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THE HIGHLANDS VOICE

Published monthly by the W.Vo. Highlands Conservancy

V.18 # 3 1985

Energy Department bill: The implications

By Tracy Byrard

Despite earlier indications to the contrary, Governor Arch A. Moore's Energy bill, which reorganizes the administration and jurisdiction of the state's oil and gas resources, passed both houses of the West Virginia Legislature in 1985.

The bill, which was introduced by Representative...

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The bill, which was introduced by Representative...

The bill, which was introduced by Representative...

By Linda Whaler

The Bluestone River conservation project, a priority issue for the Conservancy, is in big trouble and needs your support!

The Reagan administration has proposed elimination of the National Park Service's "State and Local River Conservation Assistance" program—the program that would help us develop management strategies for selected West Virginia rivers such as the Bluestone. The administration's FY 85-86 budget proposal for the Department of Interior has recommended 0 funding for this program and not even prior commitments will be honored after October 1, 1985.

The National Park Service has approved our proposal for the Bluestone River, but we will not be able to proceed with our plans if the Reagan administration gets its way. Since 1981 the State and Local

was to promote extraction of coal, oil and gas. Protection of the environment and coal miners' health and safety were only secondary concerns.

The bill also requires all employees, except the Conservation, to be covered by a variety of federal pensions. The Conservation is responsible for 75 percent of the cost of water treatment...

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River Conservation Assistance program has provided technical assistance to state/local governments and private organizations (like the WVHC) in developing river conservation strategies. Requests are coming in to the NPS from all over the country for assistance with state river inventories and river conservation studies and management plans. In just four years Park Service planners have assisted state/local governments and private non-profit groups in more than 19 states. Three state-wide river assessments have been completed and three more are underway.

The program has proven to be cost-effective and acts as a catalyst by helping state and local governments take on the responsibility of protecting and managing their rivers. This program is completely consistent with the Reagan administration's stated desire to have state and local governments shoulder more responsibility

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Members of the House Judiciary subcommittee modified the legislation by combining the Department of Energy and the DNR reorganization bills. Today the combined approach the Draft structure would have been preserved with the Department of Energy, the Air Pollution Control Commission and a separate part of the Forest Department added.

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for their needs.

The State and Local River Conservation Assistance program in the "Natural Programs" section of the NPS budget received approximately \$1 million last year. To complete existing programs and meet new requests (such as ours), the funding should be doubled to \$2 million for FY 85-86.

Senator Robert C. Byrd, Ranking Minority Member, Interior and Related Agencies Subcommittee of the Senate Appropriations Committee, needs to hear from you that the NPS's technical assistance program is important. Tell him it is a cost-effective program which will actively seek to balance West Virginia's river development needs with its power conservation needs.

Write to: Senator Robert C. Byrd, SH-311 Hart Senate Office Bldg., Washington, DC 20510 or call: (202) 224-3954.

New MNF planned requested

The West Virginia Highlands Conservancy has asked the Monongahela National Forest Supervisor to withdraw the forest's Draft Management Plan and prepare a new one for public comment, according to Larry George, Conservancy president. The Conservancy cites the need for fundamental and comprehensive revisions to the plan and numerous adverse impacts on the forest resulting from its implementation as reasons for requesting that a new plan be prepared.

Sayre Rodman, chairman of the Conservancy's Public Lands Management Committee, prepared a document entitled "Administrative comments and petition for withdrawal and revision of the Draft Management Plan for the Monongahela National Forest," which has been submitted to the Forest Supervisor, Ralph F. Mumme.

The document contains comprehensive comments by the Conservancy on all aspects of the plan. A condensed version of these comments is provided in an article starting on page 3.

(Continued on Page 7)

From the President: The Energy Bill Defeat

By Larry George

I have little doubt that Thursday, April 11, 1985 will be remembered as the day West Virginia conservationists received their worst defeat in a decade—the day Gov. Moore's Energy bill passed the Legislature. This may be a fair characterization, but this day will also be remembered for the consummation of a new progressive coalition between the United Mine Workers of America, West Virginia Citizens Action Group, House Speaker Joe Albright and his leadership team, and the Conservancy.

Details of Moore's Energy bill are contained elsewhere in this issue. Suffice it to say this legislation reorganized the state surface mining enforcement program in such a manner as to severely impair the program's effectiveness and supplanted the state's traditional resource conservation philosophy with one of production and industry advocacy.

While the bill's passage was a defeat for conservationists and the UMW, it did compel progressive organizations, including the Conservancy, to join with Speaker Joe Albright's leadership team in support of the compromise bill. Although this effort was unsuccessful, the result of the Conservancy's working with Albright, UMW, WV Labor Federation and other conservation groups, will be beneficial as we work toward other goals in the future.

The Energy bill was an example of the maximum potential of the Moore administration/coal industry alliance and does not represent their typical effectiveness. In the next session, the Conservancy, working with the House leadership and other conservation groups, should be fairly successful in achieving its conservation goals given the normal effectiveness of industry trade groups and the Governor's staff.

As I have often written, it is important that the WVHC steer a moderate course on natural resource issues while attempting to work with business and broad political spectrum of West Virginia interests. This is desirable not only to maintain the Conservancy's credibility and influence, but also to advocate conservation policies serving the state's best environmental, economic and social needs.

The Conservancy's future actions on the Energy bill may appear to represent a departure from these principles. I feel strongly, as do other officers and directors, that WVHC should take bold action to protect the integrity of mine reclamation/water quality enforcement.

Options include proposing new legislation to consolidate the Departments of Energy and Natural Resources, a variety of litigation, and most potently, filing a petition with the Secretary of Interior to withdraw primacy to the state under the Federal Surface Mining and Reclamation Act of 1977. The WVHC Board of Directors will decide on our future action May 5 at the Spring Review weekend.

The action of the Moore administration and coal industry trade associations regarding the compromise Energy bill reveal little interest on their part in working with the WVHC or any other conservation organization to achieve a reasonable compromise.

Under these circumstances, it is imperative that we take the most effective legal and/or political actions available to preserve the state mine reclamation/water quality enforcement programs and impress upon the Moore administration the resolve and effectiveness of the WVHC, in particular, and West Virginia's conservationists, in general.

We're growing... Slowly

Growth and expansion are essential for any organization to be effective and the Conservancy is no exception.

Since January 1 we have added 67 new members to our roster, making a total of 725. We are still working toward our goal of 1,000 Conservancy members.

The best exposure the Conservancy can get is a friendly recommendation from a member. Show the Voice to friends or neighbors you think may be interested in our efforts or give us their names and we'll send them our new brochure and other information about the Conservancy.

The Conservancy is an organization of individuals with a common interest in the conservation and preservation of West Virginia's natural resources. Many members are interested in one

particular issue but have recognized the value of combining forces by joining the Conservancy.

By inviting people interested in Conservancy philosophy and those interested in a specific issue to join the Conservancy, we not only make the Conservancy stronger but we also become aware of new issues which need to be addressed.

The more people we have working on local, state and national issues, the more seriously we will be taken in the offices of our agencies, the corridors of our state Legislature, and the halls of Congress.

If you know anyone interested in any of the many issues addressed by the Conservancy please tell them about our organization or give us their name and address.

Join the Conservancy!

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LWV seeks representative

The League of Women Voters of West Virginia is looking for someone to fill the recently approved position of organizational director for the Conservancy. The LWV organizational director will represent the League at quarterly Conservancy board meetings and hold the same voting rights as the directors-at-large elected by the Conservancy member-

ship.

LWV President Becky Cain is responsible for appointing someone to the post. Individuals interested in serving as the League's representative should contact:

Mrs. Becky Cain, President, League of Women Voters of West Virginia, 2313 South Walnut Drive, St. Albans, WV 25177, (304) 727-6547.

MNF Plan: The Conservancy's comments

By Sayre Rodman

Overview

The plan proposes a dramatic modification of the Forest to meet predictions of a booming demand for timber in the next fifty years. Good management for issues other than timber harvesting is sacrificed if such management is perceived to impede the harvest of enough timber to meet the projected demand. In addition, these sacrifices begin soon, decades before any real conflict with that harvest arises.

Today, woods in a reasonably undisturbed condition and well away from roads make up a major part of the Forest. Timber harvesting (lumbering) spreads over a minor part of the Forest, necessarily in areas adjacent to existing roads. This status appears reasonable to most people and is workable for some years to come according to the Draft Environmental Impact Statement (DEIS).

The plan proposes to build thousands of miles of new roads, reaching almost every area where trees grow fairly well and can be cut legally. As fast as the roads are built, lumbering will spread along them.

To further increase forest productivity, the plan calls for converting large areas of diverse hardwoods to uniform conifers, mainly pine and spruce. This would greatly reduce the forest's ability to support important game species and the public's enjoyment of the forest.

Despite these problems with the plan, some aspects of it are excellent. Unfortunately those parts mainly deal with issues having less impact than those affected by the parts in question. Much of the plan is testimony to skilled, professional planning, and to the ability of the MNF to manage its affairs well and in the public interest.

Impact

The impact of changes proposed in Alternative E, the alternative preferred by the Forest Service, is outlined in the following table.

	1983	fifth decade
Roads, miles	1070	3063
Timber, MMBF/year	36	16-1
Clearcuts, acres/yr.	1639	5200
Conifer management, acres	19442	105000

The Wildlife Resources Division of the West Virginia Department of Natural Resources (DNR) issued a summary of the impacts they predict. They consider 76% of the forest now suitable for turkey and bear. The roads and lumbering proposed in the plan would reduce this to 36%. In areas managed for conifers, turkey and bear populations would drop to about 10% of that found under present remote area management.

The environment in which turkey and bear do well is precisely the sort of forest land which the public most approves and enjoys. The threat to this type of land by proposals in the plan is responsible for the outpouring of public disapproval.

Timber Demand Estimate

The estimate of future timber demand controls the plan absolutely. The plan states, "all alternatives were adjusted to meet demand."

To estimate demand, the planning team agreed on a set of assumptions, made individual estimates ranging from 150 to 190 million board feet (MMBF) per year in 50 years, and compromised on a middle number.

'Demand' cannot be defined by one number, however. The varying amounts of a commodity that can be sold at varying price levels define demand. And, as the DEIS points out, 'timber' ranges from cheap pulpwood to high quality hardwood sawtimber.

The assumptions on which the demand estimate was based include the following: "There will be a gradual shift from emphasis on quality sawlog production to wood fiber production—" and "The taxing structure on private lands will become less favorable thereby, placing greater demands on

public lands to produce timber."

This suggests that the Forest will tailor its product to that which sells most easily in competition with private-sector producers. As private production costs escalate, the Forest, well subsidized by public money, will be able to undercut them ever more easily.

The User's Guide distributed with the plan says below-cost sales are frequently justified by values like wildlife benefits and scenic variety. The private sector cannot balance books with that reasoning.

In the plan, demand appears to mean the maximum possible amount of timber that can be sold competing head-to-head with the private sector. This is only one possible definition of demand. Nowhere does the DEIS provide an alternate demand estimate, taking into account for example, increased sale prices or reductions in quantity.

The Conservancy prefers the use of such a demand estimate and insists that an alternate estimate be included in the plan.

Timber Comments

Road Building Delay

The DEIS indicates that present roads may be adequate for timber production for the next 30 years. The plan describes the effect of a no-road alternative as "an unacceptable detrimental effect on the visual resource." A no-road alternative would mean that lumbering would continue where many people could see it. Two thousand miles of road (in 30 years) would move much lumbering to remote bear and turkey areas where the plan assumes it would displease the public less.

The Conservancy advocates fewer new timber roads until near-term demand requires more. A reevaluation of the plan's position on building more roads should be made for the two reasons outlined below.

"The Conservancy concludes that, after the quality and value of the forest have been greatly diminished by an extraordinary expansion of lumbering, the MNF staff will do an excellent job of managing what is left."

First, even the most competent economic estimates made for a 30-year period can be grossly wrong. Second, public attitude toward forest resources may shift considerably in the next 30 years as it has in the last two decades. A further shift in public opinion may put even higher value on undisturbed forest lands.

The public should not be denied a chance to comment on this at a time closer to proven need. For esthetic and financial reasons, public money should not go into roads before they are needed.

Conifer management

The plan would convert extensive regions from mixed hardwoods to spruce and pine. The great decreases in species diversity, wildlife carrying capacity, and recreational quality which would result are well documented. The justification for this conversion is pulpwood productivity.

The plan points out that historically much of the forest was coniferous and that natural selection will eventually return it to conifers. This may be so, but such history has no legal standing as to purposeful conversion. Alternative A, with no purposeful conifer management, gives an estimated 44,000 acres of conifers in 50 years. Preferred Alternative E shows 105,000 conifer acres in 50 years.

The Conservancy objects to the managed difference. In several places, the plan says potential productivity of the forest is higher than any estimate of demand for timber. Forced conifer monoculture is completely unnecessary.

Conifer conversion may also be illegal. Certain sections of the Code of Federal Regulations specify a much more detailed justification of conversion than is found in the plan.

Clearcutting

Clearcutting is overemphasized in the plan. The National Forest Management Act provides that even-aged management practices, especially clearcutting, may be used only in limited situations. An interdisciplinary team must evaluate each advertised sale area to ensure consistency with multiple use regulations. A large body of law, dating from the controversies of the early 1970's, addresses limitations on clearcutting.

Rigorous attention to the regulations would not produce such a huge proposed clearcut program. Phrases like "The even-aged system of silviculture is the preferred system for—(numerous species)" are disturbing. Preferred by the writers, clearly, but permitted so extensively by law?

Rotation length and timber quality

The Forest should be managed to complement private timberland, not duplicate it and compete directly.

Land in perpetual public trust should be cost-accounted differently from a commercial business. As directed, the plan calculates present net value (PNV) of various options using a 4% discount rate. A 4% discount rate values a 14 cent return, now, the same as a \$1 return in 50 years, all in current dollars. This constraint, fed to the FORPLAN program, forces earlier harvest to sell timber sooner. The Conservancy believes the public objects intuitively to such a calculation. For public land, the quality of the future is as important as the quality of the present.

The plan assumes private timber will be managed more for fiber than for quality saw timber. Public forests should react by producing the quality wood private owners cannot wait for. Resulting long rotation cycles would increase recreational values.

PNV accounting dictates cuts sooner than the peak of quality timber value. Delaying the cut maximizes overall value; timber should be cut when values are declining slowly but recreational values are still rising.

Minerals

The plan proposes to lease the majority of federally owned coal under the forest, in areas where no coal has been mined before. Since the prohibition against leasing coal under National Forests is due to expire soon, the planners believe they should, or will be forced to, lease coal. The plan points out that federal coal is limited in quantity and would be mined largely in conjunction with adjacent privately owned coal.

The Conservancy opposes leasing of any federal coal. Although the small quantity reduces the potential impact, it also reduces the economic incentive to lease. In particular, the Conservancy opposed the openings identified in the plan as adjacent to sensitive areas.

Any agreement between the Forest and coal operators should carry a rigid, enforceable, explicit clause requiring all operators to comply with federal and state regulations.

Other issues

As previously stated, the Conservancy highly approves of many details of the plan including the monitoring of land and water quality well beyond present levels, good management of road closures and ORV access, and precise, well-thought-out standards for a wide range of activities and construction.

Management of the National Recreation Area (NRA) presents special problems. Virtually all of the plan's proposals would be beneficial to the public. Local landowners and inhabitants may, however, strongly object to some aspects. The Conservancy prefers to hear their side before taking a position.

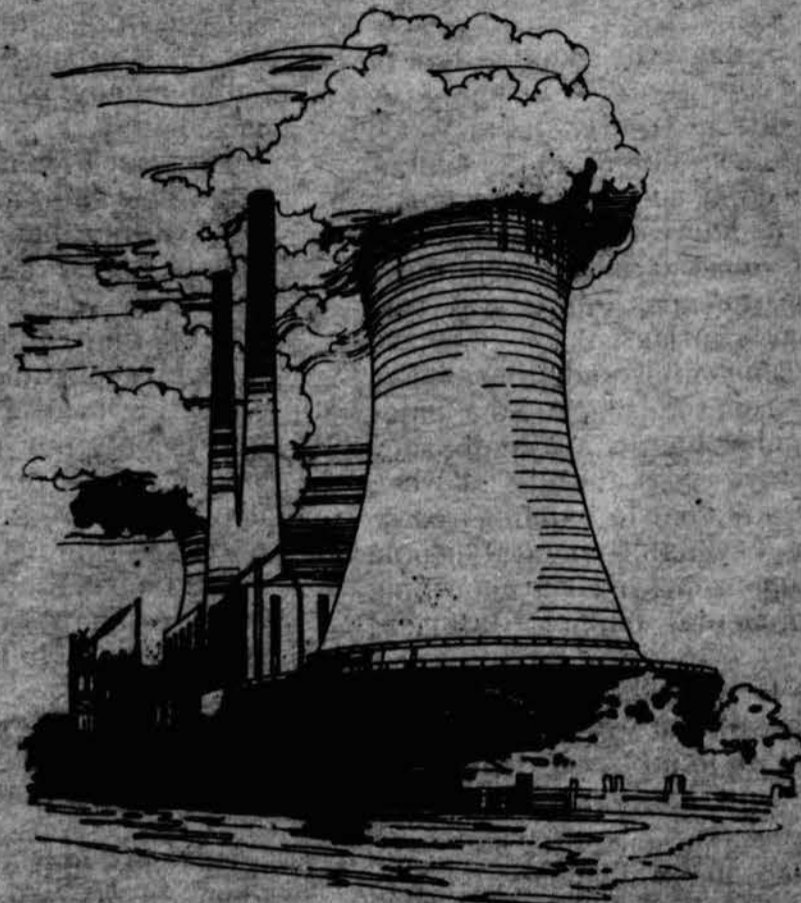
The Conservancy concludes that, after the quality and value of the forest have been greatly diminished by an extraordinary expansion of

(Continued on Page 7)

ACID DEPOSITION: WHA

(Editor's Note: Several past issues of the VOICE have dealt with the problem of acid rain and efforts to control it. A study by the National Clean Air Coalition published in 1984 indicated that one-quarter of the fragile trout streams in West Virginia are becoming acidified and 100 miles of remote streams in the Monongahela National Forest can no longer support fish. Equally alarming effects in other states were also reported. Despite such reports, legislation to control acid rain did not fare well in 1984. Citizens' concern for acid rain was apparent, however, in the large attendance at Acid Rain '84. Other positive actions include legislation passed by New York state to control sulfur emissions and similar bills being considered by other states.

The following article, written by Sandy Fosbroke, provides a comprehensive examination of how acid rain is formed, the effects it has on aquatic and terrestrial ecosystems, and what measures can be taken to control it. Sandy is a Conservancy member and graduate student at West Virginia University.



Scientist Angus Smith first used the term 'acid rain' in 1852 to describe the hazy, polluted skies of Manchester, England. Although this phenomenon has been studied extensively in Europe, the term 'acid rain' is a fairly recent addition to our language in the U.S. Man-made sources of air pollution are voluminous and ever-increasing. As the number of air pollution sources increases, more pollutants are spewed into the air, transformed into acidic forms and deposited on the land. The environmental impact of acid deposition or acid rain is potentially widespread and is coming under increasing scientific scrutiny. As a national political issue it pits the industrial Midwestern states against the Northeastern states. Internationally, U.S. relations with Canada have been strained by the Reagan Administration's reluctance to impose stricter pollution standards to curb industrial emissions. Amidst the heated debate among industrialists, environmentalists and politicians, the 'hows' and 'whys' of the acid deposition process and its environmental effects often remain unanswered. Both federal and private research programs have been accelerated to answer these questions and to provide direction for policy decision-makers.

The Process

Emission

Sulfur dioxide (SO₂) and nitrogen oxide (NO_x) are suspected to be the major precursors of acid deposition. These substances, called 'primary pollutants,' are emitted by both natural and man-made sources. Natural sources of sulfur and nitrogen oxides include: geysers, hot springs, products of organic decomposition, and particulates and gases from wildfires and volcanic eruptions. Most man-made pollutants are sulfur and nitrogen oxides emitted from coal-burning industries, smelters, factories, and motor vehicles.

Because many types of coal contain substantial amounts of sulfur its use as a fuel presents the greatest problem. In the U.S., the dominant users of coal are large electric utility plants. To comply with the 1970 Clean Air Act mandate to decrease local air pollution levels, electric utilities nearly tripled the height of their stacks. As a result emissions are now spewed higher into the atmosphere and travel greater distances before falling back to earth. This shift in stationary emission strategy has transformed local pollution problems into long-range, regional problems.

In the U.S. more than 60% of all SO₂ emissions come from coal-burning electric power plants. Sulfur dioxide emissions have shifted from relatively small and highly dispersed sources toward much larger and more concentrated sources. The increased number of motor vehicles on the nation's highways over the past 15 years has increased the amounts of nitrogen oxide emissions.

Sulfur dioxide emissions are of greatest concern because they are emitted in higher concentrations and injected higher into the atmosphere.

Transport and Transformation

Scientists strongly suspect that emissions originating in the industrial Midwest are transported by prevailing winds and deposited hundreds of miles downwind. Once airborne, primary pollutants may remain aloft for several days. During this long exposure to both oxygen and sunlight, the transformation from less harmful gaseous oxides to acids is believed to occur. Once in the atmosphere, the primary pollutants react with other chemicals to form sulfate and nitrate particles, or 'secondary pollutants.' When dissolved in water vapor, these particles form sulfuric and nitric acid, which then chemically break up to form sulfate ions, nitrate ions, and hydrogen ions. Sulfuric and nitric acids are considered strong acids because they release many hydrogen ions when dissolved in water.

During transportation, acids may be partly or wholly neutralized (made less acidic) by dust, wind-blown soil particles, or ammonia in the atmosphere. The concentration of acids and their precursors in the air is dependent, therefore, on atmospheric conditions, the complex atmospheric chemistry present in any given area at any given time, and the number of pollution sources and their total emissions.

Deposition

Acidic air pollutants may be deposited in either wet or dry forms. Wet deposition includes nitric and sulfuric acid that has dissolved in atmospheric moisture and returned to the ground with rain, snow, sleet, dew, or fog. Dry deposition includes sulfur and nitrogen compounds that reach the ground via dust particles, in gaseous form, or as sulfate and nitrate particles. Both types of deposition contribute to the total acidity received by the environment.

The pH scale is used to measure acidity (see Figure 1). Rain is naturally acidic. When unpolluted rain is in equilibrium with the carbon dioxide in the atmosphere, the pH is usually 5.0-5.6. These values are used as a measure of the acidity of natural rain.

The longest continuous record of precipitation chemistry in the U.S. has been maintained at the Hubbard Brook Experimental Research Station in New Hampshire. Precipitation data from this station indicate that pH levels fluctuate from week to week and from year to year. The average annual pH has fallen below 4.3 for the entire period since the station's establishment in the early 1960's.

Acid deposition primarily occurs in the northeastern U.S. and Canada. Other areas of the U.S., such as Florida, Colorado, and California, have recently reported increasingly acidic precipitation. Rapid increases in acid deposition

have also occurred in the Southeast where a large expansion of urban and industrial activities has resulted in an increase in sulfur and nitrogen emissions. Summer rains are acidic over large areas of North America, especially during the first part of a rainstorm when pollutants are first washed out of the atmosphere.

The Effects

The buffering capacity of an ecosystem refers to its ability to decrease the number of hydrogen ions present, thus decreasing the acidity of the ecosystem. Neutralization occurs when acids (low pH) react with bases (high pH). This results in a decrease in acidity due to the consumption of hydrogen ions. As bedrock weathers and soils form, bases are released to aid in buffering inputs of acid. As acid precipitation falls on land surfaces and filters through the soil and bedrock below, the acid reacts with these buffers.

Aquatic Ecosystems

The best scientific documentation of the effects of acid deposition involve aquatic ecosystems. The sensitivity of an aquatic ecosystem depends on its ability to supply buffers. Freshwater ecosystems sensitive to acid inputs have bedrocks highly resistant to weathering and provide low concentrations of buffers with which to neutralize incoming acid. Regions with aquatic ecosystems most sensitive to acid deposition include the Appalachian Highland region in the Adirondacks, the northeastern U.S., the Southeast, the Pacific Northwest, and eastern Canada (see figure 2). These regions have bedrock which weathers slowly and provides few buffers.

Lakes and streams receive precipitation directly and are often poorly buffered. They may, therefore, respond adversely to inputs of acid before the surrounding terrestrial ecosystems. A lake's biology also helps determine its acidity; plant photosynthesis and microbial activity decrease the acidity of lake waters, and plants may absorb nitrate ions (and sulfate ions to a lesser degree) as nutrients.

Many studies of the effects of acid deposition on aquatic ecosystems have been conducted in the New York Adirondacks. Lake and stream vulnerability to acidification varies. In general, large lakes and ponds at lower elevations are not as seriously affected as smaller bodies of water at high elevations. The smallest streams in the sensitive areas of the Adirondacks are most affected by acid deposition. Such streams are thought to be especially vulnerable to acid inputs, particularly when there is very little mineral soil and permeable bedrock present to provide buffers. More than 200 lakes in the Adirondacks can no longer support fish life due to the increase in acidity.

Surges or pulses in acidity have been detected in aquatic ecosystems. When snow melts in the

T GOES UP MUST COME DOWN

spring, bodies of water receive large amounts of water that contain acidic deposition accumulated over the winter. Such acidic pulses may also occur after severe rainstorms.

When the pH level in lake or stream water drops below 5.0, the ecosystem changes and many species of fish may die. Fish surveys in the Adirondacks reveal that total fish populations have disappeared in streams with a pH level below 5.0. As the acidity of aquatic ecosystems increases, aquatic species diversity decreases.

As the acidity of groundwater increases, trace metals, such as aluminum, are washed out into lakes and streams. Aluminum is normally bound to soil particles. With increased acidity, however, the aluminum is changed from a form that binds to soil particles to a form that dissolves in water and washes into stream and lake water. These small amounts of aluminum may be toxic to fish and other aquatic organisms.

Terrestrial Ecosystems

Although there has been much speculation about potentially harmful consequences of acid deposition on forests and their soils, the complex nature of terrestrial ecosystems has complicated the search for conclusive evidence linking acid deposition to degradation of soil and forest productivity. Some evidence of the damage acid rain can cause to terrestrial ecosystems includes damage to tree seedlings and the increased vulnerability of trees to disease and insect attack.

Natural soil formation in the humid, temperate climates found over much of the continental U.S. can be an acidifying process. Soil formation begins with weathering of newly exposed bedrock. The initial weathering rates are rapid and bases are washed out, or leached, from the soil by precipitation. Over time, an acidic layer of soil called a humus layer forms over the mineral soil that has been leached of its bases.

Soils with low nutrients available for plant growth have gone through this natural acidification process. Essential plant nutrients have been leached and plant communities have changed in response. Such highly acidic soils may not be sensitive to further acidification caused by acid deposition.

As nitric and sulfuric acids are deposited on forest soils, the nutrient content may increase, decrease or remain constant. If the soil is lacking in sulfur or nitrogen nutrients, these ions will be taken up by plants as they are added to the soil. Excess sulfur is initially trapped by soil particles and therefore unable to move through the soil and carry away other plant nutrients. Once these soils are saturated with sulfur and nitrogen, however, additional inputs of acid will result in leaching of both acids and other nutrients.

There is concern that additions of strong acids to moderately acid soils will cause accelerated nutrient leaching, an increase in the rate of aluminum released in the soil, and potentially adverse effects on soil animal populations. Forest soils most vulnerable to accelerated acidification have a pH level between 5.6 and 6.5, a low capacity to absorb sulfur, and are lacking in buffers.

Although the effects of acid deposition on forest ecosystems are complex and poorly understood, regional air pollution is influencing forest productivity. Decreased forest productivity has been identified over large areas of Europe and North America. Evidence of this decline includes decreased tree ring width (possibly indicating a reduced growth rate), tree 'dieback' (tips of branches die and fall off) and dead trees. The precise contribution of acid deposition to these situations remains unclear, but it has been implicated as a contributing stress factor in several cases of forest decline.

During the last twenty years, there has been a marked decline in productivity in high elevation forests in New York, Vermont, and New Hampshire. Red spruce, balsam fir and white birch trees in these forests grow on thin, naturally acidic soils at elevations above 2,500-3,000 feet and are shrouded in fog much of the time. Red spruce trees in these high elevation forests are showing signs of stress, including dieback and



Figure 2. Sources of sulfur dioxide emissions in North America. Shaded sections are low in natural buffers and particularly susceptible to acidification. Dots indicate sources with heavy emission concentrations (100-500 kilotonnes per year). Squares indicate sources having emissions of more than 500 kilotonnes per year. (From Fact-Sheet on Acid Rain prepared by the Canadian Embassy.)

subsequent invasion by parasitic organisms. These trees are also stressed by high wind speeds, continuous exposure to cloud moisture, and the presence of heavy metals in the soil.

Acid deposition contains sulfate, nitrate, and hydrogen ions. As these ions come into contact with forest soils, the nitrate ions may initially increase forest growth rates because nitrogen is often the nutrient trees lack most. Hydrogen ions may be absorbed by tree foliage. In exchange for the hydrogen ions, the leaves release nutrients that are then leached. If this nutrient removal rate exceeds the rate at which nutrients are taken up by roots from the soil, the tree will become nutrient deficient.

Concern has also been expressed about increased levels of aluminum which have been found moving through acidic forest soils. Some scientists have implicated increased soil aluminum levels in the death of fine tree roots.

CONTROL STRATEGIES—ALTERNATIVES

In light of scientific uncertainty regarding the 'hows' and 'whys' of acid deposition, there have been strong pushes to limit the extent of environmental damage. Two approaches include mitigation and source control of suspected air pollution emissions.

Mitigation

Mitigation strategies are used to repair, reduce or delay environmental damage from acid deposition. They are few in number, and for the most part involve the addition of lime to an area, known as liming. When distributed over acidified or sensitive areas, lime provides buffers which aid in the neutralizing of acid. Liming lakes may result in temporary neutralization and may help preserve threatened fish populations. There are several drawbacks to this practice: 1) the uncertainty of long-term impacts of repeated treatments on factors other than water quality, 2) the relatively uncertain costs associated with liming, and 3) the economic infeasibility of liming large areas.

Emission Control

Controlling acid precursors at their sources is another alternative. Current acid deposition control proposals focus on curbing emissions produced from the burning of fossil fuel, particularly coal. Debate has focused on power plants and the cost effectiveness of technology necessary to reduce sulfur dioxide emissions.

Four principal methods are available to reduce sulfur dioxide emissions produced by coal burning: 1) coal washing, 2) switching to low-sulfur coal, 3) coal mixing, and 4) flue gas desulfurization (scrubbing).

Coal Washing

Coal washing involves the physical or chemical cleaning of coal to remove sulfur prior to burning. Although partially effective in removing sulfur, this method removes very little nitrogen oxide.

Switching to low-sulfur coal

Burning low-sulfur coal significantly reduces sulfur dioxide emissions without the expense of coal washing or installation and operation of scrubbers. If industries switched to low-sulfur coal, however, coal market demand would shift from areas supplying high-sulfur coal (the Ohio River Valley and eastern states) to those supplying low-sulfur coal (the northern Plains and the Rocky Mountain states). Such a switch would reduce employment in high-sulfur coal regions and may have adverse effects in low-sulfur coal regions. More land would be strip-mined for low-sulfur coal, pressures to relax site reclamation or restoration regulations would increase, and a significant socioeconomic impact would result if users began to demand low-sulfur coal.

Coal mixing

Coal mixing has been proposed as a compromise between coal washing and coal switching. Any decrease in demand for high-sulfur coal is likely to result in adverse economic conditions in the eastern coal states.

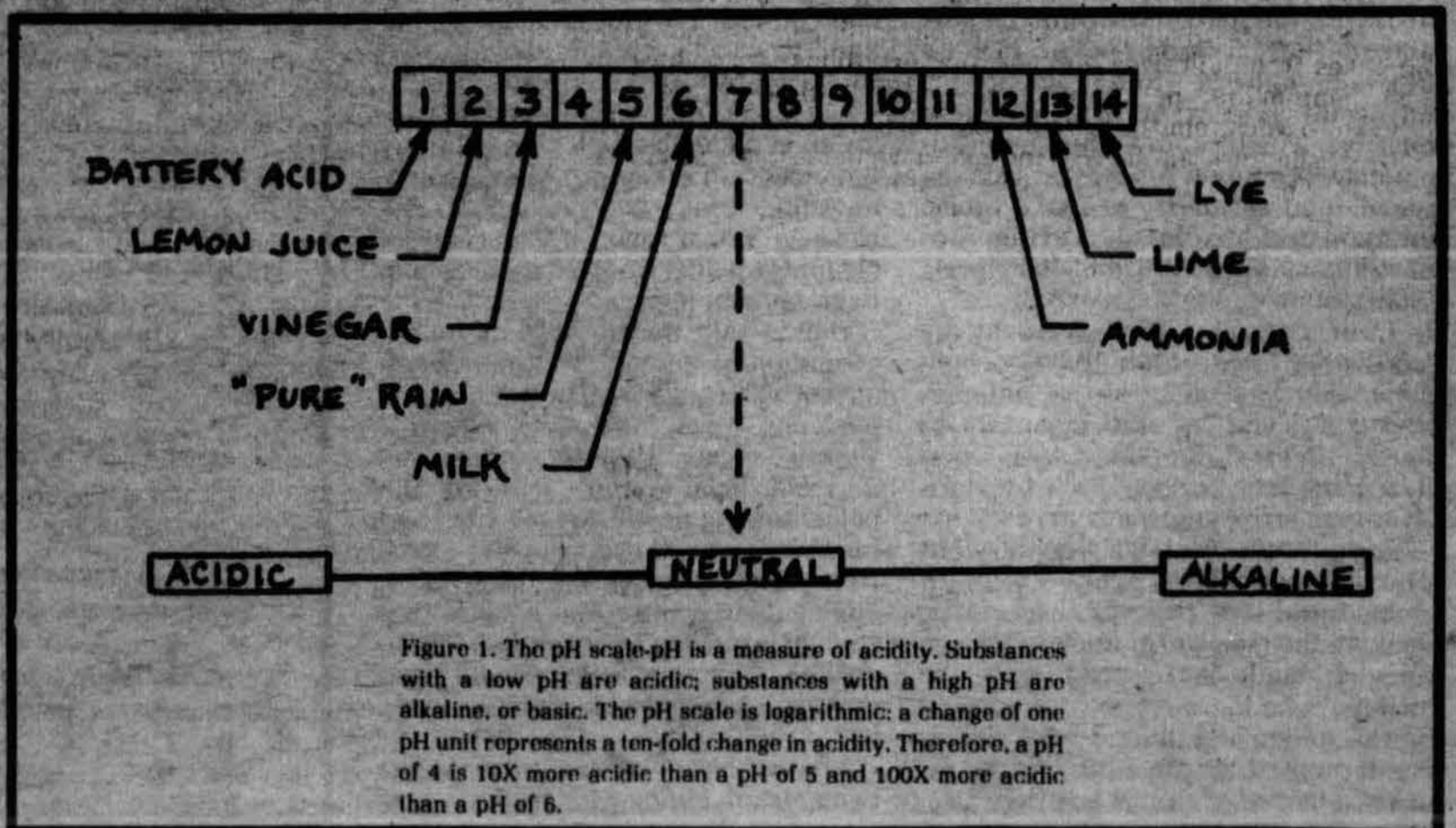


Figure 1. The pH scale—pH is a measure of acidity. Substances with a low pH are acidic; substances with a high pH are alkaline, or basic. The pH scale is logarithmic: a change of one pH unit represents a ten-fold change in acidity. Therefore, a pH of 4 is 10X more acidic than a pH of 5 and 100X more acidic than a pH of 6.

Acid Deposition. . .

Scrubbers

Scrubbers are designed to pass combustion emissions through a screen that traps sulfur. The sulfur is chemically screened out before the emissions are released into the atmosphere. Scrubbing is highly successful in reducing sulfur emissions, but it uses large amounts of lime and produces large quantities of waste sludge.

There is considerable debate about the cost effectiveness of using scrubber technology. Electric utility officials claim utility rates will increase if they are forced to install scrubber systems. Supporters of scrubber technology, on the other hand, claim such a system can be cost effective and need not result in increased utility rates for customers.

Other options for reducing emissions include the development and use of new combustion technologies and the use of alternative energy sources, such as the sun, wind, water, and biomass.

Scientific Uncertainties

Many aspects of acid deposition are poorly understood due to the complexities of environmental interactions. It is indisputable that pollutants are transported over long distances through the atmosphere but it is unclear what percentage of pollutants can be traced to specific, remote sources.

As air masses move they are exposed to additional emissions and some acid precursors may be exchanged for new ones. The chemical changes of air-borne pollutants also occur at different rates depending on both the chemical make-up of the emission and the prevailing atmospheric conditions. Therefore, it is difficult to trace emissions from one area to acid deposition in another area.

Researchers are faced with a multitude of questions about the acid deposition process and its effect on the environment. Research should be accelerated so the best quantitative and predictive data is available for use in policy making as soon as possible.

Regulatory Efforts

Should regulations be imposed now to curb emissions which may lead to acid deposition? The greatest pressure to regulate such emissions comes from Canada, who feels that major environmental damage is occurring in its eastern provinces, and officials and citizens in the northeastern U.S. who have similar concerns.

Policy making is difficult because costly control measures may not yield the desired reduction in acid deposition. On the other hand, the environmental cost of inadequately controlled emission levels is also very large. A 1980 study prepared by the University of Wyoming estimated the cost of damage to natural and man-made resources from acid rain to be \$5 billion annually in the eastern one-third of the U.S.

Congress has considered several acid deposition control plans. Most have included requirements that utilities use scrubber technology to reduce sulfur dioxide emissions. These plans must also recognize the need for a reduction of nitrogen oxides from mobile sources.

It is unlikely that fossil fuel combustion will decrease in industrialized countries during the next 25 years. If reliance on coal as an oil replacement increases, emissions will also increase. If air pollution control programs are developed, there will be a need to recognize and account for the contribution of: 1) both sulfur and nitrogen oxide emissions, 2) both mobile and stationary air pollution sources, and 3) other atmospheric pollutants that may react with the precursors of acid deposition.

Solutions?

The easiest solutions to the control of acidic air pollution involve the burning of low-sulfur coal and oil. More difficult solutions involve the installations of scrubbers to achieve a substantial reduction in sulfur dioxide emissions. Perhaps the best option is a combination of improved pollution control technology and fuel conservation.

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Public stays tough on pollution

By Kennedy Maize-reprinted with permission from *The Energy Daily*.

The business and political establishment in the United States "consistently both underestimates the seriousness of pollution problems and the depth of feeling of the public about cleaning up the mess," according to pollster Louis Harris. Speaking to a recent meeting of the Wildlife Management Institute, he said there is consistent public support for environmental causes, even when they cost the public money.

Harris has been influential in past debates over pollution policy. In 1981 his polls showed strong support for clean air laws at a time when the newly established Reagan Administration was trying to weaken them and seemed to have some momentum. Administration opponents made good use of the Harris poll and no changes occurred.

Over the past year, Harris said, his staff asked more than 10,000 people how they feel about strong enforcement of clean air and clean water laws. "by 85-8 percent, it is no contest," Harris said. "Over a 8-1 majority favors strict enforcement of the existing statutes. And, I might add, want them re-enacted again, with a substantial 66 percent who favor making the renewal of those acts even tougher and more strict than the originals."

On the subject of acid rain, Harris said, public concern is growing. Asked whether acid rain is a serious pro-

blem, a 76-18 percent majority said it is, "up sharply from a comparable 60-18 percent who felt the same back in 1981." There is also a growing sense, Harris said, "that the matter of acid rain has been contemplated, discussed, studied, and tossed back and forth, to put it bluntly, enough."

A big 72-22 majority singles out investor-owned utilities as the major culprit in the acid rain issue and the ones who should bear the cost. "Indeed," Harris said, "close to three in every four Americans today would like to see Congress pass legislation that places the responsibility and liability clearly on the shoulders of such generators of acid rain."

But would this same public be willing to see electric bills go up to pay for acid rain cleanup? Most people, he said, would be "willing to pay close to \$70 a year, if the costs of cleaning up acid rain are passed on to them at least in part."

Harris said that his polling on environmental matters "has been almost a strange and even eerie experience over the past several years." On most subjects, opinion swings. On racial matters, he said, "the pendulum tends to swing back and forth between those who are conscience stricken over the country not having done enough and a sense that change is moving too rapidly." Public opinion on economic growth and defense spending also swings sharply.

"But in the environmental area, the dynamic of change in recent years

has always been in one direction: the American people get tougher and tougher and more adamant and more shocked about the state of environmental cleanup. And they are

literally furious that there has been so much perceived foot-dragging on the part of those with the power to get things done."

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MNF Plan...

lumbering, the MNF staff will do an excellent job of managing what is left.

Legal inadequacies

Similarity of alternatives

The law requires a wide range of outputs to be considered in the varied alternatives. One section of the Code of Federal Regulations states, "Alternatives shall be distributed between the minimum resource potential and the maximum resource potential to reflect to the extent practicable the full range of major commodity and environmental resource uses and values that could be produced from the forest."

The maximum resource potential is well represented in the plan but no reasonable minimum is represented at all.

Major aspects of the alternatives are remarkably similar to one another. Timber harvest dominates the plan. Among the alternatives, the minimum proposed 30-year harvest is about 86% of the maximum proposed harvest. This narrow range cannot possibly satisfy the requirement for a maximum and minimum potential. Roadbuilding programs proposed for the next 50 years are only slightly more varied: the minimum is 58% of the maximum proposed. In addition, the minimum is a 184% increase over existing miles of roads.

The plan agrees with these observations, stating, "The principal difference between alternatives is how a demand will be met (the mix of prescriptions) rather than the levels of output." This is in total disregard of regulations.

(Continued from Page 1)

Senate floor, the senate replaced it with the slightly modified Senate version. The bill was then passed, with an unspoken agreement that it would end up in a joint conference committee.

Despite the technical flaws, lack of conflict of interest provisions, greatly politicized permit issuance and enforcement processes and the fact they had not seen the actual bill, the House passed the Senate's version by a 57-42 vote, after intensive lobbying efforts by the Governor's staff and industry representatives.

The vote was taken on "Shall the House refuse to concur with the Senate amendments?" Listed below is a roll call on how Delegates voted on this bill. Those voting yes (Y) were voting to reject the Senate version. Those delegates were voting to preserve the DNR structure and keep politics out of the permitting and enforcement activities regarding surface mines.

Voting yes (Y) were: Bailey, Blainik, Brown, Burke, Casey, Chambers, Davis, Farley, Flanagan, Fry, Fuller, Givens, Hamilton, Hatfield, Humphreys, Hutchinson, Kidd, Knight, Leary, Love, Martin, W. Mastrantonio, McCormick, McNeely, Moore, Murenky, Murphy, Neal, Pitt, Roop, Ryan, Sattles, Seacrist, Shifflet, Smith, Stacy, Wellman, White, Wiedebuch, Woolton, Yanni, Albrignt.

Voting no (N) were: Anderson, Ashcraft, Ashley, Carmichael, Conley, Crookshanks, Dalton, Demton, Faircloth, Felinberg, Garrett, Gilliam, Given, Hale, Harman, M., Harman, R., Hawes, Haynes, Hobbitzell, Johnson, Jones, Jordan, Kelly, Louisa, Martin, E. Martin, J., McKinley, Merow, Minard, Mullett, Nicely, Oite, Overington, Peddicord, Phillips, Pine, Prunty, Reed, Richards, Ruffe, Rogers, Rollins, Schilano, Shaffer, Shenholtz, Shephard, Simpkins, Smith, Southern, Springason, Starcher, Stemple, Stiles, Swann, Traylor, Walls, Woolsey. Absent was Underwood.

Absence of a 'no-action' alternative

The Code of Federal Regulations also states, "At least one alternative shall reflect the current level of goods and services provided by the unit, and the most likely amount of goods and services expected to be provided in the future if current management direction continues."

Such a 'no-action' alternative must be studied and presented even if current regulations and legislation mandate a higher level of goods and services.

Alternative A, presented as the 'no-action' alternative, differs from the above requirement in almost every aspect related to commercial use of the forest. It projects an averaged annual timber harvest of about 51 MMBF in the next decade and 164 MMBF in the fifth decade. Although the exact figure for average harvest in recent years is not available, the graph in the DEIS shows it to have

(Continued from Page 3)

been roughly 30 MMBF averaged over the last two decades and less over the last decade.

Alternative A shows roadbuilding accelerated to match timber harvest. The MNF is judge over 50 years old and has 1,070 miles of roads. The 'no-action' alternative calls for building 2,859 miles of roads in the next 50 years, a 267% increase. In 1983 1,639 acres were clearcut; 5,200 are planned for the fifth decade.

No coal is leased now. The leasing of 46,911 acres is proposed by Alternative A. Alternative A fails completely to satisfy the requirement for a 'no-action' alternative.

Other problems

The plan lacks required justification at numerous places where it proposes major increases for timbering purposes. Clearcutting and conifer conversion are examples. More site-specific information is required.

Coming Up...

—May 9-12, Wildflower Pilgrimage. Brooks Bird Club, Blackwater Falls State Park.

—June 1, Hike - in search of the Guyandotte Beauty. The Nature Conservancy. Meet at 10 a.m. at the intersection of U.S. Rts. 119 and 52 between Nolan and Naugatuck.

—June 22-23, Spruce Mountain Backpacking, WVHC outing. Send registration by May 31 to Conservancy office. Leader: Ed Lytwak (412-832-9276).

—May 18, Wildflower hike. The Sierra Club in WV. Leader: Kathy Gregg.



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The Conservancy Wants You!

Hominy Creek controversy continues

By John Purbaugh

Controversy over Westmoreland Coal Company's existing preparation plant and associated refuse piles near Carl, Nicholas County, continues with little movement toward resolution. As recounted in earlier issues of the *Voice*, the Conservancy and Kanawha Valley Chapter of Trout Unlimited were successful in convincing the Water Resources Division of the Department of Natural Resources to impose a water-quality-based effluent limit for iron discharges from a proposed refuse pile on the Blue Branch of Hominy Creek. Existing iron pollution in Hominy Creek, a well-known and valuable trout stream, makes such a limit necessary.

The Conservancy is also concerned about the issue of Westmoreland's responsibility to clean up uncontrolled iron seepage from the old refuse pile adjacent to their preparation plant.

After a more stringent permit for the Blue Branch pile was issued to Westmoreland, the company appealed to the Water Resources Board for modifications in the permit. The Conservancy filed a motion to intervene in the appeal in late 1984.

No hearing has been held before the Water Resources Board due to Westmoreland's continued requests for delays. Meanwhile, the Conservancy, DNR, TU and Westmoreland are pursuing negotiated resolutions of both issues.

Negotiations hinge on an extensive technical investigation of the existing refuse pile. The objectives of the investigation are to find the source of the iron, determine how ground water moves within the pile, and determine the effect of the iron seepage on Hominy Creek. Although preliminary data are available, Westmoreland and DNR cannot agree on the final meaning of the study. As a result, negotiations remain suspend-

ed.

Meanwhile, Westmoreland has applied for both reclamation and water resources permits for a new, smaller refuse area upstream from the existing pile on Colt Branch of Hominy Creek. This may indicate they prefer this area to the Blue Branch pile for which they previously sought a permit.

All of this sounds confusing because it is. The crux of the legal proceedings is whether or not Hominy Creek is a 'trout water' as defined by Water Resources Board Regulations. Westmoreland maintains that it is not; the State maintains that it isn't sure; and the Conservancy and TU maintain that DNR Wildlife Division stream surveys provide uncontestable evidence that Hominy Creek supports a year-round population of brown trout and produces numerous catches in the 17-inch and above category.

Gauley protection lost, Interior changes position

Protection for the Gauley River was lost in April when the National Park Service recommended the river not be included in the National Wild and Scenic River System, according to a report in the *Charleston Gazette*. The Gauley's status as a study river had provided protection from water projects for 3 years while the wild and scenic study was completed. A license application from the Town of Summersville and Noah Corporation to build a hydroelectric project at Summersville Dam was rejected last year by the Federal Energy Regulatory Commission because the Gauley was a study river.

NPS rejected the Gauley as a Wild and Scenic River because the cost of acquiring private land along the river would be prohibitive, according to the *Gazette*.

The NPS recommendation came shortly after a new position toward Wild and Scenic study rivers was adopted by the Department of Interior. The American Rivers Conservation Council reported in its March newsletter that Interior now asserts that potential Wild and Scenic rivers whose study period has expired with no reports being released are no longer protected.

For example, the study period for the Gauley expired in October 1984 but a report was not immediately submitted to Congress for consideration. Interior suggested that FERC could

process hydroelectric applications for development on the Gauley since it was no longer protected, according to the ARCC report.

The Wild and Scenic Rivers Act provided two protected periods of time for study rivers. Rivers were to be protected during the actual study period (3-6 years) and then for an additional 3 years while Congress decided whether to include the river in the system.

Supporters of the act have always presumed that rivers remained protected until the study was sent to Congress, regardless of how long this took to complete.

The study periods for 33 rivers around the country expired last October and the reports have not been submitted to Congress. ARCC reports that Interior claims the moratorium on the licensing of water resource projects on these rivers is no longer in effect.

The new Interior position will not affect the Gauley since NPS has recommended it not be included in the system. There are 32 other study rivers around the country, however, which could now be threatened by hydroelectric projects.

Four rivers in West Virginia are among those potentially threatened, according to the ARCC report. These include the Birch, Bluestone, Cacapon, and Greenbrier.



By John Purbaugh

The 1985 Highlands Conservancy Outings program started with a whimper on Saturday, March 23. The scheduled hike in Kanawha State Forest, led by Charley Carlson, appeared jinxed from the beginning by rain, the \$2 fee and the fact that most members did not receive a copy of the schedule before the hike. Four people, including myself and baby son Tom, nevertheless enjoyed a misty afternoon walk with Charley.

When the idea of an outings schedule was proposed, I felt that minimal insurance coverage would be wise, especially for the more arduous

Rain, \$2 fee jinx first outing

trips. The Board of Directors approved an outings schedule at the January meeting but required that a small fee be collected to offset the cost of insurance, printing and mailing for the first schedule.

So far, reaction to the \$2 fee for day trips and the \$10 fee for overnight outings has been negative. I have located a cheaper source of medical insurance, however, and hope to offer free fall and winter trips.

Meanwhile, please keep your suggestions for outings, either overnight or day hiking, canoeing, or other activities coming to me at the address in the roster.

George named to Coal Council

WVHC President Larry George was appointed to the National Coal Council April 17 by U.S. Secretary of Energy John Herrington.

The Council was created in October 1984 to advise the Reagan Administration in the marketing, production, environmental, transportation, technology and other aspects of national coal policy and to improve cooperation in expanding the nation's coal production.

George was nominated by U.S. Sen. Robert C. Byrd (D-WV) and Rep. Nick Rahall (D-WV) to serve a three-year

term on the advisory panel.

One of only a few conservationists nominated to serve on the 110-member Council, George said, "It is crucial that conservationists hold a leading role in shaping the nation's coal policy. The National Coal Council may provide this forum."

Chartered under the Federal Advisory Committee Act, the Council includes members from the coal industry, state and tribal governments, and conservation, labor and academic organizations.

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