

A black and white photograph of a mountain landscape. In the foreground, a large, gnarled tree branch lies horizontally across the top of the frame. Below it, a river flows through a valley, reflecting the surrounding forest and mountains. The riverbank in the immediate foreground is rocky and covered with fallen branches and debris. The background features steep, forested mountains under a bright sky.

Idaho Environmental Quality Profile

**United States
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Agency**

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Contents/Summary

3 River Water

Although Idaho's water quality is generally pretty good, portions of major rivers may have marginal quality, according to the water quality standards. Mining has had effects on the Spokane and Coeur d'Alene Rivers while heavy metals from unknown sources have affected the Lower Salmon and Clearwater Rivers. The lower Portneuf River has been degraded by municipal, industrial and agricultural sources while Rock Creek has suffered irrigation wastewater pollution. High suspended solids have been found in the Bruneau and Bear Rivers. Even though EPA permits are required of those industries and municipalities that discharge waste into streams, wastewater is not always treated adequately. Facilities become overloaded from ground-water or stormwater entering sewers, and at times low streamflow does not allow for maintenance of the water quality standards.

7 Lakes

Most major problems in Idaho's principal lakes appear to be due to algal blooms stimulated by agricultural runoff and septic tanks. Photosynthetic activity and algae decomposition can adversely affect fish in reservoirs. Sewage treatment plant discharges have been, in some cases, removed from rivers that flow into reservoirs, helping to clean up that situation. Agricultural nutrients and discharges of sewage effluents have affected American Falls Reservoir. Agricultural runoff from non-point sources entering the Snake River upstream from Oxbow and Brownlee Reservoirs has degraded those lakes. Excessive algal growth due to summer inflows from agricultural non-point sources affects Lake Lowell, which receives heavy recreational use by residents of Boise Valley.

9 Underground Water

Although not originally listed as needing to develop Underground Injection Control regulations, Idaho petitioned to be included in the EPA's UIC listings. Idaho will receive EPA grant money through 1981 and is using it to collect background data on aquifers, inventory injection wells and to evaluate the adequacy of state laws and regulations. Idaho has been implementing protective activities in the Spokane Valley-Rathdrum Prairie Aquifer, which provides drinking water for 40,000 Idahoans and 300,000 Washingtonians in the Coeur d'Alene and Spokane areas.

10 Solid Waste and Hazardous Substances

There is concern that state regulations governing subsurface sewage disposal and wastewater injection will not prevent pollution of drinking water sources in several areas in Idaho. Although no large-scale problems have occurred because of improper disposal of hazardous substances in the state, the large amount of hazardous and exempted wastes generated are not properly managed. A solid waste plan will be a high priority in 1982 and regulations will be updated to ensure all waste disposal facilities are covered. Boise is studying the feasibility of converting municipal wastes, such as glass, metal and newspaper, to energy, but recycling programs throughout the rest of the state suffer from high transportation costs and small volume

12 Air

The EPA has taken over the responsibility of maintaining an air quality program in Idaho. It appears the EPA will be limited to maintenance of an ambient air monitoring system and a program for protecting public health. Federal standards have been set for six major pollutants: Total Suspended Particulates, Sulfur Dioxide, Carbon Monoxide, Ozone, Nitrogen Dioxide and Lead. Suspended particulate matter, or solid and liquid particles of various sizes, can increase coughing and chest discomfort and can aggravate asthma and chronic lung diseases. The Pocatello and Conda-Soda Springs areas have serious problems with the suspended particulates produced by fertilizer and industrial chemical processors. In Lewiston, the wood products industry and kraft pulp mill are sources of particulates. Boise suffers problems with carbon monoxide due to heavy traffic.

IDAHO ENVIRONMENTAL QUALITY PROFILE

The Idaho Department of Health and Welfare, Division of Environment (IDHW-DOE) and the Environmental Protection Agency (EPA) have jointly prepared this Idaho Environmental Quality Profile.

The purpose of this Profile is to provide the public with a current assessment of environmental problems in Idaho and the related program efforts of DOE and EPA that will be directed at solving these priority problems. This is a draft report and it is intended for interested Idaho citizens to have the opportunity to provide guidance on re-direction of program priorities. EPA and DOE would like feedback to determine if there are environmental problems of a higher priority than those described in this report that may have been missed in our assessment. Thus:

- What are the most serious environmental quality problems in Idaho?
- Should we be re-directing our declining resources for environmental protection to other program areas to get the most return in environmental clean-up?
- Are there better methods for tackling these environmental problems?

- Do we need to place more emphasis on specific geographical environmental problem areas?

We are seeking public participation in answering these questions. The result will be used to provide additional direction for the FY-82 programs.

The last page of this Report is a questionnaire. We would appreciate your taking the time to fill out and return it.

Please direct any comments, concerns or questions to:

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WATER QUALITY STANDARDS - HISTORY AND DEFINITION

When Congress enacted amendments to the Federal Water Pollution Control Act in 1972, a national goal to achieve "fishable, swimmable" waters by 1983 was set. The purpose of the Act is to protect the quality of our nation's waters for a variety of uses, including public water supply, wildlife, fish and shellfish, recreation, navigation, agriculture and industry. Each water use depends on certain characteristics, such as temper-

ature, concentration of dissolved oxygen, or absence of bacteria, which can be measured and used to evaluate water quality.

Idaho's water quality standards provide a comprehensive set of criteria defining water quality levels necessary to protect human health, aquatic life and other desired uses of rivers and streams. These criteria thus represent water quality goals.

Most of Idaho's streams are managed to support cold water game fish species such as trout and salmon; however, some are managed as warm water fisheries, supporting bass, bullhead, and other fish requiring less stringent criteria. The water quality of individual streams or stream portions is determined at monitoring stations by measuring temperature, dissolved oxygen, acidity, etc., and comparing the results with the criteria.

Table 1: Criteria Categories for the Water Quality Index

CRITERIA CATEGORY	EXPLANATION
Temperature	Water temperature influences the type of fish and other aquatic life that can survive in a river. Excessively high temperatures are detrimental to aquatic life.
Dissolved Oxygen	To survive, fish and aquatic life must have certain levels of oxygen in the water. Low oxygen levels can be detrimental to these organisms.
pH	pH is the measure of acidity or alkalinity of water. Extreme levels of either can imperil fish and aquatic life.
Aesthetics	Refers to oil, grease, and turbidity which are visually unpleasant. For the Index, this group is mostly represented by the turbidity parameter, which is a measure of the clarity of the water, because it is much more widely measured than any of the others within the group.
Solids	Dissolved mineral and suspended material such as mud or silt. Excess dissolved minerals (hard water) interfere with agricultural, industrial, and domestic use. Excess suspended solids adversely affect fish feeding and spawning.
Radioactivity	May be in water as a result of radioactive waste discharges or fallout. Excess levels can harm aquatic and other life forms.
Bacteria	Bacteria indicate probable presence of disease-related organisms and viruses not natural to water (i.e. from human sewage or animal waste).
Trophic (Nutrient Enrichment)	Indicates the extent of algae or nutrients in water. Nutrients promote algae growth. When algae (one-celled water plants) flourish they make the water murky, and the growths make swimming and fishing unpleasant. Decomposition of dead algae can decrease dissolved oxygen concentrations to levels harmful to fish.
Organic Toxicity	Includes pesticides and other organic poisons having same effects and persistence as pesticides.
Inorganic Toxicity	Heavy metals and other elements; excess concentrations are poisonous to aquatic and other life forms. Also includes percent saturations of dissolved gases in water which can affect the metabolism of aquatic life.

THE QUALITY OF IDAHO'S PRINCIPAL RIVERS

Water Quality in Idaho is generally good to excellent, however, at certain times of the year portions of major rivers have marginal quality with respect to state and national water quality goals.

Pollutants that reach the state's streams have two general origins: 'Point sources', such as wastewater from industries and sewage treatment plants that enter streams at an easily identifiable location; and less

easily identifiable 'non-point sources' that consist of stormwater from urban areas, irrigation tail-water, and runoff from forest and mining areas and dryland farms (such as non-irrigated wheat farms).

Water quality criteria most often exceeded are those for temperature, bacteria, nutrient levels, heavy metals and sediment. The significance of organic toxics is not

known since adequate information to make such a determination has not been collected. To attain the water quality goals, wastewater treatment programs for point

sources and best management practices for non-point sources either have been implemented or are planned. Table 1 gives the major parameters measured and used in determining the relative quality of various streams (the Water Quality Index).

The most polluted streams in Idaho (ie; those that exceed the water quality limits most frequently) are the South Fork Coeur d'Alene River, the lower Portneuf River, Rock Creek in Twin Falls County, and Panther Creek, Big Deer Creek, and Blackbird Creek in the Salmon River drainage. Much of the South Fork Coeur d'Alene River is affected by high levels of heavy metals from past and present mining and ore-producing activities within its basin. Pollution from these activities also is responsible for marginal water quality in the Spokane and main-stem Coeur d'Alene Rivers.

The Portneuf River has been degraded by a combination of municipal, industrial, agricultural and natural sources. The upper Portneuf River is heavily impacted by sediment from rainfall and snowmelt runoff from dryland agricultural areas. Since the summer of 1980, however, much of the municipal and industrial wastewater has been diverted from the lower reaches of the river. Rock Creek, which flows through Twin Falls, is heavily polluted by irrigation wastewater entering its lower reaches. Both the Portneuf River and Rock Creek impact segments of the Snake River.

Panther, Big Deer and Blackbird Creeks are affected by acid mine drainage from the old Blackbird Mine near Cobalt. The native and anadromous fisheries (trout, dolly varden, salmon, etc.) have been eliminated from portions of each of these streams. (For Panther Creek, the largest of these streams, the fisheries have been almost entirely eliminated in a reach from the confluence with the Salmon and extending for 35 miles upstream)

Most of the other principal streams monitored in Idaho are significantly degraded during their worst three-month periods. Often a stream will meet the water quality standards throughout most of the year; however during the summer low flow, heavy usage periods these standards may not be maintained.

Other problems are attributed to agricultural runoff from irrigation return flows, particularly in Southern Idaho, and from dryland farming in the Palouse area and in Eastern Idaho. Some stream reaches are affected by discharges from municipal and industrial sewage treatment plants. Examples are the Boise River and Milner Reservoir on the Snake River. High concentrations of heavy metals from unknown sources are primarily responsible for the Lower Salmon and Clearwater Rivers' marginal ratings. The remaining streams, located in more remote areas of the state, lack significant agricultural, urban and industrial activities and generally meet water quality goals.

Figure 1 give the worst three-month and the average annual Water Quality Index of various Idaho river and stream reaches with respect to the water quality categories evaluated.

Figure 2 shows the location of the major streams in Idaho.

Many stream reaches, particularly in the more arid portions of the state, exceed the temperature criterion. Excessive bacterial levels occur in some of Idaho's southern streams, due primarily to runoff from grazing and animal confinement areas. Over half of the stream segments evaluated show excessive nutrient concentrations during at least part of the year. These are mostly over-enriched by runoff from irrigated and dryland agriculture, although treated sewage may contribute to these problems in some streams, such as the Boise River.

Other streams with high suspended solids levels are the Bear River near the Wyoming border, the Bruneau River and the Portneuf River. Rainfall and snowmelt runoff from dryland agricultural areas account for the sediment in the Portneuf and Bear Rivers.

Limited monitoring for organic toxicants in the waters of the Snake, Bear, Kootenai and Salmon Rivers has not revealed significant levels of contamination in recent years. Fish tissue samples taken at 19 trend stations in Idaho indicated that no criteria

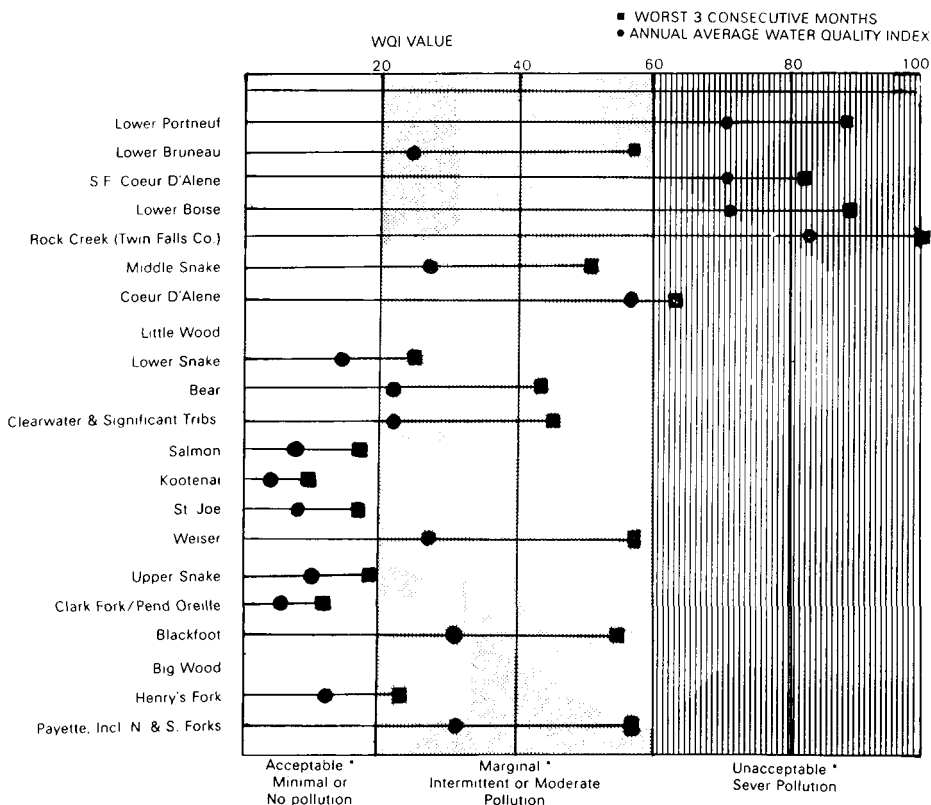
were exceeded for 22 pesticides and other organics. However, 26 percent and 30 percent of the total DDT¹ and PCB² samples, respectively, exceeded recommended concentrations for the protection of fish-eating birds and mammals. Large amounts of PCBs were released to the Upper Snake River following the flooding caused by the failure of the Teton Dam.

Many of these water quality problems will be the target of DOE's and EPA's program effort during FY-82. In some cases, such as the South Fork Coeur d'Alene problem due to past mining activities, a low priority has been assigned. This is because the resource commitment to solve these problems would be great in relationship to the environmental gains and in the cost to other program areas. There is also a question as to the technical feasibility of solving this problem.

¹DDT is a chlorinated hydrocarbon that accumulates in the biosphere. DDT has had serious effects on wildlife and has been found concentrated in human body tissue. DDT is now banned for general application and is approved for use in certain specific instances.

²PCB stands for polychlorinated biphenyls, a material known to have extremely hazardous health and environmental effects. PCB's have not been manufactured in the U.S. since 1977.

Figure 1: Water Quality Index Values for Idaho's Principal Rivers



WATER QUALITY TRENDS

The general water quality picture in Idaho, as represented by 28 monitoring stations, has exhibited little apparent change over the past seven years. Trends indicate improvement in the aesthetics and amount of solids being discharged in many

of the stream segments. Segments exhibiting the greatest improvement are the Upper and Middle Snake due to the removal of most of the discharges from potato processing and the Portneuf River due to removal of discharges from the City of Pocatello and the Simplot plant.

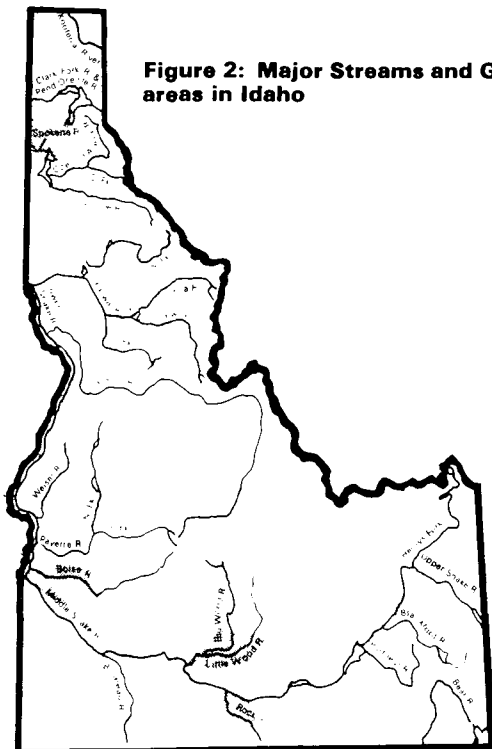


Figure 2: Major Streams and Geographical high priority areas in Idaho

CONTROL OF WATER POLLUTION SOURCES

The EPA and DOE will experience significant changes in water program priorities for 1982. EPA budgets are being reduced in many program areas. DOE also experienced a substantial reduction for FY-82 that will be compounded by the loss or reduction of EPA grant funds. To attain the highest level of environmental improvements, the greatest emphasis must be placed on the most serious problems. Therefore, EPA and DOE have jointly defined four high priority geographical areas where the most significant environmental problems occur and around which efforts will be concentrated during FY-82.

These geographical areas are shown in Figure 2. The environmental problems identified in these areas are:

- Rathdrum Prairie - on-site waste disposal systems, increased recreational lake uses, municipal waste disposal, drinking water supply, hazardous and solid waste disposal.
- Lower Boise River - municipal waste disposal, irrigated agricultural runoff, on-site waste disposal, industrial discharges, hazardous and solid waste disposal.
- Twin Falls Irrigation Tract - irrigated agricultural runoff, on-site waste disposal, municipal waste disposal, hazardous and solid waste disposal.
- South Central Snake River Plain - injection wells, drinking water supply, hazardous and solid waste, on-site waste disposal, municipal waste disposal.

POINT SOURCES OF POLLUTION

In Idaho, industries and municipalities that discharge waste into streams are required to apply for permits issued by EPA under the National Pollution Discharge Elimination System (NPDES). These permits define the level of pollutants that can be discharged to Idaho's streams and still maintain water quality as established in the standards. However, due to resource limitations, EPA does not generally issue (or re-issue) permits to defined "minor" dischargers in Idaho. In most other states, the NPDES programs have been delegated to state agencies which carry out this responsibility. Idaho does not qualify for delegation because of low state penalties available for enforcement. Through the NPDES permitting process, point source pollutants are to be removed to acceptable levels before wastewater reaches the river.

Problems still exist, however, including inadequate wastewater treatment, overloading of facilities from groundwater and/or stormwater entering into sewers and inadequate stream flow it provide mixing of the effluent from industrial and municipal wastewater treatment facilities during the summer periods when water quality normally is lower. Food processing industries and mining and ore processing facilities are other major point sources requiring improvements.

EPA resources for permitting municipal and industrial discharges will be about the same as last year's level, while DOE's resources will be reduced somewhat. First priority will be given to insurance and reissuance of permits and compliance monitoring in the environmentally impacted geographic areas. Pre-treatment programs will be developed in some cities providing for control of certain industrial wastes prior to discharge to municipal treatment systems.

Through the Construction Grants Program, EPA provides assistance to the state for the construction of municipal sewage treatment systems. DOE has been awarded partial delegation for the Idaho Municipal Facilities Construction program and is providing active management of this program.

It appears that Idaho may lose up to \$9 million in construction grant funds due to a proposed rescission of FY 80 and 81 funds which may be approved by Congress. This program may be funded in the FY-82 Federal budget, but it will be contingent on Congress passing legislation to reform the Municipal Facilities Program. DOE will evaluate their system for establishing project priorities and will amend it, as necessary, for consideration of funding limitations. DOE and EPA will continue to emphasize the upgrading of municipal sewage treatment facilities to provide

secondary treatment. To meet Idaho's Water Quality Standards on some rivers, treatment beyond secondary may be required for a few municipal discharges. EPA is working with both Idaho and Washington to establish a coordinated plan for control of nutrients in the Spokane River in order to meet Washington's water quality standards.

Operation and maintenance (O&M) of municipal facilities will continue to be a priority element of the Municipal Facilities Construction Program and O&M manual development and review will be emphasized. Training programs will be carried out by Boise State University in cooperation with DOE.

A program for handling the sludge produced by the sewage treatment plants will be considered, since this problem is increasing and needs to be addressed. The problem will be evaluated for individual community and regional solutions.

NON-POINT SOURCES OF POLLUTION

Non-point sources of pollution are generally not easily treated and "best management practices" (BMPs) must be developed to achieve control. For example, agricultural best management practices might include adequate, controlled waste storage areas to keep organic wastes from reaching streams, or contour plowing to prevent erosion of soil into rivers.

The responsibility for developing methods to control non-point source pollution has been given to local and state agencies assigned to develop water quality management plans as provided by the Federal Water Pollution Control Act.

The approach for controlling non-point sources of pollution has been through the '208 planning process.' A number of high priority pollution problems have been addressed through this program and solutions are successfully being implemented. The 208 program has not been funded for FY-82 and it is doubtful the program will be revived beyond FY-82. There are 29 '208 projects' in progress in Idaho, the last of which are scheduled for completion in 1983.

Agriculture continues to be one of the most significant non-point sources of water pollution in Idaho. A statewide agricultural Pollution Abatement Plan was completed in 1979. This voluntary program is being implemented primarily through the 208 planning process in ten high priority areas: Rock Creek, LQ Drain and Cedar Draw in Twin Falls County, Paradise Creek-South Fork Palouse River and Cow Creek in Latah County, Marsh Creek in Bannock County, the lower Boise River in Canyon County, Willow Creek in Bonneville County, Little Malad River in Oneida County, and Hangman Creek in Benewah County.

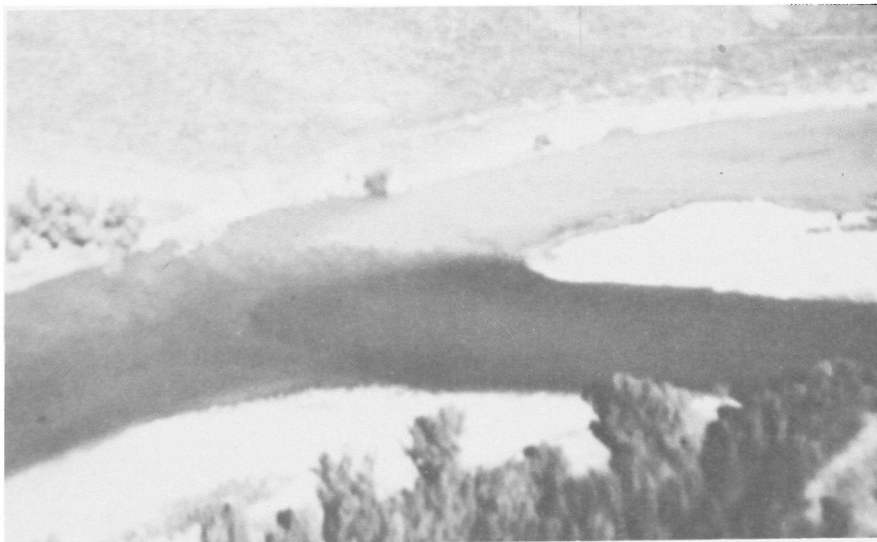
A project in the Rock Creek watershed providing for implementation of BMP's is being funded through the Rural Clean Water Program. DOE is in the process of developing a state program for funding BMP implementation utilizing the Water Pollution Control Fund.

Runoff from timber harvesting is also a major cause of non-point source problems. The Idaho Department of Lands (IDL) has the responsibility for controlling pollution from logging practices on state and private lands through the Forest Practices Act.

Activities on Federal lands are the responsibility of either the Forest Service or Bureau of Land Management. BMPs have been developed, however, a program to insure implementation is lacking at the state level due to inadequate funding. On Federal land, implementation of BMPs varies from forest to forest, and there is no monitoring to insure that good practices are utilized. Currently, the only effort being made is the development of an education/information program to make timber harvesting operators aware of the impacts of poor practices. EPA and the State will attempt to identify critical areas during FY-82 and concentrate efforts to control identified problems within these areas.

Mining activities are another major non-point source of pollution. DOE will be working closely with the Noranda and Cyprus mining companies to minimize water quality impacts as these operations progress. Runoff from abandoned and inactive mining operations, which is difficult and expensive to control, creates problems in the South Fork and main Coeur d'Alene Rivers. There are also problems due to uncontrolled discharges and pond leakage. State plans to rehabilitate the South Fork have been hampered by lack of funds.

DOE and EPA will explore other means for dealing with non-point source pollution problems, giving emphasis to those located in priority geographical areas. Implementation of existing projects will be given a high priority. A major effort will be made to identify sources of funding to provide incentives for installation of best management practices as a means for controlling excessive runoff and sedimentation from agricultural lands.



IDAHO LAKE WATER QUALITY

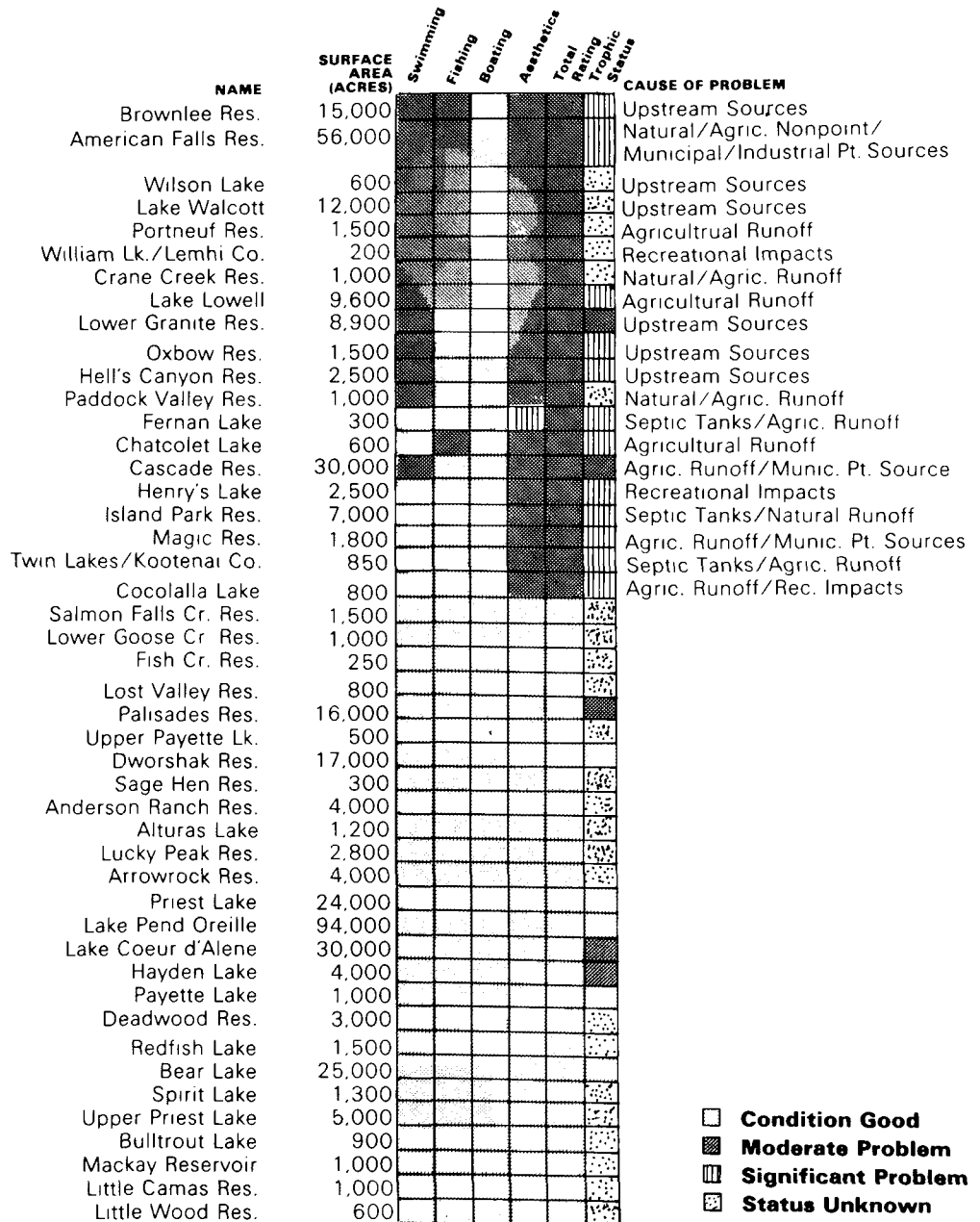
Inland lakes and waterways constitute one of Idaho's most important recreational and commercial resources. Lake water quality in Idaho is among the best in the nation. Only a few of the major recreational lakes have significant water quality problems that impair their recreational use.

Figure 3 shows the principal recreational lakes in Idaho and the status of the lakes for various recreational uses.

If a lake is undisturbed by human activities, it undergoes a natural process of aging known as eutrophication. Man's activities, however, may accelerate this process by introducing nutrients to lake waters through improper land use and waste disposal practices. Land use practices on farm land, forests and construction sites often result in erosion of nutrient-rich soils into streams feeding lakes. Significant quantities of nutrients are also discharged by sewage treatment, certain industrial plants and runoff from urban areas, pastures and feedlots.

Water Quality agencies in Idaho are concerned with the status of Idaho's lakes because many uses of the lakes and development around the lakes will affect the aging process. Highly eutrophic lakes are characterized by dense algal blooms, floating mats of vegetation, and a murky appearance. Algae are found naturally in every body of water, but when stimulated by abundant nutrients, sunlight, and warm temperatures, they rapidly multiply to become a nuisance to recreational users and seriously affect water quality for other uses. These nuisances may curtail or even

Figure 3: Principal Recreational Lakes in Idaho and a rating of their condition



□ Condition Good
 ■ Moderate Problem
 ▨ Significant Problem
 ▩ Status Unknown

eliminate recreational activities (such as swimming, boating and fishing), impart tastes and odors to water supplies, and cause toxic conditions which adversely affect other aquatic life in the lakes. For example, when sufficient quantities of these aquatic plants die, the decaying process may consume quantities of dissolved oxygen sufficient to kill fish and other aquatic life. The recreational use of lakes in itself can affect water quality. Power boats create waves that erode banks, contributing sediment, nutrients, and muddy water. They also release mixtures of oil and gasoline and associated contaminants to the water. Removal of vegetation along shorelines to enhance public access can also lead to erosion.

Most major impairments of the principal lakes in Idaho appear to be due to algal blooms stimulated by nutrients from agricultural runoff and septic tanks. Runoff from agricultural non-point sources entering the Snake River upstream of Oxbow and Brownlee Reservoirs has degraded those two water bodies. Lake Lowell, an off-stream reservoir near Boise, receives heavy recreational use by residents of the Boise Valley. Excessive algal growth in the summer impairs such use. The conditions are primarily due to nutrients from summer inflows from agricultural non-point sources and the large waterfowl population which utilizes the lake. However, because of the significant impact due to waterfowl, control of the agricultural sources of nutrients may not achieve a solution to this problem.

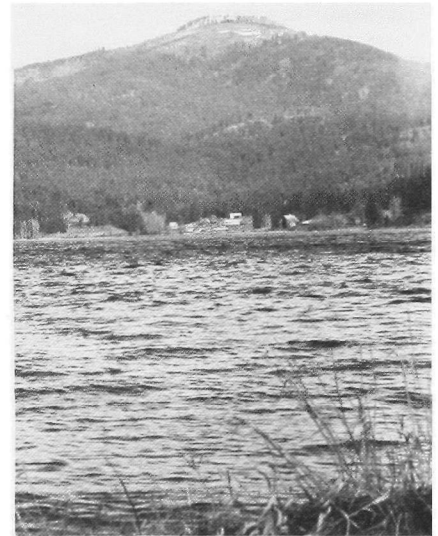
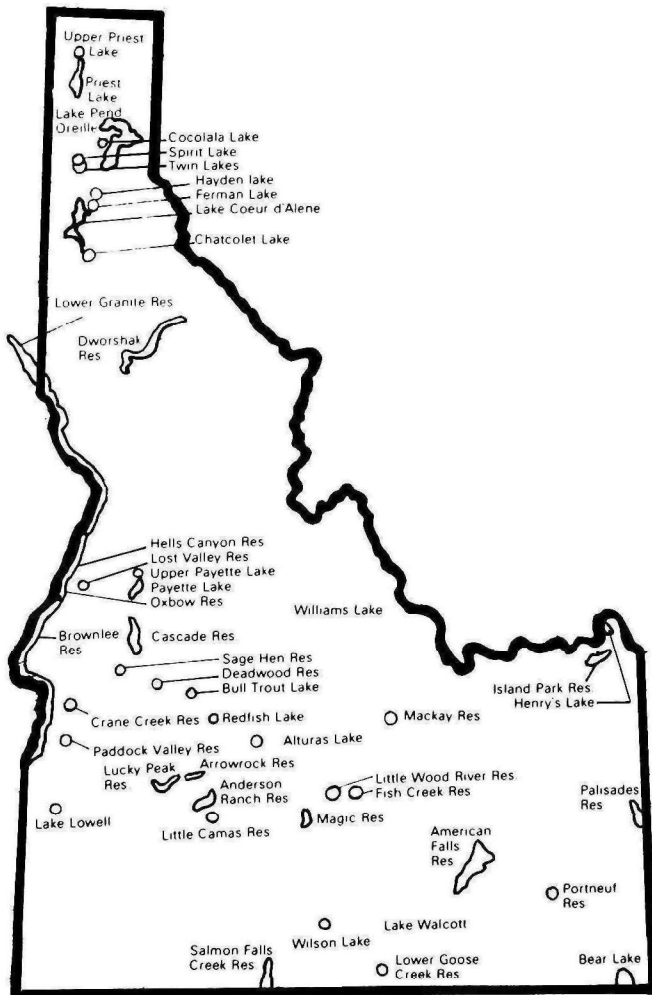


Figure 3 (cont.): Principal Recreational Lakes in Idaho.



The water quality of American Falls Reservoir is affected by nutrients from dryland and irrigated agriculture, winter discharges of treated sewage effluents from Pocatello, phosphate deposits in the soils and from many springs in the area. Wastewater from the Pocatello Simplot plants and summer discharges from the Pocatello sewage treatment plant have been removed from the Portneuf River, which flows into the American Falls Reservoir.

Many of the lakes in the Panhandle area of Northern Idaho are presently of high quality. However, development around the lakes is increasing and the lakes are extensively used for recreation. Some of the lakes are showing signs of degradation. In order to protect these valuable resources, lake shore management plans are being developed to insure that development occurs with minimal impacts on lake water quality.

Federal funding to deal with lake water quality problems has been through the 208 and Clean Lakes programs. Idaho presently has two Clean Lakes grants, one to do a lake classification analysis to determine the trophic status of Idaho's lakes and the other to study pollution sources and to develop a protection plan for Bear Lake. The Clean Lakes program also is not budgeted for 1982. Without Federal funding or increased State funds, little progress may be made in improving degraded lake water quality.

DRINKING WATER QUALITY PUBLIC WATER SYSTEM PROGRAM

The Safe Drinking Water Act, passed in 1974, gave EPA primary responsibility for establishing drinking water standards and assuring national program consistency, but intended that the states implement programs ensuring that public water systems are in compliance with standards. Idaho has assumed primary responsibility for working with public water systems to implement drinking water standards. Emphasis has been placed on voluntary compliance with the National Interim Primary Drinking Water Regulations, but when voluntary efforts fail, more formal enforcement procedures have been pursued.

There is concern by water quality agencies that current Idaho rules and regulations governing subsurface sewage disposal may not prevent unacceptable pollution of drinking water sources and health hazards in the populated areas in Southwest Boise (Ada County) and over the Snake Plain and Rathdrum aquifers.

In most cases contamination of a water supply system is due to bacteria. Disease may result from consuming small quantities of contaminated water. The national drinking water standards address treated water quality characteristics, as measured by periodic tests. EPA recognizes that these are minimum standards and are not adequate in themselves to protect public health. Therefore, EPA encourages states to implement comprehensive programs that go beyond addressing only finished water quality.

The primary means to assure safe drinking water is for public water systems to have properly operated, well-maintained adequately designed facilities. That means a major part of a state's program is evaluation of facility design and inspection of water systems to determine facility deficiencies which can create health hazards.

Approximately one-fourth of the water supplies in Northern Idaho are not meeting minimum state monitoring requirements, or have never been inspected by the state.

The drinking water program is funded with state monies and EPA grant monies made available to IDHW. The state will maintain the drinking water program to provide the maximum level of public protection that resources allow. First priority will be to ensure that drinking water systems violating the maximum contamination levels for bacteria, chemical, radio-chemical and turbidity contaminants are surveyed and the problems corrected. Public notification when drinking water maximum containment levels are violated will also receive major emphasis. If IDHW should lose existing District Health Department support due to inadequate Federal funding support, less emphasis will be given to non-community public water systems and fewer public water supply system sanitary surveys may be conducted.

GROUNDWATER PROTECTION

The Safe Drinking Water Act also established a program to protect underground sources of drinking water. EPA's role is to develop national Underground Injection Control (UIC) regulations, provide oversight and ensure national program consistency. Congress intended for the states to implement the UIC program and that EPA would list the states needing the program. Idaho, although not initially listed, petitioned to be included in the UIC listing. EPA awarded UIC grants to Idaho (Department of Water Resources) in 1979, and those grants continued in 1980 and 1981. Idaho is using developmental grant funds to collect background data on aquifers, inventory injection wells and evaluate the adequacy of state laws and regulations. The Idaho Department of Water Resources in cooperation with DOE is working to attain delegation of the UIC program, which would provide protection against groundwater degradation through regulation of injected fluids.

contamination of groundwater by impoundments, few actual cases of groundwater contamination have been documented.

'Sole source aquifer designation' is another feature of the groundwater protection program, in which an aquifer may be designated as the only source of drinking water for a particular area. Idaho entered into its first full year of implementing protective activities within the Spokane Valley-Rathdrum Prairie Aquifer. This aquifer, first designated a sole source aquifer in 1978, provides drinking water for about 40,000 Idaho residents and 300,000 Washington residents in the Coeur d'Alene and Spokane areas. The designation prohibits any Federal agency from financially assisting any project which EPA determines may contaminate this important aquifer.

Where there is rapid development in rural areas that affects vital groundwater systems, DOE and EPA have been helping local agencies develop management plans to prevent degradation. The Panhandle Health District adopted and is implementing regulations for sewage disposal

over the Rathdrum Prairie Aquifer. EPA is encouraging Spokane County to adopt similar regulations. Ada Planning Association is finalizing a wastewater management plan to prevent groundwater degradation in Southwest Ada County and the Southeast Idaho Council of Governments has developed a plan addressing prevention of groundwater degradation in Bingham County. The District Seven Health Department is developing a plan to prevent contamination of the Snake River Aquifer in the six counties making up its district.

The importance of protecting groundwater resources is recognized by DOE and EPA, and EPA will continue to provide grant support to IDWR for development of an underground injection control program. However, 208 grant funds for planning to protect against other sources of groundwater degradation will be discontinued due to the phase out of monies for this program. DOE is developing a groundwater management plan that will establish a groundwater pollution control/protection strategy and will define steps needed to implement this strategy.

A surface impoundment assessment (pits, ponds and lagoons) has been completed by the University of Idaho. While the study indicates there is potential for

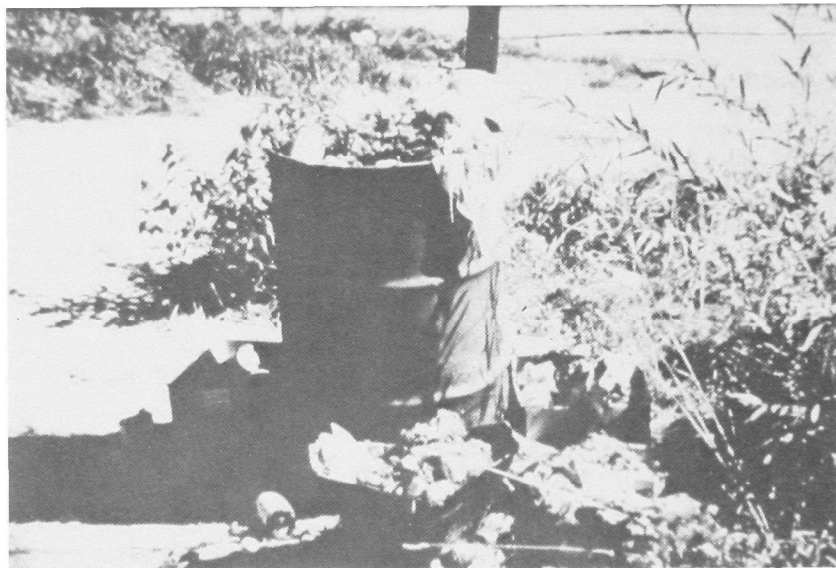
SOLID WASTE AND HAZARDOUS SUBSTANCES

Scarcity of land for waste disposal, concern about limited resources and health hazards arising from improper disposal of hazardous wastes prompted Congress to pass the Resource Conservation and Recovery Act (RCRA) in 1976. The act requires that Federal criteria be established for evaluating land disposal operations nationwide.

In the past, many municipal landfills could often be described as little more than open dumps. Progress has been made in identifying these dumps, however, the inventory to classify disposal sites is not yet complete.

Open burning of wastes has been virtually eliminated in Idaho, but environmental problems related to improper disposal of municipal solid wastes remain, with water pollution being a major concern. Rainwater draining over a fill and filtering into the ground through the wastes will carry harmful chemicals and bacteria into streams and groundwater, which can then pose a threat to drinking water supplies.

Other problems are related to waste disposal. For example, when garbage decomposes, methane gas is produced as a by-product. Methane is toxic to vegetation and is explosive in certain concentrations. Decomposition can produce odors and may attract disease-carrying rodents and insects. Proper disposal with daily cover and proper compaction will reduce many of these problems.



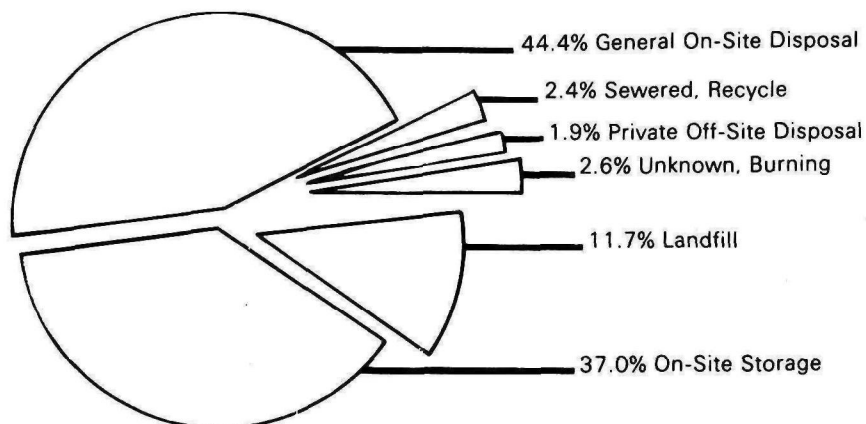
Sewage sludge disposal is an increasing problem as water pollution regulations become more strict and landfill space becomes scarce. Alternatives for waste materials, such as incineration and the use of sludge on farm and forest lands, are being tried.

The lack of Federal and state funds will practically eliminate the surveillance of municipal solid waste disposal sites.

Aside from the hazardous substances regulated by RCRA, the Toxic Substances Control Act (TSCA) and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) are used for the regulation of other chemicals.

No major problems from improper disposal of hazardous substances have been discovered in Idaho, but a significant amount of hazardous wastes generated in Idaho are not being properly managed. Figure 4 shows a typical distribution of hazardous waste disposal practices utilized throughout the Pacific Northwest. Hazardous materials disposal in municipal landfills has created health hazards to employees and could create environmental contamination. DOE and EPA will be working toward the development of a hazardous waste management program during FY-82 which will address the large volume generators (more than 1000 kilograms per month or 2200 pounds per month). DOE and EPA will then work toward the implementation of the program. Hazardous waste legislation will be developed for possible introduction during the 1982 Idaho legislative session. If the enabling legislation is passed, DOE will begin developing hazardous waste regulations that should be completed in FY-83. Emphasis will be placed on DOE involvement in technical review and development of permits for facilities treating, storing or disposing of hazardous wastes. This program is responsible for the exempted hazardous wastes which are not controlled by the Federal program. DOE will work closely with the district health departments to implement a hazardous waste surveillance program. Also, DOE will continue to develop oil and hazardous spill response capabilities.

Figure 4: Waste Disposal Practices



RESOURCE RECOVERY

RCRA provides financial assistance to state waste management authorities to develop and implement comprehensive solid waste plans, including environmentally sound disposal methods and recovery and conservation programs. Some municipal wastes, such as glass, metal and newspaper, can be recycled, and much of the rest can be converted to "refuse-derived fuel" or burned to create steam or electricity.

Figure 5 shows the location of operating chemical landfills and recycling facilities

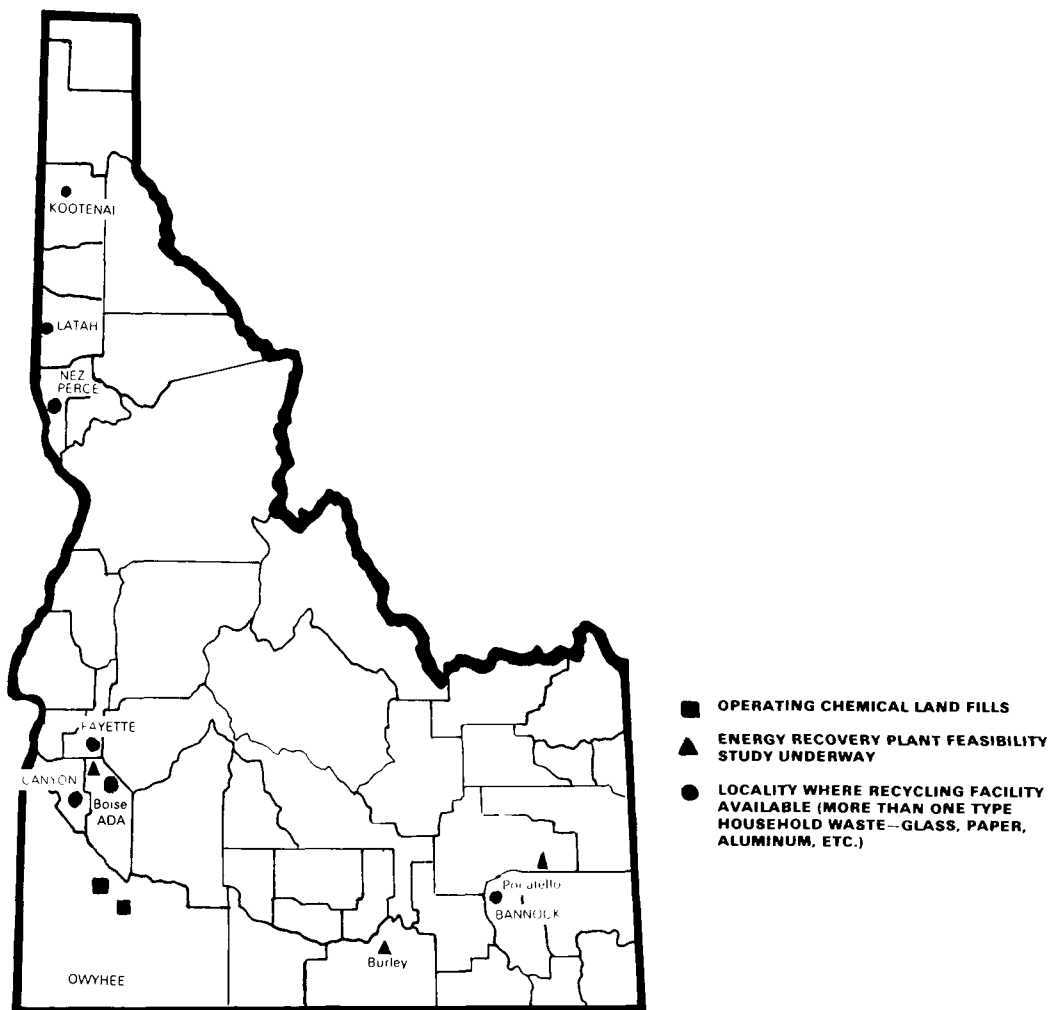
and potential energy recovery facilities in Idaho.

Boise is studying the feasibility of converting waste to energy. The economics of recycled materials are typically very good in other areas, but recycling programs in Idaho suffer from high transportation costs and small volumes.

Other wastes with a potential for recovery include tires, lubricating oil and wood waste, which present serious disposal problems. Discarded tires gradually work

to the surface in a landfill, where they trap water, become a breeding place for mosquitoes and pose a fire hazard. Waste lubricating oil is used on roads as a dust suppressant, but can contaminate air and water. And lead in the oil makes indiscriminate burning or disposal undesirable. Wood waste, which can pollute water resources and consume significant space in landfills, is presently being used to produce steam in several Idaho timber mills and utilities, and may be used with refuse derived fuel.

Figure 5: Location of Hazardous Waste and Resource Recovery Facilities in Idaho



AIR QUALITY

Air Quality Standards - History and Definition

The Clean Air Act of 1970 directed EPA to establish National Ambient Air Quality Standards ("ambient" refers to outdoor rather than indoor conditions) and in 1977, amendments to the Act required that the standards be met as soon as possible and practical. In the case of primary (health-related) standards, the new deadline is December 31, 1982. The Act required that all states adopt implementation plans, now commonly referred to as State Implementation Plans or SIP's which provided for implementation, maintenance and enforcement of these standards. Under certain conditions an extension to December 31, 1987, can be granted for carbon monoxide and ozone. The Clean Air Act is currently under review by Congress and it is expected that significant amendments will be made to the Act.

The more highly concentrated a pollutant, the worse its effect on humans and their environment. Because some pollutants have both chronic and acute effects on health, standards are based on their average concentration over various lengths of time, with a margin of safety included. Pollutants that exceed secondary standards have detrimental impacts on the public welfare and cause deterioration of many consumer products. Exceeding primary standards poses a threat to public health. If the pollutant concentration reaches the alert level, individuals, industry and government should curtail outdoor activities, use of automobiles and certain industrial operations.

Federal standards have been set for six major pollutants: Total Suspended Particulates (TSP), Sulfur Dioxide (SO₂), Carbon Monoxide (CO), Ozone (O₃), Nitrogen Dioxide (NO₂) and lead. Pollutants monitored in Idaho are TSP, SO₂, lead and CO. NO₂, photochemical oxidants and hydrocarbons are not being monitored at this time. NO₂ monitoring in Boise has been held in abeyance while the best location for monitoring is being decided upon. The levels measured in the past were about 35 percent of the ambient air quality standard. The most serious air pollution problems in Idaho are due to TSP, SO₂, lead and CO concentrations in excess of the standards.

Figure 6: Air Quality Status of Existing pollutants excluding the air quality standards in Idaho.

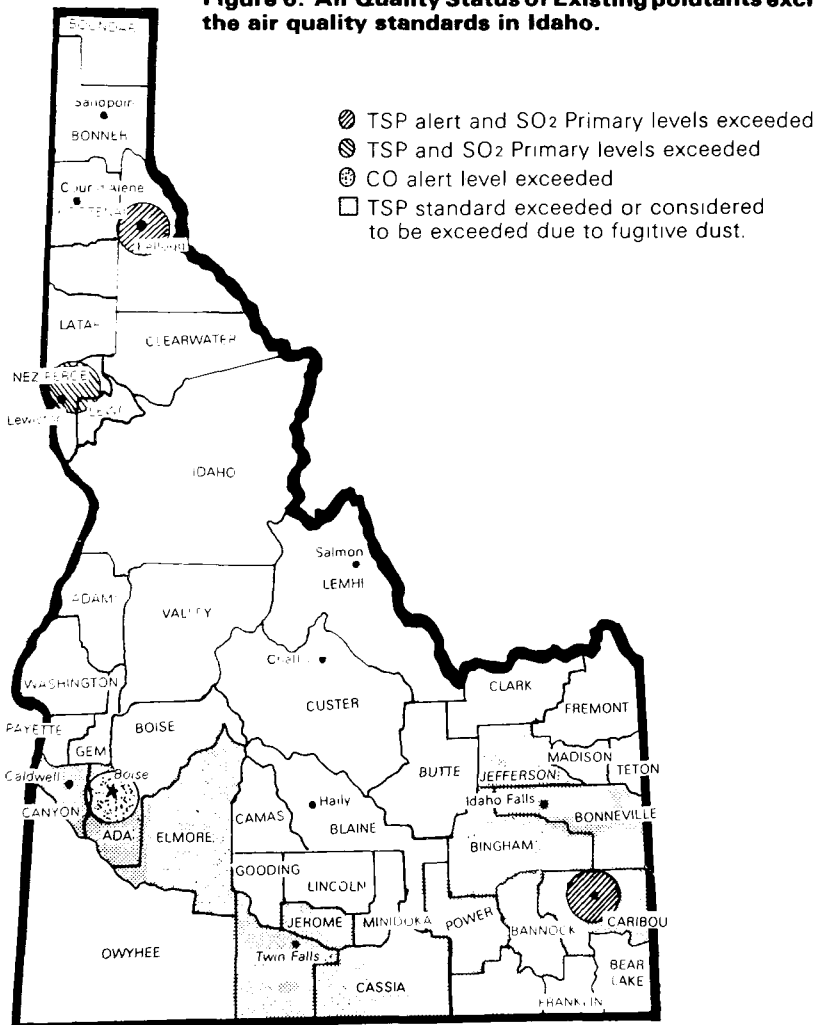


Table 2 lists the effects on health and property that normally result when the Federal standards are exceeded. Figure 6 shows the areas in Idaho where the Air Quality Standards are exceeded.

Areas within Idaho where source emissions, combined with influencing weather conditions, cause air quality standards to be exceeded have been designated "non-attainment". All other areas are classified as "attainment". The original determination of non-attainment was based on data for 1965 through 1977. Areas presently classified "attainment" may have exceeded the standards during 1979 and are also illustrated in this report.

Beginning July 1, 1981, EPA will have the responsibility of maintaining the program for air quality in Idaho³. EPA is presently evaluating the resources available for establishing an air program. The EPA program will emphasize maintaining an effective ambient air monitoring system and a basic program for protecting public health.

³The 1981 Idaho Legislature did not continue funding for the Idaho Air Quality Program beyond June 30, 1981.

TOTAL SUSPENDED PARTICULATES

Suspended particulates are solid or liquid particles of different sizes having health effects that vary with particle size and composition. Particulates can aggravate asthma and chronic lung diseases; they increase coughing and chest discomfort. Some particulates can be toxic or cancer-causing (lead or asbestos particles, for example). Particulate pollution may interfere with visibility, injure vegetation and increase building cleaning and maintenance costs.

Suspended particulate matter is a widespread problem throughout the Northwest. Some particulate emissions come from 'point sources', which are easily identified stationary industrial sources of emissions such as smokestacks. The rest, which cannot be pinpointed to a specific source, are 'area sources', such as space heating (residential and commercial heating units) and fugitive dust. Fugitive dust can be created by industrial and agricultural operations and by vehicles on paved as well as unpaved roads. In areas with little major industrial development

and low population density, fugitive dust is composed mostly of natural soil particles and is believed to be less harmful to the health. For this reason, many areas are considered to be attaining air quality standards even though particulate standards are exceeded. Data from these areas show the percentage of samples that exceeded standards based upon the number of days monitored. (Particulate samples are routinely collected once every six days).

The major point sources of total suspended particulates in the Pocatello and Conda-Soda Springs areas, are fertilizer and industrial chemical processors. In the latter area, fugitive dust from roads and fields also contributes to TSP levels in excess of standards. In Lewiston, the wood products industry and a kraft pulp mill are the chief point sources. In the Kellogg area, the Bunker Hill Company's smelting operation is a major source of TSP.

In these four areas, where the ambient air quality standards are being violated, EPA will continue to develop state implementation plan revisions.

Particulate control devices such as baghouses, electrostatic precipitators and scrubbers have been installed on many industrial sources, and some plants are scheduled to further reduce emissions in the future. As existing plants are modified and new facilities are constructed, the best technology available to control suspended particulates will be required. Control of fugitive dust is more difficult to achieve.

Paving roads and parking areas can help, as well as improved "housekeeping" in industrial areas (such as covering hoppers or conveyor belts or other equipment transporting raw materials). Construction sites can be wetted down to reduce dust. However, it is expected that reduction of fugitive dust will be gradual due to the high cost of control.

Although most of the industries that produce significant amounts of particulates have installed required control devices, particulate problems, especially those resulting from area sources and poor operation of control equipment, still remain.

SULFUR DIOXIDE

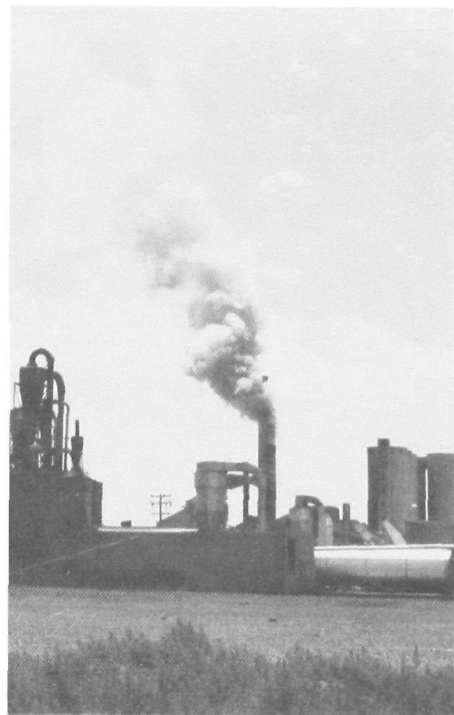
Sulfur dioxide is formed when coal or oil containing sulfur is burned, or when sulfur is burned in an industrial process. Breathing air containing sulfur dioxide can produce health effects similar to those for suspended particulates. When sulfur dioxide combines with moisture in the air to form acidic mist and rain, it can pose an increased health hazard. In addition, it corrodes buildings, is harmful to vegetation and can deteriorate the water quality of lakes and streams far from the source of the pollutant. There are three areas in Idaho where the sulfur dioxide standards have been exceeded.

The principal cause of the sulfur dioxide violations is due to the smelting of non-ferrous ores (lead and zinc) and the manufacture of phosphate fertilizer. In Kellogg, where the Bunker Hill Company smelts and refines lead and zinc, the rugged terrain of Silver Valley inhibits adequate dispersion of sulfur dioxide, although the plant's two 700-foot stacks have improved the situation. However, during frequent thermal inversions, the plant must follow a set of procedures to reduce or discon-

tinue production to keep sulfur dioxide levels within the standards. The Bunker Hill Company will conduct further studies to determine where maximum sulfur dioxide concentrations occur. The results of these studies will provide the information necessary to improve Bunker Hill's dispersion program to meet ambient standards until additional controls are installed.

The major source of sulfur dioxide in the Pocatello area is a J. R. Simplot plant, which produces fertilizers and industrial chemicals. The company is installing controls that should reduce their emissions by 25 percent. The Beker Industry's phosphate fertilizer plant near Soda Springs is the major source of sulfur dioxide in that area. Primary sources are two sulfuric acid plants, both of which operate in compliance with applicable emission regulations when their control equipment is functioning properly.

EPA will continue with the development of state implementation plan revisions for each of these non-attainment areas.



CARBON MONOXIDE

Carbon monoxide is a colorless, odorless, tasteless gas - high concentrations can cause unconsciousness or even death. At concentrations above the primary standard, this pollutant can interfere with mental alertness and physical activity, especially for persons with heart or lung disorders. Carbon monoxide is a by-product of fossil fuels combustion. Its major source is motor vehicles, and the most severe violations of standards are recorded where automobiles are concentrated - in urban areas. Boise exceeded the primary standard level of carbon monoxide about 15 percent of the time and the 'alert level' once during a 339-day study of the city's air.

The EPA is working closely with Boise City and Ada County to develop a program to reduce carbon monoxide below the ambient standard. Legislation that would have allowed the enforcement of a vehicle emissions inspection/maintenance (I/M)

program to be tied in with auto registration in Ada County did not pass the 1981 Legislature. Alternative enforcement options are presently being evaluated. An inspection/maintenance program will be one of the control measures included in the 1982 Transportation Control Plan. Implementation of this plan is to result in attainment of the CO Standard by 1987.

Motor vehicles are responsible for about 90 percent of the CO emissions; therefore, plans for reducing such emissions center on improvements to automobiles and to the transportation system as a whole. As older cars are replaced by models with up-to-date pollution control equipment, CO levels should decline. Regular vehicle inspection and maintenance will ensure that emission control devices are functioning effectively. Other measures for mitigating the problem are based upon reducing vehicle miles traveled, traffic flow improvements, transit improvements, carpooling, bike lanes and parking management.

CO problems are compounded by adverse climate conditions. During the winter months, extreme stable inversions develop which severely inhibit the dispersion of pollutants resulting in high pollutant concentrations. Also, it is difficult to maintain efficient combustion processes in cold weather. Automobiles take longer to warm-up and emit substantially more air pollutants than at warmer ambient temperatures; carbon monoxide emissions during engine warm-up may account for up to 65 percent of the total vehicle emissions produced, depending upon the size of the engine. Therefore, maintaining a warm engine or reducing average engine size may be effective in reducing cold-start emissions. The proposed low temperature emissions standard should help alleviate the cold-engine, cold weather problem.

Table 2: Effects of Major Air Pollutants on Health and Property

POLLUTANT	HEALTH EFFECTS	PROPERTY EFFECTS
Total Suspended Particulates	Correlated with increased bronchial and respiratory disease, especially in young and elderly.	Corrodes metals and concrete; discolors surfaces; soils exposed materials; decreases visibility.
Sulfur Dioxide	Upper respiratory irritation at low concentrations; more difficult breathing at moderate concentrations (3000 ug/m^3), correlated with increased cardio-respiratory disease; acute lung damage at high concentrations.	Corrodes and deteriorates steel, marble, copper, nickel, aluminum, and building materials; causes brittleness in paper and loss of strength in leather; deteriorates natural and synthetic fibers; "burns" sensitive crops.
Carbon Monoxide	Physiological stress in heart patients; impairment of psychomotor functions; dizziness and headaches at lower concentrations; death when exposed to 1000 ppm for several hours	Corrodes limestone and concrete structures.
Ozone	Irritates eyes, nose, throat; deactivates respiratory defense mechanisms; damages lungs.	Deteriorates rubber and fabrics; corrodes metals; damages vegetation.
Nitrogen Dioxide	Combines with hydrocarbons in the presence of sunlight to form photochemical smog, irritates eyes, nose, throat; damages lungs.	Corrodes metal surfaces; deteriorates rubber, fabrics, and dyes.
Lead	Primary concern with young children. Most pronounced effects on nervous system (damage may occur at low levels), kidney system, and blood forming system (high levels may have severe and sometimes fatal consequences such as brain disease, palsy, and anemia). Blood levels $>30\text{mg/deciliter}$ are associated with an impairment in cell function.	Injures plants through absorption of soil. Affects nervous system of grazing animals.

LEAD

In 1978, EPA established an air quality standard for lead, which is to be achieved by November, 1982. The State has been and EPA will continue gathering data to identify areas where the standard is being exceeded.

Violations of the lead standard have occurred in the Kellogg area, where the major sources are the Bunker Hill Company's lead smelter and general areawide contamination resulting from 60 years of milling and smelting operations

The EPA will continue to develop a revision to the state implementation plan for control of lead emissions from Bunker Hill in Silver Valley, in North Idaho



QUESTIONNAIRE

What are your views on Idaho's environmental problems?

1. What are the five environmental problems in Idaho of most concern to you?
 - 1.
 - 2.
 - 3.
 - 4.
 - 5.
2. Are IDHW/DOE and EPA directing resources in the best manner to get the most return in environmental clean-up for the resources available? If not, how should the emphasis be changed?
3. Should more effort be directed at high priority geographical problem areas?
4. Do you agree with the four high priority geographical areas identified in the Profile?

	Yes	No
Rathdrum Prairie	_____	_____
Lower Boise River	_____	_____
Twin Falls Irrigation Tract	_____	_____
South Central Snake River Plain	_____	_____
What other high priority geographical areas should be considered?		
5. Has this Profile been helpful in your understanding of environmental problems in Idaho and what is being done to solve them? If not, how can it be changed

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