# Silver Lake Water Use Summary

(prepared by the Wyoming County Soil & Water Conservation District, 2016)

**The Club on Silver Lake**

- Allocation:
- Actual Estimated Usage: 200,000 gallons per week in July and August on average
- Summary:

  In an average year, the Club uses about 200,000 gallons per week in July and August. The pump is not metered, but the Club knows the capacity of the pump. The pump is expensive to run, so they try to avoid using it whenever possible.

**Village of Mount Morris**

- Allocation: 1.5 million gallons/day.
- Actual Estimated Usage: 520,000 gallons/day (including the canning plant)
- Summary:

  The Village's water usage varies seasonally. In the winter, they utilize just gravity to transfer water (no pumping), which is about 450,000 gallons per day. In the summer, they usually pump 1 to 2 days per week to fill the reservoir. They only have the pumping capacity of approximately 1 million gallons per day, as the pump cannot pump the full 1.5 million gallons per day. This averages out to be about 515,000 to 520,000 gallons per day.

**Village of Perry**

- Allocation: 2 million gallons/day for water use by residents + 2 million gallons/day for the wastewater treatment plant
- Actual Estimated Usage: Approximately 480,000 gallons/day for residents + approximately 646,000 gallons/day for wastewater treatment plant
- Summary:

  The Village of Perry utilizes lake water in two different ways. First, the Village provides drinking water to local residents in the Villages of Perry, the Town of Perry etc. Second, the Village of Perry runs a wastewater treatment plant and needs a certain amount of flow in the outlet to meet the wastewater plant's permit requirements.

  The Village of Perry Wastewater Treatment Plant must have 1 cubic foot per second (cfs) of water flowing through the Silver Lake Outlet in order to meet the requirements of the State Pollutant Elimination Discharge System (SPEDS) permit. Therefore, even when the outlet gate is

completely closed, water will still flow from the lake to the outlet. The pipe running through the gate is specifically designed to carry 1 cfs of water and cannot be shut off. Approximately 646,000 gallons of water are released from the lake to the outlet each day for the wastewater treatment plant, which is significantly less than the 2 million gallons per day allocations.

**Local Farms**

- Allocation: 100,000 gallons/day per farm is allowed without a permit
- Actual Estimated Usage: 80,000 gallons/day from 2 farms known to withdraw water
- Summary:

  Farms are allowed to withdraw 100,000 gallons per day without a permit. Two farms are known to withdraw water from the lake. Based on estimates from the cows' water usage, each farm only draws about 40,000 gallons per day, which is well below their allowable use. This is a total of 80,000 gallons/day for the two farms.

**Evaporation**

- Allocation: Not Applicable
- Actual Estimated Usage: Approximately 578 million gallons per year
- Summary:

  Measuring evaporation off of a lake is difficult. Therefore, the exact amount of water lost from the lake to evaporation is unknown. To estimate evaporation off of the lake, pan evaporation measurements from a weather station in Buffalo, NY (the closest station) were averaged from 1986 to 2015. Pan evaporation overestimates actual evaporation from lakes. Therefore, average pan evaporation was multiplied by 0.7, a correction factor. The lake also freezes over from December to March on average, so these dates were not included in the estimates. Pan evaporation estimates from March 1 to November 30 were summed over each year. Then, this was averaged across the years, giving an average annual evaporation of 25.0 inches per year. The same process was utilized on a weather station in Dansville. However, the Dansville station only had data available from 2001 to 2015. The average annual evaporation estimate was 26.2 inches per year. Therefore, the average estimated evaporation off of the lake is 25.6 inches per year, which is equivalent to approximately 577,668,653 gallons per year.

| User | Allocation | Total Annual Allocation (gallons) | Annual % of Lake Volume | Lake Depth (in) | Average Actual Use | Total Actual Usage (gallons per year) | % of Lake Volume | Lake Depth (in) |
|---|---|---|---|---|---|---|---|---|
| The Club on Silver Lake | | | - | | 200,000 gallons per week during July and August | 2,000,000 | 0.03 | 0.09 |
| Village of Mount Morris | 1,500,000 gallons per day | 547,500,000 | 9.13 | 24.3 | 520,000 gallons per day | 189,800,000 | 3.17 | 8.41 |
| Village of Perry | 2,000,000 gallons per day | 730,000,000 | 12.18 | 32.4 | 480,000 gallons per day | 175,200,000 | 2.92 | 7.76 |
| Village of Perry WWTP (spillway) | 2,000,000 gallons per day | 730,000,000 | 12.18 | 32.4 | 1 cubic foot per second | 235,905,679 | 3.94 | 10.45 |
| Two farms | 200,000 gallons per day | 73,000,000 | 1.22 | 3.2 | 80,000 gallons per day | 29,200,000 | 0.49 | 1.29 |
| | | | | | | | | |
| Evaporation (estimated from pan evaporation in Buffalo and Dansville NY) | | | | | 25.6 inches per year | 577,668,653 | 9.64 | 25.60 |