# THE SHORES PHASE 1 SUBDIVISION - SITE MONITERING PROGRAM

Period: February 16th to February 23rd



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Date: 02/23/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT Recent Rainfall: 28 mm in the past 7 days

Reviewed By: Sanath Bandara, P.ENG

Developments since last inspection: Site was covered in snow from ongoing precipitation making visual inspections difficult, the surface and any surface water was frozen. Inspection was for groundwater data only.

**This form should only be used in conjunction with the instructions printed on Page 5.** File Version # 5

| Item # | Location | Description | Changed? | Comments, description, qualifiers, measurements, photo numbers, etc. |
|---|---|---|---|---|
| 1 | Gale Avenue N (closed section) | Status of Road Closure | No | Road Remains Closed |
| 2 | Gale Avenue N (closed section) | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 3 | Gale Avenue N at Lot 9 | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 4 | Sinkhole in front of Lot 9 | Settlement, undermining of road/driveway. | No | No visually apparent changes since last inspection |
| 5 | SRW at Lots 9/10 from MH10 to outlet | Any settlement/depressions, springs in storm corridor? | No | No visually apparent changes since last inspection |
| 6 | Gale Avenue N at Lot 21 | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 7 | Sinkhole at Lot 21 | Soil cracking, backfill settlement, poly covering, stair movement? | No | No visually apparent changes since last inspection |
| 8 | Sinkhole at Lot 21 | Condition of driveway and dwelling. | No | No visually apparent changes since last inspection |
| 9 | Gale Avenue N (east of closed section) | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 10 | Gale Avenue N (east of closed section) | Seepage/sand deposits from under driveways/roads/structures? | No | No visually apparent changes since last inspection |
| 11 | Rock Stack Walls at Lots 19-21 | Signs of instability, distress | No | No visually apparent changes since last inspection |
| 12 | Gale Avenue N (west of closed section) | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 13 | Gale Avenue N (west of closed section) | Seepage/sand deposits from under driveways/roads/structures? | No | No visually apparent changes since last inspection |
| 14 | Crowston Road (Seawatch to Gale Ave N) | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 15 | Crowston Road at Lot 29 | Storm inlet, any flow? Rate/turbidity? | No | Inflow moving at a low flowrate, low turbidity |
| 16 | Crowston Road ditches at Borrow Access | Flow rate in West/East ditches? | No | Inflow low flowrate in west and east ditches; turbidity low from visual inspection |
| 17 | Borrow area south of site | Ponding, seepage and runoff on walls, instabilities? | No | Did not visit. |
| 18 | Seawatch Lane at Lot 28 | Status of Cracking/Depression in asphalt | No | No visually apparent changes since last inspection |
| 19 | Seawatch Lane at Lot 28 | Survey of control points (if required) | No | No visually apparent changes since last inspection |
| 20 | Seawatch Lane at Lot 29 | Any new erosion, settlement/depressions in curb/ditch? | No | No visually apparent changes since last inspection |
| 21 | Lot 28 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 22 | Seawatch Lane at Lots 24 - 27 | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 23 | Seawatch Lane at Lots 15 - 23 | Cracking/settlement of asphalt/curbs? | No | No visually apparent changes since last inspection |
| 24 | Lot 22 | Status of apparent scarp at south end of lot | No | No visually apparent changes since last inspection |
| 25 | Lot 22 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 26 | Rock Stack Walls at Lots 22 to 24 | Signs of instability, distress | No | No visually apparent changes since last inspection |
| 27 | Seawatch Ln at cut slope (Sta. 2+20 to 2+60) | Status, signs of instability, major recent erosion? | No | No visually apparent changes since last inspection |
| 28 | Path east of Lot 1 | Wet areas / springs / seeps | No | No visually apparent changes since last inspection |
| 29 | Lot 1 - Collection Ponds | Water levels, turbidity? | No | No visually apparent changes since last inspection |

**Supplementary comments can be made in the space provided on Pages 3 & 4. Please refer back to the initial item number. New items can also be written in.**

# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



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Date: 02/23/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

| Item # | Location | Description | Changed? | Comments, description, qualifiers, measurements, photo numbers, etc. |
|---|---|---|---|---|
| 30 | Lot 1 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 31 | Storm outfall NE of Lot 1 | Turbidity/rate of flow, compared to inflow at Crowston Rd | Yes | Low outflow, low turbidity from visual inspection |
| 32 | PVC drain at Storm outfall NE of Lot 1 | Turbidity / rate of outflow | No | Low outflow, low turbidity from visual inspection |
| 33 | Lot 2 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 34 | Lot 2 | Existing slow spring. Rate/turbidity of flow. Sand boil. | No | No visually apparent changes since last inspection |
| 35 | Lot 3 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 36 | Lot 3 | Existing spring area. Rate/turbidity of flow. Size of area. | No | No visually apparent changes since last inspection |
| 37 | Lot 3 Spring Control Works | Lift MH covers, Rate/turbidity of flow up from sand? | No | No visually apparent changes since last inspection, low flow rate with some sediment transport |
| 38 | SRW below Lot 3 | Rate/turbidity of flow from PVC drain on downslope side of bench. | No | No visually apparent changes since last inspection |
| 39 | Lot 4 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 40 | Lot 5 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 41 | Lot 6 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 42 | SRW below Lots 1 through 6 | Erosion, settlement, springs, ponding of water, etc.? | No | No visually apparent changes since last inspection |
| 43 | SRW below Lots 7 through 12 | Erosion, settlement, springs, ponding of water, etc.? | No | No visually apparent changes since last inspection |
| 44 | Storm outfall below Lots 9/10 | Turbidity/rate of flow, infilling of outlet, sample (if req.) | No | Steady flow, low turbidity, silt accumulation level high |
| 45 | Lot 11 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 46 | Lot 12 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 47 | Lot 12 | Status of slow spring/seep and ponds. | No | No visually apparent changes since last inspection |
| 48 | Storm outfall below Lot 12 | Turbidity/rate of flow, infilling of outlet. | No | No visually apparent changes since last inspection |
| 49 | PVC drain at Storm outfall below Lot 12 | Turbidity / rate of outflow | No | No visually apparent changes since last inspection |
| 50 | Drains and Collection Pond North of Lot 13 | Turbidity / rate of outflow, infilling of pond. | No | No visually apparent changes since last inspection |
| 51 | Lot 13 | Any new erosion/rilling, settlement/depressions, springs? | N/A | Didn't visit as per homeowner request |
| 52 | Lot 13 | Status of wet areas | N/A | Didn't visit as per homeowner request |
| 53 | Lot 14 | Any new erosion/rilling, settlement/depressions, springs? | N/A | Didn't visit as per homeowner request |
| 54 | Lot 14 | Status of wet areas | N/A | Didn't visit as per homeowner request |
| 55 | Lot 15 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 56 | Lot 15 | Status of wet areas | No | No visually apparent changes since last inspection |
| 57 | Lots 16 to 18 | Any new erosion/rilling, settlement/depressions, springs? | No | No visually apparent changes since last inspection |
| 58 | Seawatch Lane at Lot 29 | Apparent hole in asphalt | No | No visually apparent changes since last inspection |

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Date: 02/23/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

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| Item # | Date | Location | Description | Changed? | Comments, description, qualifiers, measurements, photo numbers, etc. |
|---|---|---|---|---|---|
| 59 | N/A | Lot 29 | Any Anomolies or Changes | No | No visually apparent changes since last inspection. |
| 60 | N/A | SRW below Lot 5 | Rate/turbidity from PVC drain downslope of bench. | No | No visually apparent changes since last inspection. |
| 61 | N/A | Wet Seepage Area below Lot 4 | Turbidity / Rate of Outflow | No | No visually apparent changes since last inspection. |
| 62 | N/A | Storm MH4A Inspection | Turbidity / Rate of Outflow of Storm Laterals | No | No visually apparent changes since last inspection. |
| 63 | N/A | Lot 21 Driveway | Top Panel Separation Measurement | No | 12mm |
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Date: 02/23/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

| Item # | Date | Location | Description | Changed? | Comments, description, qualifiers, measurements, photo numbers, etc. |
|---|---|---|---|---|---|
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# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



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Date Range: 05/04/2015 - 01/13/2016 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

## Groundwater Monitoring

| Well Name | BH12-01 | BH12-02 | BH12-03 | BH12-05 | BH12-06 | BH12-07 | BH12-08 | BH12-09 | TH13-01 | TH13-07 | TH13-08 | TH13-09 (Shallow) | TH13-09 (Deep) | TH15-03 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Surface El. (m)** | **24.83** | **9.92** | **9.97** | **38.6** | **23.37** | **26.39** | **37.69** | **45.43** | **46.32** | **27.8** | **10.86** | **7.38** | **7.38** | **23.01** | |
| **Well Depth (m)** | **7.0** | **6.2** | **5.8** | **12.1** | **11.3** | **6.6** | **14.1** | **19.6** | **14.7** | **10.4** | **6.1** | **1.4** | **3.0** | **9.1** | |
| **Date Measured** | **Depth to Groundwater (m) - to nearest centimeter (if well dry, write 'Dry')** | | | | | | | | | | | | | | **Comments** |
| i.e.: May 4, 2015 | 5.22 | 3.13 | 2.24 | 8.19 | 7.87 | 4.89 | 10.91 | 16.80 | 14.34 | 4.45 | 2.73 | 0.87 | 0.85 | 7.38 | |
| **May 14th, 2015** | 5.25 | 3.15 | | 8.26 | 7.92 | 4.92 | 10.98 | | 14.41 | 4.57 | 2.72 | 0.97 | 0.93 | 7.41 | Missed 2 Boreholes, due to lack of map. |
| **May 21st, 2015** | 5.25 | 3.22 | | 8.45 | 7.98 | 4.93 | 11.00 | 16.89 | 14.49 | 4.55 | 2.75 | 1.00 | 0.95 | 7.41 | Difficulty locating 12-03 |
| **May 26, 2015** | 5.24 | 3.16 | 2.27 | 8.55 | 7.92 | 4.92 | 11.05 | 16.93 | 14.57 | 4.58 | 2.73 | 0.99 | 0.95 | 7.39 | Readings by Thurber. |
| **June 5th, 2015** | 5.25 | 3.21 | 2.27 | 8.69 | 7.92 | 4.93 | 11.10 | 17.01 | DRY | 4.65 | 2.76 | 0.99 | 0.96 | 7.42 | TH13-01 DRY, Tried 3x to get reading |
| **June 12th, 2015** | 5.28 | 3.25 | 2.3 | 8.77 | 7.92 | 4.96 | 11.16 | 17.06 | 14.64 | 4.69 | 2.8 | 1.02 | 0.98 | 7.44 | Water in TH13-01 |
| **June 22nd, 2015** | 5.29 | 3.25 | 2.31 | 8.93 | 7.93 | 4.97 | 11.22 | 17.11 | DRY | 4.75 | 2.8 | 0.99 | 1.00 | 7.4 | TH13-01 DRY again |
| **July 2nd, 2015** | 5.27 | 3.28 | 2.32 | 8.94 | 7.94 | 5 | 11.27 | 17.16 | DRY | 4.8 | 2.8 | 1.01 | 1.01 | 7.41 | |
| **July 8th, 2015** | 5.26 | 3.21 | 2.3 | 8.98 | 7.93 | 4.99 | 11.27 | 17.21 | DRY | 4.81 | 2.78 | 1.02 | 1.03 | 7.39 | Reading by Thurber. |
| **July 15th, 2015** | 5.29 | 3.26 | - | 9.07 | 7.94 | 5.3 | 11.28 | 17.27 | DRY | 4.86 | 2.8 | 1.04 | 1.03 | 7.42 | Well B12-02 overrun by wasps, will attempt again |
| **July 27th, 2015** | 5.31 | 3.22 | 2.32 | 9.10 | 7.94 | 5.2 | 11.30 | 17.28 | DRY | 4.91 | 2.81 | 0.99 | 1.05 | 7.38 | Levels remain roughly constant, with slight increase despite recent rain |
| **Aug 12th, 2015** | 5.33 | 3.22 | 2.33 | 9.18 | 7.96 | 5.05 | 11.46 | 17.43 | DRY | 4.94 | 2.83 | 1.03 | 1.06 | 7.41 | Significant changes, both positive and negative |
| **Aug 27th, 2015** | 5.35 | 3.3 | 2.35 | 9.41 | 7.94 | 5.07 | 11.52 | 17.52 | DRY | 4.99 | 2.48 | 1.05 | 1.08 | 7.42 | BH13-08 Partially submerged, reading poor |
| **Sep 4th, 2015** | 5.34 | 3.06 | 2.31 | 9.42 | 7.95 | 4.93 | 11.56 | 17.54 | DRY | 5.02 | 2.48 | 0.74 | 1.09 | 7.4 | BH 13-08 & 13-01 full of water, had to be cleaned |
| **Sep 21st, 2015** | 5.35 | 3.02 | | 9.54 | 7.96 | 5.01 | 11.61 | 17.64 | DRY | 4.92 | | 0.52 | | 7.39 | Unable to complete due to time restrictions, water table lower than before |
| **Sep 30st, 2015** | 5.36 | 3.09 | 2.27 | 9.56 | 7.96 | 5.03 | 11.7 | 17.67 | DRY | 4.97 | 2.46 | 0.87 | 1.07 | 7.39 | 13-08 full of water, no significant findings |
| **Oct 8th, 2015** | | | | 9.7 | | | 11.67 | 17.77 | DRY | | | | | | 12-05 depressurized, |
| **Oct 15th, 2015** | 5.35 | 3.05 | 2.29 | 9.63 | 7.96 | 5.07 | 11.68 | 17.73 | DRY | 4.94 | 2.48 | 0.78 | 1.05 | 7.4 | it, will use spade to stop flooding |
| **Nov 05th, 2015** | 5.35 | 2.96 | 2.3 | 9.72 | 7.94 | 4.99 | 11.67 | 17.82 | DRY | 4.94 | | 0.45 | 1.06 | 7.4 | |
| **Nov 20th, 2015** | 5.34 | 3.03 | 2.29 | 9.26 | 7.95 | 5.01 | | | DRY | 4.67 | 2.4 | | | 7.4 | Due to ice & frozen lids, was unable to lift lids (even with Rock hammer) |
| **Nov 27th, 2015** | 5.3 | 3.05 | 2.32 | 9.13 | 7.92 | 5 | 11.55 | 17.67 | DRY | 4.67 | | 0.83 | 1.05 | 7.55 | |
| **Dec 18th, 2015** | 4.92 | 2.95 | 2.24 | 9.02 | 7.9 | 5.26 | 11.35 | 17.58 | DRY | 4.42 | 2.66 | 0.45 | 1.02 | 7.39 | |
| **Jan 13th, 2016** | 4.91 | 2.96 | 2.11 | 9 | 7.94 | 5.32 | 11.33 | 17.42 | DRY | 4.7 | | 0.45 | 1 | 7.44 | |

**Example Comments: Well damaged, water flowing into well from surface, unstable reading, well depth decreased, explanation if not measured, etc.**

# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



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Date Range: 01/20/2017 - 10/20/2017 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

## Groundwater Monitoring

| Well Name | BH12-01 | BH12-02 | BH12-03 | BH12-05 | BH12-06 | BH12-07 | BH12-08 | BH12-09 | TH13-01 | TH13-07 | TH13-08 | TH13-09 (Shallow) | TH13-09 (Deep) | TH15-03 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Surface El. (m)** | **24.83** | **9.92** | **9.97** | **38.6** | **23.37** | **26.39** | **37.69** | **45.43** | **46.32** | **27.8** | **10.86** | **7.38** | **7.38** | **23.01** | |
| **Well Depth (m)** | **7.0** | **6.2** | **5.8** | **12.1** | **11.3** | **6.6** | **14.1** | **19.6** | **14.7** | **10.4** | **6.1** | **1.4** | **3.0** | **9.1** | |
| **Date Measured** | **Depth to Groundwater (m) - to nearest centimeter (if well dry, write 'Dry')** | | | | | | | | | | | | | | **Comments** |
| **Jan 20th, 2016** | 4.88 | 2.97 | 2.01 | 8.72 | 7.92 | 4.94 | 11.34 | 17.32 | DRY | 4.6 | 2.55 | 0.62 | 1.02 | 7.40 | Significant water level changes on BH 12-05 & BH 12-07 |
| **Jan 28th, 2016** | 5.31 | 2.94 | 2.09 | 8.35 | | 4.55 | | 17.29 | DRY | 4.67 | 2.66 | 0.45 | 0.99 | 7.40 | BH 12-06 Full of water, drained, readings comprimised. |
| **Feb 16th, 2016** | 5.3 | 2.94 | 2.09 | 8.31 | 7.93 | 4.84 | 11.06 | 17.04 | DRY | 4.42 | 2.67 | 0.49 | 1.01 | 7.39 | |
| **Feb 25th, 2016** | 5.29 | 3 | 2.23 | 8.06 | 7.9 | 4.88 | 10.97 | 16.88 | 14.65 | 4.38 | 2.63 | 0.73 | 0.99 | 7.4 | BH 13-07 has a reading for first time since May 26, 2015 |
| **Mar 14th, 2016** | 5.25 | 2.94 | 2.2 | 8.03 | 7.89 | 4.82 | 10.92 | 16.88 | 14.62 | 4.4 | 2.57 | 0.47 | 0.98 | 7.39 | Outfall water clear. |
| **Mar 31st, 2016** | 5.26 | 3 | 2.25 | 8.08 | 7.92 | 4.49 | 10.87 | 16.69 | 14.2 | 4.49 | 2.55 | 0.79 | 1 | 7.28 | 13-07 corrected |
| **April 15th, 2016** | 5.35 | 3.04 | 2.29 | 8.37 | 7.93 | | 10.96 | 16.75 | 14.18 | 4.63 | 2.53 | 1 | 0.93 | 7.21 | 12.07 flooded. |
| **May 6th, 2016** | 5.35 | 3.12 | 2.35 | 8.54 | 7.95 | 4.65 | 11 | 16.85 | 14.28 | 4.76 | 2.58 | 1.02 | 0.95 | 7.4 | Waterlevels down in some BH, |
| **May 24th, 2016** | 5.36 | 3.11 | 2.29 | 8.77 | 7.96 | 4.86 | 11.16 | 16.99 | DRY | 4.97 | | 1.02 | 0.98 | 7.42 | 13-01 Dry, Water Levels Down |
| **June 20th, 2016** | | 3.07 | 2.27 | 8.97 | 7.98 | 4.34 | 11.06 | 17.16 | DRY | 4.66 | | 1.04 | 0.78 | 7.4 | |
| **June 28th, 2016** | | | | 9.05 | 7.97 | 4.94 | 11.33 | 17.2 | DRY | | | | | 7.4 | Partial Inspection due to time constraints. |
| **August 4th, 2016** | 5.4 | 3.08 | 2.27 | 9.08 | 7.97 | 5.01 | 11.31 | 17.4 | DRY | 5.09 | 2.17 | 1.04 | 0.97 | 7.41 | |
| **August 8th, 2016** | 5.41 | 3.07 | 2.29 | 9.32 | 7.98 | 5.03 | 11.49 | 17.43 | DRY | 5.08 | 2.19 | 0.97 | 1.03 | 7.39 | Readings by Thurber |
| **August 19th, 2016** | 5.42 | 3.14 | 2.31 | 9.45 | 7.98 | 5.11 | 11.54 | 17.5 | DRY | 5.08 | 2.2 | 1 | 1.06 | 7.41 | |
| **October 3rd, 2016** | 5.42 | 3.09 | 2.27 | 9.78 | 7.99 | 5.06 | 11.68 | 17.7 | DRY | 5.02 | 2.18 | 0.88 | 1.08 | 7.41 | |
| **January 13th, 2017** | | | | 9.11 | | | | | | 4.9 | | | | 7.41 | Most covers coverd in snow & frozen. Will revisit when thawed. |
| **June 16th, 2017** | 5.32 | 3.04 | 2.26 | 8.44 | 7.95 | 4.9 | Burried | 16.377 | 14 | 4.58 | | 0.88 | 1.04 | 7.41 | Borehole 13-08 & 12-08 unaccesible. Will bring shovel next visit. |
| **July 31st, 2017** | 5.95 | 3.09 | 2.33 | 8.82 | 7.98 | 5.01 | 11.85 | 17.03 | 14.62 | 4.97 | 2.5 | 1 | 1.08 | 7.42 | |
| **September 22nd, 2017** | 5.3 | 3.09 | 2.29 | 9.21 | 8.01 | 5.04 | burried | 17.34 | DRY | 5.11 | | 6.82 | 1.14 | 7.39 | 13-08 under water, 12-08 burried, will bring shovel |
| **September 29th, 2017** | 5.25 | 3.05 | 2.32 | 9.25 | 7.98 | 5.03 | Burried | 17.38 | DRY | 5.14 | | 0.94 | 1.09 | 7.4 | 13-08 underwater, 12-08 burried |
| **October 6th, 2017** | 5.15 | 3.1 | 2.3 | 9.22 | 8 | 5.03 | 11.49 | 17.37 | DRY | 5.08 | | 0.9 | 1.08 | 7.42 | |
| **October 13th, 2017** | 5.3 | 3.11 | 2.11 | 9.35 | 7.98 | 5.03 | 11.53 | 17.38 | DRY | 3.05 | | 0.61 | 1.09 | 7.4 | Cap missing from 13-07 and chamber was flooded,13-08 underwater |
| **October 20th, 2017** | 5.33 | 3.04 | 2.27 | 9.38 | 8 | 4.99 | 11.54 | 17.57 | DRY | 5.12 | | 0.58 | 1.08 | 7.4 | 13-08 Underwater |

**Example Comments: Well damaged, water flowing into well from surface, unstable reading, well depth decreased, explanation if not measured, etc.**

# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



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Date Range: 10/27/2017 - Present  File Number: 3341-79 (2015 Sinkhole)  Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

## Groundwater Monitoring

| Well Name | BH12-01 | BH12-02 | BH12-03 | BH12-05 | BH12-06 | BH12-07 | BH12-08 | BH12-09 | TH13-01 | TH13-07 | TH13-08 | TH13-09 (Shallow) | TH13-09 (Deep) | TH15-03 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Surface El. (m)** | 24.83 | 9.92 | 9.97 | 38.6 | 23.37 | 26.39 | 37.69 | 45.43 | 46.32 | 27.8 | 10.86 | 7.38 | 7.38 | 23.01 | |
| **Well Depth (m)** | 7.0 | 6.2 | 5.8 | 12.1 | 11.3 | 6.6 | 14.1 | 19.6 | 14.7 | 10.4 | 6.1 | 1.4 | 3.0 | 9.1 | |
| **Date Measured** | Depth to Groundwater (m) - to nearest centimeter (if well dry, write 'Dry') | | | | | | | | | | | | | | **Comments** |
| **October 27th, 2017** | 5.32 | 3.08 | 2.27 | 9.39 | 7.99 | 5 | 11.59 | 17.52 | DRY | 5 | | 0.81 | 1.07 | 7.40 | 13-08 Underwater |
| **November 3rd, 2017** | 5.21 | 3.04 | 2.28 | 9.45 | 8.01 | 5.02 | 11.6 | 17.54 | DRY | 5.08 | | 0.45 | 1.07 | 7.43 | |
| **November 10th, 2017** | 5.34 | 3.06 | 2.25 | 9.46 | 8 | 5.01 | 11.59 | 17.57 | DRY | 5.11 | | 0.8 | 1.07 | 7.27 | 13-08 Underwater |
| **November 17th, 2017** | 5.34 | 2.96 | 2.24 | 9.45 | 7.97 | 4.91 | 11.57 | 17.56 | DRY | 4.83 | | 0.47 | 1.06 | 7.4 | 13-08 Underwater |
| **November 24th, 2017** | 5.32 | 2.99 | 2.21 | 9.25 | 7.96 | 4.93 | 11.49 | 17.49 | DRY | 4.68 | | 0.51 | 1.06 | 7.4 | 13-08 Underwater |
| **December 1st, 2017** | 5.33 | 3.01 | 2.15 | 9.22 | 7.98 | 4.94 | 11.48 | 17.49 | DRY | 4.84 | | 0.51 | 1.05 | 7.35 | 13-08 Underwater |
| **December 21st, 2017** | 5.32 | 3.01 | 2.24 | 9.28 | 7.95 | 4.95 | 11.52 | 17.52 | DRY | 4.9 | | 0.61 | 1.06 | 7.4 | 13-08 Underwater |
| **January 5th, 2018** | 5.21 | 3.00 | | 9.09 | 8.03 | | 11.47 | 17.49 | DRY | 4.73 | | 0.43 | 1.05 | 7.32 | 12-03, 12-07, 13-08 Underwater |
| **January 12th, 2018** | 5.26 | 2.98 | 2.11 | 8.83 | 7.99 | 4.87 | 11.37 | 17.36 | DRY | 4.61 | | 0.47 | 1.04 | 7.41 | 13-08 Underwater |
| **January 19th, 2018** | 5.22 | 2.97 | 2.19 | 8.61 | 7.95 | 4.89 | 11.27 | 17.28 | DRY | 4.61 | | 0.51 | 1.05 | 7.4 | 13-08 Underwater |
| **January 29th, 2018** | 5.22 | 2.8 | 1.97 | 8.2 | 7.95 | 4.81 | 11.13 | 17.07 | DRY | 4.3 | | 0.18 | 1.04 | 7.4 | 13-08 Underwater |
| **February 2nd, 2018** | 5.23 | 2.69 | 2.05 | 8.78* | 7.93 | 4.86 | 10.97 | 16.97 | DRY | 4.06 | 2.37 | 0.4 | 1.04 | 7.41 | Adam cleared 13-08, first reading likely high. Error with 12-05 |
| **February 6th, 2018** | | | | 7.68 | | | | | | | | | | | Revisited to remeasure 12-05 |
| **February 16th, 2018** | 5.27 | 3.03 | 2.19 | 7.94 | 7.93 | 4.89 | 10.89 | 16.74 | 14.33 | 4.46 | 2.52 | 0.62 | 1.05 | 7.4 | |
| **February 23rd, 2017** | | 3.02 | | 8.07 | 7.91 | 4.88 | 10.9 | 16.7 | | | 2.5 | 0.74 | 1.05 | 7.41 | 12.01, 12.02, 13-01, 13-07 Frozen |
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**Example Comments: Well damaged, water flowing into well from surface, unstable reading, well depth decreased, explanation if not measured, etc.**

# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



*The structure of this form was developed by Thurber Engineering Ltd. (Thurber) for the exclusive use of the District of Sechelt. This form may be revised as required by Thurber.*
*A condition of the use of this form is that Thurber's performance of its professional services is subject to the Statement of Limitations and Conditions.*

**Instructions for use of this form and additional information.**
**A copy of these instructions should be available on site during all inspections.**

**Instructions for Use**

1. Inspections and water level measurements should only be performed by experienced personnel authorized by the District of Sechelt.
2. The use of consistent staff is vital to maximizing the potential for perception of changes to the site.
3. The inspector should adhere to all WorkSafe BC regulations. Unbackfilled sinkholes should be treated as open and potentially unstable excavations.
4. If the inspector observes an imminent hazard which they believe to pose an immediate threat to person, property or the environment, the inspector should take immediate steps to protect their own safety and the safety of others and contact the relevant emergency services or utility providers. If the observed hazard is of geotechnical nature, Thurber should be contacted immediately (604-684-4384).
5. Signs of instability should be reported to Thurber within 24 hours of observation. Signs of instability may include but are not limited to the following: ground cracking, signs of ground settlement/displacement, slumping/sloughing, rapid erosion or muddy water seeping from the ground. With regards to retaining walls, signs of instability may include but are not limited to the following: rapid/significant loss of backfill, water seeping out of the wall face, wall face observed to be leaning more than previously, wall observed to be bulging (not straight) more than previously and/or loss of facing boulders.
6. Particular care should be taken during inspections in the winter months when seasonal rainfalls typically increase the hydraulic groundwater gradients which are believed to be related to the formation of sinkholes at this site.
7. Detailed inspections and groundwater monitoring should be completed weekly at minimum during the months of November through June and every two weeks at minimum during the months of July through October.
8. Additional inspections may be required by Thurber or in response to new developments or remedial works.

**Instructions for Filing/Distribution**

1. Completed inspection forms should be digitized (ideally typed into this template, or at a minimum scanned), with photos and plan markups attached in a timely manner.
2. Completed inspection forms and files should be archived and copied into a field binder for reference during future inspections.
3. Digitized copies of completed inspection forms should be provided to Thurber in a timely manner for interpretation and review.
4. Additional pages or materials may be attached to the back of this form as required. If significant modification of this form is required, please contact Thurber.

# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



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Date Range: 02/23/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

## Inspection Photographs













| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Crowston Ditch - West** | | |
| **Comment:** | **Low flowrate** | | |

| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Crowston Ditch - East** | | |
| **Comment:** | **Minimal flow rate** | | |

| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Crowston Pond** | | |
| **Comment:** | | | |

| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Seawatch lane closure** | | |
| **Comment:** | | | |













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|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Lot 11 ponding** | | |
| **Comment:** | | | |

| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Lot 9/10 outfall** | | |
| **Comment:** | **High silt, low turbidity** | | |

| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Lot 1 Pond 2** | | |
| **Comment:** | | | |

| | | | |
|---|---|---|---|
| **Photo File #** | | **Item #** | |
| **Location:** | **Lot 1 Outfall** | | |
| **Comment:** | | | |

**Tips:** **1) Use the 'right-click, Change Picture' feature in Microsoft Excel for ease and to maintain formatting.**
**2) Compress photos to 220 dpi for ease of file sharing/storage. [Picture Tools>Format>Compress Pictures> deselect ' Apply only to this photo' and select Print (220 dpi)]**

# THE SHORES PHASE 1 SUBDIVISION - SITE INSPECTION REPORT



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Date Range: 02/23/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

**This form should only be used in conjunction with the instructions printed on Page 5.**

## Inspection Photographs













| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Photo File #** | | **Item #** | | | **Photo File #** | | | **Item #** | | **Photo File #** | | | **Item #** | | | **Photo File #** | | | **Item #** |
| **Location:** | **Lot 1 Outfall** | | | | **Location:** | **Lot 1 Path** | | | | **Location:** | **Lot 1 Pond 1** | | | | | **Location:** | **Lot 3 Spring Works** | | |
| **Comment:** | | | | | **Comment:** | | | | | **Comment:** | | | | | | **Comment:** | | | |







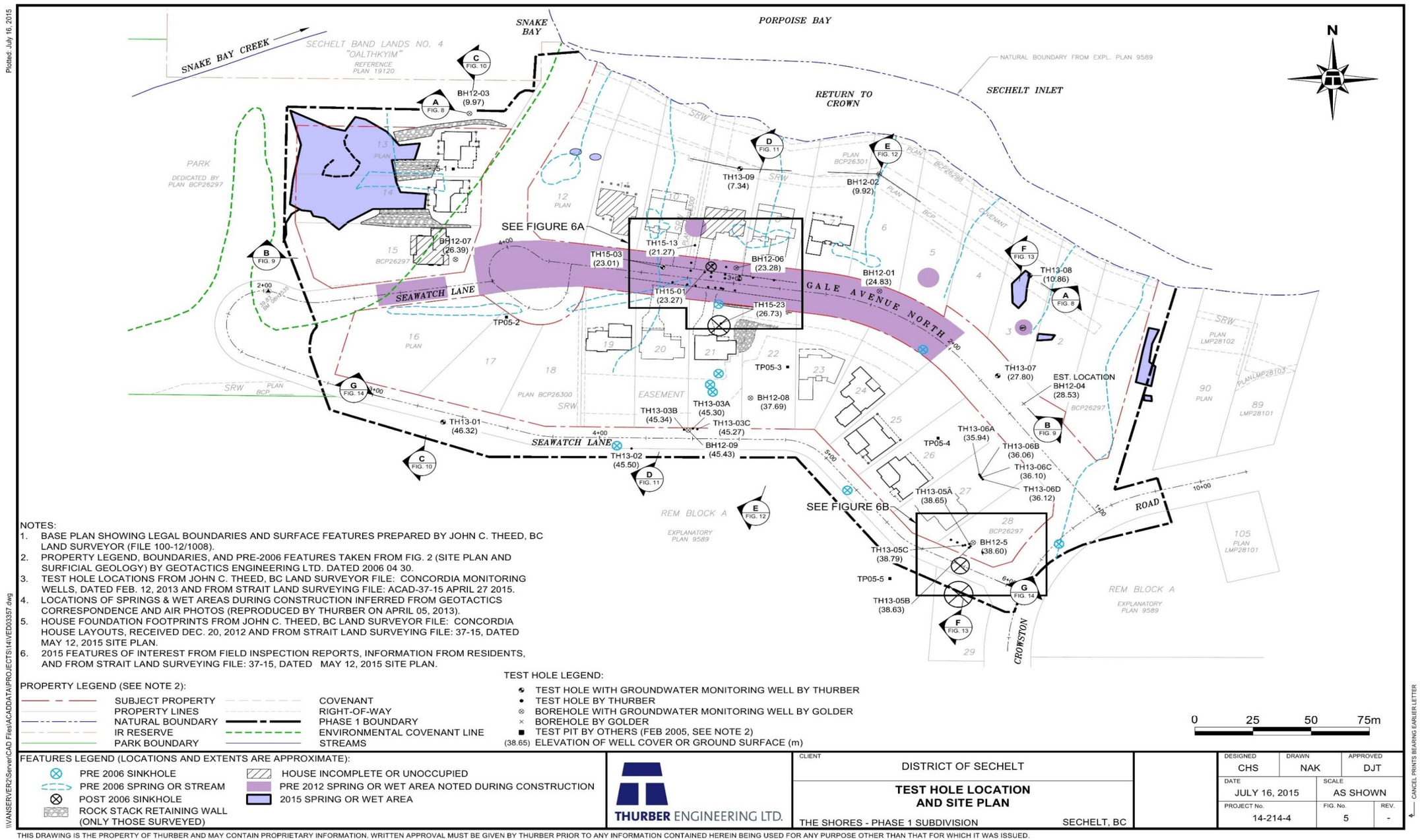





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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Photo File #** | | **Item #** | | | **Photo File #** | | | **Item #** | | **Photo File #** | | | **Item #** | | | **Photo File #** | | | **Item #** |
| **Location:** | | | | | **Location:** | | | | | **Location:** | **Lot 10 Driveway** | | | | | **Location:** | | | |
| **Comment:** | | | | | **Comment:** | | | | | **Comment:** | | | | | | **Comment:** | | | |

**Tips:** **1) Use the 'right-click, Change Picture' feature in Microsoft Excel for ease and to maintain formatting.**
**2) Compress photos to 220 dpi for ease of file sharing/storage. [Picture Tools>Format>Compress Pictures> deselect ' Apply only to this photo' and select Print (220 dpi)]**

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NOTES:
1. BASE PLAN SHOWING LEGAL BOUNDARIES AND SURFACE FEATURES PREPARED BY JOHN C. THEED, BC LAND SURVEYOR (FILE 100-12/1008).
2. PROPERTY LEGEND, BOUNDARIES, AND PRE-2006 FEATURES TAKEN FROM FIG. 2 (SITE PLAN AND SURFICIAL GEOLOGY) BY GEOTACTICS ENGINEERING LTD. DATED 2006 04 30.
3. TEST HOLE LOCATIONS FROM JOHN C. THEED, BC LAND SURVEYOR FILE: CONCORDIA MONITORING WELLS, DATED FEB. 12, 2013 AND FROM STRAIT LAND SURVEYING FILE: ACAD-37-15 APRIL 27 2015.
4. LOCATIONS OF SPRINGS & WET AREAS DURING CONSTRUCTION INFERRED FROM GEOTACTICS CORRESPONDENCE AND AIR PHOTOS (REPRODUCED BY THURBER ON APRIL 05, 2013).
5. HOUSE FOUNDATION FOOTPRINTS FROM JOHN C. THEED, BC LAND SURVEYOR FILE: CONCORDIA HOUSE LAYOUTS, RECEIVED DEC. 20, 2012 AND FROM STRAIT LAND SURVEYING FILE: 37-15, DATED MAY 12, 2015 SITE PLAN.
6. 2015 FEATURES OF INTEREST FROM FIELD INSPECTION REPORTS, INFORMATION FROM RESIDENTS, AND FROM STRAIT LAND SURVEYING FILE: 37-15, DATED MAY 12, 2015 SITE PLAN.

PROPERTY LEGEND (SEE NOTE 2):
- SUBJECT PROPERTY
- PROPERTY LINES
- NATURAL BOUNDARY
- IR RESERVE
- PARK BOUNDARY
- COVENANT
- RIGHT-OF-WAY
- PHASE 1 BOUNDARY
- ENVIRONMENTAL COVENANT LINE
- STREAMS

TEST HOLE LEGEND:
- TEST HOLE WITH GROUNDWATER MONITORING WELL BY THURBER
- TEST HOLE BY THURBER
- BOREHOLE WITH GROUNDWATER MONITORING WELL BY GOLDER
- BOREHOLE BY GOLDER
- TEST PIT BY OTHERS (FEB 2005, SEE NOTE 2)
- (38.65) ELEVATION OF WELL COVER OR GROUND SURFACE (m)

FEATURES LEGEND (LOCATIONS AND EXTENTS ARE APPROXIMATE):
- PRE 2006 SINKHOLE
- PRE 2006 SPRING OR STREAM
- POST 2006 SINKHOLE
- ROCK STACK RETAINING WALL (ONLY THOSE SURVEYED)
- HOUSE INCOMPLETE OR UNOCCUPIED
- PRE 2012 SPRING OR WET AREA NOTED DURING CONSTRUCTION
- 2015 SPRING OR WET AREA

THURBER ENGINEERING LTD.

CLIENT: DISTRICT OF SECHELT

**TEST HOLE LOCATION AND SITE PLAN**

THE SHORES - PHASE 1 SUBDIVISION — SECHELT, BC

| DESIGNED | DRAWN | APPROVED |
|---|---|---|
| CHS | NAK | DJT |
| DATE: JULY 16, 2015 | SCALE: AS SHOWN | |
| PROJECT No.: 14-214-4 | FIG. No.: 5 | REV.: - |

\\VANSERVER2\Server\CAD Files\ACADDATA\PROJECTS\14\VED\0357.dwg

CANCEL PRINTS BEARING EARLIER LETTER


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