THE SHORES PHASE 1 SUBDIVISION - SITE MONITERING PROGRAM

Period: November 24th to November 30th

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Date: 11/30/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT Recent Rainfall: 58.8 mm in the past 7 days

Reviewed By: Sanath Bandara, P.ENG

Developments since last inspection: Site was wet from recent light rainfall - heavy rainfall (35.6mm) on 26th - no visible significant changes from last inspection

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?	Yes	Low/moderate flow in east and west Crowston ditches
16	Crowston Road ditches at Borrow Access	Flow rate in West/East ditches?	No	No visually apparent changes since last 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	Increased saturation, majority of path constantly wet
29	Lot 1 - Collection Ponds	Water levels, turbidity?	No	Ponding water in Ponds 1 and 2, Pond 3 no storage

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: 11/30/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

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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/moderate outflow, minimal turbidity
32	PVC drain at Storm outfall NE of Lot 1	Turbidity / rate of outflow	No	Minimal outflow, minimal turbidity
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?	Yes	Appears someone cleared debris over MH covers, confirmed flow
38	SRW below Lot 3	Rate/turbidity of flow from PVC drain on downslope side of bench.	No	Low outflow, low turbidity from visual 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.)	Yes	Silt level low, turbity negligible, steady moderate flow
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	Surface poinding in both upper and lower ponds
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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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	N/A
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Date: 11/30/2018 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.
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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	XX Swamped, dried 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

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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.

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

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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	5.00	11.59	17.52	DRY	5.00		0.81	1.07	7.40	13-08 Underwater
November 3rd, 2017	5.21	3.04	2.28	9.45	8.01	5.02	11.60	17.54	DRY	5.08		0.45	1.07	7.43	
November 10th, 2017	5.34	3.06	2.25	9.46	8.00	5.01	11.59	17.57	DRY	5.11		0.80	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	7.40	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	7.40	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	4.90		0.61	1.06	7.40	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	7.40	13-08 Underwater
January 29th, 2018	5.22	2.80	1.97	8.20	7.95	4.81	11.13	17.07	DRY	4.30		0.18	1.04	7.40	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	0.40	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	7.40	
February 23rd, 2018		3.02		8.07	7.91	4.88	10.90	16.70			2.50	0.74	1.05	7.41	12.01, 12.02, 13-01, 13-07 Frozen
March 2nd, 2018	5.23	2.98	2.20	8.13	7.92	4.89	10.95	16.82	13.83	4.51	2.47	0.60	1.02	7.41	
March 16th, 2018	5.19	3.02	2.21	8.25	7.91	4.88	10.93	16.74	13.68	4.53	2.52	0.69	1.04	7.41	
March 23rd, 2018	5.26	2.98	2.16	8.30	7.93	4.86	10.94	16.74	13.68	4.60	2.51	0.55	1.04	7.40	
March 29th, 2018	5.22	2.97	2.15	8.13	7.90	4.84	10.90	16.72	13.63	4.46	2.48	0.62	1.04	7.42	
April 6th, 2018	5.19	2.94	2.15	8.06	7.94	4.83	10.85	16.76	13.64	4.52	2.56	0.52	1.04	7.42	
April 13th, 2018	5.15	2.92	2.13	7.88	7.90	4.81	10.78	16.60	13.62	4.27	2.52	0.56	0.98	7.40	
April 20th, 2018	5.15	3.03	2.20	7.86	7.90	4.85	10.75	16.61	13.59	4.40	2.55	0.74	0.98	7.40	
April 27th, 2018	5.15	3.03	2.21	7.92	7.92	4.86	10.76	16.74	13.65	4.47	2.59	0.86	1.00	7.40	

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 - 11/09/2018 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.

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**
May 4th, 2018	5.15	3.03	2.23	8.11	7.94	4.87	10.80	16.60	13.62	4.57	2.56	0.90	1.01	7.40	
May 11th, 2018	5.23	3.04	2.20	8.20	7.93	4.86	10.84	16.62	13.62	4.71	2.45	0.92	0.97	7.38	
May 18th, 2018	5.24	3.08	2.19	8.27	7.95	4.90	10.87	16.64	13.65	4.72	2.57	0.94	0.94	7.40	
May 25th, 2018	5.24	3.09	2.25	8.34	7.94	4.93	10.91	16.67	13.67	4.76	2.57	0.93	1.00	7.41	
June 4th, 2018	5.25	3.05	2.20	8.45	7.96	4.93	10.96	16.75	13.69	4.81	2.56	0.97	1.05	7.41	
June 8th, 2018	5.25	3.06	2.22	8.49	7.95	4.92	10.99	16.78	13.71	4.82	2.58	0.98	1.06	7.40	
June 18th, 2018	5.27	3.12	2.25	8.58	7.95	4.94	11.04	16.84	13.84	4.86	2.63	0.91	1.08	7.40	
July 3rd, 2018	5.27	3.09	2.27	8.71	7.97	4.97	11.10	16.95	13.93	4.90	2.68	0.96	1.09	7.42	
July 13th, 2018	5.25	3.12	2.29	8.78	7.99	4.98	11.15	17.00	14.29	4.94	2.63	0.96	1.08	7.42	
July 20th, 2018	5.27	3.14	2.28	8.84	7.93	5.01	11.19	17.06	14.43	4.95	2.65	0.98	1.10	7.40	
July 27th, 2018	5.29	3.17	2.28	8.87	7.98	5.03	11.24	17.09	14.51	4.98	2.72	0.99	1.10	7.41	
August 13th, 2018	5.30	3.08	2.30	9.01	8.00	5.08	11.30	17.20	14.68	5.03	2.66	0.99	1.10	7.41	
August 17th, 2018	5.31	3.14	2.30	9.05	7.98	5.06	11.32	17.24	14.7/DRY	5.04	2.71	1.00	1.11	7.41	TH13-01 partially registered as probe touched sand.
August 24th, 2018	5.31	3.14	2.30	9.08	8.02	5.09	11.34	17.25	DRY	5.05	2.68	1.00	1.12	7.40	
August 31st, 2018	5.31	3.10	2.30	9.13	7.98	5.06	11.38	17.30	DRY	5.07	2.68	1.00	1.12	7.40	
September 10th, 2018	5.31	3.07	2.30	9.17	7.99	5.06	11.41	17.33	DRY	5.06	2.67	1.00	1.09	7.41	
September 20th, 2018	5.30	3.04	2.28	9.24	7.98	5.02	11.46	17.40	DRY	5.02	2.57	0.79	1.13	7.41	
September 28th, 2018	5.30	3.06	2.27	9.22	7.98	5.03	11.45	17.43	DRY	5.03	2.65	0.79	1.11	7.40	
October 5th, 2018	5.33	3.03	2.25	9.28	7.98	5.02	11.47	17.45	DRY	5.02	2.60	0.76	1.11	7.40	
October 12th, 2018	5.33	3.04	2.26	9.32	7.98	5.02	11.48	17.47	DRY	5.02	2.60	0.78	1.10	7.40	
October 19th, 2018	5.34	3.05	2.27	9.35	7.98	5.03	11.52	17.47	DRY	5.07	2.56	0.87	1.11	7.40	
October 26th, 2019	5.37	3.01	2.29	9.40	8.01	5.03	11.55	17.53	DRY	5.07	2.56	0.56	1.11	7.41	
November 9th, 2019	5.34	3.01	2.22	9.31	8.01	4.97	11.50	17.54	DRY	4.80	2.59	0.66	1.10	7.41	

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: 11/16/2018 - 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**
November 16th, 2018	5.36	2.97	2.24	9.36	8.01	5.00	11.53	17.55	DRY	4.86	2.61	0.58	1.10	7.41	
November 23rd, 2018	5.36	2.99	2.23	9.38	7.97	5.02	11.54	17.56	DRY	4.90	2.59	0.59	1.09	7.41	
November 30th, 2018	5.31	2.93	2.20	9.13	7.95	4.94	11.48	17.52	DRY	4.73	2.56	0.52	1.10	7.41	

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

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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: 11/30/2018 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/moderate flow



Photo File #	
Item #	
Location:	Crowston Ditch - East
Comment:	Low flow



Photo File #	
Item #	
Location:	Crowston Pond
Comment:	



Photo File #	
Item #	
Location:	Seawatch Lane
Comment:	Ponding at curb



Photo File #	
Item #	
Location:	Lot 22 Scarp
Comment:	No significant change



Photo File #	
Item #	
Location:	Lot 12 Pond
Comment:	



Photo File #	
Item #	
Location:	Lot 1-12 ROW
Comment:	



Photo File #	
Item #	
Location:	Lot 9/10 Outfall
Comment:	Minimal flow

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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Date Range: 11/30/2018 File Number: 3341-79 (2015 Sinkhole) Inspector: Adam Bullock, EIT

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Inspection Photographs



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



Photo File #	
Item #	
Location:	Lot 1 - Path
Comment:	



Photo File #	
Item #	
Location:	Lot 1 - Path
Comment:	Wet



Photo File #	
Item #	
Location:	Lot 1 - Pond 1
Comment:	



Photo File #	
Item #	
Location:	Lot 3
Comment:	



Photo File #	
Item #	
Location:	
Comment:	



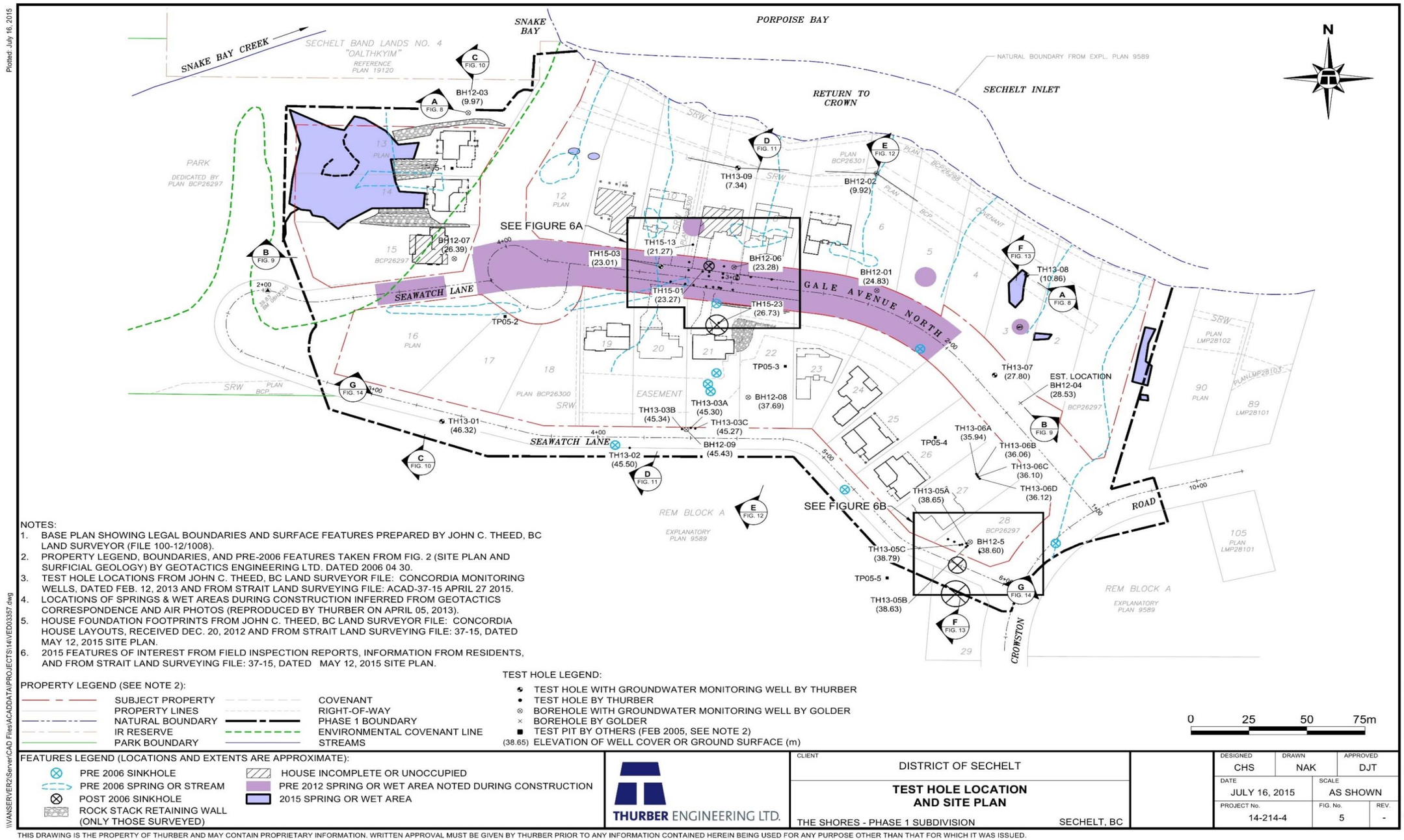
Photo File #	
Item #	
Location:	
Comment:	



Photo File #	
Item #	
Location:	N. Gale
Comment:	Cracking progression

Tips: 1) Use the 'right-click, Change Picture' feature in Microsoft Excel for ease and to maintain formatting.
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This figure was issued in the Thurber report dated July 16, 2015. Please refer to the report for additional information.
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