
Utah Environmental Report



2012

Utah Environmental Report: 2012

Issued December 23, 2012

State of Utah
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Table of Contents

Message from the Executive Director ...	1
Cleaner Air ...	2
Pollutants ...	3
Clean Fuel and Vehicle Technology Programs ...	6
Uintah Basin: Three-State Pilot Project ...	6
Indoor Air: Radon ...	10
Cleaner Land ...	11
Toxic Chemicals ...	11
Reclamation Projects ...	12
Superfund ...	12
Voluntary Cleanup Program ...	12
Waste Management ...	14
Federal Facility ...	15
Low-Level Radioactive Waste Disposal ...	15
Waste Disposal on the National Front ...	17
Depleted Uranium ...	18
Uranium Mills ...	19
Cleaner Water ...	22
Protecting, Maintaining and Restoring Utah's Waters ...	23
Measuring Current Conditions ...	23
Improving Utah's Waters ...	24
Permitting Discharges ...	25
Ground Water Protection ...	26
Utah's Wastewater Project Assistance Program ...	27
Great Salt Lake ...	28
Mercury in Fish ...	29
Animal Feeding Operations ...	30
Drinking Water ...	31
Utah's Water Loan Programs ...	32
Business Assistance Program ...	33

Message from the Executive Director

The Utah Department of Environmental Quality has, since 2006, taken this opportunity to highlight our environmental achievements of the past year in its annual *State of the Environment Report*. Each year the report updates the most current information on the amount of pollution released to Utah's environment, and it showcases our environmental achievements. This report is no different in that regard. DEQ's six divisions continue to make improvements toward protecting Utah's air, land, and water, all while implementing new recommendations to improve efficiencies.

This year has been challenging, with a number of industrial accidents that mandated environmental cleanups, and implementation of new oversight recommendations. But there have been important milestones as well. Notably, the Deseret Chemical Depot completed its incineration of stockpiles of 45 percent of the nation's chemical weapon stockpile, all under DEQ oversight. The Depot has successfully completed its mission and is now being closed.

A highlight of our 2012 achievements has been the near completion of the State Implementation Plan for PM2.5 air pollution, which we all can see is a problem in the winter. This plan, developed over three years, will bring the Wasatch Front and Cache Valley into compliance with federal air quality standards to protect human health. The effort involved more than 100 stakeholders in Utah's most affected counties. Some of Utah's air quality concerns are the result of natural chemical reactions during the winter months. But with about 10,000 individual sources of pollution, our solutions will require meaningful participation from everyone.

At the forefront of the effort to protect Utah's air quality statewide is Gov. Gary Herbert, who in early 2012 launched U-CAIR (Utah Clean Air Partnership). This is the first statewide air quality initiative that encourages all Utahns to do their part voluntarily to improve Utah's air. Businesses, industry, individuals, and governmental entities are now pledging to make substantive efforts to reduce air pollution.

We are also working closely with stakeholders to come up with a proactive approach to manage water pollution in Utah, especially nitrogen and phosphorus. Ensuring the quality of Utah's waterways will be an increasing priority in the year ahead.

While much progress has been made, there remain issues that need our vigilance. Understanding and improving air quality in the Uintah Basin remains a top priority. In partnership with the Uintah and Duchesne counties, the Special Services District, Utah State University, Western Energy Alliance, Bureau of Land Management, and the Environmental Protection Agency, we are working to improve the air quality in the basin. It is a local approach that we are confident will result in a local solution. The Division of Air Quality is currently working with stakeholders to reduce emissions, while allowing development to continue.

Our mission remains resolute: We will safeguard human health and quality of life, while protecting and enhancing Utah's environment. This annual report provides you, the public and interested stakeholders, with the data to show we are, in fact, doing that.





Cleaner Air

The Division of Air Quality (DAQ) continues to be committed to improving Utah's air quality. In most cases, we've been able to meet the challenges of tougher federal standards to help Utahns breathe easier and live healthier. As noted in the previous State of Utah Environment Reports—2006 through 2011—in the early 1980s, Utah struggled to meet the health standards for four of the six criteria pollutants identified by the U.S. Environmental Protection Agency (EPA). By 2006, all Utah counties had attained the then current federal air quality standards.

In December 2006, a revision to the EPA's standard for the allowable daily average of fine particles (PM_{2.5}) went into effect, reducing the standard from 65 micrograms per cubic meter (µg/m³) to 35 µg/m³ because scientific evidence shows that exposure can be much more harmful to health than previously known.

On December 14, 2009, the EPA directed the State to find ways to reduce wintertime pollution because parts of the state violate the Clean Air Act's limits for PM_{2.5}. These "nonattainment" areas in Utah include all of Salt Lake and Davis counties; portions of Utah, Weber, Box Elder, and Tooele counties; and those portions of Cache County, Utah, and Franklin County, Idaho, in the Cache Valley. During 2012, DAQ continued improving the expected inventory of future emission sources after accounting for growth and on-going pollution control programs. That inventory was used in computer models to quantify the amount of emissions reductions needed to bring the areas into attainment of the federal air quality standard. DAQ also continued meeting with stakeholders to identify potential air control strategies that were included in the State's plan that was sent out for public comment in the fall of 2012.

Historically, much of the Wasatch Front has had difficulty meeting the federal air quality standard for ozone, a summer-time pollutant. However, as the EPA continues to lower the standard to protect the most sensitive portion of the population, Utah continues to implement programs that help the area meet the standard. For example, the State has phased in the use of gasoline vapor controls on the delivery of gasoline to all gas stations in Utah. In January 2012, Governor Herbert kicked off the Utah Clean Air Initiative (UCAIR) to encourage Utahns to take personal responsibility to clean up the air through collaboration, education, and personal motivation. Utahns continue to take notice of DEQ's Choose Clean Air actions and voluntarily take measures to limit driving on summer days when the ozone air pollution is particularly bad. We can measure that by the fact that the number of summer-time "red" air quality days continues to decline, partly due to good weather and public awareness. DAQ alerts people all year long to pollution conditions by issuing "green, yellow, and red" air alerts. None of the 14 sites where ozone is monitored exceeded the federal limit in 2010, 2011, or 2012, based on the average readings over three years.

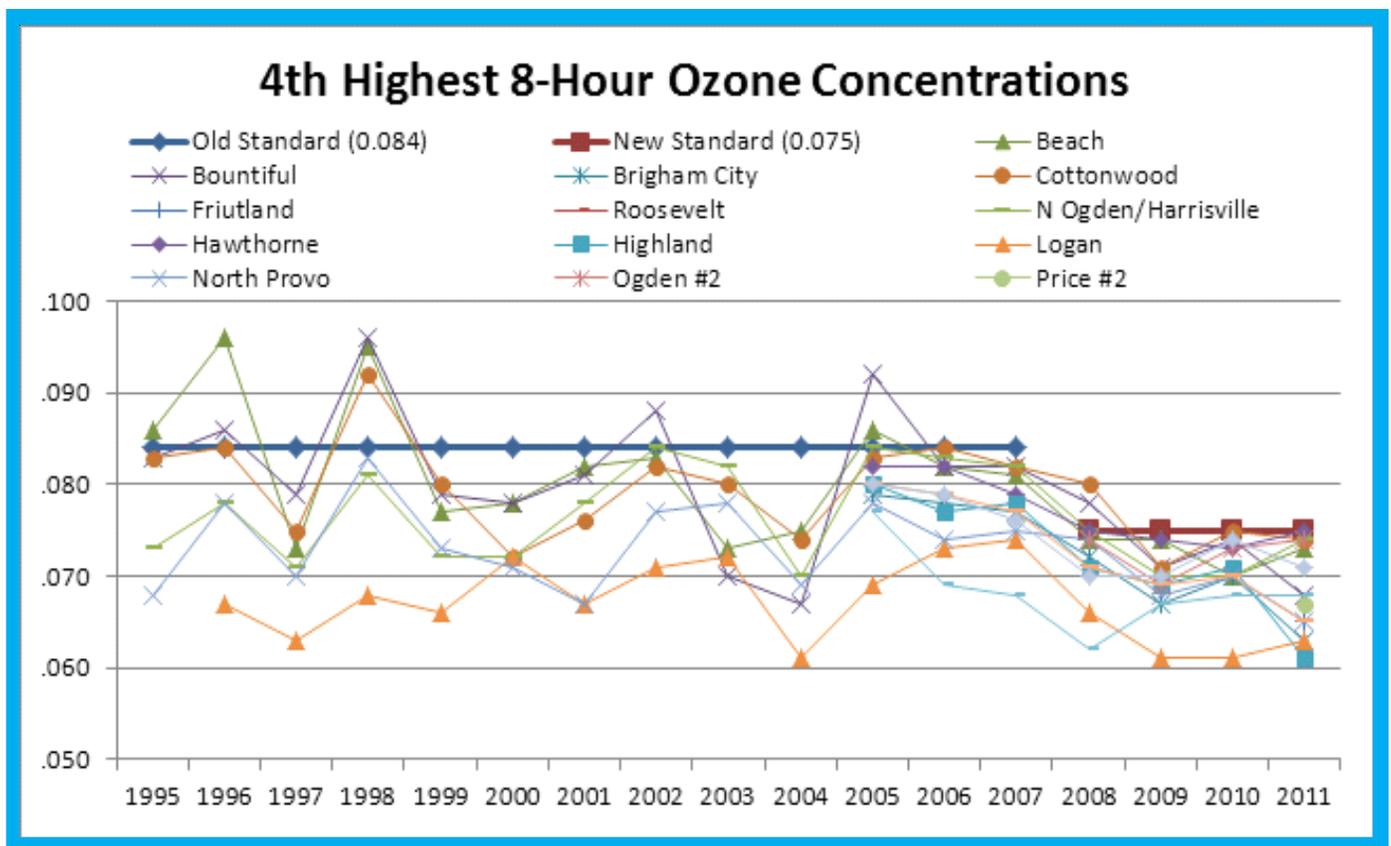
In the Uintah Basin, ozone is a wintertime problem. DAQ is working with stakeholders to address the issue before federal regulations are imposed.

Pollutants

Ozone

Ozone is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) mix with sunlight and heat. Ozone, sometimes referred to as smog, is principally a summer time problem when temperatures are high and daylight hours are long. Recent evidence indicates that ozone may also be a problem under certain conditions during the winter, primarily in the Uintah Basin.

All areas in Utah are currently meeting the ozone standard, but high levels observed in the recent past during the winter in the Uintah Basin are a concern. DAQ coordinated a massive research effort during the winter of 2011/2012 to study the formation of ozone in the Uintah Basin. The interim findings of that study have been published, and are available on DAQ's Web page at www.deq.utah.gov/locations/uintahbasin/index.htm.

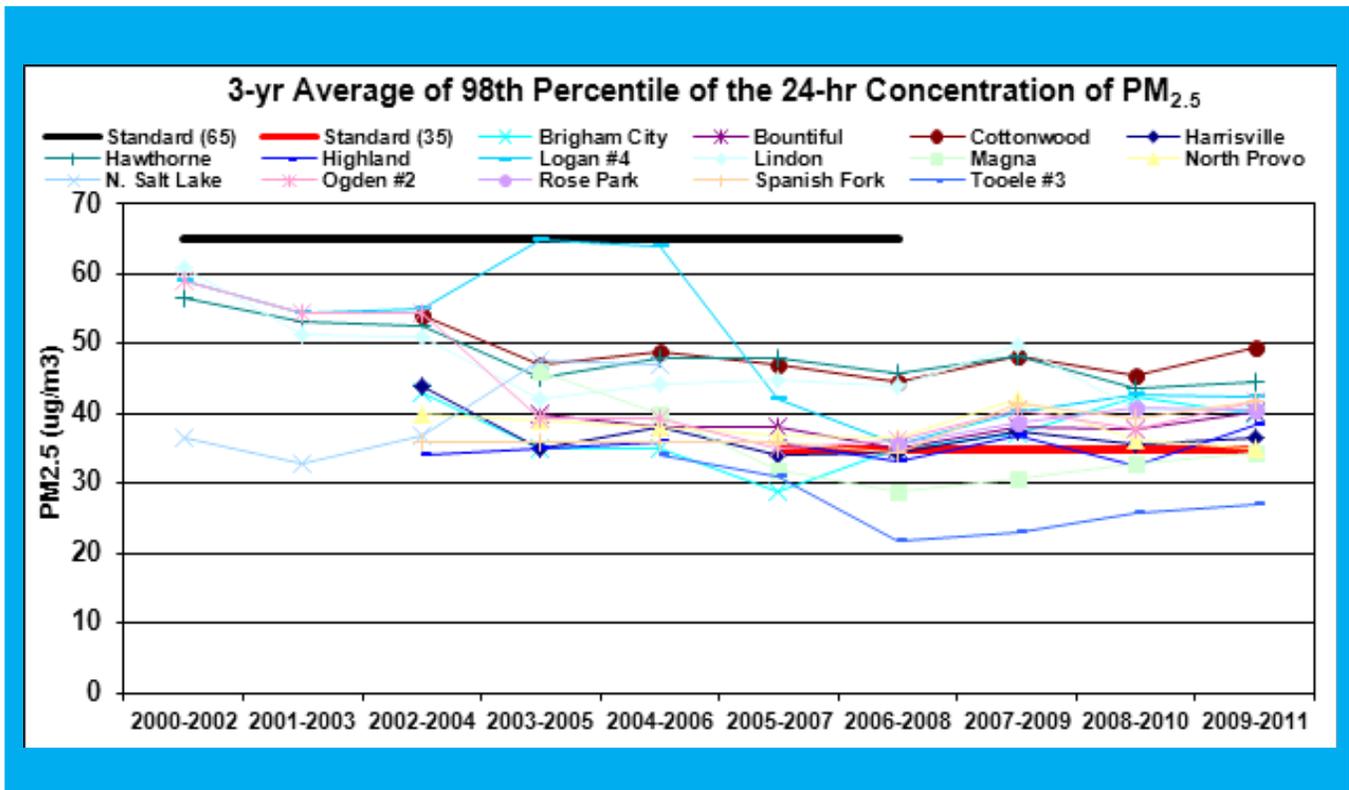


Particulate Matter (PM_{2.5})

Particulate matter refers to the tiny particles found in the atmosphere that range in size from less than one tenth of a micrometer (about one-tenth the size of a human hair) up to 50 micrometers in diameter. Fine particulate matter known as PM_{2.5}—those particles less than or equal to 2.5 micrometers in diameter—is a more serious health problem. As noted earlier, the EPA adopted new standards for PM_{2.5}, setting the standard at 15 micrograms per cubic meter (µg/m³) on an annual basis and 35 µg/m³ for the 24-hour average—about half the limit of the previous standard.

Much of the particulate pollution can be attributable to emissions from automobiles, although federal motor vehicle emission control requirements are reducing those emissions significantly over time. Industry, wood stoves, wildfires, and snow blowers—among many other sources—also contribute to poor air quality. Because a major portion comes from automobiles, DAQ’s Choose Clean Air program continues its public outreach by encouraging people to reduce vehicle trips and take mass transit when air pollution levels are on the rise.

On November 13, 2009, the EPA published the list of areas in the nation that do not meet the new federal PM_{2.5} standards. This list included much of the Wasatch Front—including all of Salt Lake and Davis Counties and portions of Weber, Box Elder, and Toole counties, as well as the low-lying portions of Utah and Cache Counties. The State had until December of 2012 to draft a plan to the EPA on how it would achieve compliance that will, ultimately, improve the air quality for decades to come.



In December 2006, a revision to the EPA's standard for the allowable daily average of fine particles (PM_{2.5}) went into effect, reducing the standard from 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 35 $\mu\text{g}/\text{m}^3$. On December 14, 2009, the EPA published notice that several areas in northern Utah do not meet that new standard. That publication began a 3-year process to develop a State Implementation Plan (SIP) to bring those areas back into attainment of the standard. As noted above, those areas identified include all of Salt Lake and Davis counties; portions of Utah, Weber, Box Elder, and Tooele counties; and those portions of Cache County, Utah, and Franklin County, Idaho, in the Cache Valley. The deadline to deliver the SIP to EPA was December 14, 2012.

Development of PM_{2.5} State Implementation Plan

The process to develop this SIP has been very difficult, due primarily to the amount of pollution reduction necessary to meet the new federal standard. Before, all areas were just below the standard; but after the new standard, nearly all areas in the state were well above it. Because there have been many prior plans to reduce particulate in Utah (Total Suspended Particulate and PM₁₀), all of the easy particulate reductions have already been implemented. Historically, the main reduction strategies have addressed industrial emissions; but with PM_{2.5}, industry contributes at most about 17 percent of the pollution in the air shed. In the Cache Valley, there are no major industrial sources. Additionally, as the federal motor vehicle control program continues to produce new vehicles that produce significantly less pollution, the pollution from on-road mobile sources continues to decline, and will continue to do so over the foreseeable future.

These two significant reductions of emissions (major industrial and on-road mobile) means that controlling the third source of pollution, called area sources, becomes critical to meet the new standard. Area sources come in two categories:

- smaller industrial and commercial sources that emit less than 100 tons per year of pollution; and,
- activities that are generally associated with urban living, including space heating (gas and wood stove), dry cleaning, gas stations, water treatment facilities, etc.

Because of the complexity of controlling these sources, DAQ used a series of stakeholder meetings to involve many people throughout the Wasatch Front to identify and study potential control strategies. Based on the work of those stakeholder meetings, DAQ developed over twenty new rules to control industrial, commercial, and residential sources of pollution.

With those new rules and a vehicle inspection/maintenance (I/M) program, DAQ was able to demonstrate attainment of the standard by 2014 in Cache County. However, even with all of those additional new control strategies, DAQ was still unable to demonstrate attainment of the standard in Utah and Salt Lake counties. Therefore, the Air Quality Board adopted for public hearing a proposed SIP that included target reductions that DAQ will spend the first part of 2013 identifying additional control strategies to achieve.

Clean Fuel and Vehicle Technology Programs

Tax Credits Since the 1990s the State of Utah has offered a tax credit for clean fuel vehicles as an incentive for helping reduce air pollution. DAQ approved the most clean fuel tax credits in 2008, with 1,493 approved credits. Since then, the number has decreased to 474 approved in 2009 and 477 in 2010.

The Utah Legislature revised the State's Clean Air and Efficient Vehicle Tax Incentives program during the 2011 legislative session. Senate Bill 226 (SB 226) amended the definition of "air quality standards." The new definition includes plug-in electric drive motor vehicles that meet Tier II Bin 4 standards. SB 226 also reduced the tax credit amount for other clean fuel vehicles that meet the air quality and fuel economy standards from \$750 to \$605.

Utah's low natural gas prices have prompted a growing number of people to convert their vehicles to compressed natural gas. But the conversion kits must be EPA certified. Some self-conversion kits on the market do not meet EPA standards and can be both dangerous and dirty.

DAQ worked with the EPA to promulgate a new compliance program that enables conversion manufacturers to satisfy federal emission certification requirements. This new program streamlined the application and certification process for conversion manufacturers and added a mechanism for older vehicles to satisfy applicable federal emission requirements. The notification and demonstration requirements for intermediate age life vehicles and engines include testing and submission of data to show that the converted vehicle or engine continues to meet applicable standards. The notification and demonstration process for outside useful life vehicles and engines involves submission of a description of the conversion system that provides sufficient technical detail to determine that the conversion will not increase emissions. EPA put this new program into effect on April 8, 2011.

Uintah Basin: Three-State Pilot Project

The EPA, under the National Environmental Policy Act, is mandated to document current air pollution levels and lessen current and projected adverse impacts through mitigation strategies. Localized monitoring in the three-state area (western Colorado, eastern Utah, and southwestern Wyoming) has revealed degraded air quality in regard to ozone and nitrogen oxide (NO_x), leading federal and State agencies to realize more information is needed as energy development in the region is considered. Because of a common need for a comprehensive set of air quality assessment tools, the stakeholders—EPA Region 8, the Bureau of Land Management, the USDA Forest Service, the National Park Service, and the states of Utah, Colorado, and Wyoming—are cooperating on measures to improve air quality.

The Utah component of the first phase of this project included the deployment of two air monitoring stations, one at Price and the other at Fruitland. The data from these two sites will be entered in a data warehouse being developed under the second phase of the project. Work conducted under the Three-State Pilot Project will be directly applicable to the ozone studies currently underway in the Uintah Basin.

Uintah Basin Ozone

The National Park Service has been measuring summertime ozone since 2005 in Dinosaur National Monument, located near Vernal, Utah, and since 2006 in Colorado National Monument, located near Grand Junction, Colorado. The EPA began measuring year-round ozone at two sites on the Ute Indian Reservation, located near Redwash and Ouray, in 2009. The official air quality levels for the Uintah Basin are currently in compliance with the ozone National Ambient Air Quality Standards (NAAQS). However, data collected from the two tribal sites during the winter of 2010 indicated that high ozone levels are occurring in the Basin during the middle of winter. This finding was unexpected, since ozone is normally an air pollutant that is formed during the summertime when high temperatures and bright sunshine occur.

A wintertime specific ozone study funded by the Uintah Basin Impact Mitigation Special Service District was conducted by the Energy Dynamics Lab and Utah State University in the winter of 2010/11. Data collected from 18 temporary and permanent air monitoring stations placed throughout the Basin found elevated wintertime ozone concentrations during temperature inversion events when snow covered the ground. The highest values were found in the central basin area with many exceeding the ozone NAAQS.

During the winter of 2011/12, an expansive, cooperative study lead by DEQ commenced to help understand how ozone is formed within the Basin during wintertime inversion conditions. The answer to this question is crucial to implementing appropriate and effective strategies for mitigating high ozone levels. Researchers from the National Oceanic and Atmospheric Administration, several University research groups, the EPA, and DEQ, are working together on this unprecedented air quality study.

The report covering the 2011/12 winter ozone study was planned for release late 2012. Researchers have released interim findings to this multi-phase study drawn from preliminary analyses of data and results. These interim findings will be updated along with the study report.

Data collected from 18 temporary and permanent air monitoring stations placed throughout the Basin found elevated wintertime ozone concentrations during temperature inversion events when snow covered the ground.

Interim Findings

The winter 2012 measurements indicate:

- No exceedance of the 75 parts per billion (ppb) National Ambient Air Quality Standard (NAAQS) for ozone was observed. The snow cover and strong inversions with low boundary layer heights required for the formation of excessive winter ozone concentrations was absent last winter. The highest 8-hour average ozone concentration observed at the surface during the study period was 62 ppb.
- Local photochemistry made only small contributions to ozone formation, as evidenced by the quantification of radical sources and chemical processing of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs).
- Stratospheric intrusion of ozone was not observed to cause increased ozone concentrations at the surface or in the boundary layer during the 2012 study. However, the lack of high ozone episodes during the study prevents the evaluation of possible stratospheric intrusions during meteorological conditions that cause high ozone levels. Additional study is needed to determine if stratospheric intrusion contributes to surface ozone during winter ozone episodes.
- Observed levels of ambient VOC species were highest in gas-production areas, lower in oil-production areas, and lower still in population centers. Examples of VOC sources include oil and gas production and on- and off-road vehicles.
- Observed VOC and methane concentrations at the Horsepool monitoring station (within a gas-production area) were higher than those typically observed in U.S. urban areas. The mix of VOC observed in the Uintah Basin has a higher proportion of alkanes, which have lower reactivity for ozone formation as compared to the highly reactive alkenes found in typical urban mixtures. However, the higher VOC concentrations present in the Uintah Basin make the total reactivity about the same as found in an urban area. This is meaningful because the reactivity of the VOC mixture can affect the optimal ozone control strategy and it may be possible to reduce ozone levels more effectively by identifying targeted control strategies for high reactivity VOC, such as aromatic, aldehyde and alkene species.
- The highest NO_x concentrations were observed in the Basin's population centers (i.e., Vernal and Roosevelt). Concentrations were lower in gas-production areas and lower still in oil-production areas. NO_x sources include all motorized vehicles, oil and gas production equipment, and coal-burning power plants.
- Methanol, a source of primary and secondary formaldehyde (an important ozone precursor), was observed in concentrations that could significantly contribute to ozone formation in the Uintah Basin.

The 2011/2012 winter season did not have persistent snow cover or the winter inversion conditions that are linked to the formation of high winter ozone concentrations. Therefore, the study team was not able to perform measurements of chemistry or the meteorological conditions that cause high ozone in winter. While the data collected in the 21011/2012 study are useful to estimate emissions inventories and to establish baseline conditions, additional measurements are needed to evaluate the sensitivity of winter ozone to VOC and NO_x and identify the most effective mitigation strategies for reducing winter ozone. A study for the 2012/2013 winter is being planned for the Basin to address these needs should conditions for elevated ozone be present. Continuing study goals include the following:

Uintah Basin 2012/2013 Winter Ozone Study

- Characterize spatial variability in ambient ozone, VOC, and NO_x concentrations during ozone episodes.
- Continue development of a Basin-wide emissions inventory (temporal and spatial distribution and speciation of VOC and NO_x) that integrates the gridded and activity-specific information of current inventories.
- Evaluate the importance of snow photochemistry and radical budgets.
- Characterize transport of NO_x emissions within and above the inversion layer.
- Make additional meteorological measurements to characterize inversion height and winds.
- Develop photochemical model simulations to evaluate effectiveness of VOC and NO_x mitigation.
- Evaluate trends in ozone, VOC, and NO_x ambient levels over multiple years.

Indoor Air: Radon

Radon is an odorless gas and the second leading cause of lung cancer. Only smoking causes more lung cancer deaths. The Division of Radiation Control's (DRC) Indoor Radon Program, funded by the State Indoor Radon Grant from EPA, attempts to reduce the indoor radon concentrations in homes throughout the state to concentrations less than EPA's current action level of 4.0 picocuries per liter of air (pCi/L). DRC does this through public outreach and by providing individualized assistance to homeowners and public agencies on all aspects of the indoor radon hazard problem.

For the past couple of years, DRC has seen a substantial increase in radon awareness. In April, 2012, Utah DEQ hosted its first annual EPA Region 8 Stakeholders Radon Meeting. The number of DRC radon continuing education courses for realtors and builders has increased and home testing has increased significantly. Approximately 8,467 short- and long-term radon tests were conducted this year, resulting in approximately 1,241 mitigation systems installed in new and existing residential housing. The test results indicate that approximately 30% of the homes tested have elevated radon levels of 4.0 pCi/L or higher.

Year	Radon Tests	Radon Mitigations
2012	8,467	1,241
2011	4,236	755
2010	3,353	596
2009	2,231	457
2008	2,243	629
2007	904	316
2006	2,700	372
2005	900	150

The Radon Program has continued its longstanding cooperative alliance with Intermountain Health Care's Women and Newborn Services, wherein an estimated 500 free radon test kits have been disseminated to mothers with new babies. Other valuable partnerships include the Utah Department of Health, American Cancer Society, American Lung Association, Wasatch Front Regional Council, Huntsman Cancer Institute, Utah Local Health Districts, Cancer Survivors Against Radon, and other community groups to provide accurate information and awareness about radon to the general public.

Additional information about ordering radon test kits, certified measurement and mitigation providers, radon resistant new construction (RNCC) builders, radon educated realtors, scheduled radon meetings and presentations, and continuing education core credit classes may be found on the Radon Web page at www.radon.utah.gov.



Protecting the environmental quality of land is integral to that ensuring Utah's air is clean and its water pure. To this end, DEQ focuses on the prevention, management, control, and cleanup of toxic chemicals.

Cleaner Land

Toxic Chemicals

Under the Emergency Planning and Community Right to Know Act of 1986, and the Pollution Prevention Act of 1990, facilities must report their releases of more than 650 toxic chemicals and chemical compounds to the EPA and State officials. It is important to note that the majority of the releases include properly permitted activities allowable under federal law. This data is available to the public through the Toxics Release Inventory (TRI).

Toxic Chemical Releases

	2011	2010	2009
Air	11.45 million	8.5 million	6.9 million
Land	183.4 million	201.9 million	161.6 million
Water	492,015	102,145	101,109

Under the Emergency Planning and Community Right to Know Act of 1986, and the Pollution Prevention Act of 1990, facilities must report their releases of more than 650 toxic chemicals and chemical compounds to the EPA and State officials.

Reclamation Projects

The Utah Division of Environmental Response and Remediation (DERR) is charged with protecting public health and Utah's environment by administering the superfund and State voluntary cleanup programs in order to clean up chemically contaminated sites and ensuring that underground storage tanks are properly managed. DERR also helps the EPA implement its brownfields action agenda to protect public health and return impacted, or potentially impacted, properties to a state of beneficial economic re-use.

During 2012, 82 sites were mitigated, up from 66 sites mitigated in the prior year, with a total of 4,545—over a hundred more Underground Storage Tank sites cleaned up as of October. In 2012, 64 new sites were identified to be added to the 453 sites currently undergoing remediation.

Superfund

During 2012, DERR staff worked closely with the EPA to achieve milestones in the Superfund Program. There are 26 formal Utah sites on the superfund National Priorities List (NPL) with five having been deleted and one removed, making a total of 20 "Active" Sites. Recently proposed for Superfund is the 700 South 1600 East PCE Plume.

Superfund Proposal: 700 South 1600 East

EPA proposes adding groundwater plume in Salt Lake City to the Superfund site list. Listing on the NPL would make cleanup of the 700 South 1600 East PCE Plume site a high priority. Listing means it is eligible for comprehensive assessment and cleanup through the Superfund process. It will also mandate the availability of federal funds for cleanup. The 700 South 1600 East PCE Plume site is located near the George E. Wahlen Department of Veterans Affairs Medical Center on the east side of Salt Lake City. The preliminary investigation area is bounded on the west side by 900 East, on the north at 500 South, on the east at 1600 East, and on the south by Yale Avenue.

Voluntary Cleanup Program

The Utah Legislature in 1997 passed a law that created the Voluntary Cleanup Program (VCP). The VCP provides a mechanism to rehabilitate brownfields and allows for property owners or others seeking to cleanup environmentally impaired sites to do so with UDEQ oversight. As of October 2012, 37 Certificates of Completion have been issued under the VCP, and approximately 854 acres have been returned to a state of beneficial reuse.

Former Simpson Steel Voluntary Cleanup Site

The former Simpson Steel site, located in Murray near 4500 South and Main Street, is approximately 20-acres and was historically used for brick manufacturing, pipe manufacturing and structural and general steel fabrication. Historical uses of petroleum products impacted the property, and waste slag was imported from a nearby smelter to fill and grade the site. A transit oriented development became the driving force for the transformation of this underutilized, industrial property since a light rail station is directly adjacent to the site.

Cleanup of the former Simpson Steel site began in spring 2009 and was performed in phases addressing the upper portion of the site, the creek channel and finally areas covered by hardscape. Cleanup activities were completed by the end of 2009 under Division of Environmental Response and Remediation (DERR) oversight. A Certificate of Completion was issued under the Voluntary Cleanup Program in March 2010. Today, the site is known as the Lions Gate development. The first phase of development was completed in spring 2012 with the completion of 400 apartment units. The next phase of the development will include low-income housing units as well as retail, restaurant and office space—all of which will be less than a five minute walk to a light rail station.



Former Simpson Steel VCP Site: Before



Lions Gate Development: After

Utah Transit Authority Sugar House Streetcar and Greenway Project

The Division of Environmental Response and Remediation (DERR) worked with the Utah Transit Authority (UTA) to develop procedures to manage contaminated soils encountered during construction of the Sugar House Streetcar and Greenway Project. Portions of the project area contained petroleum products and elevated lead and arsenic in the soil. The DERR accepted the management procedures proposed by UTA and construction of the street car line began in April 2012. The DERR conducted several site visits in 2012 to oversee sampling and management of the contaminated soils. As of October 2012, approximately 900 cubic yards of contaminated soils were removed from the project area and disposed of at a permitted facility. The anticipated project completion date is August 2013.

Waste Management

The Division of Solid and Hazardous Waste provides regulatory oversight of the management of hazardous waste generated by industries and businesses, and oversight of non-hazardous solid waste generated by individuals, businesses, and industry.

Approximately 4.4 million tons of non-hazardous solid waste was disposed in permitted landfills during 2010, the most recent reporting year for non-hazardous waste generation and management. An additional 123,000 tons was disposed in approved solid waste incinerators.

The Division continues to provide compliance assistance to small businesses which generate hazardous waste. In 2011, the Division conducted 229 compliance assistance visits to small businesses throughout the state.

Recycling Successes

In 2010, the Division of Solid and Hazardous Waste continued its support for recycling of electronic waste. The Division provided technical assistance to a group of e-waste stakeholders in drafting proposed legislation for introduction in the 2011 legislative session. Legislation was passed that requires manufacturers to provide an annual report to the Division that lists eligible programs or systems offering collection, transportation, reuse or recycling services to consumers for electronic devices. The legislation also requires manufacturers of electronic devices sold in Utah to establish and implement public education programs to inform consumers of available recycling services for electronic devices. The Division's oversight of the Mercury Switch Removal Program resulted in 44,237 mercury switches removed from automobiles and 97.32 pounds of mercury collected that might have otherwise been put in the trash and ultimately ended up in a landfill or put into the air as emissions during scrap car recycling.

Federal Facility

The Deseret Chemical Depot, located in Tooele County, began closure in 2012, having finished its mission to destroy 45 percent of the nation's chemical weapons stockpile. Complete closure of the facility is expected by 2015. As of October 2012, 100 percent of all chemical agents have been destroyed, as well as 95 percent of all secondary waste. Deseret Chemical Depot met its treaty commitments by completing the destruction of all agents before the April 2012 treaty deadline.



Low-level Radioactive Waste Disposal

In 2009, the U.S. Nuclear Regulatory Commission (NRC) directed its staff to proceed with a limited rulemaking to “10 CFR Part 61” to specify an explicit requirement for a site-specific analysis or performance assessment for the disposal of depleted uranium (DU) and other long-lived isotopes in a near-surface disposal facility. In a second directive, “Blending of Low-Level Radioactive Waste (LLW),” (dated April 7, 2010), the NRC directed its staff to include blended LLW streams as part of this rulemaking initiative.

Following the 2009 solicitation of public input on an LLW performance assessment, the NRC staff developed a technical basis (now called a “regulatory analysis”) document to support the rulemaking amendment (Agencywide Documents Access and Management System (ADAMS). The NRC shared the document with the Agreement States, and proceeded to develop proposed rulemaking language.

Following completion of draft preliminary rulemaking language, the NRC staff made the proposal publicly available in May 2011, and solicited stakeholder feedback. In connection with the proposed new performance assessment requirement itself, the staff also recommended the duration of the requisite analysis—or the time of compliance (TOC)—be specified at 20,000 years to account for the presence of large quantities of long-lived isotopes, such as DU, that might be disposed of in a near-surface disposal facility. In August 2011, the staff briefed the Advisory Committee on Reactor Safeguards (ACRS) on the preliminary proposed rulemaking language and the basis for the staff-preferred TOC, for which a Committee Letter Report was issued in September 2011. The NRC staff recommended that licensees for currently operating LLW disposal facilities and future 10 CFR Part 61 applicants conduct site-specific performance assessments to demonstrate compliance with the regulatory requirement found in 10 CFR 61.41, “Protection of the General Population from Release of Radioactivity,” to protect the general public from radiation doses. The analyses would be used to identify

if additional restrictions or prohibitions concerning the disposal of certain LLW streams, such as DU, at a particular site, would be necessary.

The NRC intends to incorporate specific parameters and assumptions for conducting requisite analyses into a separate guidance document that would be issued for public comment before the NRC finalizes the rulemaking amendments. With respect to DU and other LLW streams with long-lived isotopes, the specific technical requirements associated with disposal of such wastes would be developed through the rulemaking process. The NRC also directed staff to seek stakeholder feedback on the following four potential revisions:

1. Whether licensees should be allowed to use International Commission on Radiation Protection (ICRP) dose methodologies in a site-specific performance assessment for the disposal of all LLW.
2. Whether the regulations should incorporate a two-tiered approach that establishes a compliance period that covers the reasonably foreseeable future and a longer period of performance that is not a priori and is established to evaluate the performance of the site over longer timeframes. The period of performance is developed based on the candidate site characteristics (waste package, waste form, disposal technology, cover technology, and geo-hydrology) and the peak dose to a designated receptor.
3. Whether disposal facilities should be allowed to establish site-specific waste acceptance criteria (WAC) based on the results of the site's performance assessment and intruder assessment.
4. Whether the provisions of the revised proposed rule that require the site-specific performance assessments and the development of the site-specific WAC should specify a compatibility category that ensures alignment between the states and federal government on safety fundamentals, while providing the states with the flexibility to determine how to implement these safety requirements.

The NRC directed staff to provide an expanded proposed rule to the NRC Commissioners within 18 months to address the aforementioned revisions, as well as the staff's analysis of the issues and stakeholder feedback, including the pros and cons of the potential revisions. The current schedule for the submittal of the expanded proposed rule to the Executive Director for Operations is July 2013.

Pollution Prevention

Waste Tire Program

The Waste Tire Recycling Program continues to achieve success. During fiscal year 2011, nearly 100 percent of all tires collected in Utah were recycled or reused, amounting to 43,000 tons, or 2.6 million tires recycled.

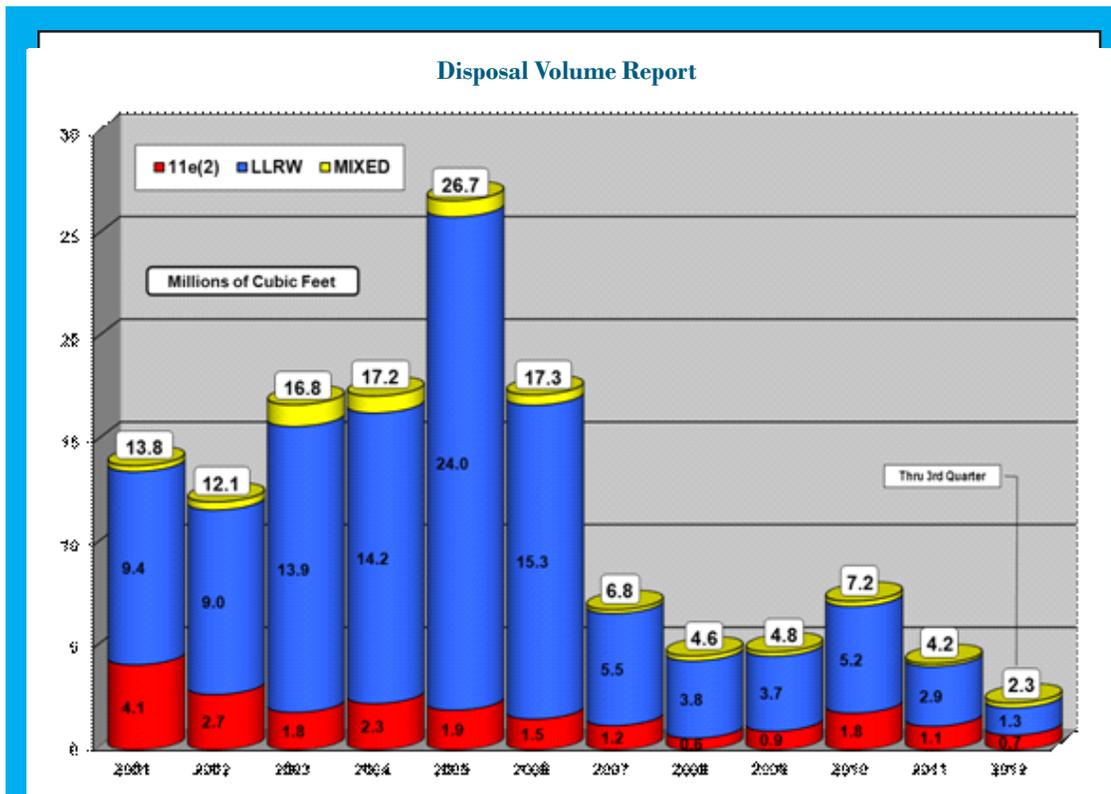
Used Oil Recycling

In 1993, the Utah Legislature enacted the Used Oil Management Act, which required DEQ to develop a statewide Used Oil Recycling Program. The volume of used oil recycled in 2010 from household participation in the Do-It-Yourself Program increased to 543,219 gallons from 460,041 gallons the previous year. However, the total amount of used oil recycled statewide, which includes businesses and DIYer used oil, decreased in 2010 to 10,526,867 gallons, down from 12,978,532 gallons the previous year.

Waste Disposal on the National Front

Other activities in 2012 include a new low-level waste disposal facility, operated by Waste Control Specialists LLC (WCS) in Texas, which received final license approval to dispose of Classes A, B, and C low-level radioactive wastes from the compact member states of Texas and Vermont and, out-of-compact facilities through an application and approval process. Additionally, the site will open in 2013 a separate disposal option exclusively for federal government low-level radioactive wastes. On November 10, 2011, WCS announced the opening of the Texas Low-Level Radioactive Waste Disposal Compact Facility for the disposal of commercial low-level radioactive waste. Final license approval was issued by the Texas Commission on Environmental Quality in April 2012.

Most recently, on November 26, 2012, the Director of the Division of Radiation Control (DRC) approved the proposed amendments to the EnergySolutions Low-Level Radioactive Waste Disposal License and Ground Water Quality Discharge Permit. The license amendments and permit modifications were part of a request submitted by EnergySolutions in May 2011 to combine the two existing low-level radioactive waste disposal embankments into a single disposal embankment. The approved license and permit amendments make changes associated with the proposed combination of the two existing low-level radioactive waste disposal embankments into a single embankment to be designated as the Class West embankment. Specifically, the new Class A West embankment encompasses the footprints of the existing Class A and Class A North embankments. In its May 2011 submittal, EnergySolutions also withdrew an earlier proposal submitted in January 2008 to convert a portion of the disposal capacity of the 11e.(2) disposal embankment to Class A low-level radioactive waste disposal capacity (referred to as the Class A South design proposal). The proposed license and permit amendments, as well as the Safety Evaluation Report, the Statement of Basis regarding the permit, and the Public Participation Summary are available to the public on the DRC Web page at www.radiationcontrol.utah.gov/EnSolutions/licamends.html.



Volumes of waste received for disposal at EnergySolutions continue to decline from a peak 26.7 million cubic feet in 2005 to the current year. This volume represents Class A low-level radioactive waste, uranium mill tailings, and mixed waste.

Depleted Uranium

On April 14, 2010 the Radiation Control Board approved a new rule that requires EnergySolutions to conduct a performance assessment before disposing of depleted uranium. Depleted uranium became an issue when the U.S. Department of Energy (DOE) announced in early December 2009 that it planned to ship 11,000 tons of depleted uranium (DU) from the Savannah River cleanup in South Carolina to EnergySolutions' low-level radioactive waste facility in Clive, Utah. Included in a license condition is a requirement that EnergySolutions must remove the waste if the site safety analysis (performance assessment) demonstrates that depleted uranium could not be safely disposed at the landfill for at least 10,000 years. The DU that was shipped to EnergySolutions is currently stored in a building until future resolution.

Governor Gary Herbert and DOE negotiated an agreement that prevented the remaining shipments from coming to Utah pending a site-safety analysis. DU is a by-product of the uranium enrichment process that becomes more radioactive over time. To address this issue, the Nuclear Regulatory Commission (NRC) is in the process of developing a new rule regarding the disposal of significant quantities of DU. A proposed rule is scheduled to be submitted to the NRC commissioners by July 2013. Under federal law, the Department of Energy is required to accept DU from an NRC licensed uranium enrichment facility. DU can also be accepted by a licensed commercial disposal site. EnergySolutions' Clive facility holds a Class A radioactive waste license and currently has DU disposed at its facility. EnergySolutions has submitted a performance assessment for the disposal of large quantities of DU and the DRC has initiated the review of the PA by issuing a Request For Proposal (RFP).

Blending of Low-Level Radioactive Waste

On October 13, 2010, the NRC revised its position that provides the states an opportunity to pursue rulemaking that would allow large-scale blending. The NRC Commissioners directed staff to develop a revised Branch Technical Position (BTP) regarding the circumstances under which large scale blending is acceptable. In June, 2012, the NRC released a draft revised BTP for public comment. The NRC is now reviewing the comments received in order to evaluate additional changes to the draft document. A final revision to the BTP is scheduled to be completed by mid-2013. Until such time, licensing actions received by NRC or Agreement States for large scale commercial blending facilities will be reviewed on a case-by-case basis.

On April 13, 2010, the Radiation Control Board adopted a position paper on waste blending, noting that it is opposed to waste blending when the intent is to alter the waste classification for the purposes of disposal site access. The issue of blending higher concentrated low-level waste (Class B and C waste) with lower concentration waste (Class A) waste has come to the forefront because of lack of disposal access for 36 states for Class B and C radioactive waste. One of the problematic low-level waste streams is ion exchange resins generated at nuclear power plants throughout the United States. These resins—small beads of plastic—remove radioactive material from waters used for cooling nuclear reactors. NRC estimates that power plants throughout the United States generate roughly 85,000 cubic feet of resins annually. Class A waste makes up ninety percent of the annual resin production.

EnergySolutions is seeking approval to dispose of waste produced by Studsvik's facility in Tennessee. The SempraSafe process is a joint venture between EnergySolutions and Studsvik to process US-generated low-level radioactive ion-exchange resins from nuclear power plants through Studsvik's THOR® process. This procedure treats the ion-exchange resins using a thermal process to treat the organic material, creating a residue containing carbon and metal oxides. The residue is more physically stable after

treatment. It's then placed in containers for shipment and disposal. Currently NRC only has guidance to address the blending of waste. In addition, the Radiation Control Board initiated rulemaking in early 2010. This new rule mandates the Executive Secretary determine if a new performance assessment (PA) is required, before a low level waste facility can receive any radioactive material for land disposal. This new rule formally took effect on April 4, 2011.

Based on the new rule, the Division of Radiation Control requested EnergySolutions to update its PA on its "SempraSafe" proposal before it can dispose of more than 40,000 cubic feet a year of this type of waste. The action was necessary because of new provisions to a rule the Radiation Control Board adopted that requires further analysis on certain types of wastes that may fall within what the NRC considers "large-scale blending operations." A public comment period ran from January 17th through March 16, 2012. The DRC received over 2,100 comments against the disposal of blended waste and 21 in favor of this activity.

The Division reviewed EnergySolutions proposal with respect to large scale blending and issued a technical memorandum because the SempraSafe material is similar to wastes already approved for disposal under their radioactive material license. Therefore, the Division will allow disposal of blended resin waste as long as the material meets license requirements and the volume of waste is 40,000 cubic feet per year or less. EnergySolutions deadline to submit a new Performance Assessment (PA) model was late December 2012. Once the PA is submitted, DRC will re-evaluate the volume limit following completion of the analysis of the updated PA.

DRC believes the limited annual volume is protective of the public health and safety since this is similar to other Class A low-level radioactive waste EnergySolutions is licensed to receive. The PA will serve to provide data to make an informed decision regarding the disposal of significant volumes of this waste.

Uranium Mills

In June, 2012, the Division of Radiation Control Director approved the indirect transfer of ownership change for the White Mesa Mill from Denison Mines (USA) Corp. to Energy Fuels Resources (USA) Inc. (Energy Fuels). This approval required Denison to submit a license amendment to request a name change of the licensee. In August, Denison submitted the request and approval by the Director was granted. Energy Fuels operates a mill in Blanding, Utah, where it extracts uranium from ores and alternate feed materials. Table 1 shows the amount of conventional ore and alternate feed that have been processed from 2007 to November 2012.

Energy Fuels Resources Inc.

Year	Conventional Ore (tons)	Alternate Feed (tons)
2007	0	44,356
2008	248,735	500
2009	144,434	166
2010	233,728	310
2011	174,545	12,025
2012 (up to Nov?)	77,334	6,631

Groundwater Issues

To date, there have been two contamination plumes (chloroform and nitrate) identified at the White Mesa Uranium Mill, as follows:

Chloroform

There are currently 27 monitoring wells associated with the chloroform plume. Repeated groundwater sampling by Energy Fuels and DRC has confirmed concentrations in excess of the State's Groundwater Quality Standards. The sampling appears to have defined the plume's eastern and southern boundaries. Impacted wells are along the eastern margin of the site and are up gradient or cross-gradient from the tailings cells. Contamination appears to have been caused by laboratory wastewater disposal activities that pre-dated mill operation. Energy Fuels' predecessor used chloroform in the laboratory and then dumped the excess into the septic system. This practice no longer exists. Laboratory water is now discharged to Tailing Cell #1. A Corrective Action Plan (CAP) is near completion and should be ready for public comment this winter. In the interim, Energy Fuels is currently using a hydraulic control system (pump and treat) to address the plume.

Nitrate

During preparation of a Permit Modification for the Energy Fuels White Mesa Mill in 2008, DRC staff identified that a plume existed based on nitrate contamination in a number of wells on site. On January 27, 2009, DRC and Energy Fuels entered into a Stipulated Consent Agreement (SCA) wherein Energy Fuels agreed to conduct a contamination investigation to determine the source.

In spite of two-plus years of investigation, site conditions makes it difficult to determine the total number, locations, magnitude of contribution, and proportion of the various sources at the site. As a result, it was agreed that resources would be better spent in developing a Corrective Action Plan rather than continuing with further investigations. A Stipulated Consent Agreement was signed by both parties on September 30, 2011 and mandated that Denison Mines submit a CAP on or before November 30, 2011.

Denison Mines submitted the CAP on November 29, 2011. A public comment period began on July 18, 2012, on the proposed Stipulated Consent Agreement for the recently approved Energy Fuels Corrective Action Plan. A hearing to receive public comments was held on August 20, 2012, at the Blanding Arts and Events Center. No commenters attended this hearing. However, comments from Energy Fuels Resources (Denison Mines) and the Ute Mountain Ute Tribe were submitted and are being reviewed by DRC staff. DRC is preparing a public participation summary and response to comments as part of the administrative record. A final SCA will then be completed, signed by both parties, and posted on the DRC's Web site.

Uranium One Utah

Uranium One Utah (formerly Plateau Resources) near Ticaboo, Garfield County has submitted a 2-year extension request regarding its Radioactive Material License (RML). The RML expired April 30, 2012, and the licensee has requested a 2-year extension to submit the required renewal application. A 30-day public comment period commenced on October 24, 2011, with a notice published in the Salt Lake Tribune and the Wayne and Garfield County Insider and posted on the DRC Web site. The public comment period ended on Friday, November 25, 2011. The Executive Secretary (Division Director) granted the licensee the extension and has requested specific information be provided to the DRC in a letter dated December 11, 2011. Therefore, the initial expiration date of April 30, 2012 has been extended to April 30, 2014. The letter and license amendment are posted on DRC's Web site: www.radiationcontrol.utah.gov/Uranium_Mills/uraniumone/index.htm.

Rio Algom Mining LLC has a current Utah Radioactive Material License (RML) for a former uranium milling facility in the Lisbon Valley, San Juan County, Utah. The RML includes groundwater monitoring requirements and concentration limits which are based on previous modeling approvals of an Application for Alternate Concentration Limits, approved by the U.S. Nuclear Regulatory Commission (NRC) per a May 11, 2004 license amendment.

Rio Algom Mining

The State of Utah obtained primacy to administer the Uranium Mill program in Utah from the NRC in August 2004, and DRC included the conditions previously approved by the NRC in the Utah RML. For more information, visit:
www.radiationcontrol.utah.gov/Uranium_Mills/rioalgom/supassess.htm.

On May 3, 2012, EnergySolutions re-submitted the License Renewal Application (LRA) regarding their 11e.(2) Radioactive Material License No. UT 2300478. EnergySolutions' Utah-based operations are in Clive, Tooele County, Utah. Most of the land within a 10-mile radius of the site is public domain administered by the U.S. Department of Interior's Bureau of Land Management (BLM). Land use in the immediate vicinity of the site is not affected by the renewal of the 11e.(2) License, since the embankment is located entirely within the licensed area. The 11e.(2) embankment is situated in a remote area of Tooele County in the western portion of Utah. The nearest resident is a person acting as caretaker at a rest stop along I-80, roughly 7 miles to the northeast, with the nearest community being approximately 35 miles from the site.

EnergySolutions, LLC

Strict access control and security also provide additional assurance of protection to the public. The embankment has been designed to resist water erosion, wind erosion, bio intrusion, geotechnical instability, and other natural events. All features are designed to promote embankment stability for NRC's 1,000-year Embankment design life requirement of NUREG-1476 (NRC, 1993c). The location of the 11e.(2) disposal embankment has been studied extensively to establish the natural conditions that contribute to the isolation of waste. The site is located on Quaternary lakebed deposits. Wells indicate that lacustrine deposits extend to at least 500 feet underneath the site. Additionally, the groundwater is of low yield and poor quality at the Clive site. In fact, the groundwater is classified by the State of Utah as a Class IV aquifer (unpotable), meaning that the Total Dissolved Solids (TDS) exceed 10,000 mg/L. The water is generally very brackish and has no uses other than for dust suppression. The site-wide average horizontal velocity of the groundwater in the shallow aquifer is 1.1 feet per year. The average site-wide vertical groundwater velocity is calculated at 0.1 feet per year in the upward direction in the saturated aquifer zones. After closure of the 11e.(2) embankment there will be no active maintenance required to preserve isolation. The above-grade design of the embankment meets the design standards for water and wind erosion, as well as being geotechnically stable. All materials used in the construction of the embankment are natural and from the area of the site.

DRC has begun its review of the LRA and plans to hold a public stakeholder meeting. Notice of the meeting will be through the Division e-mail list server. The public wanting to sign up for e-mail notifications server can visit DRC's Web site for further instructions: www.radiationcontrol.utah.gov.



Cleaner Water

Utahns and countless visitors continue to enjoy safe drinking water and many relatively pristine waterways for numerous industrial, agricultural, and recreational purposes. Utah is the second driest state in the nation, so water is a precious resource needed to maintain our communities and many aspects of our economy. Given its importance, water conservation efforts are critical, but so is the need to maintain the quality of water if this precious resource is to continue to meet the needs of current and future generations.

Significant strides have been made in protecting water resources since passage of the 1972 Federal Clean Water Act (CWA). The vast majority of Utah's waters are of sufficient quality to meet the uses required of them, but 30 percent are partially impaired. High levels of mercury continue to be found in some fish species in waters throughout Utah. The Division of Water Quality (DWQ) continually works toward not simply identifying problems, but searching for solutions for continued improvement in waters throughout the state.

DWQ continues to make strides to better understand the Great Salt Lake—a truly unique ecosystem that has worldwide significance as a refueling stop for millions of migratory birds. In 2012 DWQ implemented a cooperative monitoring agreement for the Great Salt Lake. This collaborative program combines the efforts of State, federal, and local governments to ensure that chemical and biological data are collected efficiently, saving all involved time and money, to meet multiple management needs. Data collected through these efforts will improve management decisions, helping to ensure the lake's uses as both a nationally important ecosystem and as a critical part of Utah's economy.

In 2012, DWQ collaborated with several economists to instigate a study that will ascertain the contribution of clean water to Utah's economy. Elsewhere, studies have found that degradation of water quality—particularly excessive algae growth—can negatively impact such factors as outdoor tourism and property values. Two surveys were mailed to Utahns to evaluate the net economic impact of clean water programs to our economy. Results will be shared in 2013.

Protecting, Maintaining and Restoring Utah's Waters

Nationwide, all waters are classified with numerous beneficial uses that reflect the services that each water body provides to society and the environment. In Utah, these uses include protection of aquatic organisms (fish and other important organisms upon which they depend), recreational and agricultural uses, and drinking water sources. Standards, developed with numerous scientifically rigorous studies conducted over the past 30 years, are applied to each of these uses and represent the core of Utah's efforts to ensure that healthy waters can continue to be enjoyed by all. Simply put, standards are the rules that establish pollutant concentrations that ensure protection of the beneficial uses of all waters.

DWQ continues to work directly with stakeholders, including leaders from agriculture, industry, and environmental non-profits, to improve Utah's water quality standards. An ongoing standards workgroup is currently evaluating several aspects of these rules, including developing more refined biological uses so water quality goals are clearly understood, and developing a more transparent process for federally required permits (401 Certifications) that are sometimes required for large development activities. The central goal of these collaborative efforts is to ensure the protection of water quality without placing unreasonable or unnecessary burdens on society.

Measuring Current Conditions

One important role of DWQ is to monitor and assess all of Utah's 14,250 miles of rivers and streams and nearly 3,000 lakes and reservoirs to ensure that water quality goals are met. One way to accomplish this task is to build cooperative monitoring programs that help ensure that data collected by several State, federal, and local agencies can meet multiple objectives. With oversight from a recently formed Statewide Monitoring Council, Utah continues to maintain cooperative monitoring efforts that are among the strongest in the nation.

All monitoring information collected by DWQ and other State and federal agencies needs to be interpreted to evaluate whether important beneficial uses remain protected. These assessments, which require the evaluation of hundreds of thousands of data points, are summarized in a biennial report to Congress. Among other things, this report identifies "impaired" waters that are in need of water quality improvement. Also, this report evaluates which causes of impairment represent the greatest threat to water quality, which helps determine where resources can be most efficiently and effectively used to realize water quality improvements.

Improving Utah's Waters

Once impaired waters are identified, the next challenge is to determine the sources of impairment and how to limit and control them to restore all of the water's beneficial uses. This is accomplished through a water quality study required by the Clean Water Act called a "Total Maximum Daily Load" (TMDL). A TMDL study calculates the maximum amount of pollution a body of water can receive and still meet water quality standards.

DWQ partners with many other federal, State, and local agencies, organizations, and stakeholders to combine resources to implement the watershed protection program. An example of that effort is the Utah Nonpoint Source Pollution Management Program, which helps landowners and partner agencies obtain technical and financial assistance to implement water quality improvement projects in priority watersheds throughout the State.

A TMDL study was completed in 2012 for the lower Jordan River in Salt Lake County that identifies the causes and likely sources of water impairment to its warm water fisheries beneficial use. Low dissolved oxygen concentrations, deleterious to resident fish populations, have been observed in the river from 2100 South to its terminus near Farmington Bay in late summer and early fall when flows are lowest and temperatures highest. Excess organic matter loads that result in high decomposition rates and oxygen consumption were found to be a significant contributor to the impairment. The TMDL for organic matter in the lower Jordan River employs a phased approach whereby additional analyses will be conducted while pollutant reductions are achieved to determine the most effective and economical approach to address this problem.

The Weber River watershed was targeted for water quality improvement projects in 2012, including the upper reaches of the Weber River, Fish Creek, Chalk Creek, and East Canyon Creek in Summit County. The Uinta Basin Watershed Management Unit will be the targeted focus area in 2013 as the DWQ continues the rotating basin approach in planning, implementing, and reporting on water quality improvement efforts. This rotating basin approach will coincide with the collection of critical water quality data before and after the projects are completed to enable project sponsors to accurately determine the water quality benefits of the project.

Permitting Discharges

Another way DWQ protects the quality of our waters is by issuing permits to all entities that discharge pollutants to surface waters, including discharges of domestic and industrial wastewater, and more diffuse sources like storm water. These permits establish allowable concentrations of pollutants and monitoring requirements to ensure that industry can continue to operate without degrading the uses of Utah's waters. DWQ utilizes an inspection program coupled with review of water quality data from each discharger to ensure that the terms of these permits are followed. Also, a careful review of each permit is conducted every five years to accommodate growth or respond to unforeseen environmental consequences of these discharges.

Numerous studies have identified storm water as one of the most significant threats to water quality in suburban and urban areas. Federal law requires that some industrial facilities and construction projects develop plans to minimize storm water problems and apply for a permit from DWQ, who ensures compliance. Currently there are approximately 1,348 active construction storm water permits and 612 presently active industrial storm water permits. Storm water permits are also required for municipal separate storm sewer systems that serve communities with more than 10,000 people and a population density of at least 1,000 people per square mile. These municipal permits require that DWQ work with communities to develop a comprehensive storm water management program that evaluates potential sources of storm water pollution, and then establishes ordinances and public outreach efforts to minimize potential water quality problems. Currently 78 communities in Utah have municipal storm water permits and have developed storm water management programs.

DWQ currently oversees 128 domestic and industrial entities that have individual permits to discharge treated industrial or domestic wastewater into Utah's waters. These include industries or cities and towns which have treatment facilities that discharge effluents to surface waters. Another 230 specialty permits have been issued, which cover discharges from activities such as coal mines, construction de-watering, and pipeline hydrostatic testing projects, fish hatcheries, drinking water plants, ground water remediation projects, biosolids (sewage sludge) processing projects, pesticide applications, and industrial pre-treatment facilities. In addition, there are 56 permits for "Concentrated Animal Feeding Operations (CAFO)," which is discussed in a separate section of this report.

Permits typically define a sampling schedule that allows DWQ to ensure that the discharge does not impair the beneficial uses of the receiving water. On average, there was a 95 percent compliance rate for all the regulated domestic and industrial facilities in 2011.

Ground Water Protection

The DWQ Ground Water Protection Section administers two primary programs to protect the quality of Utah's ground water resources:

- the federal Underground Injection Control (UIC) Program (UAC R317-7); and,
- the Utah Ground Water Quality Protection Program (UAC R317-6).

The UIC Program protects underground sources of drinking water by reviewing and approving numerous small-scale injection activities such as storm water dry wells, ground water remediation wells, and domestic underground drain fields. A major effort is underway to identify motor vehicle waste disposal wells that have been banned by EPA, and close or issue permits for these wells. The UIC Program also issues permits for aquifer storage and recovery operations to allow municipal water districts to capture spring runoff water and store it in drinking water aquifers for future use. An application was recently approved for a major modification of the Magnum Solutions Class III UIC permit to construct two additional subsurface salt caverns for storage of liquefied natural gas (e.g., propane). The original permit was issued to Magnum in December 2010 to create four natural gas storage caverns in a bedded salt deposit, with each cavern having a gas storage space of 9.8 million barrels. Each storage cavern will take approximately two years to complete. Regulatory oversight of the natural gas storage operation will be transferred to the Division of Oil, Gas, and Mining after completion of the storage caverns.

UIC Program staff has been collaborating with the Division of Water Rights on re-injection activities for two new geothermal power plants:

- Thermo, operated by Cymq Energy
- Cove Fort, operated by Enel North America

The Division of Water Rights is the regulatory agency responsible for administering rules under the Utah Geothermal Resource Conservation Act to ensure that UIC Program requirements are met to justify the UIC authorization by rule for these projects.

The UIC Program has successfully transitioned from existing paper and online reporting mechanisms to electronic reporting through the UIC National Database. The UIC National Database will now be the single source of data to meet the EPA's reporting obligations for the Utah 1422 UIC Program, and Utah DWQ has met the three major criteria required by the EPA Office of Ground Water and Drinking Water. According to EPA Water Program Director Sadie Hoskie, the transition to electronic reporting "is very significant, changing practices in place since the UIC regulations were first issued in 1980."

The Ground Water Quality Protection Program protects ground water by issuing permits to agricultural and industrial waste management units that have the potential to discharge pollutants into ground water. Agricultural waste management units include wastewater lagoons at large concentrated animal feeding operations, such as dairies and swine farms, while industrial waste management units include ash disposal facilities at coal-fired electrical power plants, and wastewater ponds and tailings impoundments associated with ore mining and processing operations for copper, gold, phosphates, oil sands, oil shale, and uranium.

The two primary elements of ground water discharge permits are:

- Best Available Technology (BAT) to minimize subsurface discharges to ground water; and,
- Compliance Ground Water Quality Monitoring to verify the efficacy of BAT.

Currently there are 37 active ground water discharge permits regulating 98 facilities.

The program has experienced an increase in permit activity for oil sand (bitumen) and oil shale (kerogen) development projects in the Uinta Basin.

The Ground Water Quality Protection Program also reviews aquifer classification petitions for approval by the Water Quality Board. Aquifer classifications are intended to be used as a planning tool by local governmental agencies to protect ground water quality from degradation (<http://www.waterquality.utah.gov/GroundWater/gwaquiferclass.htm>). The Board has approved 12 aquifer classifications throughout the state, including the most recent classification for the principal basin-fill aquifer in the East Shore area of Davis County.

PR Springs Approval

On October 24, 2012, the Utah Water Quality Board concurred with an Administrative Law Judge to uphold the ground water discharge permit-by-rule issued for the U.S. Oil Sands PR Spring project in eastern Utah based on the documented absence of ground water in the project area to a depth of over 1,800 feet and the de minimis effect the project will have on ground water quality. A permit-by-rule was also issued to MCW Energy Group for an oil sands pilot project at Northwest Asphalt Ridge, and a permit-by-rule is pending for the Crown Asphalt Ridge LLC oil sands project at Asphalt Ridge. Red Leaf Resources has applied for a ground water discharge permit for a proposed oil shale mining and hydrocarbon extraction project at the Red Leaf SITLA lease site located about 55 miles south of Vernal in Uintah County. The proposal involves mining and crushing oil shale, and constructing patented in-situ EcoShale® capsules using the crushed shale and overburden with bentonite-amended shale liners to provide a no-discharge structure for thermal hydrocarbon extraction, and subsequent in-place reclamation. After reviewing the permit application, DWQ requested additional information on the capsule engineering design and the long term spent shale management. Receipt of this additional information is pending. Two additional oil shale development projects in eastern Uintah County are in the preliminary permit application phases: Enefit American Oil Utah, and Tomco Energy.

Utah's Wastewater Project Assistance Program

The Utah Wastewater Project Assistance Program provides funding for high-quality water and wastewater projects through the State Revolving Fund (SRF), Utah Wastewater Loan Fund, and Hardship Grant Fund. To date, this program has provided almost \$525 million in loans and \$54 million in grants to communities to plan, develop, and construct wastewater treatment, pumping, and conveyance facilities. Recently, this program expanded to provide grants for nonpoint source projects as well.

The Water Quality Board received almost \$20 million in stimulus funding through the American Recovery and Reinvestment Act of 2009 (ARRA). These funds have now all been spent, and the remaining open projects are all expected to be closed out by the end of the federal fiscal year.

Great Salt Lake



The Great Salt Lake is of hemispheric importance as both a refueling stop for millions of migratory birds and a nesting area for others. Eighty percent of Utah's wetlands surround the lake. Tens of millions of dollars are generated for Utah's economy from the mineral extraction industry, duck hunting clubs, and the brine shrimp industry, which are all dependent on the vitality of the lake. Nature enthusiasts flock to the lake because of its ecological importance.

Utahans draw a significant amount of their heritage and identity from the lake. Overall, the lake is a truly unique resource to Utah. DWQ is committed to protecting this ecologically and economically unique ecosystem. Our goal, shared by most of the recreational, industrial, and commercial users, is that water quality remains sufficient to protect and maintain the beneficial uses of the lake and its surrounding wetlands.

The lake's uniqueness—it is very salty—complicates DWQ's ability to apply water quality practices applied to the rest of Utah's waterways. DWQ must employ special techniques for monitoring, assessment, and regulation that are specific to this saline ecosystem. Developing water quality programs to protect the lake is a DWQ priority.

In 2011, DWQ made significant efforts toward understanding the overall water quality of the open waters and wetlands. In cooperation with State, local, and federal agencies, the Division established a baseline monitoring plan designed to measure and assess the current condition of the lake and track trends of contaminants of concern that may adversely affect the lake's beneficial uses.

We are in the final phases of recommending an assessment method for the impounded wetlands surrounding the GSL that will allow us to measure the overall health of these critical nesting habitats, and we continue to support efforts to understand the overall effects of mercury in the lake by assessing mercury concentrations in the ecosystem. In addition to efforts specific to water quality, DWQ is actively involved in supporting other State agencies' management of the lake.

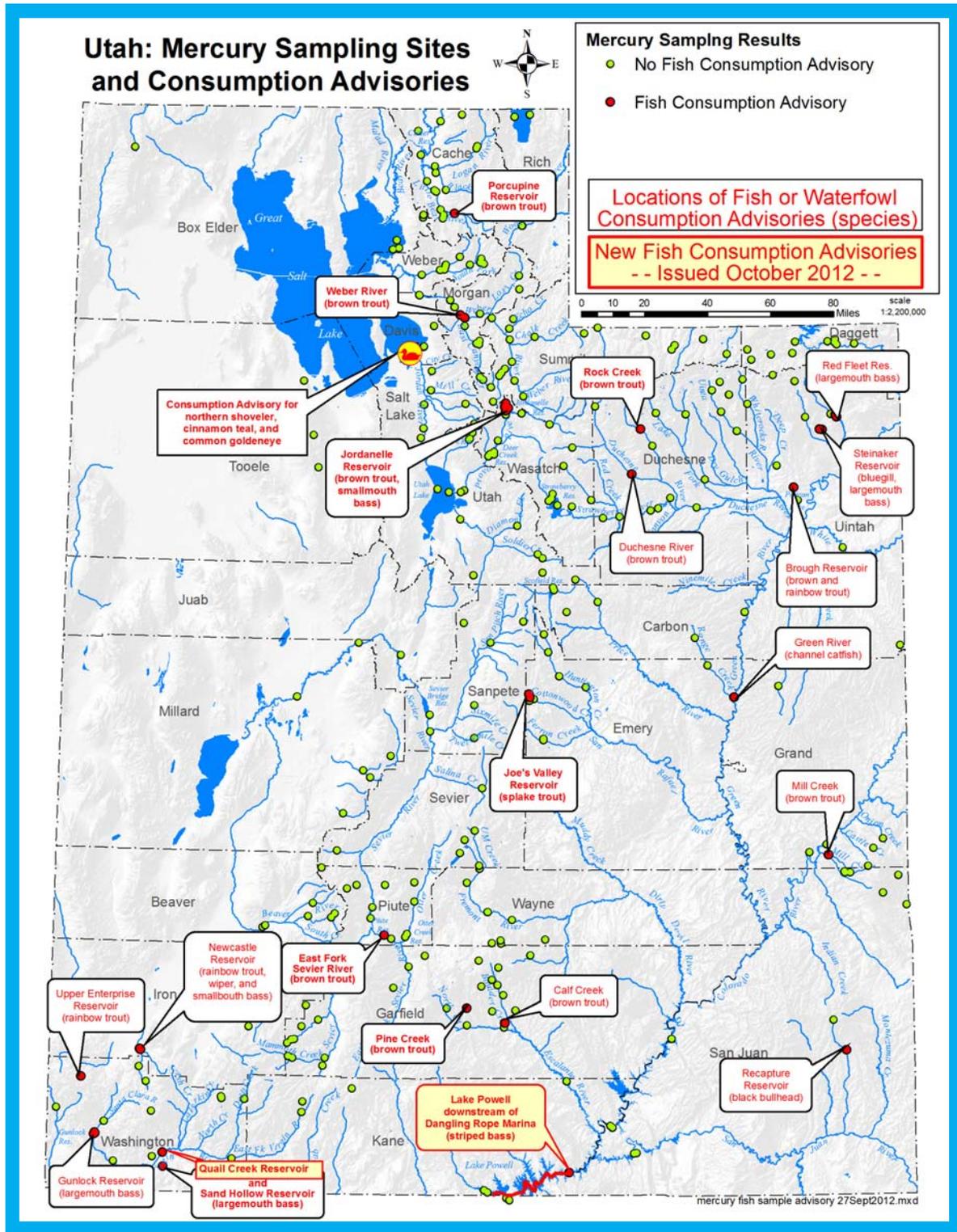
Mercury in Fish

When mercury is deposited in waterways, bacteria convert it to the toxic methylmercury that builds up in the tissue of fish and aquatic wildlife. Human exposure to methylmercury is primarily through eating contaminated fish.

DWQ, in partnership with the Utah Department of Health and the Utah Division of Wildlife Resources (DWR), continues to sample and test mercury concentrations in fish from Utah's waterways. To date, 35 species of fish from 322 water bodies have been tested. When the average mercury concentration in a species within a water body exceeds the screening level, fish consumption advisories are issued that warn us to limit our consumption of that fish from that particular water body. Pregnant women, nursing mothers, and young children are especially sensitive to the toxic effects of mercury. To date, 21 of the 322 waterways have fish consumption advisories.

Since 2005, DWQ has facilitated and chaired the Statewide Mercury Workgroup, composed of stakeholders from a broad base of local, State and federal agencies, industry, and non-profit organizations. The objectives of the Workgroup are to provide citizens with current information about the concerns posed by mercury, share technical information, and coordinate and collaborate mercury investigations in Utah to maximize limited resources. Meeting materials and notices are posted at www.mercury.utah.gov.

A multi-year investigation, led by the US Geological Survey, and funded by DWQ and DNR's Division of Wildlife Resources, began in 2010 to determine whether special pumps can be used to lower elevated levels of mercury in Newcastle Reservoir. The Division is hopeful that this project will lead to remediation of mercury contamination in those waterways that have fish consumption advisories. The project was scheduled to be completed in 2012, and ongoing results have been presented to the Mercury Workgroup.



Animal Feeding Operations

The Animal Feeding Operations/Concentrated Animal Feeding Operations (AFO/CAFO) Committee is a partnership of DWQ, the Utah Department of Agriculture and Food, the Utah Farm Bureau, the Utah Association of Conservation Districts, Utah State University (USU) Extension, the United States Department of Agriculture Natural Resources Conservation Service, the EPA (Region 8), and Utah's animal producer groups.

In 2001, the AFO/CAFO Committee developed the Utah Strategy which is a compliance assistance agreement to help animal feeding operations comply with environmental regulations to improve water quality. AFOs and CAFOs are animal production facilities where animals are confined, such as dairies and feedlots.

On December 31, 2008, the original Utah Strategy expired, prompting a new draft strategy to be prepared to continue the Utah Strategy work. DWQ has entered into two agreements to provide funding to the Utah Farm Bureau and the Utah Association of Conservation Districts to continue compliance assistance. Also, DWQ entered into a contract with USU Extension to provide educational outreach to AFOs and CAFOs in the state to implement the Utah Strategy.

Working through the Utah Strategy and the new contracts, experts of the AFO/CAFO Committee partnership provide assistance to AFOs and CAFOs through compliance and technical assistance. The agricultural partners prepare nutrient management plans, help design new waste containment structures, and assist in the implementation of proper management practices at AFOs and CAFOs. The partners assist producers in obtaining cost-share funding to address manure management problems.

By December 31, 2008, over 3,000 facilities had been assessed. Of those, 393 were AFOs with compliance problems. Since that time, 98 percent of the AFOs with compliance problems are reported to have had management plans prepared and 92 percent are in full compliance.

In early 2013, DWQ will amend Utah Administrative Code and will issue a new Utah Pollutant Discharge Elimination System CAFO General Permit to reflect the Federal CAFO rule changes as required. Compliance assistance and educational outreach will be provided by DWQ and the agricultural partners. This will include compliance worksheets for producers, educational workshops throughout the state, and information on the USU Producer's Web site.

Although more work is imminent, the Utah Strategy, AFO/CAFO Committee, and the agricultural partnership have thus far been successful in improving water quality in Utah by reducing water quality impacts from AFOs and CAFOs. This success is a result of cooperation and commitment by Utah's environmental and agricultural agencies and organizations and to address water quality concerns.

Drinking Water

The vast majority—99.86 percent—of Utahns drink water from approved public water systems, while a small number of individuals and businesses get their drinking water from private wells. Most public drinking water systems get their water from groundwater sources. DWQ helps protect groundwater sources from being contaminated by pollution (see below), whereas Utah’s Division of Drinking Water (DDW) helps ensure that all of our citizens can enjoy clean and healthy drinking water by assisting with testing treatment and delivery systems, conducting inspections of water systems, and by enforcing the Drinking Water Source Protection program. These programs are a success as 99.1 percent of the state’s population is served by public water systems that meet all health-based standards of the Safe Drinking Water Act.

DDW’s programs are intended and designed to protect people’s health to help ensure that Utah’s citizens are drinking safe water. Through a grant from the Utah Department of Homeland Security, DDW assists water systems in developing Emergency Response plans and Vulnerability Assessments. The training includes protecting sensitive information, protecting computer systems, how to develop tabletop exercises, NIMS certification, Web site awareness, and Water Agencies Response Network (WARN) membership.

Currently there are 2,576 valid water distribution and treatment certificates. These certificates are valid either through testing or renewal. Once an operator successfully passes an exam the operator is required to receive continuing education to maintain and renew certification. As a result of the professionalism of the water operators in the state, water systems have fewer compliance problems, and the number of approved systems has increased.

To protect public health and assure a safe reliable drinking water supply, the Division of Drinking Water established a plan review process to ensure proper design and construction of drinking water facilities, including water treatment plants, wells, springs, storage tanks, pumps, and waterlines. DDW also provides technical assistance to public drinking water systems to resolve deficiencies related to facility construction and water quality. Below is a summary of public drinking water projects reviewed between 1/1/2012 and 11/29/2012:

- DDW staff conducted 550 engineering reviews and technical assistance projects.
- DDW issued:
 - 174 plan approvals
 - 178 operating permits
 - 69 exception-to-rule letters
 - 332 other responses, including water system capacity evaluations, waivers, review comments, master plan approvals, denied exceptions, etc.

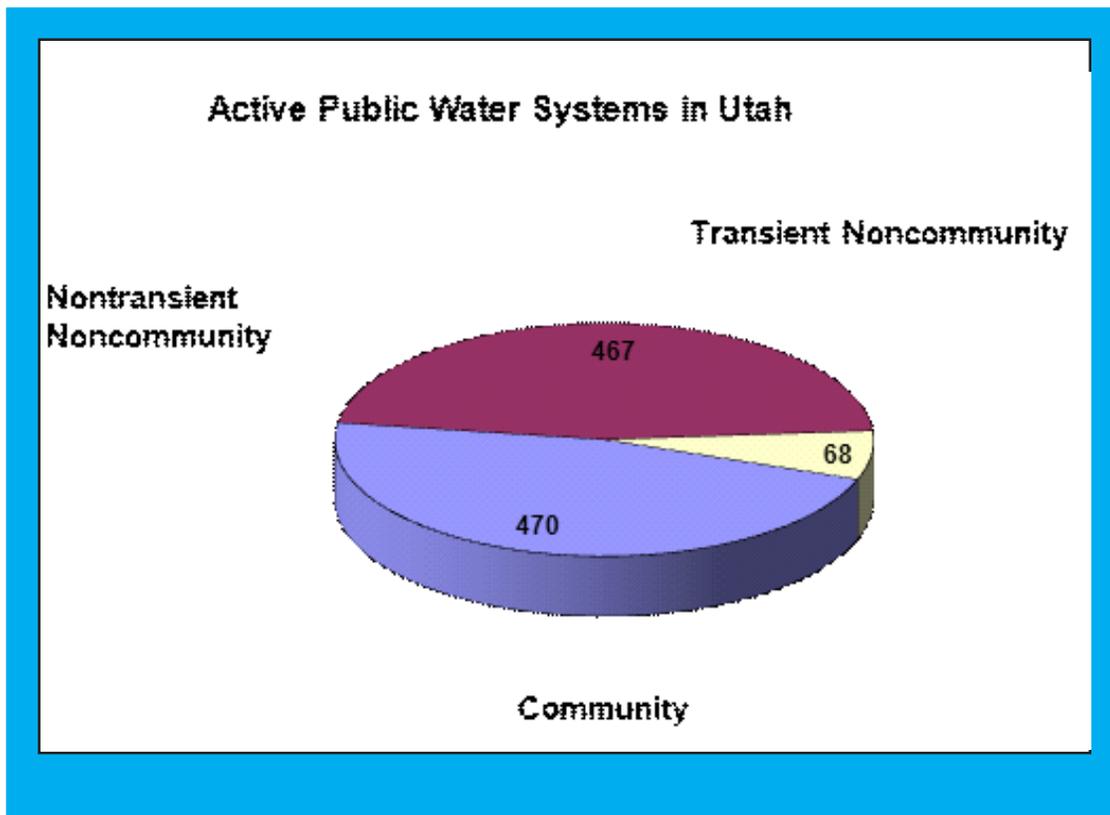
Public Drinking Water Systems

As of the date of this report, Utah has 1005 water supply systems. A public water system is defined as any water system, either publicly or privately owned, which provides drinking water for 15 or more connections, or 25 or more people, at least 60 days of the year. These include community systems serving people year round; non-transient non-community water systems that serve workers at a factory or rural public schools that have their own drinking water source, and transient non-community water systems such as seasonal campgrounds or highway rest stops.

Utah's Water Loan Programs

State Revolving Fund financial assistance is used to help construct new water treatment plants, replace aging or inadequate water pipes and storage tanks, develop new sources of drinking water (wells and springs), and perform planning studies to determine community needs and best alternatives to correct system problems.

During Fiscal Year 2012, the State of Utah provided a total of \$25.7 million to 21 different water system improvement projects. Since 1983, \$293.07 million has been authorized for 372 projects.





In 2012, DEQ's Business Assistance program continued its goal of providing resources and tools to help businesses and agencies adopt pollution prevention practices that aid in reducing pollution at the source and/or conserving water and energy resources.

This year's new initiatives focused on developing and implementing an Entry (Bronze) Level for the Clean Utah program, DEQ's business recognition program, and assisting with the Utah Clean Air Partnership (UCAIR). Clean Utah's Entry Level program encourages companies to participate in the program by implementing at least one environmental improvement project without the requirement of developing an Environmental Management System. The purpose of the new initiative is to encourage small to mid-sized businesses to participate in Clean Utah. UCAIR is Governor Herbert's state-wide initiative to improve air quality in Utah. UCAIR emphasizes partnerships with businesses, organizations, and governments to educate Utahns on air quality challenges and solutions and providing resources and tools to reduce emissions.

The Business Assistance program continued to work with the Utah State Chamber of Commercences, Utah College of Applied Technology, and Weber State University to promote sustainability tools and resources and technical assistance that are available to businesses through DEQ's BizHelp and Clean Utah programs. Through these partnerships, the Business Assistance program participated in the Salt Lake Chamber of Commerce's Business Case for Clean Air conference, Intermountain Sustainability Summit, Use Reusables workshop, Intermountain Healthcare's Sustainability conference, and Clean Utah luncheon.

The following is a summary of the reductions achieved by Clean Utah members:

- Recycled over 2,328 metric tons of material
- Saved over 9.1 million gallons of water
- Saved 3.6 million Kilowatt hours of electricity
- Reduced hazardous chemicals in manufacturing process by 326 metric tons
- Estimated cost benefit from program exceeded \$500,000

Business Assistance Program