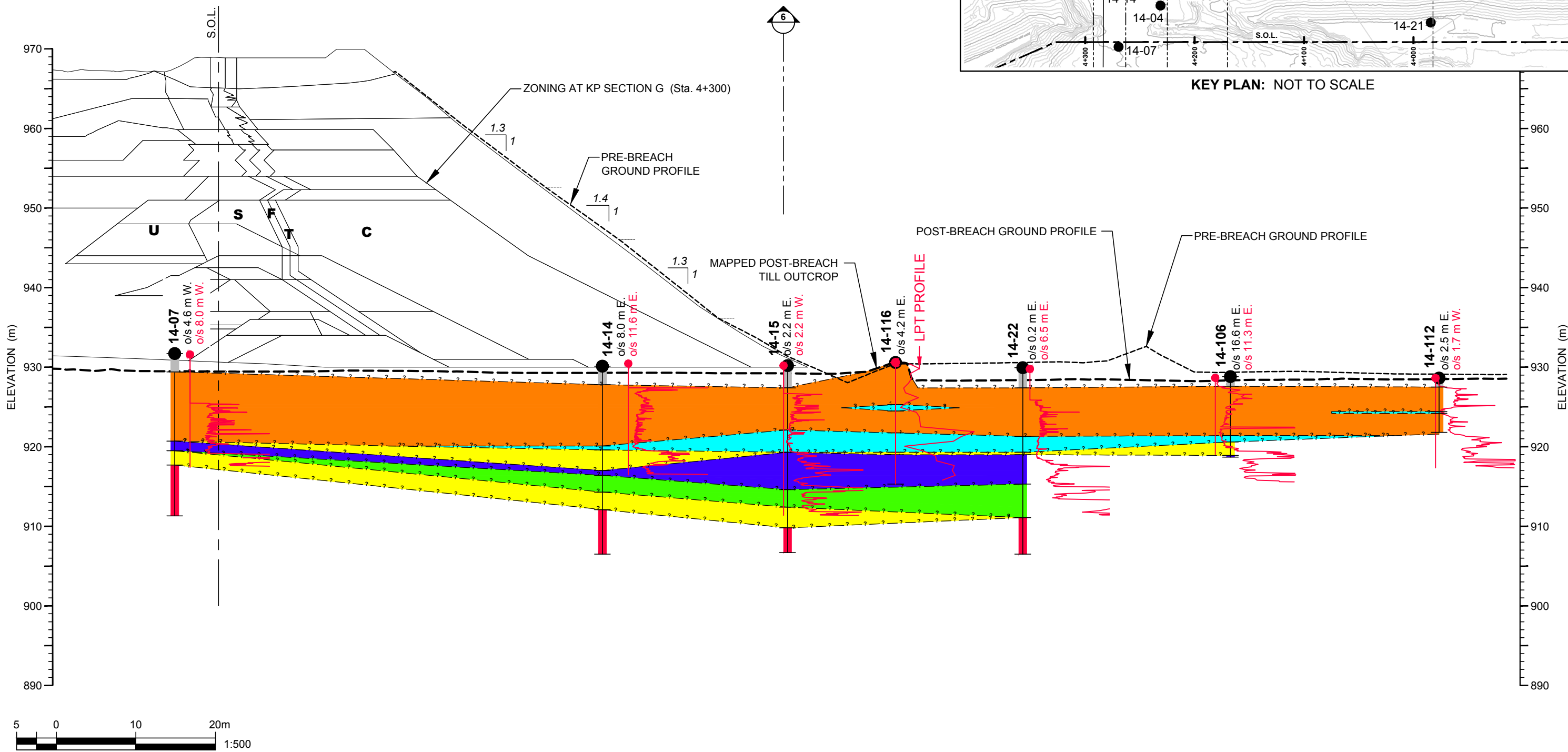
**GEOLOGICAL SECTION 5 - SIMPLE**

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|            |                   |          |     |
|------------|-------------------|----------|-----|
| DESIGNED   | CHS               | DRAWN    | DRB |
| APPROVED   |                   |          |     |
| D. VAN ZYL |                   |          |     |
| DATE       | DECEMBER 22, 2014 | DWG. No. | D10 |

NOTES:

1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



LEGEND:

- 14-12 — DRILL HOLE
- 14-10 — CPT

- T — TRANSITION
- F — CHIMNEY DRAIN
- S — CORE
- C — ROCK FILL
- D — DISTURBED ROCK FILL
- U — UPSTREAM SELECT FILL

MAJOR  
STRATIGRAPHIC  
UNITS

- UPPER TILL
- UPPER GLU
- LOWER TILLS
- WEAK BEDROCK
- LOWER BASAL TILL
- LOWER GLU
- GLACIOFLUVIAL
- LOWER BASAL TILL

STRATIGRAPHIC  
SUB-UNITS

GEOLOGICAL SECTION 5 - COMPLEX

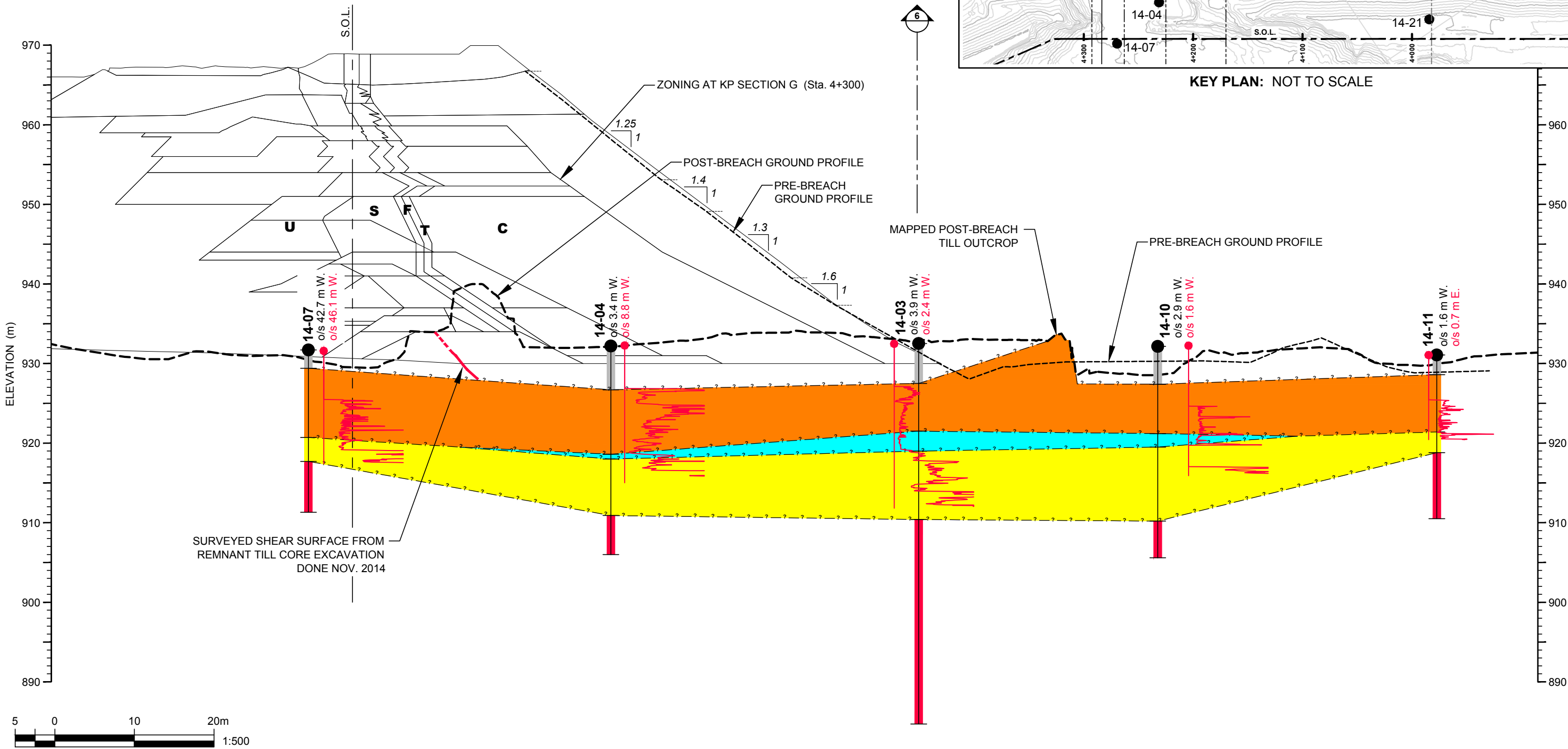
MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|                   |            |
|-------------------|------------|
| DESIGNED          | DRB        |
| SMB               | DRB        |
| APPROVED          | D. VAN ZYL |
| DATE              | DWG. No.   |
| DECEMBER 22, 2014 | D11        |



NOTES:

1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



LEGEND:  
● 14-12 — DRILL HOLE  
● 14-10 — CPT

T — TRANSITION  
F — CHIMNEY DRAIN  
S — CORE  
C — ROCK FILL  
D — DISTURBED ROCK FILL  
U — UPSTREAM SELECT FILL

MAJOR  
STRATIGRAPHIC  
UNITS

UPPER TILL  
UPPER GLU  
LOWER TILLS  
WEAK BEDROCK

STRATIGRAPHIC  
SUB-UNITS

LOWER BASAL TILL  
LOWER GLU  
GLACIOFLUVIAL  
LOWER BASAL TILL

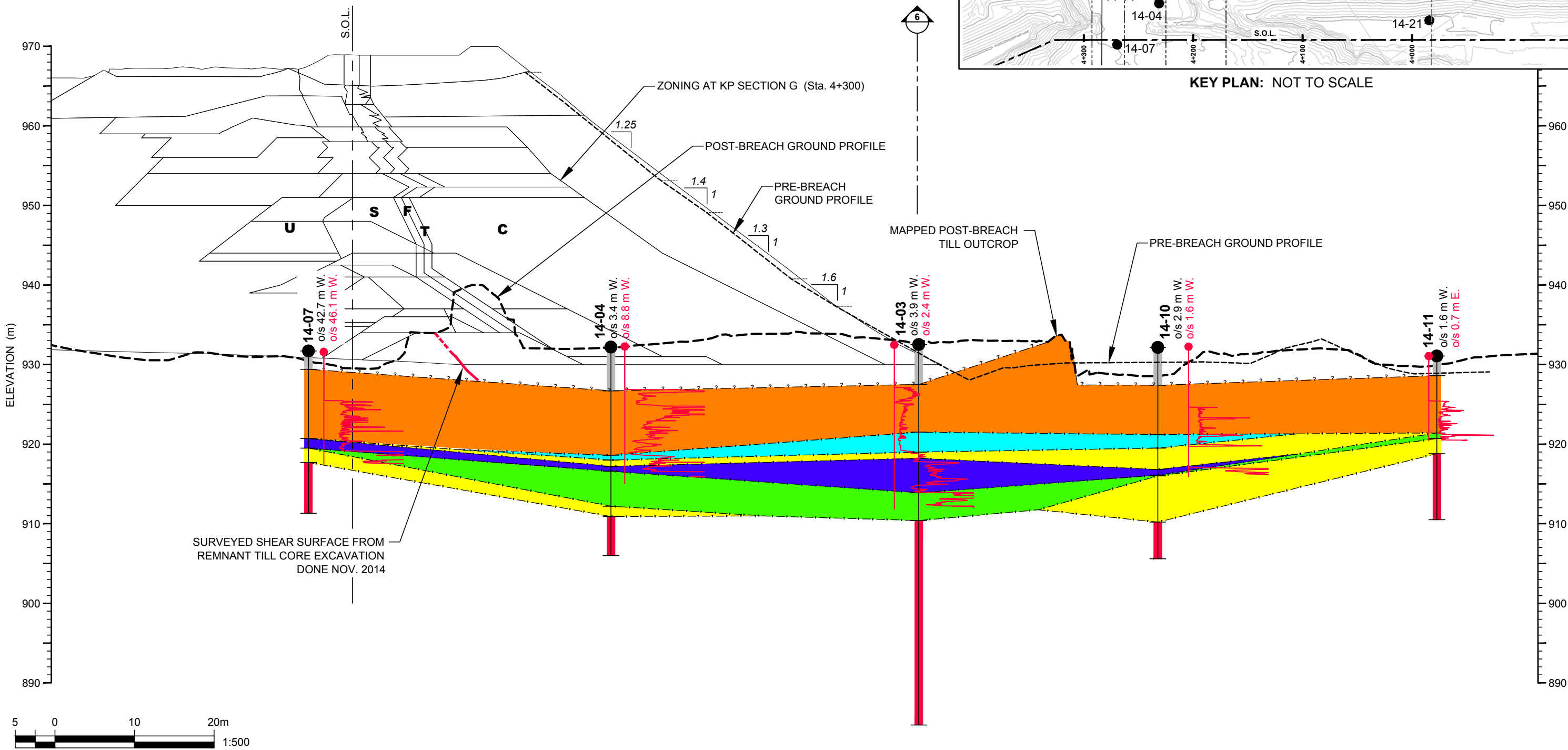
GEOLOGICAL SECTION 3 - SIMPLE

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|                           |                 |
|---------------------------|-----------------|
| DESIGNED<br>CHS           | DRAWN<br>DRB    |
| APPROVED<br>D. VAN ZYL    |                 |
| DATE<br>DECEMBER 22, 2014 | DWG. No.<br>D12 |

NOTES:

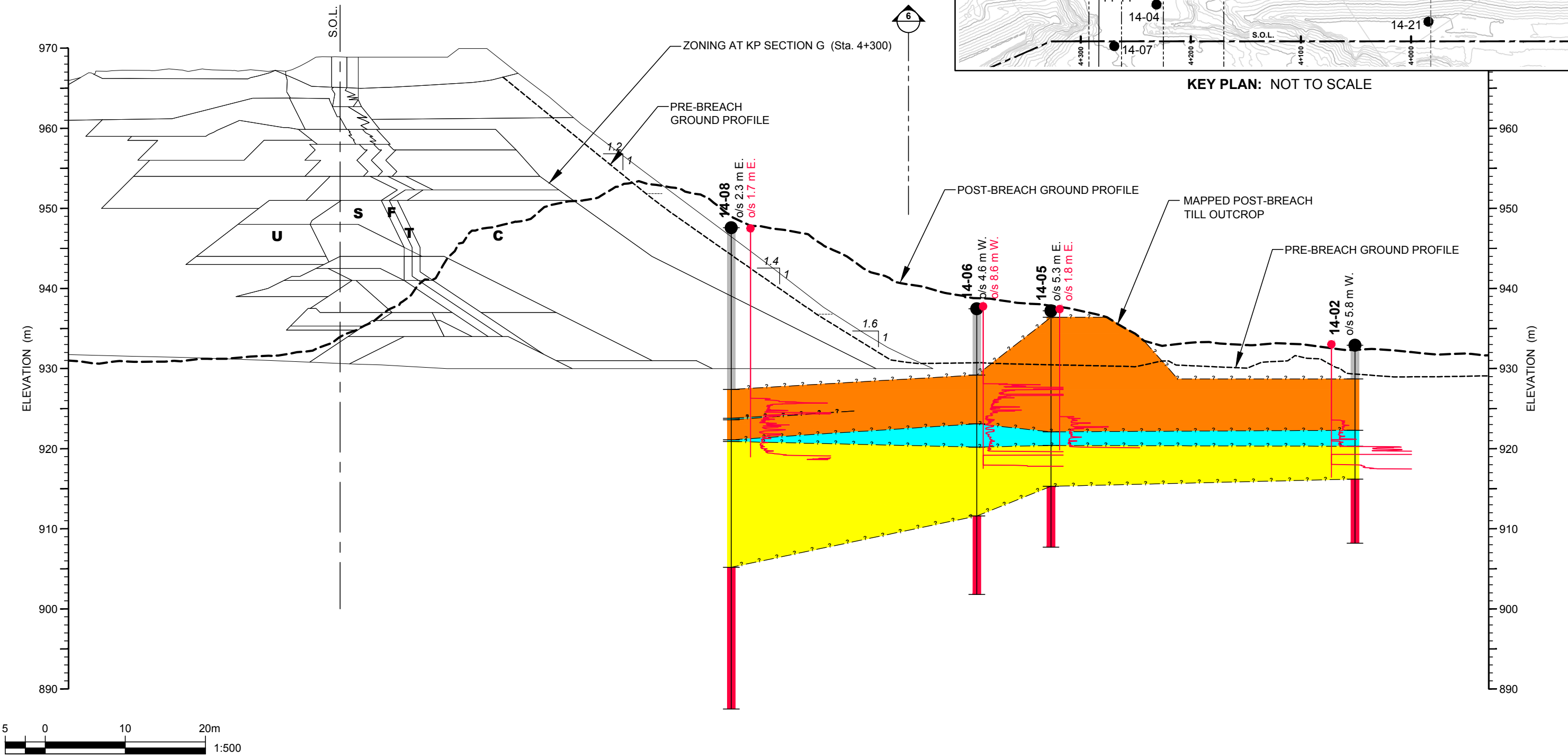
1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.





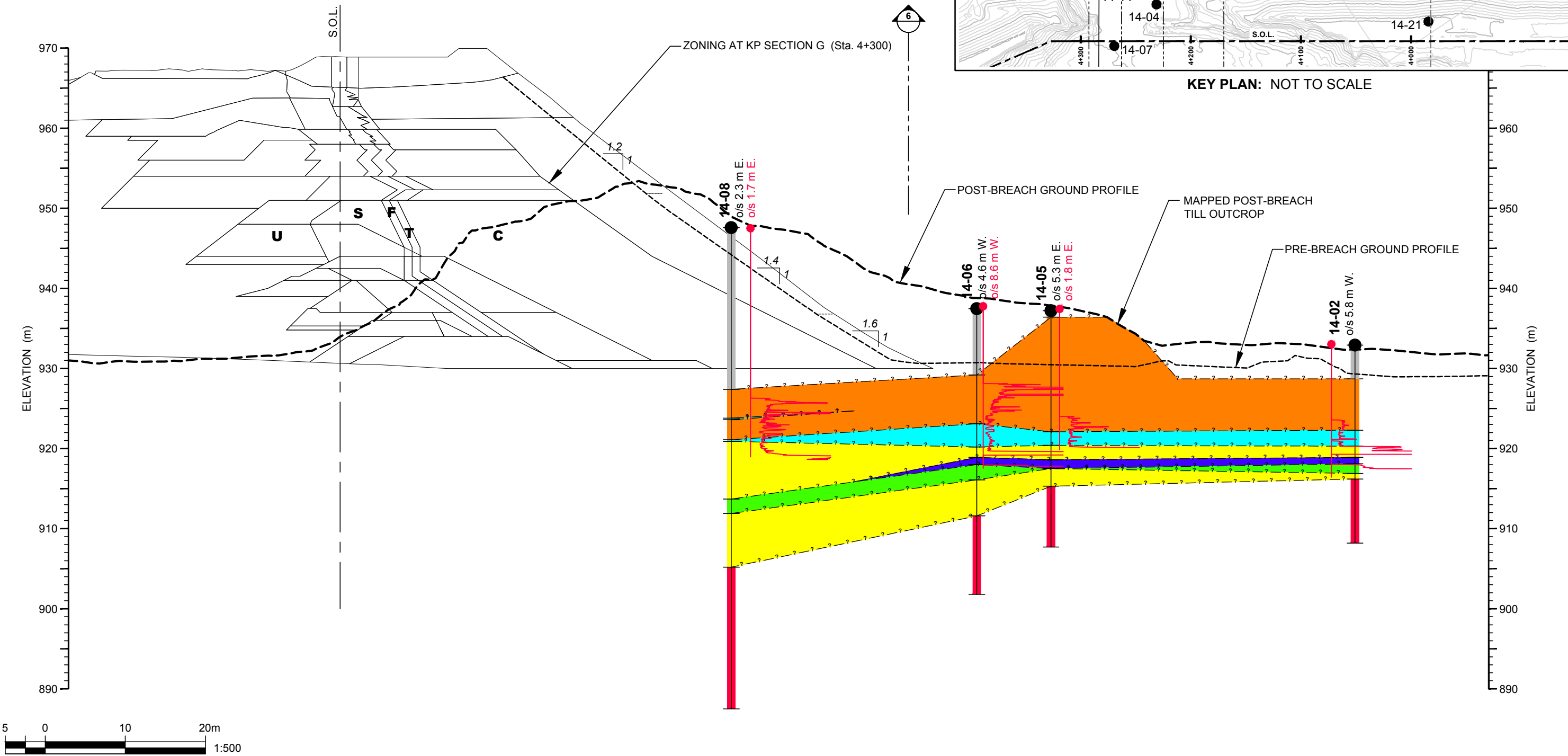
NOTES:

1. STRATIGRAPHY SHOWN ON THE LOGS HAS BEEN SIMPLIFIED FOR DISPLAY PURPOSES. REFER TO THE ACTUAL TEST HOLE LOGS FOR COMPLETE INFORMATION.
2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



NOTES:

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2. STRATIGRAPHIC BOUNDARIES BETWEEN TEST HOLES ARE SCHEMATIC AND INFERRED.



LEGEND:

- 14-12 — DRILL HOLE
- 14-10 — CPT

- T — TRANSITION
- F — CHIMNEY DRAIN
- S — CORE
- C — ROCK FILL
- D — DISTURBED ROCK FILL
- U — UPSTREAM SELECT FILL

MAJOR  
STRATIGRAPHIC  
UNITS

UPPER TILL  
UPPER GLU  
  
LOWER TILLS  
  
WEAK BEDROCK

LOWER BASAL TILL  
LOWER GLU  
GLACIOFLUVIAL  
LOWER BASAL TILL

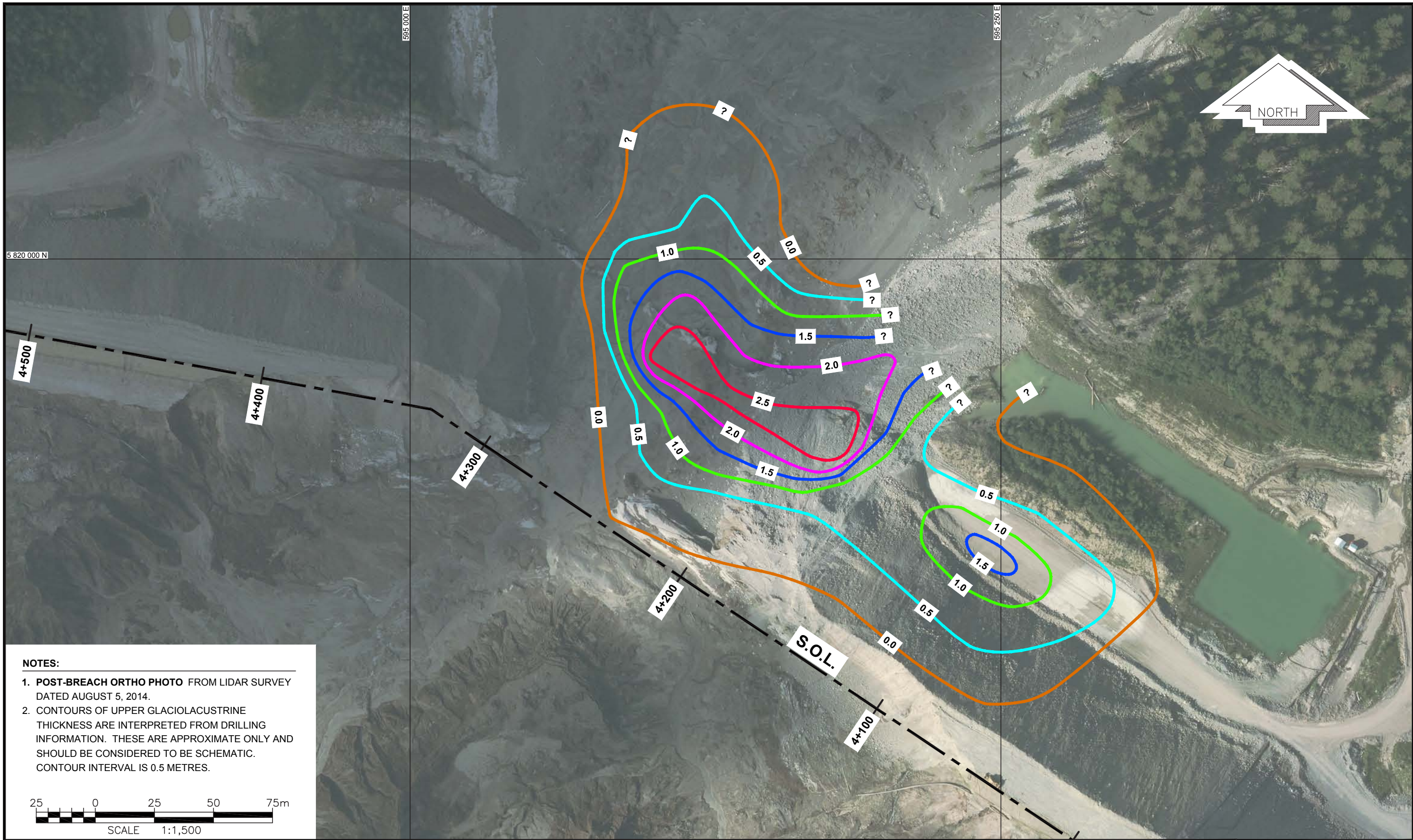
STRATIGRAPHIC  
SUB-UNITS

GEOLOGICAL SECTION 7 - COMPLEX

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

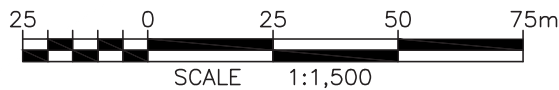
|                           |                 |
|---------------------------|-----------------|
| DESIGNED<br>CHS           | DRAWN<br>DRB    |
| APPROVED<br>D. VAN ZYL    |                 |
| DATE<br>DECEMBER 22, 2014 | DWG. No.<br>D15 |





**NOTES:**

1. **POST-BREACH ORTHO PHOTO** FROM LIDAR SURVEY DATED AUGUST 5, 2014.
2. CONTOURS OF UPPER GLACIOLACUSTRINE THICKNESS ARE INTERPRETED FROM DRILLING INFORMATION. THESE ARE APPROXIMATE ONLY AND SHOULD BE CONSIDERED TO BE SCHEMATIC. CONTOUR INTERVAL IS 0.5 METRES.



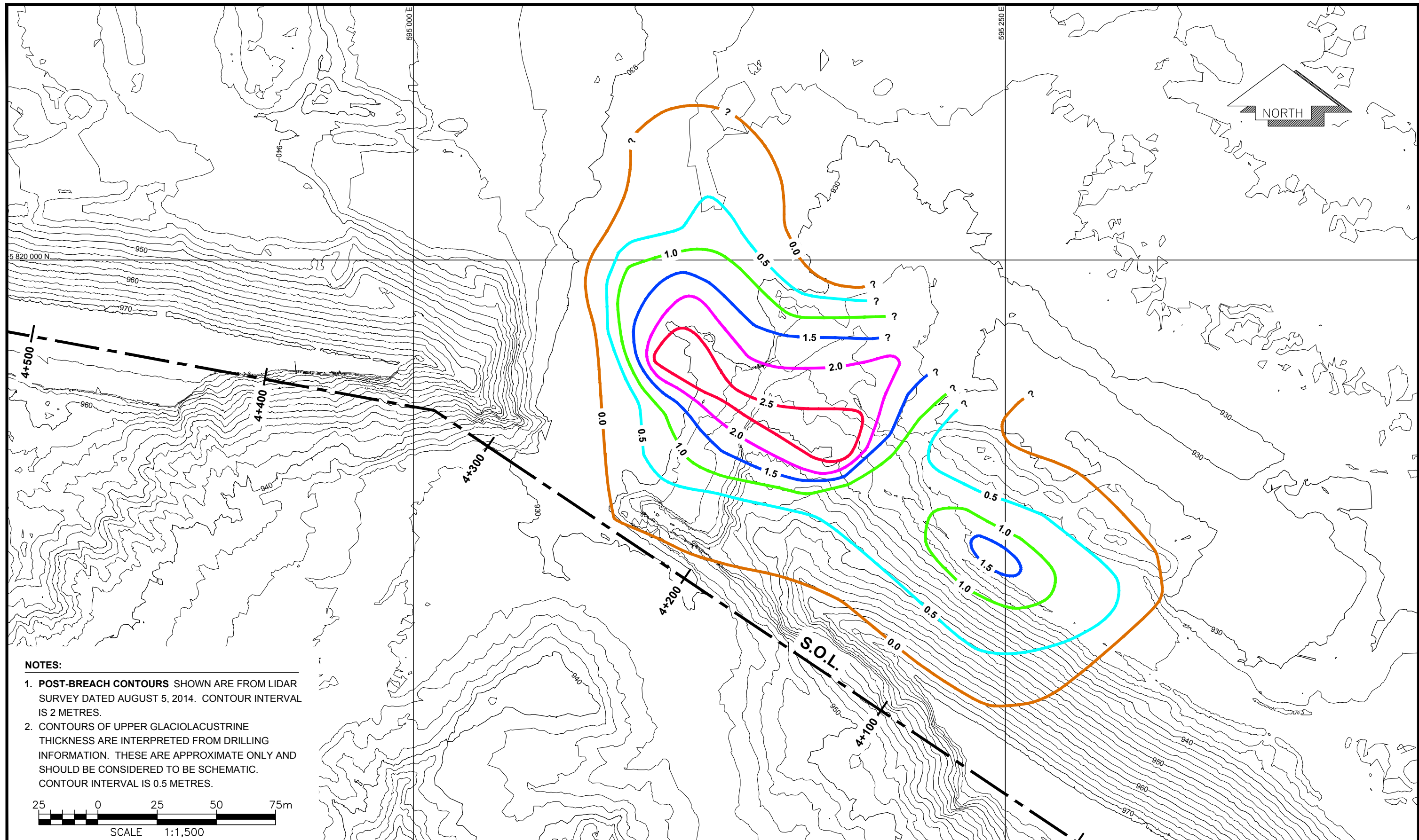
**LEGEND:**

**UPPER GLU THICKNESS CONTOURS  
WITH POST-BREACH ORTHO PHOTO**

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|                           |                        |
|---------------------------|------------------------|
| DESIGNED<br>CHS           | DRAWN<br>DRB           |
| APPROVED<br>D. VAN ZYL    |                        |
| DATE<br>DECEMBER 22, 2014 | DWG. No.<br><b>D16</b> |





**NOTES:**

1. **POST-BREACH CONTOURS** SHOWN ARE FROM LIDAR SURVEY DATED AUGUST 5, 2014. CONTOUR INTERVAL IS 2 METRES.
2. CONTOURS OF UPPER GLACIOLACUSTRINE THICKNESS ARE INTERPRETED FROM DRILLING INFORMATION. THESE ARE APPROXIMATE ONLY AND SHOULD BE CONSIDERED TO BE SCHEMATIC. CONTOUR INTERVAL IS 0.5 METRES.



**LEGEND:**

**UPPER GLU THICKNESS CONTOURS  
WITH POST BREACH TOPOGRAPHY**

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|                           |                        |
|---------------------------|------------------------|
| DESIGNED<br>CHS           | DRAWN<br>DRB           |
| APPROVED<br>D. VAN ZYL    |                        |
| DATE<br>DECEMBER 22, 2014 | DWG. No.<br><b>D17</b> |



| Major Stratigraphic Unit              | Stratigraphic Sub-Unit                | Consistency                     | Undrained Shear Strength<br>from In Situ Vanes                     | CPT qt<br>(Bars) | SPT N  | LPT N   | Color              | Moisture<br>Content | Plasitic<br>Limit | Liquid<br>Limit | Plasticity<br>Index | Liquidity<br>Index | Gradation                                      | Classification    |
|---------------------------------------|---------------------------------------|---------------------------------|--------------------------------------------------------------------|------------------|--------|---------|--------------------|---------------------|-------------------|-----------------|---------------------|--------------------|------------------------------------------------|-------------------|
| Upper Till                            |                                       | Firm to Hard                    | Inconclusive due to gravel                                         | 10 - 120         | 5 - 20 | 8 - 25  | Grey-Brown to Grey | 5 - 30              | 10 - 20           | 20 - 40         | 5 - 20              | 0 - 0.2            | Gravel 5 - 30%, Sand 25 - 40%, Fines 35 - 65%  | SC/GC to CL to GM |
| Upper Glaciolacustrine<br>(Upper GLU) |                                       | Firm to Stiff                   | Peak 90 - 140 kPa<br>Residual 40 to 65 kPa<br>Remolded 20 - 35 kPa | 10 - 35          | -      | 5 - 9   | Grey               | 15 - 40             | 10 - 25           | 20 - 70         | 10 - 50             | 0.4 - 0.7          | Gravel 0 to 5%, Sand 0 - 20%, Fines 80 - 100%  | CL to CH          |
| Lower Tills                           | Lower Basal Till                      | Very Stiff to Hard / Very Dense | Inconclusive due to gravel                                         | 20 - 215         | -      | -       | Grey               | 5 - 20              | 10 - 20           | 20 - 40         | 5 - 20              | 0 - 0.1            | Gravel 10 - 40%, Sand 30 - 50%, Fines 30 - 60% | SC to GC          |
|                                       | Lower Glaciolacustrine<br>(Lower GLU) | Very Stiff to Hard              | -                                                                  | 35 - 200         | -      | 40 - 60 | Grey to Brown      | 10 - 30             | 15 - 25           | 30 - 50         | 10 - 30             | 0.1 - 0.4          | Gravel 0 - 5%, Sand 0 - 15%, Fines 85 - 100%   | CL to CL/ML       |
|                                       | Glaciofluvial                         | Compact to Very Dense           | -                                                                  | 80 - 270         | -      | -       | Grey to Brown      | 10 - 25             | -                 | -               | -                   | -                  | Gravel 0 - 60%, Sand 20 - 95%, Fines 5 - 80%   | GP/SP to SM to ML |
|                                       | Lower Basal Till                      | Very Stiff to Hard / Very Dense | -                                                                  | 100 - 300        | -      | -       | Highly variable    | 5 - 30              | -                 | -               | -                   | -                  | Gravel 10 - 40%, Sand 30 - 50%, Fines 30 - 60% | SC to GC          |
| Weak Bedrock                          |                                       | Hard Soil / Weak Rock           | -                                                                  | 100 - 300        | -      | -       | Highly variable    | 5 - 55              | -                 | -               | -                   | -                  | Gravel 0 - 90%, Sand 0 - 90%, Fines 10 - 100%  | GM to ML to CH    |

Ranges given are general and may not be exclusive. Refer to laboratory results and test hole logs for complete information.

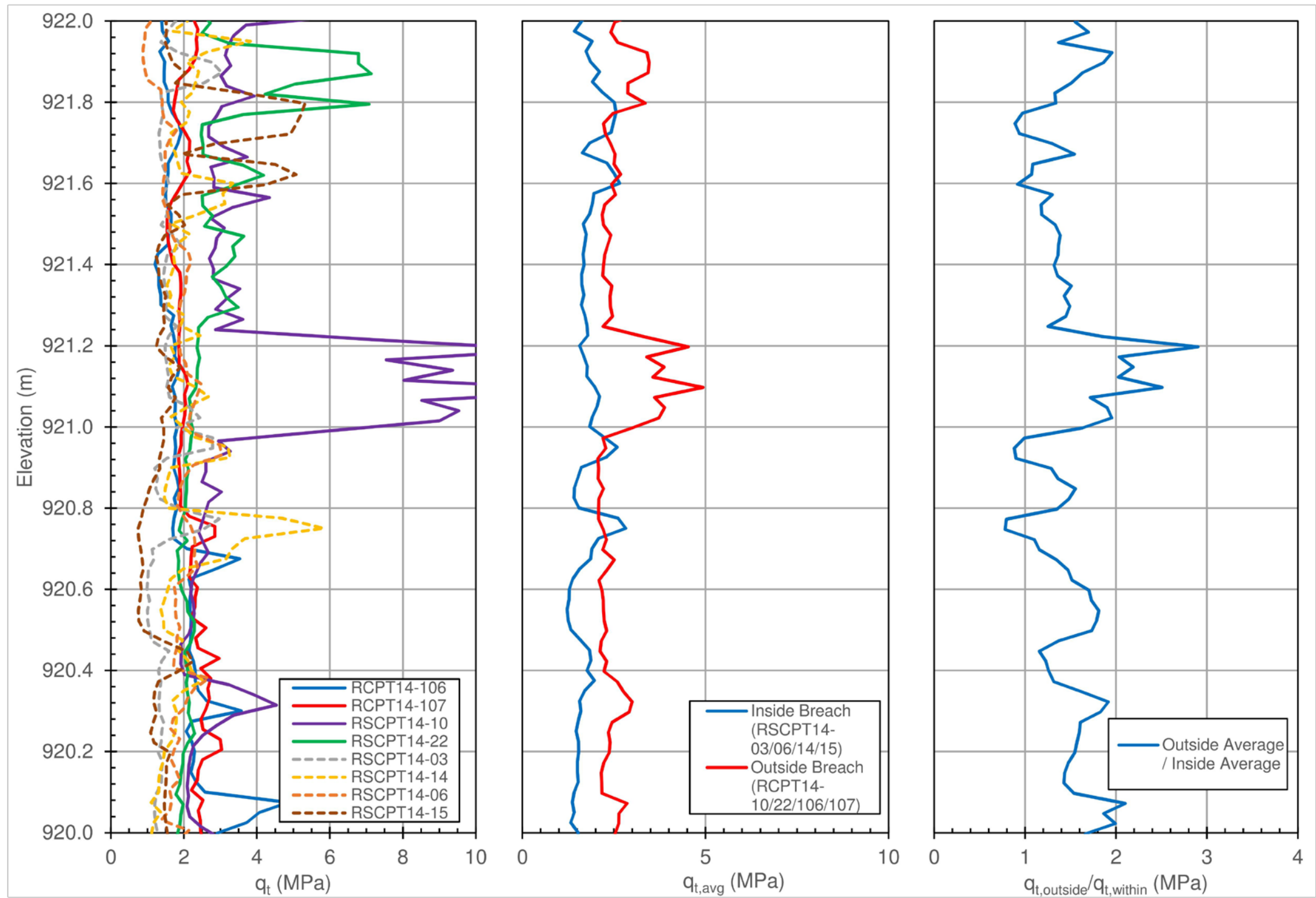
Consistency descriptions from CPT and Vane Shear test data, not from visual observations of disturbed core.

Text in red is estimated from field descriptions of sonic core without laboratory results.

GEOTECHNICAL PROPERTIES SUMMARY TABLE

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|          |                   |          |     |
|----------|-------------------|----------|-----|
| DESIGNED | CHS               | DRAWN    | NAK |
| APPROVED | D. VAN ZYL        |          |     |
| DATE     | JANURARY 16, 2015 | DWG. No. | D18 |



REVIEW OF FIELD SENSITIVITY USING CPT TIP RESISTANCE

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

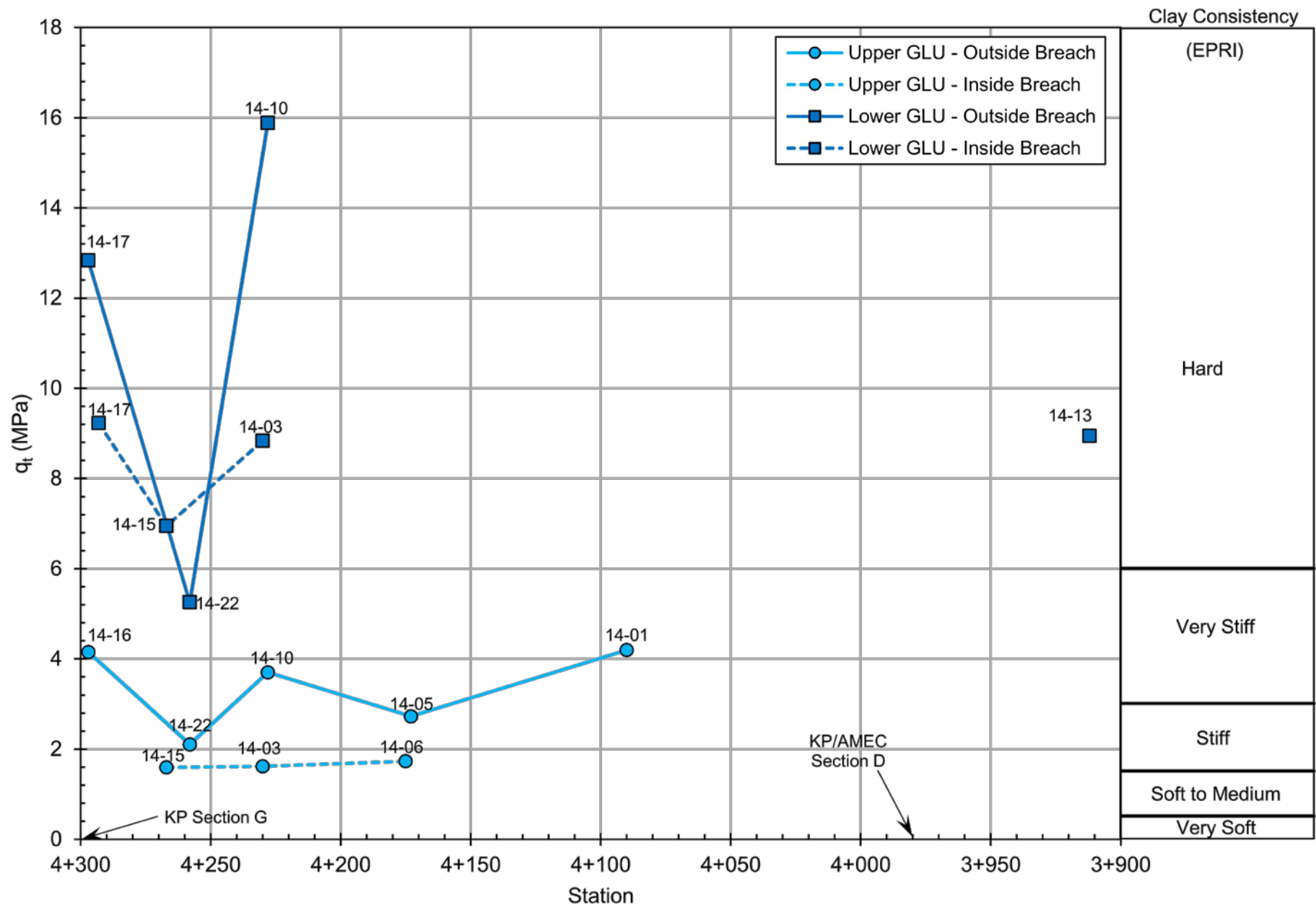
|          |                   |          |     |
|----------|-------------------|----------|-----|
| DESIGNED | DNR               | DRAWN    | NAK |
| APPROVED | D. VAN ZYL        |          |     |
| DATE     | DECEMBER 22, 2014 | DWG. No. | D19 |





|                              |                     |
|------------------------------|---------------------|
| DESIGNED<br><br>PJW          | DRAWN<br><br>NAK    |
| APPROVED<br><br>D. VAN ZYL   |                     |
| DATE<br><br>JANUARY 14, 2015 | DWG. No.<br><br>D20 |

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

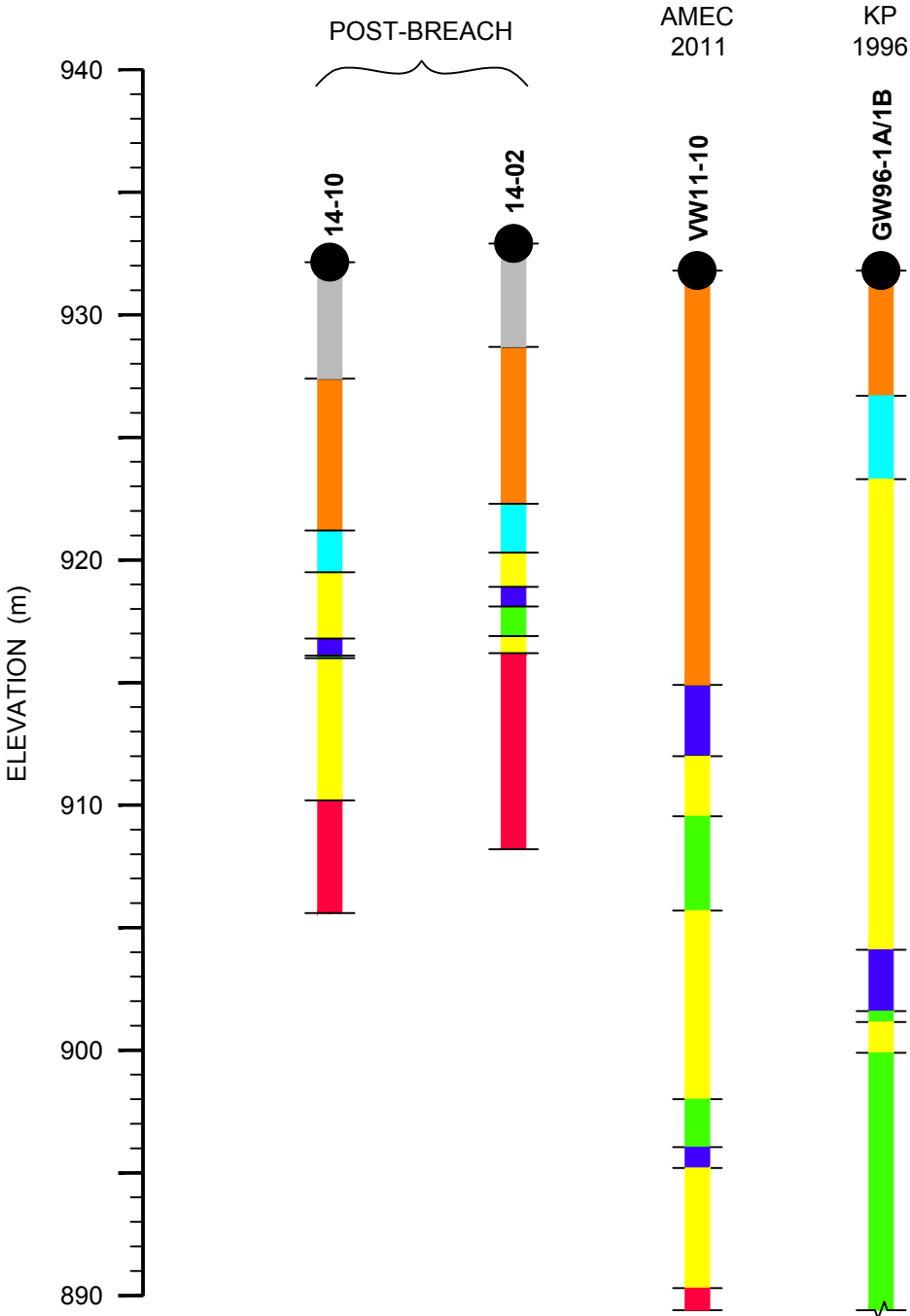
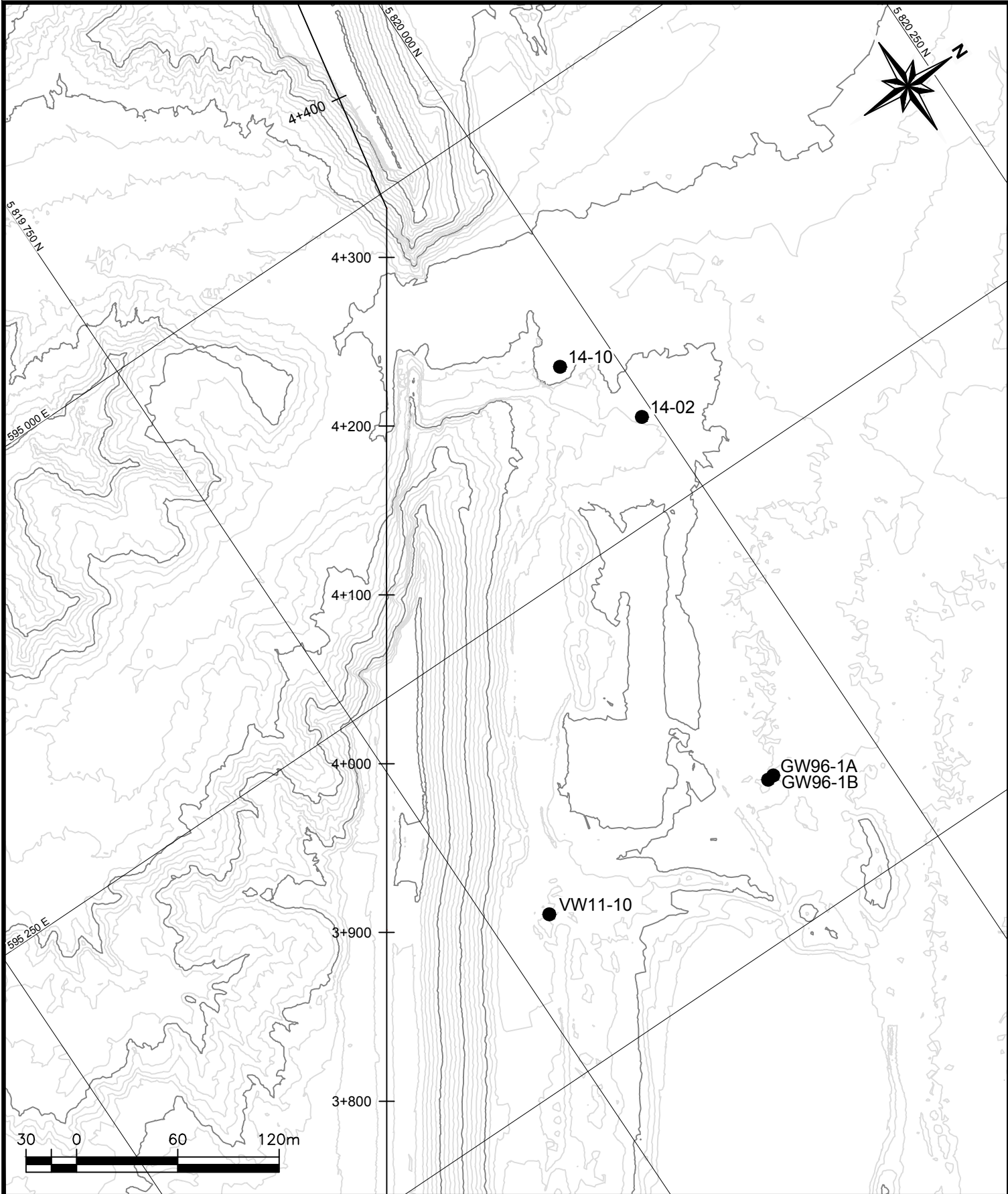


LONGITUDINAL VARIATION IN CPT TIP RESISTANCE

MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL

|          |                   |       |              |
|----------|-------------------|-------|--------------|
| DESIGNED | DNR               | DRAWN | NAK          |
| APPROVED | D. VAN ZYL        |       |              |
| DATE     | JANURARY 22, 2015 |       | DWG. No. D21 |





|                                 |             |  |                                                                            |                            |                   |                         |            |          |
|---------------------------------|-------------|--|----------------------------------------------------------------------------|----------------------------|-------------------|-------------------------|------------|----------|
| MAJOR<br>STRATIGRAPHIC<br>UNITS | UPPER TILL  |  |                                                                            | STRATIGRAPHIC<br>SUB-UNITS |                   | UPPER GLU AND LOWER GLU | DESIGNED   | DRAWN    |
|                                 | UPPER GLU   |  |                                                                            |                            |                   |                         | DNR        | NAK      |
|                                 | LOWER TILLS |  |                                                                            |                            |                   |                         | APPROVED   |          |
|                                 |             |  |                                                                            |                            |                   |                         | D. VAN ZYL |          |
|                                 |             |  |                                                                            |                            |                   |                         | DATE       | DWG. No. |
| WEAK BEDROCK                    |             |  | MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL |                            | JANURARY 07, 2015 | D22                     |            |          |

| KNIGHT PIESOLD LTD.<br>CONSULTING ENGINEERS                                           |                 | TEST HOLE LOG                      |                                | TEST HOLE No. GW96-1A/B<br>SHEET 2 of 4   |                                                                                                                                                     |
|---------------------------------------------------------------------------------------|-----------------|------------------------------------|--------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| PROJECT <u>Mt. Polley - Hydrological Investigation</u>                                |                 |                                    | PROJECT NO. <u>1627.300</u>    |                                           |                                                                                                                                                     |
| LOCATION OF TEST HOLE _____                                                           |                 |                                    | GROUND EL. _____               |                                           |                                                                                                                                                     |
| DATE BEGUN <u>Nov. 29/96</u>                                                          |                 |                                    | DATE FINISHED <u>DEC. 6/96</u> |                                           |                                                                                                                                                     |
|                                                                                       |                 |                                    | LOGGED BY <u>RJP</u>           |                                           |                                                                                                                                                     |
| NOTES                                                                                 | CORE RECOVERY % | SPT BLOWS/FOOT                     | DEPTH (m)                      | GRAPHIC LOG                               | DESCRIPTION AND CLASSIFICATION OF MATERIAL                                                                                                          |
| Water loss, type and size of hole, drilling method, groundwater level, etc.           |                 |                                    |                                |                                           |                                                                                                                                                     |
| DRILLWELL -<br>AIR ROTARY<br>w/o WATER<br>- 5 7/8" φ tricone bit<br>- 6" steel casing |                 |                                    |                                |                                           |                                                                                                                                                     |
| NOTE: *<br>GW's A+B installed in separate drill holes.                                |                 |                                    |                                |                                           |                                                                                                                                                     |
|                                                                                       |                 | SPT                                |                                |                                           |                                                                                                                                                     |
|                                                                                       | 15"/24"         | 22<br>40 (n=39)<br>= 63%           |                                |                                           |                                                                                                                                                     |
|                                                                                       |                 |                                    | 10.7                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | - becoming very dense, moist and grey-brown → BASAL Till-like, slightly coarser                                                                     |
|                                                                                       |                 |                                    | 12.1                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | SAND (TILL) - silty (25% to 30%), gravelly (30% to 35%), trace clay, very dense, well graded, massive, low permeability, moist, grey to grey-brown. |
|                                                                                       |                 |                                    | 12.55                          | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | - last 1" of sample silt w some fn sand (thin layer of glacial istrine?)                                                                            |
|                                                                                       |                 |                                    | 12.8                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | - cont'd gravelly silty sand till                                                                                                                   |
|                                                                                       |                 |                                    | 13.7                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | - becoming fine grained to SILT (TILL) w some sand (20%) and some fine gravel "Fine Till", very stiff, low permeability, moist, grey-green.         |
|                                                                                       |                 |                                    | 15.2                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | SAND (TILL) - gravelly and silty, trace clay, very dense, well graded, massive, low perm, moist brown to orange-brown at times                      |
|                                                                                       |                 |                                    | 17.3                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | - becoming gravelly and only some silt.                                                                                                             |
|                                                                                       |                 |                                    | 18.0                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | SILT and SAND (TILL) - gravelly, trace clay, very stiff to hard, well graded, massive, low permeability, moist, brown to red-brown.                 |
|                                                                                       | 6"/10"          | 21<br>50 (4")<br>= 60%<br>n = 7100 | 18.25                          | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + |                                                                                                                                                     |
|                                                                                       |                 |                                    | 21.3                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + | SAND (TILL) - gravelly, some silt, trace clay and cobbles, very dense, well graded, massive, low permeability, damp to moist, brown.                |
|                                                                                       |                 |                                    | 27.7                           | + . +<br>. + .<br>+ . +<br>+ . +<br>+ . + |                                                                                                                                                     |



El. 923.3 m

El. 904.1 m

|                                                               |              |                                                                                                                                                                                                           |                            |                                                                                 |                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MAJOR<br>STRATIGRAPHIC<br>UNITS                               | UPPER TILL   |                                                                                                                                                                                                           | STRATIGRAPHIC<br>SUB-UNITS | NOTE:<br><br>1. PANEL INTERPRETATION OF STRATIGRAPHIC UNIT SHOWN ON COLOUR BAR. | <div> <div>DESIGNED</div> <div>DNR</div> </div> <div> <div>DRAWN</div> <div>NAK</div> </div> <div> <div>APPROVED</div> <div>D. VAN ZYL</div> </div> <div> <div>DATE</div> <div>JANUARY 07, 2015</div> </div> <div> <div>DWG. No.</div> <div>D23</div> </div> |
|                                                               | UPPER GLU    |                                                                                                                                                                                                           |                            |                                                                                 |                                                                                                                                                                                                                                                              |
|                                                               | LOWER TILLS  | <div> <div></div> <div>LOWER BASAL TILL</div> </div> <div> <div></div> <div>LOWER GLU</div> </div> <div> <div></div> <div>GLACIOFLUVIAL</div> </div> <div> <div></div> <div>LOWER BASAL TILL</div> </div> |                            |                                                                                 |                                                                                                                                                                                                                                                              |
|                                                               | WEAK BEDROCK |                                                                                                                                                                                                           |                            |                                                                                 |                                                                                                                                                                                                                                                              |
| <div> <div>GW96-1A / 1B</div> <div>BORE HOLE LOG</div> </div> |              |                                                                                                                                                                                                           |                            |                                                                                 | <div>MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL</div>                                                                                                                                                                        |



# VW11-10 BORE HOLE LOG

|      |                                                                                                                                                                                                                         |                   |            |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|
| BAR. | <p style="text-align: center;"><b>VW11-10</b></p> <p style="text-align: center;"><b>BORE HOLE LOG</b></p> <p style="text-align: center;">MOUNT POLLEY INDEPENDENT EXPERT ENGINEERING INVESTIGATION AND REVIEW PANEL</p> | DESIGNED          | DRAWN      |
|      |                                                                                                                                                                                                                         | DNR               | NAK        |
|      |                                                                                                                                                                                                                         | APPROVED          |            |
|      |                                                                                                                                                                                                                         | D. VAN ZYL        |            |
|      |                                                                                                                                                                                                                         | DATE              | DWG. No.   |
|      |                                                                                                                                                                                                                         | JANURARY 08, 2015 | <b>D24</b> |