APPENDIX U

Evaluation of Lost Lake for Irrigation Water

ADVANTAGE ENGINEERS

April 21st, 2010

Frederick P. Wells, RLA
Senior Vice President
Tim Miller Associates, Inc.
10 North Street, Cold Spring, NY 10516

RE: Evaluation of Lost Lake for Irrigation Water
Proposed Lost Lake Resort Site
Town of Forestburgh, Sullivan County, New York, Pennsylvania
Advantage Project No.: 090539

Dear Mr. Wells:

This document describes the methods and results of our evaluation of Lost Lake for use as the water source for golf course irrigation at the proposed Lost Lake Resort site. Our evaluation relied on, in part, the existing information contained in the Lost Lake Resort Preliminary DEIS, dated January 29, 2010 that was prepared by Tim Miller Associates, Inc.

Background

The proposed Lost Lake Resort (LLR) will include a golf course with 45 acres of irrigated turf. The 52-acre Lost Lake is intended to serve as the source of irrigation water. New York State Department of Environmental Conservation (NYDEC) recommended in their correspondence to the Town of Forestburgh Town Board that a very detailed drawdown assessment should be conducted to fully understand potential impacts.

Purpose and Scope

The analysis presented in this report evaluates the potential impact of proposed surface water withdrawals to the freshwater wetlands that border portions of Lost Lake (Lake). A mass balance of inflow and outflow to the lake for both an average precipitation year and drought year precipitation was prepared to assess the potential impacts.

Lost Lake Water Input and Output

The change to the Lake surface elevation was determined by adding the monthly input from precipitation and overland flow, and subtracting the water losses from evaporation (E) and irrigation withdrawals. This was modeled for the normal precipitation and 10% probability low precipitation years. The groundwater baseflow contribution was estimated but found to be an insignificant portion of either input to, or discharge from the Lake. Each of these water volumes are described below.

Precipitation

The annual precipitation records and monthly averages from the Rock Hill weather station from 1957 to present were obtained from the NY State Climatologist and are summarized on Table 1 (attached); only the records for complete years were used. Rock Hill is located 5 miles east of the Lake and the nearest station where sufficient data were available, and is representative of the precipitation at the LLR site. The normal or average annual precipitation is 49.3 inches. The 1 in 10 year (i.e., the 10% probability year) annual low precipitation was determined by preparing a

frequency plot of the annual data, and was assumed to represent a reasonable estimate for a drought year condition at the LLR site. The 10% probability drought year value is 37 inches, which is 79% of the average year value of 49.3 inches. Following this method, the monthly 10% probability monthly precipitation was assumed to be 79% of the average year monthly values, which are shown on Table 1.
Precipitation to the Lake drainage area results in direct water input to the 52-acre Lake surface in addition to overland runoff from the land surface upgradient to the Lake.

Overland Runoff
The portion of precipitation that neither infiltrates or is lost to evaporation is referred to as overland runoff. In lieu of available data for Sullivan County, the overland runoff for Lackawanna County, PA was used since it is located in a similar physiographic and geologic setting as the LLR site. PA Topographic and Geologic Survey reports[1] that the annual overland runoff is approximately 9 inches per year, and represents about 20% of the total annual precipitation. On this basis, the monthly runoff volume was assumed to be 20% of the precipitation totals listed in Table 1. The actual volume of runoff includes only the upgradient drainage area of 236 acres.

Evaporation
Evaporation from the Lake surface is a substantial water volume during the summer months. The monthly average evaporation was estimated from the Lake using the published monthly pond evaporation table (attached) prepared by Susquehanna River Basin Commission (to date, a response from the Delaware River Basin Commission for such data has not been received). The monthly evaporation volume ranges from approximately 4 million gallons in April to the maximum of 8 million gallons in July.

Groundwater Baseflow
The Lake lies at the headwaters for one of the unnamed tributary streams at the site. There is no baseflow analysis for the Lake using site specific data. In the absence of any specific baseflow analysis for the site, Streamstats (USGS, 2008) was used to estimate low flows at the Lake discharge. StreamStats is a Web-based Geographic Information System (GIS) application that was created by the USGS, in cooperation with Environmental Systems Research Institute, Inc. The flows are calculated by using data from an existing gage and adjusting that data with the ratio of the Lake drainage area to the gage drainage area. The Streamstats output (attached) stream statistics for the Lake discharge below the dam are as follows:

7-day mean low flow that occurs every 2 years	0.0382 cfs / 17 gpm
7-day mean low flow that occurs every 10 years	0.0107 cfs / 5 gpm
30-day mean low flow that occurs every 2 years	0.0589 cfs / 26 gpm
30-day mean low flow that occurs every 10 years	0.0181 cfs / 8 gpm

The 7-day/10 year periods are assumed to represent groundwater baseflow only; the 7-day/2 year periods are assumed to include some overland runoff. For purposes of estimating the drought year groundwater baseflow contribution to the Lake, the 7-day/10 year mean values are considered to be representative of drought conditions. The 5 gpm discharge volume represents a monthly water volume of 216,000 gallons, and the 8 gpm rate corresponds to 346,000 gallons. During the summer months when evaporation is greatest, these volumes are less than 5% of the water volume

[1] Hollowell, J. and Koester, H., Ground-Water Resources of Lackawanna County, Pennsylvania, Water Resource Report 41, Topographic and Geologic Survey, Commonwealth of Pennsylvania, 1975.

that evaporates from the Lake, and therefore were found to be an insignificant portion of the net water mass balance. These low flows also indicate that it is likely that there is no water discharge from the Lake during the summer months when there are drought conditions, unless the Lake contains excess storage.

Irrigation

The actual irrigation water use by month at the Eagle Rock Resort 18-hole golf course for 2005 through 2009 was assumed to be a reasonable estimate for the proposed 18-hole course at LLR. The courses will be similar in layout and net size of irrigation area (approximately 50 acres), and have similar average annual precipitation (47.9 inches at Hazleton, PA and 49.3 inches at Monticello, NY). The irrigation season typically starts in April and continues through October, with peak use occurring in July and August.

Mass Balance

The input and output estimates for normal year and drought year precipitation conditions are summarized on the attached Tables 2 and 3. The tables account for the irrigation period from April through October, and are based on the assumption that the Lake is filled to the dam spillway prior to the start of the irrigation season. A second assumption is that the Lake shore geometry is vertical and that any decline or increase in water volume does not change the surface area. In order to simplify the analysis, the normal (and varying) rate of discharge from the Lake was not included; all changes were compared to the full condition. For clarification the input volumes are colored blue and the output volumes are red.

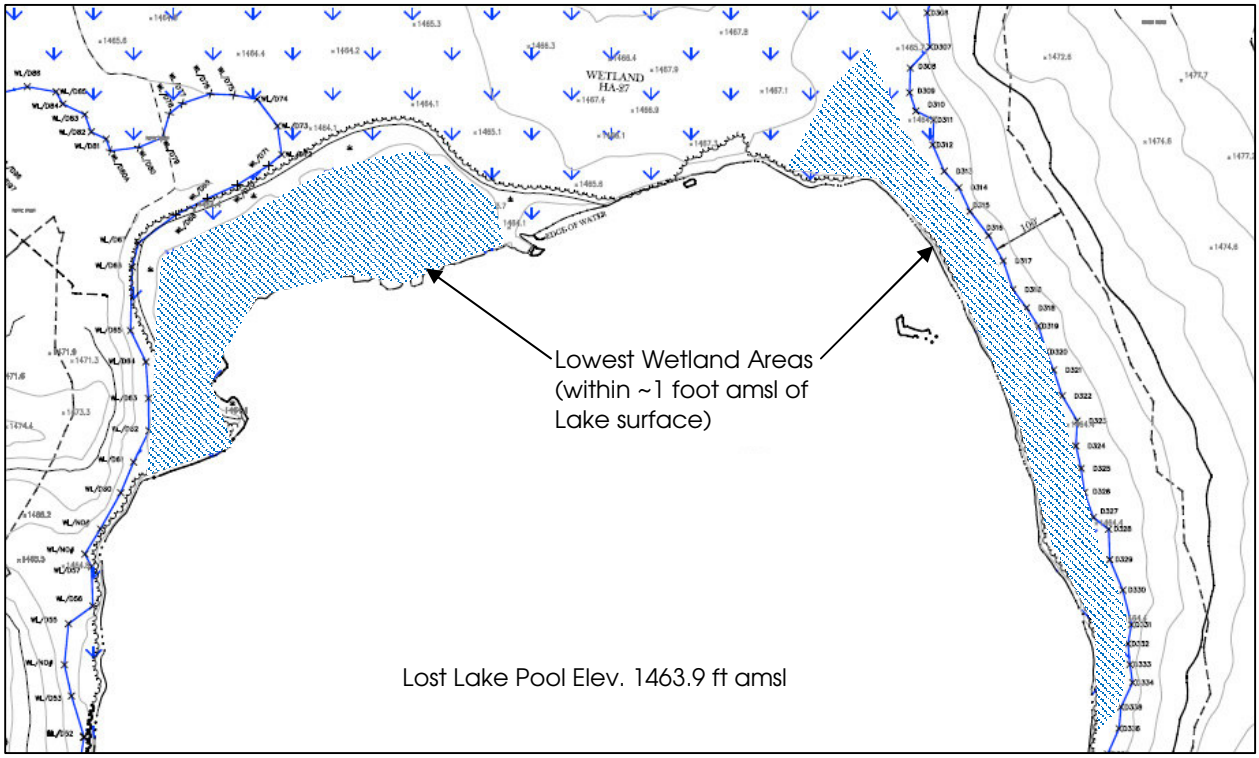
The normal precipitation year water balance summary on Table 2 shows that the Lake level remains above the referenced full condition, except for a decline of 2.1 inches in July and 1.4 inches in August. A 1-inch change to the Lake level corresponds to a volume of 1,339,802 gallons of water (27,160 gallons/acre-inch x 49.33 acres). The 10% probability drought condition described on Table 3 shows declines of 3.7 inches below the reference full condition for July and 3.0 inches for August. The Lake level remains above the reference level for all other months of irrigation.

Potential Impacts

The water mass balance results indicate that there would be maximum changes of approximately 3 to 4 inches to the existing Lake level during the months of July and August when irrigation water withdrawals are greatest. The pool elevation is 1,463.9 feet above mean sea level (amsl), so these changes would result in a drought period pool level of approximately 1,463.6 feet amsl. These minor fluctuations are small and should have no discernable effect to the existing flora and fauna in the Lake itself, especially in light of the finding that during dry periods it is very likely that the level drops under natural conditions and there is no discharge from the Lake.

Wetland Area D encompasses 74.83 acres that include a narrow strip of land that borders most of the Lake, but with the majority of the wetland area extending towards the north. Most of these wetlands lie at an elevation of at least 1 foot or more above the Lake level, and are supported by overland flow, and could not be affected by the minor Lake level fluctuations. The lowest elevation wetlands are located in a cove area at the northwest side of the Lake and a small area at the northeast, and along the eastern shore; these are mapped at approximately the same elevation as the Lake and are shown below. A Lake level decline of several inches may result in these areas

being temporarily exposed. However, since all of the dominant Wetland D plant species are classified as obligate, and are not dependent on year-round inundation, a temporary condition when these areas may not contain ponded water should not cause any adverse effect. This is also believed to be the ambient condition during summer time dry periods.



Summary of Findings

The evaluation of the potential impacts to Lost Lake from surface water withdrawals for irrigation indicates that there should be no significant impacts to the Lake and associated flora and fauna, including Wetland D.

We trust that this information adequately addresses concerns associated with the use of Lost Lake as a source for irrigation water. Should you have any questions regarding this evaluation or if we may be of further assistance, please do not hesitate to contact us at 717 458-0800.

Respectfully Submitted,
ADVANTAGE ENGINEERS

Steven R. Read, P.G.
Senior Hydrogeologist

Attachments

TABLE 1 - Monthly and Annual Precipitation for Lost Lake

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1956	na	na	na	na	na	na	na	na	na	na	3.95	2.33	6.28j
1957	1.84b	1.6	1.42	2.18	2.58	1.86	3.4	2.62	3.04	3.72	3.87	6.72	34.85
1958	4.37	3.02a	3.8	4.86	4.13	2.75	6.53	4.42	4.23	6.07	3.86	1.24	49.28
1959	2.91	1.33a	3.29	3.98	1.93	5.11	1.66	4.85	3.58	7.35	4.19	3.84	44.02
1960	3.27	3.69	1.95	3.64	4.59	6.3	4.69	5.89	8.84	1.94	2.18	1.5	48.48
1961	2.01	3.05	5.02	-z	4.41	4.57	2.48	3.08	2.95	1	4.33	2.28	35.18a
1962	3.89	3.13	1.69	3.91a	1.72	2.34	1.52	2.88	2.25	5.07	3.52	3.03	34.95
1963	2.71	2.3	2.92	1.24	-z	4	6.25	2.33	3.82	0.14	6.7	2.53	34.94a
1964	4.61	2.33	2.99	5.07	2.09	7.26	3.25	0.69	2.2	0.29n	2.7	4.08	37.56
1965	3.28	3.18	1.51	2.81	0.77	1.35	1.65	4.4	3.72	1.96	2.1	2.15	28.88
1966	2.57	2.8	2.98	2.07	3.6	1.49	0.95	1.86	4.99	3.37	4.78	4.16	35.62
1967	1.21	1.95	5.22	2.89	4.16	3.07	4.33	5.22	2.73	2.63	3.58	4.04	41.03
1968	3.02	0.24	3.42	3.65	7.99	6.55	1.58	2.93	3.01	3.54	5.26	4.88	46.07
1969	2.24	1.65	3.14	5.02	2.63	7.55	5.97	4.91	2.11	1.65	5.74	7.16	49.77
1970	1.01	3.79	3.37	3.78	3.61	2.49	4.09	4.43	1.94	5.22	5.59	3.57	42.89
1971	2.42	5.77	2.91	1.64	4.89	2.32	4.1	6.46	4.76	2.91	5.6	3.46	47.24
1972	2.37	4.64	5	3.98	4.56	12.17	3.05	2.28	1.67	3.7	9.36	5.52	58.3
1973	4.07	2.23	3.14	7.01	7.28	9.15	2.58	5.22	3.54	3.46	2.8	10.03	60.51
1974	4.27	2.78	5.45	2.65	4.76	4.29	5.05	4.18	5.49	1.28	2.83	5.17	48.2
1975	5.5	3.86	4.53	2.64	6.95	5.48	3.99	4.53	4.98	3.3	4.74	3.23	53.73
1976	5.95	2.39	3.16	2.8	5.51	4.13	5	7.55	4.83	7.12	1.32	2.46	52.22
1977	1.66	3.27	7.98	4.36	2.04	3.4	1.37	3.2	7.33	5.24	5.39	5.62	50.86
1978	7.91	1.43	3.42	1.57	7.74	3.68	2.35	2.9	3.68	2.85	2.29	4.18	44
1979	9.69	3.11	3.26	4.22	5.99	2.02	2.25	3.88	8.22	5.96	4.83	1.62	55.05
1980	0.51	1.3	8.09	6.68	1.38	4.2	2.56	1.78	1.25	4.33	2.66	1.19	35.93
1981	0.85	8.02	0.38	4.13	6.69	4.22	4.03	1.33	3.96	3.81	1.62	4.02	43.06
1982	3.28	3.17	2.4	5.1	4.63	6.78	1.96	4.04	2.88	1.6	4.03	1.81	41.68
1983	2.11	4.31	6.26	10.87	4.95	5.02	3.57	3.54	2.49	4.26	6.78	5.66	59.82
1984	1.43	4.62	5.52	6.63	9.33	4.64	6.24	1.67	1.61	2.24	3.54	3.37	50.84
1985	1.06	2.48	2.68	2.02	5.64	3.61	4.29	3.73	6.96	2.81	6.68	2.97	44.93
1986	4.24	4.16	3.49	4.53	3.68	7.52	5.64	3.63	2.67	2.94	6.05	3.59	52.14
1987	4.09	0.45	2.49a	7.5	1.85	2.57	5.53	3.76	7.83	5.52	4.09	1.79	47.47
1988	2.89	3.74	1.84	1.74	6.9	0.8	6.98	4.35	2.49	2.49	6.27	0.97	41.46
1989	1.49	1.58	3.02	3.11	10.7	7.83	2.16	4.16	8.17	5.74	2.72	1.13	51.81
1990	5.23	3.45	3.84	2.72	6.71	3.31	3.39	6.99	1.52	4.96	4.09	6.77	52.98
1991	2.64	1.76	4.35	3.58	3.75	2.25	2.82	3.05	4.75	4.3	4.24	3.51	41
1992	2.33	2.12	4.1	3.3	2.7	8.17	5.63	4.6	3.07	1.94	4.61	5.13	47.7
1993	2.48	3.02	6.85	6.49	1.58	3.26	2.81a	1.86	5.96	3.85	4.9	3.78	46.84
1994	5.21	2.84	6.91	4.29	3.27	5.72	3.38	6.83	5.48	1.71	3.49	3.22	52.35
1995	4.16	2.41	3.97	2.13	2.95	1.14	6.96	0.93	3.2	9.78	5.75	2.19	45.57
1996	7.36	2.33	3.45	6.06a	5.15	5.47	5.92	3.19	7.84	5.85	4.84	7.23	64.69
1997	2.57	1.89	4.38	4.31	3.79	1.48	2.37	4.84	3.04	1.83	6.3	4.2	41
1998	4.12	4.08	4.2	5.51	7.16	8.56	4.84	1.88	3.74	3.36	1.86	1.33	50.64
1999	6.26	1.99	5.1	2.32	3.14	2.76	2.06	4.17	11.74	3.13	1.58	2.52	46.77
2000	4.21	3.41	4.18	4.46	6.36	7.24	5.27	3.63	2.41	1.36	2.72	5.47	50.72
2001	1.45a	2.86	4.66	1.36	3.84	3.39b	3.38	5.36	4.58	0.65	0.9	2.41	34.84
2002	1.58	1	3.92	4.07	7.29	5.41	1.56	4.12	5.53	7.04	4.62	6.02	52.16
2003	3.9	3.43	3.58	2.1	3.13	6.97	3.63	6.54	11.04	7.35	5.46	6.19	63.32
2004	2.86	1.38a	2.49a	3.92	3.23	2.83a	5.84	8.71	7.26a	2.49	3.89	3.9	48.8
2005	7.42	2.29	5.4	7.18	1.42	3.67	1.74d	3.19a	1.77	16.81	4.99	3.92	59.8
2006	6.25	2.36	1.56	3.83	5.44	9.61	3.17	6.51	6.61	6.02	4.85	2.22	58.43
2007	3.96	0.30d	2.78a	7.35a	1.1	4.69	6.56	3.42	0.88	7.61	3.85	6.3	48.8
2008	1.74	-z	-z	2.24d	2.46	4.37	5.2	1.98	5.7	5.64	2.69	7.34	39.36b
2009	3.05	1.57	2.43	2.9	4.76	8.91k	7.98a	7.36	2.3	4.18a	2.2	6.3	53.94
2010	2.96	5.09	9.54	0.99j	-z	-z	-z	-z	-z	-z	-z	-z	18.58h
Normals	3.75	3.09	4.21	4.28	5.07	4.77	3.94	3.81	4.59	3.79	4.27	3.77	49.34
Mean	3.45	2.77	3.88	3.95	4.4	4.71	3.88	4	4.39	4.06	4.14	3.91	47.86
10% Low	3.0	2.4	3.3	3.4	4.0	3.8	3.1	3.0	3.6	3.0	3.4	3.0	39.0

FLAGS:
a = 1, b = 2, c = 3, ..., or z = 26 or more missing days in a month or missing months in a year.
A = Accumulation over more than one day, S = Subsequent

NOTES:
- Long-term means based on columns. Thus, the sum (or average) of the monthly values may not equal the annual value.

SOURCE:
Department of Earth and Atmospheric Science (EAS)
Northeast Regional Climate Center (NRCC)
1107 Bradfield Hall, Cornell University
Ithaca, NY 14853

Station: ROCK HILL 3 SW
State: NY
ID: 307205
Latitude: 41.59 degrees
Longitude: -74.61 degrees
Elevation: 1270 feet
Station period of record: 11/01/1956-04/20/2010

TABLE 2 - Lost Lake Water Mass Balance for Normal Year Precipitation

	JAN	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	ANNUAL
(2)Average Precipitation (inches)	3.8	3.1	4.2	4.3	5.1	4.8	3.9	3.8	4.6	3.8	4.3	3.8	49.3
Volume Precip Directly into Lake	5,016,861	4,133,893	5,632,263	5,725,911	6,782,796	6,381,447	5,271,049	5,097,131	6,140,638	5,070,374	5,712,532	5,043,618	66,008,512
Precip Runoff into Lake from Drainage (236 ac.), 21% of total	5,047,686	4,159,293	5,666,869	5,761,092	6,824,471	6,420,657	5,303,435	5,128,449	6,178,368	5,101,528	5,747,632	5,074,607	66,414,087
(3)Evapotranspiration (ET), inches, from lake surface	0	0	0	3	4.9	5.4	5.8	4.9	3.6	2.4			
ET from Lake, gallons				(4,013,489)	(6,555,365)	(7,224,280)	(7,759,412)	(6,555,365)	(4,816,187)	(3,210,791)			
(4) Irrigation water (gallons)				(620,470)	(3,584,180)	(4,628,340)	(5,565,520)	(5,497,580)	(2,980,120)	(1,473,160)			
Water Balance (relative to full condition)				6,853,044	3,467,723	949,484	(2,750,448)	(1,827,365)	4,522,699	5,487,951			
Change to Lake surface, inches				5.1	2.6	0.7	-2.1	-1.4	3.4	4.1			
Change to Lake surface if no irrigation, inches				5.6	5.3	4.2	2.1	2.7	5.6	5.2			

(1) equals 79% of normal year

(2) from Rock Hill Station, 1957 thru 2009

(3) from Susquehanna River Basin Commission, Monthly Pond Evaporation Table

(4) Average for years 2005 thru 2009 at Eagle Rock Resort, Hazleton, PA

Total Lost Lake Drainage Area		Lost Lake Area	Area Outside Lake	Irrigated Area
mi^2	acres	acres	acres	acres
0.443	283.52	49.33	236	50

TABLE 3 - Lost Lake Water Mass Balance for 10% Probability Drought Year Precipitation

	JAN	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	ANNUAL
(1) 1 in 10 Drought Precipitation (inches)	3.0	2.4	3.3	3.4	4.0	3.8	3.1	3.0	3.6	3.0	3.4	3.0	39.0
(2)Average Precipitation (inches)	3.8	3.1	4.2	4.3	5.1	4.8	3.9	3.8	4.6	3.8	4.3	3.8	49.3
Volume Precip Directly into Lake (gal.)	3,963,320	3,265,776	4,449,487	4,523,469	5,358,409	5,041,343	4,164,128	4,026,733	4,851,104	4,005,596	4,512,901	3,984,458	52,146,725
Precip Runoff (gal.) into Lake from Drainage (236 ac.), 21% of total	3,987,672	3,285,842	4,476,826	4,551,263	5,391,332	5,072,319	4,189,714	4,051,475	4,880,910	4,030,207	4,540,629	4,008,940	52,467,129
(3)Evapotranspiration (ET), inches, from lake surface	0	0	0	3	4.9	5.4	5.8	4.9	3.6	2.4			
ET from Lake, gallons				(4,013,489)	(6,555,365)	(7,224,280)	(7,759,412)	(6,555,365)	(4,816,187)	(3,210,791)			
(4) Irrigation water (gallons)				(620,470)	(3,584,180)	(4,628,340)	(5,565,520)	(5,497,580)	(2,980,120)	(1,473,160)			
Water Balance (relative to full condition at spillway)				4,440,774	610,196	(1,738,958)	(4,971,089)	(3,974,737)	1,935,708	3,351,852			
Change to Lake surface, inches				3.3	0.5	-1.3	-3.7	-3.0	1.4	2.5			
Change to Lake surface if no irrigation, inches				3.8	3.1	2.2	0.4	1.1	3.7	3.6			

(1) equals 79% of normal year

(2) from Rock Hill Station, 1957 thru 2009

(3) from Susquehanna River Basin Commission, Monthly Pond Evaporation Table

(4) Average for years 2005 thru 2009 at Eagle Rock Resort, Hazleton, PA

Total Lost Lake Drainage Area		Lost Lake Area	Area Outside Lake	Irrigated Area
mi^2	acres	acres	acres	acres
0.443	283.52	49.33	236	50

Susquehanna River Basin Commission

a water management agency serving the Susquehanna River Watershed

POND EVAPORATION CALCULATION

These values are to be used to calculate pond evaporation for the Susquehanna River Basin Commission's Consumptive Use Regulation.

Month	Inches of Evaporation*
January	0
February	0
March	0
April	3.0
May	4.9
June	5.4
July	5.8
August	4.9
September	3.6
October	2.4
November	0
December	0

***Inches of Evaporation** are averages for the Susquehanna River basin and account for rainfall for each month. These averages are based on pan evaporation at various climatological stations. Penn State University then converted the numbers to reflect Lake Evaporation.

The following is a sample calculation of daily average pond evaporation for a 2.5-acre pond for the month of July. Please note that the size of your particular irrigation pond(s) and the month will directly affect your calculations. This calculation should be completed for each month and each pond.

EXAMPLE:

Pond Size = 2.5 acres

Inches of Evaporation for July = 5.8 inches

$$5.8 \text{ in.} \times \frac{1 \text{ ft.}}{12 \text{ in.}} \times 2.5 \text{ ac.} \times \frac{43{,}560 \text{ sq. ft.}}{1 \text{ ac.}} \times \frac{7.48 \text{ gal.}}{\text{cu. ft.}} = \frac{393{,}709.75 \text{ gal.}}{\text{month of July}}$$

$$\frac{393{,}709.75 \text{ gal.}}{31 \text{ days}} = \mathbf{\frac{12{,}700 \text{ gal.}}{\text{day}}}$$

This is the daily average of pond evaporation from a 2.5-acre pond for the month of July. This number should be recorded daily and included in your total consumptive water use calculations. The appropriate daily value should be calculated and recorded for each month.

1829.1

USGS Pennsylvania Streamstats

Streamstats Ungaged Site Report

Date: Thu Apr 15 2010 09:46:17 Mountain Daylight Time
Site Location: Pennsylvania
NAD83 Latitude: 41.5831 (41 34 59)
NAD83 Longitude: -74.6799 (-74 40 47)
NAD27 Latitude: 41.5830 (41 34 58)
NAD27 Longitude: -74.6803 (-74 40 49)
Drainage Area: 0.443 mi2

Low Flow Basin Characteristics

99% Low Flow Region 5 (0.44 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	0.44 (below min value 4.84)	4.84	982
Mean Annual Precipitation (inches)	47.000	33.1	47.1
Percent of Glaciation (percent)	100.0000	0	100
Percent Forest (percent)	80.7059	41	100

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Mean/Base-flow Basin Characteristics

99% Statewide Mean and Base Flow (0.44 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	0.44 (below min value 2.26)	2.26	1720
Mean Basin Elevation (feet)	1490	130	2700
Mean Annual Precipitation (inches)	47.000	33.1	50.4
Percent Carbonate (percent)	0.0000	0	99
Percent Forest (percent)	80.7059	5.1	100
Percent Urban (percent)	0.0000	0	89

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Peak Flow Basin Characteristics

99% Peak Flow Region 1 (0.44 mi2)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	0.44 (below min value 1.72)	1.72	1280
Mean Basin Elevation (feet)	1490	0	1960
Percent Carbonate (percent)	0.0000	0	83
Percent Urban (percent)	0.0000	0	20
Percent Storage (percent)	19.6863	0	21.2

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Low Flow Streamflow Statistics

Statistic	Flow (ft^3/s)	Standard Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
M7D2Y	0.0382				
M30D2Y	0.0589				
M7D10Y	0.0107				
M30D10Y	0.0181				

M90D10Y	0.0348				

Mean/Base-flow Streamflow Statistics

Statistic	Flow (ft^3/s)	Standard Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
QA	0.83				
QAH	0.18				
BF10YR	0.36				
BF25YR	0.32				
BF50YR	0.3				

Peak Flow Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	20.2		3		
PK5	37.7		6		
PK10	53		9		
PK50	96.2		13		
PK100	119		13		
PK500	185		14		