

August 22, 1985

The BSC Group

Chairman
Planning Board
City Hall
Newburyport, MA 01950

617 350 4090

RE: Evergreen Estates

Dear Sirs:

The purpose of this letter is to provide all reviewing agencies with additional information requested since the July submittal to the Zoning Board of Appeals and others within the City government. This letter is intended an addendum to the Definitive Subdivision Plan and Environmental Impact Statement (EIS) accepted by the Planning Board at their July 25th meeting.

As discussed in the EIS, twelve monitoring wells have been installed on the project site. These wells have been monitored twice since their installation, and the data obtained have reinforced our opinion that a groundwater divide exists on the site. The well logs and monitoring data are attached. We have discussed this information with the City's consultants and have conducted an additional site visit with John Moser, a hydrogeologic consultant retained by Mr. Lally.

The data which has been collected relative to groundwater flows on the property and the recharge area of City Well No. 2 have been performed under conservative conditions with respect to protection of the water quality of the City's well. Two conditions have produced these conservative conditions. The first is the lower than average volume of precipitation received during 1983-84. This has depressed groundwater elevations and tends to move the groundwater divide closer to the well than in years of average or above-average precipitation. Secondly, all groundwater data was gathered during July and August, which are the months of maximum pumping of water from the City well. These two conditions combine to provide an additional margin of safety to all conclusions

Engineers
Surveyors
Scientists
Architects
Landscape
Architects
Planners

reached concerning the existence and location of the well recharge area and the groundwater divide.

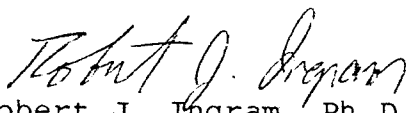
In response to comments received to date, we are also submitting a grading plan for the golf course. Several revisions have been made to this plan to ensure that the direction of surface water runoff and infiltration will be away from the recharge area of the City well. These revisions include the increased elevation of greens and tees in proximity to the divide and the placement of fine grained materials beneath all areas to be treated with fertilizers or pesticides. The creation of a less permeable layer beneath these areas will act to block or impede the migration of these chemicals into the groundwater, thereby providing an additional safeguard for the protection of water quality.

The applicant has also retained experts in the areas of fertilizer and pesticide application to render their opinions at the Planning Board public hearing.

In summary, all data which has been collected strongly indicates the existence of a groundwater divide on the site. This interpretation of the data has been agreed to by John Moser. The existence of this divide effectively separates all storm water runoff and the golf course from the recharge area of Well No. 2. Additional protection of groundwater quality is being supplied by the design of the golf course and its proposed operations with respect to long term effects from fertilizer and pesticide applications. Therefore, based on the information which has been collected, to the best of our knowledge, the quality of Well No. 2 will not be degraded by the construction and operation of the proposed golf course.

Sincerely,

BSC ENGINEERING


Robert J. Ingram, Ph.D.
Manager
Environmental Sciences

LIST OF ATTACHMENTS

Attachment No.

- | | |
|---|--|
| 1 | Test Boring Logs
Groundwater Flow Diagram |
| 2 | Special Permit Conditions
Subdivision Waiver Requirements |

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates **BORING** B-1 Sh 1 of 1
 Total Depth 25 feet Location Newburyport Logged by RWH
 Date Started 4-10-85 Completed 4-10-85 BSC Division Engineering
 Casing ID Hollow stem auger Top of casing Ground Elevation 69.03 Contractor Al Shirer Test Borings
 Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed Roadway Box
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
5						Brown medium SAND	
10							
15							
20							
25						End of boring at 25.0 feet. Refusal not reached.	1 1/2" diameter P.V.C.

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
4/10/85	p.m.	17-1.50=15.50	top of casing

Summary	
Overburden:	25 feet +
Rock:	> 25 feet
Well Depth:	25.0 feet
Boring:	25.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates BORING B-2 Sh 1 of 1
 Total Depth 25 feet Location Newburyport Logged by RWH
 Date Started 4/10/85 Completed 4/10/85 BSC Division Engineering
 Casing ID Hollow stem auger Top of casing Ground Elevation 64.76 Contractor Al Shirer Test Borings

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed Roadway Box
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
5						Brown very fine SAND	
10							
15							
20						Gray SILT	
25						End of boring at 25.0 feet. Refusal not reached.	1½" diameter P.V.C.

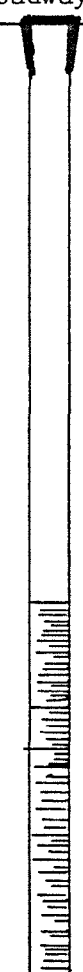
Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
4/10/85	p.m.	13-1.88=11.12	top of casing

Summary	
Overburden:	25 feet +
Rock:	> 25 feet
Well Depth:	20.0 feet
Boring:	25.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates **BORING** B-3 Sh 1 of 1
 Total Depth 25 feet Location Newburyport Logged by RWH
 Date Started 4/10/85 Completed 4/10/85 BSC Division Engineering
 Casing ID Hollow stem auger ~~Ground~~ ^{Top of casing} Elevation 75.44 Contractor Al Shirer Test Boring
 Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed Roadway Box
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
5 10 15 20 25						Yellow-brown very fine SAND	
						End of boring at 25.0 feet. Refusal not reached.	1 1/2" diameter P.V.C.

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
4/10/85	p.m.	23-1.43=21.57	top of casing

Summary	
Overburden:	25 feet +
Rock:	> 25 feet
Well Depth:	25.0 feet
Boring:	25.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates BORING B-4 Sh 1 of 1
 Total Depth 15 feet Location Newburyport Logged by RWH
 Date Started 4/10/85 Completed 4/10/85 BSC Division Engineering
 Casing ID Hollow stem auger Top of casing 63.46 Contractor Al Shirer Test Borings
 Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed Roadway Box
	Type & Number	Blows per 6 In.	Depth Range	Rec.			
5 10 15 20 25						Brown fine SAND	
						End of boring at 15.0 feet. Refusal not reached.	1½" diameter P.V.C.

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
4/10/85	p.m.	10-1.57=8.43	top of casing

Summary	
Overburden:	15 feet +
Rock:	>15 feet
Well Depth:	15.0 feet
Boring:	15.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates **BORING** B-5 Sh 1 of 1
 Total Depth 5 feet Location Newburyport Logged by SMD
 Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering
 Casing ID Backhoe pit Top of casing Ground Elevation 56.51 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
						Brown SILT with LOAM, trace fine SAND	
						Tan very fine SAND, trace SILT	
1						Light brown-tan coarse to fine SAND, trace gravel	
2							
3							
4							
5						Bottom of excavation at 5.0 feet. Refusal not reached.	1 1/4" steel pipe with 2 ft. screen.

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	5.5-0.50=5.00	top of casing

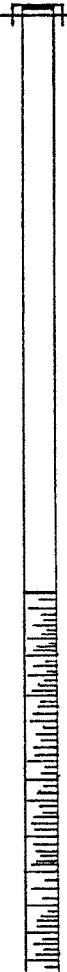
Summary	
Overburden:	5 feet +
Rock:	> 5 feet
Well Depth:	5.0 feet
Boring:	5.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates BORING B-6 Sh 1 of 1
 Total Depth 5 feet Location Newburyport Logged by SMD
 Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering
 Casing ID Backhoe pit Top of casing 54.09 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
						Light brown SILT and LOAM	
						Tan fine SAND	
1						Light brown coarse to fine SAND, trace GRAVEL	
2							
3							
4							
5						Bottom of excavation at 5.0 feet. Refusal not reached.	1 1/4" steel pipe with 2 ft. screen

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	5-1.23=3.77	

Summary	
Overburden:	5 feet +
Rock:	> 5 feet
Well Depth:	5.0 feet
Boring:	5.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates **BORING** B-7 Sh 1 of 1

Total Depth _____ Location Newburyport Logged by SMD

Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering

Casing ID Backhoe Pit Top of casing _____ Ground Elevation 56.03 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
						Brown SILT and LOAM	
						Tan fine SAND	
2						Light brown coarse to fine SAND, trace GRAVEL, trace SILT	
4							
6							
8							
10						Bottom of excavation at 8.0 feet. Refusal not reached.	1 1/2" steel pipe with 2 ft. screen

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
7/23/85	p.m.	4.50-0.83=3.67	top of casing

Summary	
Overburden:	8 feet +
Rock:	> 8 feet
Well Depth:	8.0 feet
Boring:	8.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates BORING B-8 Sh 1 of 1
 Total Depth 11 feet Location Newburyport Logged by SMD
 Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering
 Casing ID Backhoe Pit Top of casing Ground Elevation 60.41 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
5						Light brown coarse to fine SAND, little SILT, trace GRAVEL	
10							
15						Bottom of excavation at 11.0 feet. Refusal not reached.	1½" steel pipe with 2 ft. screen
20							
25							

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	8-0.95=7.05	top of casing

Summary	
Overburden:	11 feet +
Rock:	> 11 feet
Well Depth:	11.0 feet
Boring:	11.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates BORING B-9 Sh 1 of 1

Total Depth 10 feet Location Newburyport Logged by SMD

Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering

Casing ID Backhoe Pit Top of casing 60.63 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
2						Black organic SILT, some coarse to fine SAND, trace GRAVEL. Hydrogen sulfide odor.	
4							
6						Brown coarse to fine SAND, some GRAVEL	
8							
10						Bottom of excavation at 10.0 feet. Refusal not reached.	1½" steel pipe with 2 ft. screen

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	10-1.28=8.72	top of casing

Summary	
Overburden:	10 feet +
Rock:	> 10 feet
Well Depth:	10.0 feet
Boring:	10.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates BORING B-10 Sh 1 of 1
 Total Depth 12 feet Location Newburyport Logged by SMD
 Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering
 Casing ID Backhoe Pit Top of casing 60.63 Contractor Vitali
 Ground Elevation

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
						Brown SILT and LOAM	
						Tan SILT, trace very fine SAND	
5 10						Tan coarse to fine SAND, some GRAVEL, little COBBLES, trace SILT	
15 20 25						Bottom of excavation at 12.0 feet Refusal not reached.	1 1/4" steel pipe with 2 ft. screen

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	10-1.28=8.72	top of casing

Summary	
Overburden:	12 feet +
Rock:	> 12 feet
Well Depth:	12.0 feet
Boring:	12.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates **BORING** B-11 Sh 1 of 1
 Total Depth 14 feet Location Newburyport Logged by SMD
 Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering
 Casing ID Backhoe Pit Top of casing Ground Elevation 59.83 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
						Brown LOAM	
5 10						Tan coarse to fine SAND, little SILT, trace GRAVEL	
15 20 25						Bottom of excavation at 14.0 feet. Refusal not reached.	1 1/4" steel pipe with 2 ft. screen

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	8-0.98=7.02	top of casing

Summary	
Overburden:	14 feet +
Rock:	> 14 feet
Well Depth:	14.0 feet
Boring:	14.0 feet

TEST BORING LOG

BSC

Project No. 2-1195.00 Client Evergreen Estates **BORING** B-12 Sh 1 of 1
 Total Depth 14 feet Location Newburyport Logged by SMD
 Date Started 7/18/85 Completed 7/18/85 BSC Division Engineering
 Casing ID Backhoe Pit Top of casing Ground Elevation 66.31 Contractor Vitali

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed
	Type & Number	Blows per 6 in.	Depth Range	Rec.			
						Brown LOAM over black organic SILT	
						Light gray coarse to fine SAND, some GRAVEL	
5						Brown medium SAND, trace GRAVEL	
10							
15						Bottom of excavation at 14.0 feet Refusal not reached.	1 1/2" steel pipe with 2 ft. screen
20							
25							

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point
8/9/85	p.m.	15.0-1.51=13.49	top of casing

Summary	
Overburden:	14 feet +
Rock:	> 14 feet
Well Depth:	14.0 feet
Boring:	14.0 feet

TEST BORING LOG

BSC

Project No. _____ Client _____ **BORING** _____ Sh 1 of _____

Total Depth _____ Location _____ Logged by _____

Date Started _____ Completed _____ BSC Division _____

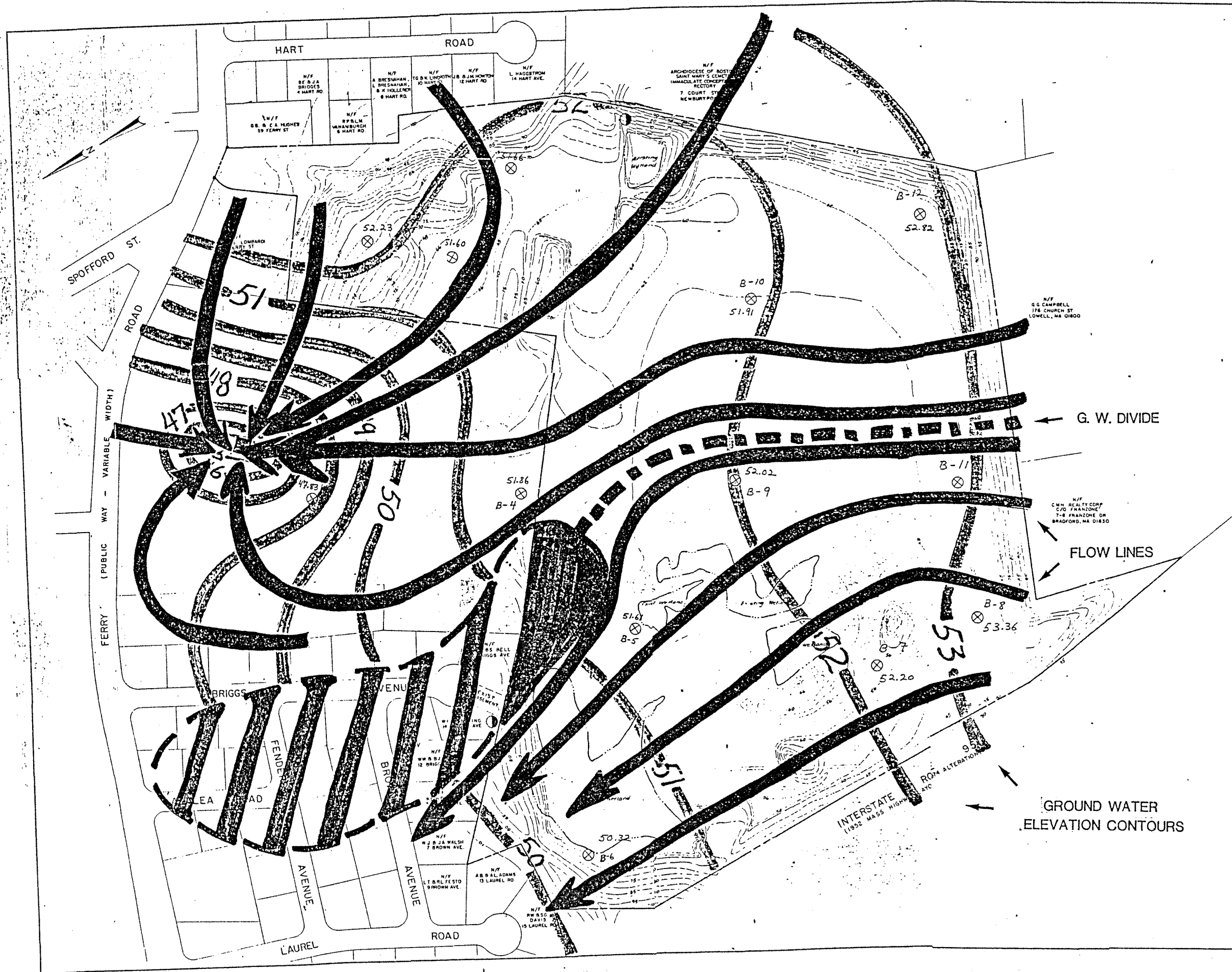
Casing ID _____ Ground Elevation _____ Contractor _____

Remarks _____

Depth Feet	Sample				Strata Change	Sample Description	Equipment Installed																
	Type & Number	Blows per 6 in.	Depth Range	Rec.																			
						PLEASE NOTE: A yellow fine, silty sand will be spread over most of the golf course area to depths of 0.5 to 2.0 feet. This sand has the following gradation: <table><tr><th><u>Sieve No.</u></th><th><u>% retained</u></th></tr><tr><td>10.....</td><td>2.6</td></tr><tr><td>18.....</td><td>1.7</td></tr><tr><td>35.....</td><td>4.8</td></tr><tr><td>60.....</td><td>38.2</td></tr><tr><td>120.....</td><td>32.2</td></tr><tr><td>230.....</td><td>15.7</td></tr><tr><td>passing 230.....</td><td>4.8</td></tr></table>	<u>Sieve No.</u>	<u>% retained</u>	10.....	2.6	18.....	1.7	35.....	4.8	60.....	38.2	120.....	32.2	230.....	15.7	passing 230.....	4.8	
<u>Sieve No.</u>	<u>% retained</u>																						
10.....	2.6																						
18.....	1.7																						
35.....	4.8																						
60.....	38.2																						
120.....	32.2																						
230.....	15.7																						
passing 230.....	4.8																						

Groundwater Measurements			
Date	Time	Depth to Groundwater	Measuring Point

Summary
Overburden:
Rock:
Well Depth:
Boring:



REVISIONS:
NO. DATE

LEGEND

GROUNDWATER ELEVATION
CONTOURS (NGVD)

GROUNDWATER DIVIDE

GROUNDWATER FLOW LINES

BEDROCK

MONITOR WELLS

PREVIOUS WELL
RECORD LOCATIONS

WELL NO. 2

BSC

DIVISION OF
BOSTON SURVEY CONSULTANTS INC.
ENGINEERING • SURVEYING • PLANNING

TITLE:

SCALE
METERS
FEET

DATE:

COMP /DESIGN:

CHECK:

DRAWN:

FIELD:

FILE NO:

DWG. NO:

SHEET:

JOB NO:

OF:

EVERGREEN ESTATES
SPECIAL PERMIT CONDITIONS

Condition #1:

"The use requested is listed in the Table of Use Regulations as a special permit in the district for which application is made or is similar in character to permitted uses in a particular district but is not specifically mentioned."

Response:

Use #27 ("Country Club, including but not limited to tennis, swimming, riding, golf or other similar outdoor recreation facility.") is listed in the Table of Use Regulations as allowable by special permit in an R-1 District. Since the proposed development is within an R-1 District, the construction of a golf course is considered a special permit use.

Condition #2:

"The requested use is essential and/or desirable to the public convenience or welfare."

Response:

At present, the site is an abandoned gravel pit. As a golf course, the site will not only provide recreational benefits to the neighborhood and community, but will replace an existing eyesore and hazard with an aesthetically pleasing, landscaped green space.

Condition #3:

"The requested use will not create undue traffic congestion or unduly impair pedestrian safety."

Response:

As is documented in Section II-A of the Environmental Impact Statement for the proposed Evergreen Estates development, traffic impact is not expected to be significant. Pedestrian safety is not expected to be a problem on the proposed golf course.

Condition #4:

"The requested use will not overload any public water, drainage or sewer system or any other municipal system to such an extent that the requested use or any other area of the city will be unduly subjected to hazards affecting health, safety or the general welfare."

Response:

Details regarding the affect of the entire Evergreen Estates development on public services are included in the Environmental Impact Statement for Evergreen Estates, Section II. The impact of Evergreen Estates, including the proposed house lots, is not expected to be significant; therefore, the impact of the proposed golf course is also expected to be insignificant.

Condition #5:

"Any special regulations for the use, set forth in the special permit table, are fullfilled."

Response:

The only comment in the Special Permit Table is to follow the dimensional requirements set for that use. The dimensional requirements have been met in the design of the proposed golf course.

Condition #6:

"The requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health or welfare."

Response:

The change in use from abandoned gravel pit to a recreational green space is expected to benefit the neighborhood and community greatly.

Condition #7:

"The requested use will not, by its addition to a neighborhood, cause an excess of that particular use that could be detrimental to the character of said neighborhood."

Response:

The neighborhood of the proposed Evergreen Estates development does not include other golf courses or country-club type uses. As such, this project will not cause an excess of that use.

LS/mkb
LS2/18
2.1195.00