

With publication of *Environment 2003* we proudly celebrate a decade of environmental indicator reporting. Publication of *Environment 1994* allowed us to share with Vermonters an assessment of the quality of the state's environment using a reader-friendly format at once both informative and understandable. Taking the latest environmental data we had available to us, we analyzed it and attempted to explain its meaning using text together with images, graphs, charts, and tables. The result, we hoped, would be a document that appealed to, informed, and educated a wide range of Vermonters.



That first report underscored the Agency of Natural Resources' commitment to environmental protection and to providing measurable results for public accountability. Over the years the document has evolved and we've used it to share the recent findings of environmental research and monitoring efforts. We've looked to the past for perspective and we've analyzed trends in order to make realistic assumptions about the future. The documents have allowed us to focus attention on key environmental issues and concerns, and we've described our own efforts — and the efforts of others — to preserve and protect our natural heritage.

With this most recent issue of the state-of-the-state's Environment series we provide not only an assessment of the quality of Vermont's environment, but also a look at how our work is affecting people, wildlife, communities, and ecosystems across Vermont. We are justifiably proud of our many accomplishments as stewards of the state's environment, but are honestly mindful of the fact that we can't do it alone. Knowing this we've worked hard to develop and to nurture partnerships — with citizens, communities and businesses — that allow us to achieve our own goals by helping others to achieve theirs.

You will read how two communities in Vermont are working to alter harmful consumer behaviors in order to keep hazardous chemicals out of their wastewater, you'll learn how a statewide network of pond watchers are doing their part to curb the runoff of pollutants into lakes and ponds, and you'll discover how government, individuals, and a Vermont utility collaborated to reintroduce and protect osprey in Vermont.

These and other stories provide but a glimpse of the many individuals and groups the Agency has partnered

with in order to achieve positive environmental and economic outcomes. These partnerships have become the cornerstone for how we wish to operate. Such partnerships help us to find workable environmental solutions that are more sensitive to local situations, and are often more cost-effective. We are profoundly grateful for the dedication of these and other citizens who are contributing to the health and vitality of Vermont's environment.

This report reflects the Agency's obvious and long-held commitment to resource stewardship and environmental protection — for the benefit of this and future generations. We invite you to explore the many partnerships we have forged and urge you to consider how we might work together with you to effectively reduce environmental and human health threats. Realistically, we can't solve all the state's environmental challenges today, but with help from people like those in this report — and from people like you — we can make significant advances that can be enjoyed by citizens today, tomorrow, and for many generations to come.

MONITORING AND MEASURING ENVIRONMENTAL HEALTH

With publication of *Environment 1994* we described how environmental indicators can be used to provide a reliable picture over time of the health of Vermont's natural environment and, indirectly, the health and quality of life of all Vermonters. We have used environmental indicators in much the same way you would monitor body temper-



ature and blood pressure as indicators of your own short-term and long-term health. Environmental indicators are simply environmental variables that can signify improvement or degradation of our surroundings. As such, they are like the canary in the mine warning us of potential danger – or they provide evidence that our efforts to protect the environment have been a wise investment.

The causes of environmental change are often hard to pinpoint, but environmental and human health threats sometimes call for immediate action. For the long-term, if our natural resource decisions are to be wise and sustainable, we need to base them on sound information about the actual condition of the environment, our own health, and the health of organisms we share the state's environment with.

We will continue to avoid using a simplistic “thumbs up” or “thumbs down” approach to reporting on the quality of Vermont's environment. Seldom is something as complex as the environment summed up as simply as that with any accuracy and real understanding. With this latest state-of-the-state's environment report, we at the Vermont Agency of Natural Resources rededicate ourselves to furthering a tradition of practicing good science, sound analysis, and responsible reporting of environmental indicators. We hope you'll agree that the document you now hold in your hands helps further this fine tradition.



TRENDS IN A DECADE OF ENVIRONMENTAL INDICATOR REPORTING

From the vantage point a decade's passage of time affords it is worth noting what's changed – and what's remained the same. The two-page spreads that make up the bulk of this report endeavor to reflect back over the ten years since 1994 in order to assess and explain change or lack of it – as measured by the environmental indicators we use.



Within these past ten years we have seen a continued emphasis on non-point sources of pollution. The past few decades have afforded great success at dealing with point sources, so called because they are identifiable, single-point sources of pollution such as a smokestack or an outflow pipe. Non-point sources of pollution often involve multiple sources of pollutants. The air pollution, for example, generated by automobiles in Vermont accounts for the majority of air pollutants, far surpassing point sources in Vermont. Motor vehicles now travel more than 6 billion miles annually in Vermont, double the amount traveled in 1970.

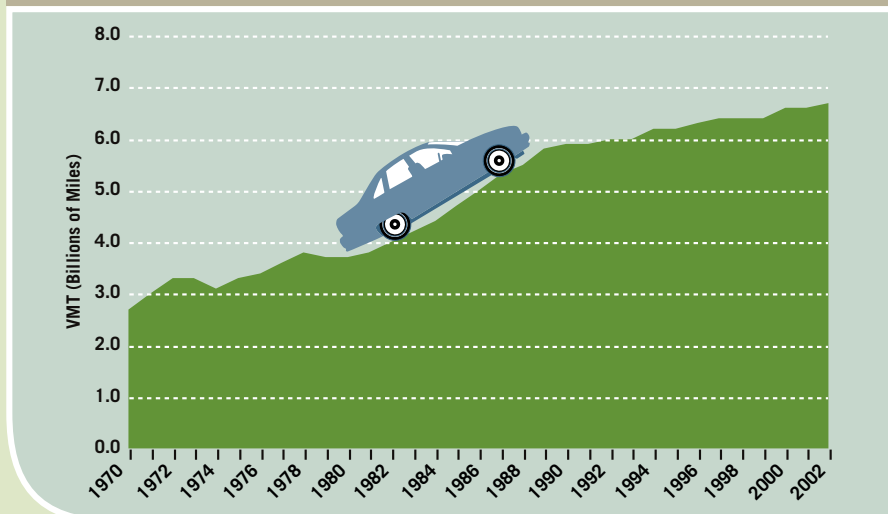
Naturally, we are most interested in reporting on the quality of Vermont's environment using environmental indicators that allow us to focus on the geographic area described by state borders. It is clear, however, that there are some environmental indicators tracking national and global trends that have great import to our own quality of life and the quality of our environment. As we prepare to go to print it is clear that 2002 is likely to be the second hottest year on record, easily elbowing 2001 into third place. The average temperature for January through September 2002 was 58.48 degrees Fahrenheit – 1.04 degrees warmer than the 122-year normal. If the trend continues through 2002, the ten hottest years on record will all have occurred since 1987, even though records go back as far as 1880. Vermont-specific consequences of climate change are largely unknown, but could include a change in forest species composition, a northward shift of agricultural production patterns, an increase in ground-level ozone, and a northward extension of disease vectors.

THE PROMISE OF SYNERGY

That a whole can be more than simply the sum of its parts is common knowledge. Thus, a hybrid gas-electric vehicle that can transport you coast-to-coast on five tanks of gas and with a minimum of air pollutants is more than a gas engine, an electric motor, a steering wheel, and seats. It's in how the parts work together as a whole that we realize the greatest benefit. Likewise, our relationships with one another create a synergy that often allow us to accomplish more than we might possibly accomplish by acting alone.

In the *Environment 1994* document we stated that, “Our quality of life actually depends on many interrelated factors. Affordable housing, education, employment, health care, social justice and the health of our natural environment all define our quality of life. While we tend to grapple with these issues separately, it is the integration of solutions that will yield the best decisions about our present and our future.” A decade later, we still hold this truth to be self-evident. A big-picture outlook that recognizes all that shapes the human experience can be

Figure 1 | Annual Vermont Vehicle Miles Traveled (1994-2003 estimated)



somewhat overwhelming but, as famed author and conservationist Aldo Leopold once pointed out, everything is inextricably connected to everything else. Our ability at the Agency of Natural Resources to effect change in all the many spheres of life is admittedly limited. As stewards of the state's environment, however, our activities alone, and in concert with others, involve us in education as we endeavor to work with young Vermonters in schools, with businesses to promote prosperity without pollution, and with citizens in communities to protect natural resources and reduce human health risks.



All our efforts to forge integrated solutions are premised on productive working relationships with others.

The Vermont Agency of Natural Resources and its three Departments — Environmental Conservation, Fish & Wildlife, and Forests, Parks & Recreation — work together and with public and private partners to accomplish many different things.

Internal partnerships allow for all state-owned conservation and recreation lands to be managed in a cost-efficient and coordinated fashion. These same partnerships mean that a broader spectrum of ideas and options are given voice and consideration when addressing such complex and difficult issues as climate change, biodiversity, and sprawl.



The Agency also partners with citizens outside of state government. A partnership between the Department of Environmental Conservation's Environmental Assistance and Wastewater Divisions and the Town of Brattleboro and City of Winooski leveraged involvement of local environmental and business groups, regional waste district officials, wastewater treatment plant operators, and others to address a common concern for wastewater and biosolids quality.

Partners worked together to create two videos that inform and educate citizens about the historical significance of waterways in these two communities, the importance of environmentally preferable purchasing, and the need to prevent disposal of environmental contaminants down drains. Besides broadcasting the video on local access television and at a local theater, the partners labeled storm drains, developed and distributed school curricula, and gave away to residents a brochure with recipes for homemade non-toxic cleaners. It is hoped that the relationships fostered by these partnerships leads to sustained efforts to protect the waters of the state and the health of its citizens.

Citizen groups are becoming increasingly involved in environmental monitoring, education, protection and restoration projects. We at the Vermont Agency of Natural Resources invite you to join us as a partner in efforts to protect the environment — for this next decade, and for many more to come.

vtenvironment.org

For readers familiar with our previous state-of-the-state's environment Web sites, this year's site — www.vtenvironment.org — may come as a surprise. While the content of *Environment 2003* is available online as a downloadable document, the site is primarily intended as an experiential learning resource for young Vermonters.

Written and illustrated with young people in mind, it offers information and hands-on activities related to understanding and measuring the health of our environment. Major sections cover air quality, water quality, forest health, and the health of fish and wildlife. For classroom use, a teacher's guide is also included.

We invite you to join your sons and daughters in exploring the site, where you can:

- Learn more about how we measure and track the health of our environment
- Share the insights we've gained by monitoring the environment for over a decade
- Meet Agency scientists and learn about their work
- Build and experiment with simple monitoring equipment

On this tenth anniversary of environmental indicator reporting by the Agency, we are pleased to rededicate the Web site to the education of young Vermonters. We hope it will help them — and the adults in their lives — to protect the health of our state's treasured natural resources.