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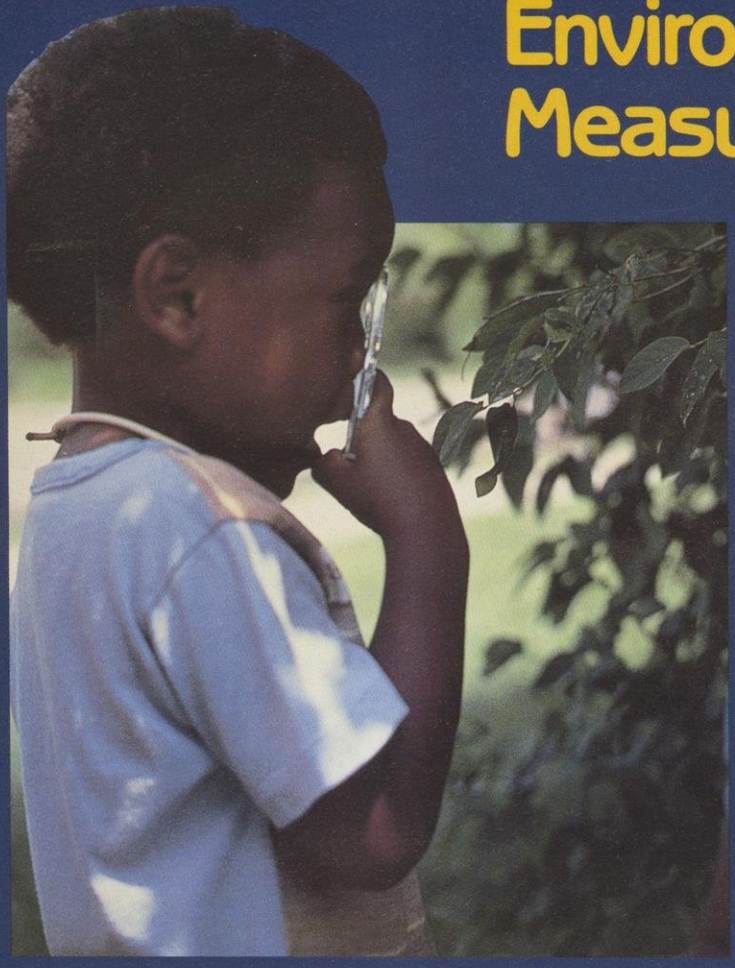
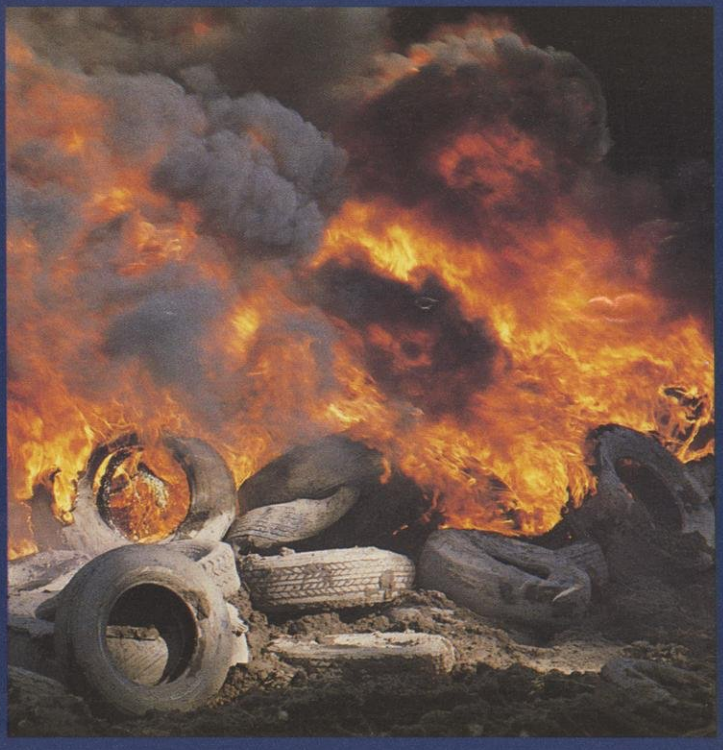
SOUTHEAST WISCONSIN

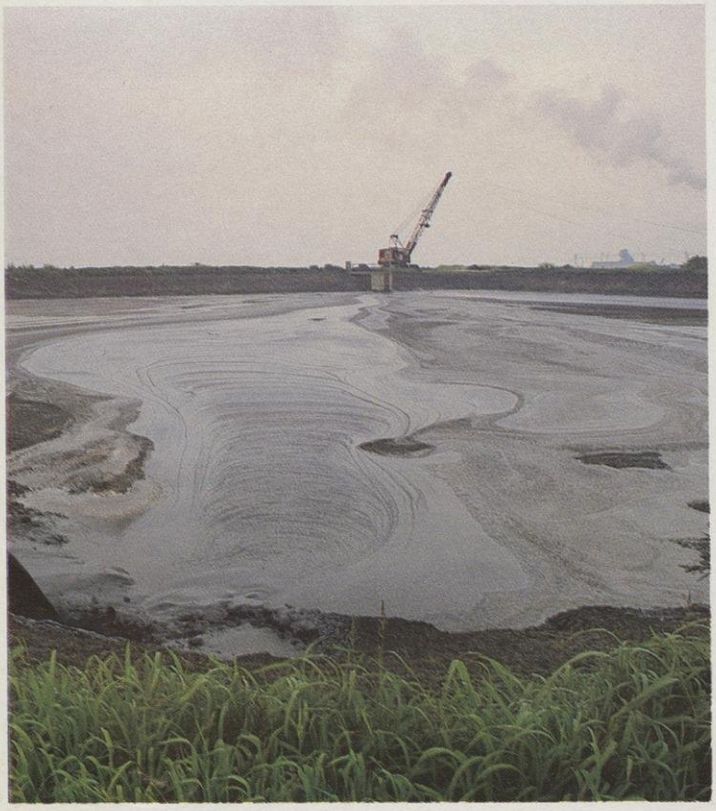
Environmental Efforts Measure Up





People, water and wind have long battled for our coastlines. Record high water levels battered the Lake Michigan shore during the last year. Photo by Jim Escalante

Southeast Wisconsin launched auto tail pipe testing in 1984 to curtail air pollution. DNR photo



Managing sewage sludge is a never-ending battle in Wisconsin's most populous region. DNR photo

Planting the seeds for a quality environment tomorrow is an important part of DNR's mission at the Havenwoods Environmental Awareness Center, part of our urban State Forest in Milwaukee. Photo by Al Stenstrup

Water quality

Air quality

Solid waste

Quality people

Coordinated by John Nelson and Jeanne Sollen, DNR Public Information, Milwaukee

FRONT COVER PHOTOS

Curious today, perhaps involved tomorrow. Combined forces of people and technology will be needed to creatively focus on environmental solutions. Photo by Al Stenstrup

Water — glass-clear and cool on the feet. The eight-county region is committed to protecting and restoring quality water resources. Photo by Dave Misterek

Smoke plumes can pit progress against our need for clean, crisp air. The region takes pride that the last quarter century has seen remarkable improvements in southeastern Wisconsin air. Photo by Dean Tvedt

New fuel or foul fire? We discard four million used tires a year. They could be burned cleanly as boiler fuel or be smelly smoke in raging fires. It's up to us. Photo by Ted Amman

Restoring our resources — it's worth the work

Gloria McCutcheon
Southeast District Director

Those of us who work for the Department of Natural Resources in the Southeast District are proud of the quality and variety of natural resources and recreational opportunities here. There are two state forests, four state parks, one recreation area, a state environmental awareness center and a wide variety of local parks. Outdoor activities run the gamut from hunting, fishing, swimming, bird watching and hiking to horseback riding, boating, skiing, snowmobiling and much more.

But environmental challenges remain. While air is cleaner in many areas here than it was 10 years ago, problems with ozone, particulates and toxics remain. There are contaminants in fish and groundwater and we need to find better ways of disposing of solid and hazardous wastes.

DNR's Southeast District staff strives to meet these challenges every day. All of us here find the work rewarding and believe an improved environment is the best public service we can give. This publication presents a rundown of our efforts.

WATER QUALITY

Clean water for quiet playtime is an important part of the southeast picture. Photo by Dean Tvedt

In Southeast Wisconsin: Quality Water = Quality Life

STEVE MACE
WATER RESOURCE MANAGER

Mention southeast Wisconsin, and water resources may not immediately spring to mind. But urban population centers do. For some people, large metropolitan areas are incompatible with natural things and synonymous with lack of open space or a deteriorating environment. But fortunately, urban expansion and economic growth in the southeast have not meant the loss of abundant, high quality water resources. Indeed, water plays a key role in attracting business, industry and recreation to the eight-county region. A high value has been placed on healthy water resources here, and a commitment has been made to work towards protection and cleanup.

Demands on water resources come in many forms—for vacation or permanent homes on lakes or streams; for camping, nature appreciation, hunting, fishing, boating, scouting; and for many other purposes. Population density and extensive urban development have resulted in use conflicts and increased pressure on all natural resources. Competition for these resources is particularly fierce and often leads to some interesting compromises. For example, recent management plans for ponds along Milwaukee County parkways have included diversion of storm water coupled with stocking of hybrid bluegill and even trout.

In 1986, DNR's Southeast District formed a working group to explore ways of restoring fish habitat in streams disturbed by flood control devices. Ways to mitigate any disturbances by creating new habitats were also studied. The idea is to provide flood relief, yet accommodate fish and other aquatic life. Output from this group will result in new standards and practices to be followed in developed urban areas.

Trying to balance the demand for housing, business and other economic development with people's basic need for a natural and healthy environment requires a special approach: integrated management of water and other resources to support the most beneficial uses. Objectives might include reducing the flow of nutrients to a system, fish stocking or removal, or habitat improvement so a lake or stream can support more aquatic life.

Smokestacks and shorelines — a balancing act among business, neighborhoods and a fragile environment. DNR photo

Great progress has been made. Some gross pollution situations caused by wastewater discharge have been cleaned up. Problems with odor, bottom deposits and low dissolved oxygen have been reduced through improved wastewater treatment. Sophisticated sewage treatment methods have sometimes been required to remove fertilizers and other nutrients, like phosphorus, so that aquatic plant growth is reduced or high quality resources are protected.

In many cases, however, wastewater control alone is not enough to protect or restore a lake or stream. Very often, nonpoint source pollution is the culprit. Eroded soil, nutrients and toxics in runoff can contaminate waters in both rural and urban areas. These sources also must be turned off. Wisconsin has a vigorous and attractive Priority Watershed Program which provides technical assistance and cost-share monies to deal with nonpoint problems.

Simple elimination or reduction of pollutants may not allow a water body to achieve its full potential, at least not for an extended period of time. Long-range improvements often involve cooperative efforts among water resources managers, fish managers and environmental engineers to accomplish specific goals for a particular body of water.

Integrated resource management makes sense from environmental and economic standpoints. Beginning with a thorough evaluation of the water resource allows a team of environmental managers, municipalities and other concerned individuals and agencies to tackle problems which are interrelated or too large for any one program to handle. Just about every use of the water resource benefits from this approach. ●

THE MILWAUKEE RIVER COMES CLEAN

SHARON GAYAN
NONPOINT SOURCE
PLANNING ANALYST

Curbing cows and concrete — the debris from 838 square miles funnels into the Milwaukee River. Controlling runoff from farming, building sites, paved streets, lawns and parking lots will help clean the waterway. Photos from DNR Nonpoint Source and Land Management Section

In 1984, the Milwaukee River Basin was designated a priority area for the state's voluntary nonpoint source pollution abatement program. When the program is fully operational, the integrity of water and other resources in this important 838-square-mile basin will be assured for the future. The basin occupies portions of seven counties—Dodge, Fond du Lac, Milwaukee, Ozaukee, Sheboygan, Washington and Waukesha. It contains more than 432 miles of streams and 21 major lakes in five watersheds: Cedar Creek, the Menomonee River, and the Milwaukee River's East/West Branch, North Branch and South Branch.

The legislative mandate to clean up the basin prompted DNR to designate its nonpoint source responsibilities to two major programs: Environmental Standards, which handles waste water, water regulation, water supply and solid waste; and Resource Management, which looks after fisheries, forestry, parks and wildlife.

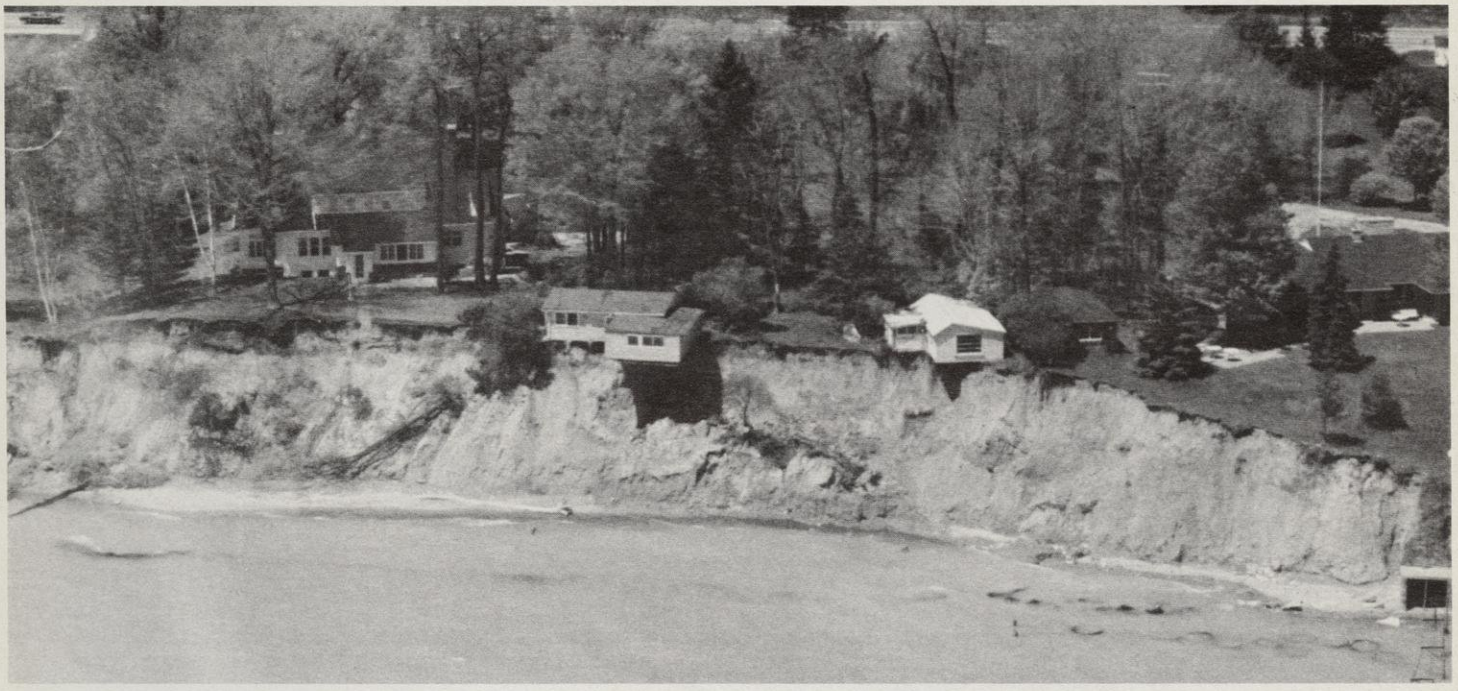
To succeed, the effort also requires active participation by local governments and cooperating agencies so that maximum voluntary landowner participation will occur. An advisory committee and a series of subcommittees have been appointed to do some of the chores. They will oversee an inventory of land and water resources in the basin and preparation of watershed plans. The committees will also be involved in public participation, education and information phases of the program as well as in implementation of recommended management practices.

Inventory and evaluation of all pollution sources in the distinctly separate rural and urban portions of the basin have required very sophisticated methods. Unique to the program is an appraisal of all surface waters to determine existing and potential beneficial uses. A complete rural land inventory of the entire basin is under way. In urban areas, a sensitivity analysis will identify nonpoint source pollutants contributed by specific land uses. Analytical water quality models have been specially developed by DNR for use in the program. These models will point the way toward new procedures for evaluating nonpoint source contributions to surface water. They will also help integrate the best management practices for cleanup.

All participants in this important nonpoint source pollution control effort—DNR, other agencies, citizen organizations and local communities—look forward to re-creating a clean Milwaukee River. They will work hard to bring it off soon because a clean Milwaukee River will be a significant economic, recreational and aesthetic asset to all of southeast Wisconsin. ●

SHORELINES, WETLANDS AND FLOODS

JERRY COLLINS
PROGRAM ASSISTANT



Life on the edge: record high waters on Lake Michigan turned the coastline into a battle zone to save homes from the sea. When high cliffs slump, 20 feet of shoreline can disappear overnight. More typically, a foot of shoreland can sluff in a year — seven to eight feet per year near Kenosha. DNR photo

The next time you're walking through a parking lot, find a car with Wisconsin's new license plate and take a real close look. Those graphics in the upper right-hand corner are a good symbol of Water Regulation and Zoning in the Southeast District. In no other district is there such a variety of demands and conflicts in waterway use.

The sailboat might depict navigable waters held in the public trust by the State of Wisconsin for use by all citizens. DNR regulation of shorelines strives to create a balance between development needs, preservation, recreational opportunities and personal property rights. This is important in the Southeast District because 40 percent of the state's entire population live in these eight counties. Consequently, pressures for both recreation and development on waterways and wetlands is intense.

Complicating management efforts are erosion problems caused by high water levels on Lake Michigan. A century of accelerating development along the coastal shoreline has made potential damage due to high water a continuous threat.

As for wetlands, too often have these areas been "improved" for agricultural, commercial or residential uses. When wetlands are filled or tilled, all sorts of benefits go down the drain: wildlife habitat, spawning grounds for fish, the filtering off of pollutants before they reach waterways, buffering effects on erosion, runoff collection and flood reduction. But wetland preservation in metropolitan areas of the Southeast District is easier said than done. It requires constant vigilance and extensive on-site investigation and project review by water management specialists. The program also assists local communities and counties in drafting effective wetland preservation ordinances.

Getting back to the new license plate, the cloud symbol could stand for DNR's Floodplain Management Program. Water Regulation and Zoning helps local Southeast District communities and counties with floodplain management ordinances. These protect state citizens from devastating flood events that could result in loss of life or property. Peculiar to the Southeast is the amount of development long in existence on floodplains before enactment of these regulating ordinances. Forty percent of all existing floodplain structures in the state occur in the Southeast District.

The barn on the auto plate represents not only regulation of agricultural uses of waterways (such as irrigation and ditching), but development in general. Nowhere in the state except the Southeast District is it as difficult to balance conservation of resources with the practicalities of an expanding metropolitan area. Fortunately, in most cases, conservation and development can go hand in hand. It means carefully examining the options and planning accordingly. Only in this way can we have an acceptable environment and at the same time cope with the southeast's large population and heavy commercial and residential demand.

Mistakes made in the past have not only threatened the environment but have been expensive too. DNR's Water Regulation and Zoning Program aims to avoid mistakes in the future by working with local communities to adopt wetland, shoreland and floodplain development ordinances, and by directly regulating any physical alteration to public waters. ●

Hands join for Delavan Lake cleanup

NEAL O'REILLY
WATER QUALITY PLANNER

The hefty harvest of common carp should end next year as landowners and lake managers improve fishing habitat by controlling runoff, sewage and water levels in Delavan Lake. Photo by Richard Wedepohl

Cooperation is defined by Webster as an act of working together, and Delavan Lake in Walworth County is a dictionary example. The U.S. Geological Survey, UW-Madison, the Walworth County Land Conservation Committee, DNR, the Delavan Lake Sanitary District and Town of Delavan are all working together to reestablish Delavan Lake as the recreational jewel it once was.

For many years, Delavan Lake has been plagued by severe algae blooms and excessive populations of rough fish, like carp and bigmouth buffalo. At times, water clarity is less than a foot. Problems on the lake date back to the 1920s when nutrients from three sewage treatment plants, numerous septic systems and agricultural runoff began pouring into the lake. As the population of the area grew, so did the problems, converting the once clear waters into something resembling pea soup.

Since the 1950s, Delavan Lake has been chemically sprayed to control algae. However, the results are cosmetic and short-lived. The long-term solution is to turn off the nutrients that feed the algae.

The worst algae bloom in Delavan's history occurred in 1983 and that sparked the unique cooperative effort to rehabilitate the lake. Monitoring was started to identify the sources of nutrients, and planning began for restoration of the lake's high water quality.

Guided by DNR, a monitoring study was done by the U.S. Geological Survey and the Delavan Lake Sanitary District. It revealed that offending nutrients came from both external and internal sources. External sources were runoff from agriculture, from a major city upstream and from properties adjacent to the lake. Internal sources were nutrients built up on the bottom of the lake by decades of excessive input. Internal nutrients are recycled or mixed back into the water by the feeding of rough fish and chemical decomposition.

With the help of the UW-Madison, a management plan for Delavan Lake was prepared in 1986. It was the product of an in-depth review. The plan calls for diverting a major stream that feeds nutrients to the lake, complete fishery rehabilitation, deactivation of the in-lake nutrients by chemical treatment with alum, and use of land conservation practices and zoning to control and prevent future erosion and surface runoff problems. Estimated cost of the plan is $2.4 million with $590,000 of this amount to come from DNR for fish rehabilitation. The rest will come from federal grants, a local hotel tax and local property owners.

The Town of Delavan will sponsor the project and is well on its way to assembling final plans to implement it within the next two years. After years of problems, through the cooperative effort and hard work of several people and agencies, the lake will once again shine as a key natural resource. ●

DEEP TUNNEL SEWERS LINK FUTURE TO PAST

FRANK SCHULTZ
CHIEF
SOLID WASTE MANAGEMENT

When the Milwaukee Metropolitan Sewerage District (MMSD) began planning to upgrade sewage collection and treatment facilities in the mid 1970s, it found that time and change had taken their toll.

While portions of the system up to 100 years old were still in working order, new sensitivity about the environment and tougher pollution control regulations demanded more than these segments could produce.

A major concern was how to reduce the amount of pollution bypassed directly to rivers and Lake Michigan during high flow (rainfall and snowmelt) periods. Some of these bypasses originated from combined sewers that served about 27 square miles of Milwaukee and Shorewood. A combined sewer carries both storm water and sewage. During low flow periods, the sewage is conveyed to a treatment plant where it is biologically and chemically cleaned before discharge. During high flows, however, storm water and sewage mix in the combined sewer. A portion still goes to the treatment plant, but what the system cannot handle, including human and industrial waste, overflows into the rivers and Lake Michigan without treatment.

During rain, clear water infiltrates nearly all sewers in the entire service area, posing the requirement for additional carrying capacity.

The options for dealing with this situation were clear: either construct a new sewer system with greatly increased capacity or find a way to treat the wastes that were bypassed during high flow periods.

New sewers, satellite treatment plants, deep tunnels and near surface storage and treatment all were studied.

The solution finally chosen consisted of these steps:

- Relief sewers to correct overflows and raw sewage spills. A major component is 17 miles of deep tunnels. Combined sewer overflows will be reduced by making dual use of the tunnels for separated and combined sewer flows.
- Rehabilitation and expansion of both treatment plants—Jones Island and South Shore.
- Improvement in solid waste processing and utilization.
- Extension of district intercepter sewers to areas not served by local treatment plants.

When rain and snow fall hard and heavy, 17 miles of tunnels under Milwaukee will hold sewage and storm water. During drier weather, this liquid will be pumped to the surface for treatment.

Construction is under way. Completion of all three legs of the deep tunnel system is expected by 1992. This storage capacity will reduce the annual number of bypass events from 50 to two per year.

Tunnel size will vary from 17 feet in diameter at the upstream end to 32 feet near the Jones Island sewage treatment plant. Most of the tunnels will follow the Milwaukee and Menomonee rivers. They will be bored in limestone at depths between 270 and 325 feet. Total storage capacity will be about 320 million gallons.

All the deep tunnels will be driven through the rock by boring machines. The machine used to mine the Crosstown tunnel (from County Stadium to Jones Island) weighs 675 tons, is about 70 feet long, and generates 2,400 horsepower. Carbide steel rollers on the cutter head of the boring machine are turned slowly against the rock face under great pressure.

The North Shore tunnel, which follows the Milwaukee River, is the longest leg of the deep tunnel system. It is scheduled for completion in 1990. The Kinnickinnic-Lake Michigan, the westernmost leg of the Crosstown tunnel, should be completed in 1992. Overall costs of the entire system will be about $200 million.

The tunnel network is an important step in Milwaukee's commitment to clean water. This project utilizes what remains serviceable from the past while applying new technology to meet the needs and environmental concerns of the future. ●

YELLOW WATER? CALL DNR

CHAD CZARKOWSKI
ENVIRONMENTAL SPECIALIST

What do you do if your drinking water turns yellow and smells like kerosene? Imagine closing a sale on your house and finding that the real estate broker can't get a safe sample from the well. Does anyone really check to make sure city tap water is safe? Is bottled water the answer?

These are concerns hundreds of callers put to the seven-member team of the Water Supply Section in Milwaukee each year. And responding to citizen complaints is just part of a job which includes sanitary inspections, sampling public wells and waterworks, licensing well contractors and investigating groundwater contamination.

The eight-county district served by the Southeast office, with more than one-third of the state's population, contains nearly 40 percent of the wells ever drilled in Wisconsin. It also has the largest segment statewide, roughly 1.2 million people, drinking treated surface water from the Great Lakes. The remaining 700,000 residents of the district rely directly on groundwater, about half on community owned wells and half on privately owned.

The southeast is the state's most densely developed and industrialized district, dotted with waste disposal sites. Managing a safe water supply under such conditions is difficult.

Fortunately, thick glacial deposits provided a multiple groundwater aquifer system and a protective "skin" covering deeper bedrock aquifers over most of the district. In spots where pollutants have contaminated shallow groundwater, well owners still obtain usable water at greater depths, but always at higher cost and often at the sacrifice of aesthetic water quality. Then there's always Lake Michigan, if you are financially or politically able to tap a water main to this supply.

Over 100 contamination areas where groundwater is damaged have been identified in the district. Most of these involve dumps, industrial sites and even smaller, private buried fuel tanks and improperly operating septic systems. Many more surely remain undiscovered, but the disturbing fact is that the effects will remain for generations. Cost of cleanup, where feasible, is often astronomical.

The happy face belies concerns that the Kettle Moraine community of Eagle needs to remove radium from its drinking water. Some 35 to 40 Wisconsin communities are also planning to reduce levels of this naturally-occurring contaminant. DNR photo

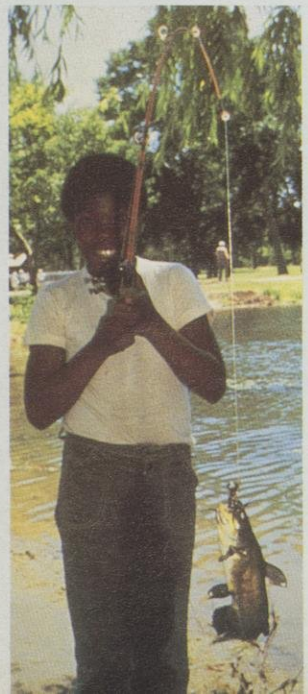
Since 1936, Wisconsin has enforced codes to assure sanitary standards for new wells. The effort evolved from concern solely for public health, to legislation in 1986 protecting the groundwater resource from human activity. This year, county governments have their first legal opportunity for well permit and inspection programs. More than 300 licensed contractors compete for well business in this eight-county area. It is hoped that regulation at the local level will improve consumer protection and free DNR staff to address the tough environmental damage and repair problems. ●

Explore the wonders of Southeastern Wisconsin

Lapham Peak, Kettle Moraine State Forest — South

The joint efforts of state and local government provide southeastern Wisconsin with some of the finest outdoor recreational facilities in the nation. DNR grant programs help counties, cities and towns buy and develop land for these purposes. The result has been beaches, pools, picnic areas, ball diamonds, tennis courts, snowmobile trails, boat launches, campgrounds and other facilities. Local clubs through volunteers also play an important role by taking on work projects and contributing money to improve hunting and fishing.

Juneau Park, Milwaukee Co.



Years of careful management by DNR here has produced forests which not only enhance aesthetics, but protect air, water and soil. Similar management has created thousands of acres of wildlife habitat and nesting cover, reintroduced the wild turkey and provided some of the finest fishing near urban centers in the U.S.

County and state parks and forests in the southeast have wide appeal at all seasons. There are sport and leisure activities including education and social events for people of all ages.

To insure that resources are protected and everyone has an opportunity for a quality outdoor experience, DNR Conservation wardens are firm and fair in enforcing laws and rules.

Everyone is invited to explore the wonders of southeastern Wisconsin, its parks, forests, natural areas, lakes and streams.

Baran Park, Milwaukee Co.

EXPLORE THE WONDERS OF SOUTHEASTERN WISCONSIN

Legend

- STATE FOREST
- STATE PARK
- STATE RECREATION AREA
- STATE TRAIL
- STATE WILDLIFE AREA
- STATE FISHERIES AREA
- STATE NATURAL AREA
- COUNTY PARK

This map includes properties of significant size. Smaller or unnamed sites are not listed.

STATE RECREATION AREA
78 Bong

STATE FORESTS
31 Havenwoods
5 Kettle Moraine-N
50 Kettle Moraine-S
40 Lapham Peak

STATE TRAILS
41 Glacial Drumlin

STATE WILDLIFE AREAS
17 Allenton Marsh
71 Honey Creek
21 Jackson Marsh
82 Karcher
1 Kiel
86 New Munster
7 Nichols Creek
58 Scuppernong
2 Sheboygan Marsh
10 Theresa Marsh
61 Michigan
80 Turtle Creek
53 Vernon Marsh

STATE FISHERIES AREA
65 Bluff Creek
92 Camp Lake
69 Eagle Lake
9 Kettle Moraine Springs Hatchery
4 LaBudde Creek

STATE NATURAL AREAS
20 Cedarburg Bog
89 Chiwaukee Prairie
60 Young Prairie

map by Jeanne Gomoll

COUNTY PARKS

SHEBOYGAN
3 Broughton Sheboygan Marsh

SHEBOYGAN
16 Albecker
19 Cedar Lake Wayside
25 Glacier Hills
26 Homestead Hollow
13 Lizard Mound
18 Ridge Run
15 Sandy Knoll

OZAUKEE
22 Covered Bridge
14 Hawthorne Hills
24 Mee-Kwon
27 Virmond
12 Waubedonia

WAUKESHA
28 Menomonee
48 Minooka
59 Mukwonago
57 Muskego
37 Naga-Waukee
32 Nashotah
44 Retzer Nature Center

MILWAUKEE
29 Brown Deer
36 Dineen
35 Estabrook
55 Grant
42 Greenfield
52 Holler
45 Jackson
30 Kletzsch
43 Kosciuszko
34 Lincoln
47 McCarty
33 McGovern
38 McKinley
56 Oak Creek Parkway
51 Sheridan
36 South Shore
39 Washington
54 Whitnall
49 Wilson

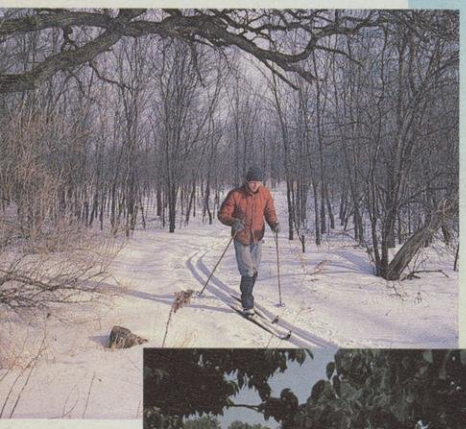
WALWORTH
68 Whitewater Lake Natureland
83 Darien

RACINE
77 Bushnell
62 Cliffside
72 Eagle Lake
70 Evans
74 Fischer
63 Koerber Property
76 Old Settler's
73 Pritchard
66 Quarry Lake
75 Sanders
67 W. R. Wadewitz Nature Camp
64 Colonel Heg Memorial

KENOSHA
81 Brighton Dale
91 Bristol Woods
90 Fox River
84 Old Settler's
79 Petrifying Springs
88 Silver Lake
85 Kemper Center

STATE PARKS
87 Big Foot Beach
11 Harrington Beach
8 Kohler/Andrae
6 Old Wade House
23 Pike Lake

Bong State Recreation Area

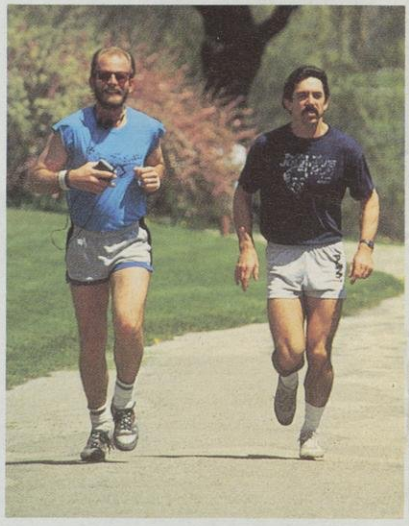


Kettle Moraine State Forest — South

Menomonee County Park

Havenwoods State Forest

Milwaukee's lakefront



Bong State Recreation Area

Sheridan Park, Milwaukee Co.

Big Foot Beach State Park

Broughton Sheboygan Marsh County Park

Paradise Springs Nature Trail, Kettle Moraine State Forest — South

Directory

For more information on state or county parks contact:

STATE

Big Foot
Rt. 3, Box 12
Lake Geneva 53147
(414) 248-2528

Bong Recreation Area
26313 Burlington Road
Kansasville 53139
(414) 878-4416

Harrington Beach
Cty. Trnk D, Route 1, Box 75A
Belgium 53004
(414) 285-3015

Havenwoods
6141 N. Hopkins
Milwaukee 53209
(414) 527-0232

Kettle Moraine—NU
Hwy. G, Box 410
Campbellsport 53010
(414) 626-2116

Kettle Moraine—SU
S91 W39091 Hwy. 59
Eagle 53119
(414) 594-2135

Kohler/Andrae
Old Park Road, R 3
Sheboygan 53081
(414) 452-3457

Lapham Peak
N846 W329 Co. Hwy. C
Delafield 53018
(414) 646-3025

Plymouth Office
Box 408 Woodchuck Lane
Plymouth 53073
(414) 892-8756

SED Headquarters
Box 12436
Milwaukee 53212
(414) 562-9500

COUNTY

Kenosha County Parks
761 Green Bay Rd.
Kenosha 53142
(414) 552-8500

Milwaukee County Parks Dept.
9480 Watertown Plank Rd.
Wauwatosa 53226
(414) 527-6100

Ozaukee County Park Commission
121 W. Main St.
Port Washington 53074
(414) 377-6400

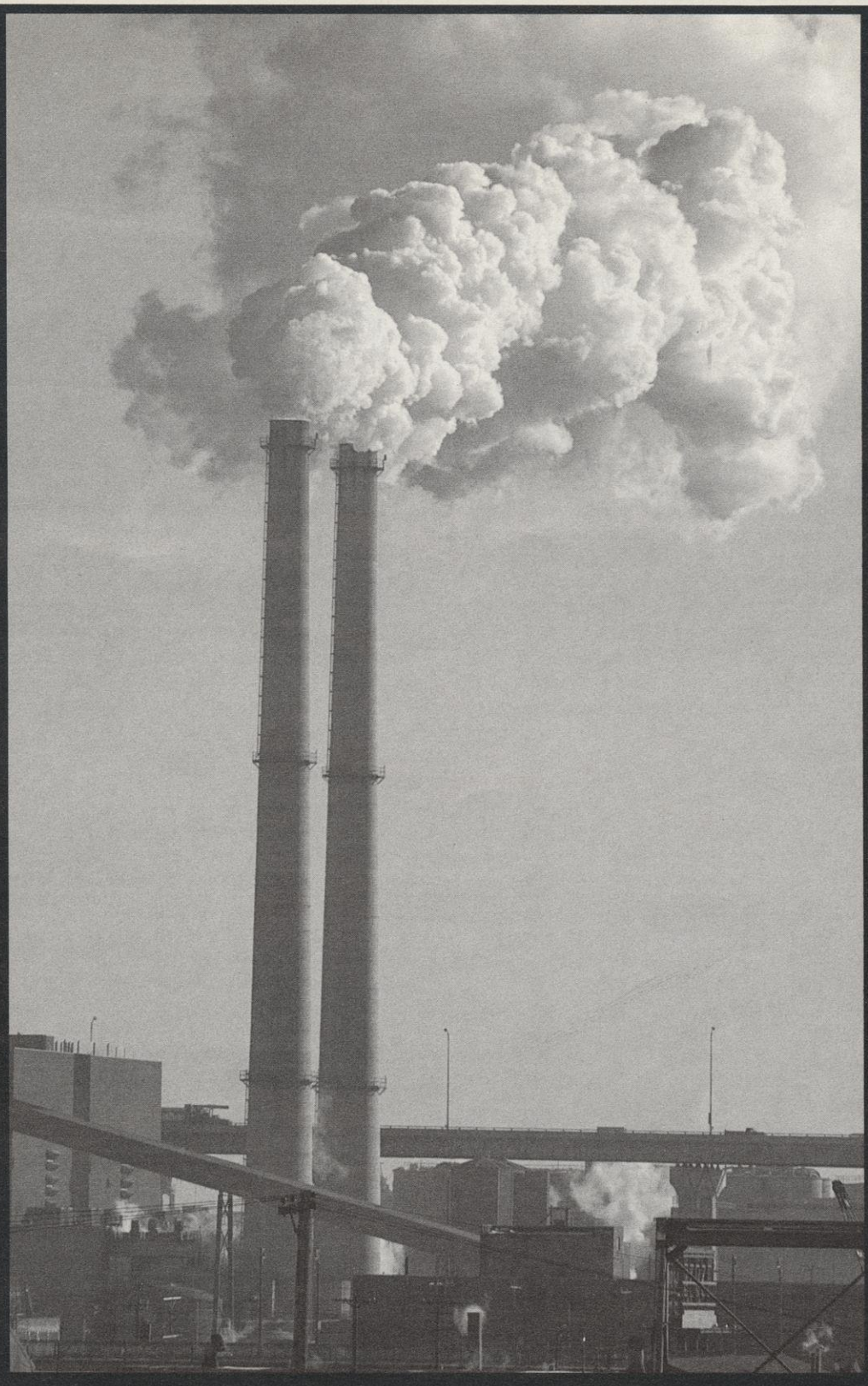
Racine County Park Dept.
14200 Washington Ave.
Sturtevant 53177
(414) 835-2535

Sheboygan County Planning Dept.
615 N. 6th St.
Sheboygan 53081
(414) 459-3060

Walworth County Planning Dept.
Lakeland Complex, Box 1007
Elkhorn 53121
(414) 741-3394

Washington County Park Dept.
Box 1986
West Bend 53095-7986
(414) 338-4445

Waukesha County Park Commission
500 Riverview Ave.
Waukesha 53188
(414) 548-7801



AIR QUALITY

A few years ago, major portions of southeast Wisconsin didn't meet all clean air standards. Today, improved controls on particulates and carbon monoxide signal improvements. Photo by Dean Tvedt

How clean is clean?

WOLF KLASSEN
DIRECTOR
SOUTHEAST DISTRICT
AIR PROGRAM

Be it fact or folklore, King Edward I is said to have been the first sovereign to take an interest in air quality by banning the burning of soft coal during meetings of his Knights of the Round Table.

England's air contamination continued into the late nineteenth century, culminating in the infamous London Fog which was caused by the same soft coal that Edward had tried to solve five centuries earlier.

In the U.S., concern about air pollution did not emerge until the early 1950s even though Chicago, St. Louis and Pittsburgh all had suffered serious episodes of contamination in the early 1900s.

Milwaukee too, as a busy industrial center in those years, can produce photos from about 1910 showing bulging black smokestacks.

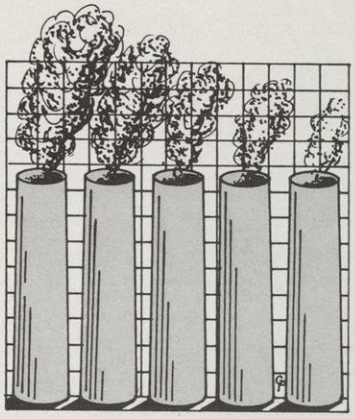
At about mid-century, Milwaukee County established the first air pollution department in the state, and improvement began. A quarter century has seen notable progress. Gone today are the black plumes that were a standard part of early industrial life. To a great extent the heavy dust and clouds of particulates that once marred smaller industrial communities are now gone or greatly reduced. Our citizens' white shirts are staying white, the sky over the region is clear most of the time, and the air is breathable.

Adoption of the federal Clean Air Act amendments of 1970 mandated the states to establish statewide agencies to protect air quality. In response, in 1975 Milwaukee County turned over its efforts to the state, specifically to DNR. Air monitoring, begun by Milwaukee County, was expanded by DNR to the entire southeastern region to protect citizens from harmful exposure to contaminants.

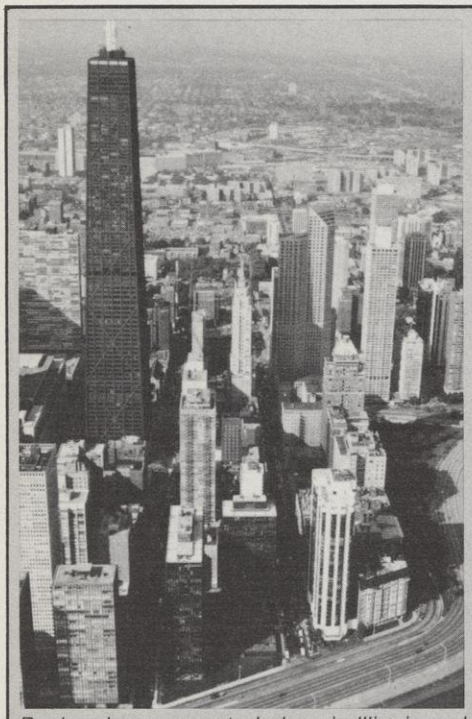
Large areas in southeastern Wisconsin that a few years ago did not meet the federal Clean Air standards have been upgraded for particulates and carbon monoxide. Sulfur dioxide is no longer a difficulty in Milwaukee County, and the state is seeking recognition of this improvement from the federal Environmental Protection Agency. Ozone remains a lingering problem in the whole region but only because most of it comes from our neighbors to the south. It is a problem the state is addressing forcefully.

All in all, thanks to responsible action by citizens, industry and the regulatory agencies, much progress has been made in achieving clean air in the Southeast District. ●

When less and less is more and more



Meeting federal standards for less particulates, ozone, carbon dioxide, lead, sulfur dioxide and nitrogen oxides means clearer, more breathable air.



Regional ozone control plans in Illinois and Indiana would keep the air in southeastern Wisconsin cleaner. Photo by Ron Schramm; courtesy of Chicago Convention and Tourism Bureau

WISCONSIN SUES EPA OVER OZONE

MIKE LUBA
ENGINEERING SUPERVISOR
AIR PROGRAM

Last January, Attorney General Donald J. Hanaway filed a notice of intent to sue the U.S. Environmental Protection Agency for failure to perform nondiscretionary acts under the Clean Air Law. In the fall of 1986, DNR had asked the attorney general's office to study the possibility of suing EPA because the agency's inaction prevented southeastern Wisconsin from complying with federal air quality standards for ozone. EPA had blamed air pollution from the Chicago area and northwestern Indiana for Wisconsin's ozone problem.

Under the Clean Air Law, Wisconsin, Illinois and Indiana must meet the ozone health standard by Dec. 31. But Wisconsin is the only state in the nonattainment area to receive final EPA approval for our state implementation plan. Illinois and Indiana have neither received final approval of their plans nor promulgated all necessary Reasonable Available Control Technology (RACT) regulations to deal with ozone.

Unless Illinois and Indiana both take immediate action to curtail ozone-creating air pollutants such as automobile emissions and volatile organic compound emissions from industries, the ambient air in southeastern Wisconsin will continue to exceed health standards.

Also, the nonattainment status of southeastern Wisconsin is an impediment to economic development and may restrict growth in the area. Unless the state can reduce ozone levels to below the federal standards, EPA may propose sanctions, stricter RACT regulations or invoke a construction ban on all major new volatile organic compound sources. All of these would have a severe negative impact on economic development in southeastern Wisconsin.

STRICTER AIR RULES HELP INDUSTRY

MIKE LUBA
ENGINEERING SUPERVISOR
AIR PROGRAM

Sources of volatile organic compounds, such as cars, might have to meet tighter air pollution controls if regional industries continue to grow without offsetting additional air pollution.

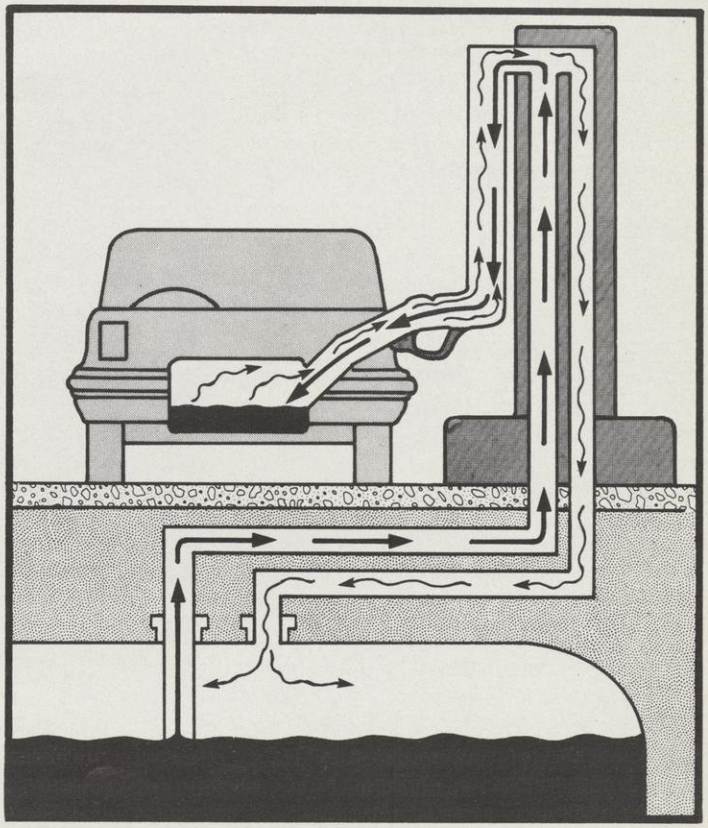
Gasoline pumps that suck in evaporating fumes could be part of the Southeast Wisconsin air pollution solution.▼

Last October the Wisconsin Department of Development released a report entitled "Ozone Air Quality Management and Economic Development in Southeastern Wisconsin." The study is the product of a coalition of industries, environmental groups and state agencies that forged a strategy to allow industrial growth while protecting air quality.

Under the proposal, industries wanting to expand in southeastern Wisconsin could do so without having to obtain offsets first. Offsets are emission reductions elsewhere in the region. The present rule provides that in nonattainment areas such as southeast Wisconsin, any new emissions of more than 10 tons of volatile organic compounds during the ozone season must have an offset. Nonattainment areas are those where the amount of a contaminant exceeds an air quality standard. Volatile organic compounds are substances that help create ozone.

Under the plan, to compensate for increased emissions, other sources of volatile organic compounds would be subject to stricter controls. This might mean vapor recovery equipment on gasoline pumps, restrictions or a ban on all oil-based paints and closer inspection of automobiles for tampering with air pollution control equipment.

Senator Joe Strohl (D-Racine), who chairs the special committee on environmental resource management which developed the plan, expects the Legislature to adopt it in its entirety. This will loosen some environmental restrictions that now check industrial growth and at the same time give the region cleaner air. ●



500 HAZARDOUS AIR POLLUTANTS

JOHN F. HILLERY
DISTRICT REPRESENTATIVE
HAZARDOUS EMISSIONS
TASK FORCE

Almost two decades have passed since the first Earth Day, May I, 1970, a day that marked the beginning of a major national effort to control pollution.

Since then, cleanup efforts in Wisconsin have reduced common air contaminants like particulates (dust) and carbon monoxide to levels at or below the national standards. 0ther more stubborn pollutants, especially ozone, are being strenuously fought.

Yet the air we breathe is still seriously endangered. It is contaminated by hundreds of toxic substances.

"Toxic air pollutants may become a greater issue than acid rain," according to a recent report prepared by the Environmental Law Institute of Washington and the Canadian Environmental Law Research Foundation.

The large amounts of toxic chemicals emitted to the atmosphere threaten the human ecosystem. Effects may range from temporary eye, nose or throat irritation to irreversible conditions such as cancer, genetic mutations, birth defects, acute neurotoxicities, behavior problems and learning disabilities.

These concerns prompted DNR in 1983 to create a special Hazardous Emissions Task Force. Its job was to define the scope of toxic emissions in the state and decide what limits should be imposed on specific toxic substances.

About 35 hazardous air pollutants are already regulated under existing administrative codes. For example, the air program regulates asbestos, beryllium, cadmium, chromium, chlorine, fluorine, mercury, pesticides, radioactive material and vinyl chlorine plus other chemicals and heavy metals.

As recommendations of the task force are incorporated into state codes, the number of regulated hazardous air pollutants is expected to increase to about 500. DNR may establish emission limits for these substances by permit or special order. Criteria used to establish the limits are set forth in the Hazardous Emissions Task Force report. They may or may not require control equipment, depending on the degree of hazard posed by each substance.

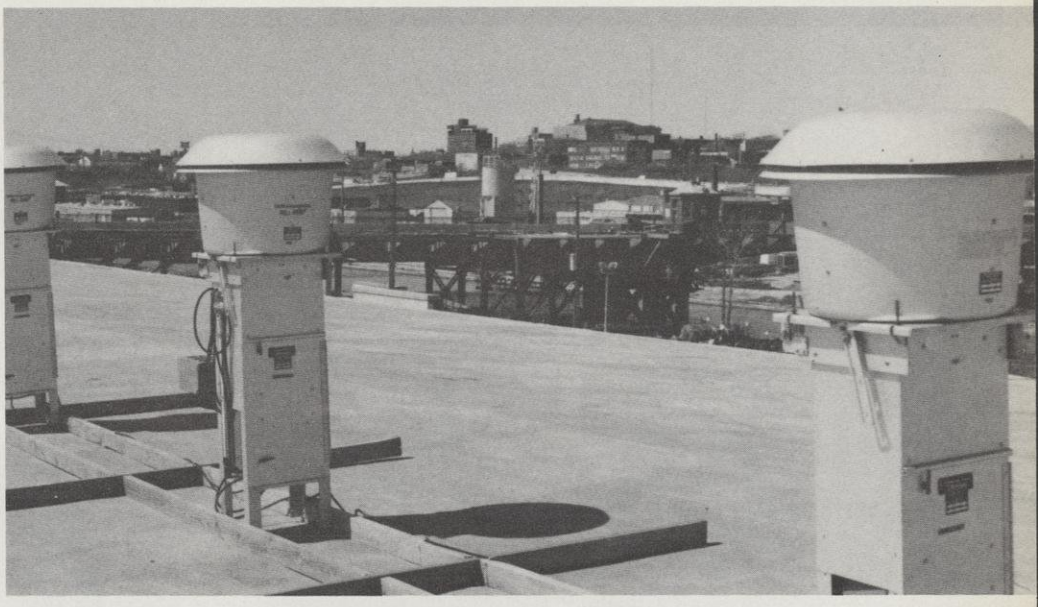
We're not out of the clouds yet. We're learning more and more about this new generation of potentially toxic air contaminants. Graphic by Georgine Price

Traces of hazardous air contaminants are coming from our vehicles and the consumer products we use as well as our businesses.

Objectives of DNR's continuing work with citizens, environmentalists and industry are to minimize exposure to toxics and to assure that the risk for Wisconsin residents is an acceptable one, with a considerable margin of safety. In taking these steps, Wisconsin has again assumed a national leadership role. Most states have not addressed the problem and neither has the EPA. ●

SOMETHING IN THE AIR? MONITORING TELLS

MARY MERTES
ENVIRONMENTAL SPECIALIST



Above, a monitor in Milwaukee, part of the air program network. It monitors fine particles which can penetrate lungs. Below, air monitoring supervisor Ed Miller, with lab equipment used to assure the accuracy of air monitors in the field.

Air monitoring is a vital part of the air management program in Wisconsin. Through use of instruments (analyzers and hi-volume samplers), monitoring allows us to know precisely the quality of outdoor air as it changes hour by hour and day by day.

The main goal is to obtain as much valid, accurate data as possible. The data are used to alert people when air quality is unhealthful and to determine whether, and to what degree, air pollution control measures may be necessary.

From 1973 to 1974, the Southeast District had eight continuous sites with analyzers that measured carbon monoxide, sulfur dioxide, ozone and haze. Today, electronic monitoring equipment operates year-round at 10 sites, and at six others, ozone monitoring takes place from April to October.

Health-related pollutants monitored are ozone, sulfur dioxide, carbon monoxide and nitrogen dioxide. Meteorological equipment is located at many of the sites to monitor weather conditions, which play a big role in air pollution.

In addition, the district operates 32 hi-volume samplers for particulates (dust), eight samplers for very fine particulates, and two for airborne lead. All three, and especially the latter two, can represent serious health hazards if found in high enough concentrations. The air monitoring section in the Southeast District consists of 12 employees who specialize in electronics repair and maintenance, laboratory testing, hi-volume sampler maintenance and calibration, field operations, data operations, quality control and operator certification and training.

Monitoring is an ongoing job and air quality has improved significantly in the Southeast District since it began. As it becomes more sophisticated, the air we breathe will become even healthier. ●

SOLID WASTE

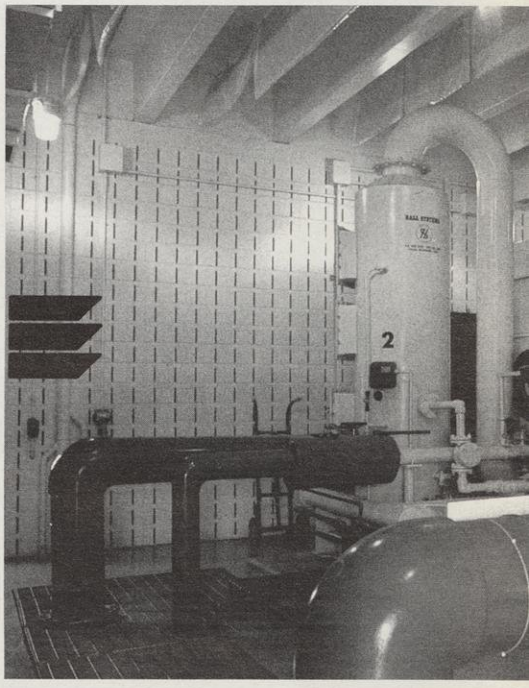
Tire blazes like this October 1986 fire in Somerset make state residents think about solid waste management in Wisconsin. Few practical ways exist to dispose of such a tremendous amount of the used rubber, in the Southeast District and elsewhere.
Photo by Larry Sperling

TIRED OLD TIRES

ELIZABETH DUCHELLE
RECYCLING SPECIALIST

On average, every person in Wisconsin throws away one car or truck tire each year. This adds up to three or four million annually. Consumers are the actual generators of waste tires, but dealers are usually responsible for getting rid of them. This poses a serious environmental problem because few practical or legal ways exist to dispose of such a tremendous amount of solid waste.

While disposal in local landfills is not illegal, landfill operators don't usually accept whole tires. The reason is that rubber does not decompose and tires move



to the surface. If the site has been covered and capped, this can lead to thousands of dollars in extra expenses for cap repair. With landfills unavailable, the upshot has been illegal stockpiling of tires in remote areas.

This can lead to serious fires, like the one near Somerset in 1986. Although rubber does not catch on fire easily, once a stockpile starts burning it's difficult to extinguish. And afterwards, cleanup crews must deal with contaminated residues left behind. In addition, tire piles are prime mosquito breeding grounds. They reproduce there 4,000 times faster than in forests.

One way to get rid of tires is to burn them for fuel. Tires have a high energy value of approximately 15,000 BTUs (British Thermal Units) per ton, the equivalent of 115 gallons of oil. However, recovering this energy is not necessarily easy or economical. It is a high risk, capital intensive business, and success hinges on used tire availability for the long term. Fortunately, incineration is not the only disposal option.

Possible alternatives include reprocessing used tires into crumb rubber, oil or carbon black. Heat decomposition (pyrolysis), cryogenic or hard freeze grinding, and tire shredding are also techniques processors are working to improve on. Some have expanded into large-scale operations.

In southeast Wisconsin, 1 1/2 to two million tires are generated annually. Currently, we don't know where these tires are going, but in the near future a new Milwaukee firm called Enerco will start incinerating whole tires to produce steam for sale to Wisconsin Electric Power Company. In West Bend, Sunset Tires, Inc. is interested in shredding whole tires into small chips for sale to a variety of markets throughout the country.

Meantime, DNR is evaluating the waste tire problem statewide to develop a comprehensive management strategy. Tire stockpile owners will be licensed and regulated, or ordered to legitimately recycle or dispose of tires within a specific period of time. Open burning is not acceptable and will be investigated as possible arson.

As markets become more accessible, there will be fewer reasons for improper disposal. Locally, the City of Milwaukee is developing a program to monitor all people who handle more than 30 waste tires per year. Slowly but surely, the problem is being solved. ●

Methane gas released from decomposing garbage is trapped and filtered, and burned for energy at a Germantown landfill site.
Photo courtesy of Waste Management of Wisconsin, Inc.

TECHNOLOGY TURNS DUMPS INTO LANDFILLS

JIM SCHMIDT
SOLID WASTE
UNIT SUPERVISOR

Few topics arouse more negative reaction than solid waste disposal. It's a rare occasion when even two people agree on what's best. Because solid waste affects everyone in every walk of life, the issue might involve business people trying to arrange low cost disposal for their company or a citizens group struggling to keep a new dump from being developed in its neighborhood. In recent years, however, a new trend has emerged. It combines awareness of past mistakes with tomorrow's technology to come up with innovative solutions. The Omega Hills Landfill in Germantown, run by Waste Management of Wisconsin, Inc., is a product of this new trend.

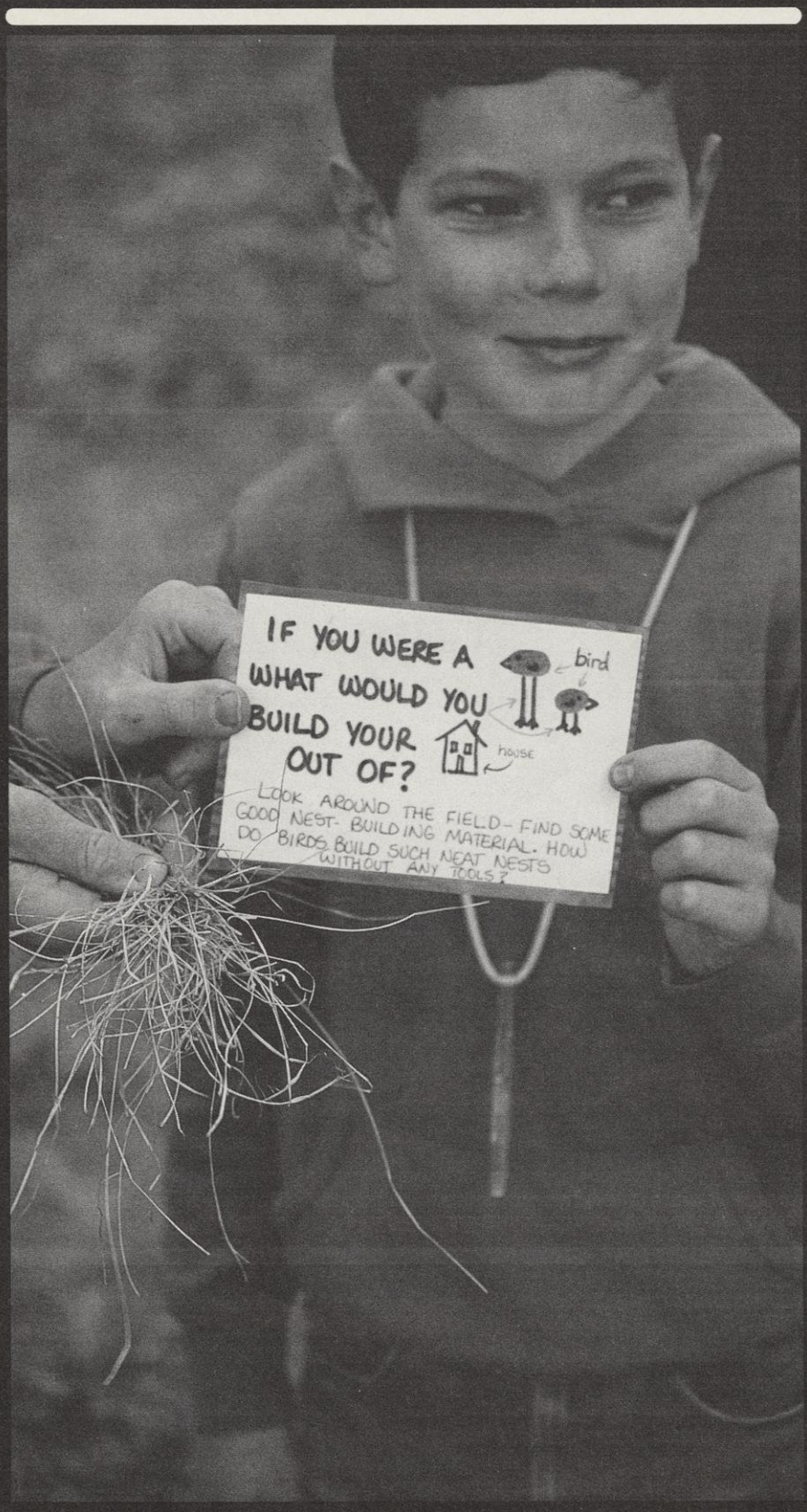
A few years ago, DNR and Waste Management, Inc.'s staff became concerned about high leachate levels in the firm's landfill. Leachate is a contaminated liquid made up of precipitation, liquids contained in refuse and the water by-product of decomposition. Historically, leachate was pumped to a collection system inside the fill, then discharged to the Milwaukee Metropolitan Sewerage District's sanitary sewer. However, the leachate was too contaminated to allow any increase in the amount Waste Management, Inc. could discharge to the sewer, thus precluding the landfill's growth. So, faced with increasing DNR pressure, Waste Management, Inc. turned to engineers Black & Veatch to design a pretreatment plant that would reduce the strength of the leachate.

Since no other system like this had ever been designed, a one-year pilot plant study was undertaken as a test. It proved successful, and leachate pretreatment began in 1985 after construction of a plant the previous year. The new technique works so well, it may be used in the future to treat other commercial wastes.

The other project at Germantown creatively solved a problem with methane gas, one of the by-products when waste decomposes. Formerly, methane was controlled by simply letting it flare or burn off at stations set up along the landfill where it was passively collected. However, design of the flares was unreliable, and they occasionally blew out, causing odor problems.

To correct this and increase the amount of gas recovered from the fill, a network of pipes and gas collection wells was established. Then, instead of burning away the methane to get rid of it, Waste Management, Inc. funneled the gas into two turbines that use it as fuel. They now generate enough electricity to power 10,000 homes and expansion is planned for the future.

Projects such as these are examples of a continuing DNR effort to come up with imaginative ideas that reduce the undesirable impacts of solid waste disposal through new technology. ●



QUALITY PEOPLE

Young minds tune to the environment — DNR Project WILD participant during activity at Havenwoods, Milwaukee. Photo by Al Stenstrup

LEARN AND ENJOY AT HAVENWOODS

ALLEN STENSTRUP
SUPERINTENDENT
HAVENWOODS ENVIRONMENTAL AWARENESS CENTER

Preschool children, senior citizens and most people in between will find opportunities for education and recreation at Havenwoods, an urban forest preserve.

Established in 1979, the Havenwoods Forest Preserve has evolved from a house of corrections, Nike missile site, military base and landfill to a 237-acre haven for outdoor enthusiasts. The preserve is open daily from 6 a.m. to 8 p.m. and is located in Milwaukee just north of Silver Spring Drive and a block west of Sherman Boulevard.

The land has begun to recover from the past, and several development projects have been completed. More than three miles of trails, surfaced with limestone, meander through open fields and woods. They are accessible to disabled persons. A four-acre pond attracts a variety of wildlife. The Children's Discovery Area gives kids a chance to build, climb, dig or roll in a natural place. The North Milwaukee Lions Club supports this development with annual donations.

The newly-constructed passive solar Environmental Awareness Center offers many program opportunities. The 10,000 square foot building has a 70-seat auditorium, classroom, display area and resource center. The education programs have grown from only a few activities in 1982 to a program of varied educational offerings.

Havenwoods lets Milwaukee area children explore nature in an urban environment. Different seasonal activities are geared to youngsters from kindergarten through high school age. Preschool children, armed with all their senses, explore the pond, fields and forests each summer. Naturalists lead the children through a variety of activities which utilize the abilities to hear, see, touch and smell.

Special programs that vary from wildflowers to nature crafts are offered for senior citizens from May to September.

Workshops for teachers and youth leaders are held year-round to provide background, teaching methods and materials on Wisconsin natural resources. Area environmental organizations frequently sponsor weekend or evening programs that include workshops, panel discussions or guest speakers. Family activities like kite flying, festivals, nature movies and outdoor sports lessons are also on the program.

Individuals or groups can participate as volunteers. Outdoor tasks like trail work or prairie seed collection are possible. Those who enjoy working with children can be trained as teacher/naturalists.

Students, for their part, have left a permanent impression on the land, planting more than 30,000 trees and shrubs at Havenwoods.

If you enjoy learning about the environment or just hiking where the grass grows tall, Havenwoods is the place.

For more information call:
(414) 527-0232
or write:
Havenwoods
6141 N. Hopkins St.
Milwaukee, WI 53209

School projects like this — water quality sampling — stimulate early environmental awareness. Photo by Al Stenstrup

MINORITY INTERNS TRAIN FOR DNR JOBS

FRANCES E. BAILEY
STAFF ASSISTANT

In June 1986, the Southeast District began a new and unique intern program.

Minority Student Internship (MSI) is designed to provide students from the Milwaukee Public School System—through Bay View, Vincent and Madison high schools—some exposure, awareness, guidance and training in the fields of environmental and technical studies.

MSI strives to provide a program extending over six years, in which students have the opportunity to work in the various areas of natural resources and get paid. In addition, MSI strives to give students the opportunity to consider professional careers in DNR.

The program runs five weeks during summer. One week is spent at UW-Stevens Point Pre-College of Natural Resources. Here students receive intensive training in natural resources. This includes post-high school education, a combination of fieldwork and trips with classroom instruction and an opportunity to meet and observe professional resource managers at work.

Each year, 10 sophomores from each of the three designated high schools can participate. The first year, working out of the Havenwoods Environmental Awareness Center in Milwaukee, students concentrate on exposure to natural resources, awareness and hands-on experience. The second year is spent at either a Youth Conservation Camp or with Operation Hard Hat. During the next four years, students are placed as college interns in different DNR jobs, depending on their school majors.

The purpose of the internship program is to give minorities and young women an idea of what careers in natural resources are all about. Another aim is to help DNR meet its goal of increasing minority involvement in the department by developing a pool of qualified, excellent candidates for hiring. ●

Part of the Minority Student Internship program gives participants exposure to a Youth Conservation Camp or Operation Hard Hat. The 20-year-old program introduces minorities and young women to what natural resources careers entail.

Shooting stars and hairy puccoon herald another summer on Chiwaukee Prairie in southeastern Kenosha County. This State Natural Area preserves rare plants and remnant prairies. Photo by Thomas A. Meyer

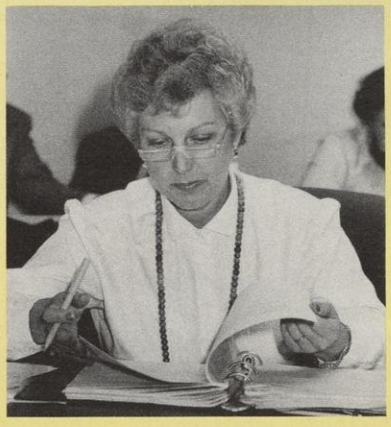
Shared values make resource efforts successful here.

To those who live here, southeast Wisconsin is very special. It has quality people and quality natural resources.

In this publication, we see an impressive relationship between southeast Wisconsin's people and their environment. Over the years, we have used and restored the resources that are the foundation of our quality of life. We take satisfaction in that progress. But the message is to keep working.

Is it worth it? I think so.

Clearly, environmental protection investments have economic and aesthetic value. It's also clear that by spending time and money to protect the environment, southeast Wisconsin citizens are demonstrating shared values. That pleases me because these same values are held by Natural Resources Board members and DNR employees of southeast Wisconsin. We identify with all who live here and all who share the responsibility to keep our region environmentally special and economically viable.



— Helen M. Jacobs, Natural Resources Board Chair