ATTACHMENT 4

Field and Laboratory Test Results

Falling Head Permeability Test #1

Boring B-4 (19 ft.)

Time (min)	Drop (ft.)	Drop (cm.)
1	0	0
2	0	0
3	0.05	1.524
4	0.05	1.524
5	0.05	1.524
6	0.05	1.524
7	0.05	1.524
8	0.05	1.524
9	0.05	1.524
10	0.05	1.524
15	0.07	2.1336
20	0.08	2.4384
25	0.08	2.4384
30	0.1	3.048

$$k_m = \frac{3.1416 \times D}{11(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$= \frac{3.1416 \times 7.62 \text{ cm}}{11\ (1800 \text{ sec} - 60 \text{ sec})} \ln \frac{579 \text{ cm}}{576 \text{ cm}}$$

$$= \frac{23.99 \text{ cm}}{19{,}140 \text{ sec}} \times 0.0053$$

$$= 0.0013 \text{ cm/sec} \times 0.0053$$

$$= 6.8 \times 10^{-6} \text{ cm/sec}$$

k_m = permeability (cm)
D = intake diameter (cm)
t_2 = 30 min = 1800 sec
t_1 = 1 min = 60 sec
H_1 = piezometer head for $t = t_1$ (cm)
H_2 = piezometer head for $t = t_2$ (cm)

Falling Head Permeability Test #2

Boring B-4 (34 ft.)

Time (min)	Drop (ft.)	Drop (cm.)
1	0.01	0.3048
2	0.02	0.6096
3	0.02	0.6096
4	0.02	0.6096
5	0.03	0.9144
6	0.03	0.9144
7	0.03	0.9144
8	0.04	1.2192
9	0.04	1.2192
10	0.04	1.2192
15	0.04	1.2192
20	0.04	1.2192
25	0.05	1.524
30	0.05	1.524

$$k_m = \frac{3.1416 \times D}{11(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$= \frac{3.1416 \times 7.62 \text{ cm}}{11\ (1800 \text{ sec} - 60 \text{ sec})} \ln \frac{1036.0 \text{ cm}}{1034.8 \text{ cm}}$$

$$= \frac{23.99 \text{ cm}}{19{,}140 \text{ sec}} \times 0.0012$$

$$= 0.0013 \text{ cm/sec} \times 0.0012$$

$$= 1.5 \times 10^{-6} \text{ cm/sec}$$

k_m = permeability (cm)
D = intake diameter (cm)
t_2 = 30 min = 1800 sec
t_1 = 1 min = 60 sec
H_1 = piezometer head for $t = t_1$ (cm)
H_2 = piezometer head for $t = t_2$ (cm)

Falling Head Permeability Test #3

Boring B-7 (12.5 ft.)

Time (min)	Drop (ft.)	Drop (cm.)
1	0.03	0.9144
2	0.03	0.9144
3	0.04	1.2192
4	0.05	1.524
5	0.06	1.8288
6	0.07	2.1336
7	0.07	2.1336
8	0.08	2.4384
9	0.08	2.4384
10	0.09	2.7432
15	0.12	3.6576
20	0.14	4.2672
25	0.19	5.7912
30	0.21	6.4008

$$k_m = \frac{3.1416 \times D}{11(t_2 - t_1)} \ln \frac{H_1}{H_2}$$

$$= \frac{3.1416 \times 7.62\ \text{cm}}{11\ (1800\ \text{sec} - 60\ \text{sec})} \ln \frac{380.1\ \text{cm}}{374.6\ \text{cm}}$$

$$= \frac{23.99\ \text{cm}}{19{,}140\ \text{sec}} \times 0.0146$$

$$= 0.0013\ \text{cm/sec} \times 0.0146$$

$$= 1.9 \times 10^{-5}\ \text{cm/sec}$$

k_m = permeability (cm)
D = intake diameter (cm)
t_2 = 30 min = 1800 sec
t_1 = 1 min = 60 sec
H_1 = piezometer head for $t = t_1$ (cm)
H_2 = piezometer head for $t = t_2$ (cm)

Contract Drilling and Testing
SJB SERVICES, INC.

Eastern New York Office
PO Box 2199
Ballston Spa, NY 12020
Phone: (518) 899-7491
FAX: (518) 899-7496

REPORT OF TESTING

Natural Water Content

ASTM D 2216

Project: Subsurface Investigation
Belleayre UMP

Date: September 18, 2008

Client: NYS Dept. of Environmental Conservation

SJB No: AD-08-051

Test Pit/Boring No.	Sample No	Depth (ft)	Natural Water Content (%)
TP-1	S-1	6-7'	7.6
	S-2	11-12'	4.6
TP-2	S-1	6-7'	7.6
	S-2	9.5-10.5'	6.4
TP-3	S-1	6-7'	6.6
	S-2	11-12'	7.2

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Contract Drilling and Testing

FALL OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Belleayre Mountain – Proposed Pond**

CLIENT: **NYS Department of Environmental Conservation**

DATE: **October 28, 2008**

PROJECT NO.: AD-08-051
REPORT NO.: LTR-1
Page 1 of 2

SAMPLE INFORMATION:
Sample No. BT-08-977 was collected from the project site, and received at SJB Services, Inc Buffalo Office on September 22, 2008. Sample is described as a composite sample of material from TP-1 to TP-3.

ASTM D-422: Particle Size Analysis of Soils

Sieve Size	*Percent Passing*
4"	100.0
3"	96.5
2"	90.3
1"	89.6
¾"	75.3
½"	71.8
3/8"	68.4
¼"	62.9
#4	59.5
#10	54.5
#20	46.7
#40	41.2
#100	23.7
#200	17.0

PERCENT COMPONENTS

GRAVEL	SAND	SILT	CLAY
37.0 %	42.5 %	12.3 %	4.7 %

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Page 2 of 2

ASTM D-698-02: Laboratory Compaction Characteristics of Soil Using Method C Standard Effort

Maximum Dry Density: 129.0 pcf
Optimum Moisture: 9.2 %

ASTM D-5084: Measurement of Hydraulic Conductivity of Saturated Porous Material Using a Flexible Wall Permeameter

Coefficient of Permeability: 7.25×10^{-5} cm/sec (95% compaction at 9.2 % moisture)

ASTM D-3080: Direct Shear test of Soils Under Consolidated Drained Conditions

Results Pending

SJB Services, Inc.

Paul Gregorczyk
Laboratory Manager