

CHAPTER THREE--DEVELOPMENT OF THE LAKE LEVEL CONTROL AND FLOW RATE CURVES

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DEVELOPMENT OF THE LAKE LEVEL CONTROL CURVES AND FLOW RATE CALCULATIONS

DISCUSSION OF LAKE LEVEL CONTROL

CONTROL CURVE DEVELOPMENT

ORIGINAL CURVE, CIRCA 1956 (AFTER THE 1956 FLOOD)

FIRST MODIFICATION, 1990'S

FINAL RULE CURVE OF THE 2000'S

HISTORICAL DATA

2018

1972 THRU EVENTS TO 2014

TABULAR DATA FROM 1872

ESTABLISHMENT OF BASELINE DATA

OSWEGO RIVER BASIN COMPARISONS AND THE CANAL CORPORATION

CANANDAIGUA, SENECA, CAYUGA AND OSWEGO LAKE RUKE CURVES

FLOW RATE CALCULATIONS BY WAYNE HAND OF KLA, WHERE $Q(\text{FLOW RATE}) = 3.16$
 $(W)H^{3/2}$ --SEE ATTACHED GRAPHS FROM THE LAKE LEVEL CURVE FOUND ON THE KLA WEBSITE,
WWW.KEUKALAKEASSOCIATION.ORG

THE ARMY CORPS OF ENGINEERS CONTROL MANUAL (THE COMPLETE CONTROL
MANUAL IS WITH THE VILLAGE OF PENN YAN GATE MANAGER)

Keuka Lake Water Level ABCs-Peter Landre, Cornell Cooperative Extension

The water level in Keuka Lake is often a topic of conversation and debate around the lake. I often hear from lakeshore owners the "lake is too high!" or the "lake is too low!", sometimes in the same day! Why do people have different perceptions of where the lake should be? Hard to say, but many people seem to reflect on previous years or at what level they set their dock that spring.

To determine whether the lake is in fact too high or too low, people need to compare the current day's lake level with the "Keuka Lake Level Guide" or guide curve. The guide curve (shown below and published weekly in the local papers and on the KLA's website) is the official guide used by the Keuka Lake Outlet Compact (KLOC) to manage lake levels. The guide curve illustrates the maximum and minimum desirable lake levels for the entire year. Ideally, the lake level on any given day should fall between the maximum and minimum. During the summer, the maximum desirable level is 714.2 and the minimum is 713.7 feet above sea level. On July 8 for example, the water level was 714.0; an acceptable level between the minimum and maximum. Currently the Keuka Lake Association and the KLOC are looking at installing a voice mail system so that people can call anytime to get the current lake level, desired levels and the gate settings for that day.

Who manages the lake level and how do they do it? The KLOC, a committee consisting of representatives from the eight municipalities around the lake, has ultimate responsibility for management of water levels and upkeep of the outlet gates. The recommended process for daily operation and management of the gates is outlined in the "Reservoir Regulation Manual-Keuka Lake Outlet", which describes the purpose and the procedures for maintaining the lake level. The Chair of the KLOC and the Director of Penn Yan Municipal Utility Board (contracted to operate the outlet gates) consult on a regular basis to determine if the gate settings need to be changed to increase or decrease the outflow or discharge of water from the lake.

The primary objective of the KLOC is to use the six outlet gates to prevent flooding around the perimeter of Keuka Lake. The manual prescribes specific gate settings (and water discharge amounts), depending on where the level is in relation to the desired levels for that day. For example, if the lake were above the maximum desired level, the manual prescribes opening all of the gates to lower the lake until it reaches the desired level.

To minimize the risk of downstream flooding, the manual limits the discharge rate to 1,000 cubic feet per second (cfs). However, since this rate is not achieved until the lake reaches 716.03 feet above sea level or higher with all 6 gates open, gate capacity may be fully used to correct high water situations without significantly jeopardizing downstream property. The manual also prescribes that a minimum of 15 cfs is needed to safely operate the Penn Yan sewage treatment plant.

KEUKA LAKE OUTLET COMPACT

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KEUKA LAKE

John Andersen, Chairman
William Weber, Secretary
Dwight Rogers, Treasurer
William Mayer, Esq., Counsel

Edward J. Balsley, Manager
315-536-3374

DISCUSSION OF KEUKA LAKE WATER LEVEL CONTROL

The Keuka Lake Outlet Compact is an Intermunicipal Agency comprized of the Keuka Lake municipalities; it owns and operates the gates in Penn Yan according to the enclosed Water Control Plan issued by The US ARMY CORPS of ENGINEERS and the Keuka Lake Level Guide. In 1999 the KLOC Commissioners authorized the Gate Manager to operate the gates in such a fashion as to meet the criteria set forth in the 3-27-00 graph enclosed and reported in the CHRONICLE EXPRESS on a weekly basis.

Also enclosed are exerpts from the Pulteney LAND USE AND ZONING REGULATIONS AS Local Law no.1, 1996. The accepted definitions are taken from the references cited in this local law.

I would like to point out that mean low and high water marks are moving targets in that they are the results of calculations based on actual Keuka Lake high and low water measurements over a given period of time. However, the Low Water mark is an absolute measurement based on the elevation of the Andrews Gates sill, which was developed on 1963 at the time NYSEG turned the ownership of the gates to the Village of Penn Yan. The gates became the property of KLOC in 1990. The LOW WATER MARK for Keuka Lake is 709.1 feet above mean sea level. The most recent data suggest that the mean low water level is 712 feet above mean sea level and the mean high is 715.15 feet.

It is interesting to note that on a 10% sloped beach/shore the shoreline difference from the Lake's edge would be about 30 feet between the 712 mark and the absolute low of 709.1.

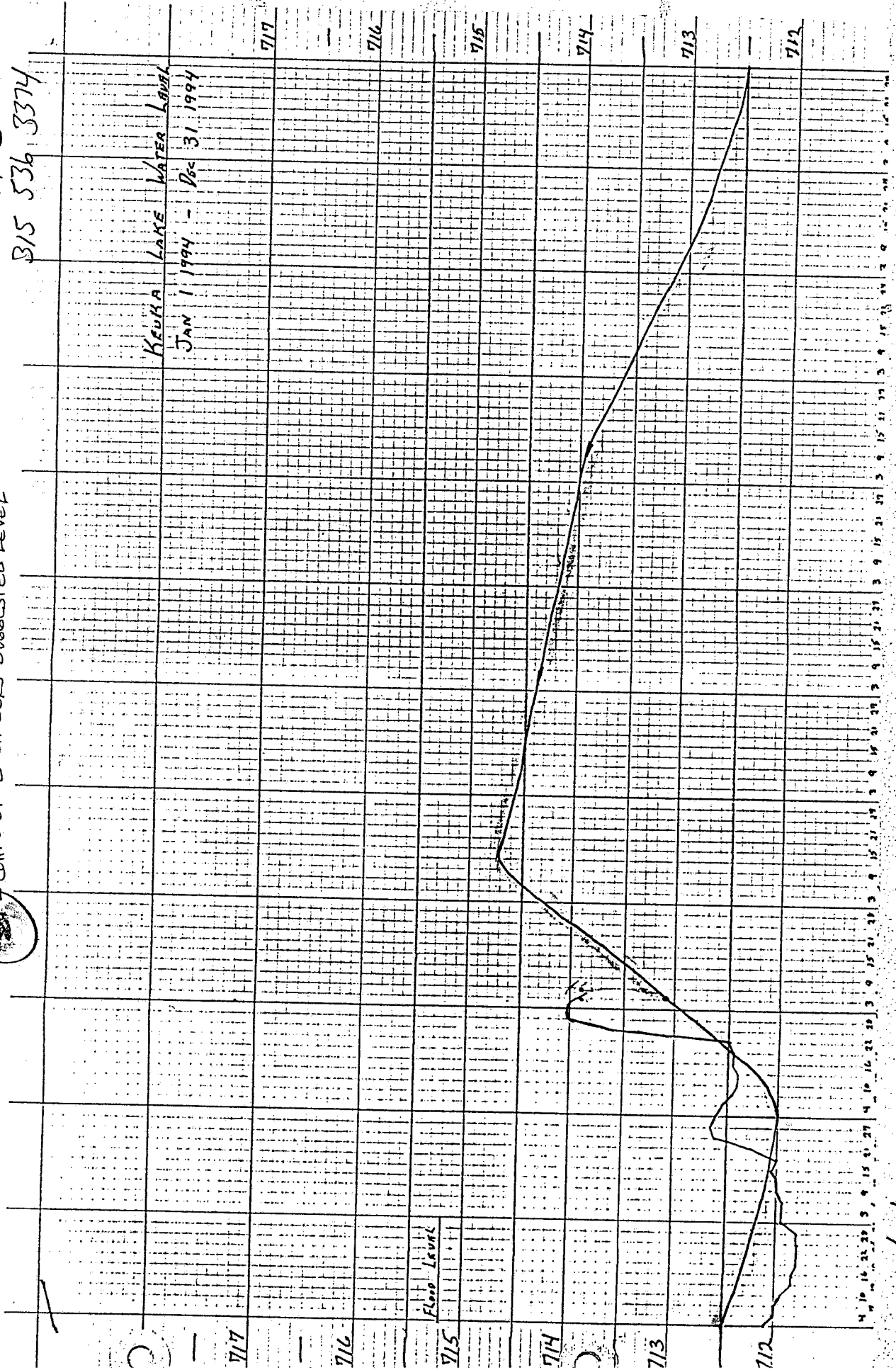
As the question was posed to me about structures in the waters of Keuka Lake and the relationship of Lake Levels, I would refer the reader to the MOORING LAW of the Town of Jerusalem and to other published laws and documents relating to Riparian Law and the rights of Upland Owners on NYS waters West of the Pre-Emption Line created by the Treaty of Hartford in 1787.

William A. Weber, Secty
3 July 2000

KEUKA LAKE REGULATION LINE

FOR LAKE LEVEL CALL: 315 536 3374

CORPS OF ENGINEERS SUGGESTED LEVEL

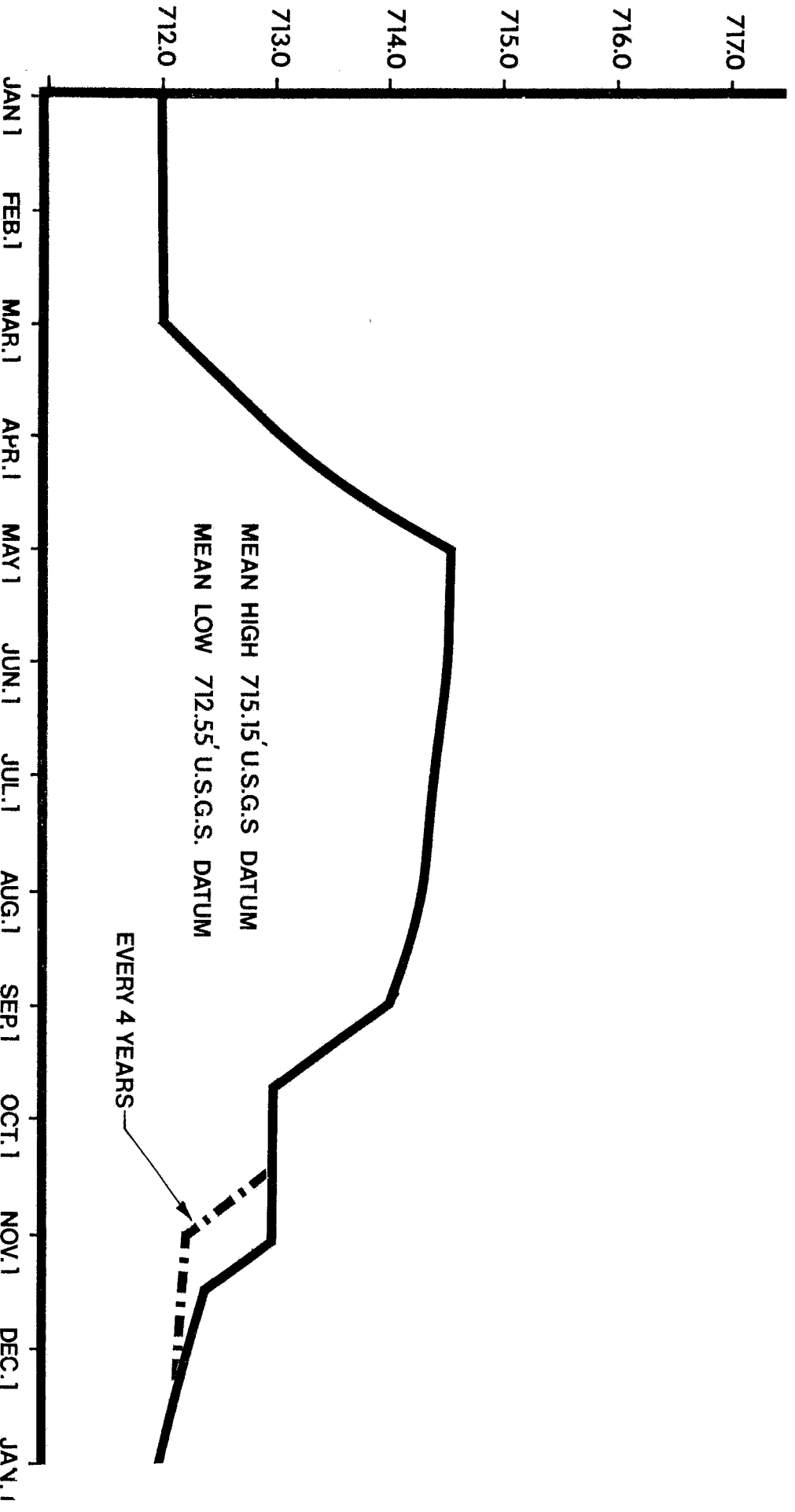


4/11/94 714.15' 266 cfs 4 gates shut

Lake Keuka Water Level Guideline Graph

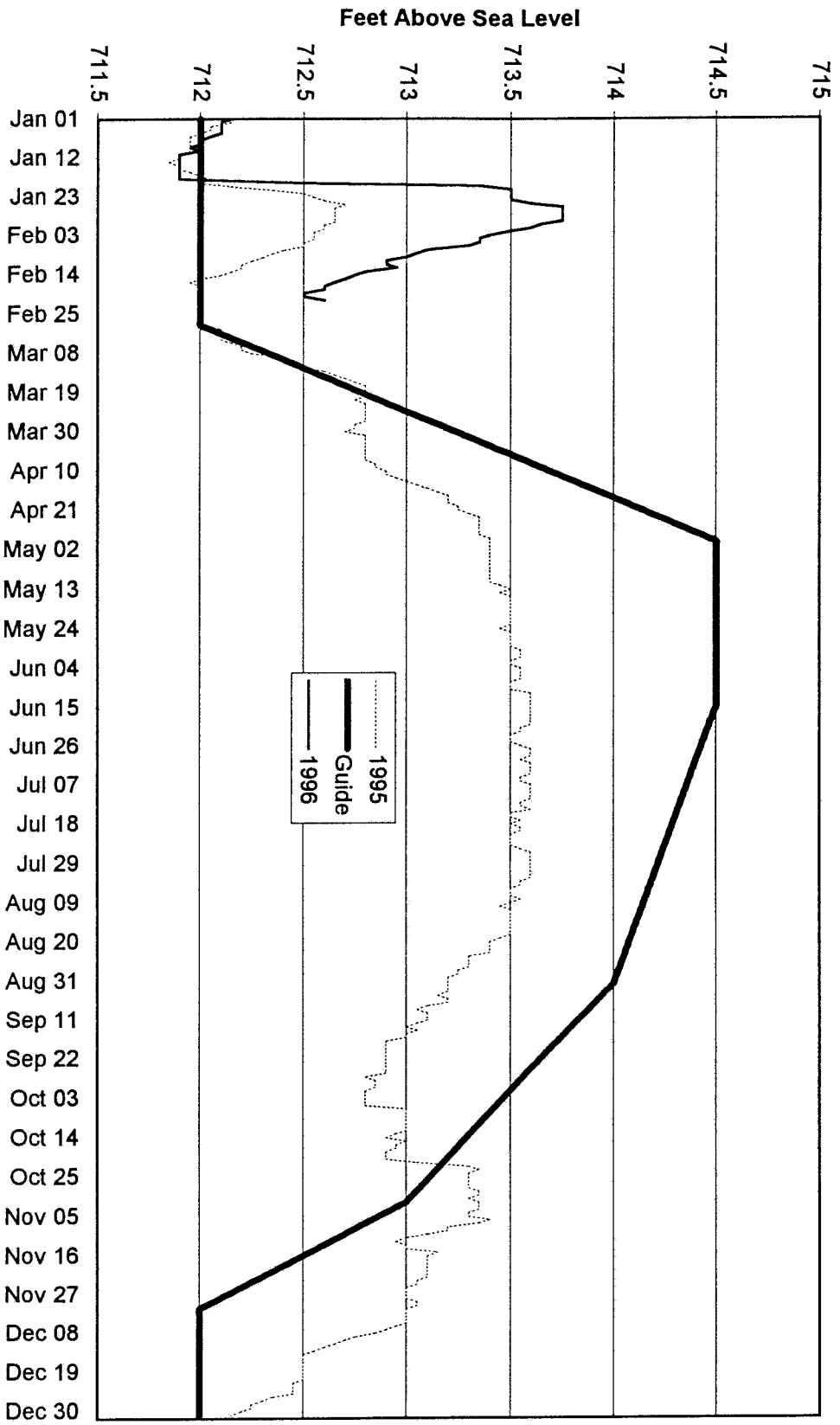
TOP OF DAM ELEVATION - 716.04'

ABOVE
SEA LEVEL



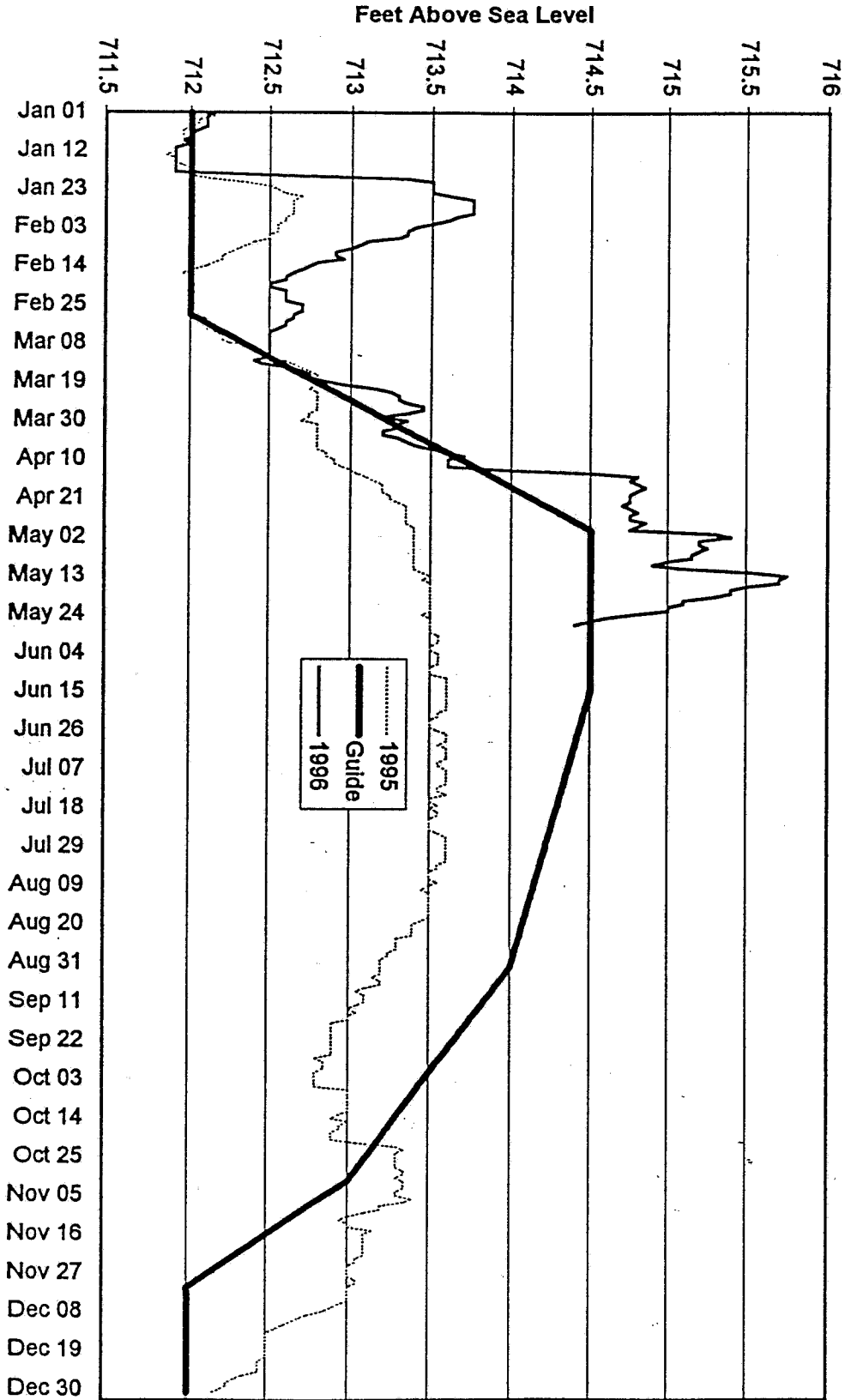
MONTHS

Keuka Lake Water Level

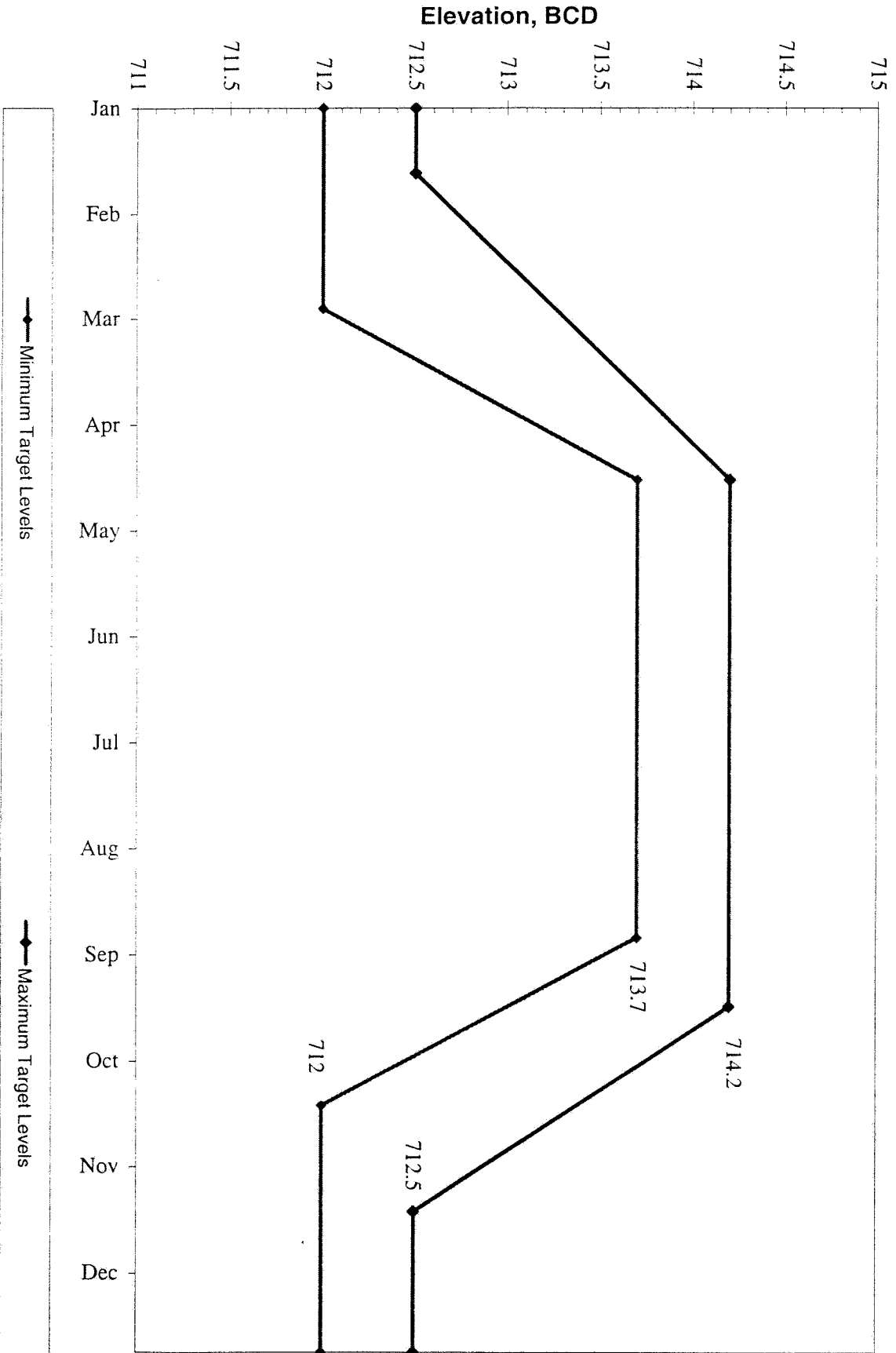


Keuka Lake Water Level

Mean High = 715.15, Top of Gates = 716.04



Keuka Lake Rule Curves




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Keuka Lake Level - 2019

Lake level readings are obtained from the recording device installed at the Penn Yan Water Treatment Plant, the readings (and this page) are automatically updated every two hours.

[click to read about Keuka Lake Water Level Management](#)

The lake has never been this high (or low) before... really? [view Historical Levels](#)

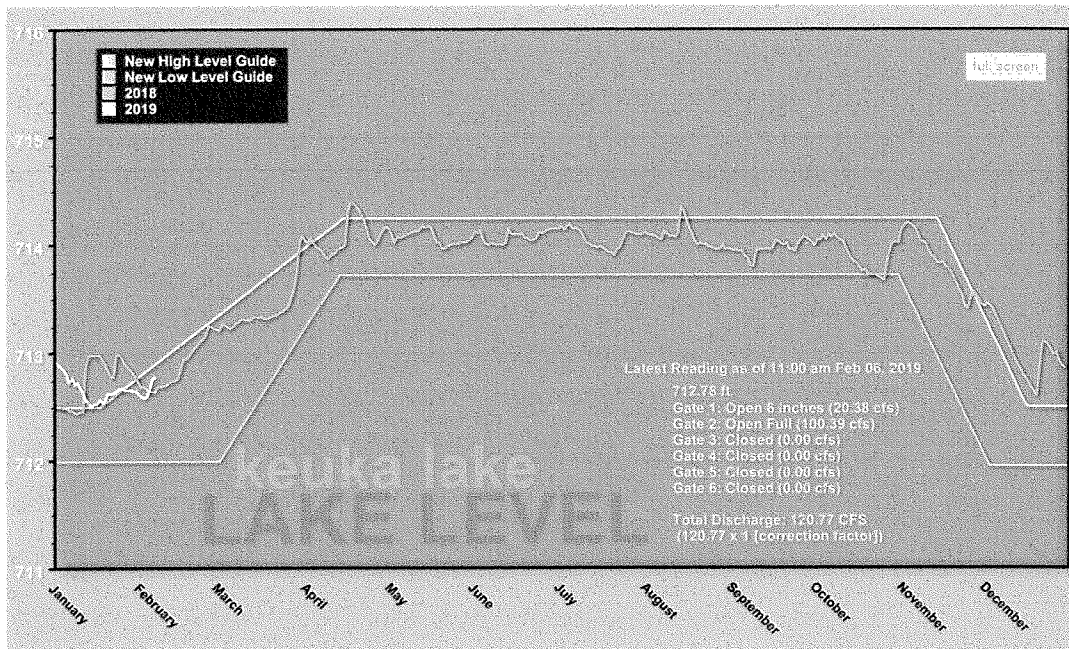
Move mouse over graph to view information.

Lake levels below reflect the last reading of each day.

[how is total discharge calculated](#)

[discharge calculator](#)

[lake level chart - mobile version](#)



Useful Information

- **Mean High Water Level - 715.3'**
Official value which was defined many years ago from historical high water measurements and is referred to as the National Tidal Datum Epoch. This is a key point for all lake shore property owners which defines boundaries.
- New gates were completed in November of 1993
- Top of dam: 716.04'
- **100 Year Flood Level - 720.8'**
Flood level that has a 1% chance of occurring each year, used by most Federal and State agencies, including FEMA, for flood plain management and the National Flood Insurance Program.
- **Minimum Outflow**
Minimum allowed water outflow is 20 cubic feet per second (CFS), to allow adequate Penn Yan wastewater treatment plant discharge dilution.
- **Normal Maximum Outflow**
Normal maximum allowed water outflow is limited to 1,000 cubic feet per second (CFS), to minimize any potential downstream damage. Exceeding this amount should only happen during high water emergency periods, requiring KLOC to declare Condition B, which is a non-failure emergency condition.
- For more details on outflow read [how total discharge is calculated](#).
- All lake level values are shown in feet above sea level per NGVD29 datum.