



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

TDD (804) 698-4021

www.deq.virginia.gov

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

September 19, 2013

Mr. Brian M. Key, P.E.  
Executive Director  
Bedford Regional Water Authority  
1723 Falling Creek Road  
Bedford, VA 24523

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

Re: Virginia Water Protection Individual Permit No. 96-0707  
Smith Mountain Lake Water Treatment Plant Withdrawal Project, Bedford County, Virginia  
Final Major Modification of VWP Individual Permit

Dear Mr. Key:

Pursuant to the Virginia Water Protection (VWP) Permit Program Regulation 9 VAC 25-210-10 et seq., § 401 of the Clean Water Act Amendments of 1977, and Public Law 95-217, the Department of Environmental Quality (DEQ) has enclosed the final Major Modification No. 1 of the Virginia Water Protection individual permit for the project referenced above.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have **30 calendar days** from the date of service (the date you actually received this decision or the date it was mailed to you, whichever occurred first) within which to appeal this decision by filing a notice of appeal in accordance with the Rules of the Supreme Court of Virginia with the Director, Department of Environmental Quality. In the event that this decision is served on you by mail, three days are added to that period. Refer to Part 2A of the Rules of the Supreme Court of Virginia for additional requirements governing appeals from administrative agencies.

Alternatively, any owner under §§62.1-44.16, 62.1-44.17, and 62.1-44.19 of the State Water Control Law aggrieved by any action the board has taken without a formal hearing, or by inaction of the board, may demand in writing a formal hearing of such owner's grievance, provided a petition requesting such hearing is filed with the board. Said petition must meet the requirements set forth in the board's Procedural Rule Number 1 (9 VAC 25-230-130.B). In cases involving actions of the board, such petition must be filed within 30 calendar days after notice of such action is sent to such owner by certified mail.

Should you have any questions, please contact Brian McGurk by phone at (804)-698-4180, or by email at [Brian.McGurk@deq.virginia.gov](mailto:Brian.McGurk@deq.virginia.gov), or at the above address.

Respectfully,



Scott W. Kudlas  
Director, Office of Water Supply

Enclosures: Final Modification Cover Page; Final Modification Part I – Special Conditions and Attachment A; Part II – General Conditions

cc: Mr. David Inman, Anderson & Associates, Inc. – VIA EMAIL  
Ms. Jeanne Richardson, U.S. Army Corps of Engineers, Field Office – VIA EMAIL  
Ms. Juliette Giordano, Virginia Marine Resources Commission – VIA EMAIL  
Mr. Mitchell R. Childrey, Virginia Department of Health – VIA EMAIL



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VWP Individual Permit Number 96-0707  
Effective Date: November 30, 2007  
Major Modification No. 1: September 19, 2013  
Expiration Date: November 30, 2022

## VIRGINIA WATER PROTECTION PERMIT ISSUED PURSUANT TO THE STATE WATER CONTROL LAW AND SECTION 401 OF THE CLEAN WATER ACT

Based upon an examination of the information submitted by the owner, and in compliance with § 401 of the Clean Water Act as amended (33 USC 1341 et seq.) and the State Water Control Law and regulations adopted pursuant thereto, the State Water Control Board (board) has determined that there is a reasonable assurance that the activity authorized by this permit, if conducted in accordance with the conditions set forth herein, will protect instream beneficial uses and will not violate applicable water quality standards. The board finds that the effect of the impact, together with other existing or proposed impacts to surface waters, will not cause or contribute to a significant impairment to state waters or fish and wildlife resources.

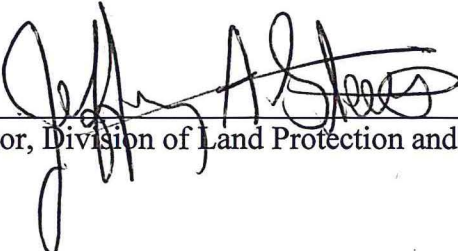
Permittee: Bedford Regional Water Authority

Address: 1723 Falling Creek Road, Bedford, Virginia 24523

Activity Location: Smith Mountain Lake near the terminus of Route 654 in Bedford County, Virginia.

Activity Description: This permit authorizes the expansion of an existing intake structure, including permanent impact to 0.69 acres of surface water and the operation of a surface water withdrawal from Smith Mountain Lake.

The permitted activity shall be in accordance with this Permit Cover Page, Part I - Special Conditions, and Part II - General Conditions.

  
\_\_\_\_\_  
Director, Division of Land Protection and Revitalization

9-20-13  
\_\_\_\_\_  
Date

## **Part I – Special Conditions**

### **A. Authorized Activities**

1. This permit authorizes the withdrawal of surface water from Smith Mountain Lake in Bedford County.
2. This permit authorizes the total permanent impact to 0.69 acres of open water, resulting from the construction of a new intake structure. The authorized impact area shall be as depicted on “Figure 2 – Plan and Cross Section” dated and received on March 27, 2013.
3. Authorized activities shall be conducted as described in the Joint Permit Application (JPA) dated March 11, 2011 and received by DEQ on March 16, 2011, and supplemental materials, revisions and clarifications received through November 14, 2012. The permit authorization and conditions are also based on additional submittals approved by DEQ.

### **B. Permit Term**

1. This permit is valid for **fifteen (15) years** from the date of issuance. A new permit may be necessary for the continuance of the authorized activities, including water withdrawals, or any permit requirement that has not been completed, including compensation provisions. The permit term, including any granted extensions, shall not exceed 15 years.
2. The permittee shall notify DEQ in writing at least 270 calendar days prior to the expiration of this permit if an extension of the permit term is required.

### **C. Standard Project Conditions**

1. The activities authorized by this permit shall be executed in such a manner that any impacts to beneficial uses are minimized. As defined in § 62.1-10(b) of the Code, "beneficial use" means both instream and offstream uses. Instream beneficial uses include, but are not limited to, the protection of fish and wildlife habitat, maintenance of waste assimilation, recreation, navigation, and cultural and aesthetic values. Offstream beneficial uses include, but are not limited to, domestic (including public water supply), agricultural, electric power generation, commercial, and industrial uses. Public water supply uses for human consumption shall be considered the highest priority.
2. No maintenance activity shall cause more than minimal adverse effect on navigation.
3. Construction of the new intake structure(s), or any alterations of the existing intake structure or any appurtenant pilings and supports must take place between June 16 and February 14.
4. All excavation, dredging, or filling in surface waters shall be accomplished in a manner that minimizes bottom disturbance and turbidity.

5. Any construction, construction access, and demolition activities associated with this project shall be accomplished in a manner that minimizes construction materials or waste materials from entering surface waters, unless authorized by this permit. Wet, excess, or waste concrete shall be prohibited from entering surface waters.
6. Any fill material placed in surface waters shall be clean and free of contaminants in toxic concentrations or amounts in accordance with all applicable laws and regulations.
7. Measures shall be employed at all times to prevent and contain spills of fuels, lubricants, or other pollutants into surface waters.
8. Temporary in-stream construction features such as cofferdams shall be made of non-erodible materials.
9. Virginia Water Quality Standards shall not be violated in any surface waters as a result of the project activities.
10. All required notifications and submittals shall be submitted to the DEQ office stated below, to the attention of the VWP permit manager, unless directed in writing by DEQ subsequent to the issuance of this permit:

Office of Water Supply  
P.O. Box 1105  
Richmond, Virginia 23218

11. All reports required by this permit and other information requested by DEQ shall be signed by the permittee or a person acting in the permittee's behalf, with the authority to bind the permittee. A person is a duly authorized representative only if both criteria below are met. If a representative authorization is no longer valid because of a change in responsibility for the overall operation of the facility, a new authorization shall be immediately submitted to DEQ.
  - a. The authorization is made in writing by the permittee.
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
12. All submittals shall contain the following signed certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate,

and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

13. Any fish kills or spills of fuels or oils shall be reported to DEQ immediately upon discovery at (540) 562-6814. If DEQ cannot be reached, the spill shall be reported to the Virginia Department of Emergency Management (DEM) at 1-800-468-8892 or the National Response Center (NRC) at 1-800-424-8802.
14. DEQ shall be notified in writing within 24 hours or as soon as possible on the next business day when potential environmentally threatening conditions are encountered which require debris removal or involve potentially toxic substances. Measures to remove the obstruction, material, or toxic substance or to change the location of any structure are prohibited until approved by DEQ.
15. The permittee shall notify the DEQ of any of any modifications of the intake structure. Any additional impacts, modifications, or changes shall be subject to individual permit review and/or modification of this permit.

**D. Water Withdrawal, Water Intake, Water Conservation, Monitoring and Reporting Conditions**

1. The maximum allowable withdrawal rates from Smith Mountain Lake are as follows (see table defining Tiers 1 through 5 below):

Tiered Water Withdrawal Limits based upon completion of capital improvements to meet demand:

Tier	AADF <sub>1</sub>	Maximum Daily Withdrawal (mgd) <sub>2</sub>	Maximum Annual Withdrawal (MG) <sub>3</sub>	Maximum Monthly Withdrawal (MG) <sub>4</sub>
1	2.00	4.62	769	96
2	2.81	5.84	1080	135
3	4.01	8.34	1541	193
4	6.00	12.00	2306	288
5	5.30	11.02	2037	255

1: Average annual daily flow, million gallons per day (mgd)

2: ((AADF +5% for plant losses) \* 1.8 peak day factor) + 10% margin of safety

3: (AADF + 5% for plant losses) \* 366 days per year (MG = million gallons)

4: ((AADF + 5% for plant losses) \* 1.5 peak month factor) \* 30.5 days per month

Description of tiers:

- a. Tier 1 contains allowable withdrawal limits corresponding to the demands justified for the Lakes-High Point and Westlake service areas through the end of the permit period
- b. Tier 2 includes the Tier 1 justified demands, plus those for the Rte 220 North and Boones Mill services areas in Franklin County. This tier requires either 1) completion of a waterline extension from the WVWA-Westlake service area to Rte 220 North in Franklin County, or 2) an amendment to the existing Water Sale and Purchase Agreement dated December 1, 2010 between the permittee and the Western Virginia Water Authority (WVWA) stipulating that WVWA will own at least 0.6 mgd of the capacity of the proposed Smith Mountain Lake Regional Water Treatment Plant.

- c. Tier 3 includes the Tier 2 limits, plus the Bedford/Central service area justified demands. This tier requires completion of the Route 122 South (Moneta to Bedford) Waterline Extension.
  - d. Tier 4 includes the Tier 3 limits, plus the Forest service area justified demands. This tier requires completion of the Route 460 East (New London to Bedford) Waterline Extension.
  - e. Tier 5 includes the justified demands for the Lakes-High Point, Westlake, Bedford/Central and Forest service areas, less the justified demands for WVWA 220 North and WVWA Boones Mill service areas. If either the waterline extension from the WVWA-Westlake service area to Rte 220 North in Franklin County, or the amendment to the existing Water Sale and Purchase Agreement dated December 1, 2010 between the permittee and WVWA as described above are not completed by June 30, 2020, the maximum allowable withdrawal limits will equal those listed for Tier 5.
2. For the Tier 2 withdrawal limits to be used, the permittee must provide written certification for approval by DEQ that either 1) the main water lines servicing the Westlake and Rte 220 North service areas have been connected so that water withdrawn from the Smith Mountain Lake intake can be sent to the Rte 220 North service area, or 2) the Water Sale and Purchase Agreement dated December 1, 2010 between the permittee and WVWA has been amended to stipulate that WVWA will own at least 0.6 mgd of the capacity of the proposed Smith Mountain Lake Regional Water Treatment Plant. Written certification must be submitted to DEQ within 30 days of the completion of the waterline connections or ratification of the amended Water Sale and Purchase Agreement by both the Bedford Regional Water Authority (BRWA) and WVWA boards of directors. If the existing Water Sale and Purchase Agreement between the permittee and the WVWA is amended prior to June 30, 2020, the permittee shall submit the amended agreement to DEQ for review to ensure that the allocation of capacity meets the goals of the Smith Mountain Project Water Management Plan.
3. For the Tier 3 withdrawal limits to be used, the permittee must provide written certification for approval by DEQ that the main water lines servicing the Lakes-High Point and Bedford/Central service areas have been connected so that water withdrawn from the Smith Mountain Lake intake can be sent to the Bedford/Central service area if and when needed. Written certification must be submitted to DEQ within 30 days of the completion of the waterline connections.
4. For the Tier 4 withdrawal limits to be used, the permittee must provide written certification for approval by DEQ that the main water lines servicing the Lakes-High Point, Bedford/Central and Forest service areas have been connected so that water withdrawn from the Smith Mountain Lake intake can be sent to the Forest service area if and when needed. Written certification must be submitted to DEQ within 30 days of the completion of the waterline connections.
5. To minimize the impingement and entrainment of fish eggs, larvae and other aquatic life, the maximum through screen intake velocity shall not exceed 0.50 feet per second, unless the intake screens are constructed less than 4 feet from the bottom of the lake. In the latter case the maximum through screen intake velocity shall not exceed 0.25 feet per second. In either case the intake screens shall be designed so that the screen openings are not wider than one millimeter.
6. Should the intake screens or other intake structures be located above the water or less than 5 feet below the record low water elevation in Smith Mountain Lake of 787.00 ft, then the location of the

intake structure shall be clearly marked to avoid a hazard to boaters and other recreational users of Smith Mountain Lake.

7. The permittee shall submit as-built drawings of each intake within 90 days after construction that document the location of the intake screens relative to the lakebed and shoreline. This will serve as the basis to confirm which velocity requirements apply.
8. The permittee shall meter withdrawals from Smith Mountain Lake on a daily basis using flow totalizer technology to confirm that the withdrawals are in compliance with special conditions of this permit. Flow meter accuracy must be demonstrated to be +/-10% over the range of flow conditions experienced by each meter. A defective meter or other device must be repaired or replaced within 30 days. A defective meter is not grounds for not reporting the withdrawals. During any period when a meter is defective, generally accepted engineering practice shall be used to estimate withdrawals and the period during which the meter was defective must be clearly identified in the report.
9. The permittee shall monitor the bi-monthly flow of water sent from Smith Mountain Lake to the Central service area (in and around the Town of Bedford) as soon as the Route 122 South Waterline (Moneta to Bedford) Extension is constructed and operational. Every other month, the permittee shall record the cumulative volume of water used in the Central service area. The permittee shall provide this information annually along with their annual reporting of calculated monthly water withdrawals required by 9VAC25-200 et seq and shall make the records available to DEQ within 96 hours of receiving a request for those records. When the reported annual total flow from Smith Mountain Lake to the Central service area reaches or exceeds 50% of the projected end-of-permit annual demand for that service area (240 MG), then monitoring shall be performed monthly, rather than bi-monthly, for the duration of the permit period.
10. The permittee shall monitor the bi-monthly flow of water sent from Smith Mountain Lake to the Forest service area as soon as the Route 460 East Waterline (New London to Bedford) Extension is constructed and operational. Every other month, the permittee shall record the cumulative volume of water used in to the Forest service area. The permittee shall provide this information annually along with their annual reporting of calculated monthly water withdrawals required by 9VAC25-200 et seq and shall make the records available to DEQ within 96 hours of receiving a request for those records. When the reported annual total flow from Smith Mountain Lake to the Forest service area reaches or exceeds 50% of the projected end-of-permit annual demand for that service area (390 MG), then monitoring shall be performed monthly, rather than bi-monthly, for the duration of the permit period.
11. The permittee shall monitor the monthly flow of water sent from Smith Mountain Lake to Franklin County (the WVWA-Westlake service area or for use within the WVWA-220 North or WVWA-Boones Mill). For each month that water is sent, the permittee shall record the cumulative volume of water sent to the Franklin County service areas. The permittee shall provide this information annually along with their annual reporting of monthly water withdrawals required by 9VAC25-200 et seq and shall make the records available to DEQ within 96 hours of receiving a request for those records.



12. The permittee shall monitor the monthly flow of water purchased from the City of Lynchburg for use within the Forest service area or for use within the Bedford City service area. For each month that water is purchased, the permittee shall record the cumulative volume of water purchased. The permittee shall provide this information annually along with their annual reporting of monthly water withdrawals required by 9VAC25-200 et seq and shall make the records available to DEQ within 96 hours of receiving a request for those records.
13. The permittee shall prepare and submit for DEQ approval a plan for monitoring and reporting water transfers to the Central, Forest, and Franklin County service areas. This plan must be submitted to DEQ within 120 days of this permit modification and should describe the methodology or methodologies to be used to monitor and report monthly transfers of water from Smith Mountain Lake to each service area. The plan shall include, at a minimum, the following:
  - a. Method(s) to calculate and/or estimate monthly flows sent to each service area from Smith Mountain Lake
  - b. Method(s) proposed to calculate and/or estimate monthly flow of water from the City of Lynchburg to each of BCPSA's service areas
  - c. An alternative procedure to be used whenever the primary monitoring method is not functioning or available
  - d. The method(s) proposed to calculate and/or estimate monthly flows shall be capable of producing volume determinations within plus or minus 10% of actual flows. Accuracy of any flow meters used must be demonstrated to be +/-10% over the range of flow conditions experienced by each meter. A defective meter or other device must be repaired or replaced within 30 days. A defective meter is not grounds for not reporting flows. During any period when a meter is defective, generally accepted engineering practice shall be used to estimate flows and the period during which the meter was defective must be clearly identified in the annual report.
14. When a drought emergency is declared by the Commonwealth of Virginia in the Bedford or Franklin County portion of the Roanoke River Drought Evaluation Region, or by Bedford or Franklin Counties in accordance with either County's Drought Management Ordinance, the permittee shall implement either the provisions directed by the Commonwealth, the declaring County's Drought Management Ordinance or the mandatory conservation measures detailed in Attachment A of this permit, whichever is most restrictive. The permittee shall be responsible for determining when drought emergencies are declared. DEQ may require documentation that mandatory conservation measures were implemented during declared drought emergencies.
15. Water withdrawal monitoring and reporting activities shall comply with this section, Part I.C, and Part II. All records and information that result from the monitoring and reporting activities required by this permit, including any records of maintenance activities to the withdrawal system, shall be retained for the life of the permit. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or as requested by the State Water Control Board.
16. For each day that water is withdrawn, the permittee shall monitor and record the date and the volume of water withdrawn that day. The permittee shall retain those records in accordance with General Condition G.3. For all permittees whose average daily withdrawal during any single

month exceeds 10,000 gallons per day, the water withdrawals shall be reported to DEQ by January 31st of the next year, as required under State Water Control Board (SWCB) Water Withdrawal Reporting Regulation (9 VAC 25-200 et seq.). The annual monitoring report shall contain the following information:

- a. the permittee's name and address,
  - b. the sources and locations of water withdrawal,
  - c. the cumulative volume of water withdrawn each month and for the calendar year,
  - d. the average daily volume (million gallons per day) of water withdrawn as calculated the last day of the monitoring period,
  - e. the largest single day withdrawal volume (million gallons) that occurred in the year and the month in which it occurred,
  - f. the method of withdrawal measurement,
  - g. the information listed in Parts I. D. 9 through 12.
17. Whenever a Trigger 3 drought event is declared at Appalachian Power Company's Smith Mountain Project, as defined within the Water Management Plan portion of that Project's Federal Energy Regulatory Commission (FERC) license P-2210, the permittee must initiate conservation measures as listed below:
- a. Review and be prepared to implement Drought Response and Contingency Plans at the appropriate time.
  - b. Participate, as appropriate, in regional and local coordination for the management of water resources.
  - c. Stay informed on drought conditions and advisories
  - d. Participate, as appropriate, in regional and local coordination for the management of water resources.
  - e. Stay informed on drought conditions and advisories
  - f. Project water needs and available water supply for a ninety-day period from the declaration of the Trigger 3 event
  - g. Assess vulnerability to the drought conditions and adjust water usage to prolong available supply.
  - h. Inspect water delivery system components
  - i. It is the permittee's responsibility to coordinate with Appalachian Power Company regarding the initiation and cessation of Trigger 3 drought events.
18. The permittee shall prepare and submit for DEQ approval a water demand management plan that specifies how long-term water conservation measures will be implemented. This plan must be submitted to DEQ within 180 days of this permit modification. The plan shall include, at a minimum, specific goals, objectives, methods and milestones to minimize water system losses and shall show how it is possible to achieve as much as a 10% reduction in long-term water demand.

## **Attachment A- Water Conservation**

### **Mandatory Non-essential Water Use Restrictions**

The following non-essential water uses will be prohibited during periods of declared drought emergencies. Please note the exceptions that follow each prohibited use. These prohibitions and exceptions will apply to uses from all sources of water and will only be effective when the Governor of Virginia or the Virginia Drought coordinator declares a Drought Emergency. Water use restrictions shall not apply to the agricultural production of food or fiber, the maintenance of livestock including poultry, nor the commercial production of plant materials, *provided that best management practices are applied to assure the minimum amount of water is utilized.*

#### **1. *Unrestricted irrigation of lawns is prohibited.***

- Newly sodded and seeded areas may be irrigated to establish cover on bare ground at the minimum rate necessary for no more than a period of 60 days. Irrigation rates may not exceed one inch of applied water in any 7-day period.
- Gardens, bedding plants, trees, shrubs and other landscape materials may be watered with hand held containers, hand held hoses equipped with an automatic shutoff device, sprinklers or other automated watering devices at the minimum rate necessary but in no case more frequently than twice per week. Irrigation should not occur during the heat of the day.
- All allowed lawn irrigation must be applied in a manner to assure that no runoff, puddling or excessive watering occurs.
- Irrigation systems may be tested after installation, routine maintenance or repair for no more than ten minutes per zone.

#### **2. *Unrestricted irrigation of golf courses is prohibited.***

- Tees and greens may be irrigated between the hours of 9:00 p.m. and 10:00 a.m. at the minimum rate necessary.
- Localized dry areas may be irrigated with a hand held container or hand held hose equipped with an automatic shutoff device at the minimum rate necessary.
- Greens may be cooled by syringing or by the application of water with a hand held hose equipped with an automatic shutoff device at the minimum rate necessary.
- Fairways may be irrigated between the hours of 9:00 p.m. and 10:00 a.m. at the minimum rate necessary not to exceed one inch of applied water in any ten-day period.
- Fairways, tees and greens may be irrigated during necessary overseeding or resodding operations in September and October at the minimum rate necessary. Irrigation rates during this restoration period may not exceed one inch of applied water in any seven-day period.

- Newly constructed fairways, tees and greens and areas that are re-established by sprigging or sodding may be irrigated at the minimum rate necessary not to exceed one inch of applied water in any seven-day period for a total period that does not exceed 60 days.
- Fairways, tees and greens may be irrigated without regard to the restrictions listed above so long as:
  - The only water sources utilized are water features whose primary purpose is stormwater management;
  - Any water features utilized do not impound permanent streams;
  - During declared Drought Emergencies these water features receive no recharge from other water sources such as ground water wells, surface water intakes, or sources of public water supply; and,
  - All irrigation occurs between 9:00 p.m. and 10:00 a.m.
- All allowed golf course irrigation must be applied in a manner to assure that no runoff, puddling or excessive watering occurs.
- Rough areas may not be irrigated.

3. ***Unrestricted irrigation of athletic fields is prohibited.***

- Athletic fields may be irrigated between the hours of 9:00 p.m. and 10:00 a.m. at a rate not to exceed one inch per application or more than a total of one inch in multiple applications during any ten-day period. All irrigation water must fall on playing surfaces with no outlying areas receiving irrigation water directly from irrigation heads.
- Localized dry areas that show signs of drought stress and wilt (curled leaves, foot-printing, purpling) may be syringed by the application of water for a cumulative time not to exceed fifteen minutes during any twenty four hour period. Syringing may be accomplished with an automated irrigation system or with a hand held hose equipped with an automatic shutoff device at the minimum rate necessary.
- Athletic fields may be irrigated between the hours of 9:00 p.m. and 10:00 a.m. during necessary overseeding, sprigging or resodding operations at the minimum rate necessary for a period that does not exceed 60 days. Irrigation rates during this restoration period may not exceed one inch of applied water in any seven-day period. Syringing is permitted during signs of drought stress and wilt (curled leaves, foot-printing, purpling).
- All allowed athletic field irrigation must be applied in a manner to assure that no runoff, puddling or excessive watering occurs.

- Irrigation is prohibited on athletic fields that are not scheduled for use within the next 120-day period.
  - Water may be used for the daily maintenance of pitching mounds, home plate areas and base areas with the use of hand held containers or hand held hoses equipped with an automatic shutoff device at the minimum rate necessary.
  - Skinned infield areas may utilize water to control dust and improve playing surface conditions utilizing hand held containers or hand held hoses equipped with an automatic shutoff device at the minimum rate necessary no earlier than two hours prior to official game time.
4. ***Washing paved surfaces such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts, and patios is prohibited.***
- Driveways and roadways may be pre-washed in preparation for recoating and sealing.
  - Tennis courts composed of clay or similar materials may be wetted by means of a hand-held hose equipped with an automatic shutoff device at the minimum rate necessary for maintenance. Automatic wetting systems may be used between the hours of 9:00 p.m. and 10:00 a.m. at the minimum rate necessary.
  - Public eating and drinking areas may be washed using the minimum amount of water required to assure sanitation and public health.
  - Water may be used at the minimum rate necessary to maintain effective dust control during the construction of highways and roads.
5. ***Use of water for washing or cleaning of mobile equipment including automobiles, trucks, trailers and boats is prohibited.***
- Mobile equipment may be washed using hand held containers or hand held hoses equipped with automatic shutoff devices provided that no mobile equipment is washed more than once per calendar month and the minimum amount of water is utilized.
  - Construction, emergency or public transportation vehicles may be washed as necessary to preserve the proper functioning and safe operation of the vehicle.
  - Mobile equipment may be washed at car washes that utilize reclaimed water as part of the wash process or reduce water consumption by at least 10% when compared to a similar period when water use restrictions were not in effect.
  - Automobile dealers may wash cars that are in inventory no more than once per week utilizing hand held containers and hoses equipped with automatic shutoff devices, automated equipment that utilizes reclaimed water as part of the wash process, or automated equipment where water

consumption is reduced by at least 10% when compared to a similar period when water use restrictions were not in effect.

- Automobile rental agencies may wash cars no more than once per week utilizing hand held containers and hoses equipped with automatic shutoff devices, automated equipment that utilizes reclaimed water as part of the wash process, or automated equipment where water consumption is reduced by at least 10% when compared to a similar period when water use restrictions were not in effect.
- Marine engines may be flushed with water for a period that does not exceed 5 minutes after each use.

6. ***Use of water for the operation of ornamental fountains, artificial waterfalls, misting machines, and reflecting pools is prohibited.***

- Fountains and other means of aeration necessary to support aquatic life are permitted.

7. ***Use of water to fill and top off outdoor swimming pools is prohibited.***

- Newly built or repaired pools may be filled to protect their structural integrity.
- Outdoor pools operated by commercial ventures, community associations, recreation associations, and similar institutions open to the public may be refilled as long as:
  - Levels are maintained at mid-skimmer depth or lower;
  - Any visible leaks are immediately repaired;
  - Backwashing occurs only when necessary to assure proper filter operation;
  - Deck areas are washed no more than once per calendar month (except where chemical spills or other health hazards occur);
  - All water features (other than slides) that increase losses due to evaporation are eliminated; and
  - Slides are turned off when the pool is not in operation.
- Swimming pools operated by health care facilities used in relation to patient care and rehabilitation may be filled or topped off.
- Indoor pools may be filled or topped off.
- Residential swimming pools may be filled only to protect structural integrity, public welfare, safety and health and may not be filled to allow the continued operation of such pools.

VWP Individual Permit No. 96-0707

Attachment A

September 19, 2013

Page 5 of 5

8. *Water may be served in restaurants, clubs, or eating-places only at the request of customers.*

## **Part II – General Conditions**

### **A. Duty to Comply**

The permittee shall comply with all conditions of the VWP permit. Nothing in the VWP permit regulations shall be construed to relieve the permittee of the duty to comply with all applicable federal and state statutes, regulations and prohibitions. Any VWP permit violation is a violation of the law, and is grounds for enforcement action, VWP permit termination, revocation, modification, or denial of an application for a VWP permit extension or reissuance.

### **B. Duty to Cease or Confine Activity**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the activity for which a VWP permit has been granted in order to maintain compliance with the conditions of the VWP permit.

### **C. Duty to Mitigate**

The permittee shall take all reasonable steps to minimize or prevent any impacts in violation of the permit which may have a reasonable likelihood of adversely affecting human health or the environment.

### **D. VWP Permit Action**

1. A VWP permit may be modified, revoked and reissued, or terminated as set forth in 9 VAC 25-210 et seq.
2. If a permittee files a request for VWP permit modification, revocation, or termination, or files a notification of planned changes, or anticipated noncompliance, the VWP permit terms and conditions shall remain effective until the request is acted upon by the board. This provision shall not be used to extend the expiration date of the effective VWP permit. If the permittee wishes to continue an activity regulated by the VWP permit after the expiration date of the VWP permit, the permittee must apply for and obtain a new VWP permit or comply with the provisions of 9 VAC 25-210-185 (VWP Permit Extension).

VWP permits may be modified, revoked and reissued or terminated upon the request of the permittee or other person at the board's discretion, or upon board initiative to reflect the requirements of any changes in the statutes or regulations, or as a result of VWP permit noncompliance as indicated in the Duty to Comply subsection above, or for other reasons listed in 9 VAC 25-210-180 (Rules for Modification, Revocation and Reissuance, and Termination of VWP permits).

### **E. Inspection and Entry**



Upon presentation of credentials, any duly authorized agent of the board may, at reasonable times and under reasonable circumstances:

1. Enter upon any permittee's property, public or private, and have access to, inspect and copy any records that must be kept as part of the VWP permit conditions;
2. Inspect any facilities, operations or practices (including monitoring and control equipment) regulated or required under the VWP permit; and
3. Sample or monitor any substance, parameter or activity for the purpose of ensuring compliance with the conditions of the VWP permit or as otherwise authorized by law.

**F. Duty to Provide Information**

1. The permittee shall furnish to the board any information which the board may request to determine whether cause exists for modifying, revoking, reissuing or terminating the VWP permit, or to determine compliance with the VWP permit. The permittee shall also furnish to the board, upon request, copies of records required to be kept by the permittee.
2. Plans, specifications, maps, conceptual reports and other relevant information shall be submitted as required by the board prior to commencing construction.

**G. Monitoring and Records Requirements**

1. Monitoring of parameters, other than pollutants, shall be conducted according to approved analytical methods as specified in the VWP permit. Analysis of pollutants will be conducted according to 40 CFR Part 136 (2000), Guidelines Establishing Test Procedures for the Analysis of Pollutants.
2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
3. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports required by the VWP permit, and records of all data used to complete the application for the VWP permit, for a period of at least three years from the date of the expiration of a granted VWP permit. This period may be extended by request of the board at any time.
4. Records of monitoring information shall include:
  - a. The date, exact place and time of sampling or measurements;
  - b. The name of the individuals who performed the sampling or measurements;

- c. The date and time the analyses were performed;
- d. The name of the individuals who performed the analyses;
- e. The analytical techniques or methods supporting the information such as observations, readings, calculations and bench data used;
- f. The results of such analyses; and
- g. Chain of custody documentation.

#### **H. Transferability**

This VWP permit may be transferred to a new permittee only by modification to reflect the transfer, by revoking and reissuing the permit, or by automatic transfer. Automatic transfer to a new permittee shall occur if:

1. The current permittee notifies the board within 30 days of the proposed transfer of the title to the facility or property;
2. The notice to the board includes a written agreement between the existing and proposed permittee containing a specific date of transfer of VWP permit responsibility, coverage and liability to the new permittee, or that the existing permittee will retain such responsibility, coverage, or liability, including liability for compliance with the requirements of any enforcement activities related to the permitted activity; and
3. The board does not within the 30-day time period notify the existing permittee and the new permittee of its intent to modify or revoke and reissue the VWP permit.

#### **I. Property rights**

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize injury to private property or any invasion of personal rights or any infringement of federal, state or local law or regulation.

#### **J. Reopener**

Each VWP permit shall have a condition allowing the reopening of the VWP permit for the purpose of modifying the conditions of the VWP permit to meet new regulatory standards duly adopted by the board. Cause for reopening VWP permits includes, but is not limited to when the circumstances on which the previous VWP permit was based have materially and substantially changed, or special studies conducted by the board or the permittee show material and substantial change, since the time the VWP permit was issued and thereby constitute cause for VWP permit modification or revocation and reissuance.

### **K. Compliance with State and Federal Law**

Compliance with this VWP permit constitutes compliance with the VWP permit requirements of the State Water Control Law. Nothing in this VWP permit shall be construed to preclude the institution of any legal action under or relieve the permittee from any responsibilities, liabilities, or other penalties established pursuant to any other state law or regulation or under the authority preserved by § 510 of the Clean Water Act.

### **L. Severability**

The provisions of this VWP permit are severable.

### **M. Permit Modification**

A VWP permit may be modified, but not revoked and reissued except when the permittee agrees or requests, when any of the following developments occur:

1. When additions or alterations have been made to the affected facility or activity which require the application of VWP permit conditions that differ from those of the existing VWP permit or are absent from it;
2. When new information becomes available about the operation or activity covered by the VWP permit which was not available at VWP permit issuance and would have justified the application of different VWP permit conditions at the time of VWP permit issuance;
3. When a change is made in the promulgated standards or regulations on which the VWP permit was based;
4. When it becomes necessary to change final dates in schedules due to circumstances over which the permittee has little or no control such as acts of God, materials shortages, etc. However, in no case may a compliance schedule be modified to extend beyond any applicable statutory deadline of the Act;
5. When changes occur which are subject to "reopener clauses" in the VWP permit; or
6. When the board determines that minimum instream flow levels resulting from the permittee's withdrawal of water are detrimental to the instream beneficial use and the withdrawal of water should be subject to further net limitations or when an area is declared a Surface Water Management Area pursuant to §§ 62.1-242 through 62.1-253 of the Code of Virginia, during the term of the VWP permit.

### **N. Permit Termination**

After notice and opportunity for a formal hearing pursuant to Procedural Rule No. 1 (9 VAC 25-230-100) a VWP permit can be terminated for cause. Causes for termination are as follows:

1. Noncompliance by the permittee with any condition of the VWP permit;
2. The permittee's failure in the application or during the VWP permit issuance process to disclose fully all relevant facts or the permittee's misrepresentation of any relevant facts at any time;
3. The permittee's violation of a special or judicial order;
4. A determination by the board that the permitted activity endangers human health or the environment and can be regulated to acceptable levels by VWP permit modification or termination;
5. A change in any condition that requires either a temporary or permanent reduction or elimination of any activity controlled by the VWP permit; and
6. A determination that the permitted activity has ceased and that the compensatory mitigation for unavoidable adverse impacts has been successfully completed.

#### **O. Civil and Criminal Liability**

Nothing in this VWP permit shall be construed to relieve the permittee from civil and criminal penalties for noncompliance.

#### **P. Oil and Hazardous Substance Liability**

Nothing in this VWP permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under § 311 of the Clean Water Act or §§ 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law.

#### **Q. Unauthorized Discharge of Pollutants**

Except in compliance with this VWP permit, it shall be unlawful for the permittee to:

1. Discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances;
2. Excavate in a wetland;
3. Otherwise alter the physical, chemical, or biological properties of state waters and make them detrimental to the public health, to animal or aquatic life, to the uses of such waters for domestic or industrial consumption, for recreation, or for other uses;

4. On or after October 1, 2001 conduct the following activities in a wetland:
  - a. New activities to cause draining that significantly alters or degrades existing wetland acreage or functions;
  - b. Filling or dumping;
  - c. Permanent flooding or impounding;
  - d. New activities that cause significant alteration or degradation of existing wetland acreage or functions.

#### **R. Permit Extension**

Any permittee with an effective VWP permit for an activity that is expected to continue after the expiration date of the VWP permit, without any change in the activity authorized by the VWP permit, shall submit written notification requesting an extension. The permittee must file the request prior to the expiration date of the VWP permit. Under no circumstances will the extension be granted for more than 15 years beyond the original effective date of the VWP permit. If the request for extension is denied, the VWP permit will still expire on its original date and, therefore, care should be taken to allow for sufficient time for the board to evaluate the extension request and to process a full VWP permit modification, if required.



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

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TDD (804) 698-4021

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Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

**SUBJECT:** Modification of Virginia Water Protection Individual Permit Number 96-0707, Bedford Regional Water Authority, Smith Mountain Lake Water Treatment Plant Withdrawal Project, Bedford County, VA

**TO:** Jeffery Steers, Director, Land Protection and Revitalization Division

**FROM:** Brian McGurk, Water Resource Modeler, Office of Water Supply

**DATE:** September 19, 2013

**COPY:** David L. Davis, Director, Office of Wetlands and Water Protection  
Scott Kudlas, Director, Office of Water Supply

DEQ has reviewed the application for a modification to Virginia Water Protection (VWP) Individual Permit Number 96-0707 and has determined that the project qualifies for major permit modification. Based on the information provided in the application and in compliance with § 401 of the Clean Water Act as amended (33 USC 1341 et seq.) and the State Water Control Law and regulations, DEQ has determined that there is a reasonable assurance that the activity authorized by this permit will protect in-stream beneficial uses, will not violate applicable water quality standards, and will not cause or contribute to significant impairment of state waters or fish and wildlife resources, provided the permittee complies with all permit conditions.

Surface water impacts have been avoided and minimized to the maximum extent practicable. The proposed permit also addresses protection of in-stream beneficial uses via flow monitoring and reporting and implementation of operating procedures that promote conservation.

The following details the application review process and summarizes relevant information for developing the Part I - Special Conditions for permit issuance.

### 1. Contact Information:

#### Permittee Legal Name and Address:

Bedford Regional Water Authority  
Attn: Mr. Brian Key, PE  
1723 Falling Creek Road

VWP Individual Permit 96-0707

Fact Sheet

September 19, 2013

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Bedford, VA 24523

540-586-7679

Email: b.key@brwa.com

**Owner Legal Name and Address:**

American Electric Power (dba Appalachian Power Company)

P. O. Box 2021

Roanoke VA 24022-2121

Attn: Mr. Frank M. Simms

**Agent Legal Name and Address:**

Anderson & Associates, Inc

100 Ardmore Street

Blacksburg VA 24060

Attn: Mr. Gary Crouch

540-552-5592

800-763-5596

**2. Joint Permit Application (JPA) Processing Dates:**

Received Application:	3/16/11
Joint Publication with VMRC of Received JPA:	did not post*
SPGP Determination letter sent to USACE:	3/25/11
Notice from VMRC re: no permit required:	3/28/11*
1 <sup>st</sup> Request for Additional Information Sent:	5/10/11
Response to 1 <sup>st</sup> Request for Additional Information Received:	6/24/11
2 <sup>nd</sup> Request for Additional Information Sent:	5/4/12
Response to 2 <sup>nd</sup> Request for Additional Information Received:	5/24/12
Letter sent to Bedford County Commissioner of Revenue:	7/11/12
Letter sent to Franklin County Commissioner of Revenue: (used county website)	not applicable (used county website)
Letters sent to VDH, VDGIF, VDCR:	7/24/12
Letters sent to VMRC:	3/25/11 & 9/26/12
Letters sent to Riparian Land Owners:	8/17/12
3 <sup>rd</sup> Request for Additional Information Sent:	8/28/12
Letter(s) sent to Local Government(s):	9/4/12
Response to 3 <sup>rd</sup> Request for Additional Information Received:	9/13/12
Application Complete:	9/13/12
Processing Deadline (120 days from Complete Application):	1/13/13
Permit Fee request sent to BCPSA:	10/9/12
Permit Fee Deposited by Accounting:	10/23/12
BCPSA merged into Bedford Regional Water Authority	7/1/13
Draft Permit Package Issued:	7/11/13

Copy of Public Notice sent to DEQ Central Office:	7/11/13
Copy of Public Notice sent to Localities:	8/01/13
Public Notice Published:	7/18/13
End of 30-Day Public Comment Period:	8/19/13
Received Verification of Publication:	7/23/13
Public Meeting or Hearing (if applicable):	

\*: VMRC notified staff via email on 3/28/11 that because the new intake structures would not encroach upon the historic channel, VMRC would not require a permit.

### 3. Project Location:

County:	Bedford
Waterbody:	Smith Mountain Lake
Basin:	Roanoke River
Subbasin:	Upper Roanoke River
HUC:	03010101
Section/Class/Sp Stds:	6i / IV / PWS; designated as nutrient rich waters under 9VAC25-260-350.
Latitude & Longitude:	Existing Raw Water Intake: 37°07'16" N -79°38'46" W
U.S.G.S. Quadrangle:	Moneta SW
State Watershed No.:	03010101RU19
TMDL Status:	No TMDL segments exist at the reservoir or intake sites.

### 4. Project Description:

The Bedford Regional Water Authority (BRWA) proposes to expand the existing intake structure at the High Point water intake site on Smith Mountain Lake (SML) in Bedford County from its currently permitted, maximum daily rate of 2.99 million gallons to a maximum daily rate of 12 million gallons. The intake is located on Lakewood Drive, south of High Point Road and west of State Route 654 in Bedford County. The intake supplies the nearby High Point Water Treatment Plant (WTP), which has a current VDH waterworks operation permit allowing a treatment capacity up to 0.770 mgd. The JPA states that the expansion is needed to provide a reliable source of water to growing communities in both Bedford and Franklin Counties. This includes growth in both the amount of water used within the current Lakes-High Point service area and expansion to additional service areas by waterline extensions. The new waterlines would allow water withdrawn in the Lakes-High Point area to be sent to the Forest and Town of Bedford water systems. BRWA currently provides water to the Forest water system via a purchase agreement with the City of Lynchburg that is in effect until 6/30/2022. The JPA states that the purchase agreement between Lynchburg and BRWA does not have a limit on the volume that is sent to BRWA.



BRWA sells water withdrawn from the High Point water intake to the Western Virginia Water Authority (WVWA) via a purchase agreement for up to 0.4 mgd. The WVWA provides water to the Westlake service area on the Franklin County side of Smith Mountain Lake. The applicant states that new waterline extensions in Franklin County would provide service between the Westlake system and Route 220 North. However, the Franklin County Summary of Capital Improvement Projects contained within its FY 2011-2012 Capital Improvement Program does not list any planned waterline extensions through FY2015-2016.

Future proposed demands for the City of Bedford were not originally included in the JPA. However, the City reverted to a Town within Bedford County as of July 1, 2013. The Bedford County Board of Supervisors approved an amended reversion agreement in August, 2012 and, according to a response to a request for additional information received September 13, 2012, the reversion process was expected to be complete within the next year. The reversion agreement required the formation of a new joint water and sewer authority to consolidate the services provided separately by the City and Bedford County (via the Bedford County Public Service Authority (BCPSA)), provided that the two entities enter into a Utility Consolidation Agreement by November 30, 2012. Both the City and Bedford County ratified the agreement and the new BRWA Governing Board has since approved a new rate structure needed due to the consolidation with the City of Bedford. The reversion agreement also includes a provision that an interconnection between the City and County (BRWA) water systems must be in place by December, 2016. BRWA views the interconnection initially as serving as an emergency water supply for the City and that it may become the permanent supply if the City's existing infrastructure requires significant upgrades or repairs. The addition of the City of Bedford's future demands did not, however, increase the volume of the proposed withdrawals that were originally included within the JPA. As of July 1, 2013, the BCPSA ceased to exist and was replaced by the BRWA. The City of Bedford's service area is now referred to by the BRWA as the Central Service Area.

## **5. Major Modification Description**

This action is a major modification to the permit originally issued on September 12, 1997 and reissued on November 30, 2007. This major modification is predicated on the proposed increase in maximum daily withdrawal rate from the current value of 2.99 million gallons to 12 million gallons per day (mgd), with a proposed average annual daily flow (AADF) of 6.0 mgd. A Preliminary Engineering Report (PER) provided with the JPA that analyzes various water supply alternatives recommends expansion of the current Lakes-High Point WTP capacity to 1.0 mgd and construction of a new, regional WTP near the existing Lakes-High Point WTP with a 5.0 mgd capacity. A more recent PER dated February 15, 2013 recommends decommissioning the High Point WTP and construction of a 6.0 mgd regional WTP with ultimate expansion of capacity to 12 mgd. Staff reviewed the proposed withdrawal increase for the demand anticipated over 15 and 30-year planning periods and over the remainder of the current permit term to 2022.

This modification is intended for the expansion of the existing intake only. Any potential impacts related to future waterline extensions and/or water treatment plant expansion or construction are not part of this modification and would be permitted separately.

## 6. Water Withdrawal Use, Need and Demand:

### Purpose of Water Uses

The proposed system is a public water supply for parts of Bedford County and Franklin County near Smith Mountain Lake. The predominant types of water use are residential and commercial.

### Basis of Need

The applicant statement of need is to support expected future growth in several service areas within both Bedford County and Franklin County. The application provided projected future demand estimates taken from several consultant studies to support water supply needs:

- A Preliminary Engineering Report (PER) by Thompson & Litton (2003) for the Burnt Chimney/SML area that provided projected use rates near SML in Franklin County.
- U. S. Rte 220 North Water System Evaluation by Thompson & Litton (2004) that provided projected use rates for areas west of SML in Franklin County.
- A PER by Anderson & Associates (2011) that provided projected use rates for the Lakes-SML and Forest service areas in Bedford County. This report contains an alternatives analysis to for expanding water service across Bedford County.
- Water and Sewer Master Plan for BCPSA (2009) by Draper-Aden Associates
- Two regional water supply plans: 1) Region 2000 (2009) by Draper-Aden Assoc & Malcolm Pirnie; and 2) Roanoke Valley-Alleghany Regional Commission Regional Water Supply Plan (2010) by Draper-Aden Assoc.

The projected future Bedford County demands in the JPA and associated add-info responses for 15 to 30-year periods derived from the above consultant reports generally agree with demands listed in the water supply plans. In Section 27 of the JPA, the applicant reported a statistical population (growth) trend for Bedford County as currently 4% and in the future as 1.1%; and for Franklin County as currently 0.9%. The Documentation of Need in the JPA (Tab 7) refers to the BCPSA Water and Sewer Master Plan (2009) as its source for population growth trends. That document, however, reports population projections only for 2010, 2020 & 2030 as reported by VEC (Table 3 of BCPSA Water and Sewer Master Plan (2009)). The VEC projections indicate population growth of approximately 1.7% per year from 2006 to 2010, followed by approximately 1% per year from 2010 to 2030. The same document then goes on to present BCPSA water demand projections that equal 4% per year for 2008-2018 and 1.1% per year for 2018 to 2028 (Table 5 of same document). (The same annual breakdown of residential demand projections is included in Appendix D-3 of the Region 2000 Water Supply Plan.) These projections were based on the assumption that "...water infrastructure will inevitably be expanded to provide service to many of the existing residents currently on individual wells or within privately supplied systems". Therefore, staff could not find support in the application for a current Bedford County population growth trend of 4% per year.

Staff compared the projected future population growth rates that were supplied for the proposed BRWA and WVWA service areas with separate estimates of 2010 and future (2028) population estimates determined by interpolation of the VEC population projections. The two projected population estimates were similar. Projected residential demand rates for 2028 based on the interpolated VEC population estimate (using a 75 gpd per capita use rate) were, however, less than the requested average annual daily flows (AADF) for the six BRWA and WVWA service areas (5.59 mgd vs. 6.00 mgd). Much of the difference between the population-based projected 2028 residential demand of 5.59 mgd and the applicant's total projected demand can be attributed to projected commercial, institutional, industrial and un-accounted uses for the City of Bedford that total 0.89 mgd (Region 2000 Water Supply Plan, Appendix D-3).

### Water Demand Projection

A major assumption supporting the projected future demand is that both BRWA and the Western Virginia Water Authority (WVWA) will extend service to a significant number of previously self-supplied users within their projected service areas by the end of the current 15-year permit term, especially within Franklin County. The table below lists recent and projected AADF by service area:

**Table 1: Water Withdrawals and Projected Demands in BRWA and WVWA in Franklin County:**

County	Service Area	2009 ADF mgd <sup>1</sup>	2010 ADF mgd <sup>1</sup>	2011 ADF mgd <sup>1</sup>	AADF projected for end of current permit term (2022) <sup>2</sup>	AADF projected over 15 years (mgd) <sup>3</sup>	AADF 20-35 year projection (mgd) <sup>4</sup>
Bedford	Bedford Central	1.01	0.93	0.89	1.20	1.31	1.95
Bedford	BRWA Forest	1.56	1.50	1.38	2.10	2.14	2.71
Bedford	BRWA Lakes-High Point (used in Bedford County)	0.28	0.39	0.30	0.50	0.54	0.74
	<b>Bedford County use/demand subtotals</b>	2.85	2.82	2.57	3.80	3.99	5.40
Franklin	WVWA-Westlake (Purchased by WVWA from BRWA Lakes-	0.11	0.17	0.18	1.50	1.65	1.6

	High Point)						
Franklin	WVWA 220 North	n/a <sup>4</sup>	n/a <sup>4</sup>	0.03	0.70	0.85	0.83
Franklin	WVWA Boones Mill	0.07	0.08	0.07	0.11	0.13	0.13
	<b>Franklin County WVWA use/demand subtotals</b>	0.18	0.25	0.28	2.31	2.63	2.56
	<b>Totals (BRWA + WVWA)</b>	<b>3.03</b>	<b>3.08</b>	<b>2.85</b>	<b>6.11</b>	<b>6.62</b>	<b>7.96</b>

## Notes:

1. reported 2009-2011 flows: VWUDS and add info responses 5/2012 & 9/2012
2. interpolated values, using reported (2009-2012) and projected 2020, 2028, 2030 & 2040 AADF for Bedford County; and projected 2023, 2024, & 2028 values for Franklin County service areas
3. projected flows for 2028: add info responses 6/2011 & 9/13/12
4. projected 20-35 yr demands:
  - o Bedford service areas: (2048) Table 1 from Anderson & Assoc., (1/2011, JPA, Tab 7)
  - o Franklin 220 North & Boones Mill service areas: from PER for U.S. 220 North Water System Evaluation (Thompson & Litton, 2004; JPA Tab 7)
  - o Franklin WVWA-Westlake service area: from PER for SR 122/Burnt Chimney/Smith Mountain Lake Water Distribution System (Thompson & Litton, 2003; JPA Tab 7)
5. n/a = not reported by WVWA

Approximately 38% (2.31 mgd) of the projected AADF of 6.11 mgd total demand over the permit duration would be needed for service areas within Franklin County. Recent (2011) reported AADF demand for water within WVWA service areas supplied by BCPSA was approximately 0.18 mgd. Therefore, future service area expansions and connections that would provide approximately 2.31 mgd (39%) of the requested 6.0 mgd AADF are required by an entity that is not party to the permit application. Within Section 3 (Project Purpose) of the JPA it was stated that the expansion of the surface water intake is "... needed to provide a reliable source of water to the growing communities in both Bedford and Franklin Counties (WVWA)." In Section 27 of the JPA (Water Withdrawal Use, Need, and Alternatives) the project was identified as a "...continued regional effort between the BCPSA and the WVWA."

DEQ has had a number of recent "regional" permit applications involving demand from multiple parties that were not firmed up prior to issuance of the permit. In these instances the parties failed to reach agreement and the permit ultimately allocated more water than justified during the

permit term. Therefore, DEQ believes that allocation of additional water from Smith Mountain Lake to supply portions of Franklin County will require completion of capital projects that will make service to those areas possible within the term of the permit. Expansion of service throughout most of the BRWA-Lakes-SML service area is planned for completion within the next few years. The BRWA Summary of Projects table submitted with the May 2012 response to DEQ's request for additional information indicates that the planned 6.0 mgd WTP and waterline extensions to near Bedford City and the Forest service area may potentially be completed within the term of the permit. Expansion of service to new areas outside of Bedford County (within WVWA service areas) would presumably depend upon expenditures by WVWA.

The JPA contains peak day factors (projected peak day to AADF ratio) of 2.0 for each service area. Reported metered information regarding peak day and peak month flows is very limited. The reported BRWA Lakes-High Point service area peak day factor ranged from 1.8 to 3.5 for 2007 and 2009-2011 (2008 peak day flow wasn't reported). Reported peak day factors for 2007-2011 for the City of Bedford ranged from 1.7 to 2.1 and averaged 1.8. Neither Lynchburg nor BRWA has reported peak day flows for the water delivered by Lynchburg to BRWA for the Forest service area. Peak day flows for water sold to 1) WVWA's SML-Westlake service area from the BRWA Lakes/SML service area and 2) BRWA from the City of Lynchburg are not measured daily (meters read on a monthly basis only). For the BRWA Lakes-High Point WTP service area the peak month factor (ratio of average flow during the peak month to the AADF) reported to DEQ ranged from 1.3 to 1.8 since 2007 and averaged 1.6. Peak month factors for the Forest Service area for the same period ranged from 1.2 to 1.4, and those for Bedford City were similar.

**Table 2: Peak Day/AADF and Peak Month Average/AADF factors for BRWA Service Areas**

<b>Service Area</b>	<b>Minimum Peak Day Factor</b>	<b>Maximum Peak Day Factor</b>	<b>Average Peak Day Factor (2007-2011)</b>	<b>Minimum Peak Month Factor</b>	<b>Maximum Peak Month Factor</b>	<b>Average Peak Month Factor (2007-2011)</b>
Lakes-(High Point WTP)	1.8	3.5	2.8	1.3	1.8	1.6
Forest	nd	nd	nd	1.2	1.4	1.2
Bedford City /Central	1.7	2.1	1.8	1.1	1.3	1.2

WVWA - Westlake	nd	nd	nd	1.3	2.6	1.8
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nd: not determined (daily flows not measured)

The relatively high reported peak day and peak month factors for the BRWA Lakes (High Point WTP) service area may be due to the large percentage of water transferred to the WVWA-SML service area for seasonal and holiday use. The smaller peak day and peak month factors representing demands from the Bedford City and Forest service areas may indicate smaller seasonal/holiday fluctuations due to a higher percentage of permanent residents. Because the majority of the future AADF demand would represent the Forest and Bedford City/Central service areas, the overall peak day factor should reflect demands from these areas. Because the 2007-2011 peak month factors for both Bedford City/Central and Forest are very similar, it is reasonable to assume that the peak day factors for these service areas may also be similar. Given the range of reported data on peak day factors from recent years, use of a peak day factor of 2.0 for the Lakes-High Point and WVWA-Westlake service areas and 1.8 for all other service areas was considered reasonable.

Demands confirmed for this permit are listed below for the Bedford County and Franklin County service areas. The projected average daily demand total exceeds the applicant's requested volumetric withdrawal rates by 0.11 mgd (AADF). Meeting the projected demands for the Bedford Forest, Bedford Central, and Franklin County service areas, however, depends upon the completion of capital improvements (pipeline extensions) during the term of the permit. This difference in projected and requested demands are evidence of the uncertainty regarding whether these demands can be met by extension of the regional water supply system within the term of the permit.

**Table 3: Projected Demands Justified for BRWA**

Service Area	End of Permit AADF Demand (mgd)	End of Permit Peak Day Demand (mgd)
BRWA-Forest	2.10	3.78
BRWA Lakes- High Point	0.50	1.00
BRWA-Bedford City/Central	1.20	2.16
WVWA- Westlake	1.50	3.00
WVWA-Rte	0.70	1.26

220 North		
WVWA-Boones Mill	0.11	0.20
<b>Total:</b>	<b>6.11</b>	<b>11.4</b>

### 7. Alternatives Reviewed:

BRWA included a Preliminary Engineering Report entitled “Lakes-Bedford-Forest Water Supply Evaluation, Bedford County, Virginia” by Anderson & Associates (January 13, 2011) within Tab 7 of the JPA (Documentation of Need) that analyzed the technical and financial feasibility of several alternative approaches to providing water service throughout all of BRWA’s service areas. The alternatives that were evaluated included two approaches to providing service to the Forest service area and three alternatives to providing service to Bedford City.

**Table 4: Alternatives Considered by BRWA for Providing Water to the Forest and Bedford City areas**

Alternative	Purpose	Description
A1	Service to Forest	Continue to purchase from City of Lynchburg
A2	Service to Forest	Deliver water from the Lakes service area along Rtes 122 and 460
B1	Service to Bedford City	Bedford City continues to supply & maintain its own system
B2	Service to Bedford City	Deliver water from the Lakes service area along Rte 122
B3	Service to Bedford City	Purchase water from City of Lynchburg and deliver along Rte 460

The report recommended implementation of alternatives A2 and B2 as the most cost effective approach to a regional water system in the long term.

BRWA also included a site selection study for an expanded water treatment plant in the Lakes-High Point service area within Tab 6 of the JPA entitled “Smith Mountain Lake, Withdrawal Site Selection Study,” for Bedford County Public Service Authority & Western Virginia Water Authority, dated December 13, 2010, by Anderson & Associates, Inc. This study compared five potential locations and ranked them based on six primary criteria; environmental, site availability, site access, site development, water quality, and zoning. Sites 1, 2, and 3 were located on the Franklin County side of Smith Mountain Lake and would have required construction of new intakes and water treatment plants. Site 4 includes the existing intake location with a proposed treatment plant site on currently private property. Site 5 includes the existing intake location with a proposed treatment plant site on Bedford County property. Sites 4 and 5 (existing intake location) scored the highest in the environmental category and Site 5 was

ranked the highest among all categories. The report recommended that Site 5 should be used for the intake and plant expansion project.

Both the Region 2000 and Roanoke Valley Alleghany Regional Commission (RVARC) Water Supply Plans contained recommendations for expansion of the current Smith Mountain Lake intake and water treatment plant capacity in the Lakes-High Point service area in a fashion similar to the Site 5 alternative.

Based upon staff's review of the alternatives analysis and site selection study conducted by the applicant, use of the existing intake site is the least environmentally damaging, practicable alternative in light of the overall project purpose.

## **8. Water Withdrawal Volumes:**

### Water Withdrawal Volumes Requested in JPA

The applicant requested authorization of the following withdrawal volumes based upon the water demand projected for the Year 2028:

- Proposed maximum instantaneous withdrawal: 12,500 gpm (2\*average daily\*(24/16))
- Proposed average daily withdrawal: 6 mgd
- Proposed maximum daily withdrawal: 12 mgd (2\*average daily)
- Proposed maximum monthly withdrawal: 270 MG (1.5\*average daily\*30)
- Proposed maximum annual withdrawal: 2190 MG (average daily\*365)

### Return Flow / Consumptive Use

A significant portion of the BRWA Lakes-High Point service area and all of the WWA service areas are located within the drainage area of Smith Mountain Lake. However, all of the wastewater associated with the proposed demand would serve areas with either septic tanks or non-discharging wastewater plants. Although a significant percentage of this wastewater would ultimately discharge as ground water baseflow to the lake or to streams that drain to the lake, the time lag between withdrawal, recharge and ultimate discharge to surface water would be very large. It is not likely that water withdrawn from the lake during the summer dry season or a significant drought period would return to the lake as ground water baseflow during the same season or drought period.

The remaining portion of the BRWA Lakes-High Point service area, all of the Bedford City/Central service area and approximately two-thirds of the Forest service areas are located in the Goose Creek or Big Otter River drainage basins, which discharge to the Roanoke River downstream of Smith Mountain Lake. The Bedford City wastewater system, which covers most of the Bedford City/Central BRWA service area, discharges to the Big Otter River. The Bedford



City wastewater service area generally coincides with the area covered by the Bedford City/Central water service area.

Approximately one-third of the Forest service area is located within the James River basin. Water supplied from SML to the Forest service area would presumably end the purchase of water from Lynchburg, which withdraws from the James River. This could result in a net decrease of water withdrawn from the James River basin. Wastewater within the Forest service area is discharged via septic systems or, in some areas, via sewers to Lynchburg's wastewater system and ultimately to the James River.

Therefore, except for the amount of flow sent to the City of Bedford's wastewater discharge, the proposed BRWA withdrawals (as well as other withdrawals from the lake) should be considered 100% consumptive for the purposes of evaluating the effects of the water withdrawal during the drought of record period.

The water sent from SML to the portion of the Forest service area located within the James River basin represents an inter-basin transfer pursuant to § 62.1-44.15 because 1) it involves the transfer of water out of the Roanoke River basin, which flows to another state (North Carolina), and 2) all of the transferred water represents an expanded withdrawal from SML. In the case of inter-basin transfers, the statute requires the applicant to supply the following information in support of the transfer:

1. an analysis of alternatives to such a transfer
2. a comprehensive analysis of the impacts that would occur in the source and receiving basins
3. a description of measures to mitigate any adverse impacts that may arise
4. a description of how notice shall be provided to interested parties

BRWA provided a description of the alternatives considered (see above).

Smith Mountain Lake is part of the Smith Mountain Hydroelectric Project (Smith Mountain Project). The Smith Mountain Project (SMP) is currently licensed by the Federal Energy Regulatory Commission (FERC) as a hydropower generation facility owned by American Electric Power (dba Appalachian Power Company, or APCO). A cumulative impact analysis of the potential effects of water withdrawals upon Smith Mountain lake levels and SMP release rates (and therefore downstream flows) was conducted as part of the SMP FERC relicensing effort. The current FERC license was issued on December 15, 2009 (FERC No P-2210). The SMP also has a current VWP permit (VWP #08-0572) that has special conditions that are consistent with the conditions of the FERC license. It was determined during the relicensing and repermitting process that consumptive public supply withdrawals from the project (Smith Mountain and Leesville lakes) totaling 12.5 mgd would not have a significant effect upon the operation of the SMP. Because approximately two-thirds of the Forest service area lies within the Roanoke River basin, the portion of the 2.10 mgd AADF justified for the Forest service area that would be effectively transferred to the James River basin would probably be less than the 2.0 mgd criterion for a North Carolina Interbasin Transfer Certificate.

The effects upon the receiving basin (James River) would consist of a decrease in direct withdrawals by the City of Lynchburg to supply the Forest service area. Because there would be no overall change to the wastewater flow within the sewered areas within this water service area, the existing WWTP discharge to the James River would presumably remain the same, causing a net benefit to the receiving basin. Therefore, no adverse impacts are anticipated to either basin. Notice to interested parties will be incorporated into the public noticing for the application.

There is a concern regarding flow sent to the Central SA because all of this flow is taken out of the SMP drainage area (Roanoke River above Leesville Dam) and is therefore all consumptive with respect to the SMP. If one assumes that 1) a linear increase in withdrawals for service areas within the SMP drainage between reported 2011 data and the projected end-of-permit demands, & 2) that the Rte 220 waterline extension is not built until the later years of the 15-year permit term, then during approximately 2019 50% of the Central service area demand (0.60 mgd, or ~28 MG during a peak month) could equal roughly one-third of the total Roanoke Basin BRWA withdrawals (approximately 2 mgd). Of course how flows to the Central service area will increase is unknown, but it is possible that once the pipe is there, the SML intake may supply much of the Town of Bedford (Central service area) demand, at least during short term periods like droughts.

As mentioned above, about one-third of the Forest service area is within the James River basin and therefore some of the water transferred to this service area represents an inter-basin transfer. However, this one-third appears (from photoimagery) to be the most developed (next to Lynchburg), suggesting that more than one-third of the water transferred to the Forest service area would go to the James Basin. The threshold for a North Carolina Interbasin Transfer Certificate is 2.0 mgd. It's unlikely that over 90% (2.0 mgd/2.10 mgd) of the water sent to Forest would go to the James Basin, but it could be close. With the same assumptions as above, 50% of the Forest end-of-permit average annual demand of 2.10 mgd is approximately equal to one-third of the total withdrawals. As with the Central service area, once the pipeline is there, it's possible that a large portion of the SML withdrawals would be going to the James Basin, at least for short periods. Therefore, monitoring of the flows to the Central and Forest service areas should ultimately be carried out at a monthly frequency.

**Table 5: Comparison of BRWA water withdrawals from Smith Mt. Lake for service areas within and outside of SMP area**

Service Area	2011 AADF withdrawals from SML mgd	2011 Max Monthly <sup>2</sup> (MG)	"2019" AADF mgd <sup>1</sup>	"2019" Max Monthly <sup>2</sup> (MG)	AADF end-of-permit (mgd)	End of Permit Max Monthly <sup>2</sup> (MG)
Sum of WVWA & Lakes-High Pt (total demand within SMP)	0.48	21.96	1.34	61.31	2.81	128

Central	0.00	0.00	0.66	30.20	1.20	55
<b>Subtotal of Withdrawals within Roanoke Basin</b>	<b>0.48</b>	<b>21.96</b>	<b>2.00</b>	<b>91.50</b>	<b>4.01</b>	<b>183</b>
Forest	0.00	0.00	1.07	48.95	2.10	96
<b>TOTAL WD</b>	<b>0.48</b>	<b>21.96</b>	<b>3.07</b>	<b>140.45</b>	<b>6.11</b>	<b>280</b>

1: linear increase in WD assumed between 2011 and end of permit (RT 220 extension not yet built)

2: AADF \* 1.5 \*  
30.5

### Conservation/drought operations

During the last BCPSA permit reissuance cycle, staff noted that Part I.D.11 in current permit 96-0707 is a condition that would allow DEQ to reopen the permit to require implementation of specific conservation measures when minimum releases from the SMP are reduced. The triggers that reduce downstream releases to the Roanoke River during drought conditions were finalized in the reissued FERC license for the SMP. At the time of reissuance, it was premature to assume that the same triggers would be appropriate for implementing conservation. The reopener condition would allow DEQ to revisit the issue after the FERC license was issued, if necessary.

The Region 2000 Water Supply Plan includes a description of the Bedford County Drought Response and Water Conservation Plan. The purpose of the plan is to provide for the declaration of the official stages of water supply shortages and for the implementation of voluntary and mandatory water conservation measures by BRWA. The BCPSA Drought Response and Water Conservation Plan was approved on December 16, 2008 (from BCPSA website, accessed October 26, 2012).

BCPSA supplied projected demands both with and without long-term conservation measures within the original JPA, indicating a 10% reduction in demand from projections without conservation. Subsequent evaluation of those demands was carried out using the lower demand totals submitted assuming the incorporation of long-term conservation measures. However, a detailed plan specifying how long-term conservation measures are to be implemented was not submitted. A permit condition was included that requires the submittal of a water demand management plan specifying how the 10% reduction will be accomplished.

### Cumulative Impact Analysis

The applicant stated in the JPA that the proposed withdrawal rate would comprise a small percentage of both the summer monthly median and annual average daily stream flow rates (as measured prior to installation of the SMP at gauging station 02057500 just downstream of Smith Mountain dam on the Roanoke River). The estimated one-day averaged, adjusted low flow rate

at this site (using the same data), with a 200 year return period, is 51.7 cfs (Austin, Samuel H, et al, *Low-Flow Characteristics of Virginia Streams*, USGS SIR 2011-5143). Therefore, the accepted end-of-permit peak day flow demand of 11.4 mgd (17.6 cfs) is about 34% of the lowest estimated flow rate for the basin.

A cumulative impact analysis of the potential effects of water withdrawals upon Smith Mountain lake levels and SMP release rates (and therefore downstream flows) was conducted as part of the SMP FERC relicensing effort. The current FERC license was issued on December 15, 2009 (FERC No P-2210). The SMP also has a current VWP permit (VWP #08-0572) that has special conditions that are consistent with the conditions of the FERC license. It was determined during the relicensing and repermitting process that consumptive public water supply withdrawals from the project (Smith Mountain and Leesville lakes) totaling 12.5 mgd would not have a significant effect upon the operation of the SMP according to the new FERC license.

The Water Management Plan developed during relicensing by APCO for the SMP was based upon a hydrologic model that forecasts SML lake levels based upon the historic record of inflows, as well as other inputs, including withdrawals. The model input was set up so that the input daily withdrawal rate was unchanged throughout the simulation period of more than 40 years. The same withdrawal rate was used for each season through both wet and dry (drought) years and therefore no adjustment for seasonal variations in withdrawal rates was made. The effects of water withdrawals upon lake levels and downstream flows were examined during this process by determining the number of “trigger events” that occurred during a group of simulations with withdrawal inputs that varied from zero to 25 mgd. All of the water withdrawn was considered to be for consumptive and for public supply uses. A “trigger event” is a low SML lake level condition that represents drought periods. Increases in total net withdrawals did not result in significant differences in lake elevations in simulated normal and wet periods, but did cause noticeable lake elevation differences during dry periods (see graph on page 433 of P-2210 Flood & Drought Management Low Flow Operating Protocol Report). The evaluation process resulted in a modeling protocol (HL-8) that allowed for a net withdrawal from the project waters (Smith Mountain Lake and Leesville Lake) of 12.5 mgd. Because the evaluation process determined that a total net withdrawal of 12.5 mgd was protective of lake levels and ultimately downstream flows during drought periods, this total net withdrawal rate must be considered to represent the lake withdrawal that would occur during a drought. Staff believes that actual lake withdrawal rates will fluctuate between wet, normal and dry conditions and that withdrawal rates during dry periods will be greater than normal. Therefore the SMP allowable total net withdrawal rate of 12.5 mgd represents the total net (peak) withdrawal rate during drought conditions and is not an average annual rate.

The total reported and permitted maximum daily withdrawals from the SMP lakes (Smith Mountain and Leesville) are currently less than 12.5 mgd (Table 6). Applying a peak month factor of 1.5 to the requested BRWA AADF of 6.0 mgd (plus 5% for plant losses) and assuming that the other existing or permitted SML withdrawals would operate at maximum daily rates results in a potential total withdrawal from the SMP of 11.59 mgd during a drought period, which is less than the 12.5 mgd net withdrawal limit.

Therefore the cumulative impact analysis that was conducted for the SMP relicensing process was considered to be sufficient to estimate the potential cumulative impacts to existing beneficial uses and existing water users. However, staff conducted a simplified analysis of the potential effects of total net withdrawals during a drought period upon SMP lake levels. Staff included withdrawals from two unpermitted golf course facilities (Waterfront and Mariners Landing) because much of their withdrawals are used to irrigate and promote consumptive transpiration of turf grass, particularly during dry periods. The staff modeling analysis is attached to this fact sheet (Attachment A).

**Table 6: Recent reported and current permitted maximum daily withdrawals from SMP lakes (Smith Mountain and Leesville)**

Facility	Highest Recent (2007-2011) Max Daily Flow (mgd)	Highest Recent (2007-2011) Max Monthly Flow (MG)	Avg over Highest Recent Max Month (mgd)	Permitted Max Daily Flow (mgd)	Potential Max Daily Flow during a Drought (mgd)
BRWA Lakes-High Point	0.84	14.85	0.48	2.99	9.45
Waterfront GC	1.00	8.00	0.26	Not permitted	1.00
Mariners Landing	0.24	3.10	0.10	Not permitted	0.24
Pittsylvania County-Leesville intake (not yet installed)	0.00	0.00	0.00	0.90	0.90
<b>Total:</b>	<b>2.08</b>	<b>25.95</b>	<b>0.84</b>	<b>3.89</b>	<b>11.59</b>

Based upon the results of the analysis, staff determined the proposed project as limited in the draft permit, will protect existing beneficial uses while meeting the applicant's statement of need.

#### Permit Withdrawal Limitations

The permit limits surface water withdrawals to the requested average and maximum daily rates. Capital improvements in the form of 1) a new regional Water Treatment Plant and 2) new waterline extensions are required in order to provide the demand for the requested withdrawals. Therefore, the permit contains limits on the withdrawal rates that increase based upon completion of capital improvements. Table 7 lists five withdrawal tiers. The allowable withdrawal limits increase from tiers 1 through 4 as milestones are reached. Tier 1 contains allowable withdrawal limits corresponding to the demands justified for the Lakes-High Point and

Westlake service areas (for which major water line extensions are not needed). Tier 2 includes the Tier 1 demands, plus those for the Rte 220 North and Boones Mill services areas in Franklin County. This tier requires either 1) completion of a waterline extension from the WVWA-Westlake service area to Rte 220 North in Franklin County, or 2) an amendment to the existing Water Sale and Purchase Agreement dated December 1, 2010 between BRWA and WVWA stipulating that WVWA will own at least 0.6 mgd of the capacity of the proposed Smith Mountain Lake Regional Water Treatment Plant. Tier 3 includes the Tier 2 limits, plus the Bedford/Central service area demands and requires completion of the Route 122 South Waterline (Moneta to Bedford) Extension. Tier 4 includes the Tier 3 limits, plus the Forest service area demands and requires completion of the Route 460 East (New London to Bedford) Waterline Extension. Tier 5 includes the justified demands for the Lakes-High Point, Westlake, Bedford/Central and Forest service areas, less the justified demands for WVWA 220 North and WVWA Boones Mill service areas. This tier requires a reduction in allowable withdrawal limits if either the waterline extension from the WVWA-Westlake service area to Rte 220 North in Franklin County, or the amendment to the existing Water Sale and Purchase Agreement between BRWA and WVWA as described above are not completed by June 30, 2020 (the expiration date of the current agreement).

Tier	Description	AADF <sub>1</sub>	Maximum Daily Withdrawal (mgd) <sub>2</sub>	Maximum Annual Withdrawal (MG) <sub>3</sub>	Maximum Monthly Withdrawal (MG) <sub>4</sub>
1	Lakes-High Pt + Westlake	2.00	4.62	769	96
2	Tier 1 + Rte 220N & Boones Mill, requires either waterline extension or amended purchase agreement	2.81	5.84	1080	135
3	Tier 2 + Bedford/Central, requires waterline extension to Bedford	4.01	8.34	1541	193
4	Tier 3 + Forest; requires waterline extension to Forest	6.00	12.00	2306	288
5	Tier 3 limits reduced by amount equal to Rte 220N & Boones Mill demands if either 1) waterline not completed or 2) purchase agreement not amended by June 30, 2020.	5.30	11.02	2037	255

1: Average annual daily flow

2: ((AADF + 5% for plant losses) \* 1.8 peak day factor) + 10% margin of safety

3: (AADF + 5% for plant losses) \* 366 days per year

4: ((AADF + 5% for plant losses) \* 1.5 peak month factor) \* 30.5 days per month

## 9. Water Supply Plan Review:

The JPA was coordinated with Water Supply Planning staff on October 24, 2012, who responded on the same day. The project is located within the area covered by both the RVARC and the

Region 2000 Water Supply Plans. Both of these plans were developed in accordance with the Local and Regional Water Supply Planning Regulation 9VAC25-780.

The proposed project was identified as the preferred alternative for Bedford County, the City of Bedford and Franklin County in the RVARC Water Supply Plan. The Region 2000 Water Supply Plan also considered expansion of the BRWA intake and water treatment capacity as a preferred alternative for Bedford County. The information submitted in the JPA is consistent with these plans. The applicable sections of the plans were considered in staff's evaluation of the proposed project.

### **10. Surface Water Impacts:**

#### Impacts associated with the major modification

The permit authorizes a permanent impact to 30,000 square ft (0.69 acre) of open water due to the construction of two new surface water intakes within the existing easement. Any potential impacts related to the construction of the planned new regional water treatment plant were not considered in the application and are not authorized as part of this permit.

Water quality impacts are expected to be temporary and minimal provided the permittee abides by the conditions of the permit. A loss of state waters shall occur. However, the impacts have been avoided and minimized to the greatest extent practicable.

### **11. Compensation for Unavoidable Impacts:**

**Staff did not require compensation for impacts to open water because the impacts are minimal and there will not be a loss of open water acreage or functions and values.**

### **12. Site Inspection:**

A site visit was conducted for this project on September 14, 2012. A summary of the site inspection is located in VWP Permit File No. 97-0707.

### **13. Relevant Regulatory Agency Comments:**

As part of the application review process, DEQ contacted the appropriate state regulatory agencies. Any relevant agency comments were addressed in the VWP individual permit Part I - Special Conditions. Therefore, the staff anticipates no adverse effect on water quality or fish and wildlife resources provided the applicant adheres to the permit conditions.

#### **Summary of State Agency Comments and Actions**

By email dated July 24, 2012 and September 26, 2012, comments were requested from the following state agencies: Virginia Department of Game and Inland Fisheries (DGIF), Virginia Department of Conservation and Recreation (DCR), Virginia Department of Health (VDH) and the Virginia Marine Resources Commission (VMRC). Failure to provide comments within 45 calendar days of the DEQ request for comments infers that the agency has no comments on the project activities.

VDH: The Office of Drinking Water responded on August 20, 2012 with no comments.

VMRC: VMRC responded on November 1, 2012 that the intake location is located over a man-made area of Smith Mountain lake and does not fall within their jurisdiction.

DGIF: DGIF responded on September 24, 2012 with several comments. No listed wildlife species or resources are currently documented under DGIF jurisdiction from the project area. Therefore, no adverse impacts upon such species or resources are expected. DGIF supports the proposal to install a 1mm mesh screen on the intake. However, DGIF recommended that in order to best protect aquatic residents from impingement and entrainment associated with the intake, that the intake velocities not exceed 0.25 fps. Modeling data concerning the potential impacts upon flows downstream of SMP were initially requested. However this request was rescinded via email on October 24, 2012 after it was documented that the modeling during SMP FERC relicensing was sufficient as long as total project consumptive withdrawals remain less than 12.5 mgd.

DCR: DCR responded on September 4, 2012 with comments from the DCR Divisions of Natural Heritage and Stormwater Management.

The Division of Natural Heritage searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in DCR's files, natural heritage resources have not been documented in the project area. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The Division commented that the current activity will not affect any documented state-listed plants or insects and that there are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

The Division of Stormwater Management commented that projects involving land-disturbing activities equal to or greater than 10,000 square feet must comply with the Virginia Erosion and Sediment Control Law and all applicable regulations adopted in accordance with that law.

Staff coordinated the comments from DGIF and DCR with the applicant and the applicant's consultant via email on October 9, 2012.

### **Summary of Federal Agency Comments and Actions**



U.S. Army Corps of Engineers (USACE):

The USACE requested additional information from the applicant via an email dated March 31, 2011 to Anderson & Associates, Inc (copy to DEQ). Information regarding wetlands and streams along proposed waterline extensions was requested, along with color exhibits of JPA figures 1 and 3. This information was also requested by DEQ via letter to Anderson & Associates, Inc on May 10, 2011. The applicant responded that the waterline extensions are not being requested as part of this JPA and therefore the only surface water area that will be affected is that within the existing intake buoy area (150 ft by 300 ft).

The USACE issued a Preliminary Jurisdictional Determination for the project on February 22<sup>nd</sup>, 2013. The USACE also issued a Nationwide Permit 7 verification on February 22<sup>nd</sup>, 2013, with the condition that no work is to be performed between February 15 and June 15 of any year, as per the AEP-FERC Shoreline Management Plan for the SMP.

Federal Energy Regulatory Commission (FERC):

Smith Mountain Lake is part of the Smith Mountain Hydroelectric Project (Smith Mountain Project). The Smith Mountain Project (SMP) is currently licensed by FERC as a hydropower generation facility owned by APCO. FERC must approve any request made by BRWA to utilize project waters for non-project activities (e.g., public water supply). APCO leads the process of requesting such approval from FERC. On October 3<sup>rd</sup>, 2012 staff met with APCO and BCPSA representatives to discuss BCPSA's application to FERC through APCO to utilize project waters. During this meeting Appalachian Power staff expressed their opinion that FERC will require inclusion of all interested stakeholders in their approval process. The FERC approval process can be concurrent with the VWP permitting process.

**14. Public Involvement during Application Process:**

Pre-Application

In accordance with 9 VAC 25-210-75.B.3 of the VWP Permit Program regulations, those who intend on submitting an application for a new or expanded major surface water withdrawal provide an opportunity for public comment on the proposed project, and shall assist in identifying public concerns or issues prior to filing a VWP individual permit application. The regulation also says that if the potential applicant receives a request for a public information meeting, at least one meeting must be held.

The applicant published a public notice regarding the application in February 2011, sent letters describing the project to 18 adjacent landowners, and held a public meeting regarding the project on February 15, 2011. A summary of the public comments received during this hearing was provided in the JPA (Tab 3). Several responses from adjacent landowners were also included in the JPA.

Riparian/Adjacent Landowner and Local Government Notification

Tab 5A of the JPA dated September 12, 2011, and revised October 11, 2011, provides information parcels, ownership, and mailing address for the properties on which the project falls.

Staff verified the information provided for landowners and concurred that the information provided meets the requirements for obtaining landowner information from the local government tax roles.

Staff obtained information regarding approximately 200 riparian landowners located adjacent to the impact area and within one-half mile downstream of the proposed intake expansion from the Bedford County GIS Coordinator and from the Franklin County Commissioner of Revenue GIS website during August, 2012. Staff notified these landowners by letter dated August 17, 2012. Local governments (Bedford County and Franklin County) were notified by letter dated September 4, 2012.

Notifications of riparian and adjacent landowners and local governments were conducted in accordance with DEQ's Guidance Memorandum No. 11-2005 (Revised Local Government, Riparian Property Owner, Adjacent Property Owner or Resident, and General Public Notification Procedures for VPDES, VPSA and VWP Permit Applications and Draft Permits).

Staff received responses to the notification letter from 12 individuals between August 22, 2012 and October 6, 2012. Staff returned calls and emails to all respondents as soon as possible after receipt. Most of those who responded were concerned about future opportunities for public input. Several commented on their concern regarding the effect of more withdrawals upon already low lake levels. One respondent requested that staff visit the site and their property with them. Staff accepted and included the location into the site visit that was conducted on September 14, 2012.

Staff received 7 letters returned by the U.S. Postal Service that were marked undeliverable.

### **15. Public Comments received during Comment Period:**

The public notice was published in the Lynchburg News & Advance, The Smith Mountain Eagle, and The Bedford Bulletin on July 18, 2013, with the 30-day public comment period ending on August 19, 2013. In response to the public notice, comments from 25 respondents were received, one of which requested a public hearing.

Twenty-one of the total of twenty-two written comments were received via email from citizens in the Smith Mountain Lake area. These comments are summarized below:

- Confusion regarding the maximum daily and maximum annual withdrawal limits in the permit. Belief that the draft permit would allow a constant daily withdrawal of up to 12 million gallons per day (mgd) throughout the year.
- Concern that increased water withdrawals will lower water elevations in Smith Mountain Lake during drought periods, negatively impacting recreational uses and property values
- Concerns regarding existing and future water demands on the Roanoke River and their impact upon Smith Mountain Lake levels.

- Concerns that the withdrawal of water from the James River Basin to supply the BRWA Bedford Central and Forest service areas is a more cost effective and sustainable water supply alternative than withdrawing additional water from Smith Mountain Lake.

Detailed written comments were also received from a single respondent, Bedford Weaving, Inc. who sent a digital file and a letter with written comments. During the 30-day public comment period, Bedford Weaving also requested an extension of the comment period so that they would have more time to review information and provide comments. The comment period was not extended, however, because detailed comments on many similar or more complex projects have commonly been received within the standard 30-day public comment period. A summary of the comments provided by Bedford Weaving, Inc follows below:

- Concern that the application and draft permit do not address the specifics of how the Town of Bedford's existing water supply and treatment system will be incorporated within the new BRWA overall water system. Water from the High Point Intake Site at Smith Mountain Lake may, after treatment and distribution, may not be compatible with customer specifications
- Concern that the proposed modification is part of a larger "single and complete" project and that the proposed water withdrawal intake expansion does not have "independent utility" as defined by 9 VAC 25-660-10; 9 VAC 25-670-10; 9 VAC 25-680-10; and 9 VAC 25-690-10, therefore all of the applicant's planned regional water system projects should be authorized by a single VWP permit
- Concern that the Town of Bedford's water supply system was excluded from BRWA's accounting of existing sources available to meet projected needs
- Concern that WVWA should be a co-applicant because the allocation of water to a non-applicant (Western Virginia Water Authority, or WVWA) is not consistent with 9 VAC 25-210 et seq. and State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia) and because waterline extensions in Franklin County that are needed to fulfill BRWA's total requested demands are part of an overall "single and complete" project
- Concern that the tiered withdrawal limits described in Condition I. D of the draft permit are vague and should be revised so that the limits increase when required capital improvements have been completed, rather than decrease if they are not completed. Also, conditions I.D. 2-4 requiring reductions in withdrawal limits if waterline extensions are not completed by certain dates are unenforceable and inappropriate because 1) the details of what constitutes completion of the waterline extensions is not defined and contained in the draft permit, and 2) completion of a water transmission line does not ensure that the water will be used
- Concern that modification of the permit may be inappropriate and that a new permit may be required because 1) information included with the application for permit modification indicates that the existing High Point water treatment plant may be decommissioned, thereby discontinuing withdrawals from the existing permitted intake, and 2) an action to issue the permit with conditions, deny the permit, or conduct a public meeting or hearing was not taken within 120 days of the application being deemed complete
- Concern that the projected demands submitted with the application did not include long-term conservation measures as required by 9 VAC 25-210-115 B.2 and recommendations that DEQ require 1) the implementation of long-term water conservation measures that are capable of reducing the 30-year projected demand by 15% compared to projected demand

without conservation measures, 2) demand management practices for the reduction of water system losses, and 3) water reuse and reclamation activities

- Concern that the proposed requirement in Condition I.D.13 for submittal of a monitoring plan for water withdrawals and transfers for post-permit DEQ approval conflicts with 9 VAC 25-210-90 F.1 because the general public should be able to review and comment on specific monitoring methodologies for measuring water withdrawals and transfers
- Concern that the methods used for monthly monitoring of flows as required by Conditions I.D.9-12 may be inadequate and that direct flow measurements should be considered
- Belief that Condition I.D.12 relating to the delivery of water from the City of Lynchburg to the Forest or Bedford service areas is not applicable because the purchase of water from the City of Lynchburg for use within BRWA's service areas was an alternative that was not selected as a long-term option
- Suggestion regarding a rewording of the specification of monitoring accuracy in Condition I.D.8
- Belief that the Voluntary Settlement between the City of Bedford and the County of Bedford was likely invalid from the time of its execution, meaning that the BRWA is not a legal entity and cannot be issued a VWP permit

Staff considered the written comments received and prepared responses to the comments (see Attachment B). A public hearing was not held for this permit modification because a hearing was not required.

### **15. Changes in Permit Part I - Special Conditions Due to Public Comments:**

Staff revised portions of the draft permit in response to some of the written comments. The portions of the draft permit revised in response to public comments are summarized below:

- Parts I.D.1 through I.D.4 were revised so that the maximum allowable withdrawal limits increase as capital improvements are completed, rather than decrease if they are not completed. Requirements for written certification of the completion of capital improvements (waterline extensions) were also inserted.
- Parts I.D.8 and I.D.13 were revised as suggested to clarify the specification of flow meter accuracy
- Part I.D.13 was also revised to remove a reference to monitoring of withdrawals because this condition refers only to monitoring and reporting of water transfers, rather than withdrawals
- A new condition (Part I.D.18) was inserted to require the submittal of a water demand management plan that specifies how long-term water conservation measures will be implemented.

### **16. Special Conditions:**

The following conditions were developed to protect instream beneficial uses, to ensure compliance with applicable water quality standards, to prevent significant impairment of state

waters or fish and wildlife resources, and to provide for no net loss of wetland acreage and function through compensatory mitigation and success monitoring and reporting.

***Section A Authorized Activities***

Nos. 1 through 3 address the activities authorized by this permit, including impact types and limits.

***Section B Permit Term***

Nos. 1 and 2 address the permit term and reissuance process to ensure that all permit conditions are completed.

***Section C Standard Project Conditions***

No. 1 addresses the requirement for the minimization of adverse impacts to in-stream and off-stream beneficial uses.

No. 2 addresses the minimization of adverse effects on navigation.

No. 3 is a time of year condition recommended by DGIF to minimize potential adverse impacts to fish during spawning season.

No. 4 ensures that dredging and filling operations during intake expansion will minimize stream bottom disturbances and turbidity.

No. 5 through 7 provide requirements and limitations on the entry of various materials (including concrete, fill, fuels, lubricants, and untreated stormwater runoff) into state waters.

No. 8 requires temporary disturbances to surface waters during construction to be avoided and minimized to the maximum extent practicable and the restoration of such temporary disturbances.

No. 9 prohibits the violation of Water Quality Standards in surface waters as a result of project activities

Nos. 10 through 15 set forth all reporting requirements concerning construction, monitoring, compensation, and restoration as required by current law and regulations.

***Section D Water Withdrawal, Water Intake, Water Conservation, Monitoring and Reporting Conditions***

No. 1 establishes the maximum allowable withdrawal rates to protect instream and offstream beneficial uses. The maximum allowable withdrawals area scaled, with 4 separate tiered limits that depend upon completion of the capital improvements required for overall demand to increase. A fifth tier requires a reduction in allowable withdrawal limits if either the waterline extension from the WVWA-Westlake service area to Rte 220 North in Franklin County, or the amendment to the existing Water Sale and Purchase Agreement dated December 1, 2010, between the permittee and WVWA as described above are not completed by June 30, 2020 (the expiration date of the current agreement).

- No. 2 specifies the requirements for Tier 2 withdrawal limits, which includes written certification of either 1) the completion of a waterline extension to the Rte 220 North service area in Franklin County, or 2) the amendment of the existing water sale and purchase agreement between BRWA and WVWA. Written certification must be submitted to DEQ within 30 days of the completion of either task. It contains a further stipulation that if the purchase agreement is amended before the expiration date of the current agreement (June 30, 2020), the amended agreement must be submitted to DEQ for review to ensure that the allocation of capacity meets the goals of the Smith Mountain Project Water Management Plan.
- No. 3 specifies the requirement for Tier 3 withdrawal limits, which includes written certification to DEQ that the main water lines servicing the Lakes-High Point and Bedford/Central service areas have been connected so that water withdrawn from the Smith Mountain Lake intake can be sent to the Bedford/Central service area if and when needed. Written certification must be submitted to DEQ within 30 days of the completion of the waterline connections.
- No. 4 specifies the requirement for Tier 4 withdrawal limits, which includes written certification to DEQ that the main water lines servicing the Lakes-High Point and Bedford/Central service areas have been connected so that water withdrawn from the Smith Mountain Lake intake can be sent to the Bedford/Central service area if and when needed. Written certification must be submitted to DEQ within 30 days of the completion of the waterline connections.
- No. 5 contains the screen size and intake velocity limits which reduce impingement and entrainment of aquatic organisms.
- No. 6 requires the permittee to mark the intake location to avoid a hazard to boats.
- No. 7 requires as-built drawings of the completed intake structure(s).
- Nos. 8, 15 and 16 require monitoring and reporting of water withdrawals to protect all beneficial uses.
- Nos. 9 through 12 require monitoring of the transfers of water between BRWA and WVWA service areas, or water purchased from the City of Lynchburg, in order to gather information regarding the transfers of treated water between BRWA service areas to assist in determining whether and to what extent the demands projected for those service areas are being met by raw water withdrawals from Smith Mountain Lake.
- No. 13 requires the submittal of a monitoring and reporting plan for approval by DEQ to record water transfers to each of the separate service areas from the Smith Mountain Lake intake and from Lynchburg to BRWA's service areas.
- No. 14 requires conservation measures to protect minimum instream flows during declared drought emergencies.
- No. 17 requires specific conservation measures to be taken during Trigger 3 drought conditions that affect the operation of the Smith Mountain Project.
- No. 18 requires the submittal for DEQ approval of a water demand management plan that specifies how long-term water conservation measures will be implemented.

## **16. General Conditions:**

General Conditions are applied to all VWP individual permits, as stated in the VWP Permit Program regulation.

**17. General Standard:**

This project may result in minimal, temporary impacts to beneficial uses related to the propagation and growth of aquatic life as defined in the General Standard. Provided the permittee abides by the conditions of the permit, no substances shall enter state waters in concentrations, amounts or combinations that would contravene established standards or interfere with beneficial uses or are inimical or harmful to human, animal, plant, or aquatic life.

**18. Staff Findings and Recommendations:**

- The proposed activity is consistent with the provisions of the Clean Water Act and State Water Control Law, and will protect beneficial uses.
- The proposed permit addresses avoidance and minimization of wetland impacts to the maximum extent practicable.
- The effect of the impact will not cause or contribute to significant impairment of state waters or fish and wildlife resources.
- The proposed permit conditions address no net loss of wetland acreage and function through compensatory mitigation.
- This permit is proposed to prevent unpermitted impacts.
- The draft permit reflects the required consultation with and full consideration of the written recommendations of VMRC, VDH, DCR and DGIF.

Staff recommends VWP Individual Permit Number 96-0707 be modified as proposed.

Approved:

  
\_\_\_\_\_  
Director, Division of Land Protection and Revitalization

9-20-13  
\_\_\_\_\_  
Date

## **Attachment A**

### **Virginia DEQ Modeling Support Summary Request to Modify VWP Permit 96-0707**

#### **JPA 11-0359 Bedford County PSA Smith Mountain Lake Project**

##### **Background and Summary**

The Bedford Regional Water Authority (BRWA) proposes to expand the existing intake structure at the High Point Water Intake site on Smith Mountain Lake (SML) in Bedford County from its currently permitted, maximum daily rate of 2.99 million gallons to a maximum daily rate of 12 million gallons. Smith Mountain Lake is part of the Smith Mountain Hydroelectric Project (Smith Mountain Project). The Smith Mountain Project (SMP) is currently licensed by the Federal Energy Regulatory Commission (FERC) as a hydropower generation facility owned by American Electric Power (dba Appalachian Power Company). A cumulative impact analysis of the potential effects of water withdrawals upon Smith Mountain lake levels and SMP release rates (and therefore downstream flows) was conducted during 2008 as part of the SMP FERC re-licensing effort. It was determined during the re-licensing process (concluded in 2009) that consumptive withdrawals from the lake totaling 12.5 mgd would not have a significant effect upon operation of the SMP according to the new FERC license. SMP operations in accordance with the current FERC license and VWP permit conditions are therefore protective of downstream beneficial uses.

The modeling conducted during this process demonstrated that lake withdrawals up to 25 mgd did not significantly affect SMP operations during normal and wet conditions, but did have some effect during drought conditions. The available information indicates that the model input was set up so that the daily withdrawal rate was unchanged throughout the simulation period of more than 40 years. The same withdrawal rate was used for each season through both wet and dry (drought) years and therefore no adjustment for seasonal variations in withdrawal rates was made. It is a reasonable assumption that actual lake withdrawal rates would fluctuate between wet, normal and dry conditions and that withdrawal rates during dry periods would be greater than normal. Therefore the SMP allowable total net withdrawal rate of 12.5 mgd represents the total net withdrawal rate during drought conditions and is not an average annual rate.

The total reported and permitted maximum daily withdrawals from the SMP lakes (Smith Mountain and Leesville) are currently less than 12.5 mgd (Table 1). The SMP modeling analysis included only public water supply withdrawals. However, withdrawals from two unpermitted golf course facilities (Waterfront and Mariners Landing) were included in this analysis because much of their withdrawals are used to irrigate and promote consumptive transpiration of turf grass, particularly during dry periods.

This analysis consisted of a simplified, conservative conceptualization of the SMP lakes and estimated the potential drop in elevation of Smith Mountain Lake due to net withdrawals for 4 different scenarios over a 120-day hypothetical drought period. Based on this analysis, current facilities have the potential to drop lake levels between 0.45 to 0.54 inches (approximately 0.05 ft) over an extended drought period. If the total net withdrawals reached 12.5 mgd over the same



drought period, the affect upon lake levels could be between 2.73 and 3.23 inches (approximately 0.25 ft).

**Table 1: Recent reported and current permitted maximum daily withdrawals from SMP lakes (Smith Mountain and Leesville)**

Facility	Highest Recent (2007-2011) Max Daily Flow (mgd)	Highest Recent (2007-2011) Max Monthly Flow (MG)	Average over Highest Recent Max Month (mgd)	Permitted Max Daily Flow (mgd)
BRWA Lakes-High Point	0.84	14.85	0.48	2.99
Waterfront GC	1.00	8.00	0.26	Not permitted
Mariners Landing	0.24	3.10	0.10	Not permitted
Pittsylvania County-Leesville intake (not yet installed)	0.00	0.00	0.00	0.90
<b>Total:</b>	<b>2.08</b>	<b>25.95</b>	<b>0.84</b>	<b>3.89</b>

### Analysis

Staff conducted a simplified analysis of the potential effects of total net consumptive withdrawals upon Smith Mountain Lake elevations during a severe drought period. Assumptions made for the analysis were:

- SML and Leesville Lake act as a single “run of river” impoundment, without pump-back from Leesville Lake to SML
- releases equal inflows
- a four month (120-day) drought period
- the stage-storage data provided by AEP for the SMP provides an acceptably accurate estimate of lake area for each foot of lake elevation

The drop in lake elevation due solely to net withdrawals was estimated for each of a series of starting lake elevations using the following equation:

$X*Y*\{3.07ac\text{-ft}/\text{million gallons}\} / \{Z\}* \{12\text{ inches}/\text{ft}\}$ ; where

- X = the number of days during the drought period
- Y = the total net withdrawal rate in million gallons per day
- Z = the surface area of the lake that corresponds to the starting elevation based upon the stage-storage relationship (acres)

This equation was solved for each one-foot increment in SML pool elevation (and therefore lake surface area) between a maximum of 795 ft NGVD and a minimum of 785 ft NGVD, using the available stage-storage relationship. The calculation was carried out for several withdrawal scenarios. The scenarios and results are listed in Table 2.

**Table 2: Smith Mt Lake elevation drops due to direct lake withdrawals during a 120-day drought period.**

Scenario	Total Net Withdrawals (mgd)	Minimum Drop (inches)	Maximum Drop (inches)
1: Highest Reported Recent Max Daily Withdrawals	2.08	0.45	0.54
2: Current Permitted / Reported Max Daily Withdrawals	5.13	1.12	1.33
3: Potential Max Monthly Allocations + Reported Max Daily Withdrawals	11.59	2.53	3.00
4: Total Allowable Net Withdrawals	12.50	2.73	3.23

Description of scenarios:

Scenario 1: Highest Reported Recent Maximum Daily withdrawals from 2007-2011:

- BRWA: 0.835mgd
- Waterfront golf course (non-permitted): 1.0 mgd
- Mariners Landing (non-permitted): 0.24 mgd
- Pittsylvania Leesville intake: 0.00 mgd
- Total = 2.08 mgd.

Scenario 2: Current Permitted Max Daily withdrawals+ Highest Reported Recent Maximum Daily withdrawals from 2007-2011 for non-permitted facilities:

- BRWA: 2.99 mgd
- Pittsylvania Leesville intake: 0.90 mgd
- Waterfront golf course (non-permitted): 1.00 mgd
- Mariners Landing (non-permitted): 0.24 mgd
- Total = 5.13 mgd.

Scenario 3: Potential Maximum Monthly allocated withdrawals + Highest Reported Recent Maximum Daily withdrawals from 2007-2011 for non-permitted facilities:

- BRWA: Max monthly allocation of 288 MG/month / 30.5 days/month = 9.45 mgd
- Pittsylvania Leesville intake: 0.90 mgd
- Waterfront golf course (non-permitted): 1.00 mgd
- Mariners Landing (non-permitted): 0.24 mgd

- Total = 11.59 mgd

Scenario 4: Total SML project withdrawals due to consumptive use incorporated into SML Project Water Management Plan over period of FERC license: 12.5 mgd

The maximum drop of 3.23 inches (0.27 ft) would occur due to a total net withdrawal rate of 12.5 mgd if the 120-day drought period began when the SML lake level was already at an extremely low (and previously unreached) elevation of 785 ft NGVD (see appendix below containing all calculations). If the SML elevation was at full pool (795 ft NGVD) at the beginning of the 120-day drought period, the drop due to a 12.5 mgd total net withdrawal rate would be 2.73 inches (about 0.23 ft).

Based on this analysis, current facilities have the potential to drop lake levels between 0.45 to 0.54 inches (approximately 0.05 ft) over an extended drought period. If the total net withdrawals reached 12.5 mgd over the same drought period, the affect upon lake levels could be between 2.73 and 3.23 inches (approximately 0.25 ft). These results are consistent with those from the sensitivity analysis of total net withdrawals conducted by AEP during the SMP FERC relicensing process (see graph on page 433 of P-2210 Flood & Drought Management Low Flow Operating Protocol Report).

If the same analysis is conducted assuming a constant net evaporation rate from the lake of 7 inches/month (0.23 inches/day) over the same 120 day period, the following ranges of lake elevation drop due to both evaporation and net withdrawals would be, not surprisingly, significantly greater.

**Table 3: Smith Mt Lake elevation drops due to both lake evaporation at a constant rate of 7 inches/month and direct lake withdrawals during a 120-day drought period.**

Scenario	Total Net Withdrawals (mgd)	Minimum Drop (inches)	Maximum Drop (inches)
Highest Reported Recent Max Daily Withdrawals	2.08	28.05	28.14
Current Permitted / Reported Max Daily Withdrawals	5.13	28.72	28.93
Potential Max Monthly Allocations + Reported Max Daily Withdrawals	11.59	30.13	30.60
Total Allowable Net Withdrawals	12.5	30.33	30.83

**Appendix: Calculations to estimate potential SMP lake elevation drop due to total net consumptive withdrawals and estimated evaporation:**

Equation:

$X*Y*\{3.07ac-ft/million\ gallons\} / \{Z\}*\{12\ inches/ft\}$ ; where

- X = the number of days during the drought period
- Y = the total net withdrawal rate in million gallons per day
- Z = the surface area of the lake that corresponds to the starting elevation based upon the stage-storage relationship (acres)

Calculations:

A. Drop due only to lake withdrawals (inches):

Beginning Elevation (ft NGVD)	Beginning Lake Area (ac)	Scenario 1	Scenario 2	Scenario 3	Scenario 4
795	20260	0.45	1.12	2.53	2.73
794	19803	0.46	1.15	2.59	2.79
793	19514	0.47	1.16	2.63	2.83
792	19229	0.48	1.18	2.66	2.87
791.5	19087	0.48	1.19	2.68	2.90
791	18945	0.49	1.20	2.70	2.92
790	18540	0.50	1.22	2.76	2.98
789	18387	0.50	1.23	2.79	3.01
788	18112	0.51	1.25	2.83	3.05
787	17640	0.52	1.29	2.90	3.13
786	17570	0.52	1.29	2.92	3.15
785	17100	0.54	1.33	3.00	3.23

B. Drop due to both lake evaporation at constant rate of 0.23 inches/day plus lake withdrawals (inches):

Beginning Elevation (ft NGVD)	Beginning Lake Area (ac)	Scenario 1	Scenario 2	Scenario 3	Scenario 4
795	20260	28.05	28.72	30.13	30.33
794	19803	28.06	28.75	30.19	30.39
793	19514	28.07	28.76	30.23	30.43
792	19229	28.08	28.78	30.26	30.47
791.5	19087	28.08	28.79	30.28	30.50
791	18945	28.09	28.80	30.30	30.52
790	18540	28.10	28.82	30.36	30.58
789	18387	28.10	28.83	30.39	30.61
788	18112	28.11	28.85	30.43	30.65
787	17640	28.12	28.89	30.50	30.73
786	17570	28.12	28.89	30.52	30.75

785	17100	28.14	28.93	30.60	30.83
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## **Attachment B**

### **DEQ Responses to Public Comments Request to Modify VWP Permit 96-0707**

#### **JPA 11-0359 Bedford County PSA Smith Mountain Lake Project**

#### **Summary of Public Comments and Staff Responses**

#### **Proposed Modification of Virginia Water Protection Individual Permit No. 96-0707**

#### **Expansion of the existing intake structure at the High Point water intake site on Smith Mountain Lake in Bedford County**

***I. Comments received that voiced concerns or opposition to the draft modification of VWP Permit No. 96-0707 that are within the purview of the Virginia Water Protection (VWP) Permit Program are provided below, along with Staff responses.***

- 1. Confusion regarding the maximum daily and maximum annual withdrawal limits in the permit. Belief that the draft permit would allow a constant daily withdrawal of up to 12 million gallons per day (mgd) throughout the year.*

The draft permit contains withdrawal limits that restrict withdrawals to no more than 2306 million gallons (MG) within a single year, no more than 288 MG within a single month, and no more than 12.00 million gallons per day (mgd) within a single day. The draft permit also limits withdrawals to an average annual daily volume of 6.00 mgd. The daily maximum limit of 12.00 mgd allows the permittee to meet short term water demands that are higher than the average daily demand. The permittee is restricted from withdrawing the daily maximum volume for an extended period of time due to the maximum monthly and annual volume limits in the draft permit. For instance, pumping at a rate of 12 mgd for more than 24 days within a single month would exceed the maximum allowable monthly withdrawal of 288 MG. Likewise, withdrawals of 288 MG for more than 8 months within a calendar year would exceed the maximum allowable annual total withdrawal of 2306 MG. The daily and monthly maximum withdrawal limits allow the permittee to meet short term peak period and seasonal demands that must be balanced by lower than average withdrawals during off-peak months.

The draft permit includes a condition (Part I.D.17) requiring the permittee to assess their system's vulnerability to drought conditions and adjust water use to prolong available water supply whenever a Trigger 3 drought event is declared for the Smith Mountain Project. This condition is intended to limit the number of days of above average withdrawal rates during

drought periods. In addition, if a drought emergency is declared by either Bedford County, Franklin County, or by the Commonwealth of Virginia for the Smith Mountain Lake area, the draft permit requires implementation of mandatory restrictions on water use, which would further restrict withdrawal rates from the lake.

2. *Concern that increased water withdrawals will lower water elevations in Smith Mountain Lake during drought periods, negatively impacting recreational uses and property values*

The water elevations in Smith Mountain Lake have historically fluctuated between a historic low of 787.0 ft above mean sea level (msl) and a historic high of 799.8 ft msl and will continue to fluctuate due to factors such as hydroelectric power generation, precipitation, temperature, evaporation, and releases to provide flow to users downstream. Data relating lake elevation to water storage volume indicate that the volume of water contained within the lake between the normal pool elevation of 795.0 ft msl and 787.0 ft msl is approximately 49.25 billion gallons, or about 8208 times the average annual daily withdrawal volume authorized by the draft permit.

The potential impacts to Smith Mountain Lake from water withdrawals were estimated by two separate efforts. A cumulative impact analysis of the potential effects of water withdrawals upon Smith Mountain Lake levels and release rates (and therefore downstream flows) was conducted by Appalachian Power Company during 2008 as part of the Federal Energy Regulatory Commission (FERC) re-licensing effort for the Smith Mountain Project (SMP). Their long-term modeling analysis determined that constant, daily consumptive withdrawals from the lake totaling 12.5 mgd would not have a significant effect upon operation of the SMP, including lake levels and downstream beneficial uses. A second analysis conducted during the review of this current permit application by DEQ, was to estimate the potential effect of consumptive withdrawals upon lake levels. This analysis indicated that water levels would decrease a maximum of approximately 3 inches due to a continuous daily withdrawal rate of 12.5 mgd throughout a 120-day drought period in which the beginning lake level was at 785 ft (two feet below the historical minimum). It also indicated that, over the same 120-day drought period and beginning water level, the increase in BRWA's withdrawal rate from the currently permitted maximum daily limit of 2.99 mgd to 9.44 mgd (the proposed maximum monthly withdrawal limit divided by 30.5 days per month) would lower water levels a maximum of approximately 1.7 inches.

Based upon the analyses conducted, staff determined that the potential effect of the withdrawal on water elevations is minimal. Staff has determined there is reasonable assurance that the activity, as proposed to be authorized by the draft permit, will not adversely impact existing beneficial uses, provided the applicant complies with all permit conditions. Based upon staff's review and modeling, the conditions in the draft permit are protective of existing beneficial uses.

3. *Concerns regarding existing and future water demands on the Roanoke River and their impact upon Smith Mountain Lake levels.*

A cumulative impact analysis of the potential effects of water withdrawals upon Smith Mountain Lake levels and Smith Mountain Project (SMP) release rates (and therefore downstream flows) was conducted by Appalachian Power Company during 2008 as part of the Federal Energy Regulatory Commission (FERC) re-licensing effort for the SMP. Their long-term modeling analysis determined that constant, daily consumptive withdrawals from the lake totaling 12.5 mgd would not have a significant effect upon operation of the SMP, including lake levels and downstream beneficial uses. With the proposed maximum monthly limit of 288 MG, the cumulative withdrawals from both Smith Mountain Lake and Leesville Lake during a severe drought period are anticipated to be less than 12.5 mgd. Future requests to withdraw additional water from Smith Mountain Lake or any other upstream water body will be required to demonstrate that the activity would not cause adverse impacts to instream and offstream existing beneficial uses, including recreational uses.

Staff has determined there is reasonable assurance that the activity, as proposed to be authorized by the draft permit, will not adversely impact existing beneficial uses, will not violate applicable water quality standards, and will not cause or contribute to significant impairment of state waters or fish and wildlife resources, provided the applicant complies with all permit conditions. Based upon staff's review and modeling, the conditions in the draft permit are protective of existing beneficial uses.

4. *Concerns that the withdrawal of water from the James River Basin to supply the BRWA Bedford Central and Forest service areas is a more cost effective and sustainable water supply alternative than withdrawing additional water from Smith Mountain Lake.*

The applicant provided analyses of several alternatives for supplying water to the Bedford Central and Forest service areas. These alternatives included continuing to purchase water withdrawn from the James River from the City of Lynchburg, purchasing additional James River water to supply the Bedford Central service area and providing water withdrawn from Smith Mountain Lake to both service areas. The analyses determined that the most cost-effective alternative would be an interconnected regional system with the ability to supply water to these service areas from Smith Mountain Lake. Both the Region 2000 and Roanoke Valley Alleghany Regional Commission (RVARC) Water Supply Plans contained recommendations for expansion of the current Smith Mountain Lake intake and water treatment plant capacity to provide water for an interconnected regional water supply system for Bedford County. The authors of the RVARC plan noted in their analysis of potential water supply alternatives that interbasin transfer considerations and competition for water use are significant factors against the use of the James River as a water supply alternative for the RVARC region, which includes Bedford County.

The cumulative impact analysis conducted by Appalachian Power Company in support of the re-licensing effort for the SMP demonstrated that withdrawals from Smith Mountain Lake at levels greater than proposed by the applicant would be sustainable. The State Water Control

Law does not authorize the State Water Control Board to prohibit the selection of a water source for a particular withdrawal activity, provided that the proposed water withdrawal activity can be conducted without causing adverse impacts to existing beneficial uses.

Staff has determined there is reasonable assurance that the activity, as proposed to be authorized by the draft permit, will not adversely impact existing beneficial uses, will not violate applicable water quality standards, and is the least environmentally damaging practicable alternative in terms of impacts to water quality and fish and wildlife resources, provided the applicant complies with all permit conditions.

5. *Concern that the proposed modification is part of a larger “single and complete” project and that the proposed water withdrawal intake expansion does not have “independent utility” as defined by 9 VAC 25-660-10; 9 VAC 25-670-10; 9 VAC 25-680-10; and 9 VAC 25-690-10, therefore all of the applicant’s planned regional water system projects should be authorized by a single VWP permit.*

The definitions of “independent utility” in 9 VAC 25-660-10; 9 VAC 25-670-10; 9 VAC 25-680-10; and 9 VAC 25-690-10 pertain to VWP General Permits for activities involving impacts to less than one-half acre of nontidal wetlands, open water, and up to 300 linear feet of nontidal stream bed, the construction and maintenance of utility lines, the construction and maintenance of Virginia Department of Transportation (VDOT) or other linear transportation projects, and the construction and maintenance of development activities and certain mining activities, respectively. VWP General Permits authorize specified categories of activities proposing surface water impacts within a defined impact threshold and are only provided the opportunity for public comment and participation during development and/or modification of the VWP General Permit conditions in the VWP regulations. VWP General Permits were only developed for those activities specified by § 62.1-44.15:21.D of the Code of Virginia, which does not include surface water withdrawals. Surface water withdrawal activities, unless excluded by 9 VAC 25-210-60.B of the VWP regulations, require a VWP Individual Permit. The review and issuance of VWP Individual Permits are governed by § 62.1-44.2 et seq. of the Code of Virginia and 9 VAC 25-210 et seq. of the VWP regulations. Neither this law nor this regulation contains a definition or requirement for “independent utility” for a “single and complete” project. Therefore, the project described for this permit modification, as required by 9 VAC 25-210-80.B(1)(f), is the expansion of the existing water withdrawal intake in order to withdraw the additional volumes requested. The State Water Control Law and VWP regulation does not require issuance of a single VWP permit that encompasses all of the activities included in the applicant’s future water system expansion plans.

It was recognized during review of the application to modify the permit that capital improvements in the form of 1) a new regional water treatment plant and 2) new waterline extensions to the Bedford Central and Forest service areas are required in order to provide the demand needed for the requested withdrawals. Therefore, the permit contains limits on the withdrawal rates that depend upon completion of each of the waterline extensions (Condition I.D. 1). Staff believes that the withdrawal limits in the draft permit will prevent the allocation of more water than is justified by actual demands.



6. *Concern that the Town of Bedford's water supply system was excluded from BRWA's accounting of existing sources available to meet projected needs*

Upon approval of the Reversion Agreement between the City of Bedford and Bedford County by the Bedford County Board of Supervisors in August, 2012, the projected future demands were revised to include the Bedford City (Central) service area to account for the requirement in the Reversion Agreement for an interconnection between the City's (now Town) water system and the BRWA water system. However, BRWA did not increase their requested allocation due to the uncertainty in how water from the Town's sources and Smith Mountain Lake would be distributed to new interconnected service areas. Through previous correspondence with the City (now Town) of Bedford regarding a planned rehabilitation of the Stoney Creek Reservoir, as well as the Region 2000 and Roanoke Valley-Alleghany Regional Commission (RVARC) Regional Water Supply Plans, staff had already acquired information concerning the Town's existing water supply sources. Staff was also aware of concerns regarding the ability of the Town's water system to meet system demand during drought conditions. Therefore, staff agrees with the statements made in both water supply plans that the use of Smith Mountain Lake water would provide additional reliability to the City's (now Town) public water supply system, at least during periods of extreme drought.

7. *Concern that Western Virginia Water Authority (WVWA) should be a co-applicant because the allocation of water to a non-applicant (WVWA) is not consistent with 9 VAC 25-210 et seq. and State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia) and because waterline extensions in Franklin County that are needed to fulfill BRWA's total requested demands are part of an overall "single and complete" project.*

Surface water withdrawal activities, unless excluded by 9 VAC 25-210-60.B of the VWP regulations, require a VWP Individual Permit. As described in the response to comment number 2 above, the review and issuance of VWP Individual Permits are governed by § 62.1-44.2 et seq. of the Code of Virginia and 9 VAC 25-210 et seq. of the VWP regulations, neither of which contain a requirement for a "single and complete" project.

BRWA submitted a purchase agreement between BRWA and WVWA that documents WVWA as a wholesale customer of BRWA. WVWA purchases water from BRWA's High Point Water Treatment Plant for use in Franklin County. It was recognized during review of the application to modify the permit that capital improvements in the form of a new water treatment plant and a waterline extension to the Rte 220 North service area in Franklin County are required in order to provide the total demand needed for a portion of the requested withdrawal. Therefore, the permit contains limits on the withdrawal rates that depend upon either 1) completion of the waterline extension, or 2) an amendment to the existing purchase agreement stipulating that WVWA will own at least 0.6 mgd of the capacity of the proposed Smith Mountain Lake Regional Water Treatment Plant. (Condition I.D 1). Staff believes that the withdrawal limits in the draft permit will prevent the allocation of more water than is justified by actual demands.

8. *Concern that the tiered withdrawal limits described in Condition I. D of the draft permit are vague and should be revised so that the limits increase when required capital improvements have been completed, rather than decrease if they are not completed. Also, conditions I.D. 2-4 requiring reductions in withdrawal limits if waterline extensions are not completed by certain dates are unenforceable and inappropriate because 1) the details of what constitutes completion of the waterline extensions is not defined and contained in the draft permit, and 2) completion of a water transmission line does not ensure that the water will be used.*

Staff agrees with the comment that the tiered withdrawal limits would be clearer if the limits increase as the capital improvement milestones are reached. Therefore, Condition I.D.1 was revised to include five tiers. The first four tiers contain increasing limits that are conditioned upon completion of the capital improvement milestones. Tier 5 contains a set of reduced limits that would be in effect if the milestones required to supply water to the Rte 220 North and Boones Mill service areas are not met by the expiration date of the current purchase agreement between BRWA and WVWA (June 30, 2020).

Staff agrees with the comment that the definition of the completion of waterline extension was not included in the draft permit. Therefore, Conditions I.D. 2, Condition I.D. 3 and Condition I.D.4 have been revised to include specific details defining completion of these improvements. Completion of the required waterline extensions has been defined as written certification by the permittee that the water mains between service areas have been connected. The conditions require submittal of written certification to DEQ within 30 days of the completion of the connections. Although no permit action can ensure that allocated water is actually used, Staff believes that certification of the interconnections of these water systems will ensure that the allocated water can be used. If this water is not used, the BRWA will need to justify the need for that water again at permit renewal.

9. *Concern that modification of the permit may be inappropriate and that a new permit may be required because 1) information included with the application for permit modification indicates that the existing High Point water treatment plant may be decommissioned, thereby discontinuing withdrawals from the existing permitted intake, and 2) an action to issue the permit with conditions, deny the permit, or conduct a public meeting or hearing was not taken within 120 days of the application being deemed complete.*

The project described for this permit modification involves the expansion of the existing water withdrawal intake by installing new intake structures alongside the existing structure in order to withdraw the volumes requested. As stated previously under Nos. 5 and 7, the State Water Control Law and VWP regulation do not require issuance of a single VWP permit that encompasses all of the potential activities included in the applicant's future water system plans. Potential decommissioning of the High Point water treatment plant and any eventual removal of the existing intake structure is not a part of the modification. Staff continued to work with the permittee to develop a draft permit modification beyond 120 days after the application was declared complete. However, the VWP regulation governing review and issuance of Individual Permits (9 VAC 25-210 et seq) does not require submittal of a new application if the 120-day deadline is not met.

Staff agrees with the commenter's recommendation that the issuance date of the original permit should be included in the modified permit. The draft permit Cover Sheet and Fact Sheet have been modified to clarify the dates of the permit term.

10. *Concern that the projected demands submitted with the application did not include long-term conservation measures as required by 9 VAC 25-210-115 B.2 and recommendations that DEQ require 1) the implementation of long-term water conservation measures that are capable of reducing the 30-year projected demand by 15% compared to projected demand without conservation measures, 2) demand management practices for the reduction of water system losses, and 3) water reuse and reclamation activities.*

The applicant submitted both projected demands with and without conservation measures as required by 9 VAC 25-210-115 B.2 on page 24 of their Joint Permit Application (JPA). Projected demands without conservation were for an average daily withdrawal of 7.39 mgd; projected demands with long-term conservation measures were projected to be 6.7 mgd. BRWA included a 10% reduction in long-term demands due to planned conservation measures. Therefore, subsequent review of the applicant's projected demand projections were carried out with the understanding that the projections included long-term conservation measures.

Staff believes that a planned 10% reduction is a reasonable and acceptable goal for long-term water demand management which would include reductions in water system losses. Staff also believes that 9 VAC 25-210 et seq. does not provide the authority for the State Water Control Board to require water reuse and reclamation activities as part of a water demand management plan.

Staff, however, agrees with the comment that the application does not contain a detailed plan that specifies long-term conservation measures to achieve the goal of a 10% reduction in demand. Therefore, the draft permit has been revised to include a condition (Part I.D. 18) requiring submittal of a water demand management plan that contains specific goals, objectives, methods and milestones for achieving a 10% reduction in long-term water demand within 180 days of issuance of the modified permit.

11. *Concern that the proposed requirement in Condition I.D.13 for submittal of a monitoring plan for water withdrawals and transfers for post-permit DEQ approval conflicts with 9 VAC 25-210-90 F.1 because the general public should be able to review and comment on specific monitoring methodologies for measuring water withdrawals and transfers.*

BRWA plans to interconnect its service areas so that it will have the ability to transfer treated water to or from different service areas at different times within the interconnected system. The purpose of conditions I.D.9 through I.D.13 is to gather and report on information regarding the transfers of treated water between BRWA service areas to assist in determining whether and to what extent the demands projected for those service areas are being met by

raw water withdrawals from Smith Mountain Lake. Staff believes that the reporting of treated water volumes transferred between the service areas of a water system is not equivalent to the monitoring of a parameter as described by 9 VAC 25-210-90 F.1. In addition, the information to be included in the plan was outlined in the draft permit and available for public review and comment. Staff does not agree that the methodologies used to obtain that information should be specified in detail within the permit because such specification would limit potential changes to methodologies as technology changes.

Staff does agree, however, that the monitoring of water withdrawals, as required by Condition I.D.8 does fall within the intent of 9 VAC 25-210-90 F.1. Therefore, condition I.D.13, which refers to transfers of treated water between service areas, has been revised to exclude the reference to water withdrawals.

*12. Concern that the methods used for monthly monitoring of flows as required by Conditions I.D.9-12 may be inadequate and that direct flow measurements should be considered.*

BRWA plans to interconnect its service areas so that it will have the ability to transfer treated water to or from different service areas at different times within the interconnected system. The purpose of conditions I.D.9 through I.D.13 is to gather and report on information regarding the transfers of treated water between BRWA service areas to assist in determining whether and to what extent the demands projected for those service areas are being met by raw water withdrawals from Smith Mountain Lake. Staff considered whether direct flow measurements would be required to achieve this purpose and determined that indirect measurements and/or estimates are appropriate because an approximate accounting of the water volumes transferred is considered sufficient to determine the extent to which water withdrawn from the Smith Mountain Lake intake is being used. The information collected will not be used to determine compliance with the allowable withdrawal limits outlined in Condition I.D.1. Data obtained from the metering required by Condition I.D.8 will be used to determine compliance with Condition I.D.1.

*13. Belief that Condition I.D.12 relating to the delivery of water from the City of Lynchburg to the Forest or Bedford service areas is not applicable because the purchase of water from the City of Lynchburg for use within BRWA's service areas was an alternative that was not selected as a long-term option.*

BRWA plans to interconnect its service areas so that it will have the ability to transfer treated water to or from different service areas at different times within the interconnected system. Prior to that interconnection, however, BRWA will presumably continue to purchase water from Lynchburg for use in the Forest service area under their current contractual arrangement. Although the delivery of water withdrawn from Smith Mountain Lake to the Bedford and Forest service areas was selected as the least environmentally damaging practicable alternative, an interconnected system would still allow temporary purchases of water from the City of Lynchburg after interconnection. The purpose of conditions I.D.9 through I.D.12 is to gather information regarding the transfers of treated water between BRWA service areas to assist in determining whether and to what extent the demands

projected for those service areas are being met by raw water withdrawals from Smith Mountain Lake. Condition I.D.12 also requires the reporting of the volumes of water purchased from the City of Lynchburg for use in the Forest service area before the Route 460 East Waterline (New London to Bedford) waterline extension is operational.

*14. Suggestion regarding a rewording of the specification of monitoring accuracy in Condition I.D.8*

Condition I.D.8 requires the daily metering of water withdrawals from Smith Mountain Lake using flow totalizer technology to confirm that the withdrawals are in compliance with special conditions of this permit. This condition also contains a specification that the meters used shall produce volume determinations within plus or minus 10% of actual flows. It was suggested that this specification regarding meter accuracy should be reworded to prescribe that meter accuracy "...must be demonstrated to be +/-10% over the range of flow conditions experienced by that meter."

Staff agrees with this suggestion. Therefore, Condition I.D.8 and Condition I.D.13 have been reworded to reflect this change.

*15. Belief that the Voluntary Settlement between the City of Bedford and the County of Bedford was likely invalid from the time of its execution, meaning that the BRWA is not a legal entity and cannot be issued a VWP permit.*

According to the record, a Special Court validated the Settlement Agreement between the City of Bedford and Bedford County. BRWA filed articles of incorporation with the State Corporation Commission, which issued its certification on December 18, 2012. Staff therefore believes that BRWA is a valid permittee as defined in 9 VAC 25-210-10.

**II. A comment received that voiced concerns or opposition to the draft modification of VWP Permit No. 96-0707 that is not within the purview of the Virginia Water Protection (VWP) Permit Program is provided below along with the Staff response.**

*Concern that the application and draft permit do not address the specifics of how the Town of Bedford's existing water supply and treatment system will be incorporated within the new Bedford Regional Water Authority (BRWA) overall water system. Water from the High Point Intake Site at Smith Mountain Lake may, after treatment and distribution, not be compatible with customer specifications.*

The quality or compatibility aspects of finished or blended water that has been processed at a water treatment plant and distributed for sale are not within the purview of the VWP Permit Program. These matters are appropriately the subject of contractual negotiation between the water provider and each of their customers.

**III. Comment Received in Support of the Proposed Project**

The comment summarized below is in support of the draft modification to VWP Permit No. 96-0707. Staff did not provide a response to comments of support for the project.

*The proposed water withdrawal is insignificant with regard to lake levels. The decision should be based upon facts, not emotions.*