Department of Environmental Conservation
Fiscal Year 2016

Department Performance Measures

VISION

We envision a Vermont where people live in harmony with diverse and healthy natural systems; appreciate and enjoy our natural resources; work together responsibly to reduce waste and risks to human health and the environment; and prosper without significant degradation of natural systems. We envision a Vermont where people breathe clean air; drink clean water; eat safe food; and live in a sustained and healthy environment.

MISSION

To preserve, enhance, restore, and conserve Vermont's natural resources, and protect human health for the benefit of this and future generations.

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27. Improve Business Practices to Gain Efficiencies (Lean)
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29. Provide Permit Assistance
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OVERVIEW

The Department of Environmental Conservation launched an effort beginning in 2014 to improve how the Department tracks and measures the performance of our programs using Results Based Accountability (RBA). This framework is currently used by the Agency of Human Services and the Secretary of Administration's office to challenge Departments to answer the three primary questions used in RBA: (1) How much did we do? (2) How well did we do it? (3) Is anyone better off?

DEVELOPMENT OF THIS DOCUMENT

In Fall of 2014, Department and Agency of Administration staff trained over 60 managers on the basics of RBA, how it is being used in state government and the potential opportunities for the future which could include budgeting and strategic planning. After training our managers and key staff, we formed an internal "Performance Management" team with members representing a diverse cross-section of Department programs. The document can be used together, or each page could stand alone to describe our performance in a specific area. The performance measures presented in this document are organized by category rather than by program, division or appropriation.

WATER

Surface water and groundwater resource management, drinking water program

AIR

Air quality, pollution emissions, climate change, greenhouse gas reduction programs

LAND

Waste management, septic systems, natural hazards

OPERATIONS

Business process improvement, management, enforcement

NEXT STEPS

Each page includes next steps which outline what actions we will undertake to maintain current trends or "turn the curve" to move towards our goals and outcomes identified in the Department Strategic Plan and Act 186. The measures presented in this document are the highest level measures and indicators we currently track as a Department. Over the next two years, the Performance Management team will continue to work to develop both program specific measures and continue to identify common measures between programs.

The Department is beginning a new strategic planning process, and will use the measures developed as part of this exercise to inform our priorities and strategies in the upcoming years. In addition, we will continue to use Lean continuous process improvement as a tool to move our programs towards increased efficiency by focusing on outcomes, and identifying and eliminating waste in our work flow and business processes.

WATER

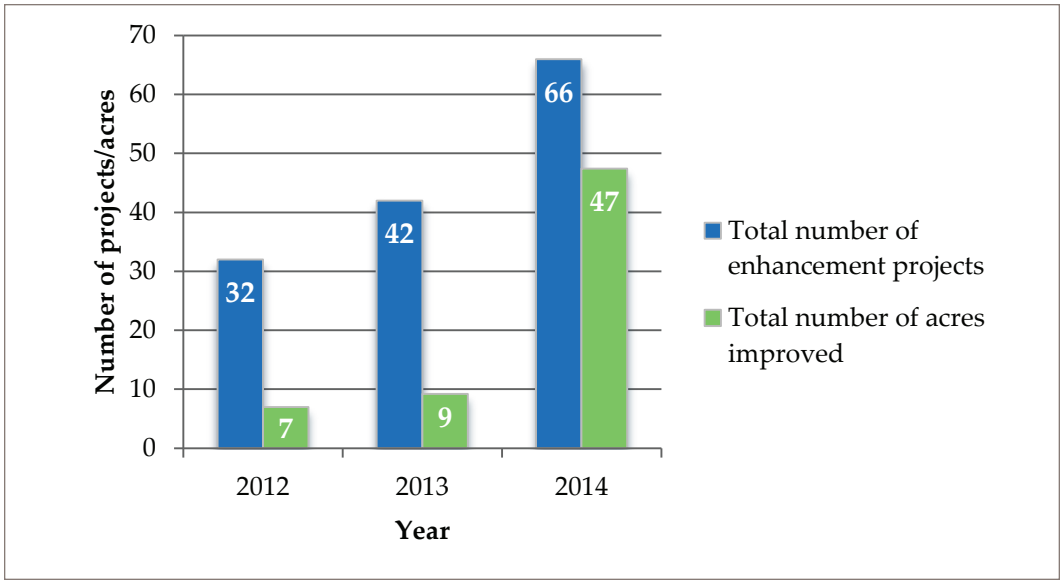
Enhance Surface Water Quality Through Best Management Practices

Improving ecological and hydrologic function throughout Vermont

66 projects enhanced the function of 47 acres in 2014

PERFORMANCE TREND

Number of Enhancement Projects Undertaken and Resulting Acres Improved



DATA ANALYSIS

In efforts to enhance water quality, the Watershed Management Division (WSMD) uses a multi-pronged and comprehensive approach. This approach includes strategies to avoid, minimize, and manage impacts to Vermont's surface waters. Managing impacts is particularly important considering that watersheds, currently meeting Vermont's water quality standards, may be trending downward and could easily become stressed or impaired as a result of cumulative and legacy impacts. In these watersheds, it is important to use best management practices and other means to enhance, or improve upon ecological and hydrologic functions, in an effort to move the water quality trend in a positive direction.

In 2014, WSMD facilitated or helped to fund 66 unique enhancement projects, collectively resulting in improvements to roughly 47 acres.

Enhancement projects include:

- Implementation of best management practices on 20 lakeshore properties
- Riparian buffer plantings and in-stream improvements
- Removal of invasive species from eight different wetland complexes
- Installation of green stormwater infrastructure practices such as rain gardens and bioretention

2014 represents a significant jump from previous years. This is primarily due to a lack of reportable data for the previous years; the data for 2012 and 2013 is likely underrepresented.

It should also be noted that a few programs do not report data in units of acres; these programs will report separately at the program level in the future.

NEXT STEPS

Enhancement projects are an important tool in WSMD's efforts to improve water quality throughout Vermont. When implemented and sited properly, they can have noteworthy results. To date, WSMD has relied heavily on its Tactical Basin Planning process and partner organizations to identify, develop, and implement projects. In the future, WSMD will continue along this track but also plans to increase its efforts by:

- Further engaging municipalities and NGO's in this work
- Increasing the amount of funding available for project scoping and implementation
- Increasing the amount of technical assistance provided by WSMD staff
- Using Lean business process improvement tools to evaluate and advance project prioritization methodologies

Since the data currently available in relation to our enhancement projects is fairly limited, WSMD will create a data development plan to better track progress on this performance measure.

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535

www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

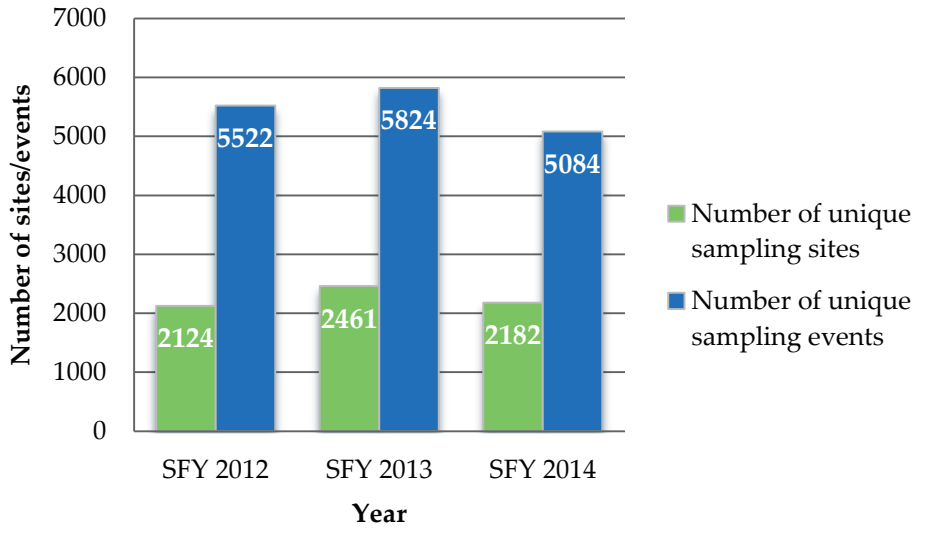
Maintain Surface Water Quality Through Monitoring and Assessment

Establishing baseline conditions, tracking trends, and ensuring water quality efforts are effective

5,000+ samples
taken and analyzed in 2014

PERFORMANCE TREND

Total Number of Sampling Sites and Events



DATA ANALYSIS

The Watershed Management Division (WSMD) has been involved in monitoring and assessment efforts in earnest since 1977. Monitoring and assessment is critical to establishing baseline conditions, tracking long-term changes in water quality and designated uses, and informing management efforts. Through the work of staff scientists and citizen volunteers, it is possible to evaluate the impacts of stressors (e.g. encroachment, nutrient loading, invasive species, and erosion), prioritize mitigation and restoration efforts, and evaluate their effectiveness.

In 2014, WSMD monitored 2,182 unique sites in watersheds across the state. The Division monitors: water quality for nutrients and other pollutants, the presence of aquatic invasive species and cyanobacteria (blue-green algae), as well as wetland functions. All told, results from over 5,000 sampling events were analyzed. The slight increase in 2013 is a result of Vermont's participation in the National Lakes Assessment, which is on a 5-year cycle and represents a greater level of monitoring and effort for that year.

In regard to the Division's assessment efforts, WSMD staff participated in a variety of activities including: shoreland assessments, aquatic resource biological integrity assessments, stream geomorphic assessments, bridge and culvert assessments, permit monitoring and reporting requirements, and compliance assessments. This data enables WSMD to gauge compliance with the Vermont water quality standards and compare water quality to that of other states; where we rank very highly.

These combined efforts identify where protection, restoration, enhancement, and maintenance should be targeted to best ensure the quality of Vermont's surface waters.

NEXT STEPS

Monitoring and assessment is a critical function provided by WSMD staff. Collected data and information helps direct implementation efforts in our watersheds. Ongoing water quality data collection and assessment, combined with permit compliance monitoring, aids in maintaining waters at a high standard. Given this, WSMD hopes to steadily increase its efforts over the next few years.

WSMD also supports monitoring and assessment efforts by volunteer groups and partners. Their involvement greatly increases the number of sites monitored and thus expands the amount of available data. It also creates an important connection between the State, citizen scientist groups, and other associations. WSMD plans to bolster these local level efforts over the next few years.

Specifically, WSMD will:

- Continue high level data collection and assessment efforts
- Continue permit compliance monitoring
- Increase sampling in Lake Champlain
- Increase training opportunities for interested citizen scientists
- Increase in training and monitoring performed by volunteer groups and partners

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535
www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

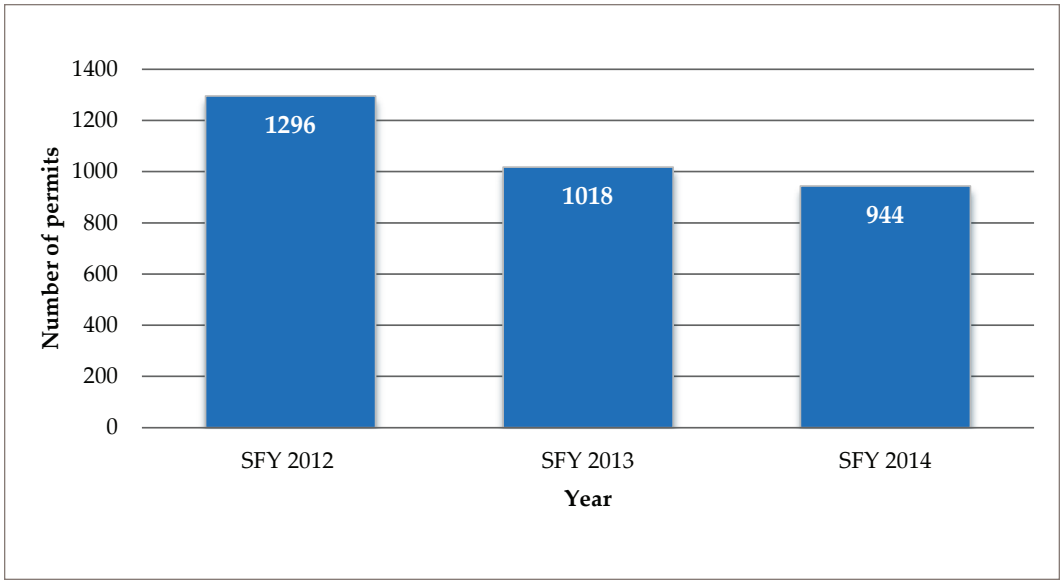
Maintain Surface Water Quality Through Permitting

Permitting as a tool for maintaining water quality

900+ permits
issued and 4,000+ active permits

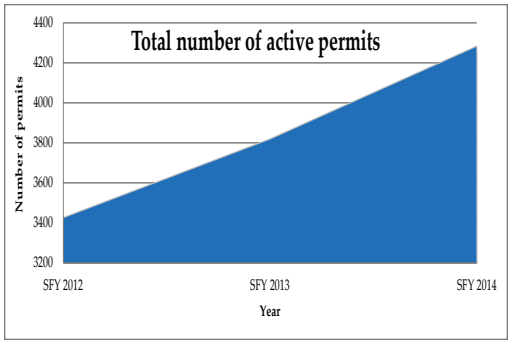
PERFORMANCE TREND

Number of Permits Issued by Year



DATA ANALYSIS

WSMD requires permit coverage for a variety of activities which have a potential to impact water resources. The permit process is meant to avoid or minimize impacts to water quality. Permit coverage is required for aquatic nuisance control, lake and shoreland encroachments, stream alterations, construction and operational stormwater management, wastewater direct discharges, residuals management, and wetland encroachments.



In 2014, WSMD issued roughly 944 new permits. This is a slight decrease from 2013 and 2012. The large number of permits issued in 2012 is a result of a renewal cycle for the Multi-Sector General Permit (stormwater) and additional authorizations provided after Tropical Storm Irene. The two year downward trend reflects a return to normal permitting levels. Related to this, the number of active permits rose to 4,284 in 2014. Active permits remain in effect beyond when the initial project or development occurs and require ongoing evaluation and in some cases monitoring. The long-term nature of these permits and their associated monitoring and compliance requirements enable us to ensure water quality efforts are maintained.

WSMD expects to see an increase in permits, both new and active, as a result of the Lake Champlain clean up plan over the course of the next few years.

NEXT STEPS

WSMD recently received new regulatory authority for shorelands, flood hazard areas, and river corridors. WSMD will likely also receive additional regulatory authority as part of the Lake Champlain clean up plan. To make sure that new regulatory processes are implemented properly, and that existing processes continue to maintain water quality at a high standard, WSMD proposes to:

- Engage a wide variety of stakeholders in the creation of new regulatory systems
- Utilize Lean business process improvement tools to improve efficiency and identify ways to improve permit processes
- Increase the number of staff dedicated to permit review and processing
- Develop an online permit application submittal system
- Review requirements associated with active permits and update as necessary
- Evaluate potential legislative changes needed to improve permit outcomes

The processing and management of permits represents a large portion of WSMD's workload. Given expected permit increases in the coming years, finding ways to make the permit process more efficient and effective will be critical to adapting to this increase in workload and ensuring the health of Vermont's surface waters.

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535

www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

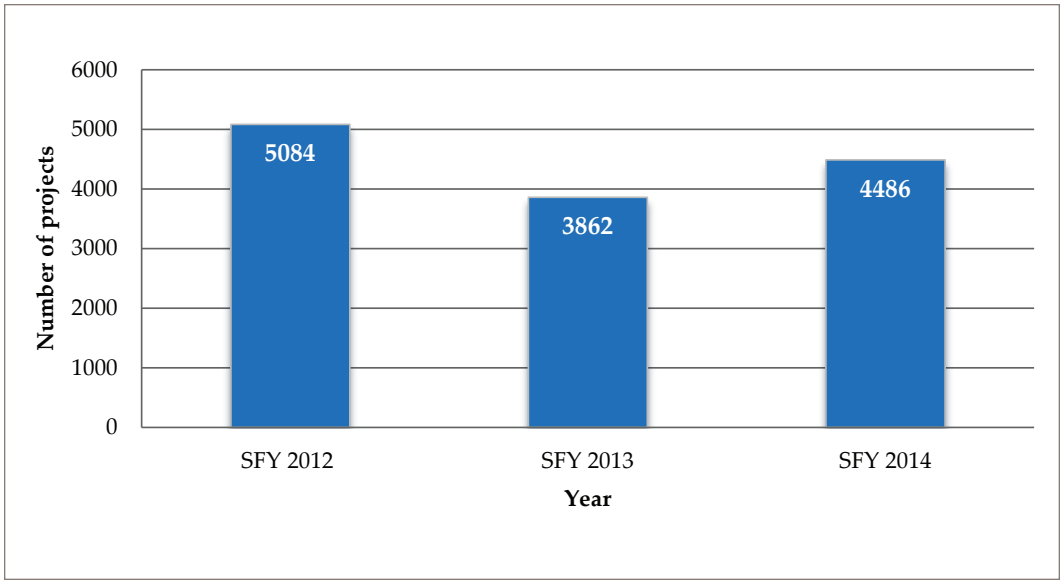
Maintain Surface Water Quality Through Technical Assistance and Review

Mitigating impacts to surface waters through sound advice and scientific knowledge

4,000+ projects
reviewed to ensure Vermont's water quality

PERFORMANCE TREND

Number of Projects Reviewed by Year



DATA ANALYSIS

The Watershed Management Division (WSMD) regularly provides technical assistance to municipalities, landowners, developers, and NGO's (lake and watershed associations) to ensure that water quality standards are met and ecological functions and values are maintained. This type of assistance can take many forms. In many cases, it is regulatory in nature, as the majority of projects coming in to WSMD do so through a defined permit process. In other cases, it is purely advisory or collaborative. For example, many WSMD staff support local NGO's in the design and implementation of watershed restoration projects. All the technical assistance provided serves a critical function in maintaining watershed health.

In 2014, WSMD staff provided technical assistance on over 4,000 unique projects, as shown in the graph above. This total includes, jurisdictional determinations, review of permit applications and renewals, municipal and NGO support, bylaw reviews, illicit discharge detection and elimination efforts, and grant application review and management.

In 2012, the data shows a large number of projects reviewed in comparison to subsequent years. Much of this is attributed to the additional technical assistance provided in the aftermath of Tropical Storm Irene. This is particularly true of the Rivers Program which played a critical role in the state's recovery efforts.

The slight jump from 2013 to 2014 is generally a result of better tracking in 2014. We expect this number to increase again in 2015 and likely 2016 as we refine our data management methods and take on additional responsibilities associated with the Lake Champlain clean up plan.

The numbers provided in this report are an underestimation of the projects actually reviewed by WSMD staff.

NEXT STEPS

Technical review by experts in the environmental field is key to limiting stressors to Vermont surface waters (as described in Vermont's Surface Water Management Strategy). As stewards of Vermont's surface waters, WSMD strives to have a strong, active and meaningful presence across the Vermont landscape. As such, WSMD plans to increase the number of projects reviewed by staff over the next few years.

Specifically, WSMD will:

- Continue high level involvement in project reviews
- Utilize Lean business process improvement tools to improve efficiency and identify ways to better use limited technical resources
- Increase the number of staff dedicated to project review and technical assistance
- Find new ways to support municipalities and NGO's in project identification, development, and implementation

As noted in the data analysis, the data we have currently available on technical assistance and review is fairly limited. Given this, WSMD will also craft a data development plan that will set the stage for more robust reporting on this performance measure in the future.

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535

www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

Protect Surface Water Quality Through Easements and Designations

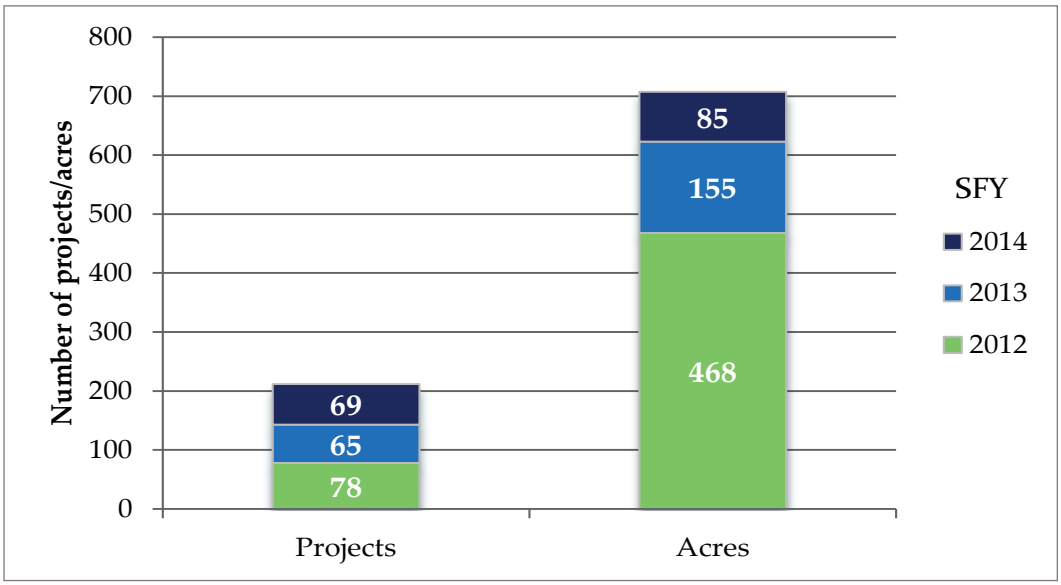
Tools for protecting water quality and increasing flood resiliency

708 acres

protected by easements and designations over the past 3 Years

PERFORMANCE TREND

Number of Projects and Acres Protected



DATA ANALYSIS

Our State's natural ecosystems, and the functions and values they provide, are a finite resource. The Watershed Management Division (WSMD) has a primary responsibility for ensuring these water resources remain intact for future generations.

While a variety of tools exist for safeguarding natural systems from deleterious change, designations and easements are the most effective. These tools place additional restrictions on development activities and are an excellent method for reducing flood hazards, protecting water quality, and restoring wetland and riparian habitats. Such tools include:

- River corridor easements and floodplain protection measures
- Parcel buyouts
- Identification of waters for reclassification
- Outstanding Resource Water designations
- Class I wetland designations

Over the past 3 years, WSMD has used these tools to directly protect 708 acres across Vermont through 218 unique projects. In 2014 specifically, 85 acres were preserved, 66 of which were part of a wetland easement. This easement was a preservation action taken as part of a mitigation plan and will help ensure long term surface water protection and wildlife habitat connectivity.

The large number of new projects and acres protected in 2012 is a result of buyouts and municipal efforts in the aftermath of Tropical Storm Irene. These buyouts were a cost effective way to ensure the protection and stability of Vermont's rivers.

With an influx of funding for projects associated with the Lake Champlain clean up plan, WSMD expects to report a significant increase in the number of projects undertaken and number of acres protected in the coming years.

NEXT STEPS

In 2012, rulemaking authority was transferred to DEC from the Vermont Water Resources Panel, including the authority to designate Outstanding Resource Waters and Class I wetlands. WSMD also gained the authority to administer the Vermont Water Quality Standards, which allows increased protection of Vermont waters through water reclassifications. In the coming years, WSMD plans to take greater advantage of this authority in addition to bolstering existing efforts. Strategies will include:

- Increasing the total number of projects implemented and acres protected
- Providing tools and technical assistance to municipalities and NGO's
- Reviewing existing conservation prioritization methodologies
- Increasing the number of water reclassifications under the Vermont Water Quality Standards
- Furthering designations of Outstanding Resource Waters and Class I wetlands

In addition, WSMD will establish a data development plan that will set the stage for more robust reporting on this performance measure in the future.

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535

www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

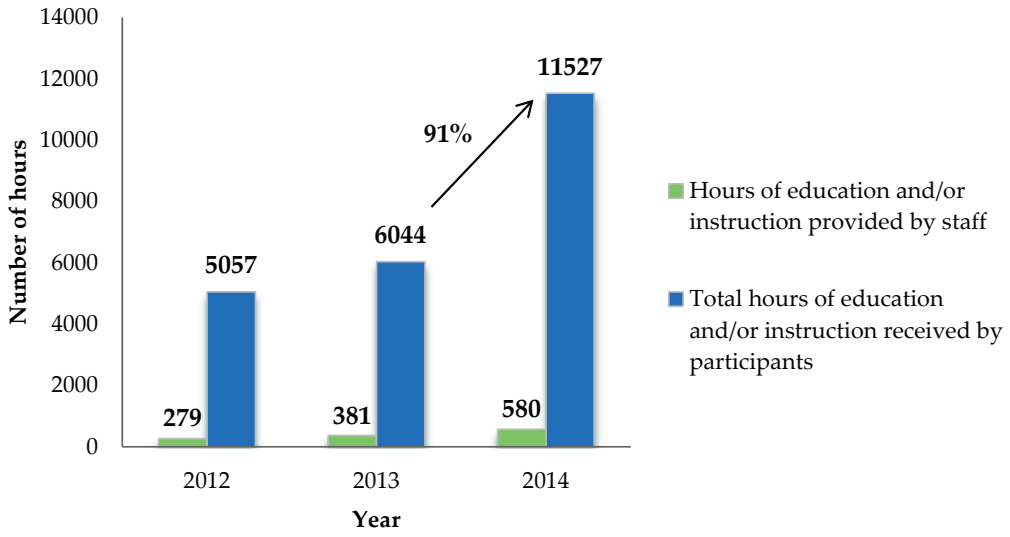
Protect Surface Water Quality Through Education and Training

Increasing environmental literacy and stewardship across Vermont

91% increase
in hours of education and/or instruction received

PERFORMANCE TREND

Hours of Education and Training Delivered



DATA ANALYSIS

Strategies to protect Vermont's water resources often include the procurement of easements or the designation of high quality waters. However, education, outreach, and training are also important tools to utilize in this effort. Often, only a small increase in environmental literacy is needed to change individual behavior and engender environmental stewardship. These changes include limiting the use of road and driveway salt, helping to stop the spread of aquatic nuisance species through boat washing, incorporating green stormwater infrastructure into development projects, and decreasing the use of lawn fertilizers.

In 2014, the Watershed Management Division (WSMD) provided a total of 580 hours of education and instruction to Vermonters throughout the state. These education, outreach, and training opportunities included:

- Rivers and Roads trainings on smart road development and culvert design
- Training on wetland habitats and functions
- Workshops to help prevent the spread of aquatic invasive species
- Presentations on a variety of regulations and permit requirements to municipal officials
- Webinars and trainings to inform people about stormwater management alternatives
- Lake-wise workshops to landowners and contractors on lake friendly development

When taking into consideration the number of participants at each event (average of 20), the total hours of education or instruction received by participants was about 11,500 hours, which is a dramatic jump from 2012 and 2013. This is partially due to better data collection occurring in 2014 but also increased effort by WSMD staff.

Note that the data reported above does not include technical assistance provided in terms of project review, which is reported as another measure.

NEXT STEPS

WSMD believes strongly in the importance of education and instruction as a tool for environmental protection and has steadily increased the number of hours provided to Vermonters. While this is a positive trend, staff time constraints from filling both technical and education/outreach roles require us to find ways to increase our total impact through being more efficient and effective in our educational efforts. Given this, WSMD proposes to:

- Increase the average number of participants per event to have a larger impact and reach a greater audience
- Use technology to increase access to trainings by recording and uploading webinars and presentations for online viewing
- More effectively utilize partner distribution networks

Since the data currently available in relation to our education, outreach, and training efforts is fairly limited, WSMD will create a data development plan to better track progress on this performance measure.

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535

www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

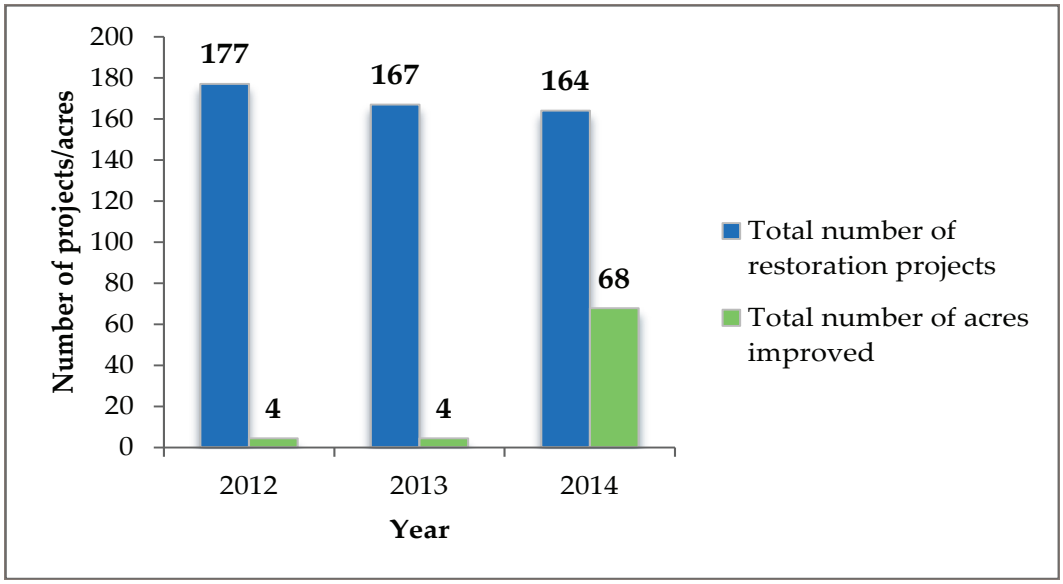
Restore Surface Water Quality Through Targeted Projects in Impaired Waters

Returning ecological and hydrologic function to impaired waters

68 acres
improved in 2014

PERFORMANCE TREND

Number of Restoration Projects Undertaken and Resulting Acres Improved



DATA ANALYSIS

Due to cumulative and legacy impacts of development and land use change, a number of Vermont's surface waters do not currently meet water quality standards. Restoring ecologic and hydrologic function to these impaired waters is critical to resilient and self-sustaining natural systems and essential to achieving the water quality goals and objectives as articulated in the Surface Water Management Strategy. Project implementation is a primary tool in which WSMD facilitates improvements in impaired waters. This work includes: sediment and phosphorus treatments, water quality remediation projects, river and floodplain restoration projects, wetlands restoration work, increased permit requirements for impaired waters, and the development and implementation of restoration plans.

In 2014, WSMD facilitated 164 restoration projects in impaired waters. This is consistent with the number of projects completed in 2012 and 2013. The major difference is the number of acres improved. In 2014, 68 acres were improved versus 4 acres in previous years. This is due to the completion of a sediment phosphorus inactivation treatment in Ticklenaked Pond. This was the final step for restoring water quality and setting the stage for removal from the impaired waters list. Furthermore, there were three wetland restoration projects, restoring over 13 acres of wetlands. It should also be noted that the data available for 2012 and 2013 is incomplete. Given this, the data presented is an underestimate of the actual acres restored. Additionally, a few programs within the Division do not report data in units of acres; these programs will report separately at the program level in the future.

NEXT STEPS

Restoration projects are an important tool in WSMD's efforts to improve water quality throughout Vermont. Traditionally, WSMD has relied heavily on Tactical Basin Plans, development and implementation of restoration plans, and increased permitting requirements for restoring water quality where it has been degraded. While this approach will continue into the future, WSMD plans to expand upon these efforts by:

- Increasing the amount of funding available for restoration project scoping and implementation
- Increasing the amount of technical assistance provided by WSMD staff to partners
- Reviewing project prioritization methodology and funding mechanisms
- Utilize Lean business process improvement tools to improve efficiency and evaluate and advance project prioritization methodologies

Additionally, since the data currently available in relation to our restoration projects is fairly limited, WSMD will create a data development plan to better track progress on this performance measure.

DATA SOURCE: Watershed Management Division

PREPARED BY: Watershed Management Division (802) 828-1535

www.watershedmanagement.vt.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

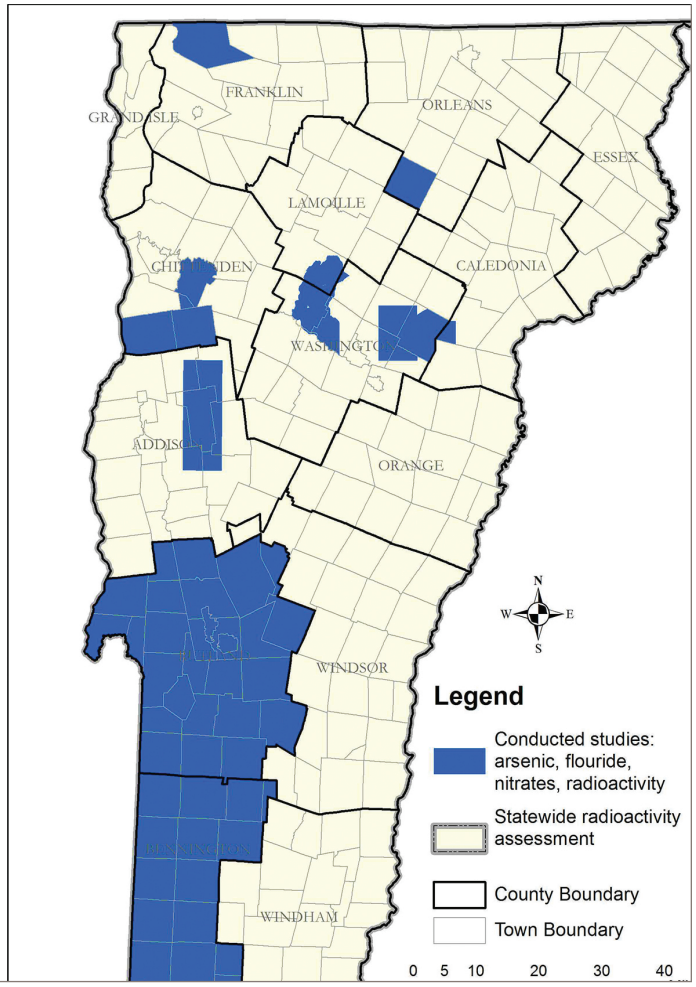
Protect Public Health Through Regional Groundwater Mapping

Geologic Assessments Support Drinking Water Planning

Bringing science to Vermont's environmental problems and public health issues

PERFORMANCE TREND

Geologic Studies Related to Drinking Water Protection



DATA ANALYSIS

Vermont's geology influences many facets of human health. The bedrock, glacial materials, and soils may each have positive and/or negative impacts on water quality and air quality. Some geologic materials may filter contaminants so they do not reach groundwater supplies. Geologic materials may also be the source of naturally-occurring constituents of concern in drinking water, including radionuclides and arsenic, or airborne contaminants. The Vermont Geological Survey and our partners are involved in issues related to arsenic, radionuclides (including radon), nitrates, fluoride, manganese, and asbestos. The communication of natural and anthropogenic contaminants to air, soil and water and onward to plant and animal life is the key driver of this program. Primary concerns are the fate and transport of materials within earth systems and the impact on both human and environmental health.

The map above shows areas where geology and health studies have been completed or are ongoing. The Vermont Geological Survey focuses on public service mapping – bringing our science to bear on solutions to Vermont's environmental problems and public health issues.

NEXT STEPS

- Conduct well water sampling, monitoring and field studies to determine the extent of known contaminants and discern potential emerging issues.
- Build upon previous studies and expand the regions analyzed for specific constituents of concern.
- Prioritize and propose new studies in geographic areas of concern in order to characterize the fate and transport of these constituents.
- Collaborate with partners such as the Vermont Health Department on the public awareness of specific geology and health issues such as radionuclides and arsenic in groundwater and radon in indoor air. The goal is to reduce the exposure of Vermonters to chemical contaminants.

DATA SOURCE: Vermont Geological Survey Database

PREPARED BY: Vermont Geololgical Survey Division

http://www.anr.state.vt.us/dec/geo/vgs.htm L

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

Finance Water Infrastructure Upgrades

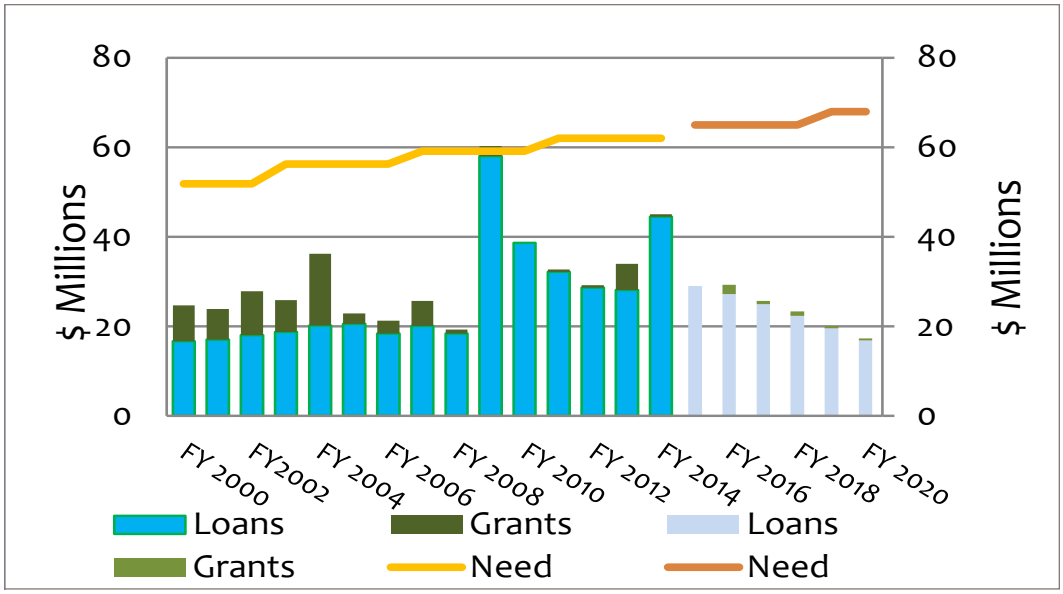
Providing low cost loans to municipalities

$45 million

available in 2014

PERFORMANCE TREND

Water infrastructure loans, grants, and need



DATA ANALYSIS

Available funding, including grants and loans, are forecasted to lag behind the need for funds for public infrastructure.

Grants, available to municipalities for wastewater projects, have generally decreased over time as other demands for state funds have increased. Loans, available through the Drinking Water and Clean Water State Revolving Funds, are forecasted to decrease due to anticipated decreases in federal funding.

Increasing demand for drinking water funds largely reflect evolving regulatory requirements and aging water system components.

Increasing demands for clean water funds are anticipated due to the proposed TMDL for Lake Champlain, stormwater regulations and aging wastewater system components.

NEXT STEPS

1. Implementing a new computer system to replace legacy systems will enhance financial management and allow for auto generating routine correspondence.
2. A LEAN event in 2015 on the Construction Inspection services provided by our program
3. Requesting legislative approval to expand the eligibility of CWSRF loans to additional project types and to somse privately owned facilities

DATA SOURCE: State records on funds available, annual requests for funding and forecasted trends.

PREPARED BY: Facilities Engineering Division, http://www.anr.state.vt.us/dec/fedfed.htm

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

Ensure Safe Drinking Water

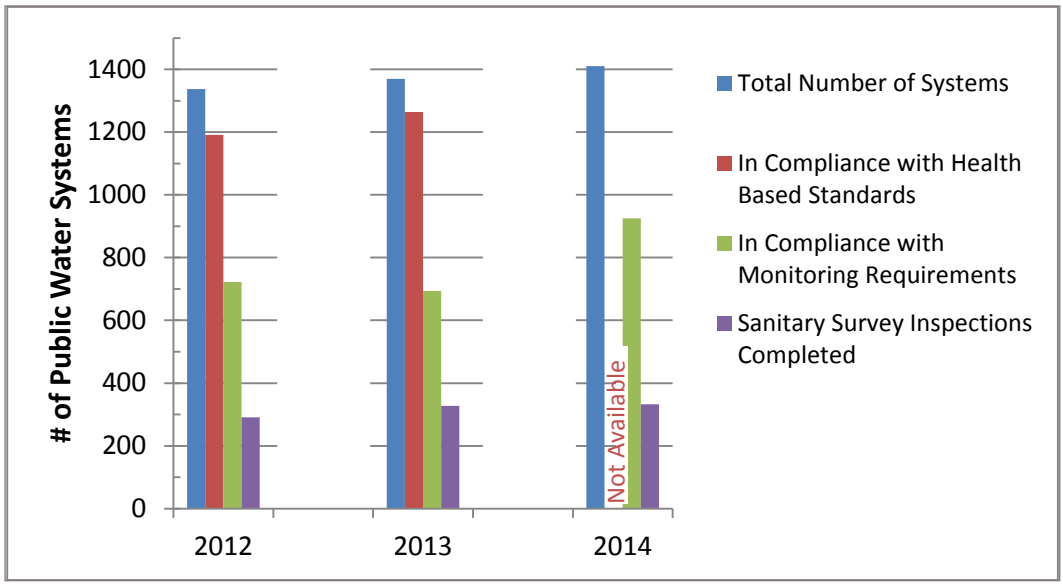
Public water systems are providing safe drinking water to their customers

92%

Public Water Systems produced safe drinking water.

PERFORMANCE TREND

Compliance with Health Standards and Monitoring Requirements



DATA ANALYSIS

While most water systems provide safe drinking water, approximately 10% struggle to meet standards. Primary reasons are coliform contamination events and disinfection by-products exceedances. Coliform contamination indicates the system's vulnerability to bacteria and viruses. Disinfection by-products form when organic matter in surface water interacts with chlorine during the disinfection process. Less frequent contamination issues include naturally occurring high levels of arsenic or radionuclides.

The Water Supply Program focuses on proactively preventing compliance problems from occurring in the first place. This is accomplished by having requirements pertaining to source protection, well construction, water quality monitoring, and water system operations. More specifically: well construction plans and the source water's quality/quantity are assessed prior to issuing the source permit; engineering plans are reviewed to ensure technical requirements are met prior to issuing a construction permit; sanitary survey inspections identify unsafe or unsanitary operations, and operations permits contain monitoring and operational requirements that must be adhered to and may also include a compliance schedule to bring a system back into compliance in a timely manner.

When water quality exceedances occur or public health risks are found, public water systems must take action to ensure that public health is protected. For example, system owners may be required to issue boil water notices to their users or to make a modifications to their system (e.g. install treatment or repair a distribution system).

NEXT STEPS

To maintain EPA funding, we need to:

- Continue to require water systems to meet standards via the operating permit
- Continue to monitor and assess whether water systems meet operational standards
- Continue to monitor and assess whether water systems meet federal Maximum Contaminant Levels (MCLs), monitoring, reporting, and treatment technique standards
- Continue to improve the source protection program, with policy and rule changes
- Continue to provide technical assistance to municipalities and volunteer-run private systems
- Take enforcement actions against chronic non-compliers

DATA SOURCE: USEPA SDWIS database; DWGPD database

PREPARED BY: Drinking Water and Groundwater Protection Division

www. drinkingwater.vermont.gov 1-800-823-6500

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

WATER

Ensure Dam Safety to Protect the Public and the Environment

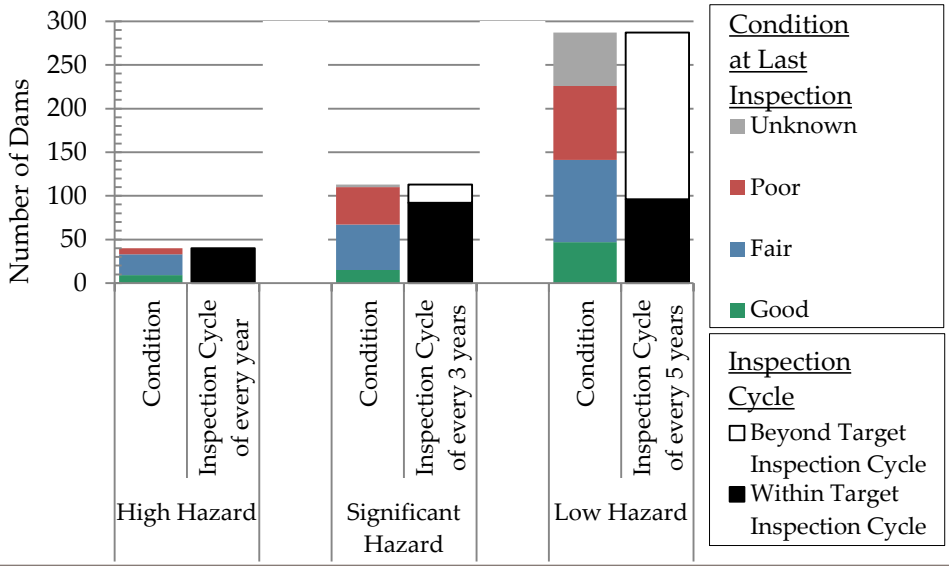
Through inspections, permits, and informing dam owners

52%

of dams receive timely inspections

PERFORMANCE TREND

Summary of Dams Inspected and Hazard Class



Hazard Rating

Based on Dam Failure Consequences

High = Loss of Life is more than a few; Economic impact is extensive community, industry or agriculture

Significant = Loss of life is a few; Economic impact is notable agriculture, industry or structures

Low = No loss of life; Economic impact is minimal(Undeveloped to occasional structures or agriculture)

DATA ANALYSIS

Vermont has 440 dams impounding greater than 500,000 cubic feet of water and subject to periodic inspections by the Dam Safety Program.

Annually the program inspects all the high hazard dams and generally meets the target number of inspections on significant hazard dams. Annual number of inspections on low hazard dams are not met due to staff resource restrictions.

Inspections determine the condition of each dam with poor being the lowest rating. More than a quarter of the significant and low hazard dams are in poor condition.

About half of the low hazard dams have not been inspected in the last decade and in some cases may have become higher hazard dams due to greater dangers in the event of a dam failure, such as recent development down-river of the dam.

NEXT STEPS

1. Reduce the staff resources needed to manage flood control dams by transferring ownership of three dams to the Army Corps of Engineers.
2. Seek additional staff position to increase from 90 to 130 the number of dams inspected each year.

DATA SOURCE: State Dam Safety Program.

PREPARED BY: Facilities Engineering Division, http://www.anr.state.vt.us/dec/fed/fed.htm

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

AIR

Support Climate Policy with Sound Science and Technical Expertise

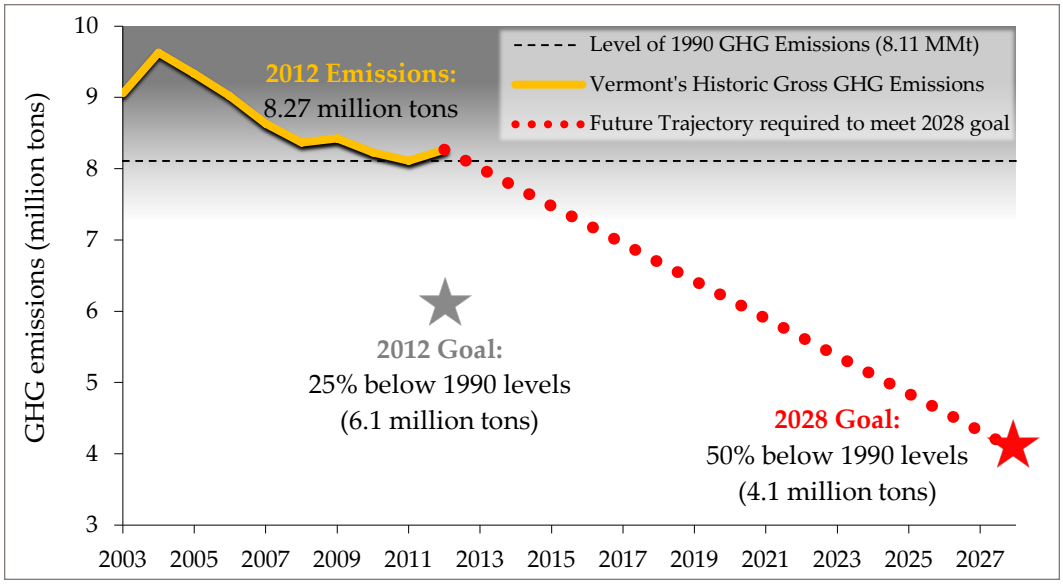
Tons of greenhouse gases emitted in Vermont

36%

higher GHG emissions in 2012 than the statutory target

PERFORMANCE TREND

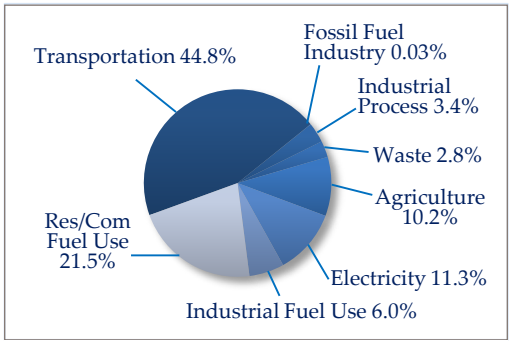
Vermont greenhouse gas emissions inventory, 2003-2012



DATA ANALYSIS

This performance measure tracks Vermont's progress in meeting the state's greenhouse gas reduction goals. Emissions from most sectors declined slightly or remained nearly constant between 2010 and 2012, however emissions from the electricity sector have been rising in the past few years despite effective energy efficiency programs and an increase in in-state renewable energy generation. This has been caused by a marked decrease in reliance on nuclear generation, an increased reliance on higher GHG-emitting regional market power in Vermont's contracted electricity mix, and ongoing sales of Renewable Energy Certificates (RECs) to entities outside of Vermont.

Vermont did not achieve its 2012 goal of reducing greenhouse gas emissions to 25% below 1990 levels. Vermont now must focus its attention on the next goal on the horizon of reducing GHG emissions 50% below 1990 levels by 2028 as set forth by state statute.



Vermont greenhouse gas emissions by sector

This will require a substantial, but not impossible, effort by Vermont State Government and all Vermonters. As illustrated above, the average rate of decline from 2004 through 2008 was somewhat steeper than what will be required in the future to meet the 2028 goal.

NEXT STEPS

To meet Vermont's greenhouse gas reduction goals, Vermont state government, businesses, communities and individuals must continue to develop and implement effective policies and actions to reduce annual GHG emissions.

The Air Quality and Climate Division will continue to publish GHG emissions inventory updates on an annual basis to track progress and inform climate policy.

The AQCD provides Vermonters with of science and technical information on climate change through a number of channels:

- Climate Change website
- Climate Connections newsletter
- @vtclimatechange on Twitter

DATA SOURCE: State of Vermont Department of Environmental Conservation Air Quality and Climate Division. (2014). Vermont Greenhouse Gas Emissions Inventory Update 1990-2012. Montpelier, VT.

PREPARED BY: Air Quality and Climate Division, 802-828-1288

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

AIR

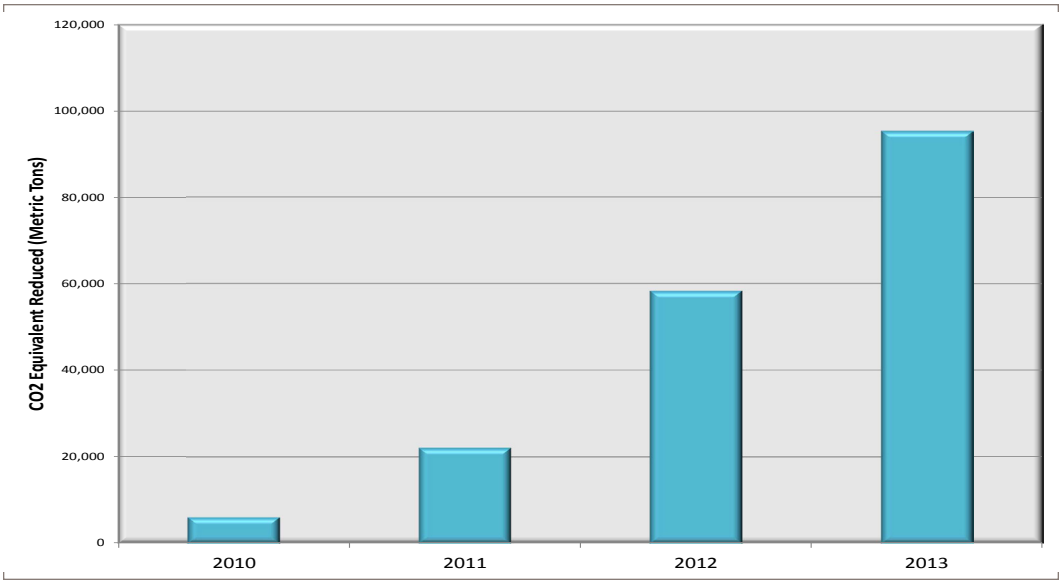
Promote the reduction of greenhouse gas emissions

Through environmental recognition programs and assistance for businesses and municipalities

100,000
metric tons of greenhouse gases reduced

PERFORMANCE TREND

Cumulative greenhouse gases reduced



DATA ANALYSIS

The Vermont Green Business Program is a voluntary assistance and recognition program that is available to all Vermont businesses that wish to reduce environmental impacts and promote sustainability of their business operations. Vermont Green Business members implement best management practices to reduce waste, conserve water and energy, reduce toxic chemical use, and adopt environmental purchasing policies. All program applicants are provided with an on-site visit by staff to help identify opportunities to reduce environmental impacts and become more environmentally sustainable. In the program there are sectors such as Green Hotels, Clean Marinas, Green Restaurants, Green Links, and Green Grocers. Recognition and publicity are provided to program members as well as ongoing technical assistance. The Program tracks and measures environmental outcomes from membership applications and annual reports filed by members. There are nearly 200 Green Business members.

The annual Vermont Governor's Awards for Environmental Excellence recognizes actions taken by businesses, not-for-profit organizations, institutions, public agencies and individuals to conserve and protect natural resources, prevent pollution, and promote environmental sustainability. Through applications received, environmental practices implemented are tracked and measured, and converted to metric tons of carbon dioxide emissions reduced, as well as other environmental outcome measures.

Since 2010, nearly 100,000 metric tons carbon dioxide emissions have been reduced through energy conservation, water conservation, waste reduction and environmentally preferable purchasing from nearly 200 green businesses and 125 Governor's Awards applicants.

NEXT STEPS

Recognition and assistance programs prevent pollution and promote environmental sustainability in measureable ways. By publicizing these efforts, others become informed and are encouraged to take action to promote sustainability. The following strategies will be pursued for program improvement:

- Enhance publicity and marketing to increase the number of applicants to the Vermont Green Business Program and annual Vermont Governor's Awards for Environmental Excellence
- Improve the Vermont Green Business Program web site, including improved application forms and assistance resources
- Enhance electronic reporting and application forms for recognition programs
- Increase the number of annual applications to the Green Business Program by 100 % by 2016 and increase Program members to 225
- Partner with various public and private organizations to enhance the visibility of these programs

DATA SOURCE: VT Green Business Program and VT Governor's Awards Data
PREPARED BY: Environmental Assistance Office

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

AIR

Achieve and Maintain Healthy Air Quality

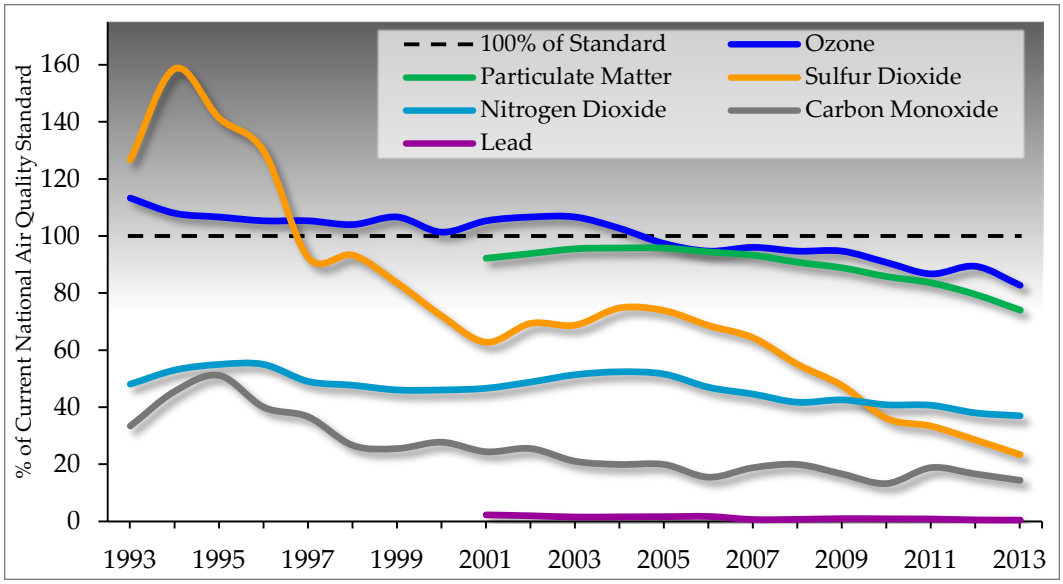
Monitoring Vermont's air pollutant concentrations

100%

of Criteria Air Pollutants meet current standards, but reductions will be needed to meet future standards

PERFORMANCE TREND

Ambient air quality trends for Criteria Air Pollutants in Vermont



DATA ANALYSIS

Vermonters' health, welfare and environment are affected by exposures to many different pollutants present in our air that result from a combination of local and out-of-state sources. The US EPA sets and periodically revises National Ambient Air Quality Standards (NAAQS) for six of the most common air pollutants: ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, and lead.

Monitored concentrations of these common air pollutants in Vermont's ambient air provide direct performance measures of the effectiveness of the integrated efforts of the entire AQCD program to reduce air pollution emissions, in combination with parallel efforts from upwind states and national programs in the US and Canada.

Concentrations of the pollutants plotted above are based on the highest concentrations measured in Vermont, and are expressed as percentages of the current health standards for each pollutant. All six pollutants have been declining over time, and are currently below (the dashed line) levels of current health standards. Ozone and particulate matter are the pollutants that come closest to exceeding standards. Continued reductions of these pollutants will be needed to meet future standards.

NEXT STEPS

Vermont's ground level ozone concentrations are heavily influenced by transport from upwind states, and active participation in regional organizations like the multi-state Ozone Transport Commission is essential to achieve future progress.

Our in-state contributions to ozone (and states & provinces downwind of us) come primarily from mobile sources. These emissions will also need to be reduced to assure the health of future generations.

Our particulate matter pollution is heavily influenced by interstate transport in the summer, and will benefit from regional programs like EPA's Cross State Air Pollution Rule. Our winter particulate levels are often dominated by local emissions, especially in mountain valley towns where reductions from local sources like wood stoves will be needed to meet more protective future standards.

DATA SOURCE: AQCD Ambient Air Monitoring Network; US EPA Air Quality System (AQS)

PREPARED BY: Air Quality and Climate Division, 802-828-1288

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

AIR

Reduce Public Exposure to Industrial Air Pollution

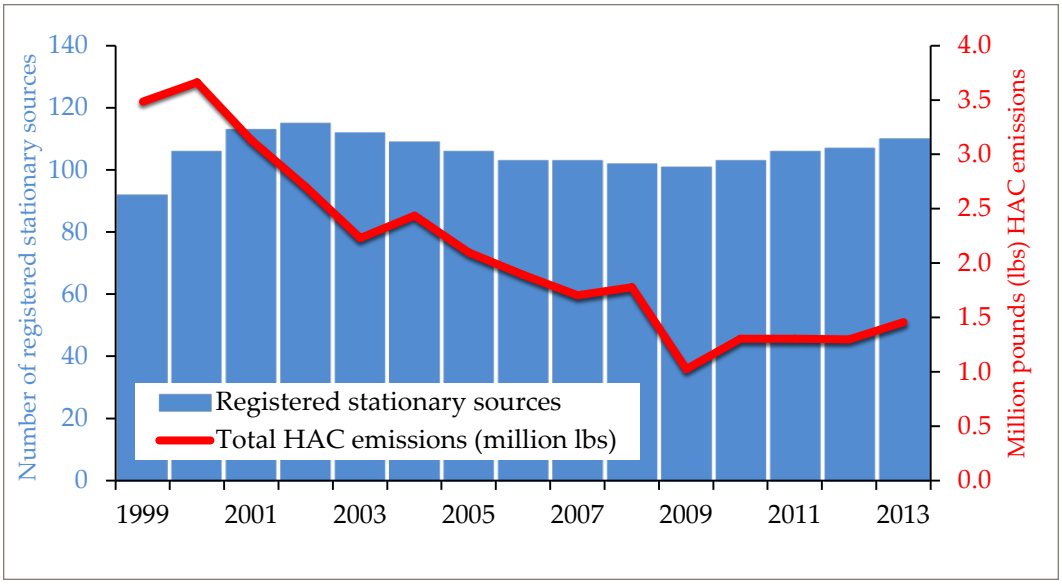
Regulating toxic air pollution emissions from stationary sources

60%

reduction of Hazardous Air Contaminant emissions from 2000

PERFORMANCE TREND

Hazardous Air Contaminant emissions and number of stationary sources



DATA ANALYSIS

The Air Program regulates industrial stationary sources of air pollution through permits, inspections, regulations, and registration of actual emissions. These programs have effectively helped reduce toxic Hazardous Air Contaminant emissions from these sources over time. These emissions have been reduced by 60 percent since the year 2000, even while the number of stationary sources has remained relatively constant. As emissions decrease, further reductions become more difficult and require expanded efforts with smaller and smaller sources.

In 2014, the Air Program issued 30 permits for new or modifying stationary sources, issued 28 operating permits for existing sources, issued 31 permits for open burning, conducted 46 inspections, reviewed 20 excess emission reports, oversaw 38 stack emission compliance tests, responded to 35 public complaints and referred 2 cases for formal prosecution.

NEXT STEPS

- Continue permitting of new and modifying sources to ensure they are as clean as possible.
- Continue permitting of existing sources to ensure emission reductions are achieved when reasonable and necessary.
- Continue inspections and compliance testing and outreach to ensure facilities operate properly and in compliance.
- Continue registration of facility actual emissions to identify emission sources and reduction opportunities.
- Revise the emission registration fee structure to reflect current science of relative toxicity and provide incentive to further reduce emissions.
- Expand outreach to source categories that cumulatively contribute significant emissions.

DATA SOURCE: AQCD Emissions Registration Program

PREPARED BY: Air Quality and Climate Division, 802-828-1288

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

AIR

Reduce Mobile Source Air Pollution

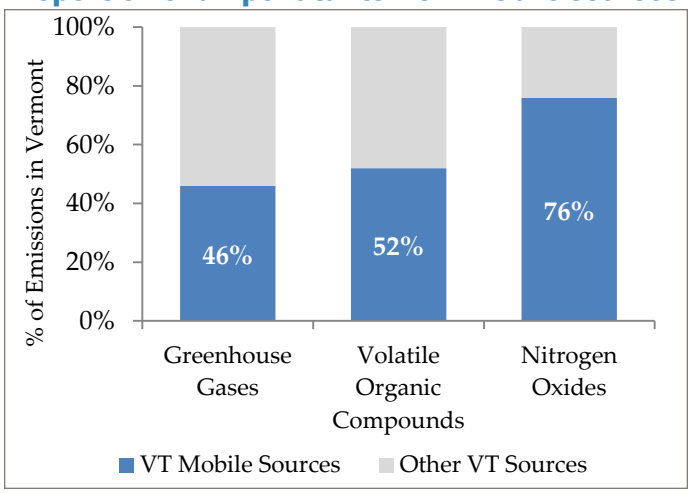
Increasing electric vehicles in Vermont will reduce air pollution emissions

1%

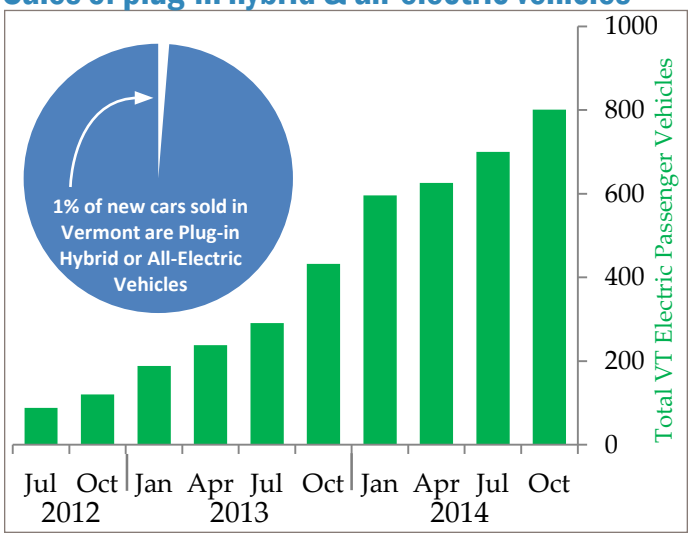
of new cars sold in Vermont are EVs.

PERFORMANCE TREND

Proportion of air pollutants from mobile sources



Sales of plug-in hybrid & all-electric vehicles



DATA ANALYSIS

In Vermont, motor vehicles are the largest source of many air pollutants, including greenhouse gases and the ozone-forming volatile organic compounds (VOCs) and nitrogen oxides. Over the last thirty years, the number of cars and trucks registered in Vermont has increased by nearly 60%, while the number of vehicle miles traveled (VMT) each year in Vermont has nearly doubled.

Cleaner conventional vehicles and alternatively fueled vehicles such as plug-in hybrid and all-electric vehicles are necessary to help offset increases in vehicle population and VMT.

While the continuous growth rate of new electric vehicles registered in Vermont plotted above is encouraging, these vehicles are still only a very small fraction of the total new vehicles registered. In order to improve air quality and meet our greenhouse gas emission reduction goals, plug-in hybrid and all-electric vehicles will need to be a much larger fraction of total new vehicles registered in Vermont.

At the same time, efforts to reduce air pollution from conventional vehicles must continue. These include continued adoption of California vehicle emissions standards, inspection and maintenance of vehicle emission control systems, and enhancement of emissions control technology upgrade programs for diesel engines.

NEXT STEPS

- Implement VT's ZEV Action Plan which identifies actions to expand the ZEV market in VT, and continue to participate in Multi-State ZEV Action Plan.
- Continue adoption of California vehicle emissions standards, including ZEV requirements.
- Continue and enhance VT's vehicle emissions inspection and maintenance program to maximize benefits from investments in emissions control technology.
- Continue to reduce diesel emissions through technical support and funding for vehicle and equipment replacement, and installation of idling reduction technologies.
- Continue providing information and training to VT automotive technicians to ensure effective maintenance and repair of vehicle emission control systems.

DATA SOURCE: VT submission to US EPA 2011 National Emissions Inventory
VT Department of Motor Vehicles Motor Vehicle Registrations

PREPARED BY: Air Quality and Climate Division, 802-828-1288

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

Promote the Sustainable Management of Waste

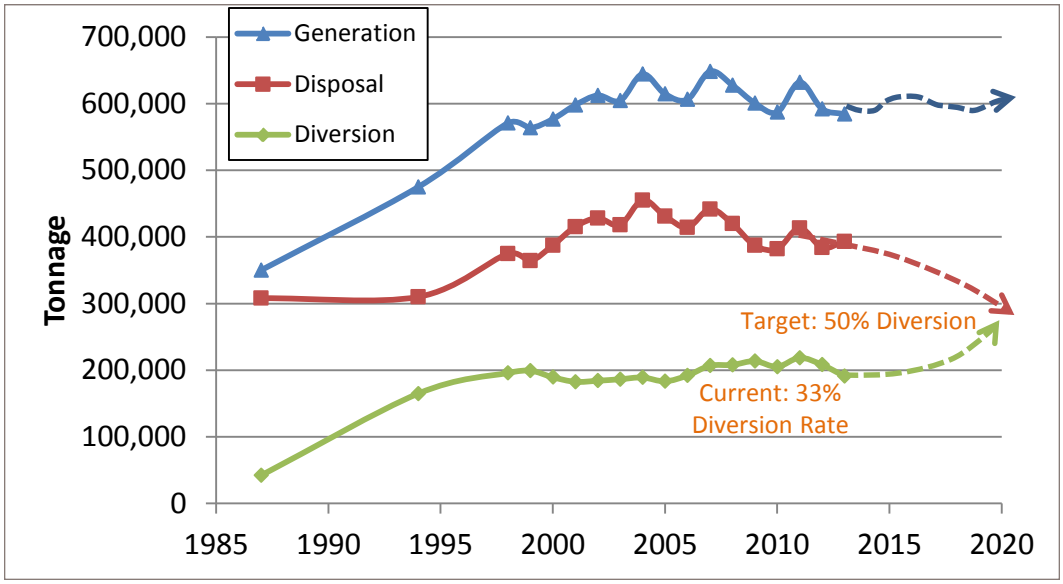
Increase the statewide diversion rate of all solid waste generated by Vermonters

3.4 lbs

The amount of waste disposed of by an average Vermonter *each* day.

PERFORMANCE TREND

Tons of solid waste generated, diverted and disposed of by Vermonters



DATA ANALYSIS

Solid waste generation has increased steadily in VT, parallel to national trends. The disposal of these materials results in the loss of reusable and recyclable materials along with lost opportunities to save energy, conserve and reduce greenhouse gases and create business opportunities. Recycling and composting efforts in Vermont have resulted in Vermonters diverting 33% of their generated waste in 2013. The diversion rate has been stagnant at or near this level for the last 15 years.

In 2013 Vermont began implementing the Universal Recycling Law, an innovative and encompassing change to the State's solid waste material management system. Largely focused on removing all recyclables and organics from disposal, Universal Recycling aims to make diversion convenient and cost-effective for all residents. It is estimated that these efforts can result in a diversion rate of 50% by 2020, an ambitious, but feasible goal.

Efforts in 2014 have largely focused on education, outreach, discussion and coordination with local and regional solid waste planners, who together with the State Solid Waste Management Program have taken on the challenging task of initiating the necessary changes to make Universal Recycling a success.

NEXT STEPS

- Requiring the parallel collection of recyclables and organics at locations or by haulers that collect municipal solid waste (MSW)
- Encouraging the use of the food recovery hierarchy
- Providing financial incentive to reduce waste by implementing a 'Pay as You Throw' pricing system for MSW
- Implementing the development of updated Solid Waste Implementation Plans by the State's various solid waste management entities
- Banning the following items from disposal:

  Recyclables

  -- by July 2015

  Leaf and Yard Debris

  – by July 2016

  Food Scraps

  – by July 2020

.

DATA SOURCE: Solid Waste Management Program

PREPARED BY: Waste Management and Prevention Division, 802-828-1138

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

Minimize Exposure to Hazardous Materials

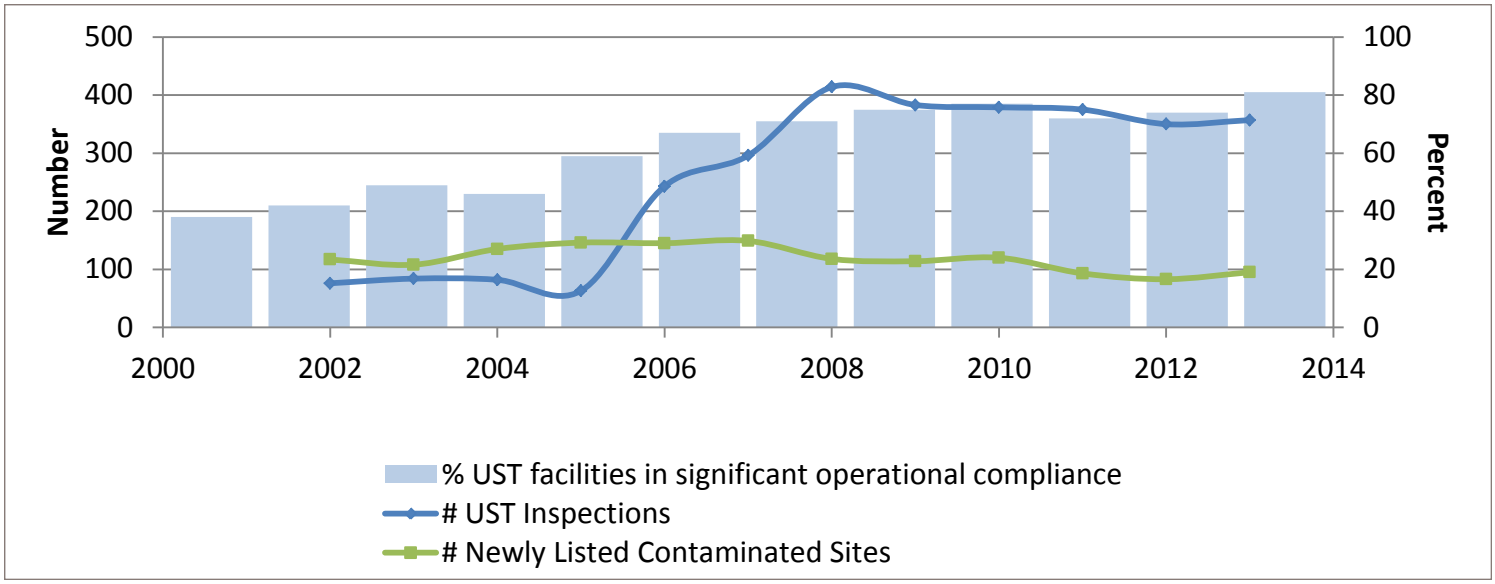
Reduce the number of contaminated properties added to the Sites Management Section every year

95

Contaminated properties were added to the Sites Management Program for clean-up in 2013

PERFORMANCE TREND

Underground storage tank (UST) inspections reduce the number of new sites



DATA ANALYSIS

Vermont has over 1400 sites that have been contaminated with hazardous materials and are currently in need of clean up. Many of our education, outreach, inspection and other regulatory efforts attempt to identify potential sources and uses of these hazardous materials that could potentially contribute to contamination of a property. This work is largely an attempt to minimize the exposure and release of these materials before a property has an opportunity to become contaminated. We achive this by encouraging appropriate property management and containment of hazardous materials and ensuring compliance with appropriate regulations. The direct impact of this program is fewer properties being listed as contaminated sites each year.

One example of an action that has contributed to fewer hazardous materials exposures and therefore the contamination of properties can be seen in the work of the Underground Storage Tank (UST) program. In 2005, the UST program streamlined their inspection process and dramatically increased the number of annual inspections completed at underground petroleum storage tank facilities every year. This increased site presence not only has resulted in a nearly 30% increase in the number of facilities found to be in significant operational compliance with relevant management practices, but it has also decreased the number of emergency spill responses which has directly resulted in a reduction in the number of properties listed as contaminated sites each year.

NEXT STEPS

- Development of Salvage Yard Rules which requires the salvage yard registration and the development of best management practices
- Implementation of new Above Ground Storage Tank rules will improve compliance with the best management practices for design, installation, operation and removal of potential contaminante sources
- Implementation of annual self-registration of compliance by small quantity generators of hazardous waste will increase their awareness of regulations and should improve overall compliance rates

DATA SOURCE: RCRA and Sites Management Section

PREPARED BY: Waste Management and Prevention Division, 802-828-1138

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

Transition Contaminated Sites Back to Productive and Beneficial Use

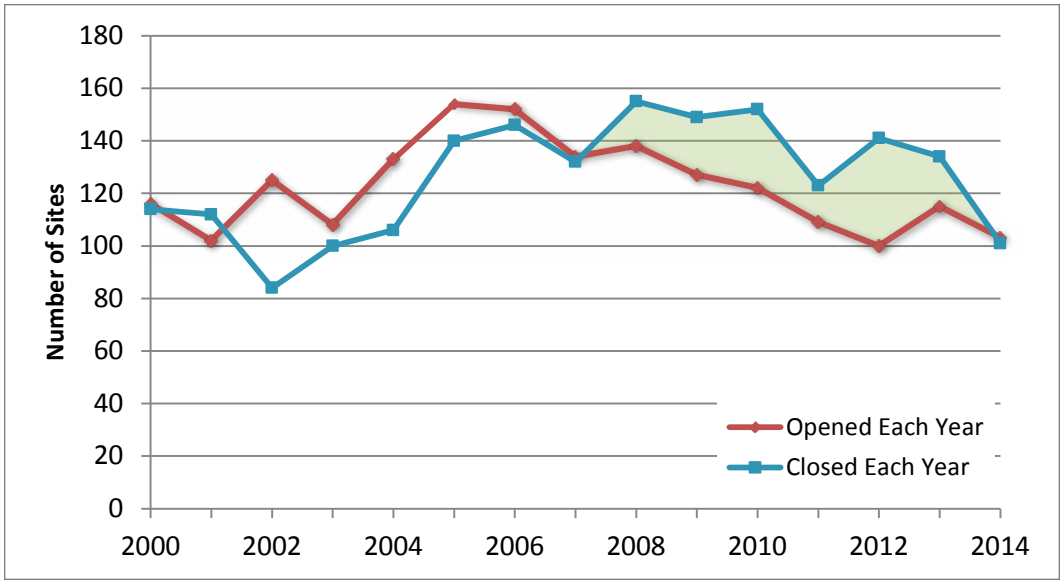
By facilitating the clean-up and closure process for contaminated sites

=

in 2014 nearly the same number of contaminated sites were added to the Sites Section as were successfully cleaned

PERFORMANCE TREND

Contaminated sites opened and closed (cleaned) each year



DATA ANALYSIS

There are many factors that contribute to successful remediation of contaminated sites including, the extent and type of contamination, financial capability of the property owner and degree of impact on the environment or human health. Our contribution to supporting successful clean-up of these properties includes and extends beyond, providing technical and financial assistance for site assessment and implementing clean-up remedies. It can also include assistance in pursuing redevelopment of difficult-to-clean sites such as abandoned and vacant properties. In all cases, the ultimate end goal is to return the impacted property to a productive and beneficial use, whether that be a return to the previous land-use practices under new management strategies or a change in land-use and redevelopment of the property.

Historically, the opening of new sites occurred at a faster rate than existing sites could be cleaned and closed out of the Sites Management Section. In 2007 this trend began to change, with more site clean-up and closures happening than new listings, allowing more time and effort to be devoted to difficult to clean properties. The largest contributing factor to this shift was the success in decreasing in the number of new sites being listed. Unfortunately a decrease in the number of sites that are able to be cleaned and closed each year has also been occurring. The last few years has seen a smaller difference between the number of new and closed sites, a trend which is unsustainable and indicates that we need to work towards increasing the efficiency with which we support the clean-up of contaminated sites.

NEXT STEPS

The Petroleum Cleanup Fund Reimbursement process completed a Lean Event in February 2014. A high percentage of newly listed sites are eligable for reimbursement under this program. The outcome of this work was an implementation plan with the goal of significantly decreasing the time to reimbursement by implementing changes, like an online automated submission system. This increased efficiency will allow our hydrogeologists and engineers to better focus on technical aspects of site clean-up rather than claims processing.

The Environmental Contingency Fund (ECF) supports the clean-up of some of Vermont's most challenging contaminated sites and supports Vermont's participation in the federal Superfund and Brownfields programs. Current projections indicate that the demands being placed on the ECF are not viable given the current revenue sources. We are working towards solutions to ensure the long-term sustainability of this fund and ultimately the clean-up and closure of highly contaminated sites.

DATA SOURCE: Sites Management Section.

PREPARED BY: Waste Management and Prevention Division, 802-828-1138

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND AND WASTE

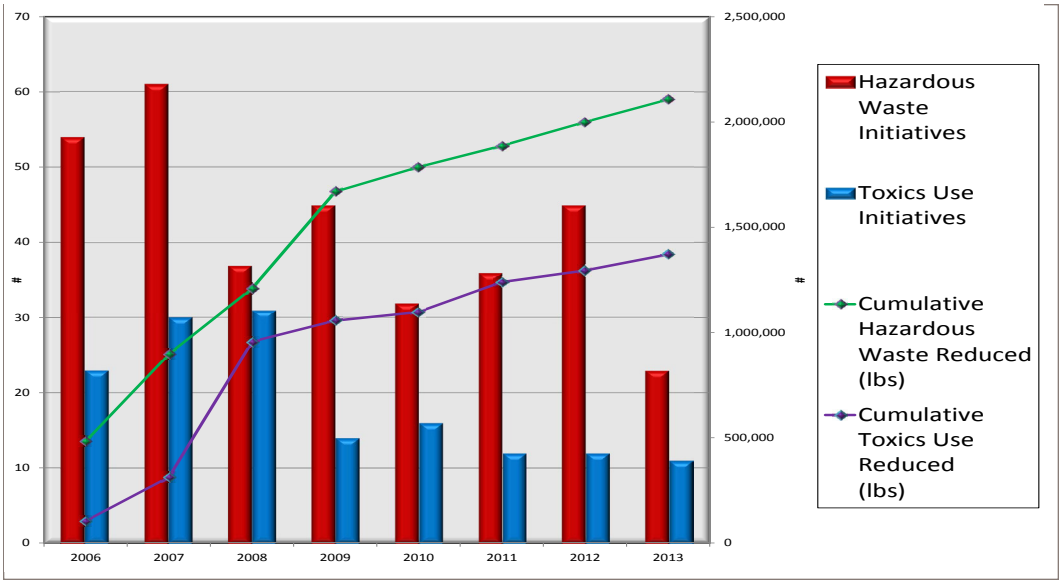
Working with Businesses to Reduce Hazardous Waste Generation and Use of Toxic Chemicals

Through pollution prevention and assistance

2.1 million lbs of hazardous waste reduced & **1.4 million lbs** of toxics use reduced since 2006

PERFORMANCE TREND

Hazardous waste & toxics use reduced



DATA ANALYSIS

Vermont's largest users of toxic chemicals and generators of hazardous waste are required to develop three-year plans to identify opportunities for reducing use of toxic chemicals and hazardous waste generation in industrial processes. These facilities are required to then implement reduction practices that are identified as technically and economically feasible. Many Vermont facilities have been subject to planning requirements since 1994. Initially there were nearly 200 facilities subject to planning; now there are about 65 facilities. Over the years, many facilities reduced their toxics use and hazardous waste below the thresholds required for planning. Nearly 100% of facilities are in compliance with planning requirements which include annual progress reports in addition to a three-year plan. In addition to reviewing plans for compliance, the Environmental Assistance Office provides technical assistance in identifying and implementing reduction measures. Planning facilities are visited on-site at least once during the three-year planning cycle to review progress in planning, assist in identifying new reduction opportunities, and provide assistance when requested in evaluating technical and economic feasibility of these opportunities.

Reduction strategies may include employee training to prevent waste of materials, equipment upgrades, and chemical substitution of less toxic and hazardous materials in manufacturing processes. Often, by implementing reduction strategies, Vermont businesses are saving money, reducing liability and reducing worker exposure to toxic and hazardous materials.

NEXT STEPS

Information sharing and technical assistance are important to sustaining toxics use and hazardous waste reduction over time. The Environmental Assistance Office will be focusing on the following strategies:

- Enhance web site resources on toxics use and hazardous waste reduction methodologies
- Develop technical workshops and webinars for businesses
- Focus on assisting facilities that are new to the planning process
- Develop and publicize case studies of successful toxics use and hazardous waste reduction efforts that are transferable to other businesses

The Environmental Assistance Office will also focus on the following strategies to enhance the effectiveness of the planning requirements:

- Develop electronic reporting systems for all reporting requirements
- Continue to identify facilities that are subject to the requirements but not filing plans as required by law
- Evaluate alternative sustainability planning for facilities that have exhausted all opportunities for toxics use and hazardous waste reduction

DATA SOURCE: Pollution Prevention Planning Data

PREPARED BY: Environmental Assistance Office

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

Reduce the Number of Releases from Hazardous Materials

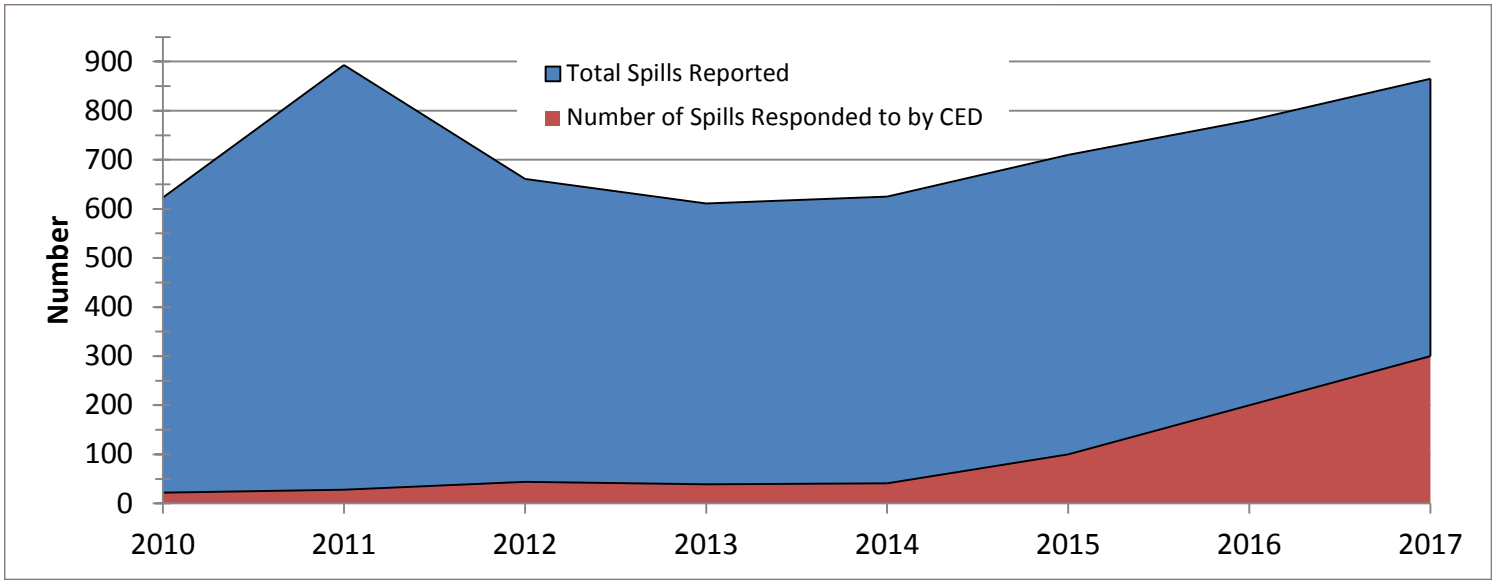
Increase enforcement responses to preventable and significant releases.

584

spills occurred in 2014, only 41 of which were able to be responded to

PERFORMANCE TREND

Hazardous material releases and enforcement responses



DATA ANALYSIS

In an average year the Department of Environmental Conservation receives 600 hazardous material release reports. One exception to this was 2011, which was anomalously high as a result of the flooding from tropical storm Irene. The number of reported releases has remained relatively constant over the past several years. While some releases are relatively minor, and only require minimal remediation, others are significant and can result in environmental harm as well as potential harm to human health. When a release is significant, it often is referred to the Sites Management Section and results in the expenditure of a significant amount of money from the Petroleum Clean-Up Fund.

The goal of the Compliance and Enforcement Division (CED) is to reduce the number of preventable releases by increasing the response rate to spills as they occurr. When an investigation determines that a spill was preventable or significant, and enforcement action will be taken. This will result in an increase in the level of deterrence which should help to reduce the number of spills that occur.

NEXT STEPS

The Compliance and Enforcement Division is working with the Waste Management and Prevention Division to improve communications around hazardous materials releases. The goal of this effor is for release reports and complaints to be entered into the DEC incident tracking system which will enable a prompt response by investigators. This will result in a more consistent enforcement response. This higher level of response will lead to enhanced enforcement outcomes and an incentive to improve future compliance by preventing these releases

DATA SOURCE: CED and WMPD Tracking DatabaseS

PREPARED BY: Compliance and Enforcement Division, 802-828-1254

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

Meet Environmental Standards for Potable Water and Waste Water Projects

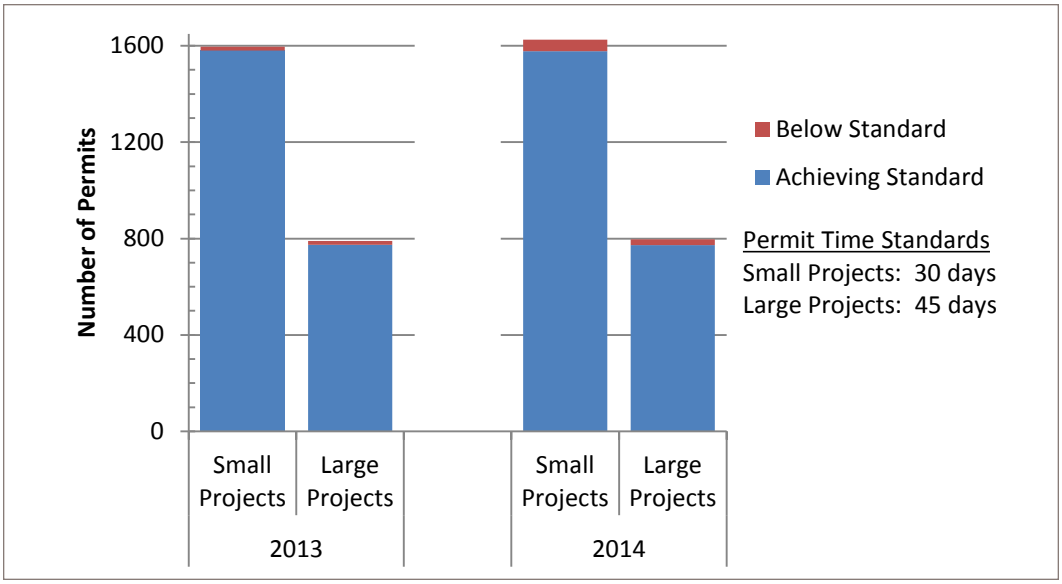
Completing permit reviews in a timely manner

97%

Permits are issued within time standards; Averaging 14 Days In-House

PERFORMANCE TREND

Water and wastewater permits achieving time limits



NEXT STEPS

- Developing new version of E-DEC online applications
- Installing new database which tracks more compliance efforts
- Training designers and internal staff on new database
- Implementing Professional Certification for certain projects

DATA ANALYSIS

Timely permit reviews support local economic development, both on an individual homeowner level up to large commercial and community developments.

The Regional Office Water/Wastewater Program has processed an average of 2880 permit applications per year for the past 11 years. Permits can be for small residential projects (<560 gallons per day flows) to projects treating and disposing of less than 6500 gallons per day to a soil-based wastewater system.

The program also permits potable water supplies, sanitary sewer extensions and sewer and water service connections to municipal sewers, Indirect Discharge soil-based systems (>6500 gallons per day flows) and public water systems.Two review time standards are applied to this program; either a 30 day in-house review period for small projects, or a 45 day in-house review period for larger ones.

There is an effort to implement Licensed Designer Professional Certification on some projects rather than conducting detailed technical review by Regional Office staff. This will allow staff time to spend on the more difficult technical reviews, conducting field verification and post-permitting compliance activities while maintaining excellent permitting timeframes.

DATA SOURCE: Drinking Water & Groundwater Protection Division Regional Office Databases

PREPARED BY: Drinking Water & Groundwater Protection Division www.septic.vermont.gov

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

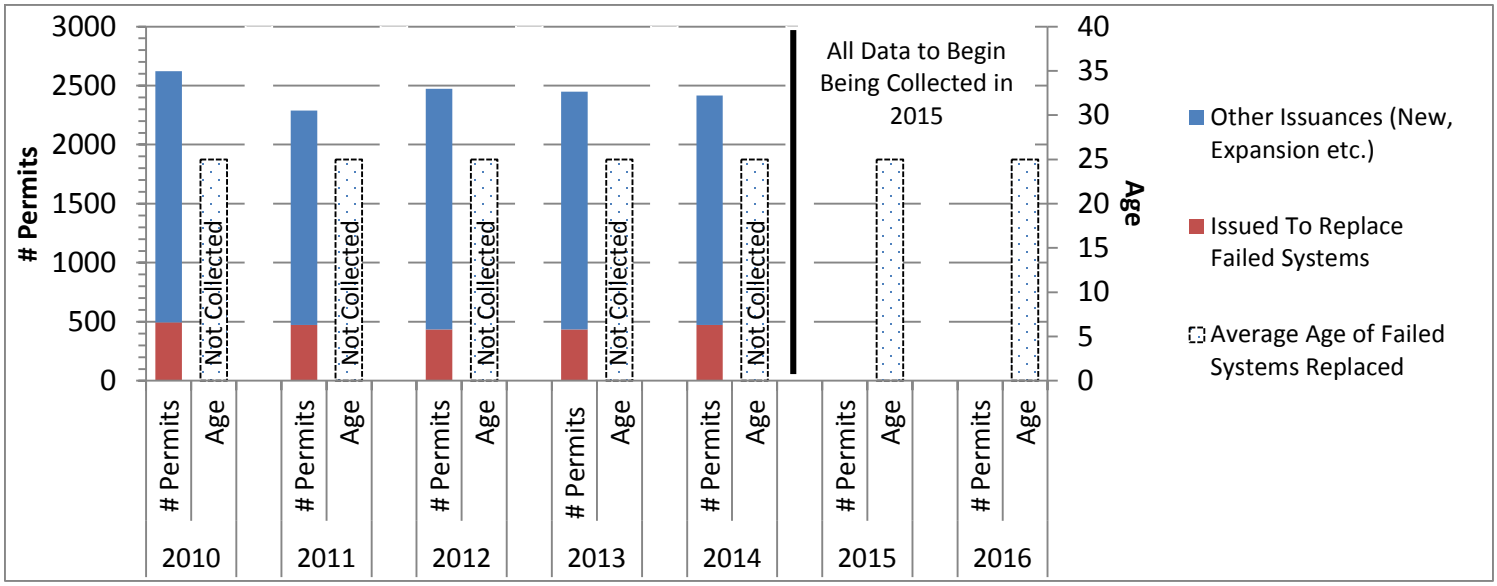
Ensure Sustainable Onsite Septic Systems

Onsite wastewater (septic) systems are functioning as anticipated

Evaluating the longevity of septic systems

PERFORMANCE TREND

System age and permits issued to replace failed septic systems



DATA ANALYSIS

Onsite wastewater (septic) systems have been regulated since 1969 with a comprehensive statewide program covering all onsite systems beginning in 2007. The science around wastewater treatment and the role of soils, new advanced treatment technologies, and multiple leachfield options have greatly advanced. Onsite systems are typically designed and constructed with a lifetime expectation of 20 or more years.

This performance measure is to track the age of septic systems as they fail to confirm that they function as expected. We will also track system longevity of residential vs. commercial systems; Innovative/Alternative vs. conventional; and permitted vs. not permitted.

NEXT STEPS

- The database currently being develolped will include fields to track this additional data
- Administrative staff to be trained on new database Spring 2015
- New online application will include needed data

DATA SOURCE: Regional Office Database

PREPARED BY: Drinking Water & Groundwater Protection Division

www.septic.vermont.gov (802) 828-1535

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

LAND

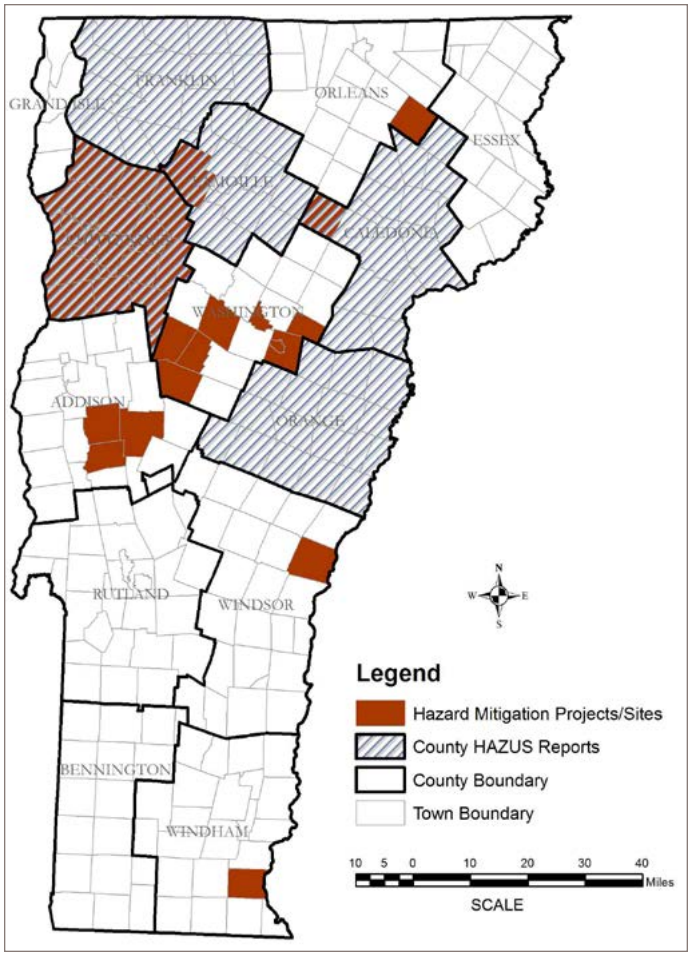
Identify Vulnerability to Geologic Hazards

Assessments of potential landslide, erosion and seismic hazards

8-10
Hazard assessments conducted every year

PERFORMANCE TREND

Areas where hazard assessments have been conducted



DATA ANALYSIS

The purpose of the Geology and Hazards program is to identify natural hazards and provide information for mitigation and preparedness. The Vermont geological Survey focuses on studies of physical hazards such as landslides, rockfalls, earthquakes, floods and drought. As a first geologic responder to landslides, qualitative assessments are made of the likelihood of continued slope failure and risk to Vermonters. The Vermont Geological Survey also works with Regional Planning Commissions and towns to implement the landslide hazard mapping protocol and planning. Landslide mapping is a mitigation strategy and monitoring of existing sites is the tool to protect citizens in these vulnerable areas.

Geologic hazards such as earthquakes, wind and floods are analyzed for specific areas in Vermont using HAZUS-MH. Emergency preparedness, particularly for critical facilities, is informed through these and other studies. In particular, mapping of surficial materials serves to identify areas of unconsolidated materials which may amplify shaking during a seismic event and provides background information for more detailed seismic hazard studies. Studies are posted for the public on our web site.

The map above shows areas where hazard assessments have been conducted. Many sites are identified during field mapping of bedrock and surficial materials as part of our basic mapping program. The Vermont Geological Survey focuses on public service mapping – bringing our science to bear on solutions to Vermont's environmental problems and public health issues.

NEXT STEPS

- Respond to and monitor landslide and rockfall events
- Conduct surficial geologic mapping and identify areas prone to erosion and landslides
- Implement the Landslide Mapping Protocols developed in 2012
- Coordinate with Vermont Emergency Management and with New England regional partners
- Continue to seek funding for seismic hazard analyses and studies
- Conduct regional groundwater studies for drought resiliency and response

DATA SOURCE: Vermont Geological Survey Database

PREPARED BY: Vermont Geological Survey Division, http://www.anr.state.vt.us/dec/geo/vgs.htm

LAND

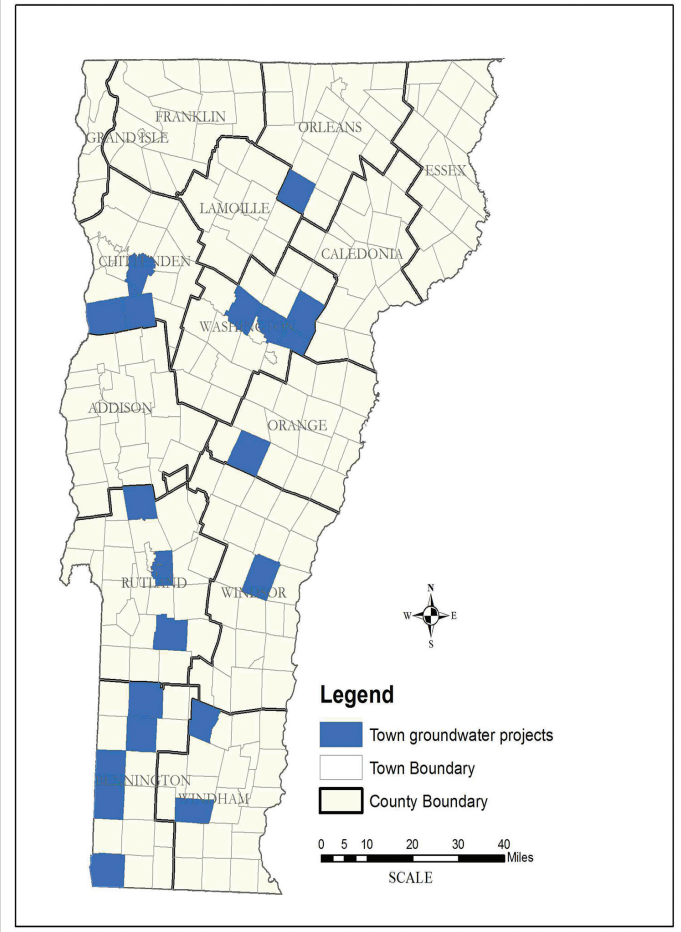
Support Natural Resource Conservation Projects

Providing public service geologic and groundwater mapping

16 Town-Wide Groundwater Mapping Projects Completed Since 2001

PERFORMANCE TREND

Areas Where Geologic Mapping Has Been Completed



DATA ANALYSIS

The purpose of these projects is to map bedrock and surficial geology, identify geologic structures, glacial and postglacial landforms, and integrate these data with subsurface information inferred from private water well data to:

1) provide data and analyses regarding aquifer favorability (yield, depth) and recharge areas;

2) identify and measure characteristics associated with bedrock and unconsolidated sediment such as naturally-occurring arsenic and radioactivity;

3) locate future resources required for hazard response and infrastructure;

4) provide information to apply to land-use questions and planning, natural communities and ecology, and both groundwater and surface water.

The Vermont Geological Survey focuses on public service mapping – bringing our science to bear on solutions to Vermont's environmental problems and public health issues. The VGS seeks to involve communities at a grassroots level, increase community understanding of geologic issues, and address issues specific to town and state needs, particularly groundwater and hazards. Towns request mapping projects at the annual STATEMAP Committee meeting each fall. Completed town groundwater projects are highlighted on the above map of Vermont. In addition, statewide datasets are developed and results are on the web site.

NEXT STEPS

- Identify priority areas for mapping projects through coordination with other government agencies, DEC Divisions, local conservation groups and officials, and regional planners.
- Maintain funding for mapping programs and the application to groundwater resource issues.
- Continue to build the datasets required to develop regional interpretations for groundwater, geochemistry, hazards, resources, and natural communities.
- Coordinate with university partners to develop regional groundwater and fractured bedrock studies.

DATA SOURCE: Vermont Geological Survey Database

PREPARED BY: Vermont Geological Survey Division

http://www.anr.state.vt.us/dec/geo/vgs.htm

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

OPERATIONS

Improve Staff Performance Evaluations

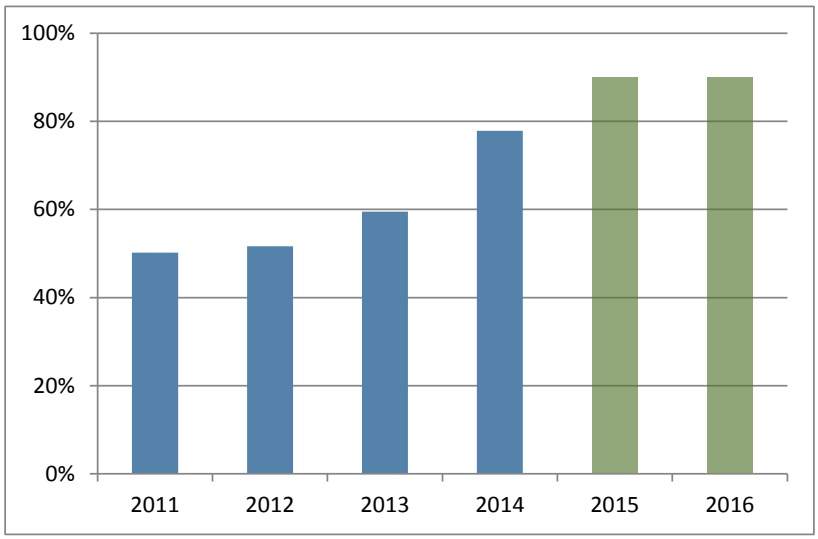
Complete evaluations on time and enhance supervisor and staff communication

77%

Performance Evaluations completed on time

PERFORMANCE TREND

Percent of staff performance evaluations completed on time



DATA ANALYSIS

The Department of Environmental Conservation has approximately 25% of staff responsible for supervising other employees.

Over the past year, the Department has launched efforts in line with the outcomes in our strategic plan to improve staff morale and job satisfaction. This includes increases communication between upper and mid-level management, addition of regular supervisor meetings, improved performance evaluation process and required training for supervisors.

DEC staff initiated an annual Morale Survey with a plan to repeat the survey annually to get a "pulse" on how the Department is doing. The results of the survey indicate that communication between supervisors and staff is above average. One reason for these positive numbers could be our enhanced, more comprehensive performance evaluation system and tracking which was initiated in November 2014. The survey also identified the need for managers and leadership to implement various activities to boost morale, as well as address other issues identified in the survey such as workload and lack of support throughout the year.

NEXT STEPS

Continue to Build Morale

- Continue tri-annual meetings for all DEC supervisors
- During every tri-annual DEC Supervisor's meeting, have "morale" as a topic.
- Increase 2 hour training opportunities for supervisors to 4 times per year
- Seek feedback and continue to improve performance evaluation process
- A "staff" space committee formed to make improvements on adjusting to new open office environment

DATA SOURCE: ANR Human Resource Database

PREPARED BY: Administration and Innovation Division (802) 828-1556

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

OPERATIONS

Improve Business Practices to Gain Efficiences

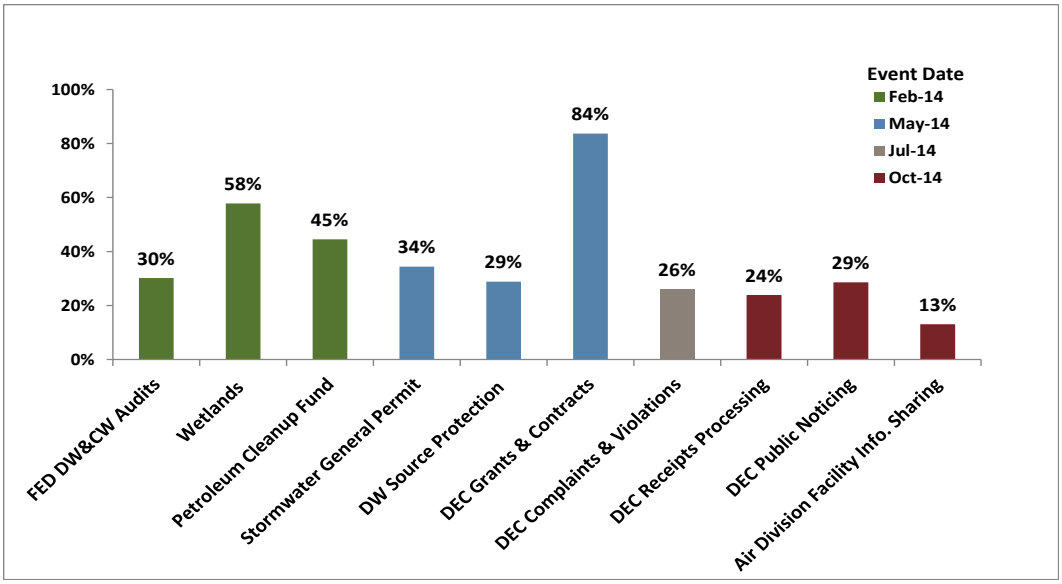
Implementing Lean Principles through our Business Transformation Initiative

10

Lean Continous Process Improvement Events completed in 2014.

PERFORMANCE TREND

Lean Events Completed and Measurement of Implementation



DATA ANALYSIS

The Vermont Department of Environmental Conservation's (DEC) Business Transformation Initiative (BTI) is an effort to build a system of continuous improvement with the goal of better serving the Vermont public through more efficient, timely and transparent processes. This initiative utilizes "Lean" improvement method information technology tools.

In 2014, DEC held a total of ten formal events (graph above), and three informal events. The differences between the formal and informal events are the involvement of a consultant and DEC Business Transformation Initiative Team in scoping, facilitating, and benchmarking the projects. The informal projects are an indication that Lean-trained staff and managers are taking the initiative to apply Lean concepts to their programs, outside of the broader Departmental process. The Lean program is evolving to a point where the programs organically and spontaneously initiate Lean events, a fundamental goal of our initiative to instill a culture of continuous improvement.

In 2014, over one-third of DEC employees participated in Lean activities, with many participating in multiple events. To date, 11% of DEC staff have received a 3-day Lean Leadership training allowing them to help lead events and better educate others on Lean concepts. Over 40 external people have been involved in our Lean events and trainings, including external stakeholders, customers and other state employees.

NEXT STEPS

Continue Implementing Lean Iniatives

- Hold nine additional formal Lean events in 2015
- Train more staff in both basic and more advanced Lean methods.
- Maintain focus on project implementation by holding staff accountable for implementation progress
- Utilize new technology including SharePoint Lean Sites for managing formal Lean event projects.
- Help to spread Lean to other state agencies by continuing to share our trainings, soliciting participation in our internal Lean events, holding cross-agency events, and developing an external website. h
- Support our first cross-agency event with VTrans in March 2015.

DATA SOURCE: Business Transformation Initiative Program Tracking

PREPARED BY: Administration and Innovation Division, (802) 585-4888

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

OPERATIONS

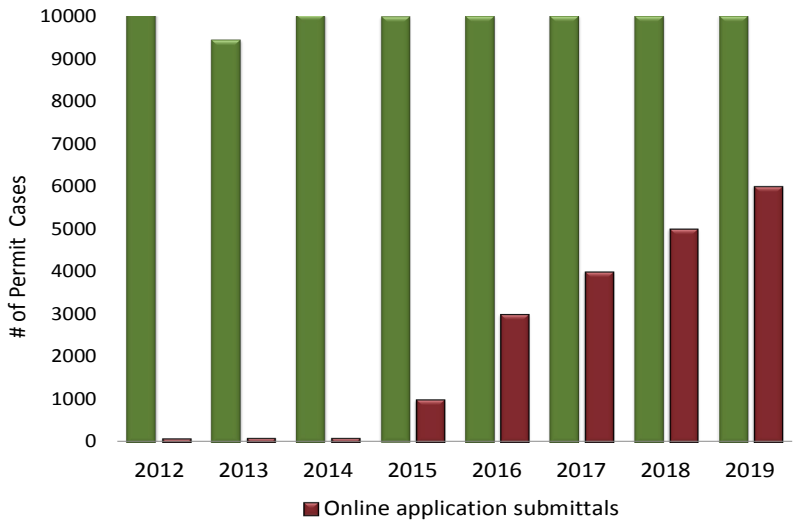
Support the Implemenation and Use of Online Permitting

Increasing use of technology for a web-based submittal system

ANR Online, a web-based submittal system, launched in January 2015 for a few selected programs

PERFORMANCE TREND

ANR Online Electronic Application Submittal



DATA ANALYSIS

Programs in Air, Water, Waste and Facilities have numerous permitting programs which include construction, treatment, discharge, operations, certifications, registrations, and licensing. Permitting necessitates programs provide technical assistance and regulatory oversight to ensure compliance with state and federal law. In State fiscal year 2014, approximately 10,000 permitting cases were received, 99% of which were received in paper format.

In 2008 DEC's first online submittal system began accepting applications for only three programs. It was originally envisioned that the system would serve as the DEC's single online application submittal and reporting system and be expanded to include applications/ reports for all DEC programs. However, because it was custom developed and maintained by a contractor, the system proved to be very expensive to maintain, let alone expand. As a result, the system was never built-out as originally envisioned. In January 2015, a significant software initiative created a new electronic submittal system known as ANR Online. Now that the ANR Online system is in place, programs can begin building applications and reporting forms in the system to allow for online submittal.

NEXT STEPS

Continue to develop Online capacity

- Grow capacity for a web based permit application, data submittal system, and payment process
- In all programs train program staff to create on-line forms
- Prioritize submittals needing ANR Information Technology services to provide functionality connecting to program databases
- Leverage technology by electronically tracking the status of submittal and notifying applicant of status
- Build capacity by reducing the need for data entry and satisfy customer request for online submission and payment
- Work to eliminate paper processes to simplify information requests

DATA SOURCE: DEC Annual Report of Permit Activity

PREPARED BY: Administration and Innovation Division, (802) 585-4888

OPERATIONS

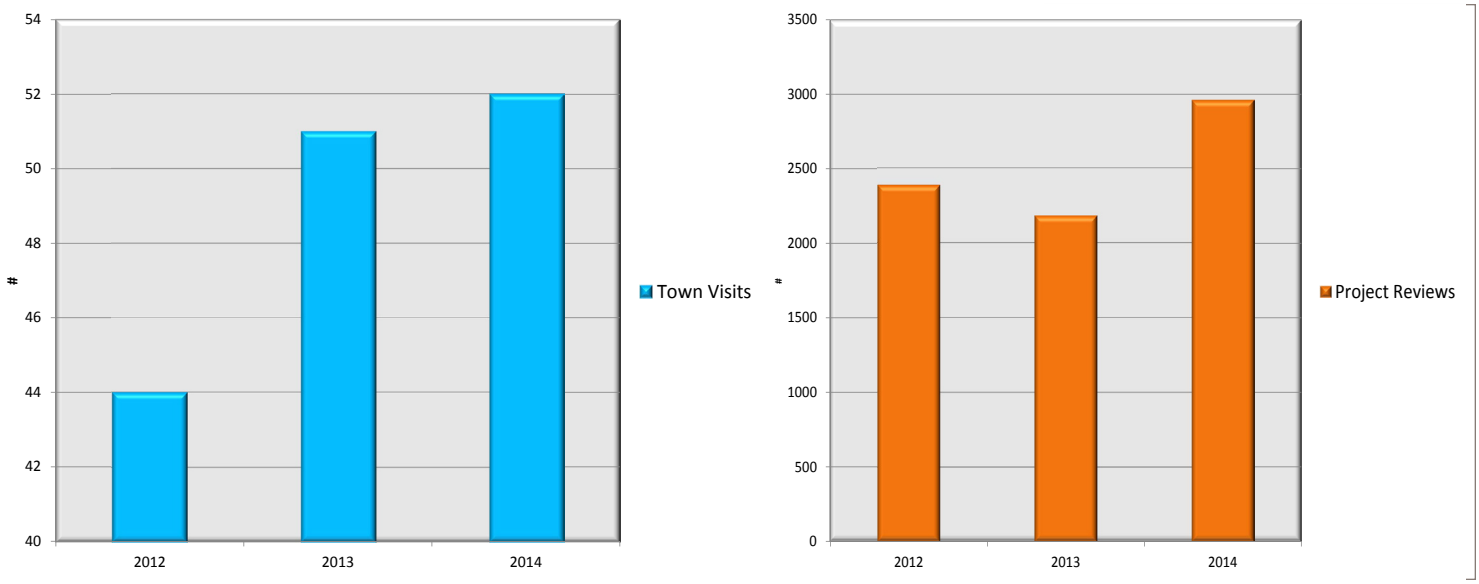
Provide Permit Assistance

Assisting the public in identifying environmental and state permits

3,000
Project Reviews in 2014

PERFORMANCE TREND

Number of town visits & project reviews



DATA ANALYSIS

Permit Specialists in the five ANR regional offices (Barre, Essex, Rutland, St. Johnsbury, and Springfield) assist permit applicants or their consultants in identifying environmental and other state permits that may be required for a development project. This is often accomplished by completing a Project Review Sheet that identifies potential permits, provides contact information, and a fact sheet description of the relevant permit programs.

In addition to project reviews, the Permit Specialists respond to general questions from the public about the state permitting process and prepare correspondence; answering questions about general permit requirements or policies and directing the public inquiries to the appropriate state agencies. Permit Specialists also assist municipal officials, such as zoning administrators, to understand the state permitting process so that local project applicants are aware of state permitting requirements. They represent the Department at a variety of public events to explain its regulatory authorities and provide general information on other state agency programs.

Although the number of project reviews can be affected by the strength of the economy, there is a general upward trend in numbers. There is a recognition that assistance visits to town offices should increase beyond the 20% of towns annually visited to provide permit information and assistance. The Permit Handbook, which contains fact sheets and contact information on most state permits, and the Do You Need a Permit? brochure are widely disseminated by hard copy or via the web and are frequently in need of update due to changes in permit programs and program contacts.

NEXT STEPS

To enhance Permit Assistance functions provided in the ANR Regional Offices, the following strategies will be implemented:

- Complete an update to the Permit Handbook in 2015, which has fact sheets and contact information on all state permits
- Update the Permit Assistance brochure in 2015 and increase dissemination to municipal offices
- Enhance Permit Assistance web pages and resources
- Increase the number of municipal site visits by 25% in 2015
- Increase outreach and public presentations to business groups and consultants about the Permit Assistance Program

DATA SOURCE: Permit Specialist Data
PREPARED BY: Environmental Assistance Office

VERMONT
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

OPERATIONS

Increase the Number of Formal Enforcement Actions

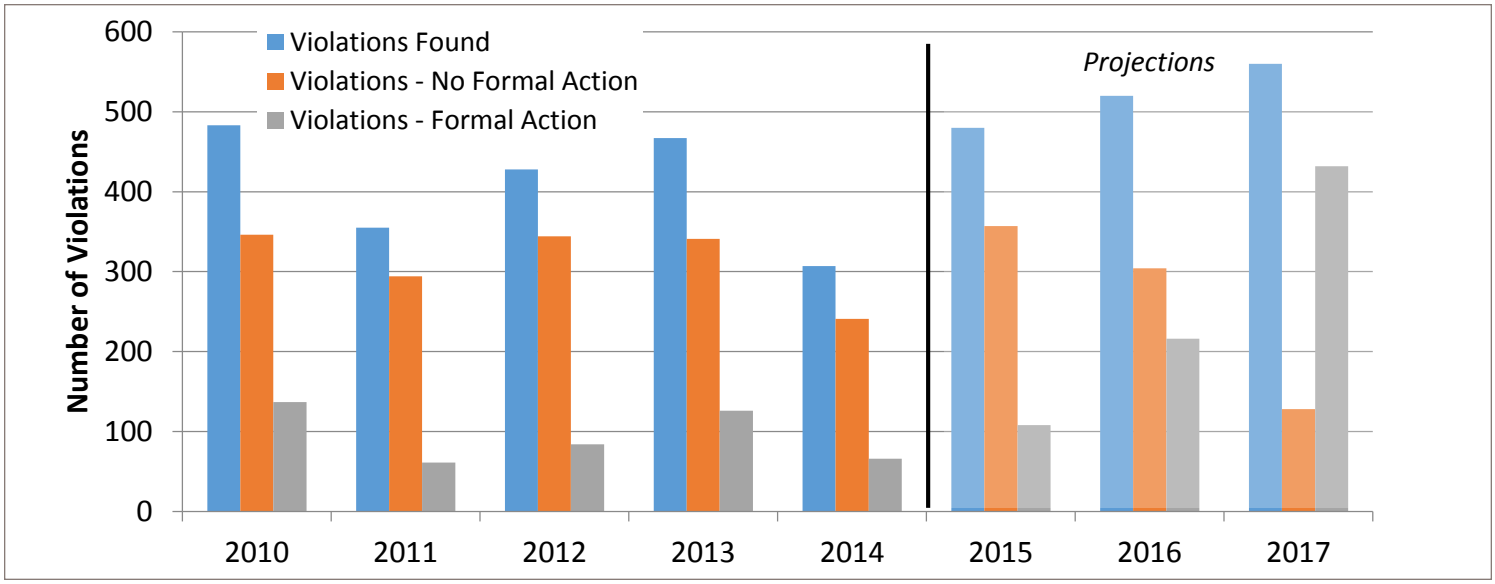
By more efficiently responding to violations as they are reported.

470

Violations were found in 2014, only 43 of which were addressed through formal actions

PERFORMANCE TREND

Number of violations and the number of formal actions taken in response



DATA ANALYSIS

Over the last five years the number of complaints received by the Compliance and Enforcement Division has been steadily increasing. As part of the State's delegation of authority to run federal environmental programs, the Department of Environmental Conservation is required to respond to citizen complaints in a timely way.

These complaints often lead to the discovery of violations, only some of which have had formal enforcement actions taken by Environmental Enforcement Officers. In recent years, the number of Enforcement Officers has decreased, as has the response rate to violations found.

Enforcement Officers have found an increase in the number of citizen complaints that have resulted in violations found. Despite this increase in total violations, there has not been a proportional increase in the number of violations that are able to be referred for formal enforcement action. This is largely due to the increased demands coming from more reported complaints and requests for assistance.

NEXT STEPS

The Compliance and Enforcement Division is in the process of hiring an additional Environmental Enforcement Officer. With this hiring, staffing levels will better match the demand for Enforcement Officer services and will be equal to our pre-2008 level.

Once a new Enforcement Officer is hired and trained, the Division will be better able to respond to the increased workload and, more importantly, be able to address more violations through formal enforcement actions.

DATA SOURCE: CED Incident Tracking Database

PREPARED BY: Compliance and Enforcement Division, 802-828-1254

VERMONT
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Department of Environmental Conservation