McDonald Morrissey Associates, LLC
GROUND WATER HYDROLOGISTS

January 15, 2025

Town of Arlington Conservation Commission
Attn: Mr. Charles Tirone, Chairperson
730 Massachusetts Avenue
Arlington, MA 02476

RE: **Thorndike Place, Dorothy Road, Arlington, Massachusetts – Preliminary Review of New Applicant Information**

Dear Mr. Tirone and Commission Members,

McDonald Morrissey Associates, LLC (MMA) is providing this letter in response to The Arlington Land Trust's request for a preliminary technical review of new materials presented by BSC Group (BSC) on behalf of Arlington Land Realty, LLC (Applicant). In conducting our review, MMA primarily focused on the following documents:

- *Stormwater Report, Thorndike Place, Dorothy Road, Arlington, MA*. Prepared by BSC Group, Inc., revised December 2024. Note: this reference extends to the associated "calculations only" version of the stormwater report presented as an electronic file named "2024-12_Revised_Stormwater-Calcs_Only.pdf"

- Letter to the Town of Arlington Conservation Commission from Dominic Rinaldi of BSC Group, Inc. *RE: Revisions to Stormwater Management/Response to Peer Review, Thorndike Place Residential Development*. Dated January 3, 2025.

MMA's preliminary review of the new materials has resulted in a set of initial observations, which are summarized as follows:

- The new design does away with the concept of temporarily storing significant quantities of stormwater on the roof of the main building, but the smaller infiltration systems located between the proposed townhomes along the northern boundary of the property have returned.

- System 1, which was created by dividing the primary stormwater infiltration system included in prior design iterations into two subareas, has been elevated such that BSC is now claiming 4-feet of vertical separation between the bottom of the system and estimated seasonal high groundwater (ESHGW) is provided. Based on this change, BSC claims they are absolved of the responsibility of performing a groundwater mounding analysis for System 1 according to Volume 3, Chapter 1 of the Massachusetts Stormwater Handbook (MSH). It is worth noting that, according to BSC's HydroCAD modeling, System 1 would be responsible for approximately 84% of cumulative infiltration across the seven proposed subsurface structures and the rain garden during storm events under post-development conditions.

- Groundwater mounding analyses are performed by BSC for the other, smaller proposed stormwater infiltration structures (i.e., Systems 2 through 7 and the rain garden). BSC presents the analyses as being reliable predictions of mounding generated during the 100-year, 24-hour storm event; however, they are fundamentally flawed for a variety of reasons, including the following: 1. any additive effects from simultaneous infiltration by other systems, including System 1, are ignored; and 2. the inputs used by BSC are inconsistent with the infiltration rates and durations used/predicted by their own HydroCAD model.

- Correcting only the two issues described above causes predicted groundwater mounding to rise well above the bottoms of Systems 1 and 7 during all considered design storm events, ranging from the 2-year, 24-hour storm event to the 100-year, 24-hour storm event (refer to **Attachment A**).

The following section provides additional technical detail and discussion related to the initial observations presented above:

- In describing the HydroCAD modeling, BSC's Stormwater Report claims the following: *"…the infiltration rate for silt loam (0.27-inches per hour* [in/hr]*) has been used in the infiltration system design to account for the materials found being primarily fill*". This statement is inaccurate, as certain features (e.g., System 1) selectively utilize a 0.52 in/hr infiltration rate, while other, smaller infiltration systems rely on the 0.27 in/hr infiltration rate. Though the same issue was previously highlighted in a prior review letter authored by MMA[1], it appears to remain unaddressed by BSC.

- BSC's revised design includes raising the bottom of System 1 to elevation (El.) +8-feet, thus creating a claimed vertical separation (i.e., that BSC measures from the chamber bottoms, not the bottom of the proposed stone layer) of exactly 4-feet relative to the proposed ESHGW condition at El. +4-feet. Rather than providing an obvious functional benefit, this modification appears to intentionally target a detail contained in the MSH. Specifically, as noted in Volume 3, Chapter 1 of the MSH, a groundwater mounding analysis requirement is triggered when a proposed system is intended to attenuate peak discharges for certain storm events (i.e., equal to or greater in magnitude than the 10-year, 24-hour event) <u>and less than 4-feet of vertical separation from ESHGW is provided</u>. While BSC is now claiming a groundwater mounding analysis for System 1 can be avoided under the letter of the MSH, the following considerations should be noted:

[1] Letter to the Town of Arlington Conservation Commission from McDonald Morrissey Associates, LLC. *RE: Thorndike Place, Dorothy Road, Arlington, Massachusetts – Preliminary Review of New Applicant and Reviewer Information*. Dated November 4, 2024.

- BSC inappropriately treats their proposed ESHGW elevation as a highly certain condition, disregarding evidence illustrating significant degrees of spatial and temporal variability in water table conditions at the site. Under prior proposed design iterations, a groundwater mounding analysis—albeit flawed in a variety of ways—was being performed by BSC for each significant infiltration structure. In MMA's opinion, this approach allowed for a minor amount of leeway relative to the specific ESHGW elevation, particularly given the severity (i.e., significant heights) of groundwater mounding predicted for design storm events using BSC's selected method. BSC's new approach now unreasonably relies on the uncertain ESHGW condition as a means of avoiding conducting an important analysis for a controlling (i.e., in terms of infiltration volume) structure, particularly since previously presented information suggests 4-feet of vertical separation is unlikely to be adequate in terms of preventing groundwater mounding from adversely impacting System 1[2].

- Though the MSH clearly identifies the criteria defining the mounding analysis requirement, it does not say groundwater mounding should be completely ignored in cases where larger (i.e., 4-feet or greater) vertical separations are provided. Hydraulic responses to infiltration, such as groundwater mounding heights, are governed by site-specific characteristics including aquifer properties (e.g., hydraulic conductivity, storativity, etc.). A single/common threshold (e.g., 4-foot vertical separation distance) may be conservative and therefore applicable in most cases, but it would be technically invalid to assume it would be universally applicable. The pre-existing evidence highlighting concerns over adverse effects associated with groundwater mounding[3] should be a cause for more careful analysis to verify the viability of the proposed design, as opposed to being treated as motivation to sidestep such efforts.

- By completely ignoring groundwater mounding caused by System 1 infiltration, BSC has compromised the results of groundwater mounding analyses performed for other proposed infiltration systems, particularly System 7. Effects from infiltration sources that are simultaneously active and located in close proximity to one another are generally additive and must be handled accordingly. The very U.S. Geological Survey (USGS) study that produced the spreadsheet used by BSC to perform their groundwater mounding analyses[4] states the following: "*…groundwater mounding associated with two or more nearby infiltration basins can be*

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[2] Letter to The Arlington Land Trust from McDonald Morrissey Associates, LLC. *RE: Thorndike Place, Dorothy Road, Arlington, Massachusetts – Preliminary Review of Applicant's Groundwater Mounding Analysis*. Dated April 26, 2024

[3] Letter to The Arlington Land Trust from McDonald Morrissey Associates, LLC. *RE: Thorndike Place, Dorothy Road, Arlington, Massachusetts – Preliminary Review of Applicant's Groundwater Mounding Analysis*. Dated April 26, 2024.

[4] Carleton, G.B., 2010, *Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins*: U.S. Geological Survey Scientific Investigations Report 2010-5102, 64 p.

conservatively estimated by simulating the basins separately then adding together the mounding at any given location associated with each individual basin". MMA will be prepared to elaborate on this point during the next public hearing, which is currently scheduled for January 16, 2025.

- Regarding BSC's application of the Hantush analytical model for conducting mounding analyses for infiltration systems other than System 1, MMA currently believes the most notable deficiency is the failure to account for additive mounding effects caused by simultaneous infiltration from multiple systems, as discussed above. However, additional deficiencies are also evident. For example, the applied infiltration (i.e., "recharge") rates and durations used by BSC are inexplicably inconsistent with their own HydroCAD predictions. The inconsistency is best evidenced by the fact that, in many cases, the assigned rates of recharge significantly exceed the claimed assumed infiltration capacity of site soils (i.e., 0.27 in/hr). Furthermore, site-specific and project-specific complexities, such as building foundations acting as barriers to lateral groundwater flow, continue to limit the applicability and representativeness of the idealized Hantush analytical model that is used by BSC. In consideration of these limitations, MMA reiterates our previously stated perspective that a more robust and flexible numerical modeling approach (e.g., MODFLOW) should be pursued to provide more reliable predictions of post-development groundwater mounding during storm events.

The review described herein is preliminary and based on information made available to MMA as of the indicated transmittal date. MMA therefore reserves the right to amend and/or extend this commentary based on expanded review and/or review of new information provided by the Applicant or other interested parties.

Sincerely,

Michael Mobile, Ph.D., CGWP
President, McDonald Morrissey Associates, LLC

Attachment: (A) MOUNDSOLV Summary Reports

MAM/
\\mma-server\Data\1_Projects\Arlington\Thorndike_Place\7_Reports_and_Memos\Comment_Letter_1-14-25\FINAL_MMA_Review_Letter_1-15-25.docx

Attachment A:

MOUNDSOLV Summary Reports

2-Year, 24-Hour Storm Event

System 7 Infiltration Volume = 1,379 cu. ft. (HydroCAD)

System 7 Infiltration Duration = 25.3 hrs @ 0.27 in/hr

System 1 Infiltration Volume = 13,377 cu. ft. (HydroCAD)

System 1 Infiltration Duration = 41.4 hrs @ 0.52 in/hr

MOUNDSOLV
Groundwater Mounding Analysis
For A Sloping Water-Table Aquifer
Zlotnik et al. (2017) Solution

Solution Method

Zlotnik et al. (2017) transient solution for a rectangular source (linearization method 2)

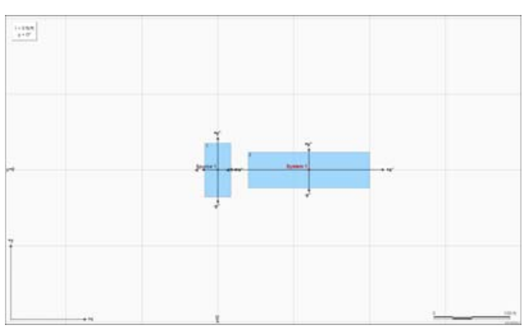
Site Description

Aquifer Data

Property	Value
Horizontal hydraulic conductivity, *K* (ft/d)	5.4
Specific yield, *Sy*	0.08
Initial saturated thickness, h_0 (ft)	16
Maximum allowable water-table rise, *σ* (ft)	4
Dip, *i* (ft/ft)	0
Slope rotation from x axis, *γ* (°)	0

Recharge Sources

Property	Source 1	Source 2
X coordinate at center, *X* (ft)	0	120
Y coordinate at center, *Y* (ft)	0	0
Dimension along x* axis, *L* (ft)	34.45	160
Dimension along y* axis, *W* (ft)	70.3	46.62
Rotation from slope direction, *ϕ* (°)	0	0
Recharge rate, *Q* (ft^3/d)	1307.7909	7757.568
Infiltration rate, *q* (ft/d)	0.54	1.04

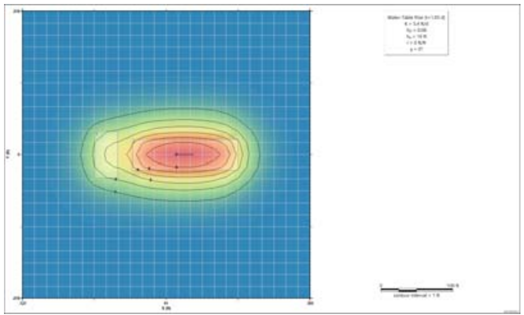


Map of recharge source.

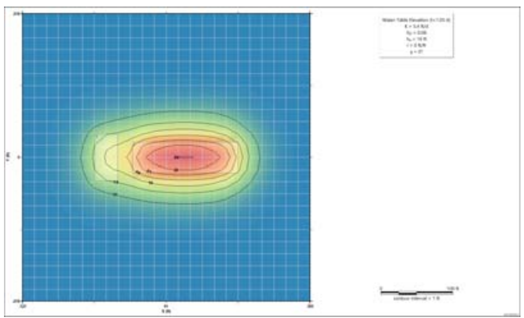
Monitoring Points

Elapsed Time, t = 1.05 d

Name	x (ft)	y (ft)	s (ft)	h (ft)	z (ft)
Source 1	0	0	3.152	19.15	0
System 1	120	0	7.065	23.06	0



Contour plot of water-table rise.

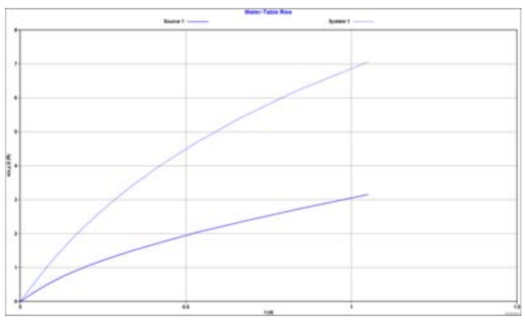


Contour plot of water-table elevation.

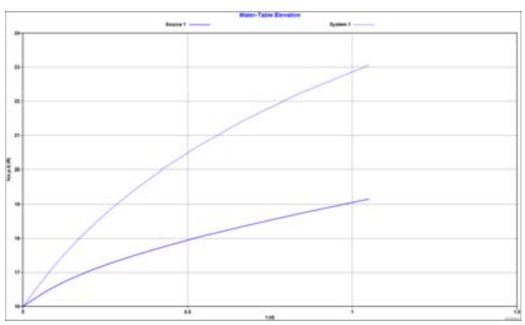
Time Series Data

Time	Source 1		System 1	
(d)	s (ft)	h (ft)	s (ft)	h (ft)
0	0	16	0	16
0.003062	0.02067	16.02	0.0398	16.04
0.006889	0.0465	16.05	0.08956	16.09
0.01167	0.07879	16.08	0.1517	16.15
0.01765	0.119	16.12	0.2295	16.23
0.02513	0.1689	16.17	0.3266	16.33
0.03447	0.2299	16.23	0.4476	16.45
0.04615	0.3035	16.3	0.5973	16.6
0.06075	0.391	16.39	0.7809	16.78

0.079	0.4935	16.49	1.003	17
0.1018	0.6122	16.61	1.269	17.27
0.1303	0.748	16.75	1.583	17.58
0.166	0.9021	16.9	1.949	17.95
0.2105	1.076	17.08	2.372	18.37
0.2662	1.272	17.27	2.854	18.85
0.3358	1.494	17.49	3.401	19.4
0.4228	1.745	17.75	4.012	20.01
0.5316	2.03	18.03	4.688	20.69
0.6676	2.356	18.36	5.427	21.43
0.8376	2.727	18.73	6.221	22.22
1.05	3.152	19.15	7.065	23.06



Time-series plot of water-table rise.



Time-series plot of water-table elevation.

Profile Data

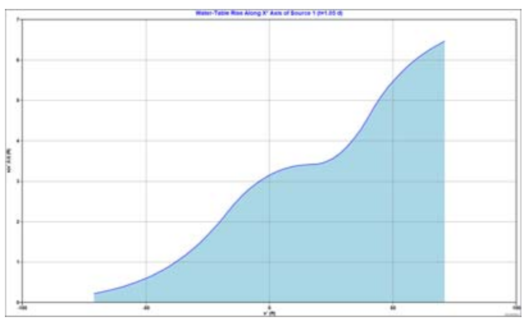
Profile Along X Axis for Source 1 at Elapsed Time, t = 1.05 d*

x* (ft)	s (ft)	h (ft)	z (ft)
-71	0.2256	16.23	0
-68.16	0.2593	16.26	0

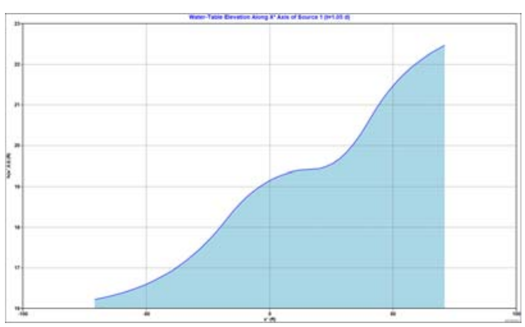
-65.32	0.2975	16.3	0
-62.48	0.3405	16.34	0
-59.64	0.3888	16.39	0
-56.8	0.4431	16.44	0
-53.96	0.5039	16.5	0
-51.12	0.5718	16.57	0
-48.28	0.6476	16.65	0
-45.44	0.7319	16.73	0
-42.6	0.8256	16.83	0
-39.76	0.9294	16.93	0
-36.92	1.044	17.04	0
-34.08	1.171	17.17	0
-31.24	1.31	17.31	0
-28.4	1.463	17.46	0
-25.56	1.631	17.63	0
-22.72	1.815	17.82	0
-19.88	2.015	18.02	0
-17.04	2.233	18.23	0
-14.2	2.444	18.44	0
-11.36	2.629	18.63	0
-8.52	2.791	18.79	0
-5.68	2.931	18.93	0
-2.84	3.051	19.05	0
0	3.152	19.15	0
2.84	3.235	19.24	0
5.68	3.302	19.3	0
8.52	3.353	19.35	0
11.36	3.389	19.39	0
14.2	3.411	19.41	0
17.04	3.419	19.42	0
19.88	3.433	19.43	0
22.72	3.481	19.48	0
25.56	3.565	19.56	0
28.4	3.685	19.69	0
31.24	3.845	19.84	0

34.08	4.044	20.04	0
36.92	4.285	20.28	0
39.76	4.569	20.57	0
42.6	4.862	20.86	0
45.44	5.121	21.12	0
48.28	5.349	21.35	0
51.12	5.552	21.55	0
53.96	5.732	21.73	0
56.8	5.892	21.89	0
59.64	6.035	22.03	0
62.48	6.163	22.16	0
65.32	6.277	22.28	0
68.16	6.379	22.38	0
71	6.471	22.47	0

The axes of Source 1 (x, y*) are rotated 0°*
from the axes of mapping coordinate system (x, y)



Profile of water-table rise along x axis of Source 1.*



Profile of water-table elevation along x axis of Source 1.*

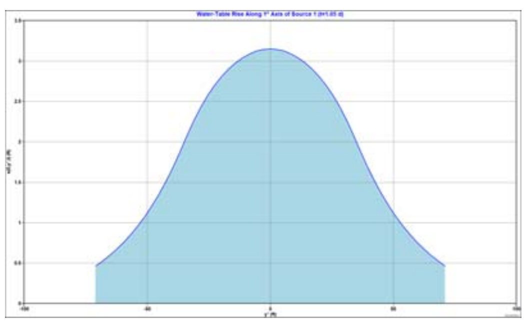
Profile Along Y* Axis for Source 1 at Elapsed Time, t = 1.05 d

y* (ft)	s (ft)	h (ft)	z (ft)

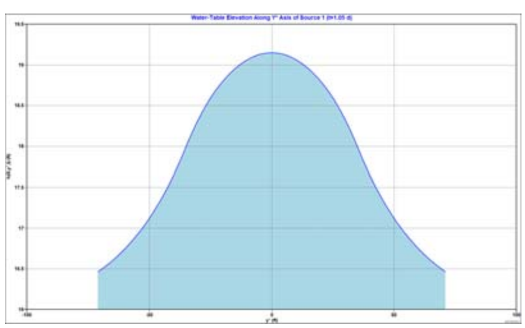
-71	0.4641	16.46	0
-68.16	0.5262	16.53	0
-65.32	0.5954	16.6	0
-62.48	0.6724	16.67	0
-59.64	0.7578	16.76	0
-56.8	0.8524	16.85	0
-53.96	0.9571	16.96	0
-51.12	1.073	17.07	0
-48.28	1.201	17.2	0
-45.44	1.342	17.34	0
-42.6	1.498	17.5	0
-39.76	1.671	17.67	0
-36.92	1.861	17.86	0
-34.08	2.067	18.07	0
-31.24	2.257	18.26	0
-28.4	2.424	18.42	0
-25.56	2.57	18.57	0
-22.72	2.698	18.7	0
-19.88	2.807	18.81	0
-17.04	2.9	18.9	0
-14.2	2.978	18.98	0
-11.36	3.041	19.04	0
-8.52	3.09	19.09	0
-5.68	3.124	19.12	0
-2.84	3.145	19.14	0
0	3.152	19.15	0
2.84	3.145	19.14	0
5.68	3.124	19.12	0
8.52	3.09	19.09	0
11.36	3.041	19.04	0
14.2	2.978	18.98	0
17.04	2.9	18.9	0
19.88	2.807	18.81	0
22.72	2.698	18.7	0
25.56	2.57	18.57	0

28.4	2.424	18.42	0
31.24	2.257	18.26	0
34.08	2.067	18.07	0
36.92	1.861	17.86	0
39.76	1.671	17.67	0
42.6	1.498	17.5	0
45.44	1.342	17.34	0
48.28	1.201	17.2	0
51.12	1.073	17.07	0
53.96	0.9571	16.96	0
56.8	0.8524	16.85	0
59.64	0.7578	16.76	0
62.48	0.6724	16.67	0
65.32	0.5954	16.6	0
68.16	0.5262	16.53	0
71	0.4641	16.46	0

The axes of Source 1 (x, y*) are rotated 0°*
from the axes of mapping coordinate system (x, y)



Profile of water-table rise along y axis of Source 1.*

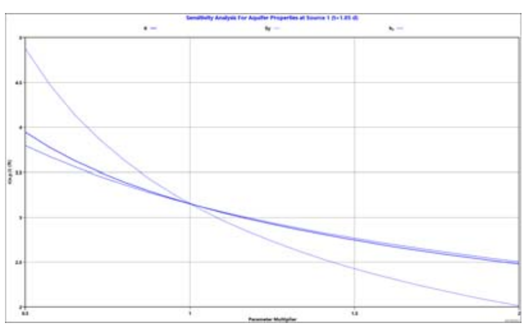


Profile of water-table elevation along y axis of Source 1.*

Sensitivity Data

Source 1, x=0 ft, y=0 ft

Parameter	**Water-Table Rise (ft)**		
Multiplier	**K**	**Sy**	**h_0**
0.5	3.943	4.876	3.797
0.575	3.772	4.47	3.672
0.65	3.628	4.14	3.559
0.725	3.502	3.865	3.457
0.8	3.392	3.632	3.364
0.875	3.294	3.431	3.279
0.95	3.206	3.256	3.201
1.025	3.126	3.102	3.128
1.1	3.053	2.965	3.061
1.175	2.986	2.843	2.998
1.25	2.924	2.732	2.939
1.325	2.866	2.632	2.884
1.4	2.813	2.54	2.832
1.475	2.762	2.456	2.783
1.55	2.715	2.378	2.737
1.625	2.671	2.306	2.694
1.7	2.629	2.24	2.652
1.775	2.589	2.177	2.613
1.85	2.551	2.119	2.575
1.925	2.515	2.065	2.539
2	2.481	2.014	2.505



Sensitivity plot for water-table rise.

Notation

h is water-table elevation above datum[1]

h_0 is aquifer saturated thickness prior to mounding

i is dip of aquifer
K is horizontal hydraulic conductivity
L is dimension of recharge source parallel to x^* axis
q is infiltration rate (= $Q / L \cdot W$)
Q is recharge rate
s is water-table rise above static water table
Sy is specific yield
t is time since start of recharge
t_0 is time when recharge stops
W is dimension of recharge source parallel to y^* axis
x, *y* are mapping Cartesian coordinate axes
x^*, y^* are recharge source Cartesian coordinate axes
z is elevation above datum[1]
γ is angle between *x* axis and dip direction
ϕ is angle between dip direction and x^* axis of recharge source
σ is maximum acceptable water-table rise

[1]*Elevation datum is the base of aquifer beneath the center of primary recharge source*

Report generated by MOUNDSOLV v4.0 on 14 Jan 2025 at 23:00:23
MOUNDSOLV (www.aqtesolv.com)

100-Year, 24-Hour Storm Event

System 7 Infiltration Volume = 1,621 cu. ft. (HydroCAD)

System 7 Infiltration Duration = 29.7 hrs @ 0.27 in/hr

System 1 Infiltration Volume = 15,354 cu. ft. (HydroCAD)

System 1 Infiltration Duration = 47.5 hrs @ 0.52 in/hr

MOUNDSOLV
Groundwater Mounding Analysis
For A Sloping Water-Table Aquifer
Zlotnik et al. (2017) Solution

Solution Method

Zlotnik et al. (2017) transient solution for a rectangular source (linearization method 2)

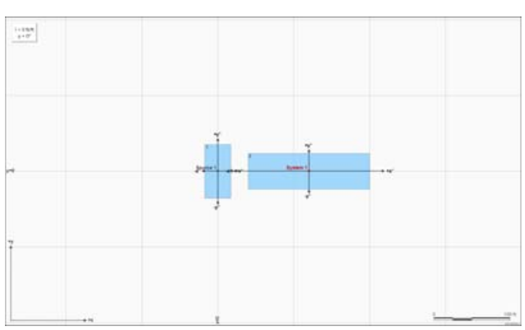
Site Description

Aquifer Data

Property	Value
Horizontal hydraulic conductivity, *K* (ft/d)	5.4
Specific yield, *Sy*	0.08
Initial saturated thickness, h_0 (ft)	16
Maximum allowable water-table rise, *σ* (ft)	4
Dip, *i* (ft/ft)	0
Slope rotation from x axis, *γ* (°)	0

Recharge Sources

Property	Source 1	Source 2
X coordinate at center, *X* (ft)	0	120
Y coordinate at center, *Y* (ft)	0	0
Dimension along x* axis, *L* (ft)	34.45	160
Dimension along y* axis, *W* (ft)	70.3	46.62
Rotation from slope direction, *ϕ* (°)	0	0
Recharge rate, *Q* (ft^3/d)	1307.7909	7757.568
Infiltration rate, *q* (ft/d)	0.54	1.04

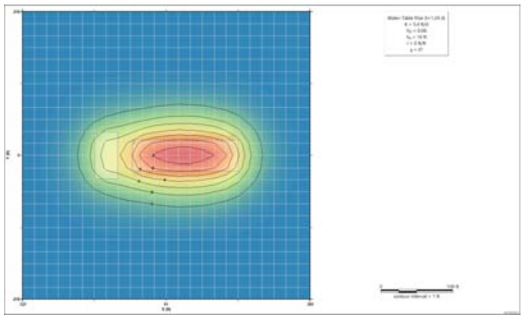


Map of recharge source.

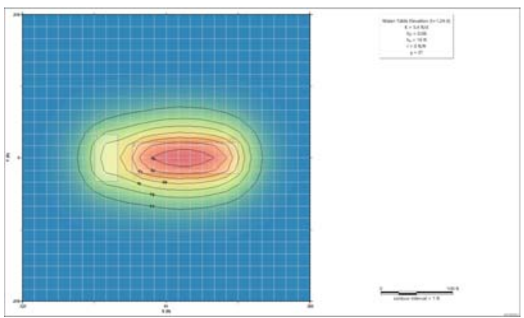
Monitoring Points

Elapsed Time, t = 1.24 d

Name	x (ft)	y (ft)	s (ft)	h (ft)	z (ft)
Source 1	0	0	3.503	19.5	0
System 1	120	0	7.714	23.71	0



Contour plot of water-table rise.

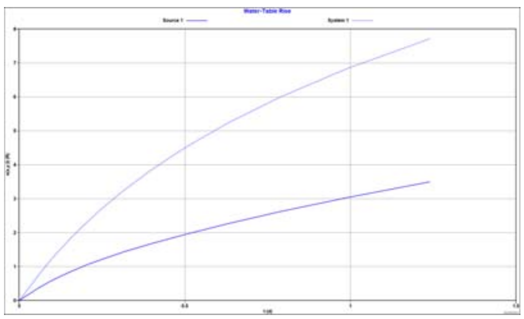


Contour plot of water-table elevation.

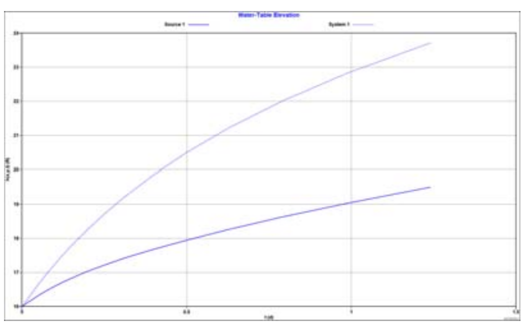
Time Series Data

Time	Source 1		System 1	
(d)	s (ft)	h (ft)	s (ft)	h (ft)
0	0	16	0	16
0.003616	0.02441	16.02	0.047	16.05
0.008135	0.05491	16.05	0.1058	16.11
0.01379	0.09303	16.09	0.1792	16.18
0.02085	0.1404	16.14	0.271	16.27
0.02967	0.1988	16.2	0.3855	16.39
0.04071	0.2696	16.27	0.5278	16.53
0.0545	0.3541	16.35	0.7029	16.7
0.07174	0.4536	16.45	0.9159	16.92

0.09329	0.569	16.57	1.172	17.17
0.1202	0.7013	16.7	1.474	17.47
0.1539	0.8516	16.85	1.828	17.83
0.196	1.021	17.02	2.238	18.24
0.2486	1.213	17.21	2.707	18.71
0.3144	1.428	17.43	3.238	19.24
0.3966	1.672	17.67	3.835	19.83
0.4994	1.949	17.95	4.497	20.5
0.6278	2.263	18.26	5.221	21.22
0.7884	2.623	18.62	6.004	22
0.9891	3.034	19.03	6.837	22.84
1.24	3.503	19.5	7.714	23.71



Time-series plot of water-table rise.



Time-series plot of water-table elevation.

Profile Data

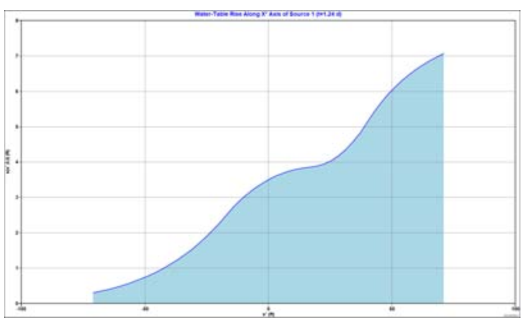
Profile Along X Axis for Source 1 at Elapsed Time, t = 1.24 d*

x* (ft)	s (ft)	h (ft)	z (ft)
-71	0.3052	16.31	0
-68.16	0.3462	16.35	0

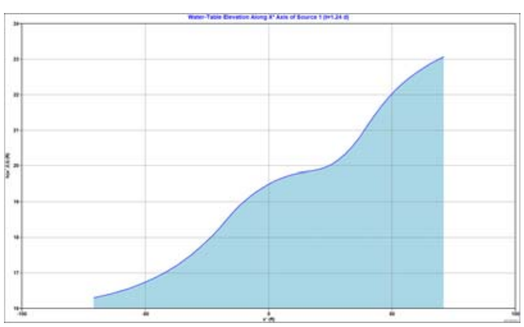
-65.32	0.3919	16.39	0
-62.48	0.4429	16.44	0
-59.64	0.4997	16.5	0
-56.8	0.5627	16.56	0
-53.96	0.6326	16.63	0
-51.12	0.7101	16.71	0
-48.28	0.7956	16.8	0
-45.44	0.8901	16.89	0
-42.6	0.9941	16.99	0
-39.76	1.109	17.11	0
-36.92	1.234	17.23	0
-34.08	1.372	17.37	0
-31.24	1.523	17.52	0
-28.4	1.687	17.69	0
-25.56	1.867	17.87	0
-22.72	2.062	18.06	0
-19.88	2.275	18.27	0
-17.04	2.505	18.5	0
-14.2	2.727	18.73	0
-11.36	2.926	18.93	0
-8.52	3.1	19.1	0
-5.68	3.254	19.25	0
-2.84	3.388	19.39	0
0	3.503	19.5	0
2.84	3.601	19.6	0
5.68	3.683	19.68	0
8.52	3.75	19.75	0
11.36	3.801	19.8	0
14.2	3.838	19.84	0
17.04	3.861	19.86	0
19.88	3.89	19.89	0
22.72	3.952	19.95	0
25.56	4.049	20.05	0
28.4	4.182	20.18	0
31.24	4.352	20.35	0

34.08	4.562	20.56	0
36.92	4.812	20.81	0
39.76	5.103	21.1	0
42.6	5.403	21.4	0
45.44	5.669	21.67	0
48.28	5.904	21.9	0
51.12	6.113	22.11	0
53.96	6.299	22.3	0
56.8	6.466	22.47	0
59.64	6.615	22.61	0
62.48	6.748	22.75	0
65.32	6.869	22.87	0
68.16	6.977	22.98	0
71	7.074	23.07	0

The axes of Source 1 (x, y*) are rotated 0°*
from the axes of mapping coordinate system (x, y)



Profile of water-table rise along x axis of Source 1.*



Profile of water-table elevation along x axis of Source 1.*

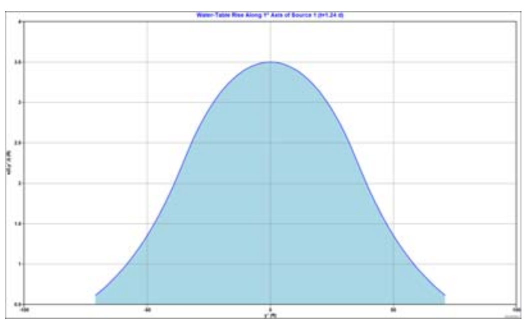
Profile Along Y* Axis for Source 1 at Elapsed Time, t = 1.24 d

y* (ft)	s (ft)	h (ft)	z (ft)

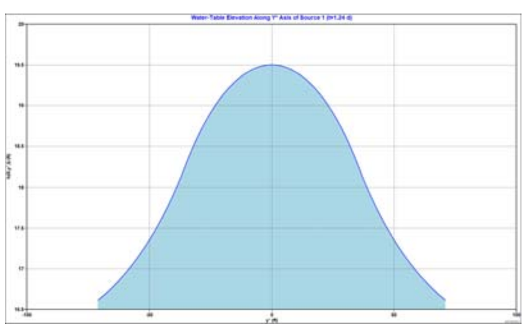
-71	0.6139	16.61	0
-68.16	0.687	16.69	0
-65.32	0.7675	16.77	0
-62.48	0.8559	16.86	0
-59.64	0.9529	16.95	0
-56.8	1.059	17.06	0
-53.96	1.176	17.18	0
-51.12	1.303	17.3	0
-48.28	1.442	17.44	0
-45.44	1.595	17.6	0
-42.6	1.762	17.76	0
-39.76	1.945	17.94	0
-36.92	2.145	18.14	0
-34.08	2.36	18.36	0
-31.24	2.559	18.56	0
-28.4	2.734	18.73	0
-25.56	2.887	18.89	0
-22.72	3.022	19.02	0
-19.88	3.137	19.14	0
-17.04	3.236	19.24	0
-14.2	3.319	19.32	0
-11.36	3.386	19.39	0
-8.52	3.437	19.44	0
-5.68	3.474	19.47	0
-2.84	3.496	19.5	0
0	3.503	19.5	0
2.84	3.496	19.5	0
5.68	3.474	19.47	0
8.52	3.437	19.44	0
11.36	3.386	19.39	0
14.2	3.319	19.32	0
17.04	3.236	19.24	0
19.88	3.137	19.14	0
22.72	3.022	19.02	0
25.56	2.887	18.89	0

28.4	2.734	18.73	0
31.24	2.559	18.56	0
34.08	2.36	18.36	0
36.92	2.145	18.14	0
39.76	1.945	17.94	0
42.6	1.762	17.76	0
45.44	1.595	17.6	0
48.28	1.442	17.44	0
51.12	1.303	17.3	0
53.96	1.176	17.18	0
56.8	1.059	17.06	0
59.64	0.9529	16.95	0
62.48	0.8559	16.86	0
65.32	0.7675	16.77	0
68.16	0.687	16.69	0
71	0.6139	16.61	0

The axes of Source 1 (x, y*) are rotated 0°*
from the axes of mapping coordinate system (x, y)



Profile of water-table rise along y axis of Source 1.*

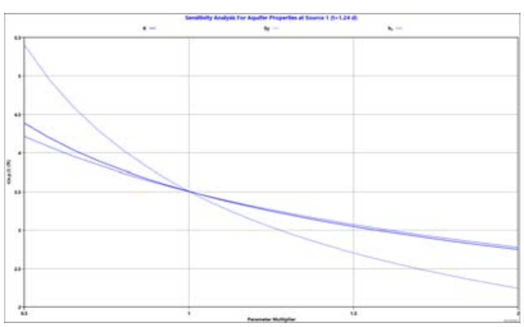


Profile of water-table elevation along y axis of Source 1.*

Sensitivity Data

Source 1, x=0 ft, y=0 ft

Parameter Multiplier	Water-Table Rise (ft)		
	K	Sy	h_0
0.5	4.387	5.4	4.214
0.575	4.197	4.956	4.078
0.65	4.035	4.593	3.955
0.725	3.895	4.291	3.843
0.8	3.772	4.034	3.74
0.875	3.663	3.812	3.646
0.95	3.564	3.619	3.558
1.025	3.474	3.449	3.477
1.1	3.393	3.298	3.402
1.175	3.318	3.162	3.331
1.25	3.248	3.039	3.265
1.325	3.183	2.928	3.204
1.4	3.123	2.827	3.146
1.475	3.067	2.733	3.091
1.55	3.014	2.648	3.039
1.625	2.964	2.568	2.99
1.7	2.916	2.495	2.943
1.775	2.872	2.426	2.899
1.85	2.829	2.362	2.856
1.925	2.789	2.302	2.816
2	2.75	2.245	2.778



Sensitivity plot for water-table rise.

Notation

h is water-table elevation above datum[1]

h_0 is aquifer saturated thickness prior to mounding

i is dip of aquifer
K is horizontal hydraulic conductivity
L is dimension of recharge source parallel to *x** axis
q is infiltration rate (= *Q* / *L*·*W*)
Q is recharge rate
s is water-table rise above static water table
Sy is specific yield
t is time since start of recharge
t_0 is time when recharge stops
W is dimension of recharge source parallel to *y** axis
x, *y* are mapping Cartesian coordinate axes
*x**, *y** are recharge source Cartesian coordinate axes
z is elevation above datum[1]
γ is angle between *x* axis and dip direction
ϕ is angle between dip direction and *x** axis of recharge source
σ is maximum acceptable water-table rise

[1]*Elevation datum is the base of aquifer beneath the center of primary recharge source*

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