

requirements of this Certification.¹⁹⁰

A. Project Operations

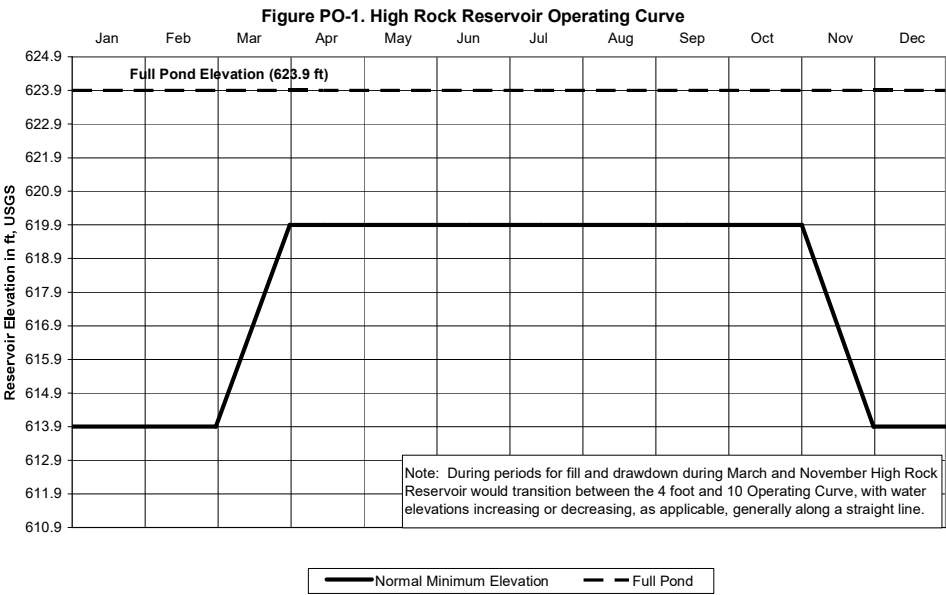
Unless *operating* in accordance with the Hydro Project Maintenance and Emergency Protocol and Low Inflow Protocol, Project minimum flows take priority over reservoir water elevations, as specifically described in Articles PO-1 and PO-2 below.

i. Article PO-1 – Reservoir Operations (RSA Section 3.1.1)

a. High Rock Reservoir Operations

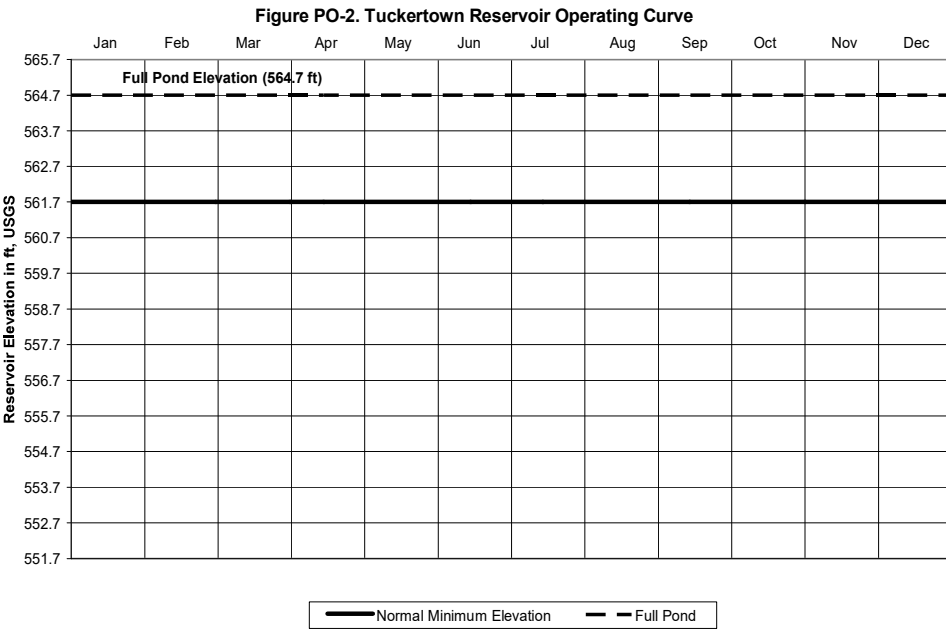
APGI *must* operate High Rock Reservoir at or above the normal minimum elevation (NME) as depicted on the High Rock Operating Curve (Figure PO-1), except as needed in order to maintain minimum flows or as provided under the Low Inflow Protocol (LIP) or the Hydro Project Maintenance and Emergency Protocol (HPMEP). High Rock Reservoir may be drawn down below its NME in order to meet the Required Minimum Instream Flow at Falls, as specified in Article PO-2, only after Narrows Reservoir has reached its NME. If High Rock Reservoir water elevation is below the NME at 12:01 AM on any operating day, where the operating day is defined as 12:01 AM through 12:00 midnight, APGI *must* reduce releases from High Rock Reservoir for that operating day up to a maximum of the daily average flow equivalent of the minimum flow requirement at Falls, as specified in Article PO-2. Under this condition, releases from Falls Dam will be limited to those defined in Article PO-2.

¹⁹⁰ The proposed license articles included in Condition 13 of this water quality certification have been modified, as necessary, to facilitate the Commission's administration of the license. The additions are shown in italics.



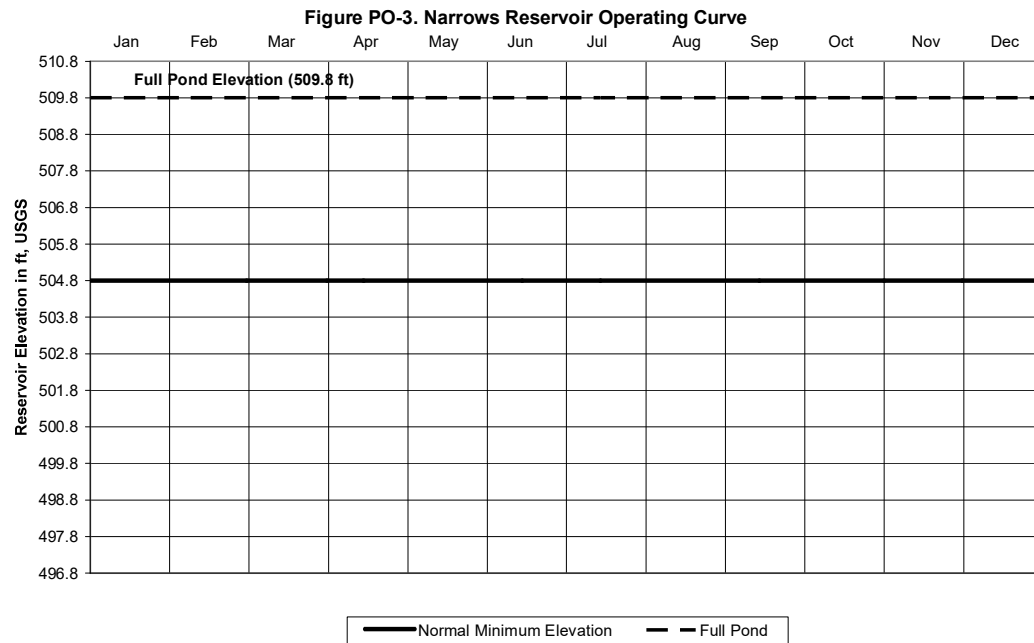
b. Tuckertown Reservoir Operations

APGI *must* operate Tuckertown Reservoir at or above the NME as depicted on the Tuckertown Operating Curve (Figure PO-2), except as provided in the HPMEP.



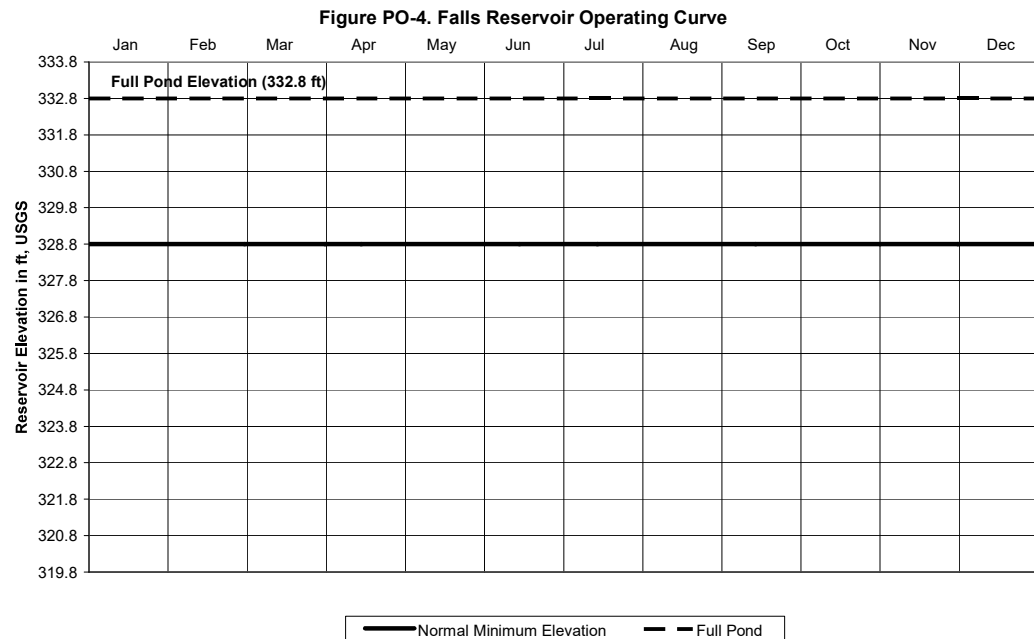
c. Narrows Reservoir Operations

APGI *must* operate Narrows Reservoir at or above the NME as depicted on the Narrows Operating Curve (Figure PO-3), except as needed in order to maintain minimum flows, or as provided under the LIP or HPMEP.



d. Falls Reservoir Operations

APGI *must* operate Falls Reservoir at or above the NME as depicted on the Falls Operating Curve (Figure PO-4), except as provided in the HPMEP.



e. Reservoir Stabilization to Enhance Fish Spawning

From April 15 through May 15 of each year, APGI *must* maintain reservoir water elevations at all four Project reservoirs no lower than -1.0 feet below the elevation of each reservoir on April 15 to enhance conditions for fish spawning in the reservoirs. No later than August 31 of each year, APGI *must* report the resulting reservoir water elevations at each reservoir during

the April 15 through May 15 period in a letter report to the North Carolina Wildlife Resources Commission (NCWRC). The letter report *must* provide an explanation of any circumstances that prevented APGI from maintaining the target water elevations. Within 60 days of filing the letter report with the NCWRC, a copy of the letter report *must* be filed with the Division and FERC. Satisfaction of these reporting commitments constitutes compliance with this Article.

f. Temporary Operational Variances

The lake level requirements outlined in items a through e above may be temporarily modified if APGI is operating in accordance with the Commission-approved LIP and HPMEP. The Licensee must notify FERC, the Division, NCWRC, the U.S. Fish and Wildlife Service, and other interested parties of any such modifications affecting the NME and the spring lake levels in accordance with the LIP or the HPMEP.

In the case of an emergency or unplanned event, APGI must include, as part of its notification to FERC, an incident report. The report must, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also must include: (1) operational data before, during, and immediately after the incident; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from interested parties regarding the incident. Based on the report and FERC's evaluation of the incident, FERC reserves the right to require modifications to the project facilities and operations to ensure future compliance.

ii. Article PO-2 – Project Instream Flows (RSA Section 3.1.2)

a. Required Minimum Instream Flows

Commencing no later than six months from the effective date of the New License and except when operating under the Low Inflow Protocol (LIP) or Hydro Project Maintenance and Emergency Protocol (HPMEP), APGI *must* operate the Project to provide a daily average minimum flow from the Falls Development according to the following schedule:

June 1 – January 31	1,000 cfs
February 1 – May 15	2,000 cfs
May 16 – May 31	1,500 cfs

b. Temporary Operational Variances

The flow requirements outlined in item a above may be temporarily modified if APGI is operating in accordance with the Commission-approved LIP and HPMEP. The Licensee must notify FERC, the Division, NCDWR, NCWRC, SCDNR, USFWS, NMFS, and other interested parties of any such modifications affecting the minimum flows in accordance with the LIP or the HPMEP.

In the case of an emergency or unplanned event, APGI must include, as part of its notification to FERC, an incident report. The report must, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report also must include: (1) operational data before, during, and immediately after the incident; (2) a description of any corrective measures implemented at the time of the occurrence and the measures implemented or proposed to ensure that similar incidents do not recur; and (3) comments or correspondence, if any, received from interested parties regarding the incident. Based on the report and FERC's evaluation of the incident, FERC reserves the right to require modifications to the project facilities and operations to ensure future compliance.

ii. **Flow Adjustment for Enhancement of Downstream Spawning (RSA Section 2.1.1)**

APGI *must* work with the licensee of the Yadkin-Pee Dee River Project, FERC No. 2206, (Downstream Licensee), the North Carolina Division of Water Resources (NCDWR), the North Carolina Wildlife Resources Commission (NCWRC), the South Carolina Department of Natural Resources (SCDNR), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), The Nature Conservancy (TNC), and American Rivers (collectively, Group) to develop a process to allow the Downstream Licensee to provide adjusted flow between February 1 and May 15 to enhance spawning conditions in the lower river downstream of the Blewett Falls development, part of the Yadkin-Pee Dee River Project.

APGI's role in enhancing downstream spawning below Blewett Falls will be limited to:

- a. Attending an annual meeting with the Group, if held, to consider expected flow and hydrologic conditions and to schedule adjusted flow period(s) for the upcoming spawning season, and
- b. Once the schedule for adjusted spawning flow period(s) has/have been established by the Group, APGI *must* communicate its daily generation/flow release schedule during the adjusted spawning flow period(s) to the Downstream Licensee at least one week in advance of the

start of the adjusted spawning flow period(s). If unexpected hydrologic conditions, or other conditions, such as those covered in the Low Inflow Protocol (LIP, Appendix A) or the Hydro Project Maintenance and Emergency Protocol (HPMEP, Appendix B), occur during any adjusted spawning flow period, APGI *must* communicate to the Downstream Licensee any resulting changes in its daily generation/flow release schedule for the remainder of that adjusted spawning flow period.

APGI will not be required to attempt to match Yadkin Project outflow to inflow during any adjusted spawning flow period(s), nor will APGI be required to provide an instantaneous minimum flow release from the Yadkin Project during any adjusted spawning flow period(s).

APGI's participation in enhancement of downstream spawning *must* take place within the confines of the other requirements of the New License and this Certification relating to management of flows and reservoir water elevations, and would not result in any modification of those flow and reservoir management requirements. Specifically, nothing in this section will require or cause APGI to fall below the Project Minimum Flows as described in Article PO-2 or to have to modify its reservoir operations as prescribed in Article PO-1.

If state and federal agencies and the Downstream Licensee are unable to come to an agreement on what measures are to be undertaken by the Downstream Licensee to achieve Flow Adjustment for Enhancement of Downstream Spawning, APGI will be under no obligation to meet the commitments outlined in this Condition [13(A)(iii)].

iii. Article PO-3 - Flow and Reservoir Elevation Monitoring (RSA Section 3.1.3)

Within six months of the effective date of the New License, APGI *must* file with the Division a final Flow and Reservoir Elevation Monitoring and Compliance Plan for the Yadkin Project. The Flow and Reservoir Elevation Monitoring and Compliance Plan *must* be developed in consultation with the North Carolina Division of Water Resources (NCDWR), the South Carolina Department of Natural Resources (SCDNR), the U.S. Geological Survey (USGS) and the Downstream Licensee (the Licensee of the Yadkin-Pee Dee River Project, FERC No. 2206), and *must* include detailed provisions for monitoring reservoir water elevations and for monitoring flows from both the Narrows and High Rock developments.

APGI *must* include with the final plan documentation of consultation, copies of comments and recommendations on the draft plan after it has been prepared and provided to the agencies and Downstream Licensee, and specific

descriptions of how comments are accommodated by the final plan. APGI *must* allow a minimum of 30 days for the agencies and Downstream Licensee to comment prior to filing the plan with the Division. If APGI does not adopt a recommendation, the filing *must* include APGI's reasons, based on Project-specific information.

The Division *and FERC* reserve the right to require changes to the plan. Upon Division approval, APGI *must* submit the plan to FERC for approval. *Implementation of the Flow and Reservoir Elevation Monitoring and Compliance Plan must not begin until the licensee is notified by FERC that the plan is approved.* Upon receiving FERC approval, APGI *must* implement the plan, including any changes required by the Division and/or FERC. APGI *must* file the final plan with the Division within 30 days of receiving FERC approval.

a. **Releases from High Rock Development**

Flow monitoring from the High Rock Development will serve as the measure for the flow releases from the High Rock Development required under Article PO-1 or under the Low Inflow Protocol (LIP). Daily average flows within +25% of the applicable maximum flow, measured from 12:01 AM to 12:00 midnight, *will* be considered compliant for each operating day.

b. **Releases from Falls Development**

Flow monitoring from the Narrows Development will serve as the compliance measure for the flow release from the Falls Development required under Articles PO-1, PO-2 or under the LIP. Daily average flows within -5% of the applicable minimum flow, measured from 12:01 AM to 12:00 midnight, *will* be considered compliant for any operating day so long as:

1. Whenever High Rock Reservoir is at or above its normal minimum elevation (NME), the applicable daily average minimum flow is achieved on a weekly average basis, measured from 12:01 AM Saturday to 12:00 midnight Friday.
2. Whenever High Rock Reservoir is drawn down below its NME (when a maximum release from Falls is also applicable), releases from Falls *must* be limited to $\pm 5\%$ of the cfs equivalent of the Required Instream Minimum Flow at Falls, as measured on a weekly average basis from 12:01 AM Saturday to 12:00 midnight Friday.

APGI *must* endeavor to meet the Required Minimum Instream Flows required in Article PO-2, and *must* not routinely use the flow variances

provided above. APCI *must* prepare an annual flow monitoring report documenting its compliance with minimum flow releases, including a record of any days during the year when the daily average required minimum instream flow fell within the -5% and was made up as part of the weekly average, a record of flows during any period when High Rock was below its NME, and a record of any LIP events. By no later than March 31 of the following year, APCI *must* file the report with the Division *and* FERC summarizing its evaluation. If, based on the results of the report, the state of North Carolina has a concern about the frequency or pattern of use of the variance by APCI, the state may request consultation with APCI to discuss APCI's reasons for that use and any practicable alternatives to that use. *FERC reserves the right to require changes to project operations or facilities based on the information in the report.*

iv. **Article PO-4 – Low Inflow Protocol (LIP) (RSA Section 3.1.4)**

This condition highlights the responsibilities of APCI from Appendix A, “Low Inflow Protocol for the Yadkin and Yadkin-Pee Dee River Hydroelectric Projects.” The complete text of the LIP is included by reference in this Certification (see “D” below).

a. **Definitions.** The following definitions shall be applicable to this condition:

1. **Stream Gage Three-Month Rolling Average Flow** – The three-month rolling average of streamflow at the following U.S. Geological Survey (USGS) stream gages:

- Yadkin River at Yadkin College (02116500)
- South Yadkin River near Mocksville (02118000)
- Abbotts Creek at Lexington (02121500)
- Rocky River near Norwood (02126000)

On the last day of each month, APCI *must* calculate the arithmetic mean of (a) the daily flows of the current month and (b) the arithmetic mean of the daily flows of each of the two preceding months. The sum of the three-month rolling average for these four gage stations *must* be compared by APCI to the Historic Stream Gage Three-Month Rolling Average Flow for the corresponding period and a percentage of Historic Three-Month Rolling Average *must* be calculated.

2. **Historic Stream Gage Three-Month Rolling Average Flow** – The historical three-month rolling average flow for each of the four designated USGS stream gages for the period 1974 through 2003 (except for the Abbotts Creek gage, for which the period is 1988

through 2003) are set forth in Table LIP-1 below:

Table LIP-1. Historic Stream Gage Three-Month Rolling Average Flow		
For Evaluation of Flow Trigger on:	Average of daily flows during:	Historic Three-Month Rolling Average Flow, cfs
January 1	Oct-Nov-Dec	4,000
February 1	Nov-Dec-Jan	5,200
March 1	Dec-Jan-Feb	6,250
April 1	Jan-Feb-Mar	7,700
May 1	Feb-Mar-Apr	7,550
June 1	Mar-Apr-May	6,850
July 1	Apr-May-Jun	5,350
August 1	May-Jun-Jul	4,200
September 1	Jun-Jul-Aug	3,600
October 1	Jul-Aug-Sep	3,200
November 1	Aug-Sep-Oct	3,300
December 1	Sep-Oct-Nov	3,550

3. **Full Pond Elevation** – The Full Pond Elevation for each development's reservoir is listed in Table LIP-2.

Table LIP-2. Full Pond Elevations	
Reservoir	Full Pond Elevation (feet, USGS datum - NGVD 1929)
High Rock	623.9
Tuckertown	564.7
Narrows	509.8
Falls	332.8

4. **Normal Minimum Elevation (NME)** – NME for each Project reservoir is listed in Table LIP-3.

Table LIP-3. Normal Minimum Elevations (feet, USGS datum - NGVD 1929)				
Month	High Rock	Tucker-town	Narrow s	Falls
Full Pond	623.9	564.7	509.8	332.8
January 1	613.9	561.7	504.8	328.8

February 1	613.9	561.7	504.8	328.8
March 1	transition	561.7	504.8	328.8
April 1	619.9	561.7	504.8	328.8
May 1	619.9	561.7	504.8	328.8
June 1	619.9	561.7	504.8	328.8
July 1	619.9	561.7	504.8	328.8
August 1	619.9	561.7	504.8	328.8
September 1	619.9	561.7	504.8	328.8
October 1	619.9	561.7	504.8	328.8
November 1	transition	561.7	504.8	328.8
December 1-15	613.9	561.7	504.8	328.8
December 16-31	613.9	561.7	504.8	328.8

5. **U.S. Drought Monitor Three-Month Numeric Average –**
APGI *must* calculate a three-month rolling average of U.S. Drought Monitor (<http://www.drought.unl.edu/dm/monitor.html>) values by: (a) assigning a numeric value equal to the highest U.S. Drought Monitor designation (e.g., D0=0, D1=1, D2=2, D3=3 and D4=4) for any part of the Yadkin-Pee Dee River Basin draining to Blewett Falls development as of the last day of that month; and (b) calculating an arithmetic mean of that numeric value and numeric values correspondingly assigned for the previous two months. A normal condition in the basin, defined as the absence of a drought designation, *must* be assigned a numeric value of negative one (-1).

6. **Yadkin-Pee Dee River Basin Drought Management Advisory Group (YPD-DMAG) –** The YPD-DMAG *must* consist of one representative from each of the following organizations (to the extent that they are willing to participate): Alcoa Power Generating Inc. (APGI), Progress Energy (PE; *now Duke Energy Progress LLC*), North Carolina Department of Environmental Quality (NCDEQ), North Carolina Division of Water Resources (Division) Basin Planning Branch, North Carolina Division of Water Resources (Division) 401 & Buffer Permitting Unit, North Carolina Wildlife Resources Commission (NCWRC), South Carolina Department of Natural Resources (SCDNR), South Carolina Department of Health and Environmental Control (SCDHEC), the United States Fish and Wildlife Service (USFWS), High Rock Lake Association (HRLA), Badin Lake Association (BLA), Duke Power Company, Lake Tillery Homeowners Association, South Carolina Pee Dee River Coalition (SCPDRC) and owners of intakes that withdraw more than one million gallons of water per day from the impoundments of either the Yadkin Project (FERC Project 2197) or the

Yadkin-Pee Dee Project (FERC Project 2206).

b. Implementation Procedure

1. Table LIP-4 sets forth the combinations of conditions under which the LIP *must* be implemented. The determination of the applicable LIP Stage *must* be made using the High Rock Reservoir water elevation as of midnight between the last day of the previous month and the first day of the current month in combination with the U.S. Drought Monitor Three-Month Numeric Average and the Stream Gage Three-Month Rolling Average Flow to determine the need to declare or change a Stage of the LIP. The LIP *must* be implemented beginning at Stage 0 and, if the combination of conditions becomes more severe, the Stages *must* increase in one Stage increments.

Table LIP-4. Summary of LIP Triggers					
Stage	High Rock Reservoir Elevation		US Drought Monitor Three-Month Numeric Average		Stream Gage Three-Month Rolling Average as a percent of the Historical Average
0	< NME minus 0.5 ft	and either	Any	or	Any
	or				
	< NME	and either	≥ 0	or	< 48 %
1	< NME minus 1 ft	and either	≥ 1	or	< 41 %
2	< NME minus 2 ft	and either	≥ 2	or	< 35 %
3	< NME minus 3 ft	and either	≥ 3	or	< 30 %
4	< $\frac{1}{2}$ of (NME minus Critical Reservoir Water Elevation)	and either	≥ 4	or	< 30 %

2. The average daily flows set forth in Table LIP-5 *must* be initiated no later than seven days after the determination of the applicable LIP Stage and *must* be in effect for the balance of the month except as provided in the section titled “Recovery from LIP Stages.”

Table LIP-5. LIP Flows⁽¹⁾, cfs
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Stage	High Rock (daily average maximum flow target)			Falls ⁽²⁾ (daily average flow target)		
	Feb 1 - May 15	May 16 - 31	Jun 1 - Jan 31	Feb 1 - May 15	May 16 - 31	Jun 1 - Jan 31
0	2000	1500	1000	2000	1500	1000
1	1450	1170	900	1450	1170	900
2	1080	950	830	1080	950	830
3	770	770	770	770	770	770
4	Additional measures may be determined by consensus of APGI and State Agencies, subject to Division approval.					
<p>(1) Developments shall be operated to achieve the target flows to the extent practicable as a first priority and to supplement inflows equitably from the storage reservoirs as a second priority. For LIP Stages 1, 2, 3 and 4, APGI shall achieve the indicated average daily flows set forth in this table by supplementing Project inflows by drawing proportionally from High Rock and Narrows reservoirs such that the difference between the respective drawdowns below NME of High Rock and Narrows reservoirs shall be approximately one foot.</p> <p>(2) For LIP Stages 0-3, the values shown in this table reflect flow targets. These values cannot be met exactly as shown and shall likely vary slightly on a real time basis from the values shown here, but it is expected that the variances from the target flows shall be minimal.</p>						

3. APGI *must* notify via email the NCDWR, and FERC by letter, phone call, or email, of LIP implementation or a change in Stage as soon as practicable but no later than (i) three business days after a Stage 0 determination; (ii) two business days after a Stage 1 or a Stage 2 determination; or (iii) 48 hours after a Stage 3 or Stage 4 determination.
4. APGI *must* consult with the YPD-DMAG with respect to issues relating to or arising out of implementation of the LIP, including, but not limited to: (i) notification to the public of the possible effects of and/or continuance of drought; (ii) issues relating to the effects of drought conditions on life, health, property, wildlife, aquatic life; (iii) possible public health concerns; and (iv) short and long term prospects for recovery from drought.
5. APGI *must* develop and provide information on its website to inform the public on reservoir water elevations, Project releases, usability of public access areas, reservoir inflows, meteorological

forecasts, Historic and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three-Month Numeric Average calculations, LIP status, YPD-DMAG meeting summaries, and implementation of maintenance or emergency operation plans. *APGI must notify FERC within 30 days of completing this requirement.*

c. Recovery from LIP Stages

1. Recovery from the LIP shall be triggered by the occurrence of any of the three following conditions either separately or in combination:
 - Condition 1: All three triggering conditions associated with a lower numbered LIP Stage, as described in Table LIP-4, are met.
 - OR**
 - Condition 2: High Rock Reservoir water elevations return to at or above the NME plus 2.5 ft.
 - OR**
 - Condition 3: High Rock Reservoir water elevations return to at or above the NME for 2 consecutive weeks.
2. When any of these three conditions occurs, the APGI shall take the following actions as indicated by the particular condition:
 - Condition 1: The LIP recovery shall be a stage-by-stage reversal of the staged approach described in Table LIP-4 above, beginning at the first day of each month.
 - Condition 2: Implementation of the LIP shall be immediately discontinued.
 - Condition 3: Implementation of the LIP shall be immediately discontinued.
3. APGI *must* notify the NCDWR via email, *and FERC by letter*, within 3 business days following attainment of any of the conditions necessary to return to a lower stage of the LIP.

d. Updating the LIP

During the term of the New License, APGI *must* consult with the YPD-DMAG at least once every five (5) years to review and consider updating the LIP. The use of the period of record 1974 through 2003 to calculate the Historic Stream Gage Three-Month Rolling Average flows set forth in Table LIP-1 of this Article *must* be evaluated every five years during such review. On the basis of such consultation, review and consideration, APGI may propose modifications to this Article for the Division's review and approval. *No change to the LIP may be implemented without prior FERC approval.*