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September 16, 2016

Hon. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

RE: Project 2685: Blenheim-Gilboa Pumped Storage Power Project

Dear Secretary Bose:

On August 11, 2016, the New York Power Authority ("NYPA") filed with the Federal Energy Regulatory Commission (the "Commission") a request to amend the schedule for the Integrated Licensing Process ("ILP") currently being used for the relicensing of NYPA's Blenheim-Gilboa Pumped Storage Project (the "August 11 Request"). The Schoharie County Board of Supervisors Relicensing Committee ("SCRC") hereby submits these comments in response to NYPA's August 11 Request. The SCRC recognizes that on September 6, 2016, the Commission issued a letter to NYPA approving the August 11 Request. Nevertheless, the SCRC respectfully requests that the Commission consider these comments as the matters discussed herein are of paramount importance to the SCRC and granting the requested relief will not materially impact the Commission's September 6th ruling.

On February 19, 2016, NYPA filed its Initial Study Report ("ISR"), which included complete reports for three of NYPA's six relicensing studies. The other three of NYPA's relicensing studies—the Recreation Use/User Contact Study and Assessment of Effects the Project has on Recreation Use ("Recreation Study"), the Socioeconomics Study, and the Effect of Project Operations on Downstream Flooding Study ("Downstream Flooding Study")—remained outstanding. Under the Commission's process, plan and schedule for the Project relicensing at the time, the ILP study determination process for these studies was not scheduled to begin until the filing of NYPA's Updated Study Report ("USR"), due on February 18, 2017, and would not have been completed until June 18, 2017, when the Director of the Office of Energy Project issued the study plan determination on the USR. This determination, however, would fall well after the statutory deadline—April 30, 2017—for NYPA to file its final license application ("FLA") for the Project.

In its August 11 Request, NYPA sought Commission approval to amend the process plan and schedule for the project, requesting that the Commission accelerate the deadline for filing the USRs for the Recreation and Socioeconomics Studies. NYPA stated in its request that accelerating the review of these two studies would provide for earlier discussion and formal resolution of these studies, and that this resolution would enable NYPA to develop a more complete FLA for the project. As noted above, on September 6th, the Commission approved NYPA request to accelerate the deadline for filing the Recreation and Socioeconomic studies. The Downstream Flooding Study, however, remains subject to original schedule and, accordingly, the study will not be filed until February 18, 2017, and the ILP study determination process will not be complete until June 18, 2017—well after NYPA files its license application.

The SCRC and the Flood Committee do not oppose acceleration of the deadline for filing the USRs for the Recreation and Socioeconomics Studies. The impacts of the Project on these two areas are of great interest to the SCRC and the accelerated schedule will allow more time for review of the studies. The SCRC and the Flood Committee do, however, oppose allowing completion of the Downstream Flooding Study process to occur after the FLA is filed. Given recent significant weather events that have devastated Schoharie County and the surrounding region, the impacts that the Project has on downstream flooding, and the potential for the Project to mitigate such events, to whatever extent possible, rank among the SCRC's top concerns. More specifically, the SCRC and the Flood Committee are requesting that the study determination process for the Downstream Flood Study also be completed prior to NYPA filing the FLA. The Project facilities, including dams, were constructed in the late 1960s to early 1970s. Since that time, meteorological trends have changed significantly and the Project facilities' original design must be re-examined to determine whether they adequately deal with these significant meteorological changes. The FLA should not be filed until NYPA's ability to safely pass future floods generated by storms approaching Probable Maximum Precipitation ("PMP") values is thoroughly evaluated. This request is predicated on the fact that the frequency and magnitude of extreme precipitation events is increasing in the catchment of NYPA at the Project. The SCRC respectfully requests that the Commission take into consideration the following factual data:

A. The watershed of NYPA at the Project is prone to flash floods and currently trending towards even more extreme stream volumes.[1] The 356 sq. mile catchment of the Project is marked by extreme hydrologic events. At the beginning of the Schoharie Reservoir is Prattsville, NY. The United States Geological Survey ("USGS") Station at Prattsville (#0135000), recorded a Maximum Volume of 120,000 cubic feet per second ("CFS").[2] Its catchment is 237 sq. miles. The Maximum Stream Volume recorded in New York State is 378,000 CFS as measured on the St. Lawrence River at Cornwall, Ontario Canada, near Massena, NY (USGS #04264331), on May 20, 1993. The Prattsville maximum discharge is approximately 31% of the St. Lawrence River maximum flow of 378,000 CFS. The catchment of the St. Lawrence at Massena, NY, however, is > 5.5 times the size of the entire State of New York.[3] Furthermore, the probable maximum flood ("PMF") estimate for the Gilboa Dam, at the end of the Schoharie Reservoir and owned by the City of New York, is 312,000 CFS. This is only 18% less than the maximum measured discharge of the St. Lawrence River at Massena, NY.

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[1] John Garver and Jaclyn Cockburn: MOHAWK WATERSHED SYMPOSIUM, March 2012, *available at*, http://minerva.union.edu/garverj/mws/MWS_2012_Abstract_Volume.pdf; see also Attachment 1.
[2] *Id*. at 21.
[3] United States Geological Survey: MAXIMUM KNOWN STAGES AND DISCHARGES OF NEW YORK STREAMS AND THEIR ANNUAL EXCEEDANCE PROBABILITIES THROUGH SEPTEMBER, 2011, at 5, *available at*, http://pubs.usgs.gov/sir/2014/5084/pdf/sir2014-5084.pdf; see also Attachment 2.

B. Rainfall in the catchment of NYPA at the Project has increased significantly since the Project's design and construction in the 1960's. In 1963 the 100-year 24-hour Rainfall Curve for the region surrounding the Project was 7".[4] The current PMP for the Project is 20".[5]

C. Rainfall amounts that occurred during Hurricane Irene August 28, 2011 in Schoharie and Greene Counties evidence the magnitude of such severe events. This data reproduced from various private and public sources amply illustrates the great rainfall generating capacity of the topography of the NYPA at the Project catchment when combined with the abundant source of oceanic/atmospheric moisture.[6]

In sum, multiple severe weather events have occurred and additional data has been gathered since the Project was initially constructed evidencing the critical need for a re-examination of Project related flooding the role NYPA can play in avoiding or mitigating such events. Therefore, SCRC respectfully requests that NYPA also be directed to complete the ILP study determination process for the Downstream Flooding Study prior to filing the FLA so that the ability of the Project to safely pass future storms of greater magnitude than that generated by Hurricane Irene can be thoroughly evaluated.

The Project has the ability to intake approximately 10,000 CFS if all four pumps are operating during a high water event. Such a void creation prior to the peak flow has the potential to reduce flooding downstream. An earlier release of the Downstream Flooding Study would also allow the SCRC additional time to explore with NYPA whether an agreement could be negotiated between the parties regarding the lowering of their reservoir levels prior to the occurrence of a major storm, using the Projects intakes and reservoir to mitigate flooding impacts and possible reduction of Project discharge.

Thank you for your continued attention to this matter.

Respectfully submitted,

/s/ *Steven D. Wilson*

Steven D. Wilson

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[4] US Department of Commerce National - Weather Bureau: RAINFALL FREQUENCY ATLAS OF UNITED STATES, Technical Paper No. 40, May 1965, at 56, available at, http://www.nws.noaa.gov/oh/hdsc/PF_documents/TechnicalPaper_No40.pdf.
[5] National Oceanic and Atmospheric Administration National Weather Service: Hydro Meteorological Report #43, Ch. 4, at 4-05.
[6] *See* Attachments 3, 4, 5, and 6.

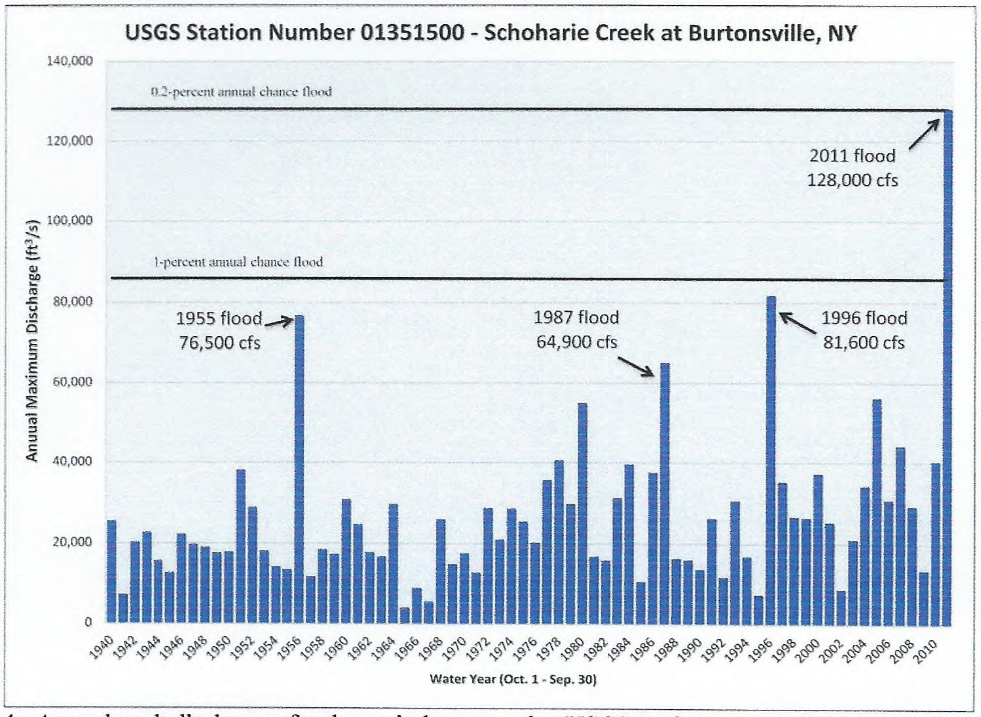


Figure 4: Annual peak discharges for the period-or-record at USGS station number 01351500 – Schoharie Creek at Burtonsville, NY (0.2 and 1-percent annual chance of flood discharges from FEMA, 2012).

Table 1: Peaks for the flood of August 28, 2011 at selected U.S. Geological Survey streamgages in the Schoharie Creek Basin.

USGS Station number	USGS Station name	Drainage area (mi^2)	Peak Stage (ft)	Peak discharge (ft^3/s)	Peak unit discharge (ft^3/s/mi^2)
01349700	East Kill near Jewett Center	35.6	25.65	28,400	798
01349705	Schoharie Creek near Lexington, NY	96.8	22.87	34,100	352
01349810	West Kill near West Kill, NY	27.0	14.03	19,100	707
01349950	Batavia Kill at Red Falls near Prattsville, NY	68.6	21.40	44,200	644
01350000	Schoharie Creek at Prattsville, NY	237.0	24.38	120,000	506
01350101	Schoharie Creek at Gilboa, NY	316.0	40.72	111,000	351
01350180	Schoharie Creek at North Blenheim, NY	358.0	22.00	119,000	332
01351500	Schoharie Creek at Burtonsville, NY	886.0	17.52	128,000	144

Conclusion

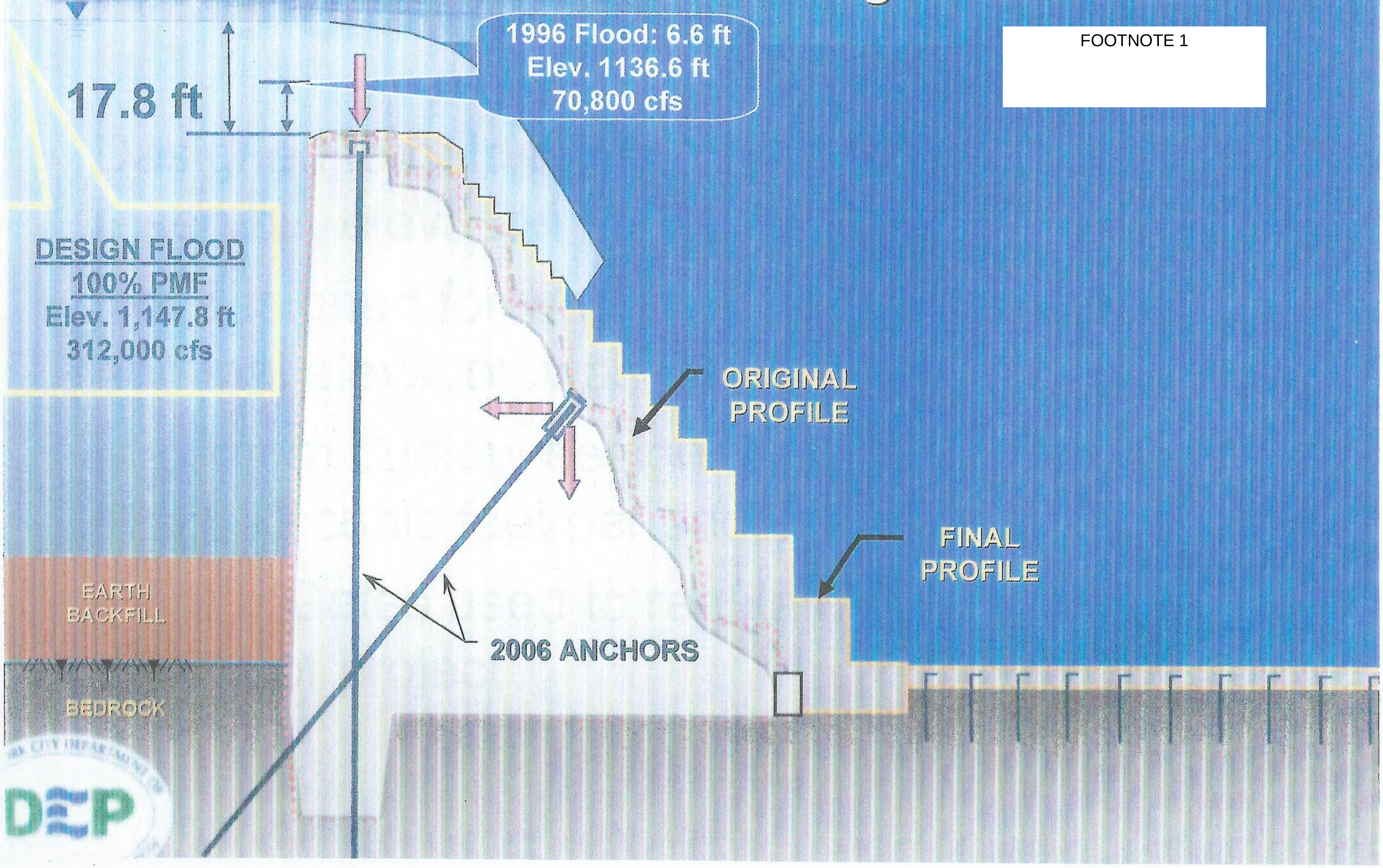
The Schoharie Creek has experienced flooding for millennia. The USGS has been recording streamflow data in Schoharie Creek and its tributaries for just over a century to help monitor water resources, protect communities from flooding and to characterize the probabilities and extents of possible future flooding. The three events documented in this abstract demonstrate different contexts in which flooding has occurred in the Schoharie Valley and how the basins' response was documented by the USGS. The information collected during the most recent floods of the Schoharie Creek help provide a better understanding of how events of this magnitude develop and in turn, how government agencies can aid in protecting life and property in the future.

All three floods (1987, 1996, 2011) significantly impacted the entire Schoharie Valley and will remain in peoples memories for years to come. It is important, from a hydrologic perspective, to understand the similarities and differences

GILBOA DAM RECONSTRUCTION PROJECT

1996 Flood Flow vs. Final Design Flood Flow

FOOTNOTE 1



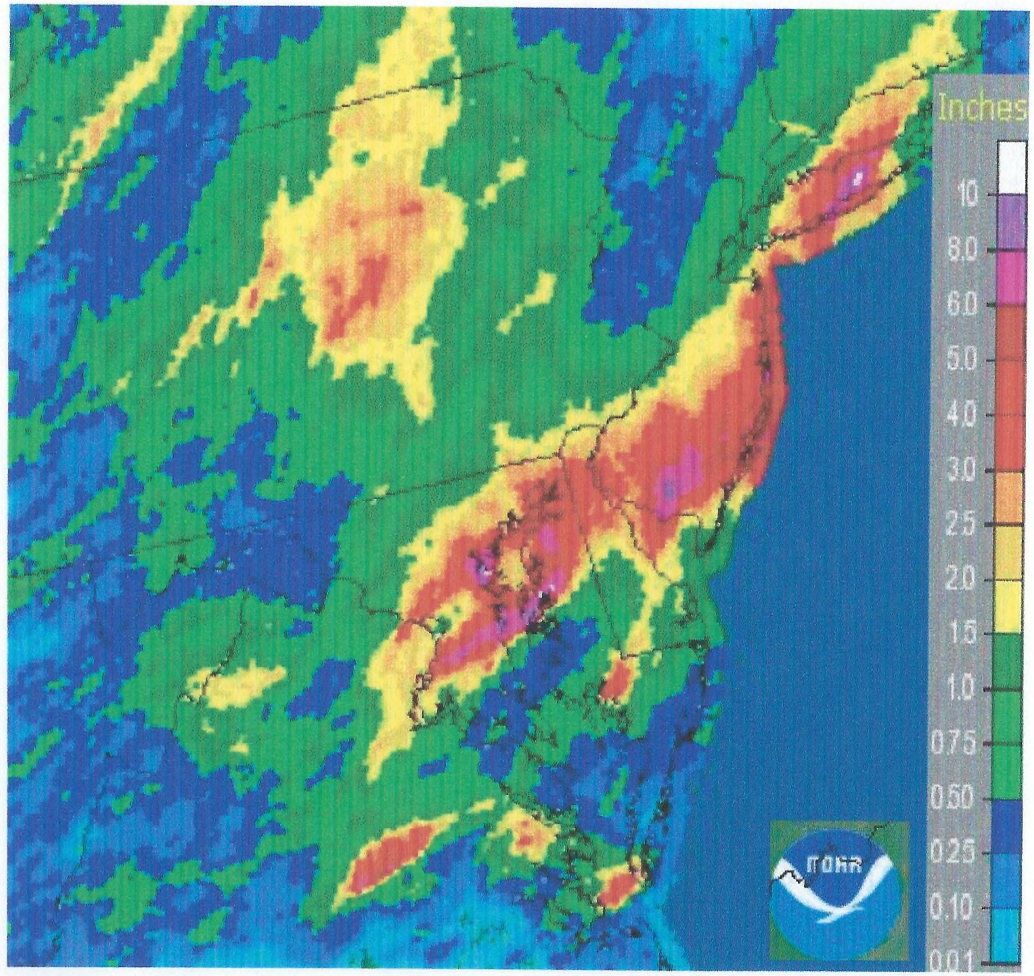
ATTACHMENT 2

Northeast Regional Climate Center

Recent and historical weather data customized to meet your needs

- Home
- Weather Station Data
- State & Regional Analyses
- Analyses for Industry
  - Turf Grass
  - Apple Frost Risk
  - Grape Bud Hardiness
  - Mosquito Control
  - Extreme Precipitation
  - East Coast Winter Storms
  - NEWA
  - Emerald Ash Borer
  - Gypsy Moth
  - Lawn Watering
  - Stewart's Disease Risk
- Climate Change
- Publications & Services

New 24-Hour Precipitation Record for New York State!



Extreme rainfall (shades of orange, red, purple, and white on the map) shattered records in several areas.

Quick Links

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Blog

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We appreciate any feedback:
nrcc@cornell.edu

Heavy rain has brought flooding to the Northeast and a preliminary New York State 24-hour precipitation record! Islip LI MacArthur Airport received 13.57" between 9:10 PM EDT August 12th and 7:54 PM EDT August 13th. This breaks the previous record of 11.6" at Tannersville, NY on August 27-28, 2011 during Hurricane/Tropical Storm Irene. See the National Weather Service statement. Other rainfall totals include 6.3" in Baltimore, MD, 8.93" at the Millville Airport, NJ, and 5.57" in Atlantic City, NJ. This qualifies as a 24-hour 200-year storm event for Islip, meaning rainfall of this magnitude is only expected to occur once in a 200-year period. Pictured above is the 24-hour rainfall ending at 8AM from the Mid-Atlantic RFC, which combines radar data, rain gauge data, and satellite data.

NRCC supports a three-tiered national climate services support program. The partners include: State Climate Offices, Regional Climate Centers, and the National Centers for Environmental Information.

Contact NRCC
1123 Bradfield Hall, Cornell University, Ithaca, NY 14853

Phone: 607-255-1751 | Fax: 607-255-2106

Mission Statement

Personnel

Links

Contact

website design: Knowledge Town

Powered by ACIS Regional Climate Centers

National Centers for Environmental Information

Cornell University

Total storm rainfall August 27-29, 2011 by location:

Table 2 Source: NWS Albany

Location	Total Storm Rainfall (in inches)
Summit	8.88
North Blenheim	8.0
Richmondville	5.85
Charlotteville	5.50
Fulton	5.40
Cobleskill	5.15
Jefferson	4.60

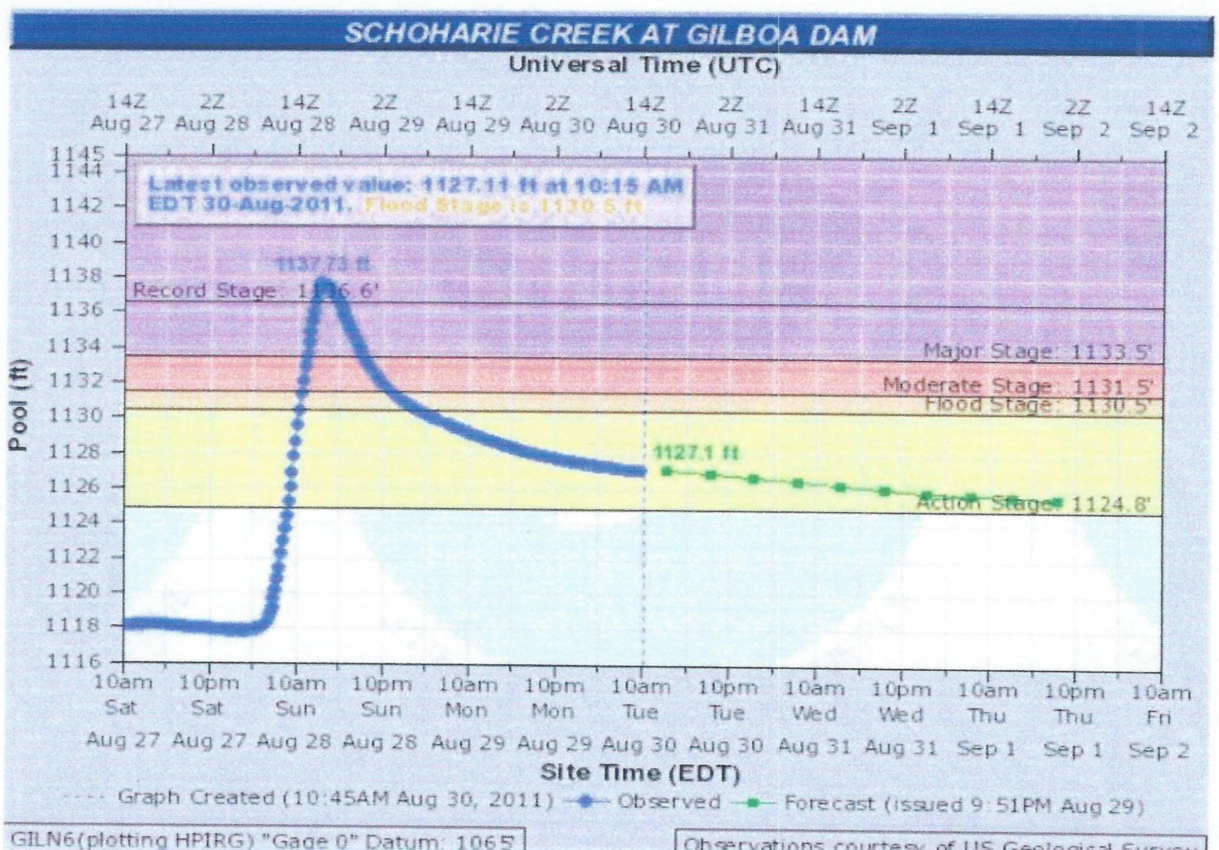

Figure 6

*Albany National Weather Service Forecast Office

The Hydrology of Tropical Storms Irene and Lee

Britt Westergard, Joseph Villani, Stephen DiRienzo, Hugh Johnson, Vasil Koleci, Kevin Lipton, George Maglaras, Kimberly McMahon, Timothy Scrom, and Thomas Wasula
NOAA/NWS Weather Forecast Office, Albany, New York

Tropical Storm Irene produced extremely heavy rainfall across eastern New York and western New England from August 27th through August 28th. A maximum area of storm total precipitation of 12 to 18 inches (30 to 46 cm) fell across the elevated terrain of Greene County. A New York State 24-hour rainfall record was set at a National Weather Service (NWS) rain gage at Tannersville, NY. Record flooding occurred at thirteen forecast points in the NWS-Albany Hydrologic Service Area. Heavy rainfall and record flooding were especially prevalent across the eastern Catskill river basins, including the Schoharie Creek, which fed downstream into the Mohawk River.

Nine days after Tropical Storm Irene, the remnants of Tropical Storm Lee produced storm total rainfall amounts of 3 to 6 inches (7 to 15 cm) with isolated areas of 7 to 8 inches (17 to 21 cm) across eastern New York and western New England. While the Mohawk watershed did not receive the 8 to 12 inches (20 to 30 cm) of rainfall that caused major to record flooding throughout the Susquehanna watershed, the rainfall it did experience, combined with antecedent saturated soils following Tropical Storm Irene, produced major flooding in the western Mohawk watershed and minor to moderate flooding elsewhere.

In addition to reviewing the hydrologic effects of these two events, this presentation examines the operational challenges of forecasting widespread rapid rises to record flooding. In addition, some of the actions taken by the National Weather Service since these events are discussed; including updates to flood stage and impact statements for river forecast points.

PUBLIC INFORMATION MESSAGE...UPDATED STORM TOTALS
NATIONAL WEATHER SERVICE ALBANY NY
205 PM EDT TUE AUG 30 2011

THE FOLLOWING ARE UNOFFICIAL OBSERVATIONS TAKEN AUGUST 27 THROUGH AUGUST 30 FOR THE STORM THAT AFFECTED OUR REGION. APPRECIATION IS EXTENDED TO HIGHWAY DEPARTMENTS...COOPERATIVE OBSERVERS...SKYWARN SPOTTERS AND MEDIA FOR THESE REPORTS. THIS SUMMARY IS ALSO AVAILABLE ON OUR HOME PAGE AT WEATHER.GOV/ALBANY

*******************STORM TOTAL RAINFALL*******************

LOCATION	STORM TOTAL RAINFALL /INCHES/	TIME/DATE OF MEASUREMENT		COMMENTS
CONNECTICUT				
...LITCHFIELD COUNTY...				
NEW HARTFORD	10.15	646 PM	8/28	TRAINED SPOTTER
BULLS BRIDGE	10.02	700 AM	8/29	COOP
TORRINGTON	9.07	500 PM	8/28	TRAINED SPOTTER
FALLS VILLAGE	8.49	700 AM	8/29	COOP
WINSTED	8.44	433 PM	8/28	TRAINED SPOTTER
BAKERSVILLE	8.41	214 PM	8/28	COOP
THOMASTON	8.24	705 AM	8/29	COOP
ROCKY RIVER	7.89	700 AM	8/29	COOP
LITCHFIELD	7.47	1043 AM	8/28	PUBLIC
NORFOLK	7.71	709 AM	8/29	COOP
BLACK ROCK LAKE	6.88	700 AM	8/29	COOP
COLEBROOK LAKE	5.18	700 AM	8/29	COOP
NEW MILFORD	4.80	900 AM	8/28	AMATEUR RADIO
SHARON	4.77	535 PM	8/28	WEATHERNET6
MASSACHUSETTS				
...BERKSHIRE COUNTY...				
SAVOY	9.10	1126 PM	8/28	WEATHERNET6
SAVOY	7.31	700 AM	8/29	COOP
CLARKSBURG	6.00	1011 PM	8/28	WEATHERNET6
BECKET	5.70	807 AM	8/29	TRAINED SPOTTER
DALTON	5.36	700 AM	8/29	COOP
NORTH ADAMS	5.10	700 AM	8/29	COOP
LENOX DALE	4.95	420 PM	8/28	TRAINED SPOTTER
WILLIAMSTOWN	4.90	509 PM	8/28	TRAINED SPOTTER
ADAMS	4.25	1008 AM	8/28	PUBLIC
PITTSFIELD	4.71	700 AM	8/29	ASOS
WEST OTIS	3.84	700 AM	8/29	COOP
LENOX	3.00	1000 AM	8/28	TRAINED SPOTTER
LANESBOROUGH	2.60	501 PM	8/28	WEATHERNET6

...FULTON COUNTY...

BROADALBIN	4.76	440 PM	8/28	WEATHERNET6
PECK LAKE	4.04	700 AM	8/29	COOP
FISHHOUSE	3.51	632 PM	8/28	WEATHERNET6
JOHNSTOWN	3.35	700 AM	8/29	COOP
NORTHVILLE	3.15	550 PM	8/28	WEATHERNET6

...GREENE COUNTY...

EAST DURHAM	13.30	214 PM	8/28	PUBLIC
EAST JEWETT	12.22	145 PM	8/28	TRAINED SPOTTER
SOUTH DURHAM	10.30	945 AM	8/28	PUBLI
FREEHOLD	7.12	300 PM	8/28	PUBLIC
PRATTSVILLE	7.00	1219 PM	8/28	WEATHERNET6
CAIRO	7.00	517 AM	8/29	WEATHERNET6
CATSKILL	6.78	231 PM	8/28	TRAINED SPOTTER

...HAMILTON COUNTY...

INDIAN LAKE	3.77	700 AM	8/29	COOP
WELLS	3.50	409 PM	8/28	TRAINED SPOTTER
LAKE PLEASANT	3.24	700 AM	8/29	COOP
INLET	3.05	658 AM	8/29	TRAINED SPOTTER
INLET 2.2 ESE	3.00	700 AM	8/29	COCORAHS

...HERKIMER COUNTY...

COLUMBIA CENTER	7.56	600 PM	8/28	TRAINED SPOTTER
ILION	6.88	733 AM	8/29	TRAINED SPOTTER
CHEPACHET	6.10	700 AM	8/29	COOP
ELIZABETHTOWN	3.65	1150 AM	8/28	TRAINED SPOTTER
LITTLE FALLS 7.5 NW	2.87	550 AM	8/29	COCORAHS
LITTLE FALLS	2.51	700 AM	8/29	COOP
3 N LITTLE FALLS	2.37	623 PM	8/28	TRAINED SPOTTER
OLD FORGE 0.8 SE	2.12	445 AM	8/29	COCORAHS
HERKIMER	2.00	310 PM	8/28	TRAINED SPOTTER
FAIRFIELD	1.83	152 PM	8/28	TRAINED SPOTTER

...MONTGOMERY COUNTY...

HESSVILLE	6.56	700 AM	8/29	WEATHERNET6
GLEN	4.12	742 PM	8/28	WEATHERNET6
FONDA	3.80	607 PM	8/28	WEATHERNET6
AMSTERDAM	3.68	610 PM	8/28	WEATHERNET6
PALATINE BRIDGE	2.89	516 AM	8/29	WEATHERNET6
FORT PLAIN 0.2 SE	2.03	700 AM	8/29	COCORAHS

...RENSSELAER COUNTY...

BUSKIRK	6.53	1025 PM	8/28	TRAINED SPOTTER
AVERILL PARK	6.19	803 AM	8/29	COCORAHS
POESTENKILL	6.18	417 PM	8/28	PUBLIC
EAST NASSAU	5.90	631 AM	8/29	TRAINED SPOTTER
VALLEY FALLS 2.1 SE	5.90	700 AM	8/29	COCORAHS
NORTH GREENBUSH	5.70	255 PM	8/28	PUBLIC
BUSKIRK	5.62	700 AM	8/29	COOP
STEPHENTOWN	5.60	646 AM	8/29	WEATHERNET6

CENTER BRUNSWICK	5.58	1045	PM	8/28	WEATHERNET6
MELROSE	5.55	700	AM	8/29	COOP
EAST GREENBUSH	5.52	700	AM	8/29	COOP
BRUNSWICK	5.40	700	AM	8/29	COOP
SYCAWAY	5.38	855	PM	8/28	NWS EMPLOYEE
BRUNSWICK	5.40	700	AM	8/29	COOP
EAGLE MILLS	4.99	538	PM	8/28	TRAINED SPOTTER
SPEIGLETOWN	4.30	444	PM	8/28	WEATHERNET6

...SARATOGA COUNTY...

GANSEVOORT	6.75	626	PM	8/28	WEATHERNET6
SARATOGA SPRINGS	6.60	609	AM	8/29	WEATHERNET6
WILTON	5.33	1259	PM	8/28	TRAINED SPOTTER
MALTA	4.91	600	AM	8/29	COCORAHS
CHARLTON	4.90	800	PM	8/28	TRAINED SPOTTER
MALTA	4.85	700	AM	8/29	COOP
HICKEYS CORNERS	4.80	630	AM	8/29	RETIRED NWS EMPLOYEE
SARATOGA NHP	4.51	700	AM	8/29	COOP
CLIFTON PARK	4.48	727	PM	8/28	TRAINED SPOTTER
BALLSTON SPA 4.7 WNW	4.47	700	AM	8/29	COCORAHS
SARATOGA SPRINGS 0.5S	4.43	600	AM	8/29	COCORAHS
SARATOGA SPRINGS	4.37	700	AM	8/29	COOP
GANSEVOORT 1.3 WNW	4.35	645	AM	8/29	COCORAHS
ROUND LAKE	4.01	700	PM	8/28	TRAINED SPOTTER
BALLSTON SPA	3.93	726	PM	8/28	WEATHERNET6
VISCHER FERRY	3.90	303	PM	8/28	WEATHERNET6
HADLEY	3.78	700	AM	8/29	COOP
MILTON	3.66	935	PM	8/28	WEATHERNET6
MECHANICVILLE	3.04	1058	PM	8/28	WEATHERNET6
CORINTH	2.94	546	PM	8/28	WEATHERNET6

...SCHENECTADY COUNTY...

DELANSON	10.28	700	AM	8/29	COOP
DUANESBURG	8.55	536	AM	8/29	WEATHERNET6
SCOTIA	5.90	1019	PM	8/28	WEATHERNET6
ROTTERDAM	5.50	345	PM	8/28	TRAINED SPOTTER
NISKAYUNA	5.17	700	AM	8/29	COOP
1 NNE HAWTHORNE HILL	5.15	630	PM	8/28	NWS EMPLOYEE
SCHENECTADY 3.3 E	4.92	900	AM	8/29	COCORAHS
SCOTIA 1.1 NW	4.23	600	AM	8/29	COCORAHS

...SCHOHARIE COUNTY...

SUMMIT	8.88	607	PM	8/28	WEATHERNET6
NORTH BLENHEIM	8.00	331	PM	8/28	TRAINED SPOTTER
RICHMONDVILLE	5.85	952	PM	8/28	WEATHERNET6
CHARLOTTEVILLE	5.50	1004	PM	8/28	WEATHERNET6
FULTON	5.40	316	PM	8/28	WEATHERNET6
COBLESKILL	5.15	700	AM	8/29	COOP
CHARLOTTEVILLE	4.71	700	AM	8/29	COOP
JEFFERSON	4.60	1109	PM	8/28	WEATHERNET6

The abundance of water in the Schoharie Creek presents a considerable management challenge partly because much of this water appears to be associated with high discharge events, many of which have caused significant flooding that is locally chronic. The Irene and Lee events or 2011 were one example of this new emerging extreme situation, and it needs to be emphasized that a major increase in water in this basin was recognized prior to flooding of Irene and Lee (i.e. Garver and Cockburn, 2011).

Recent work has shown that regionally there has been an increase in the number of heavy and very heavy precipitation events (Groisman et al., 2004; DeGaetano, 2009), and the number of cyclonic systems in the North Atlantic has increased in size and number over the last 25 yr, but this data set consists of small numbers (Webster et al., 2005; Changnon, 2008). Thus is has been suggested that the most dramatic and significant change in the hydrology in the Mohawk watershed is related to Atlantic-tracking storms, which have had a significant effect on flooding in the southernmost part of the watershed (Garver and Cockburn, 2011).

One of the most important implications of this situation is that the recent floods in the Mohawk Watershed may be part of an emerging trend of increased water and sediment mobility in the system (Cockburn et al., 2009). If so, there are serious implications for the ability of the system to handle this water including an aging infrastructure that is underfit for this new hydrologic regime. Examples of infrastructure vulnerability include bridges, dams, stormwater and sewer outfall systems that in many cases are more than 50 yr old. Some of these structures are crucial to the State as they include water supply for NY City (Gilboa Dam) and other local municipalities, hydropower generation (Blenheim Pump Storage), and major transportation arteries including I-90 and rail lines that are key connections in the Eastern Corridor: all of which were damaged or impaired in the recent Irene/Lee events and will continue to be vulnerable in future events.

It is unlikely that we can engineer our way out of this situation without using cost-prohibitive strategies, but instead we should focus on innovation and smart design. We have dams, and locks in many places in the watershed, but none are used for flood mitigation, this should change. It might be a good time to reevaluate flood mitigation strategies in the basin, especially in the Catskill-draining rivers, like the Schoharie Creek. We will not be able to prevent flooding in the Mohawk watershed and instead we have to be clever as to how we live with this changing natural hazard. This will include gradually clearing predicted floodways and using engineering solutions that anticipate more frequent extreme events.

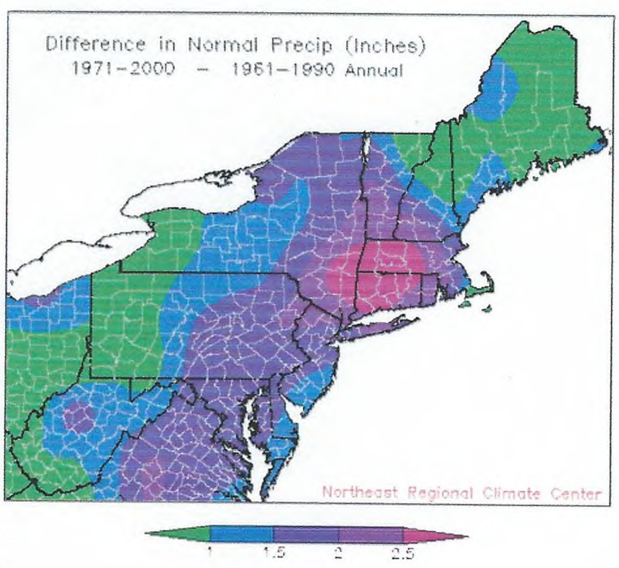

FIGURE 1: Increase in NE precipitation (Northeast Regional Climate Center). Increase in precipitation is indicated by the shift in the new normals (30 year averages used for understanding daily weather variations) established by the National Weather Service. This maps shows the increase in annual precipitation in eastern NY (and Mass / CT) up to 2.5 inches annually in the normal period from 1961 to 1990 and then between 1971-2000. This difference is largely due to a decrease in the early part and an increase in the later part of the record. Note that in areas with high relief and high topography (i.e. Catskills), floodwaters can be especially damaging because rivers in these settings tend lack significant flood plans. The new normals released in 2011 (1981-2010) have not yet been integrated into this analysis.

Document Content(s)