

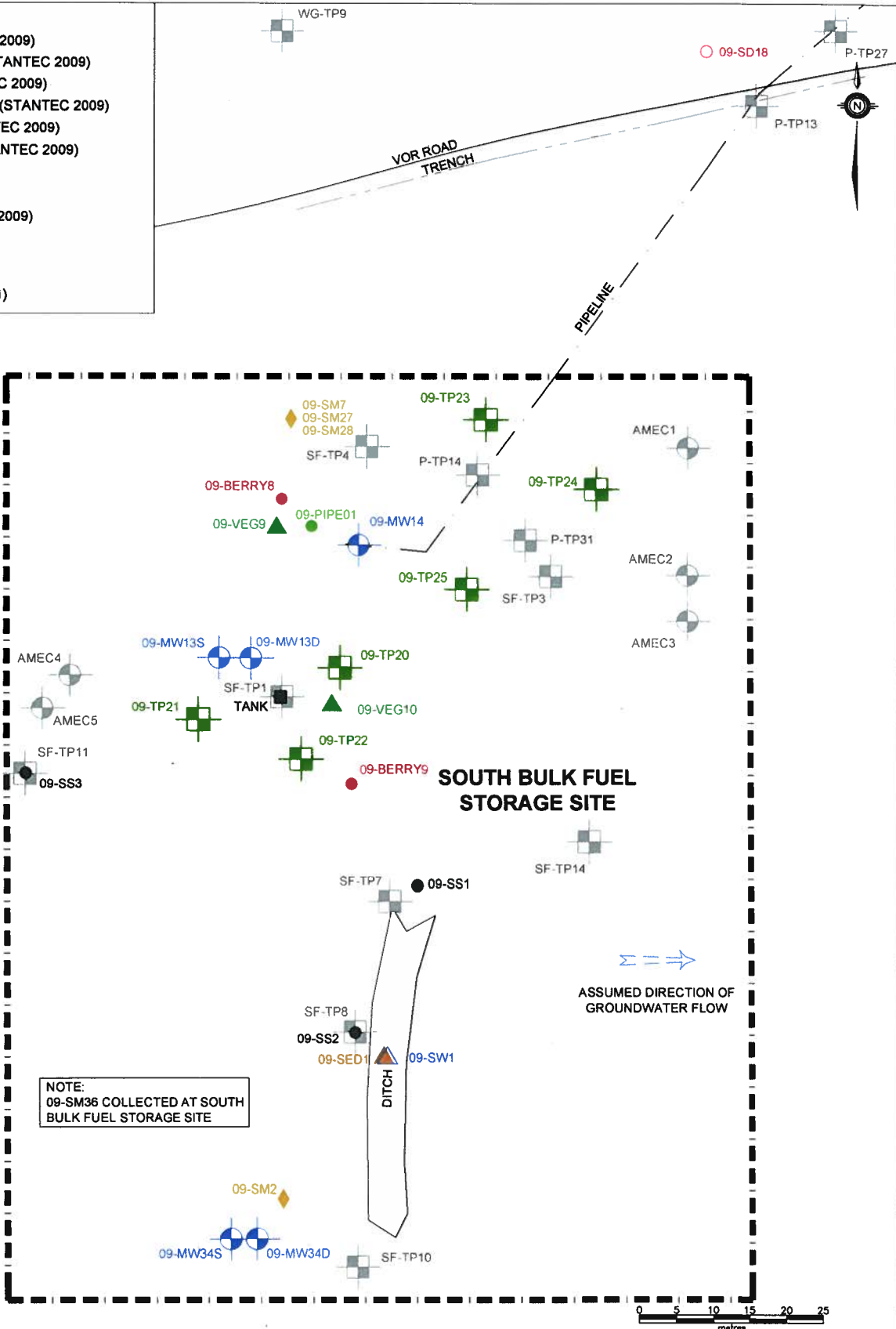
Appendix 3a

Site Drawings

– South Bulk Fuel Storage Site



LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (AMEC 2001)



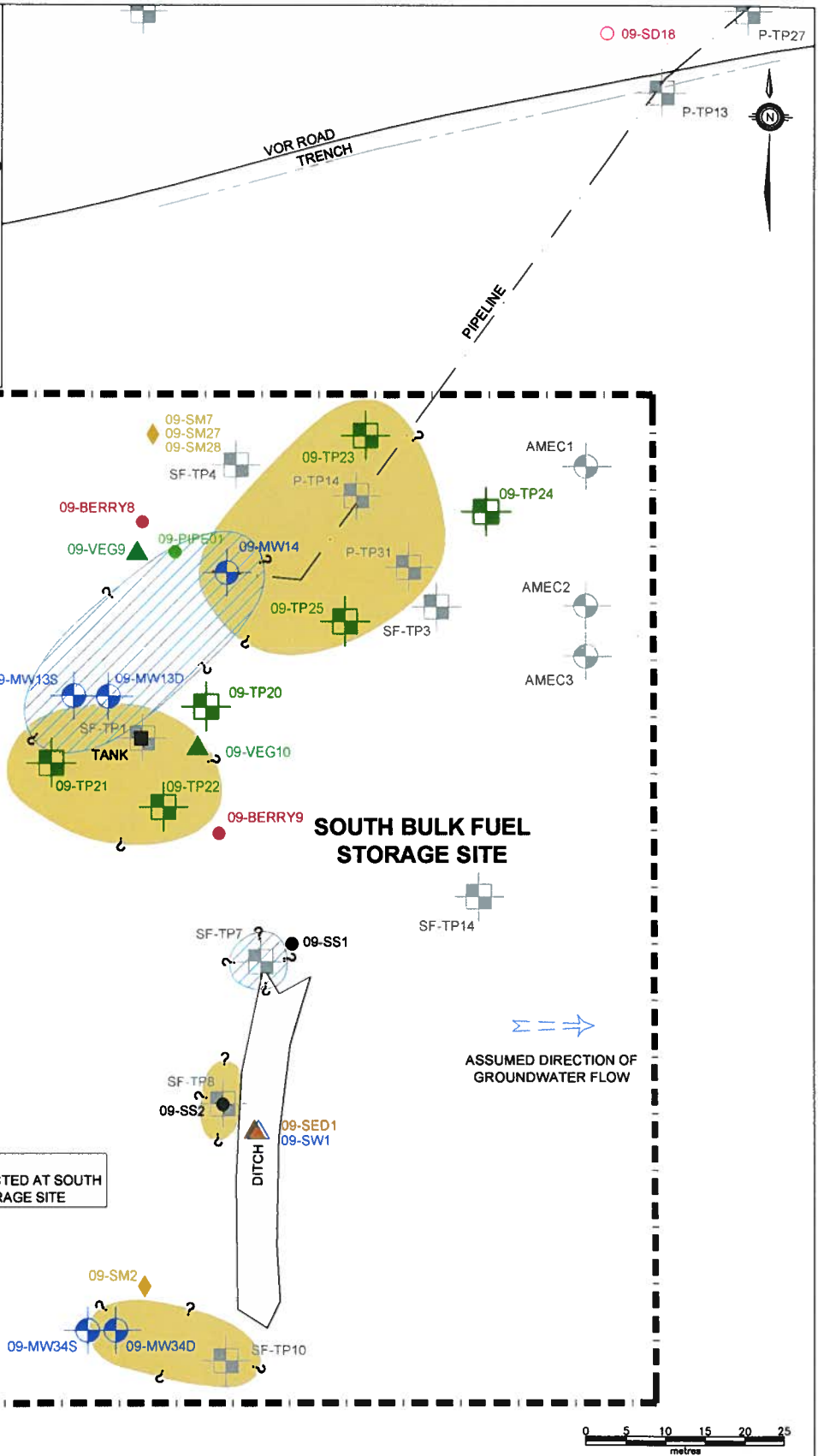
NOTE:
09-SM36 COLLECTED AT SOUTH
BULK FUEL STORAGE SITE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

| | | | |
|---|---------------------------------|--------------------------------|---|
| CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION | SCALE: 1:800 | DATE: JUNE 17, 2010 |  |
| | DRAWN BY: N.M. | CHECKED BY: A.R. | |
| PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL | EDITED BY: - | REV. No. 0 |  |
| DRAWING TITLE: SITE PLAN - SOUTH BULK FUEL STORAGE SITE | DRAWING No: 121410105-EE-03A | CAD FILE: 1044857-EE-07.DWG | |

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

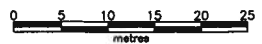
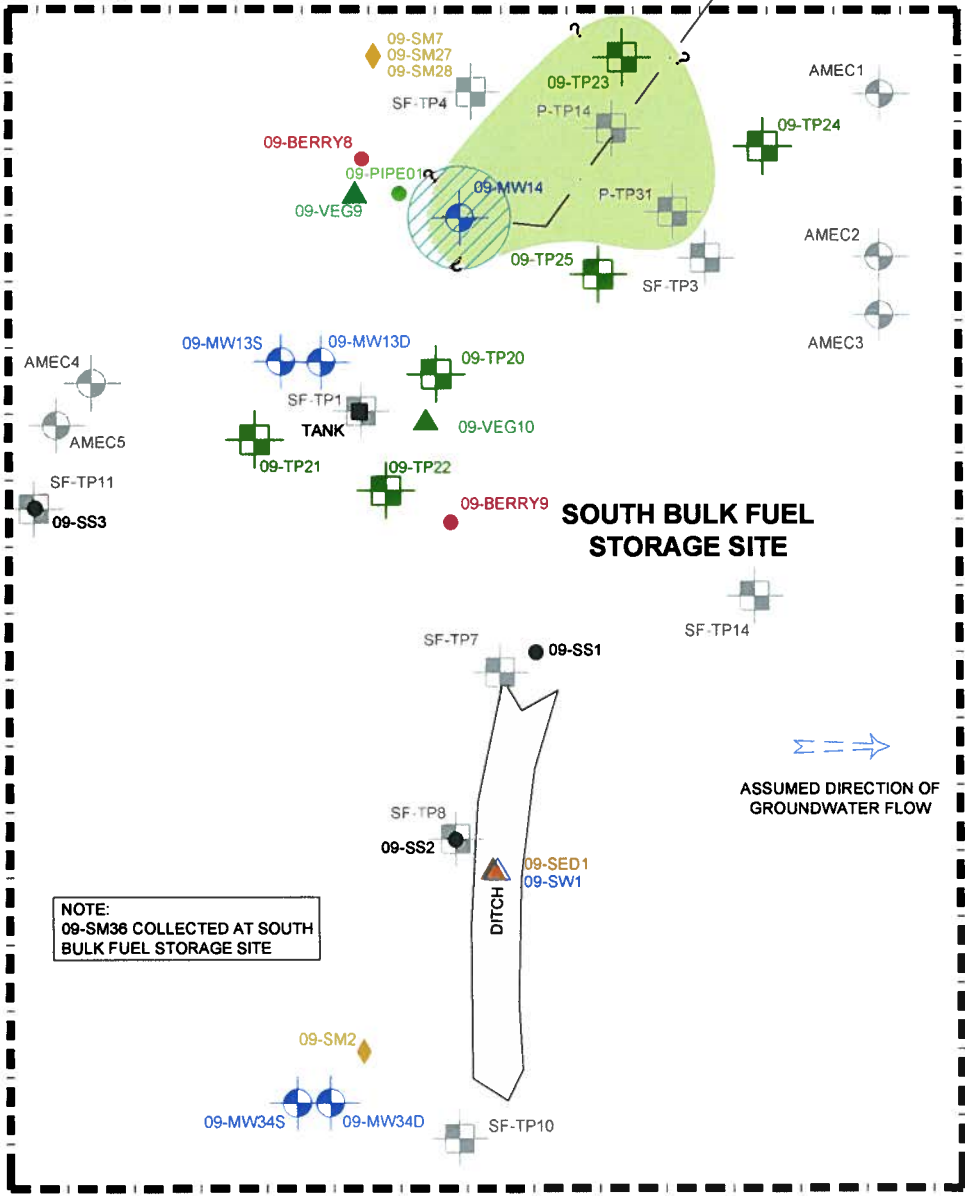
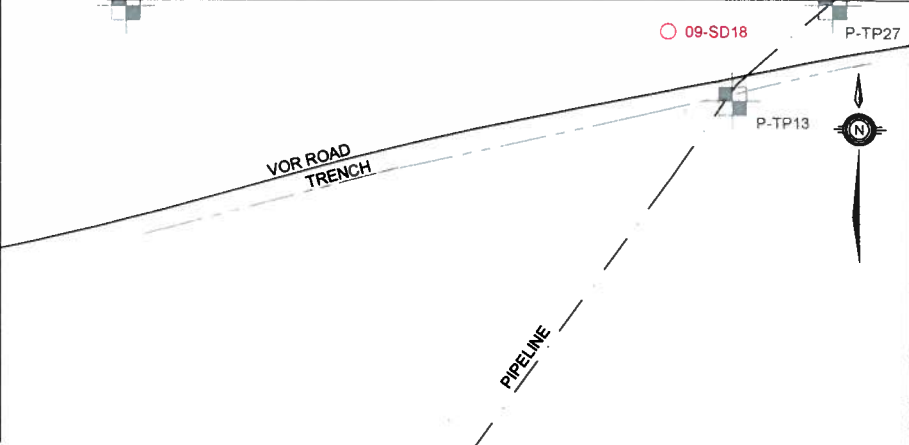
| | |
|----------------|--|
| CLIENT: | NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION |
| PROJECT TITLE: | PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL |
| DRAWING TITLE: | APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - SOUTH BULK FUEL STORAGE SITE |

| | | | |
|--------------|-------------------|-------------|---------------|
| SCALE: | 1:800 | DATE: | JUNE 17, 2010 |
| DRAWN BY: | N.M. | CHECKED BY: | A.R. |
| EDITED BY: | - | REV. No. | 0 |
| DRAWING No.: | 121410105-EE-03B | | |
| CAD FILE: | 1044857-EE-10.DWG | | |


Stantec

LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF BENZENE AND XYLENE IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF ETHYLBENZENE AND XYLENE IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

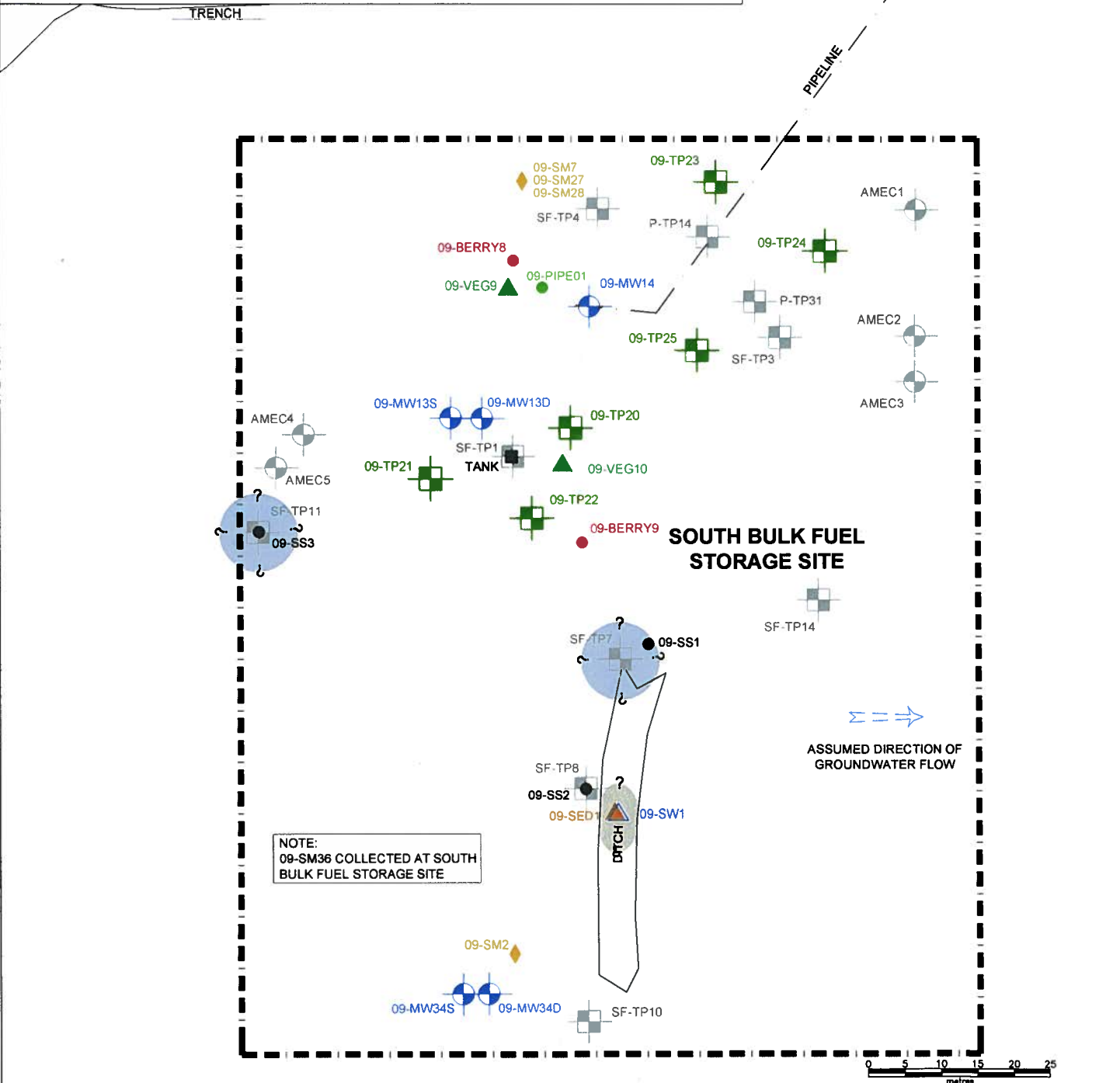


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

| | | | |
|---|-------------------------------|-----------------------------|---|
| CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION | SCALE: 1:800 | DATE: JUNE 17, 2010 |  |
| | DRAWN BY: N.M. | CHECKED BY: A.R. | |
| PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL | EDITED BY: - | REV. No. 0 | Stantec |
| | DRAWING No.: 121410105-EE-03C | CAD FILE: 1044857-EE-15.DWG | |
| DRAWING TITLE: APPROXIMATE EXTENT OF BTEX IMPACTS EXCEEDING GENERIC GUIDELINES - SOUTH BULK FUEL STORAGE SITE | | | |

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (AMEC 2001)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



NOTE:
09-SM36 COLLECTED AT SOUTH BULK FUEL STORAGE SITE

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

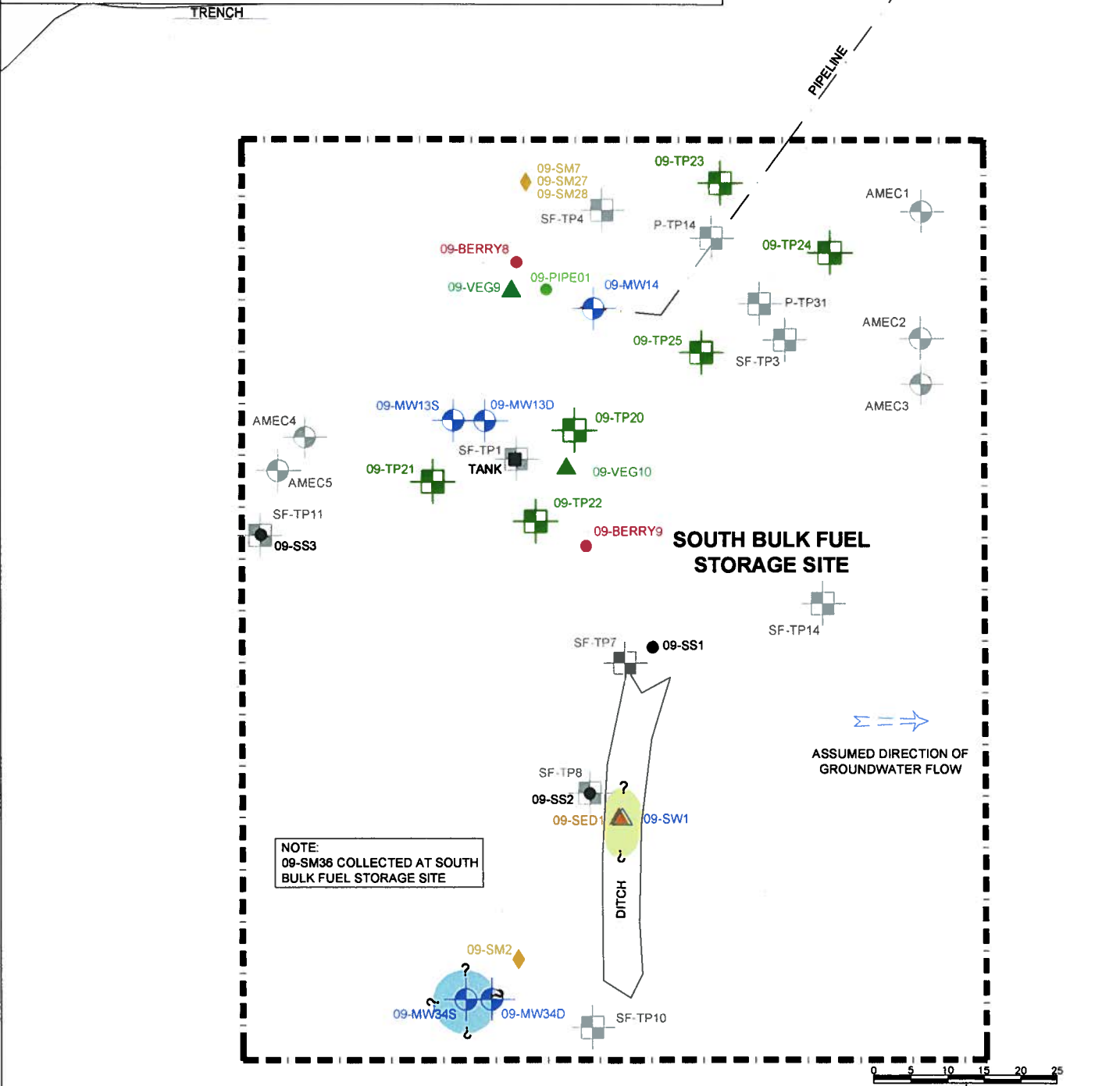
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| <p>CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</p> <p>PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</p> <p>DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - SOUTH BULK FUEL STORAGE SITE</p> | <p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p> <p>DRAWING No: 121410105-EE-3D</p> <p>CAD FILE: 1044857-EE-11.DWG</p> | <p>DATE: JUNE 21, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p> |
|--|---|--|





Stantec

LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (AMEC 2001)
- APPROXIMATE EXTENT OF GENERAL CHEMISTRY IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF GENERAL CHEMISTRY IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES

| | | | |
|---|--------------------------------|--------------------------------|---|
| CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION | SCALE: 1:800 | DATE: JUNE 21, 2010 |  |
| | DRAWN BY: N.M. | CHECKED BY: A.R. | |
| PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL | EDITED BY: - | REV. No. 0 |  |
| DRAWING TITLE: APPROXIMATE EXTENT OF GENERAL CHEMISTRY IMPACTS EXCEEDING GENERIC GUIDELINES - SOUTH BULK FUEL STORAGE SITE | DRAWING No: 121410105-EE-3E | CAD FILE: 1044857-EE-13.DWG | |

Appendix 3b

Sample Coordinates

– South Bulk Fuel Storage Site

Sample Coordinates - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

| Sample ID | Coordinates (NAD27) | |
|----------------------|---------------------|----------|
| | Easting | Northing |
| TEST PITS | | |
| 09-TP20 | 694270 | 5931000 |
| 09-TP21 | 694251 | 5930993 |
| 09-TP22 | 694265 | 5930988 |
| 09-TP23 | 694289 | 5931034 |
| 09-TP24 | 694297 | 5931022 |
| 09-TP25 | 694285 | 5931014 |
| MONITOR WELLS | | |
| 09-MW13S | 694254 | 5931001 |
| 09-MW13D | 694254 | 5931001 |
| 09-MW14 | 694273 | 5931017 |
| 09-MW34S | 694257 | 5930923 |
| 09-MW34D | 694257 | 5930923 |
| SURFACE SOIL | | |
| 09-SS1 | 694270 | 5930979 |
| 09-SS2 | 694262 | 5930971 |
| 09-SS3 | 694237 | 5930989 |
| SURFACE WATER | | |
| 09-SW1 | 694265 | 5930947 |
| SEDIMENT | | |
| 09-SED1 | 694265 | 5930947 |
| VEGETATION | | |
| 09-VEG9 | 694261 | 5931019 |
| 09-VEG10 | 694269 | 5930995 |
| BERRIES | | |
| 09-BERRY8 | 694262 | 5931023 |
| 09-BERRY9 | 694272 | 5930985 |
| SMALL MAMMALS | | |
| 09-SM2 | 694264 | 5930929 |
| 09-SM7 | 694263 | 5931034 |
| 09-SM27 | 694263 | 5931034 |
| 09-SM28 | 694263 | 5931034 |
| RABBITS | | |
| 09-SM36 | Not recorded | |
| MISCELLANEOUS | | |
| 09-PIPE01 | 694266 | 5931019 |

Appendix 3c



Test Pit Records and Monitor Well Records
– South Bulk Fuel Storage Site



TEST PIT RECORD

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): DUG 8-6-09 WATER LEVEL 0.5m 8-6-09

TEST PIT No. 09-TP20
 PROJECT No. 121410105
 DATUM _____

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | PID READINGS (ppm) | CHEMICAL ANALYSIS (ppm) | | | | |
|-----------|---------------|--|---|-------------|---------|--------|-------------------|-------------|--------------------|-------------------------|---------|---------|--------------|---------|
| | | | | | TYPE | NUMBER | HYDROCARBON ODOUR | OTHER TESTS | | TPH | BENZENE | TOLUENE | ETHYLBENZENE | XYLENES |
| 0 | | Loose, brown, SAND (SP); trace silt and clay |  | | BS | 1 | 1 | | 55.4 | - | - | - | - | - |
| | | Dense, grey, SILT (ML); some clay, trace sand |  | | BS | 2 | 1-2 | | 94.6 | - | - | - | - | - |
| 1 | | End of Test Pit | | | | | | | | | | | | |
| | | Rapid groundwater seepage observed at 0.5 m depth; sheen on groundwater. | | | | | | | | | | | | |
| | | Bedrock not encountered. | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



TEST PIT RECORD

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): DUG 8-6-09 WATER LEVEL 0.6m 8-6-09

TEST PIT No. 09-TP21
 PROJECT No. 121410105
 DATUM _____



| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | PID READINGS (ppm) | CHEMICAL ANALYSIS (ppm) | | | | |
|-----------|---------------|---|-------------|-------------|---------|--------|-------------------|-------------|--------------------|-------------------------|---------|---------|--------------|---------|
| | | | | | TYPE | NUMBER | HYDROCARBON ODOUR | OTHER TESTS | | TPH | BENZENE | TOLUENE | ETHYLBENZENE | XYLENES |
| 0 | | Loose, brown, SAND (SP); trace silt | | 0.6 | BS | 1 | 1-2 | | 60.6 | - | - | - | - | - |
| | | | | | BS | 2 | 2 | | 115 | 6900 | nd | nd | nd | nd |
| 1 | | End of Test Pit | | | | | | | | | | | | |
| 2 | | Rapid groundwater seepage observed at 0.6 m depth; skim of fuel on groundwater. | | | | | | | | | | | | |
| 3 | | Bedrock not encountered. | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



TEST PIT RECORD

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): DUG 8-6-09 WATER LEVEL 0.8m 8-6-09

TEST PIT No. 09-TP22
 PROJECT No. 121410105
 DATUM _____

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | PID READINGS (ppm) | CHEMICAL ANALYSIS (ppm) | | | | |
|-----------|---------------|---|---|-------------|---------|--------|-------------------|-------------|--------------------|-------------------------|---------|---------|--------------|---------|
| | | | | | TYPE | NUMBER | HYDROCARBON ODOUR | OTHER TESTS | | TPH | BENZENE | TOLUENE | ETHYLBENZENE | XYLENES |
| 0 | | Loose, brown, SAND (SP); trace silt and clay |  | | BS | 1 | 2 | | 123 | - | - | - | - | - |
| 1 | | Dense, grey, SILT (ML); trace to some clay |  | | BS | 2 | 1-2 | | 185 | 31000 | 0.04 | 0.20 | 0.22 | 0.51 |
| 2 | | End of Test Pit Rapid groundwater seepage observed at 0.8 m depth. Bedrock not encountered. | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



TEST PIT RECORD

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): DUG 8-6-09 WATER LEVEL N/A

TEST PIT No. 09-TP23
 PROJECT No. 121410105
 DATUM _____

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | PID READINGS (ppm) | CHEMICAL ANALYSIS (ppm) | | | | |
|-----------|---------------|--|-------------|-------------|---------|--------|-------------------|-------------|--------------------|-------------------------|---------|---------|--------------|---------|
| | | | | | TYPE | NUMBER | HYDROCARBON ODOUR | OTHER TESTS | | TPH | BENZENE | TOLUENE | ETHYLBENZENE | XYLENES |
| 0 | | Compact, brown to grey SAND with silt (SM) | | | | | | | | | | | | |
| | | | | BS | 1 | 0 | | 0 | - | - | - | - | - | - |
| 1 | | | | BS | 2 | 1 | | 413 | 14000 | nd | nd | 5.00 | 28.00 | |
| 2 | | End of Test Pit | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



TEST PIT RECORD

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): DUG 8-6-09 WATER LEVEL 1.2m 8-6-09

TEST PIT No. 09-TP24
 PROJECT No. 121410105
 DATUM _____


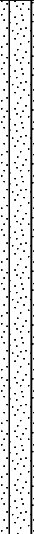
| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | PID READINGS (ppm) | CHEMICAL ANALYSIS (ppm) | | | | |
|-----------|---------------|---|-------------|-------------|---------|--------|-------------------|-------------|--------------------|-------------------------|---------|---------|--------------|---------|
| | | | | | TYPE | NUMBER | HYDROCARBON ODOUR | OTHER TESTS | | TPH | BENZENE | TOLUENE | ETHYLBENZENE | XYLENES |
| 0 | | Compact to dense, grey, SAND with silt (SP-SM); trace clay | | 1.2 | BS | 1 | 0 | | 0.3 | - | - | - | - | - |
| 1 | | | | | BS | 2 | 0 | | 3.0 | - | - | - | - | - |
| 2 | | | | | | | | | | | | | | |
| 3 | | End of Test Pit Very slow groundwater seepage observed at 1.2 m depth. Bedrock not encountered. | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



TEST PIT RECORD

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): DUG 8-6-09 WATER LEVEL 1.5m 8-6-09

TEST PIT No. 09-TP25
 PROJECT No. 121410105
 DATUM _____

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | PID READINGS (ppm) | CHEMICAL ANALYSIS (ppm) | | | | |
|-----------|---------------|---|--|-------------|---------|--------|-------------------|-------------|--------------------|-------------------------|---------|---------|--------------|---------|
| | | | | | TYPE | NUMBER | HYDROCARBON ODOUR | OTHER TESTS | | TPH | BENZENE | TOLUENE | ETHYLBENZENE | XYLENES |
| 0 | | Loose, brown, SAND (SP) |  | | BS | 1 | 0 | | 0.0 | - | - | - | - | - |
| 1 | | Dense, grey, SAND with silt (SP-SM) |  | ▽ | BS | 2 | 1 | | 226 | 5800 | nd | nd | 0.28 | 0.51 |
| 3 | | End of Test Pit Very slow groundwater seepage observed at 1.5 m depth. Bedrock not encountered. | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |



MONITOR WELL RECORD

BOREHOLE No. 09-MW13S

PAGE 1 of 1

PROJECT No. 121410105

DRILLING METHOD Auger

SIZE 100mm HS

DATUM _____

CLIENT NL Department of Environment and Conservation

PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility

LOCATION Northwest Point, NL

DATES (mm-dd-yy): BORING 8-6-09 WATER LEVEL 0.46m 8-6-09

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | HYDROCARBON ODOUR | APPARENT MOISTURE CONTENT | PID (ppm) | TPH (ppm) | WELL CONSTRUCTION DETAILS |
|-----------|---------------|--|-------------|-------------|---------|--------|----------|------------------|-------------------|---------------------------|-----------|-----------|---|
| | | | | | TYPE | NUMBER | RECOVERY | N-VALUE OR RQD % | | | | | |
| 0 | | | | | | | mm | | | | | | 0.61 m STICK UP CAST IRON WELL HEAD |
| | | Loose, brown, SAND (SP) | | | SS | 1 | 305 | 3 | 2 | | 102 | - | BENTONITE |
| 1 | | Compact, brown to grey, SAND with silt (SP-SM) | | | SS | 2 | 305 | 4 | 0-1 | S | 25.5 | - | 50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK |
| 2 | | | | | SS | 3 | 255 | 2 | 0-1 | S | 44.1 | - | |
| 3 | | Dense, grey, SILT with sand (ML) | | | SS | 4 | 255 | 5 | 0-1 | | 11.0 | - | |
| 3 | | End of Borehole | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |



MONITOR WELL RECORD

BOREHOLE No. 09-MW13D
 PAGE 1 of 1
 PROJECT No. 121410105
 DRILLING METHOD Auger
 SIZE 100mm HS
 DATUM _____

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): BORING 8-6-09 WATER LEVEL 0.91m 8-6-09

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | HYDROCARBON ODOUR | APPARENT MOISTURE CONTENT | PID (ppm) | TPH (ppm) | WELL CONSTRUCTION DETAILS | |
|-----------|---------------|--|-------------|-------------|---------|--------|----------|------------------|-------------------|---------------------------|-----------|-----------|--|-----------|
| | | | | | TYPE | NUMBER | RECOVERY | N-VALUE OR RQD % | | | | | | |
| 0 | | | | | | | mm | | | | | | 0.61 m STICK UP CAST IRON WELL HEAD | |
| 0 | | Loose, brown, SAND (SP) | | | SS | 1 | 305 | 10 | 1 | | 60.5 | - | | |
| 1 | | Loose to compact, brown, SAND (SP); trace silt | | | SS | 2 | 355 | 6 | 1 | | 47.2 | - | | |
| 2 | | Compact, grey, SILT with sand (ML) | | | SS | 3 | 305 | 26 | 1 | | 14.7 | - | | |
| 3 | | Dense, grey, SILT with sand (ML); trace clay | | | SS | 4 | 355 | 22 | 0-1 | | 41.3 | - | | BENTONITE |
| 3 | | | | | SS | 5 | 305 | 40 | 0-1 | | 43.9 | - | | |
| 4 | | | | | SS | 6 | 305 | 39 | 0-1 | | 9.4 | - | | |
| 5 | | | | | SS | 7 | 305 | 47 | 0-1 | | 11.0 | - | | |
| 6 | | | | | SS | 8 | 305 | 41 | 0-1 | | 12.5 | - | | |
| 7 | | | | | SS | 9 | 355 | 57 | 0-1 | | 13.4 | - | | |
| 7 | | | | | SS | 10 | 510 | 37 | 0-1 | | 22.1 | - | | |
| 8 | | End of Borehole | | | | | | | | | | | 50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK END CAP | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |



MONITOR WELL RECORD

BOREHOLE No. 09-MW14
 PAGE 1 of 1
 PROJECT No. 121410105
 DRILLING METHOD Auger
 SIZE 100mm HS
 DATUM _____

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): BORING 8-6-09 WATER LEVEL 1.52m 8-6-09

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | HYDROCARBON ODOUR | APPARENT MOISTURE CONTENT | PID (ppm) | TPH (ppm) | WELL CONSTRUCTION DETAILS |
|-----------|---------------|--|-------------|-------------|---------|--------|----------|------------------|-------------------|---------------------------|---|-----------|--|
| | | | | | TYPE | NUMBER | RECOVERY | N-VALUE OR RQD % | | | | | |
| 0 | | Compact, brown to grey, SAND with silt (SP-SM) | | ▼ | | | mm | | | | | | 0.61 m STICK UP CAST IRON WELL HEAD |
| | SS | | | | 1 | 355 | 4 | 1-2 | 43.0 | - | BENTONITE | | |
| 1 | SS | | | | 2 | 305 | 6 | 2-3 | 230 | - | 50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK | | |
| 2 | SS | | | | 3 | 355 | 11 | 3 | 155 | - | | | |
| | SS | | | | 4 | 355 | 11 | 3 | 281 | 26000 | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | End of Borehole | | | | | | | | | | END CAP | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |



MONITOR WELL RECORD

BOREHOLE No. 09-MW34S

PAGE 1 of 1

PROJECT No. 121410105

DRILLING METHOD Auger

SIZE 100mm HS

DATUM _____

CLIENT NL Department of Environment and Conservation

PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility

LOCATION Northwest Point, NL

DATES (mm-dd-yy): BORING 8-10-09 WATER LEVEL 0m 8-10-09

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | HYDROCARBON ODOUR | APPARENT MOISTURE CONTENT | PID (ppm) | TPH (ppm) | WELL CONSTRUCTION DETAILS |
|-----------|---------------|-----------------------|-------------|-------------|---------|--------|----------|------------------|-------------------|---------------------------|-----------|-----------|---|
| | | | | | TYPE | NUMBER | RECOVERY | N-VALUE OR RQD % | | | | | |
| 0 | | PEAT | | | | | mm | | | | | | 0.61 m STICK UP CAST IRON WELL HEAD |
| 1 | | Grey, SAND (SP) | | | SS | 1 | 355 | - | 0 | 0.0 | - | | BENTONITE |
| 2 | | Grey, CLAY (CL) | | | SS | 2 | 380 | 2 | 0 | 0.0 | - | | 50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK |
| 3 | | Grey, silty SAND (SM) | | | SS | 3 | 510 | 2 | 0 | 0.0 | - | | END CAP |
| 3 | | End of Borehole | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |



MONITOR WELL RECORD

BOREHOLE No. 09-MW34D
 PAGE 1 of 1
 PROJECT No. 121410105
 DRILLING METHOD Auger
 SIZE 100mm HS
 DATUM _____

CLIENT NL Department of Environment and Conservation
 PROJECT Phase III ESA, HHRA & ERA, Former US Military Facility
 LOCATION Northwest Point, NL
 DATES (mm-dd-yy): BORING 8-10-09 WATER LEVEL 0m 8-10-09

| DEPTH (m) | ELEVATION (m) | DESCRIPTION | STRATA PLOT | WATER LEVEL | SAMPLES | | | | HYDROCARBON ODOUR | APPARENT MOISTURE CONTENT | PID (ppm) | TPH (ppm) | WELL CONSTRUCTION DETAILS |
|-----------|---------------|-----------------------|-------------|-------------|---------|--------|----------|------------------|-------------------|---------------------------|-----------|--|--|
| | | | | | TYPE | NUMBER | RECOVERY | N-VALUE OR RQD % | | | | | |
| 0 | | PEAT | | ▼ | | | mm | | | | | 0.61 m STICK UP CAST IRON WELL HEAD | |
| 1 | | Grey, SAND (SP) | | | SS | 1 | 355 | - | 0 | 0.0 | 1600 | BACKFILL | |
| 2 | | Grey, CLAY (CL) | | | SS | 2 | 380 | 2 | 0 | 0.0 | - | | |
| 3 | | Grey, silty SAND (SM) | | | SS | 3 | 510 | 2 | 0 | 0.0 | - | | |
| 4 | | | | | SS | 4 | | | | 0.0 | | | |
| 5 | | | | | | | | | | | | BENTONITE | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | End of Borehole | | | | | | | | | | | 50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK END CAP |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |

Appendix 3d

Laboratory Analytical Results Summary Tables

– South Bulk Fuel Storage Site

Table 3.1 Results of Laboratory Analysis of TPH/BTEX in Soil - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

| Sample Location | Sample Depth (m) | Benzene | Toluene | Ethyl-benzene | Xylenes | TPH Purgeable (<C ₁₀) | TPH Extractable (C ₁₀ -C ₃₂) | C ₆ -C ₁₂ | C ₁₃ -C ₂₃ | C ₂₄ -C ₃₂ | C ₆ -C ₁₀ (Gas Range) | C ₁₀ -C ₂₁ (Fuel Range) | C ₂₁ -C ₃₂ (Lube Range) | Modified TPH - Tier I ² | Resemblance |
|--------------------------------|------------------|---------|---------|---------------|---------|-----------------------------------|---|---------------------------------|----------------------------------|----------------------------------|---|---|---|------------------------------------|-------------|
| Units | | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | - |
| Tier I RBLS ¹ | | 0.16 | 14 | 58 | 17 | - | - | - | - | - | - | - | - | 140 | - |
| 1999 Sampling (AGRA) | | | | | | | | | | | | | | | |
| SF-TP1 | 0.5 | <0.002 | <0.002 | <0.002 | <0.004 | 1,380 | 20,200 | - | - | - | - | - | - | 21,580 | D |
| SF-TP3 | 1.5 | <0.002 | <0.002 | <0.002 | <0.004 | <0.02 | <0.20 | - | - | - | - | - | - | <0.22 | - |
| SF-TP4 | 1.5 | <0.002 | <0.002 | <0.002 | <0.004 | <0.02 | <0.20 | - | - | - | - | - | - | <0.22 | - |
| SF-TP8 | 0.5 | <0.40 | <0.40 | <0.40 | <0.80 | 51.8 | 626 | - | - | - | - | - | - | 678 | D |
| SF-TP10 | 0.5 | <0.002 | <0.002 | <0.002 | <0.004 | <0.02 | 470 | - | - | - | - | - | - | 470 | DOH |
| SF-TP11 | 0.5 | <0.002 | <0.002 | <0.002 | <0.004 | <0.02 | <0.20 | - | - | - | - | - | - | <0.22 | - |
| SF-TP14 | 1.5 | <0.002 | <0.002 | <0.002 | <0.004 | <0.02 | <0.20 | - | - | - | - | - | - | <0.22 | - |
| P-TP14 | 2.5 | 4.1 | 8.6 | 5.6 | 49.3 | 555 | 2,140 | - | - | - | - | - | - | 2,695 | D |
| P-TP31 | 0.75 | 5.0 | 6.5 | 22.4 | 38.7 | 699 | 795 | - | - | - | - | - | - | 1,494 | D |
| MDL | - | 0.002 | 0.002 | 0.002 | 0.002 | 0.02 | 0.20 | - | - | - | - | - | - | 0.20 | - |
| 2001 Sampling (AMEC) | | | | | | | | | | | | | | | |
| SF-TP15 | 0.5 | <0.004 | <0.003 | <0.003 | <0.008 | - | - | 2.74 | 20.2 | 542 | - | - | - | 564.94 | DHO |
| SF-TP16 | 0.5 | <0.004 | <0.003 | <0.003 | <0.008 | - | - | 36.8 | 3560 | 0.93 | - | - | - | 3,597.73 | D |
| MDL | - | 0.004 | 0.003 | 0.003 | 0.008 | - | - | 0.02 | 0.2 | 0.2 | - | - | - | 0.44 | - |
| SF-MW1 | 1.0 | <0.002 | <0.002 | <0.002 | 0.043 | - | - | 11.4 | 9460 | 6 | - | - | - | 3,476.9 | DHO |
| SF-MW3 | 1.5 | <0.002 | <0.002 | <0.002 | <0.004 | - | - | <0.02 | <0.2 | <0.2 | - | - | - | <0.44 | NRGD |
| SF-MW2 | 14.9 | <0.002 | <0.002 | <0.002 | <0.004 | - | - | <0.02 | 1 | 1.1 | - | - | - | 2.2 | NNRGD |
| SF-MW1 | 7.9 | <0.002 | <0.002 | <0.002 | <0.004 | - | - | 0.2 | <0.2 | <0.2 | - | - | - | 0.21 | GD |
| SF-MW1 | 1.5 | 0.058 | 0.19 | 0.248 | 1.04 | - | - | 91.9 | 1350 | <0.2 | - | - | - | 1,441.90 | - |
| MDL | - | 0.002 | 0.002 | 0.002 | 0.004 | - | - | 0.02 | 0.2 | 0.2 | - | - | - | 0.44 | - |
| 2009 Sampling (Stantec) | | | | | | | | | | | | | | | |
| 09-TP22-BS2 | 0.8 - 1.2 | 0.04 | 0.20 | 0.22 | 0.51 | - | - | - | - | - | 1,100 | 29,000 | 380 | 31,000 | WFO |
| 09-TP25-BS2 | 1.3 - 1.8 | <0.03 | <0.03 | 0.28 | 1.1 | - | - | - | - | - | 920 | 4,800 | 75 | 5,800 | WFO |
| 09-TP25-BS2 Lab-Dup | 1.3 - 1.8 | <0.03 | <0.03 | 0.28 | 1.0 | - | - | - | - | - | 890 | 5,400 | 79 | - | - |
| RDL | - | 0.03 | 0.03 | 0.03 | 0.05 | - | - | - | - | - | 30 | 15 | 15 | 30 | - |
| 09-TP21-BS2 | 0.0 - 0.3 | <0.03 | <0.03 | <0.03 | <0.05 | - | - | - | - | - | 300 | 6,500 | 76 | 6,900 | WFO |
| RDL | - | 0.03 | 0.03 | 0.03 | 0.05 | - | - | - | - | - | 3 | 15 | 15 | 20 | - |
| 09-TP23-BS2 | 1.3 - 1.8 | <0.3 | <0.3 | 5.0 | 28 | - | - | - | - | - | 1,900 | 12,000 | 210 | 14,000 | WFO |
| RDL | - | 0.3 | 0.3 | 0.3 | 0.5 | - | - | - | - | - | 30 | 15 | 15 | 30 | - |
| 09-MW14-SS4 | 2.1 - 2.7 | 1.7 | <0.5 | 18 | 82 | - | - | - | - | - | 2,700 | 23,000 | 180 | 26,000 | WFO |
| RDL | - | 0.5 | 0.5 | 0.5 | 1 | - | - | - | - | - | 50 | 15 | 15 | 50 | - |
| 09-MW34D-SS1 | 0.0 - 1.8 | <0.1 | <0.1 | <0.1 | <0.3 | - | - | - | - | - | <10 | 410 | 1,100 | 1,600 | FO |
| RDL | - | 0.1 | 0.1 | 0.1 | 0.3 | - | - | - | - | - | 10 | 15 | 15 | 20 | - |

Notes:

- 1 = Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Risk Based Screening Levels (RBLS) for a residential site with non-potable groundwater and coarse grained soil, fuel oil impacts (September, 2003)
- 2 = Modified TPH - Tier I does not include BTEX
- MDL = Method detection limit; RDL = Reportable Detection Limit for routine analysis
- Lab-dup = laboratory duplicate sample
- < # = Not detected above MDL/RDL noted
- "-" = Indicates value is not available or does not apply
- D = Diesel; DOH = Diesel and other hydrocarbons; DHO = Diesel and heavy oil; D = Diesel; GD = Gas and diesel; NRGD = No resemblance to gas or diesel; WFO = Weathered fuel oil; FO = Fuel oil
- Shaded = Value exceeds generic guideline for a residential site, non-potable groundwater, coarse grained soil and fuel oil impacts

**Table 3.2 Results of Laboratory Analysis of Petroleum Hydrocarbon Fractionation in Soil - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Parameter | Units | Criteria ¹ | 2001 Sampling (AMEC) | |
|-------------------------|-------|-----------------------|----------------------|-------|
| | | | SF-TP16 | MDL |
| Sample Depth (m) | | | 0.5 | - |
| Benzene | mg/kg | 0.16 | <0.025 | 0.025 |
| Toluene | mg/kg | 14 | <0.025 | 0.025 |
| Ethylbenzene | mg/kg | 58 | <0.025 | 0.025 |
| Xylene (Total) | mg/kg | 17 | <0.05 | 0.05 |
| Aliphatic >C6-C8 | mg/kg | - | 1.9 | 0.1 |
| Aliphatic >C8-C10 | mg/kg | - | 158 | 0.4 |
| Aliphatic >C10-C12 | mg/kg | - | 1,090 | 8 |
| Aliphatic >C12-C16 | mg/kg | - | 4,210 | 15 |
| Aliphatic >C16-C21 | mg/kg | - | 687 | 15 |
| Aliphatic >C21-C32 | mg/kg | - | 28.2 | 15 |
| Aromatics (-EX) >C8-C10 | mg/kg | - | 0.7 | 0.1 |
| Aromatic >C10-C12 | mg/kg | - | 36.2 | 4 |
| Aromatic >C12-C16 | mg/kg | - | 464 | 15 |
| Aromatic >C16-C21 | mg/kg | - | 246 | 15 |
| Aromatic >C21-C32 | mg/kg | - | 34.9 | 15 |
| Modified TPH (Tier 2) | mg/kg | 140 | 6,950 | 103 |
| Resemblance | - | - | - | - |

Notes:

1 = Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Risk Based Screening Levels (RBSLs) for a residential site with non-potable groundwater and coarse grained soil, fuel oil impacts (September, 2003)

MDL = Method Detection Limit

"-" = indicates value is not available or does not apply

< # = Not detected above MDL noted

Shaded = Value exceeds applicable criteria

Table 3.3 Results of Laboratory Analysis of Metals in Soil - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

| Parameters | Units | Criteria ¹ | 1999 Sampling (AGRA) | | | 2001 Sampling (AMEC) | | | | 2009 Sampling (Stantec) | | | |
|------------------|-------|-----------------------|----------------------|--------|------|----------------------|---------|--------|------|-------------------------|----------------|------------|-----|
| | | | SF-TP6 | P-TP14 | MDL | SF-MW1 | SF-TP16 | SF-MW1 | MDL | 09-SS1 | 09-SS1 Lab-Dup | 09-SS3 | RDL |
| Sample Depth (m) | | | 0.5 | 2.5 | - | 1.0 | 0.5 | 1.5 | - | 0.0 - 0.15 | 0.0 - 0.15 | 0.0 - 0.15 | - |
| Aluminum | mg/kg | - | 17,050 | 8,760 | 5 | 1,100 | 2,580 | 2,990 | 5 | 7,000 | 7,500 | 14,000 | 10 |
| Antimony | mg/kg | 20 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <2 | <2 | <2 | 2 |
| Arsenic | mg/kg | 12 | 0.4 | 0.4 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <2 | <2 | <2 | 2 |
| Barium | mg/kg | 500 | 169 | 69 | 1 | 9 | 16 | 29 | 0.5 | 53 | 59 | 110 | 5 |
| Beryllium | mg/kg | 4 | <0.2 | <0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.1 | <2 | <2 | <2 | 2 |
| Bismuth | mg/kg | - | 0.4 | 0.2 | 0.2 | <0.2 | <0.2 | <0.2 | 0.2 | <2 | <2 | <2 | 2 |
| Boron | mg/kg | - | - | - | - | - | - | - | - | <5 | <5 | <5 | 5 |
| Cadmium | mg/kg | 10 | <0.5 | <0.5 | 0.5 | <0.5 | <0.5 | <0.5 | 0.5 | <0.3 | <0.3 | <0.3 | 0.3 |
| Calcium | mg/kg | - | 5,400 | 3,640 | 5 | 415 | 938 | 715 | 5 | - | - | - | - |
| Chromium | mg/kg | 64 | 29 | 19 | 1 | 7 | 7 | 5 | 1 | 16 | 15 | 21 | 2 |
| Cobalt | mg/kg | 50 | 9 | 5 | 1 | <1 | 2 | 1 | 1 | 4 | 4 | 5 | 1 |
| Copper | mg/kg | 63 | 44 | 14 | 1 | 3 | 3 | 3 | 1 | 8 | 9 | 32 | 2 |
| Iron | mg/kg | - | 20,700 | 12,300 | 5 | 4,510 | 6,180 | 5,860 | 5 | 10,000 | 11,000 | 13,000 | 50 |
| Lead | mg/kg | 140 | <5 | <5 | 5 | <5 | <5 | <5 | 5 | 3.1 | 3.3 | 17 | 0.5 |
| Lithium | mg/kg | - | - | - | - | - | - | - | - | 5 | 5 | 6 | 2 |
| Magnesium | mg/kg | - | 8,870 | 4,230 | 5 | 384 | 2,380 | 1,310 | 5 | - | - | - | - |
| Manganese | mg/kg | - | 425 | 209 | 1 | 31 | 100 | 66 | 1 | 140 | 160 | 140 | 2 |
| Mercury | mg/kg | 6.6 | 0.04 | 0.03 | 0.01 | <0.01 | <0.01 | <0.01 | 0.02 | <0.1 | <0.1 | <0.1 | 0.1 |
| Molybdenum | mg/kg | 10 | <4 | <4 | 4 | <3 | <3 | <3 | 3 | <2 | <2 | <2 | 2 |
| Nickel | mg/kg | 50 | 20 | 11 | 5 | <5 | <5 | <5 | 5 | 8 | 8 | 14 | 2 |
| Phosphorous | mg/kg | - | 743 | 674 | 5 | 91 | 235 | 248 | 5 | - | - | - | - |
| Potassium | mg/kg | - | 7,490 | 2,410 | 5 | 185 | 370 | 820 | 5 | - | - | - | - |
| Rubidium | mg/kg | - | - | - | - | - | - | - | - | 11 | 13 | 15 | 2 |
| Selenium | mg/kg | 1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <1 | <1 | <1 | 1 |
| Silver | mg/kg | 20 | <5 | <5 | 5 | <5 | <5 | <5 | 5 | <0.5 | <0.5 | <0.5 | 0.5 |
| Sodium | mg/kg | - | 2,370 | 834 | 5 | - | - | - | - | - | - | - | - |
| Strontium | mg/kg | - | - | - | - | - | - | - | - | 13 | 14 | 24 | 5 |
| Thallium | mg/kg | 1 | - | - | - | + | - | - | - | <0.1 | <0.1 | <0.1 | 0.1 |
| Tin | mg/kg | - | - | - | - | - | - | - | - | <2 | <2 | <2 | 2 |
| Uranium | mg/kg | 23 | - | - | - | - | - | - | - | 0.4 | 0.5 | 1.0 | 0.1 |
| Vanadium | mg/kg | 130 | 44 | 29 | 5 | 12 | 14 | 13 | 5 | 27 | 27 | 34 | 2 |
| Zinc | mg/kg | 200 | 50 | 25 | 2 | 4 | 15 | 13 | 2 | 21 | 23 | 38 | 5 |

Notes:

1 = CCME Canadian Soil Quality Guidelines for Protection of Environmental and Human Health at a Residential/Parkland site (2007)

MDL = Method Detection Limit; RDL = Reportable Detection Limit for routine analysis

Lab-Dup = Laboratory duplicate sample

< # = Not detected above MDL/RDL noted

"-" = No applicable guideline

Shaded = Value exceeds applicable criteria

**Table 3.4 Results of Laboratory Analysis of PAHs in Soil - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Parameters | Units | Criteria ^{1,3} | Criteria ^{2,3} | 1999 Sampling (AGRA) | | | | | 2009 Sampling (Stantec) | |
|---------------------------------|-------|-------------------------|-------------------------|----------------------|--------|--------|--------|-------|-------------------------|-------|
| | | | | SF-TP6 | SF-TP8 | SF-TP9 | P-TP14 | MDL | 09-SS2 | RDL |
| Sample Depth (m) | | | | 0.5 | 0.5 | 0.5 | 2.5 | - | 0.0 - 0.15 | - |
| Non-carcinogenic PAHs | | | | | | | | | | |
| 1-Methylnaphthalene | mg/kg | - | - | - | - | - | - | - | <0.005 | 0.005 |
| 2-Methylnaphthalene | mg/kg | - | - | - | - | - | - | - | <0.005 | 0.005 |
| Acenaphthene | mg/kg | - | - | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.005 | 0.005 |
| Acenaphthylene | mg/kg | - | - | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.005 | 0.005 |
| Anthracene | mg/kg | 2.5 | - | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.005 | 0.005 |
| Fluoranthene | mg/kg | 50 | - | <0.01 | 0.05 | <0.01 | <0.01 | 0.01 | 0.007 | 0.005 |
| Fluorene | mg/kg | - | - | <0.01 | <0.01 | <0.01 | <0.01 | 0.001 | <0.005 | 0.005 |
| Naphthalene | mg/kg | - | - | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.005 | 0.005 |
| Perylene | mg/kg | - | - | - | - | - | - | - | <0.005 | 0.005 |
| Phenanthrene | mg/kg | - | - | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.005 | 0.005 |
| Pyrene | mg/kg | - | - | <0.03 | 0.08 | 0.07 | <0.03 | 0.003 | <0.005 | 0.005 |
| Carcinogenic PAHs | | | | | | | | | | |
| Benzo(a)anthracene | mg/kg | - | - | <0.01 | 0.02 | <0.01 | <0.01 | 0.001 | <0.005 | 0.005 |
| Benzo(a)pyrene | mg/kg | 20 | - | <0.03 | <0.03 | <0.03 | <0.03 | 0.003 | <0.005 | 0.005 |
| Benzo(b)fluoranthene | mg/kg | - | - | <0.04 | <0.04 | <0.04 | <0.04 | 0.004 | <0.005 | 0.005 |
| Benzo(g,h,i)perylene | mg/kg | - | - | <0.02 | <0.02 | <0.02 | <0.02 | 0.002 | <0.005 | 0.005 |
| Benzo(k)fluoranthene | mg/kg | - | - | <0.04 | <0.04 | <0.04 | <0.04 | 0.004 | <0.005 | 0.005 |
| Chrysene | mg/kg | - | - | <0.01 | 0.02 | <0.01 | <0.01 | 0.001 | <0.005 | 0.005 |
| Indeno(1,2,3-c,d) pyrene | mg/kg | - | - | <0.03 | <0.03 | <0.03 | <0.03 | 0.003 | <0.005 | 0.005 |
| Dibenz(a,h,)anthracene | mg/kg | - | - | <0.04 | <0.04 | <0.04 | <0.04 | 0.004 | <0.005 | 0.005 |
| Benzo(a)pyrene TPE ⁴ | | - | 5.3 | 0.041 | 0.043 | 0.041 | 0.041 | - | 0.006 | - |

Notes:

1 = CCME Canadian Soil Quality Guidelines for the Protection of Environmental Health at a Residential/Parkland Site (2008)

2 = CCME Canadian Soil Quality Guidelines for Protection of Human Health for a Residential Site (Direct Soil Contact) (2008)

3 = As per CCME recommendations, soil samples are compared against the SQG for the protection of human health and environmental health separately

4 = Carcinogenic PAHs Assessed as Benzo(a)pyrene Total Potency Equivalent (TPE)

MDL = Method Detection Limit; RDL = Reportable Detection Limit for routine analysis

< # = Not detected above MDL/RDL noted

"-" = No applicable guideline or does not apply

**Table 3.5 Results of Laboratory Analysis of TPH/BTEX in Groundwater - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Sample Location | Benzene | Toluene | Ethyl-benzene | Xylenes | TPH Purgeable (<C ₁₀) | TPH Extractable (C ₁₀ -C ₃₂) | C ₆ -C ₁₂ | C ₁₃ -C ₂₃ | C ₂₄ -C ₃₂ | C ₆ -C ₁₀ (Gas Range) | C ₁₀ -C ₂₁ (Fuel Range) | C ₂₁ -C ₃₂ (Lube Range) | Modified TPH - Tier I ² | Resemblance |
|---|---------|---------|---------------|----------|-----------------------------------|---|---------------------------------|----------------------------------|----------------------------------|---|---|---|------------------------------------|-------------|
| Units | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | - |
| Tier I RBSLs¹ | 1 | 20 | 20 | 20 | - | - | - | - | - | - | - | - | 12/20/20 | - |
| 1999 Sampling (AGRA) | | | | | | | | | | | | | | |
| SF-TP7 | <0.0002 | <0.0002 | <0.00022 | <0.00045 | 0.36 | 4,800 | - | - | - | - | - | - | 4,800.36 | D |
| SF-TP10 | <0.0002 | <0.0002 | <0.00022 | <0.00045 | <0.005 | <0.05 | - | - | - | - | - | - | <0.055 | - |
| MDL | 0.0002 | 0.0002 | 0.00022 | 0.00045 | 0.005 | 0.05 | - | - | - | - | - | - | - | - |
| 2001 Sampling (AMEC) | | | | | | | | | | | | | | |
| SF-MW1D | <0.0002 | <0.0002 | <0.00022 | <0.00045 | - | - | 0.0735 | 1.92 | <0.05 | - | - | - | 1.9935 | D |
| SF-MW2S | <0.0002 | <0.0002 | <0.00022 | <0.00045 | - | - | <0.005 | <0.05 | <0.05 | - | - | - | <0.105 | - |
| SF-MW3D | <0.0002 | 0.0082 | <0.00022 | 0.00091 | - | - | <0.005 | <0.05 | <0.05 | - | - | - | <0.105 | - |
| SF-MW3D | <0.0002 | 0.00704 | <0.00022 | 0.00032 | - | - | 0.0086 | 0.268 | <0.05 | - | - | - | 0.2766 | D |
| SF-TP16 | 0.00503 | 0.00351 | 0.00119 | 0.0122 | - | - | 0.935 | 12.5 | <0.05 | - | - | - | 13.435 | GD |
| MDL | 0.0002 | 0.0002 | 0.0002 | 0.00045 | - | - | 0.005 | 0.05 | 0.05 | - | - | - | 0.105 | - |
| 2009 Sampling (Stantec) | | | | | | | | | | | | | | |
| 09-MW13S | <0.001 | <0.001 | 0.002 | 0.023 | - | - | - | - | - | 0.91 | 49 | 5.4 | 55 | FO |
| 09-MW34S | <0.001 | 0.005 | <0.001 | <0.002 | - | - | - | - | - | <0.01 | 2.6 | 0.9 | 3.5 | WFO/LO |
| 09-MW34D | <0.001 | <0.001 | <0.001 | <0.002 | - | - | - | - | - | <0.01 | 1.4 | 0.9 | 2.2 | WFO/LO |
| 09-MW34D Lab-Dup | <0.001 | <0.001 | <0.001 | <0.002 | - | - | - | - | - | <0.01 | 1.8 | 0.4 | - | - |
| 2009 Sampling (Stantec) - Standing Water | | | | | | | | | | | | | | |
| 09-PIPE1 | 0.002 | 0.005 | 0.015 | 0.19 | - | - | - | - | - | 1 | 16.0 | 0.5 | 17 | WFO |
| RDL | 0.001 | 0.001 | 0.001 | 0.002 | - | - | - | - | - | 0.01 | 0.05 | 0.1 | 0.1 | - |

Notes:

1 = Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Risk Based Screening Levels (RBSLs) for a residential site with non-potable groundwater and coarse grained soil, fuel oil impacts (September, 2003)

2 = Modified TPH - Tier I does not include BTEX

MDL = Method detection limit; RDL = Reportable Detection Limit for routine analysis

< # = Not detected above MDL/RDL noted

"-" = indicates value is not available or does not apply

D = Diesel; GD = Gasoline and diesel; FO = Fuel oil; WFO = Weathered fuel oil; LO = Lube oil

Shaded = Value exceeds applicable criteria

**Table 3.6 Results of Laboratory Analysis of Petroleum Hydrocarbon Fractionation in Groundwater - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Parameter | Units | Criteria ¹ | 2001 Sampling (AMEC) | | 2009 Sampling (Stantec) | |
|-------------------------|-------|-----------------------|----------------------|-------|-------------------------|------|
| | | | SF-MW1S | MDL | 09-MW14 | RDL |
| Benzene | mg/L | 1 | <0.001 | 0.001 | <30 | 30 |
| Toluene | mg/L | 20 | <0.001 | 0.001 | <30 | 30 |
| Ethylbenzene | mg/L | 20 | <0.001 | 0.001 | 560 | 30 |
| Xylene (Total) | mg/L | 20 | <0.002 | 0.002 | 2,500 | 50 |
| Aliphatic >C6-C8 | mg/L | - | <0.01 | 0.01 | 16,000 | 100 |
| Aliphatic >C8-C10 | mg/L | - | 0.02 | 0.01 | 170,000 | 400 |
| Aliphatic >C10-C12 | mg/L | - | 5.28 | 0.01 | 170,000 | 730 |
| Aliphatic >C12-C16 | mg/L | - | 19 | 0.05 | 370,000 | 1400 |
| Aliphatic >C16-C21 | mg/L | - | 3.96 | 0.05 | 63,000 | 1400 |
| Aliphatic >C21-C32 | mg/L | - | 0.16 | 0.1 | 5,500 | 1400 |
| Aromatics (-EX) >C8-C10 | mg/L | - | <0.01 | 0.01 | 15,000 | 100 |
| Aromatic >C10-C12 | mg/L | - | 1.21 | 0.01 | 36,000 | 370 |
| Aromatic >C12-C16 | mg/L | - | 5.38 | 0.05 | 93,000 | 1400 |
| Aromatic >C16-C21 | mg/L | - | 2.29 | 0.05 | 28,000 | 1400 |
| Aromatic >C21-C32 | mg/L | - | 0.23 | 0.1 | 3,800 | 1400 |
| Modified TPH (Tier 2) | mg/L | 12/20/20 | 37.5 | 0.45 | 970,000 | 1000 |
| Resemblance | - | - | - | - | FO | - |

Notes:

1 = Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Risk Based Screening Levels (RBSLs) for a residential site with non-potable groundwater and coarse grained soil, gasoline/fuel oil/lube oil impacts (September, 2003)

MDL = Method Detection Limit; RDL = Reportable Detection Limit

"-" = indicates value is not available or does not apply

< # = Not detected above MDL/RDL noted

FO = Fuel oil

Shaded = Value exceeds applicable criteria

**Table 3.7 Results of Laboratory Analysis of Dissolved Metals in Groundwater - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Parameters | Units | Criteria ¹ | 1999 Sampling (AGRA) | | | 2001 Sampling (AMEC) | | | 2009 Sampling (Stantec) | | | | |
|-------------|-------|-----------------------|----------------------|---------|-------|----------------------|---------|-------|-------------------------|---------|----------|----------|-------|
| | | | SF-TP7 | SF-TP11 | MDL | SF-MW1S | SF-MW1D | MDL | 09-MW13S | 09-MW14 | 09-MW34S | 09-MW34D | RDL |
| Aluminum | ug/L | - | 60 | 320 | 5 | 13,000 | 1,660 | 5 | 533 | 545 | 772 | 32.8 | 5 |
| Antimony | ug/L | 20,000 | <1 | <1 | 1 | - | - | - | <2.0 | <2.0 | <2.0 | <2.0 | 2 |
| Arsenic | ug/L | 1,900 | <1 | <1 | 1 | - | - | - | <2.0 | 5.8 | 3.8 | <2.0 | 2 |
| Barium | ug/L | 29,000 | 206 | 213 | 5 | 105 | 46 | 5 | 14.2 | 127 | 22.0 | 20.3 | 5 |
| Beryllium | ug/L | 67 | <1 | <1 | 1 | <1 | <1 | 1 | <2.0 | <2.0 | <2.0 | <2.0 | 2 |
| Bismuth | ug/L | - | <1 | <1 | 1 | <1 | <1 | 1 | <2.0 | <2.0 | <2.0 | <2.0 | 2 |
| Boron | ug/L | 45,000 | - | - | - | - | - | - | <5.0 | 7.8 | <5.0 | 25.1 | 5 |
| Cadmium | ug/L | 2.7 | <0.015 | <0.015 | 0.015 | <0.015 | <0.015 | 0.015 | 0.051 | 0.093 | 0.019 | 0.020 | 0.017 |
| Calcium | ug/L | - | 2,990 | 1,880 | 50 | 8,000 | 14,500 | 50 | - | - | - | - | - |
| Chromium | ug/L | 810 | 6 | 2 | 1 | 11 | 2 | 1 | 1.3 | 9.6 | 2.5 | 1.5 | 1 |
| Cobalt | ug/L | 66 | <5 | <5 | 5 | 6 | 1 | 1 | 4.89 | 24.2 | 1.33 | <0.40 | 0.40 |
| Copper | ug/L | 87 | 7 | <1 | 1 | 16 | 5 | 1 | 2.7 | <2.0 | <2.0 | <2.0 | 2 |
| Iron | ug/L | - | 1,370 | 1,840 | 1 | 27,500 | 1,410 | 1 | 3,020 | 36,800 | 10,200 | 535 | 50 |
| Lead | ug/L | 25 | <1 | <1 | 1 | 3 | <1 | 1 | <0.50 | 0.85 | <0.50 | <0.50 | 0.50 |
| Magnesium | ug/L | - | 2,330 | 840 | 50 | 5,220 | 13,500 | 50 | - | - | - | - | - |
| Manganese | ug/L | - | 400 | 66 | 5 | 432 | 310 | 1 | 404 | 5,420 | 233 | 428 | 2 |
| Mercury | ug/L | 0.29 | 0.8 | 0.8 | 0.1 | 0.2 | 0.3 | 0.1 | 0.052 | 0.038 | 0.0125 | 0.080 | 0.02 |
| Molybdenum | ug/L | 9,200 | <5 | <5 | 5 | <5 | <5 | 5 | <2.0 | 5.1 | <2.0 | <2.0 | 2 |
| Nickel | ug/L | 490 | <5 | <5 | 5 | 8 | <5 | 5 | <2.0 | 9.1 | <2.0 | <2.0 | 2 |
| Phosphorous | ug/L | - | 6 | 8 | 5 | 164 | 195 | 5 | - | - | - | - | - |
| Postassium | ug/L | - | 1,620 | 1,410 | 50 | 6,060 | 8,630 | 50 | - | - | - | - | - |
| Selenium | ug/L | 63 | <1 | <1 | 1 | - | - | - | <1.0 | <1.0 | <1.0 | <1.0 | 1 |
| Silver | ug/L | 1.5 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | 0.1 | <0.10 | <0.10 | <0.10 | <0.10 | 0.10 |
| Sodium | ug/L | - | 6,480 | 4,070 | 50 | 5,300 | 6,830 | 50 | - | - | - | - | - |
| Strontium | ug/L | - | - | - | - | - | - | - | 49.1 | 258 | 37.5 | 192 | 5 |
| Thallium | ug/L | 510 | - | - | - | - | - | - | <0.10 | <0.10 | <0.10 | <0.10 | 0.10 |
| Tin | ug/L | - | - | - | - | - | - | - | <2.0 | <2.0 | <2.0 | <2.0 | 2 |
| Titanium | ug/L | - | - | - | - | - | - | - | 5.7 | 18.8 | 15.4 | 4.1 | 2 |
| Uranium | ug/L | 420 | - | - | - | - | - | - | 0.34 | 1.73 | 0.15 | 0.32 | 0.10 |
| Vanadium | ug/L | 250 | <50 | <50 | 5 | 28 | 5 | 2 | 3.8 | 23.1 | 7.7 | 3.1 | 2 |
| Zinc | ug/L | 1,100 | 127 | 174 | 30 | 23 | 3 | 1 | 19.0 | 58.1 | 8.1 | 10.0 | 5 |

Notes:

1 = Ontario Ministry of the Environment (MOE) Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. July 27, 2009. Table 3: full depth generic site condition standards in a non-potable groundwater condition, coarse-grained soil

MDL = Method Detection Limit; RDL = Reportable Detection Limit

< # = Not detected above MDL/RDL noted

"-" = No applicable guideline

Shaded = Value exceeds applicable criteria

**Table 3.8 Results of Laboratory Analysis of General Chemistry in Groundwater - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Parameter | Units | Criteria ¹ | 2001 Sampling (AMEC) | | | | 2009 Sampling (Stantec) | | | | | | | | | |
|--|-------|-----------------------------|----------------------|---------|---------|-------|-------------------------|------------------|------|---------|------|----------|------|----------|------------------|------|
| | | | SF-MW1S | SF-MW2S | SF-MW3S | MDL | 09-MW13S | 09-MW13S Lab-Dup | RDL | 09-MW14 | RDL | 09-MW34S | RDL | 09-MW34D | 09-MW34D Lab-Dup | RDL |
| Metals | | | | | | | | | | | | | | | | |
| Dissolved Calcium | mg/L | - | - | - | - | - | 5.4 | - | 0.1 | 72 | 0.1 | 8.0 | 0.1 | 23 | - | 0.1 |
| Dissolved Magnesium | mg/L | - | - | - | - | - | 1.7 | - | 0.1 | 9.2 | 0.1 | 1.6 | 0.1 | 12 | - | 0.1 |
| Dissolved Phosphorus | mg/L | <0.004 to >0.1 ³ | - | - | - | - | <0.1 | - | 0.1 | <0.1 | 0.1 | <0.1 | 0.1 | <0.1 | - | 0.1 |
| Total Phosphorous | mg/L | | 0.31 | 0.18 | 0.34 | 0.01 | | | | | | | | | | |
| Dissolved Potassium | mg/L | - | - | - | - | - | 1.1 | - | 0.1 | 4.1 | 0.1 | 1.2 | 0.1 | 8.2 | - | 0.1 |
| Dissolved Sodium | mg/L | - | - | - | - | - | 16 | - | 0.1 | 6.2 | 0.1 | 5.5 | 0.1 | 9.2 | - | 0.1 |
| Calculated Parameters | | | | | | | | | | | | | | | | |
| Anion Sum | me/L | - | - | - | - | - | 0.830 | - | N/A | 3.69 | N/A | 0.470 | N/A | 2.58 | - | N/A |
| Bicarb. Alkalinity (calc. as CaCO ₃) | mg/L | - | - | - | - | - | 34 | - | 1 | 177 | 1 | 20 | 1 | 125 | - | 1 |
| Calculated TDS | mg/L | - | - | - | - | - | 68 | - | 1 | 272 | 1 | 57 | 1 | 63 | - | 1 |
| Carb. Alkalinity (calc. as CaCO ₃) | mg/L | - | - | - | - | - | <1 | - | 1 | <1 | 1 | <1 | 1 | <1 | - | 1 |
| Cation Sum | me/L | - | - | - | - | - | 1.23 | - | N/A | 6.03 | N/A | 1.17 | N/A | 2.75 | - | N/A |
| Hardness (CaCO ₃) | mg/L | - | - | - | - | - | 21 | - | 1 | 220 | 1 | 27 | 1 | 110 | - | 1 |
| Ion Balance (% Difference) | % | - | - | - | - | - | 19.4 | - | N/A | 24.1 | N/A | 42.7 | N/A | 3.19 | - | N/A |
| Langelier Index (@ 20C) | N/A | - | - | - | - | - | -2.41 | - | - | -0.756 | - | -3.12 | - | -0.277 | - | - |
| Langelier Index (@ 4C) | N/A | - | - | - | - | - | -2.66 | - | - | -1.01 | - | -3.37 | - | -0.527 | - | - |
| Nitrate (N) | mg/L | 2.9 | <0.05 | 0.54 | <0.05 | <0.05 | <0.05 | - | 0.05 | <0.05 | 0.05 | <0.05 | 0.05 | <0.05 | - | 0.05 |
| Saturation pH (@20C) | N/A | - | - | - | - | - | 9.07 | - | - | 7.31 | - | 9.12 | - | 7.92 | - | - |
| Saturation pH (@4C) | N/A | - | - | - | - | - | 9.32 | - | - | 7.56 | - | 9.37 | - | 8.17 | - | - |
| Inorganics | | | | | | | | | | | | | | | | |
| Total Alkalinity (Total as CaCO ₃) | mg/L | - | 19 | 45 | 102 | 1 | 34 | - | 5 | 180 | 30 | 20 | 5 | 130 | - | 30 |
| Dissolved Chloride (Cl) | mg/L | - | 2.2 | 1.6 | <0.1 | 0.1 | 3 | - | 1 | 5 | 1 | 3 | 1 | 3 | - | 1 |
| Colour | TCU | - | - | - | - | - | 82 | - | 30 | 790 | 100 | 150 | 30 | 78 | - | 30 |
| Nitrate + Nitrite | mg/L | - | - | - | - | - | <0.05 | - | 0.05 | <0.05 | 0.05 | <0.05 | 0.05 | <0.05 | - | 0.05 |
| Nitrite (N) | mg/L | 0.06 | <0.05 | <0.05 | <0.05 | 0.05 | <0.01 | - | 0.01 | <0.01 | 0.01 | <0.01 | 0.01 | <0.01 | - | 0.01 |
| Nitrogen (Ammonia Nitrogen) | mg/L | - | - | - | - | - | <0.05 | - | 0.05 | <0.05 | 0.05 | 0.1 | 0.05 | <0.05 | - | 0.05 |
| Total Organic Compound | mg/L | - | - | - | - | - | <50(1) | <50(1) | 50 | 64 | 50 | 27 | 1 | 27(3) | - | 5 |
| Orthophosphate (P) | mg/L | - | - | - | - | - | <0.01 | - | 0.01 | 0.01 | 0.01 | <0.01 | 0.01 | 0.01 | - | 0.01 |
| pH | pH | 6.5 - 9 | 5.42 | 6.58 | 6.83 | - | 6.66 | - | N/A | 6.55 | N/A | 6.00 | N/A | 7.64 | 7.68 | N/A |
| Reactive Silica (SiO ₂) | mg/L | - | - | - | - | - | 14 | - | 0.5 | 27 | 1 | 15 | 0.5 | 32 | - | 1 |
| Dissolved Sulphate (SO ₄) | mg/L | - | 1.2 | 1 | 1.6 | 0.1 | 4 | - | 2 | <2 | 2 | <2 | 2 | <2 | - | 2 |
| Turbidity | NTU | Narritive ² | 630 | 790 | 6,900 | 1 | >1000 | - | 10 | 360 | 1 | >1000 | 10 | 120 | - | 1 |
| Conductivity | uS/cm | - | 56 | 92 | 185 | 1 | 100 | - | 1 | 350 | 1 | 59 | 1 | 250 | 260 | 1 |
| Fluoride | mg/L | - | <0.1 | <0.1 | <0.1 | 0.1 | - | - | - | - | - | - | - | - | - | - |

Notes:

1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)

2 = Maximum increase of 8 NTUs from background levels when background levels are between 8 and 80 NTUs

3 = Phosphorous guideline is dependant on trophic status of the freshwater environment

MDL = Method Detection Limit; RDL = Reportable Detection Limit; < # = Not detected above MDL/RDL noted; (1) Detection limit increased due to sample matrix

"-" = indicates value is not available or does not apply

Lab-dup = Laboratory duplicate sample

Shaded = Value exceeds applicable criteria

**Table 3.9 Results of Laboratory Analysis of TPH/BTEX in Surface Water - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Sample Location | Benzene | Toluene | Ethylbenzene | Xylenes | C ₆ -C ₁₀ (Gas Range) | C ₁₁ -C ₂₀ (Fuel Range) | C ₂₁ -C ₃₂ (Lube Range) | Modified TPH - Tier I ² | Resemblance |
|--------------------------------|---------|---------|--------------|---------|--|--|--|---------------------------------------|-------------|
| RDL | 0.001 | 0.001 | 0.001 | 0.002 | 0.01 | 0.05 | 0.1 | 0.1 | - |
| Units | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | - |
| Criteria¹ | 0.37 | 0.002 | 0.09 | - | - | - | - | - | - |
| 2009 Sampling (Stantec) | | | | | | | | | |
| 09-SW1 | <0.001 | <0.001 | <0.001 | <0.002 | <0.01 | 0.30 | 0.1 | 0.4 | WFO/LO |

Notes:

1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)

2 = Modified TPH - Tier I does not include BTEX

"-" = Value is not available or does not apply

RDL = Reportable Detection Limit for routine analysis

< # = Not detected above RDL noted

WFO/LO = Weathered fuel oil / lube oil

Table 3.10 Results of Lab Analysis of Dissolved Metals in Surface Water - South Bulk Fuel Storage Site Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

| Parameters | Units | Criteria ¹ | 2009 Sampling (Stantec) |
|------------|-------|-----------------------|-------------------------|
| | | | 09-SW1 |
| Aluminum | ug/L | 5 ² | 725 |
| Antimony | ug/L | - | <2.0 |
| Arsenic | ug/L | 5 | <2.0 |
| Barium | ug/L | - | 33.8 |
| Beryllium | ug/L | - | <2.0 |
| Bismuth | ug/L | - | <2.0 |
| Boron | ug/L | - | <5.0 |
| Cadmium | ug/L | 0.010 ³ | 0.041 |
| Chromium | ug/L | 8.9 | 10.0 |
| Cobalt | ug/L | - | 4.18 |
| Copper | ug/L | 2 ⁴ | 9.5 |
| Iron | ug/L | 300 | 4,610 |
| Lead | ug/L | 1 ⁵ | 1.02 |
| Manganese | ug/L | - | 585 |
| Mercury | ug/L | 0.026 | 0.065 |
| Molybdenum | ug/L | 73 | <2.0 |
| Nickel | ug/L | 25 ⁶ | 3.1 |
| Selenium | ug/L | 1 | <1.0 |
| Silver | ug/L | 0.1 | <0.10 |
| Strontium | ug/L | - | 49.7 |
| Thallium | ug/L | 0.8 | <0.10 |
| Tin | ug/L | - | <2.0 |
| Titanium | ug/L | - | 12.2 |
| Uranium | ug/L | - | <0.10 |
| Vanadium | ug/L | - | 2.4 |
| Zinc | ug/L | 30 | 22.4 |

Notes:

1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)

2 = Aluminum guideline = 5 µg/L at pH<6.5
= 100 µg/L at pH>=6.5

3 = Cadmium guideline = $10^{(0.86[\log(\text{hardness})]-3.2)}$ = 0.010 mg/L at a water hardness of 24 mg/L as CaCO₃

4 = Copper guideline = 2 µg/L at water hardness of 0-120 mg/L as CaCO₃
= 3 µg/L at water hardness of 120-180 mg/L as CaCO₃
= 4 µg/L at water hardness >180 mg/L as CaCO₃

5 = Lead guideline = 1 µg/L at water hardness of 0-60 mg/L as CaCO₃
= 2 µg/L at water hardness of 60-120 mg/L as CaCO₃
= 4 µg/L at water hardness of 120-180 mg/L as CaCO₃
= 7 µg/L at water hardness >180 mg/L as CaCO₃

6 = Nickel guideline = 25 µg/L at water hardness of 0-60 mg/L as CaCO₃
= 65 µg/L at water hardness of 60-120 mg/L as CaCO₃
= 110 µg/L at water hardness of 120-180 mg/L as CaCO₃
= 150 µg/L at water hardness >180 mg/L as CaCO₃

"-" = Not analysed or no applicable guideline; < # = Not detected above RDL noted

Shaded = Value exceeds CCME freshwater aquatic life guideline

Table 3.11 Results of Laboratory Analysis of General Chemistry in Surface Water - South Bulk Fuel Storage Site Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

| Parameter | RDL | Units | Criteria ¹ | 2009 Sampling (Stantec) | |
|--|------|-------|-----------------------------|-------------------------|----------------|
| | | | | 09-SW1 | 09-SW1 Lab-Dup |
| Metals | | | | | |
| Dissolved Calcium | 1 | mg/L | - | 5.6 | - |
| Dissolved Magnesium | 1 | mg/L | - | 2.4 | - |
| Dissolved Phosphorus | 1 | mg/L | <0.004 to >0.1 ² | <0.1 | - |
| Dissolved Potassium | 1 | mg/L | - | 6.5 | - |
| Dissolved Sodium | 1 | mg/L | - | 2.8 | - |
| Dissolved Sulphur | 5 | mg/L | - | NA | - |
| Calculated Parameters | | | | | |
| Anion Sum | N/A | me/L | - | 0.420 | - |
| Bicarb. Alkalinity (calc. as CaCO ₃) | 1 | mg/L | - | 9 | - |
| Calculated TDS | 1 | mg/L | - | 47 | - |
| Carb. Alkalinity (calc. as CaCO ₃) | 1 | mg/L | - | <1 | - |
| Cation Sum | N/A | me/L | - | 0.930 | - |
| Hardness (CaCO ₃) | 1 | mg/L | - | 24 | - |
| Ion Balance (% Difference) | N/A | % | - | 37.8 | - |
| Langelier Index (@ 20C) | - | N/A | - | -3.60 | - |
| Langelier Index (@ 4C) | - | N/A | - | -3.85 | - |
| Nitrate (N) | 0.05 | ug/L | 3 | <0.05 | - |
| Saturation pH (@20C) | - | N/A | - | 9.59 | - |
| Saturation pH (@4C) | - | N/A | - | 9.84 | - |
| Inorganics | | | | | |
| Total Alkalinity (Total as CaCO ₃) | 5 | mg/L | - | 9 | - |
| Dissolved Chloride (Cl) | 1 | mg/L | - | 8 | - |
| Colour | 80 | TCU | Narrative | 470 | - |
| Nitrate + Nitrite | 0.05 | mg/L | - | <0.05 | - |
| Nitrite (N) | 0.01 | ug/L | 0.06 | <0.01 | - |
| Nitrogen (Ammonia Nitrogen) | 0.05 | mg/L | - | <0.05 | - |
| Total Organic Compound | 50 | mg/L | - | 73(3) | 76(1) |
| Orthophosphate (P) | 0.01 | mg/L | - | <0.01 | - |
| pH | N/A | pH | 6.5 - 9 | 5.99 | - |
| Reactive Silica (SiO ₂) | 0.5 | mg/L | - | 10 | - |
| Dissolved Sulphate (SO ₄) | 2 | mg/L | - | <2 | - |
| Turbidity | 1 | NTU | Narrative ³ | 270 | - |
| Conductivity | 1 | uS/cm | - | 60 | - |

Notes:

1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)

2 = Phosphorous guideline is dependant on trophic status of the freshwater environment

3 = Maximum increase of 8 NTUs from background levels when background levels are between 8 and 80 NTUs

RDL = Reportable Detection Limit

< # = Not detected above RDL noted

"-" = Value is not applicable or does not apply

Lab-dup = Laboratory duplicate sample

(1) Detection limit increased due to sample matrix

(3) Elevated detection limit due to matrix interference

Shaded = Value exceeds CCME freshwater aquatic life guideline

**Table 3.12 Results of Laboratory Analysis of PCBs in Vegetation - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Sample Location | Polychlorinated Biphenyls (PCBs) |
|--------------------------------|----------------------------------|
| RDL | 0.05 |
| Units | ug/L |
| Criteria | na |
| 2009 Sampling (Stantec) | |
| 09-VEG-09 | <0.3 |
| 09-VEG-10 | <0.3 |

Notes:

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

**Table 3.13 Results of Laboratory Analysis of PCBs in Berries - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Sample Location | Polychlorinated Biphenyls (PCBs) |
|--------------------------------|----------------------------------|
| RDL | 0.05 |
| Units | ug/g |
| Criteria | na |
| 2009 Sampling (Stantec) | |
| 09-BERRY 8 | <0.05 |
| 09-BERRY 9 | <0.05 |

Notes:

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

**Table 3.14 Results of Laboratory Analysis of PCBs/Crude Fat in Small Mammal and Rabbit Tissue Samples - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Location | Polychlorinated Biphenyls (PCBs) | Crude Fat |
|--|----------------------------------|-----------|
| RDL | 0.05 / 0.07 | 0.5 |
| Units | ug/g | % |
| Criteria | na | na |
| 2009 Sampling (Stantec) - Small Mammals | | |
| 09-SM2 | <0.05 | - |
| 09-SM7 | <0.05 | 2.3 |
| 09-SM7 Lab-Dup | <0.05 | - |
| 09-SM27 | <0.07 | - |
| 09-SM28 | <0.07 | - |
| 2009 Sampling (Stantec) - Rabbits | | |
| 09-SM36 | <0.05 | 1.1 |

Notes:

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

"-" = Not analyzed

**Table 3.15 Results of Laboratory Analysis of Metals in Small Mammals and Rabbits - South Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105**

| Parameters | RDL | Units | Criteria | 2009 Sampling (Stantec) - Small Mammals | | 2009 Sampling (Stantec) - Rabbits |
|------------|-------|-------|----------|--|--------|--------------------------------------|
| | | | | 09-SM2 | 09-SM7 | 09-SM36 |
| Aluminum | 2.5 | mg/kg | na | 8.6 | - | - |
| Antimony | 0.50 | mg/kg | na | <0.50 | - | - |
| Arsenic | 0.50 | mg/kg | na | <0.50 | - | - |
| Barium | 1.5 | mg/kg | na | 5.2 | - | - |
| Beryllium | 0.50 | mg/kg | na | <0.50 | - | - |
| Boron | 1.5 | mg/kg | na | <1.5 | - | - |
| Cadmium | 0.050 | mg/kg | na | <0.050 | - | - |
| Chromium | 0.50 | mg/kg | na | <0.50 | - | - |
| Cobalt | 0.20 | mg/kg | na | <0.20 | - | - |
| Copper | 0.50 | mg/kg | na | 4.23 | - | - |
| Iron | 15 | mg/kg | na | 90 | - | - |
| Lead | 0.18 | mg/kg | na | <0.18 | - | - |
| Lithium | 0.50 | mg/kg | na | <0.50 | - | - |
| Manganese | 0.50 | mg/kg | na | 15.4 | - | - |
| Mercury | 0.10 | mg/kg | na | - | <0.1 | <0.1 |
| Molybdenum | 0.50 | mg/kg | na | <0.50 | - | - |
| Nickel | 0.50 | mg/kg | na | <0.50 | - | - |
| Selenium | 0.50 | mg/kg | na | <0.50 | - | - |
| Silver | 0.12 | mg/kg | na | <0.12 | - | - |
| Strontium | 1.5 | mg/kg | na | 15.1 | - | - |
| Thallium | 0.020 | mg/kg | na | <0.020 | - | - |
| Tin | 0.50 | mg/kg | na | <0.50 | - | - |
| Uranium | 0.020 | mg/kg | na | <0.020 | - | - |
| Vanadium | 0.50 | mg/kg | na | <0.50 | - | - |
| Zinc | 1.5 | mg/kg | na | 28.8 | - | - |

Notes:

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

"-" = Not analyzed

Appendix 3e

Results of Hydraulic Response (Bail-Down) Test

– South Bulk Fuel Storage Site

Stantec Consulting Ltd.

607 Torbay Road

St. John's, NL, A1A 4Y6

Stantec

Tel: (709) 576-1458

Slug Test Data Report

Project: Northwest Point

Number: 121410105

Client: NLDEC

Page 1

Test Well: 09-MW14**Slug Test:** 09-MW14

Test Well: 09-MW14

Depth to Static WL: 1.36 [m]

Casing radius: 0.025 [m]

Location:

Boring radius: 0.05 [m]

Recorded by: Stantec

Screen length: 3.05 [m]

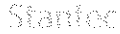
Date: 8/27/2009

Aquifer Thickness: 2.91 [m]

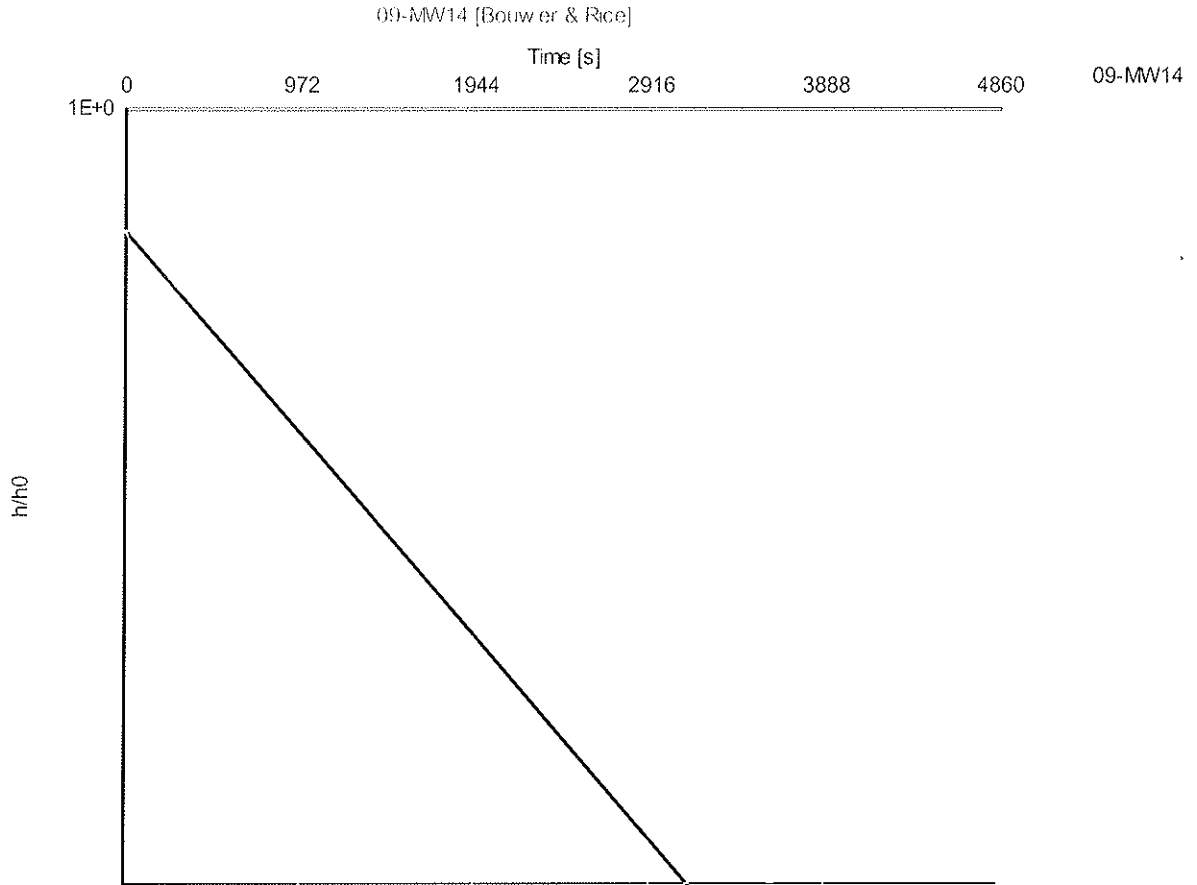
| | Time [s] | Depth to WL [m] | Drawdown [m] |
|----|----------|-----------------|--------------|
| 1 | 10 | 3.21 | 1.85 |
| 2 | 20 | 3.20 | 1.84 |
| 3 | 30 | 3.20 | 1.84 |
| 4 | 40 | 3.20 | 1.84 |
| 5 | 50 | 3.20 | 1.83 |
| 6 | 60 | 3.19 | 1.83 |
| 7 | 90 | 3.18 | 1.82 |
| 8 | 120 | 3.17 | 1.81 |
| 9 | 180 | 3.16 | 1.80 |
| 10 | 240 | 3.15 | 1.79 |
| 11 | 300 | 3.14 | 1.78 |
| 12 | 480 | 3.11 | 1.75 |
| 13 | 600 | 3.09 | 1.73 |
| 14 | 720 | 3.07 | 1.71 |
| 15 | 840 | 3.05 | 1.69 |
| 16 | 960 | 3.04 | 1.68 |
| 17 | 1200 | 3.02 | 1.66 |
| 18 | 1500 | 3.00 | 1.64 |
| 19 | 1800 | 2.98 | 1.62 |
| 20 | 2400 | 2.97 | 1.61 |
| 21 | 3000 | 2.96 | 1.60 |
| 22 | 3600 | 2.96 | 1.60 |
| 23 | 4860 | 3.03 | 1.67 |

Stantec Consulting Ltd.

607 Torbay Road
 St. John's, NL, A1A 4Y6
 Tel: (709) 576-1458


Slug Test Analysis Report

Project: Northwest Point
 Number: 121410105
 Client: NLDEC



Slug Test: 09-MW14

Analysis Method: Bouwer & Rice

Analysis Results: Conductivity: 1.28E-8 [m/s]

Test parameters:

| | | | |
|-------------------|-----------|---------------------------|----------|
| Test Well: | 09-MW14 | Aquifer Thickness: | 2.91 [m] |
| Casing radius: | 0.025 [m] | Gravel Pack Porosity (%): | 25 |
| Screen length: | 3.05 [m] | | |
| Boring radius: | 0.05 [m] | | |
| $r(\text{eff})$: | 0.033 [m] | | |

Comments:

Evaluated by: AR

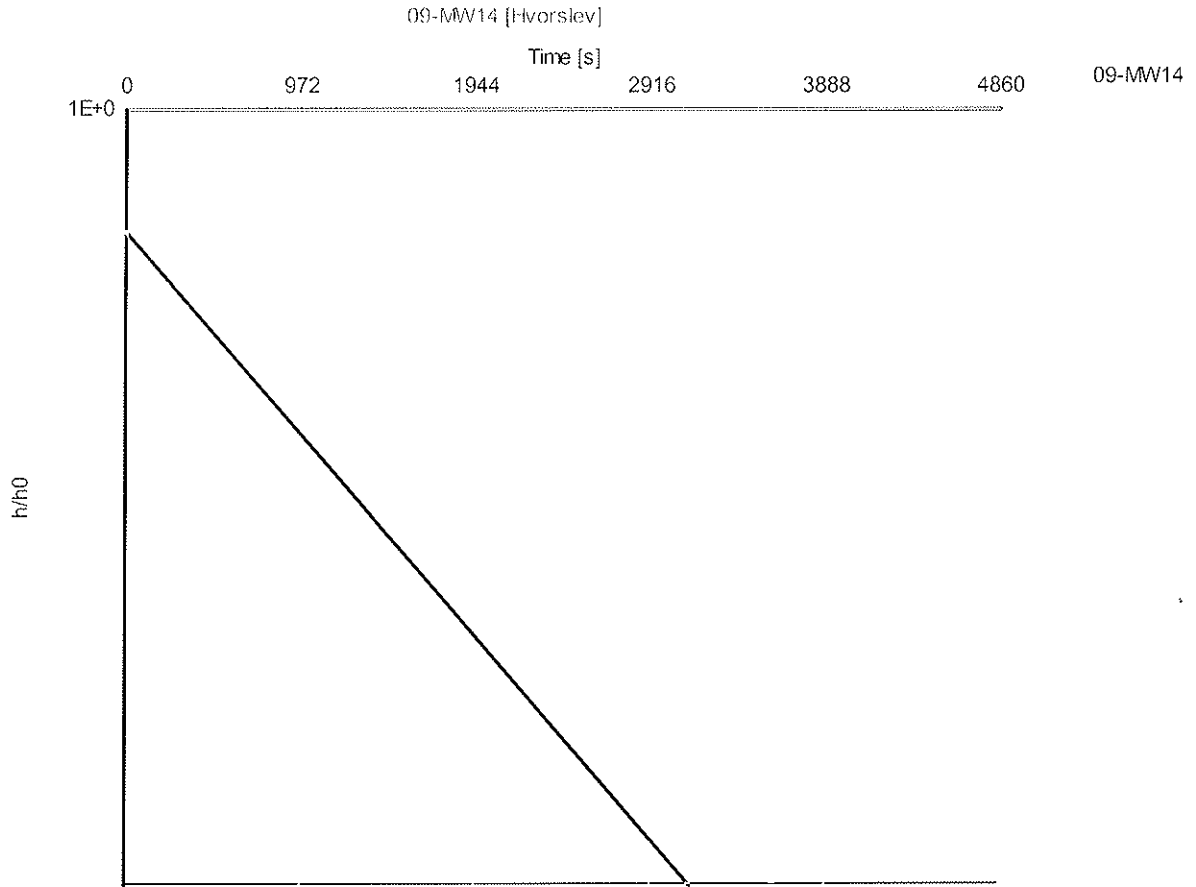
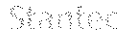
Evaluation Date: 6/9/2010

Stantec Consulting Ltd.

607 Torbay Road
St. John's, NL, A1A 4Y6
Tel: (709) 576-1458

Slug Test Analysis Report

Project: Northwest Point
Number: 121410105
Client: NLDEC



Slug Test: 09-MW14

Analysis Method: Hvorslev

Analysis Results: Conductivity: 1.68E-8 [m/s]

Test parameters:

| | | | |
|----------------|-----------|--------------------|----------|
| Test Well: | 09-MW14 | Aquifer Thickness: | 2.91 [m] |
| Casing radius: | 0.025 [m] | | |
| Screen length: | 3.05 [m] | | |
| Boring radius: | 0.05 [m] | | |

Comments:

Evaluated by: AR

Evaluation Date: 6/9/2010