

132 FERC ¶ 61,236
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;
Marc Spitzer, Philip D. Moeller,
John R. Norris, and Cheryl A. LaFleur.

Appalachian Power Company

Project No. 2210-192

ORDER ON REHEARING AND CLARIFICATION

(Issued September 16, 2010)

(F) License Article 409, *Aquatic Vegetation Management Plan*, is revised by adding the following paragraph at the end of the article:

If at any time during the term of the license, the Virginia Department of Game and Inland Fisheries or the Aquatic Vegetation Technical Review Committee demonstrates that invasive species is significantly affecting fish and wildlife populations or recreation, respectively, and that additional surveys and/or control measures are needed, the Commission may direct,

Appalachian Power, after opportunity for public comment, to undertake further reasonable measures to control non-native, aggressive invasive species in project waters.

UNITED STATES OF AMERICA 129 FERC ¶ 62,201
FEDERAL ENERGY REGULATORY COMMISSION

Appalachian Power Company

Project No. 2210-169

ORDER ISSUING NEW LICENSE

(December 15, 2009)

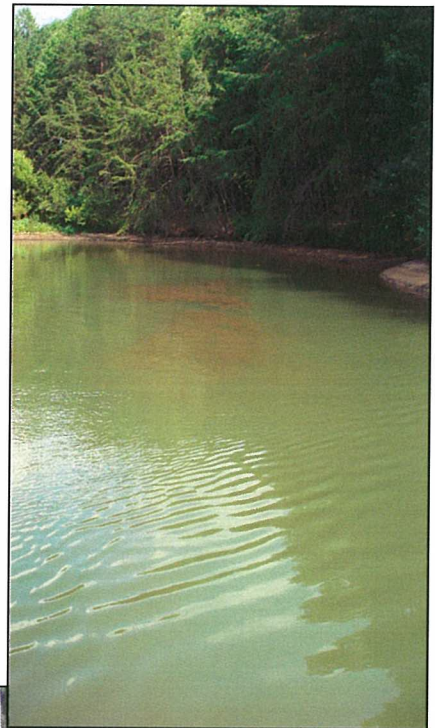
Article 409. Aquatic Vegetation Management Plan. Upon the effective date of this license, the licensee shall implement the *Aquatic Vegetation Management Plan*, filed July 15, 2008, and shall include the following modifications.

- (a) The plan shall include a provision to notify adjacent landowners prior to the treatment of invasive aquatic vegetation beds. The notification procedures (including the notification period) shall be developed after consultation with the Aquatic Vegetation Technical Review Committee.
- (b) The report filed by the Licensed Applicator shall identify the type of herbicide used in any treatments.
- (c) The plan shall include a requirement that Appalachian Power control/treat invasive aquatic vegetation beds at public boat ramps and other public areas (e.g., county and state parks, swimming areas, etc), where determined appropriate by the Aquatic Vegetation Technical Review Committee.

The approved *Aquatic Vegetation Management Plan* may not be amended without prior Commission approval.

**APPALACHIAN POWER COMPANY
SMITH MOUNTAIN PROJECT (P-2210)
AQUATIC VEGETATION MANAGEMENT PLAN**

July 2008



Summary

The Smith Mountain Project (No. 2210) is licensed to Appalachian Power Company (Appalachian) and is a pumped storage hydroelectric project located on the Roanoke River in Bedford, Campbell, Franklin and Pittsylvania counties in Virginia. The upper reservoir of the pumped storage facility is the Smith Mountain development, while the lower reservoir is the Leesville development.

The purpose of the Aquatic Vegetation Management Plan is to identify measures for addressing aquatic vegetation issues at the Smith Mountain Project over the term of the new license. The plan includes information pertaining to control methods and plan, monitoring requirements, and a permit program.

The Aquatic Vegetation Management Plan is being submitted to the FERC as part of the license application and reflects the measures that Appalachian will be responsible for as the licensee. However, there will be times when it makes sense to develop a cooperative agreement between Appalachian and other parties to manage an issue in a mutually beneficial way. These types of agreements will be outside of relicensing and may reflect additional measures that are above those required by this management plan.

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1.0 INTRODUCTION AND PROBLEM STATEMENT

Smith Mountain Lake is the upper reservoir of a pumped storage project encompassing 20,260 acres and over 500 miles of shoreline. The Smith Mountain Project is owned and operated by Appalachian Power Company (Appalachian). In 2002, Tri-County Lake Administrative Commission (TLAC), an administrative organization for the three counties surrounding Smith Mountain Lake, contracted a complete lake survey for submerged aquatic vegetation (SAV). This survey confirmed the existence of the non-native, nuisance brittle naiad (*Najas minor*) and non-native, aggressive invasive curly-leaf pondweed (*Potamogeton crispus*) in Smith Mountain Lake. Hydrilla (*Hydrilla verticillata*), a non-native aggressive invasive, was also reported as being sampled in Smith Mountain Lake during 2002. The 2002 survey was completed during a drought period when lake levels were well below normal.

As a follow-up to the 2002 survey and based on reports by local residents, TLAC contracted for additional surveys of known SAV locations during 2003, 2004, and 2005. The 2003 and 2004 survey found three species of non-native SAV, including brittle naiad, curly-leaf pondweed and aggressive invasive Brazilian elodea (*Egeria densa*). Native plants found in 2003 and 2004 included sago pondweed (*Potamogeton pectinatus*), slender pondweed (*Potamogeton pusillus*), southern naiad (*Najas guadalupensis*), nitella species (*Nitella spp.*) and chara species (*Chara spp.*). The native American elodea (*Elodea canadensis*), coontail (*Ceratophyllum demersum*) and tapegrass (*Vallisneria americana*) were also found during the 2003 survey, but not during the 2004 survey. Conversely, the native fragrant water lily (*Nymphaea odorata*) was also found during the 2004 survey, but not during the 2003 survey. The 2005 survey found non-native brittle naiad and Brazilian elodea. No other non-native SAV was found. Native SAV found during the 2005 survey included sago pondweed, slender pondweed, southern naiad, nitella, chara and fragrant water lily.

In 2006, Devine Tarbell and Associates (DTA) conducted an aquatic vegetation survey as part of a study relating to the relicensing of the Smith Mountain Project. The 2006 survey found non-native, aggressive invasive curly-leaf pondweed and non-native, nuisance brittle naiad. Native SAV found during the 2006 DTA survey included nitella species, slender and sago pondweeds, chara species and fragrant water lily. During this study effort, 29 SAV beds were located. Non-native species were found in 22 of the 29 beds. None of the 29 beds were comprised of entirely non-native vegetation and 5 of the 29 beds were comprised of entirely native vegetation. TLAC reported the discovery of substantial beds of Brazilian Elodea in one cove of Smith Mountain Lake during the 2006 growing season. No aquatic vegetation was observed at Leesville. It is believed that the water level fluctuation on Leesville Lake inhibits the establishment of SAV beds in this reservoir.

In 2007, several patches of hydrilla in varying densities were discovered in multiple locations throughout 80 acres in Crazy Horse Cove. Subsequently it was also documented in adjacent coves to the south and at Pelican Point. It should be noted that 2007 was a drought year and lake levels were below normal as experienced during 2002. During low inflow conditions such as those experienced in 2002 and 2007, it is believed

that lower water levels and increased water clarity allows sunlight to penetrate deeper, resulting in weeds becoming more abundant.

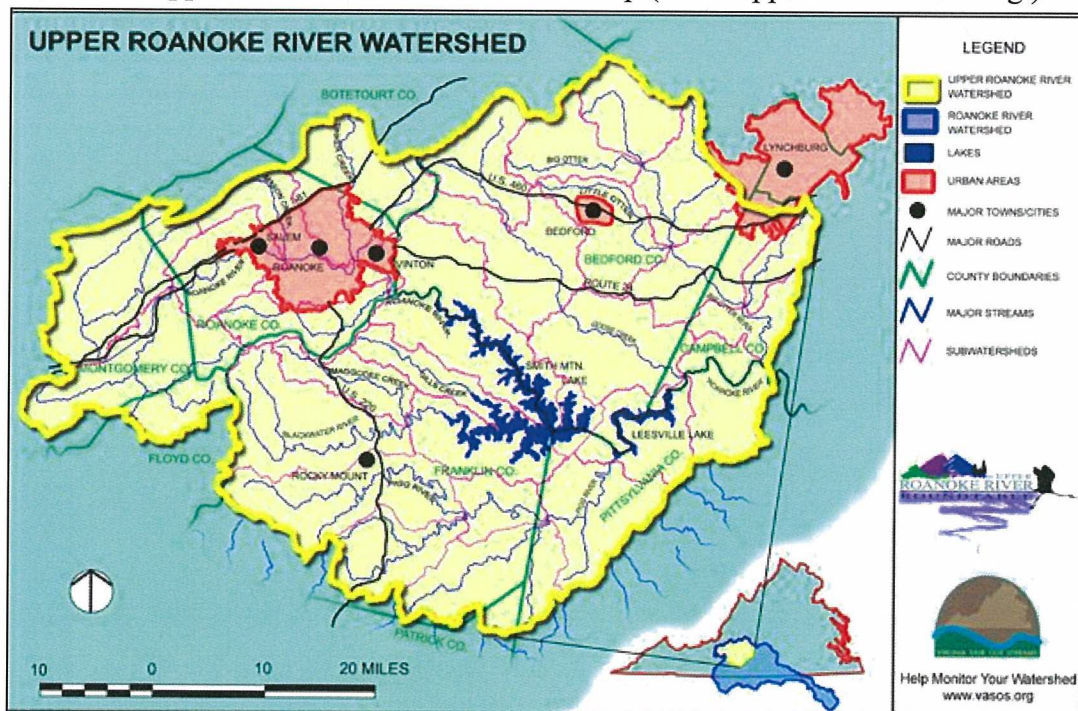
If left untreated, non-native, aggressive invasive aquatic vegetation such as hydrilla, curly-leaf pondweed and Brazilian elodea, can have an effect on recreation, the local economy, the environment and aesthetics. Recreation issues can include impacts to swimming areas, boating and personal watercraft access, bank/shoreline fishing and marina access. Economic issues can include impacts to fishing tournaments, tourism, access to marinas and restaurants, water withdrawals, property values, electricity generation, and the cost of treatment. Environmental impacts can include competition with native plants, water quality impacts, and potential impacts to adjoining ecosystems. Aquatic vegetation can also impact the aesthetic values of the reservoir.

Currently, hydrilla is the aquatic plant of primary concern at the Project. Hydrilla was verified in Smith Mountain Lake in 2007. While Smith Mountain Lake is a deep lake and is not likely to experience the same degree of hydrilla infestation as the shallower lakes in the south, there are cove areas that could become inundated.

2.0 LAKE AND WATERSHED CHARACTERISTICS

The Smith Mountain Project is located on the Roanoke River in the south-central portion of Virginia. The watershed to the Project is the upper Roanoke River which is designated as Hydrologic Unit Code 03010101 (Figure 1). The size of the Smith Mountain Lake is approximately 20,260 acres at elevation 795 feet with 500 miles of shoreline. Shoreline development consists primarily of residential development with some multi-family and commercial development. In contrast, the size of Leesville Lake is approximately 3,260 acres at elevation 613 feet with 100 miles of shoreline. The majority of the shoreline is undeveloped, with development consisting of residential and two commercial areas.

Figure 1. Upper Roanoke River Watershed Map (www.upperroanokeriver.org)



The Smith Mountain reservoir has a drainage area of 1,029 square miles while the total drainage area for the Leesville development is 1,505 square miles. (Note: The Leesville drainage area contains the Smith Mountain drainage area.) Inflows originate primarily from the Roanoke River and secondarily from the Blackwater River. The project also receives inflow from several other tributaries including Beaver Dam Creek, Gills Creek, Craddock Creek, Witcher Creek, Walton Creek and Backwater Creek. The primary inflow into Leesville Reservoir, other than the releases from Smith Mountain Dam, is from the Pigg River.

Based on Virginia Department of Environmental Quality's (VDEQ) monitoring efforts within the Smith Mountain Project and watersheds, and Virginia's Water Quality Standards (9VAC 25-260-450 Roanoke River Basin, Roanoke sub-basin) the following classifications have been assigned to Project waters:

- Smith Mountain and its tributaries within five miles of the 795 ft pool elevation are Class IV (Mountainous zone) with public water supply designation.
- Smith Mountain and its tributaries (except Roanoke River) are classified as "Nutrient Enriched Waters" (Special Standard 9 VAC25-260-350).
- Various tributaries to Smith Mountain Lake, upstream of the five-mile range, are Class III (Non-tidal), Class V (Stockable trout), and Class VI (Natural Trout) waters.
- Leesville Reservoir is Class IV (Mountainous Zone) water with public water supply designation for the reservoir only.
- Tributaries to Leesville Reservoir are Class III (Non-tidal) waters.

Water quality data collected as part of the Smith Mountain Lake Association's (SMLA) Water Quality Monitoring Program and data collected by VDEQ were reviewed for the Roanoke River arm, Blackwater River arm, mainstem of Smith Mountain Lake and Leesville Lake. The water quality data for these water body sections are summarized as follows:

Roanoke River Arm Summary:

- Chlorophyll and nutrients increased significantly as you move up the arm (towards the headwaters and away from the main body of the lake)
- Secchi decreased significantly as you move up the arm
- Fecal coliforms highest at upper end of arm
- Chlorophyll increased in upper zone from 1995 to 2005 (SMLA)
- Secchi decreased in upper zone from 1995 to 2005 (SMLA)
- Nitrate increased from 1990 to 2002 at upper 3 sampling sites (VDEQ)
- Chlorophyll increased in middle zone from 1995 to 2005 (SMLA)
- Secchi increased in middle zone from 1995 to 2005 (SMLA)

Blackwater River Arm Summary:

- Chlorophyll and nutrients increased significantly as you move up the arm (towards the headwaters and away from the main body of the lake)
- Secchi decreased significantly as you move up the arm
- Fecal coliforms highest at upper end of arm
- Chlorophyll increased and secchi decreased from 1995 to 2005 in upper zone (SMLA)
- Fecal coliforms decreased at most upstream site from 1990 to 2002 (VDEQ)
- Nitrate decreased in the arm from 1990 to 2002 (VDEQ)
- Orthophosphate increased from 1991 to 2005 at 5 downstream sites (VDEQ)
- Total phosphorus decreased from 1995 to 2005 in lower zone (SMLA)

Mainstem Smith Mountain Lake Summary:

- Chlorophyll increased significantly as you move up from the dam
- Nitrate decreased with distance as you move up from the dam
- Secchi decreased significantly as you move up from the dam (caused by most upstream site only)
- Chlorophyll increased from 1995 to 2005 in lower zone (SMLA)
- Nitrate decreased from 1990 to 2002 in arm (VDEQ)
- Orthophosphate increased from 1994 to 2005 (VDEQ)
- Secchi decreased from 1996 to 2005 (VDEQ)

Leesville Lake Summary:

- Chlorophyll decreased significantly as you move up from the dam
- Secchi decreased significantly as you move up from the dam
- Chlorophyll decreased from 1998 to 2005 (VDEQ)
- Secchi decreased from 1993 to 2003 (VDEQ)

Water is released from the Project through the Leesville development. The estimated average annual daily inflow into the Smith Mountain reservoir is 976 cubic feet per second (cfs) while the average annual daily inflow into the Leesville reservoir is estimated at 1,483 cfs. The current minimum flow required from the Leesville dam is 650 cfs, but the proposed Water Management Plan that is filed as part of Appalachian's license application calls for minimum flows that vary by month.

The water in the reservoir is used for generation, domestic water supply, recreation, agricultural purposes, irrigation for golf courses and other minor uses by residents.

3.0 BENEFICIAL USE AREAS

The following areas have been identified as beneficial use areas by the Aquatic Vegetation Work Group (the work group providing input during relicensing):

- Public access ramps
- Smith Mountain State Park (including beach)
- Water withdrawals for public use
- Franklin County Park
- Designated water ski areas
- Sites set aside for future recreational uses
- Sensitive habitat areas for wildlife and fish
- Impact Minimization Zones (IMZ) and Conservation/Environmental (C/E) shoreline classifications identified in the Shoreline Management Plan
- Designated bank fishing and fishing pier areas
- Commercial marinas and restaurants

4.0 MANAGEMENT GOALS AND OBJECTIVES

The management goals and objectives for the Aquatic Management Plan are:

1. Implement an ongoing methodology to identify non-native, aggressive invasive aquatic vegetation in the lake.
2. Manage and control non-native, aggressive invasive vegetation in the lake to minimize impacts to fish, wildlife, habitats, and recreation
3. Identify and promote native, desirable aquatic vegetation.
4. Prioritize control sites.
5. Determine control options.
6. Preserve recreation access, shoreline access
7. Establish a permitting process for treatment, monitoring locations, maintain beneficial habitat and protect public water withdrawal sites.
8. Educate the public.
9. Identify methods to prevent introduction of non-native vegetation to other areas of the lake and to prevent the introduction of other non-native species to the lake. In addition to aquatic vegetation, this could also assist in preventing the introduction of other non-native organisms (e.g. zebra mussels, etc.).
10. Encourage appropriate agencies to identify and control/eradicate potential sources of non-native, invasive aquatic vegetation and encourage legislation on a regional basis, if appropriate.

5.0 PLANT MANAGEMENT HISTORY

The following is a list of aquatic vegetation control treatments performed at the Smith Mountain Project to date by TLAC:

<u>Year</u>	<u>Location</u>	<u>Acreage</u>	<u>Vegetation Treated</u>
2002	Little Bull Run	20	Elodea, Curly Leaf Pondweed, Eurasian Milfold and Brittle Naiad
2002	Penhook Cove	10	Elodea, Curly Leaf Pondweed, Eurasian Milfold and Brittle Naiad
2002	Sommerset Cove	10	Elodea, Curly Leaf Pondweed, and Brittle Naiad
2002	Pebble Brook	3	Elodea, Curly Leaf Pondweed, and Brittle Naiad
2003	Little Bull Run	16.75	Curly Leaf Pondweed, Slender Pondweed and American Elodea
2004	Little Bull Run	17.2	Curly Leaf Pondweed
2004	Poplar Cove	2.5	Curly Leaf Pondweed
2005	Penhook cove	2.4	Curly Leaf Pondweed
2005	Cove off Tranquility Road	3.5	Curly Leaf Pondweed
2005	Cove in Waverly Subdivision	1.0	Curly Leaf Pondweed
2006	Crazy Horse Cove	45	Brazilian Elodea
2006	Becky's Creek / Poplar Cove	8	Curly Leaf Pondweed
2007	Crazy Horse Marina Cove	80	Hydrilla
2007	Pelican Point	4	Hydrilla
2007	Just Outside of Crazy Horse	3	Hydrilla
2007	Contentment Island	1	Hydrilla
2007	Lands End	1	Hydrilla
2007	Bull Run	3	Curly Leaf Pondweed
2007	Behind Bridgewater Marina	2	Curly Leaf Pondweed
2007	Bridgewater Bay	6	Curly Leaf Pondweed
2007	Becky's Creek / Poplar Cove	3	Curly Leaf Pondweed
2007	Near R-47	2	Curly Leaf Pondweed

6.0 AQUATIC PLANT COMMUNITY CHARACTERISTICS

Based on SAV surveys conducted on behalf of TLAC from 2002 to 2005, the SAV survey conducted by DTA during 2006, and confirmed local resident reports to TLAC during 2007, Table 1 below presents a list of SAV known to occur within Smith Mountain Lake.

Submerged aquatic vegetation is grouped into three separate categories. They are:

- Non-Native Aggressive Invasive;
- Non-Native Nuisance; and
- Native

Table 1. List of Non-Native Aggressive Invasive, Non-Native Nuisance and Native SAV Species known to occur in Smith Mountain Lake

Non-Native, Aggressive Invasive Species:	<ul style="list-style-type: none"> • Hydrilla • Curlyleaf pondweed • Brazilian elodea
Non-Native, Nuisance Species:	<ul style="list-style-type: none"> • Brittle naiad
Native Species:	<ul style="list-style-type: none"> • Fragrant water lily • Chara • Southern naiad • Narrowleaf pond weed • Coontail • Nitella • Sago pondweed • Canadian elodea • Slender pondweed • American elodea • Tapegrass

7.0 AQUATIC VEGETATION MANAGEMENT ALTERNATIVES

A variety of techniques are available for managing undesirable SAV, including physical, mechanical, biological and chemical control methods. An integrated approach to undesirable SAV management that produces the desired outcome and minimizes the possibility of unintended consequences requires consideration of the problem species, management goals and objectives, and the possible impacts of management activities.

A list of appropriate weed control methods will be developed and maintained by the Aquatic Vegetation Technical Review Committee as described in Section 9.3 of this plan. The list of methods will be reviewed and updated as appropriate to include new products. This review will include consultation with appropriate state agencies and other experts in the field of aquatic vegetation control. A copy of the list of methods will be made available upon request. *(Note: List removed from plan at request of Aquatic Vegetation Workgroup.)*

Table 2. Summary of Weed Control Methods and Suitability at Smith Mountain Project

Description	Advantages	Disadvantages	Suitability
Hand pulling or cutting	<ul style="list-style-type: none"> • Low cost • Minimum impact on native plants • No special equipment needed • Homeowners can do this themselves • No chemicals in the water 	<ul style="list-style-type: none"> • Labor intensive • Slow • Can spread non-native, invasives that fragment • Can't always get roots • Requires education of Homeowner for identification for all aquatic vegetation to protect native species. 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project.
Bottom barriers—panels of fiberglass, plastic sheeting, burlap, weed suppression cloth or geotextile fabrics installed before spring growing season.	<ul style="list-style-type: none"> • Site specific • Reusable • Inexpensive • 	<ul style="list-style-type: none"> • Labor intensive • Not species specific • Prevents growth of native vegetation • Potential impact to spawning habitat for littoral species if a lot of area is covered. 	<ul style="list-style-type: none"> • Possible for treating small areas such as around residential docks.
Diver harvesting—SCUBA divers use hoses attached to small suction dredges to remove plant material	<ul style="list-style-type: none"> • Can target specific species • Entire plant can be removed • No chemicals needed 	<ul style="list-style-type: none"> • Labor intensive • Costly • Slow 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project
Water level manipulation—drawdown	<ul style="list-style-type: none"> • Cost effective 	<ul style="list-style-type: none"> • Lower levels interfere with recreation / safety • Requires freezing temperatures • 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project
Sediment agitation—mechanically disturbs lake bottom to remove plants	<ul style="list-style-type: none"> • Low operating costs • Suppresses plant growth overtime 	<ul style="list-style-type: none"> • Plant fragmentation • High initial cost • May need permit 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project
Rotovation/Cultivation—underwater rototiller that tills the sediment to dislodge roots (good for water lilies and Eurasian watermilfoil)	<ul style="list-style-type: none"> • Winter treatment can minimize impacts on recreation 	<ul style="list-style-type: none"> • Plant fragmentation • Bottom disturbance • May need permit • Large machinery 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project

Table 2 Continued: Summary of Weed Control Methods and Suitability at Smith Mountain Project

Description	Advantages	Disadvantages	Suitability
Mechanical Harvesting —mower cuts plants below water	<ul style="list-style-type: none"> • Immediate plant removal • Minimum bottom disturbance • 	<ul style="list-style-type: none"> • Plant fragmentation • Disposal costs • Large machinery • Large amounts of decaying plants can cause water quality problems 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project
Sterile Grass carp	<ul style="list-style-type: none"> • Low maintenance 	<ul style="list-style-type: none"> • Permit from VDGIF required to stock • Non-discriminatory, fish will eat all plants • Cannot be contained to a given area • Impacts on native biota 	<ul style="list-style-type: none"> • Not recommended at this time. Not applicable for spot treatment. Useful only if extensive, dense beds of non-native, aggressive invasive species exist.
Other biological methods (flies, moths)	<ul style="list-style-type: none"> • Under investigation. Not a proven affective method. 	<ul style="list-style-type: none"> • Under investigation. Not a proven affective method. 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Project.
Fluridone (Sonar)	<ul style="list-style-type: none"> • Systemic kills roots and shoots • Somewhat selective for species • Few use restrictions • Low doses effective • Negligible risk to wildlife • No restrictions for fishing, swimming or consumption (don't use for crop irrigation for 30 days after application.) • Excellent for treatment of hydrilla 	<ul style="list-style-type: none"> • Long contact time required • Expensive • Restriction of use for irrigation during the lengthy treatment time 	<ul style="list-style-type: none"> • Possible for use at the Smith Mountain Project.

Table 2 Continued: Summary of Weed Control Methods and Suitability at Smith Mountain Project

Description	Advantages	Disadvantages	Suitability
<p>Glyphosate (Rodeo)— only use those glyphosate products labeled and specifically formulated for aquatic systems.</p>	<ul style="list-style-type: none"> • Systemic herbicide, kills roots and shoots • No-label restrictions on swimming and fishing • Best for emergent and shoreline weeds — Applied to plant, not to water. 	<ul style="list-style-type: none"> • Non-selective for species • Affects emergent plants only 	<p>Possible for use at the Smith Mountain Project.</p> <p>Best used for control of emergent and shoreline weeds such as cattail, reeds, rushes, smartweeds, and some floating-leaf plants like water lily and lotus. It is to be applied to the plant and not into the water. Only those glyphosate products labeled and specially formulated for aquatic systems will be allowed.</p>
<p>Endothal (Aquathol and Hydrothol)</p>	<ul style="list-style-type: none"> • Short contact time required • Low toxicity to fish (Aquathol® formulation) 	<ul style="list-style-type: none"> • Contact herbicide— does not affect underground portions • Use restrictions for water use. (Can't use as irrigation water, livestock water or in food crop areas without withholding restrictions.) • Toxic to fish (Hydrothal® formulation) • Temporary effect 	<p>Not recommended for Smith Mountain Project.</p>
<p>2,4-D (Aquaide, Aqua-Cleer, Weedar, Weed-Rhap, Weedestroy, Weedtrine)</p>	<ul style="list-style-type: none"> • Systemic herbicide • Some species specificity • Low toxicity to fish • Rapidly and completely decompose in about 3 weeks 	<ul style="list-style-type: none"> • Toxic to sediment dwelling organisms • Should not be used in water for irrigation, livestock or domestic purposes. 	<p>Not recommended for Smith Mountain Project.</p>

Table 2 Continued: Summary of Weed Control Methods and Suitability at Smith Mountain Project

Description	Advantages	Disadvantages	Suitability
Diquat (Diquat, Aqua-Clear, Aqua-Quat, Watrol, Weedtrine)	<ul style="list-style-type: none"> • Short contact time required 	<ul style="list-style-type: none"> • Contact herbicide— does not affect underground portions • Short-term efficacy • Use restrictions for water use • Toxic to aquatic invertebrates • 14-day waiting period is required by law before diquat-treated water can be used for livestock consumption, crop irrigation or drinking. • 1-day waiting period for swimming. 	Not recommended for Smith Mountain Project.
Triclopyr (Garlon, Pathfinder)	<ul style="list-style-type: none"> • Systemic • Selective for broadleaved plants • No label restrictions for swimming and fishing 	<ul style="list-style-type: none"> • Not effective on curly leaf pond weed 	<ul style="list-style-type: none"> • Under review.
Copper compounds (chelated copper, copper-sulfate (Bluestone))	<ul style="list-style-type: none"> • Short contact time required • Low costs 	<ul style="list-style-type: none"> • Potential toxicity to mollusks and fish • Accumulates in sediments • Not for rooted aquatic plants 	<ul style="list-style-type: none"> • Not recommended for Smith Mountain Lake

Note: As additional information is obtained regarding the above listed treatment options, they will be reevaluated and the listing will be revised as appropriate. As new products come on the market, they will be evaluated and added to this listing as appropriate.

8.0 INTEGRATED MANAGEMENT ACTION STRATEGY

8.1 Issuance of Permit by Appalachian to Control Aquatic Vegetation

Appalachian will issue permits under the following guidelines provided that the requirements of Section 10 of this Management Plan are met. This permit will allow for the control of aquatic vegetation within the Smith Mountain Project as specified in the terms of the permit. It does not however, eliminate the need to follow any additional applicable local, state and federal regulations in addition to the requirements of Section 10.

1. Native Aquatic Vegetation: (Fragrant water lily, Chara, Southern naiad, Narrowleaf pond weed, Coontail, Nitella, Sago pondweed, Canadian elodea, Slender pondweed, American elodea, Tapegrass)

Appalachian will only issue a permit to treat native vegetation if there is a significant impediment to navigation at the beneficial use areas listed in Section 3.0. Areas outside of beneficial use areas will be considered on a case-by-case basis.

2. Non-Native Nuisance Aquatic Vegetation: (Brittle Naiad)

Appalachian will issue permits for non-native nuisance aquatic vegetation if the vegetation is exhibiting adverse effects to the beneficial use areas or impeding recreation. Spot treatments (treatment at the dock and swim area – not entire shoreline) will be allowed for only those areas that are necessary for allowing access to docks and swim areas.

3. Non-Native Aggressive Invasive Aquatic Vegetation: (Hydrilla, Curlyleaf pondweed, Brazilian elodea)

Appalachian will issue permits for non-native aggressive invasive aquatic vegetation provided the requirements of Section 10 of this management plan are met.

8.2 Control of Aquatic Vegetation by Appalachian

Under this Management Plan, Appalachian will not treat native or non-native nuisance aquatic vegetation on the lake. One goal of this plan is to promote native vegetation; and, while not the preferred vegetation type, non-native nuisance vegetation is not aggressive and provides some habitat value.

Appalachian will consult with the VDGIF following both annual and 5-yr surveys (see Section 9.0). If, at any time during the period of the license, the VDGIF determines that hydrilla or other non-native aggressive invasive aquatic vegetation is significantly

affecting fish and wildlife populations in the project area, Appalachian will cooperate with VDGIF to identify and implement the appropriate actions.

Non-native aggressive invasive aquatic vegetation will similarly be controlled if it is significantly affecting recreation at any of the following beneficial use areas:

- Public access ramps, fishing piers and designated bank fishing areas operated by the state
- Smith Mountain State Park (including beach)
- Franklin County Park
- Future public recreational use sites as development under Appalachian's Recreation Management Plan

The determination of whether there are significant impacts to these areas will be done in consultation with the Aquatic Management Technical Review Committee that is referenced in Section 9 of this plan.

The magnitude of potential actions required can not be identified at this time and therefore it is not feasible to clearly define Appalachian's level of contribution to this effort. It is Appalachian's position that the control of non-native, aggressive invasive species is an issue that is beyond our responsibility as a licensee but Appalachian is willing to act as an equal partner with the Commonwealth of Virginia and TLAC in dealing with the issue. Such agreement to work with Commonwealth of Virginia and TLAC to implement control/removal of non-native aggressive invasive aquatic vegetation will be outside of the FERC license and can include sites other than those listed above.

8.3 Coordination with TLAC's On-going Vegetation Control Program, Other Management Plans and Implementation Schedule

Appalachian's efforts under its Aquatic Vegetation Management Plan will be coordinated with TLAC's ongoing vegetation control program. This effort will be coordinated and implemented as follows:

- 1) Prior to conducting the annual survey, Appalachian will meet with TLAC and the Technical Review Committee to review the proposed areas to be surveyed by Appalachian and to obtain TLAC's most recent survey results and/or citizen reports.
- 2) Appalachian will conduct its annual survey between mid-August and mid-September of each year starting in 2010. The survey information will be provided to Technical Review Committee within 30 days following the last survey date. Recommendations regarding treatment will be included.
- 3) Appalachian will request information related to TLAC's upcoming plans for vegetation treatment and will include this information in the annual report to the Technical Review Committee as described in Section 9.3.
- 4) Prior to conducting the 5-year survey, Appalachian will meet with the Technical Review Committee to review the proposed survey methods and schedule.
- 5) Appalachian will conduct its 5-year survey starting in 2011.

- 6) Following the 5-year survey, Appalachian will prepare a report as described in Section 9.3 for review, comment and recommendation by the Technical Review Committee.
- 7) The final 5-year report filed with the Commission as described in Section 9.3 will include a discussion of the coordination of efforts among Appalachian, TLAC and any other members of the Technical Review Committee during the preceding 5 year period.

The aquatic vegetation reports as described above will also be provided to the Habitat Technical Review Committee to provide information on locations of aquatic vegetation, the types of aquatic vegetation present and proposed treatments.

The annual habitat reports will be provided to the Aquatic Vegetation Technical Review Committee to provide information on locations of any plantings of native aquatic vegetation that is proposed as part of the Habitat Management Plan.

9.0 MONITORING AND PLAN UPDATE PROCEDURES

9.1 Full Lake Survey:

Appalachian will conduct a “full lake” survey on Smith Mountain Lake once every five (5) years starting in the year following the issuance of a new FERC license. The purpose of this survey will be to assess changes in the composition and distribution of SAV in the lakes over time. If deemed necessary, this 5-year survey may be conducted more frequently. Reasons to perform this level of survey on a more frequent basis would include, but not be limited to, evidence of the major spread of a non-native, aggressive invasive SAV.

The 5-year survey will be accomplished by utilization of combination of methods until the most economical and agreeable method is determined for use in Smith Mountain Lake. For the first 5-year survey, remote sensing along with on-water visual inspections, use of hydroacoustics, underwater videography or other scientifically valid technique as appropriate will be utilized. For the remote sensing, an airplane or helicopter may be used to survey the entire lake. Since remote sensing requires ideal surface conditions (e.g. smooth water surface, high water clarity, appropriate angle of sunlight, low cloud cover, etc.) and cannot always be effectively used, on-water visual inspections, hydroacoustics and underwater videography or other scientifically valid technique will be used to supplement the remote sensing. Included in the 5-year survey will be on-the-water survey of identified SAV beds to determine species composition. Following each 5-year survey, a report presenting the findings and condition of Smith Mountain Lake will be generated. Upon completion of the first 5-year survey, the 5-year survey methodology will be modified as appropriate.

9.2 Annual Surveys:

In between the 5-year surveys, Appalachian will survey all Beneficial Use Areas identified in Section 3.0, and all areas previously identified with non-native, aggressive

invasive aquatic vegetation and other areas of non-native aquatic vegetation as appropriate. These surveys will not only target areas more likely to become invested by non-native invasive species such as marinas, but also areas not likely to be noticed such as undeveloped shoreline at the State Park. These surveys will be conducted by on-water visual inspections and use of hydroacoustics, videography, throw rakes or other scientifically valid technique. A physical survey will also be conducted at each survey area to monitor changes in species presence and composition. In addition to the active annual SAV monitoring, Appalachian issued permits, resident reports of SAV to TLAC and TLAC treatment data will be compiled and analyzed. This passive data collection will be an additional means of SAV monitoring at Smith Mountain Lake. Following each survey, a report presenting the findings of the active and passive SAV monitoring will be generated. The annual surveys will not be completed during years of the 5-year survey. Information collection occurring between the 5-year surveys (annual monitoring) will be coordinated between Appalachian and TLAC as part of a cooperative effort.

9.3 Reporting and Consultation:

An Aquatic Vegetation Technical Review Committee will be established by Appalachian to review the annual survey information (including permits issued during the previous year) and report. The Committee will provide input on recommendations and proposed treatments. The workgroup will include representatives from Appalachian, TLAC, Virginia Department of Game and Inland Fisheries, Virginia Department of Conservation and Recreation, Virginia Department on Environmental Quality, Virginia Department of Agriculture and Consumer Services, Smith Mountain Lake Association, Leesville Lake Association, a representative from a fishing club/organization, and others with expertise in the field, as needed. The Committee will convene at least annually and on an as needed basis.

Following the 5-year survey, a report will also be forwarded to the Aquatic Vegetation Technical Review Committee. The Committee will have 30 days to review, provide recommendations on strategies, technologies, survey schedules, and comment on the report. The Committee will meet during the review period to discuss the report prior to finalization. This report will be filed with the Federal Energy Regulatory Commission along with documentation of consultation with the members of the Aquatic Vegetation Technical Review Committee.

The contents of the 5-year report will include: (a) the information and reports associated with the annual surveys preceding the 5-year survey; (b) information collected as part of the 5-year survey; (c) discussion of the coordination of efforts to control vegetation during the preceding 5-year survey as required by the license and efforts outside of the license; (d) recommendations and proposed methods for controlling aquatic vegetation at the project that require Commission review and approval; (e) the updated vegetation maps mentioned in section 9.4 of the plan; (f) any education efforts, as outlined in Section 9.5 of the plan, undertaken by Appalachian during the reporting period; and (g) consultation with the Technical Review Committee.

9.4 Updates of Mapping:

Maps showing locations of issued permits, known SAV beds and Beneficial Use Areas will be maintained and updated annually by Appalachian and presented in the annual monitoring reports.

9.5 Education

Appalachian will work with the Aquatic Vegetation Technical Review Committee to identify measures to 1) educate the public concerning aquatic vegetation, 2) prevent introduction of non-native invasive vegetation to other areas of the lake, 3) prevent introduction of other non-native invasive species to the lake.

10.0 PERMIT PROGRAM

A permit through Appalachian will be required for any treatment of SAV. Treatment options are outlined in Table 2 in Section 7.0. Treatments by any other means not outlined in Table 2 are discouraged and will only be considered following a formal review process by the Aquatic Vegetation Technical Review Committee. There is no permit fee required by Appalachian at this time but may be considered in the future. Specific requirements and conditions of the permit program are as follows:

- Any landowner or organization requesting vegetation treatment will be required to obtain a Permit Application for Aquatic Vegetation Treatment in Smith Mountain or Leesville Lakes from Appalachian or TLAC. The licensed application hired by the landowner or organization will be required to complete the application form. An example permit application is provided in Appendix A.
- Depending on the level of treatment proposed, a representative from Appalachian may require an inspection of the site prior issuing a permit.
- Only contractors licensed by the State of Virginia shall be authorized to treat vegetation using herbicides. No landowners are authorized to use herbicides or chemicals to remove vegetation, regardless of the size of the bed.
- Appalachian will periodically investigate vegetation treatment to ensure that proper techniques are being used.
- The contractor and landowner shall determine the best method for vegetation treatment at their discretion, but are only authorized to use a method provided in Table 2. All other methods will require a formal review by the Aquatic Vegetation Technical Review Committee. However, in all cases only herbicides registered by the U.S. Environmental Protection Agency may be used.
- After each vegetation treatment, the contractor is required to fill out a brief report and send it to Appalachian for a record of the treatment. An example report sheet is provided in Appendix B.
- Treatment permits for aesthetics will not be issued unless the vegetation is posing a barrier to navigation, recreation, angling, or it consists of non-native aggressive invasive vegetation.

- Each permit issued is valid for a period of 3 months, with an option to extend the life of the permit if the contractor was unable to access the bed within that time period.
- No vegetation treatment is authorized during the fish spawning season (usually mid-March through mid-June). Established weeds, native or non-native, provide protective cover for fish during this time. Nuisance vegetation does not usually reach full growth until after spawning season.

A summary of the permits issued during the previous year will be provided in the annual report.

11.0 MAPS

Maps showing the locations of Beneficial Use Areas, SAV monitoring results, citizen reported SAV (including information from TLAC and SMLA), TLAC treatment areas, and permit locations will be updated on an annual basis by Appalachian. These maps will be provided as part of the annual and five-year reports.

12.0 SOURCE DOCUMENTS

Guidance for Integrated Aquatic Vegetation Management Plans, July 2004, Washington State Department of Ecology, Publication No. 04-10-053

A Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans, January 1994, Washington State Department of Ecology, Gibbons, Maribeth V.; Gibbons, Harry L. Jr.; Sytsma, Mark D.

Pesticides and Aquatic Animals: A Guide to Reducing Impacts on Aquatic Systems, 1996, Publication 420-013, Helfrich, Louis A.; Weigmann, Diana L.; Hipkins, Patricia; and Stinson, Elizabeth R.

APPENDIX A

PERMIT APPLICATION FOR AQUATIC VEGETATION TREATMENT

**Permit Application for Aquatic Vegetation Treatment
Appalachian Power Company
Smith Mountain Lake and Leesville Lake**

APPLICANT INFORMATION:

Landowner / Organization Name: _____	Applicator / Company: _____
Lake Address: _____ <i>(no P.O. Box)</i>	Address: _____
_____	_____
Phone: _____ () _____	Phone: _____ () _____
Tax Map and Parcel #: _____	License No. _____

PERMIT INFORMATION:

New Permit Application [] Extend Existing Permit []
existing permit # _____

LOCATION:

Permit for Smith Mountain Lake [] Permit for Leesville Lake []

TREATMENT METHOD:

[] Herbicide _____
(list type of herbicide to be used)

If herbicide is being used, provide the number of anticipated applications during 3 month permit period. _____

BED DESCRIPTION:

Bed Size (square feet) _____
Distance from Landowner's shoreline (in feet) _____
Dominant Species _____ Subdominant species _____
Other species in or around the bed _____
Are there any native species within 100 ft of the bed to be removed? _____ If so, what species? _____

I certify that all information provided in this application is true and correct and a copy has been provided to the licensed applicator prior to treatment.

Signature: _____

- All application of herbicides must be performed by a licensed applicator.
- Permits are issued for a three month period.
- No vegetation treatment shall occur during fish spawning season (March 15-June 15).
- All vegetation treatment sites are subject to review by Appalachian prior to permit issuance.
- **The Licensed Applicator is required to submit the Report Following Treatment to Appalachian within 30 days of treatment.**

Return application to:
Appalachian Power Company's Shoreline Management Office,
996 Old Franklin Turnpike, Rocky Mount, VA 24151
Telephone: (540) 489-2556 Fax: 540-489-2567

--FOR OFFICE USE ONLY--

Received Date:

Site Survey Date:

Received By:

Site Surveyed By:

Reviewed By:

Permit Issue Date:

Permit #

Shoreline Classification:

APPENDIX B

REPORT FOLLOWING TREATMENT OF AQUATIC VEGETATION ON SMITH MOUNTAIN OR LEESVILLE LAKES

Report Following Treatment of Aquatic Vegetation
Appalachian Power Company
Smith Mountain Lake and Leesville Lake
To be completed by Licensed Applicator

Permit # _____

Date of treatment _____

Today's date _____

Landowner /
Organization
Name:

Applicator /
Company:

Lake Address: _____

(no P.O. Box)

Address: _____

Phone: () _____

Phone: () _____

Tax Map and
Parcel #:

License No. _____

List all species treated _____

Method used for treatment _____

Total size (square feet) of vegetation bed treated _____

Please briefly describe the treatment process, including any additional information below:

- Statement of Effectiveness of Treatment by Applicator: _____

This report is to be completed by the applicator and submitted to AEP's Rocky Mount Service Center within 30 days of vegetation treatment. One report is to be submitted for each permit acquired.