



UTAH DEPARTMENT OF  
**ENVIRONMENTAL  
QUALITY**

**2015**  
**UTAH'S ENVIRONMENT**



# FROM THE EXECUTIVE DIRECTOR

Every day, the nearly 400 employees of the Utah Department of Environmental Quality (DEQ) work tirelessly to improve the lives of all Utahns. These dedicated public servants safeguard Utah's air, land, and water to support human health, a vibrant economy, and our unsurpassed quality of life.

DEQ serves Utah residents in many ways:

The mother who mixes formula for her baby trusting that the water from the tap is safe.

The entrepreneur who locates in Utah because of its natural beauty and outdoor opportunities, knowing that air emissions have dropped by 35 percent over the last decade, and that we have a robust plan to continue to improve air quality as our population grows.

The community that sees an old industrial site—long dormant due to contamination—cleaned up and turned into a thriving commercial center.

The family that cools off during a long hike by swimming in a clear lake.

The homeowner who puts his trash out and knows it will be disposed safely and responsibly.

All these Utah residents—and many others—can thank DEQ.

Our work is increasingly challenging. The steady drip of federal regulations we must implement has become a torrent. The politics of the environment is often divisive. Demand for our services grows with our population. Environmental issues have become more technically complex and difficult to solve. Public budgets are tight.

To fulfill our mission in the face of such challenges, we adhere to 10 guiding principles:

- 1. Common sense and the law—not ideology—guide our actions.**
- 2. We seek continuous improvement, implementing innovations that advance quality, efficiency, and effectiveness so we can achieve our mission at the lowest cost to hard-working taxpayers.**
- 3. Utahns need economic opportunity as well as clean air, water, and land, and these goals are complementary.**
- 4. We base our decisions on sound science and the best information available.**
- 5. On matters of policy, we defer to elected officials chosen by the people.**
- 6. We serve the public. We listen to and understand the diverse perspectives of Utah residents.**
- 7. We work collaboratively with the regulated community, elected officials, other government agencies, and the public to achieve positive, practical, and balanced results.**
- 8. We are open and transparent and make information about Utah's environment and our work accessible to the public.**
- 9. We maintain a long-term perspective. Our obligation runs to future Utahns as well as to those who live here today.**
- 10. Character matters. Who we are is as important as what we do. We act with uncompromising integrity.**



# FROM THE EXECUTIVE DIRECTOR



I invite you to read the 2015 State of the Environment Report to learn more about what the people of DEQ do each day to make your life better. You will read examples of how we are implementing our guiding principles and overcoming daunting challenges. I am proud of our employees, who constantly seek better ways to protect Utah's natural wonder and secure our economic future.

One of the defining characteristics of Utah is our stewardship ethic—a drive to leave the world better for those who follow. We at DEQ share that drive, and building on past success, pledge to continue our work to create a cleaner, healthier, more prosperous Utah.

Alan Matheson  
*Executive Director*



AIR



# Air Quality

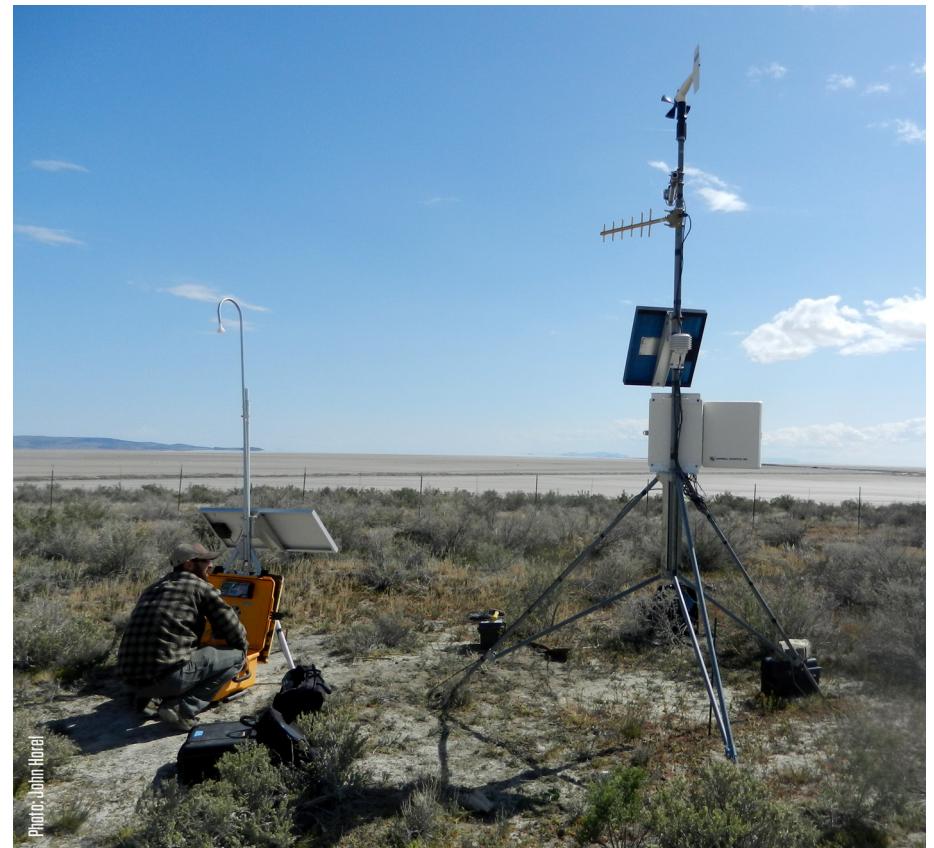
Utah continues to make significant progress towards understanding and addressing the causes of seasonal air pollution. Increased public awareness and legislative funding for research have provided important support for the Division of Air Quality (DAQ) in its ongoing efforts to reduce pollution, improve air quality, and protect public health.

## Air Quality Research Projects

Legislative funding for air quality research has provided DAQ with the resources to investigate the complex conditions that lead to high pollution levels during winter inversions and summertime ozone episodes. Better understanding of the unique conditions that lead to poor air quality helps DAQ craft cost-effective control measures to improve air quality. Thirteen research projects examined pollution sources and the chemical reactions that form fine particulates and ozone. Projects included:

- Air quality monitoring during winter inversions
- Air toxics monitoring in West Valley City
- Automobile startup and idling emissions
- Contribution of wood smoke to PM<sub>2.5</sub> along the Wasatch Front
- Impact of the Great Salt Lake on summertime ozone
- Emission predictions for oil and gas operations in the Uinta Basin
- Adaptation of air quality models to account for the unique chemistry in the Basin

Legislative funding has been critically important for leveraging federal, state, and private-sector sponsorships of approximately \$7.7 million for DAQ research projects.



*Researchers use portable air monitors to measure emissions*

Photo: John Diefel



# Air Quality

## CARROT Program

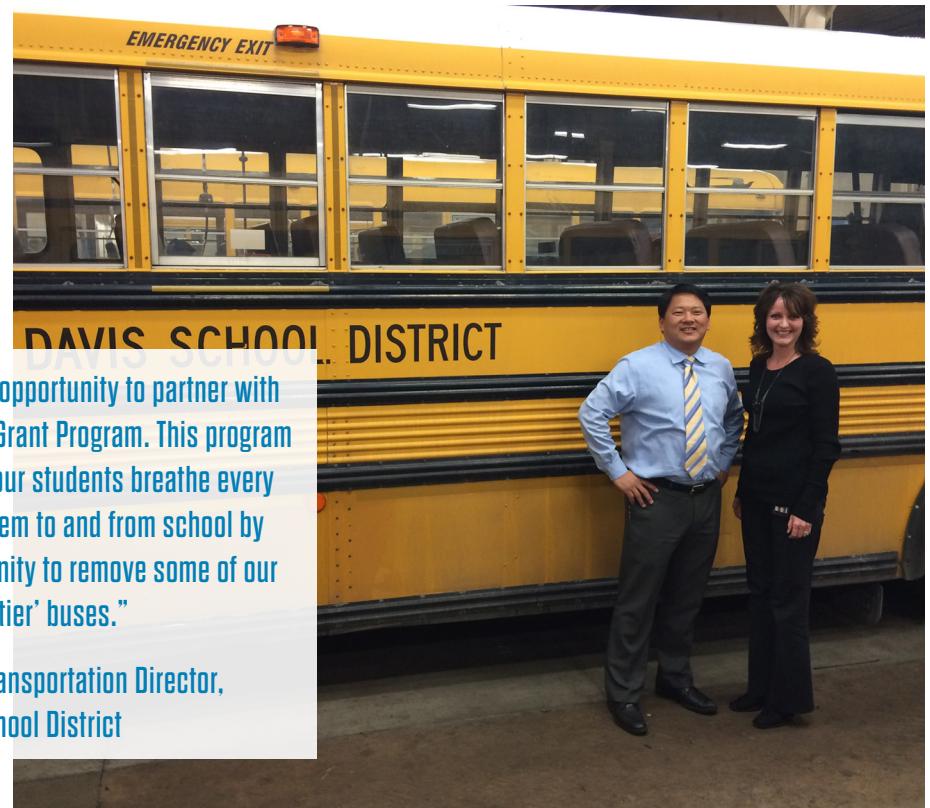
The Clean Air Retrofit, Replacement, and Off-Road Technology (CARROT) Program provides incentives to individuals and small businesses to reduce emissions from small-engine and heavy-duty diesel equipment. The \$200,000 appropriated for FY 2015 was divided into two segments: the Grant Program and the Lawn Mower Discount and Exchange Program.

- The Grant Program awarded \$100,000 in grants to five entities for projects that reduced emissions from heavy-duty diesel vehicles, amounting to a 17-ton reduction in annual emissions.
- The Lawn Mower Program offered 388 electric mowers to individuals at a discounted price and provided an additional discount for those who exchanged a gas-powered mower for an electric mower. The May 2015 discount and exchange event was a tremendous success: registration closed after only a few hours due to high demand, and approximately 80 percent of the participants brought in a gas mower to scrap in exchange for an electric model. This change-out was the equivalent of removing 120 passenger cars from Utah roads.

The legislature appropriated \$700,000 to the CARROT Program for FY2016. Of this funding, \$300,000 will be dedicated to a new School Bus Replacement Program, and the remainder will be split between the Grant Program and Lawn Mower Program.

## Utah Clean Diesel Program

The Environmental Protection Agency (EPA) awarded \$500,000 to the Utah Clean Diesel Program this fall to replace 15 school buses in Davis, Granite, Provo, Tooele, and Weber school districts. Buses that meet the latest EPA standards will reduce emissions by 90 to 95 percent. Nearly \$11 million in state and federal grants have been awarded through the Utah Clean Diesel Program since 2008, resulting in over 44,590 tons of emissions reductions.



*David Roberts and Lisa Burr (DAQ)*



# Air Quality

## PM2.5 State Implementation Plan (SIP)

In 2013, a D.C. Circuit Court of Appeals ruling against the Environmental Protection Agency (EPA) interpretation of the Clean Air Act (CAA) required the agency to publish a new schedule for PM2.5 State Implementation Plan (SIP) submissions. Utah had to resubmit its three PM2.5 plans and demonstrate that each area would either attain the standard by December 31, 2015, or that it would be impracticable to do so even after applying all reasonable control measures. DAQ demonstrated that it would be possible for the Cache Valley to meet the December deadline, but it would be impracticable for the two nonattainment areas along the Wasatch Front to attain the 24-hour PM2.5 standard.

EPA must determine by December 31, 2015, whether or not each of the three areas has attained the standard. The CAA allows areas meeting certain conditions to petition the EPA to postpone the SIP attainment date for one year. This appears to be a viable option for Utah, particularly for the Cache Valley. A strong inversion at the end of December, however, could jeopardize the state's ability to meet the criteria necessary to make such a petition. Under these circumstances, these areas would be reclassified as Serious and thus be subject to the SIP obligations for that classification.

The EPA can preemptively reclassify areas as Serious under its discretionary authority. Under this scenario, Utah would still be obligated to develop a SIP for these areas, including requirements for Best Available Control Measures (BACM), but the terms would be more favorable than if the EPA were to reclassify these areas automatically under existing law. The EPA has worked cooperatively with DAQ on this option and has proposed the use of its discretionary authority to preemptively reclassify all three areas as Serious nonattainment areas. That proposal, however, does not preclude Utah from petitioning the EPA to extend the attainment date to 2016.



*DAQ compliance inspectors, such as Cindy Beem, ensure that pollution control equipment is functioning properly*



# Air Quality

## Ozone Standard Change

In October 2015, the EPA finalized a new 8-hour ozone standard that lowers the ozone limit from 75 parts per billion (ppb) to 70 ppb. DAQ has one year to evaluate statewide air monitoring data to determine which areas meet the new standard. Monitoring data currently indicate that the populated areas from Ogden to Spanish Fork and Tooele County are not in compliance with the new standard during the summer months, and the Uinta Basin is not in compliance during the winter months.

Utah, along with other western states, has elevated background ozone, often in rural areas far from man-made pollution sources. This background ozone comes from wildfires, stratospheric intrusions, and domestic and intercontinental ozone transport. The EPA has indicated that it will work closely with Utah to find ways to comply with the new standard while taking into account exceedances potentially caused by background ozone.



*Air quality research in the Basin helps DAQ identify cost-effective emission control measures*

## Uinta Basin

The completion of the three-year Uinta Basin Ozone Study (UBOS) in 2014 provided DAQ with critical information on the possible sources and causes of wintertime ozone in the Basin. Improved understanding of emissions from the oil and gas industry and how they contribute to ozone formation assists DAQ in identifying cost-effective control measures that address air pollution from Basin emission sources. Air quality research projects funded by the state legislature build on scientific findings from the UBOS. Current projects include the following:

- Air quality modeling that accurately represents Utah-specific wintertime conditions in the Basin
- Better understanding of the contribution of carbonyl emissions from oil and gas operations on ozone formation
- An emission projection methodology for oil and gas operations based on market pricing, regulatory controls, and well production decline

DAQ also implemented four retrofit rules in 2015 to reduce emissions from older oil and gas equipment operating in the Basin. These regulations implement best practices that are known to cut emissions from existing sources, including:

- General provisions that minimize volatile organic compound (VOC) emissions
- Replacement of high-bleed pneumatic controllers with low-bleed devices
- Auto-igniting flares at oil and gas production sites
- Bottom-loading or submerged filling for tank trucks

By designating general operating provisions for the oil and gas industry and instituting cost-effective emission control requirements, DAQ ensures that pollution control equipment in the Basin operates effectively.

DAQ has been working on improvements to Uinta Basin coordination and compliance, including an online inventory tool and tablet-based GIS application for navigating the Uinta Basin oil fields and accessing air quality permit and Division of Oil, Gas, and Mining (DOGM) information in real-time.



# Air Quality

## Clean Power Plan

EPA's Clean Power Plan (CPP) rule is designed to reduce carbon dioxide (CO<sub>2</sub>) emissions from electric-generating power plants. The final rule covers 11 power plants in Utah, including five coal-fired plants under state jurisdiction, one coal-fired plant under federal jurisdiction, and five natural gas plants under state jurisdiction. EPA established emission rates for power plants based on best system of emission reduction (BSER) building blocks:

- Improving efficiency at existing coal-fired power plants
- Shifting generation from coal to existing lower-emitting natural gas plants
- Shifting to new zero-emitting renewables

The state of Utah has filed suit challenging the CPP, but will pursue the parallel path of developing a Utah plan to protect its interests should the suit fail. Under the CPP, Utah must either submit a state plan or initial submission with an extension request by September 6, 2016. The initial submission does not require the adoption of any enforceable measures, final decisions, legislation, or regulations, but failure by the state to submit either the plan or extension request will result in EPA promulgating a federal implementation plan (FIP) for Utah.



Photo: arayead/www.flickr.com/photos/1977899@N00/

*EPA's Clean Power Plan targets coal-fired power plants*



# Air Quality

## Regional Haze

Utah's Regional Haze (RH) SIP was developed to protect the vistas of Class 1 areas, including Utah's five national parks, from regional haze. Since 2002, sulfur dioxide emissions have been reduced by 27,947 tons per year, and nitrogen oxide emissions have been reduced by 15,258 tons per year.

In 2013, the EPA approved the majority of the RH SIP dealing with emission reductions for sulfur dioxide (SO<sub>2</sub>), but disapproved the SIP's best available retrofit technology (BART) determinations for nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) for Units 1 and 2 at PacifiCorp's Hunter and Huntington plants.

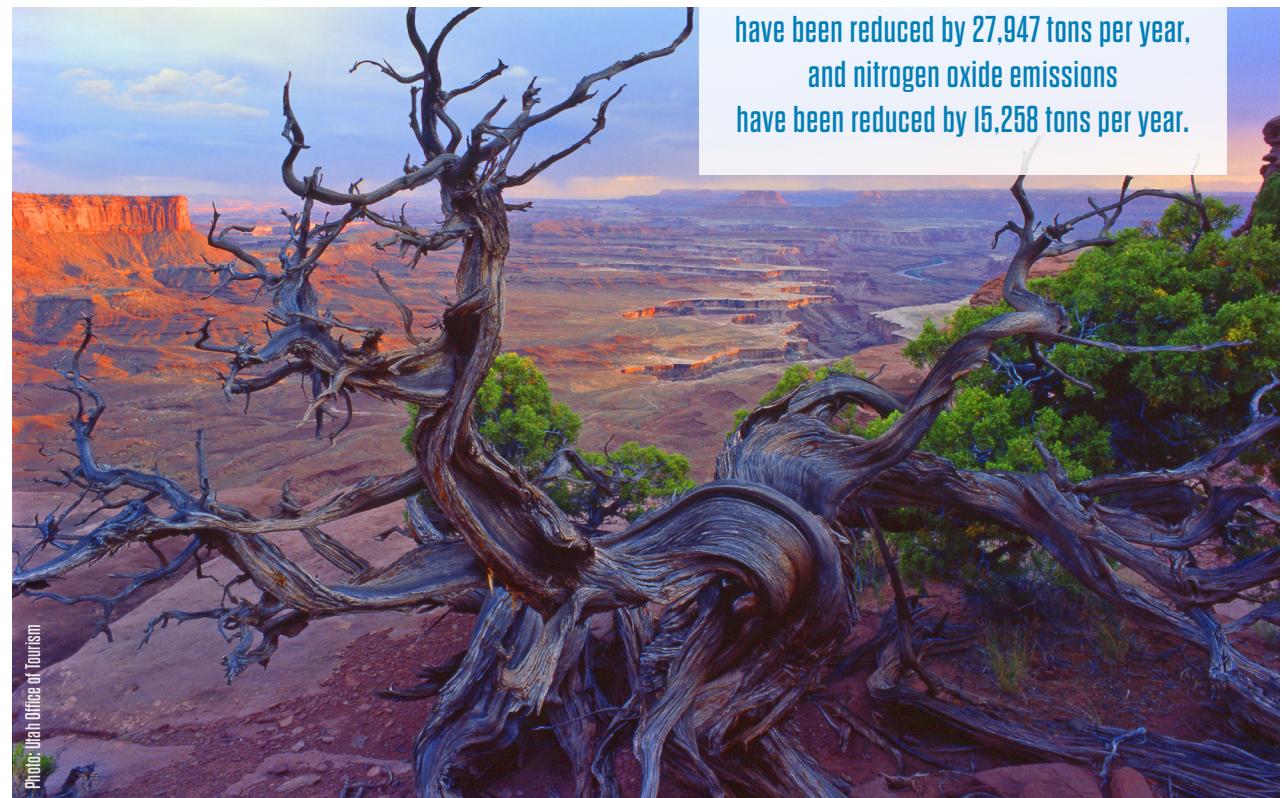
DAQ revised the RH SIP to demonstrate that an alternative to BART for NO<sub>x</sub> will achieve greater reasonable progress than BART. Combined emissions of NO<sub>x</sub>, SO<sub>2</sub>, and PM in the Alternative to BART RH SIP will be lower than achieved by the most stringent technology available to reduce NO<sub>x</sub> from sources subject to BART.

Visibility modeling shows that the alternative will provide visibility improvement on a greater number of days and greater average improvement, with reductions achieved earlier than required by rule.

The EPA's ability to approve this revised SIP is contingent upon an Enforceable Commitment SIP that ensures that SO<sub>2</sub> emission reductions from the closure of PacifiCorp's Carbon Power Plant were not double counted in the RH SIP. The Air Quality Board approved the Enforceable Commitment SIP in October 2015.

The EPA has requested a delay for reviewing the revised SIP. The agency is also considering whether to issue a Regional Haze Federal Implementation Plan (FIP) if it fails to approve the latest Utah SIP submission. Final action by the EPA is tentatively set for June 1, 2016.

**Since 2002, sulfur dioxide emissions have been reduced by 27,947 tons per year, and nitrogen oxide emissions have been reduced by 15,258 tons per year.**



*Utah's Regional Haze SIP has improved visibility in Utah National Parks*

Photo: Utah Office of Tourism



# LAND



# Waste Management and Radiation Control

The Division of Waste Management and Radiation Control (WMRC) helps businesses and residents handle waste properly and plays a critical role in safeguarding Utah residents from harmful exposure to radiation. In 2015, WMRC accomplished its objectives through:

- Permitting and compliance for hazardous and solid waste storage, treatment, and disposal facilities
- Oversight of facilities performing corrective action cleanup of contaminated sites
- Oversight of the recycling of used oil, waste tires, and mercury switches
- Education and outreach on proper waste disposal, the health risks from indoor radon, and the management of used oil and hazardous waste
- Daily inspections and compliance monitoring of low-level radioactive waste
- Verification of the classification of radioactive materials shipped from generator sites into the state
- Evaluation of the safety of depleted uranium disposal in the West Desert
- X-ray equipment inspections at medical, veterinary, dental, and various non-medical, industrial, and institutional facilities across the state
- Improved efficiencies designed to streamline inspection processes

WMRC works closely with facilities to clean up waste-contaminated areas and establishes permit and licensing conditions that ensure that waste treatment, storage, and disposal practices protect human health and the environment. Health physicists safeguard citizens from exposure to radiation through equipment inspections and oversight of the industrial and medical uses of radioactive materials. Education and outreach on proper waste disposal, recycling, radioactive materials, and indoor radon gas exposure are critical components of WMRC programs. The division has also implemented operational efficiencies designed to streamline its inspection processes.



*WMRC ensures that landfills don't contaminate soils or ground water*



# Waste Management and Radiation Control

## Permitting and Compliance

### **SOLID AND HAZARDOUS WASTE**

The division issues permits to solid and hazardous waste facilities to treat, store, and dispose waste in a manner that protects the land and ground water from contamination. Permitted solid waste facilities include municipal, commercial, and industrial landfills. The division issues permits to a number of large commercial and government hazardous waste facilities and ensures compliance with regulatory requirements and all permit conditions through regular inspections. Failure to comply with permit conditions results in a range of enforcement actions.

### **LOW-LEVEL RADIOACTIVE WASTE (LLRW)**

WMRC is responsible for licensing, permitting, and compliance monitoring for the EnergySolutions waste management facility in Clive, Utah, one of only three shallow land disposal facilities in the country that can accept LLRW. The division is also responsible for the Generator Site Access program that regulates all radioactive waste generators, processors, and collectors that utilize the Clive facility for waste disposal. WMRC licensing and oversight ensure that radioactive waste entering Utah meets Class A state requirements and that the handling and disposal of LLRW at the site is protective of public health and safety.

## Corrective Actions

The division works with companies through its Corrective Action Program to remediate environmental contamination from the improper storage, treatment, or disposal of solid or hazardous waste. Corrective Actions (CA) ensure that facilities deal with these releases properly to minimize harm to the public and the environment. WMRC's collaborative efforts with businesses and developers on these cleanups lead to timely resolution of environmental issues and a faster return of contaminated lands to beneficial use. WMRC also prepares Site Management Plans that allow facilities to continue operations while still protecting workers and environmental receptors from residual contamination on these sites.

**Corrective Actions ensure that facilities deal with these releases properly to minimize harm to the public and the environment.**



*WMRC is working with the Army to clean up legacy chemical waste at Tooele Army Depot*



# Waste Management and Radiation Control

## FORMER GENEVA STEEL SITE

Corrective action permits on the former 1,700-acre steel mill site included cleanup of three hazardous waste surface impoundments and facility-wide corrective action at the Anderson Geneva Development in Vineyard, Utah.

The activities have made it possible for developers to construct a mixed-use development on the former steel mill site. Cleanup activities included remediation of groundwater contamination and multiple solid waste management units (SWMUs) scattered across the site.

The property is currently being redeveloped to house single-family homes, high-density housing areas, and retail, office, and industrial space.



*Former Geneva Steel Plant*

## Development plans include:

- **Housing for 26,000 residents**
- **Two million square feet of retail space**
- **Three and half million square feet of office space**
- **Five million square feet of industrial space**
- **An intermodal hub**
- **A major town center**



*Photo: Anderson-Geneva*

*Cleanup activities at the former Geneva Steel site paved the way for new housing developments*



# Waste Management and Radiation Control

## **TOOELE ARMY DEPOT-SOUTH (TEAD-S)**

The WMRC has been working with the Army to remediate legacy waste remaining at TEAD-S from the demilitarization and testing of chemical agents, bombs, projectiles, and other munitions. The project to investigate and clean up these buried wastes began about three years ago, and the majority of the work will be completed in 2017. Work has included the surface removal of thousands of demilitarized munitions, drums, and other wastes from two solid waste management units (SWMUs) that contain over 100 disposal pits and widespread surface contamination.

## **CAMP WILLIAMS**

WMRC partnered with the Division of Environmental Response and Remediation (DERR) to clean up unexploded ordnances (UXO) near Camp Williams through the Military Munition Response Program (MMRP). The Wood Hollow Training Area located along the boundary of Camp Williams contained a significant number of UXOs. The dud rate — projectiles that fail to detonate as designed — was about 8-10 percent for the munitions used in the Wood Hollow area, creating an increased potential public risk from live, unexploded ordnances in land that is now being used for farming, ranching, recreation, mining, and more recently, urban development. WMRC, DERR, and Parsons, a Utah National Guard contractor, began remedial action (RA) at the Wood Hollow MRS this summer.

The Parsons team located 65 munitions and explosives of concern (MECs), removed 15,418 pounds of munitions debris (MD), walked 384 miles, and cleared 241 acres of MECs to a depth of 18 inches. The team also investigated transects in step-out areas adjacent to the original MRS boundary. These areas were investigated because of the high density of MD and MEC items found along the MRS boundary, indicating there might be more MECs in the area. WMRC will continue to work with its partners in the coming year to clear out additional MECs.



*UXO technician uses digital-geophysical mapping (DGM) near Camp Williams to “see” possible unexploded ordnances below ground*



# Waste Management and Radiation Control

## Corrective Action Sites: 44

### Solid waste

- Landfills: 144
- Recycling operations: 44
- Tons of solid waste disposed: 4,080,347 Tons

### Recycling

- Used oil: 437,124 gallons
- Waste tires: 43,051 tons
- Electronic waste: approximately 2.9 pounds per capita
- Mercury Switches: 3,688 switches or 8.1 pounds of mercury

### Education and Outreach

Education and outreach are key components of WMRC programs. The division educates businesses and residents on the proper disposal and recycling of solid and hazardous wastes to prevent soil and ground water contamination. The used oil and waste tire programs, for example, have dramatically reduced the health hazards from these two waste streams and helped encourage proper disposal and recycling of these materials.

WMRC provides comprehensive information on the management of household hazardous waste, recycling, pollution prevention, and best management practices for specific businesses. The used oil and small hazardous waste generator programs offer presentations and training to the public and businesses as part of their public outreach efforts. The Recycling and Community Outreach Program provides the public with information on hazardous household waste collection dates, the location of used oil collection centers, and a county-by-county list of recycling centers and the wastes they accept.

WMRC's Indoor Radon Program is dedicated to providing the public with the tools to recognize and remediate elevated levels of radon in homes and schools. X-ray inspectors provide medical and dental professionals with information and guidance on the safe operation of their equipment to reduce patient exposure to medical radiation.



# Waste Management and Radiation Control

## **SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE**

WMRC provides compliance assistance for small businesses that generate less than 2,200 pounds of hazardous waste per month. This program has been successful in helping small businesses understand the requirements necessary for compliance with the hazardous waste management rules specific to small business.

Although WMRC visits approximately 150 companies a year through this program, there remain many small generators who are not aware of the compliance assistance program. The division collects information about these other small quantity generators through trade associations, word-of-mouth, and complaints received from neighbors. The aim is educate these small waste generators on the proper disposal of hazardous wastes to protect their workers and the environment.



*WMRC provides critical assistance to small businesses that generate hazardous waste*

## **ELECTRONIC WASTE (E-WASTE)**

Electronics are the fastest growing waste stream in the country, with predictions that approximately 3 billion electronics will be discarded by 2016. WMRC is particularly concerned about the mismanagement of recycled and discarded Cathode Ray Tube (CRT) TVs and computer monitors. E-waste contains a wide range of hazardous materials, including heavy metals such as lead, mercury, and cadmium. CRT screens in particular contain high levels of lead. Improperly disposed e-waste can end up in landfills, where these toxic substances can contaminate soils and groundwater.

To combat this problem and inform the public of environmentally safer options, WMRC publicizes electronic recycling events, maintains a list of recycling centers that accept electronics, and identifies manufacturers that participate in electronics take-back programs. WMRC also inspects electronics recyclers to ensure that they are managing recycled electronics appropriately.



*Improper disposal of electronic waste is a growing problem in Utah*



# Waste Management and Radiation Control

## RADON

According to the U.S. Environmental Protection Agency (EPA), indoor radon is the second-leading cause of lung cancer in the United States, and a serious problem in Utah. One in three homes in the state test above the EPA action level of 4 picocuries per liter (pCi/l) of air, with homes testing at an average of 5.3 pCi/l.

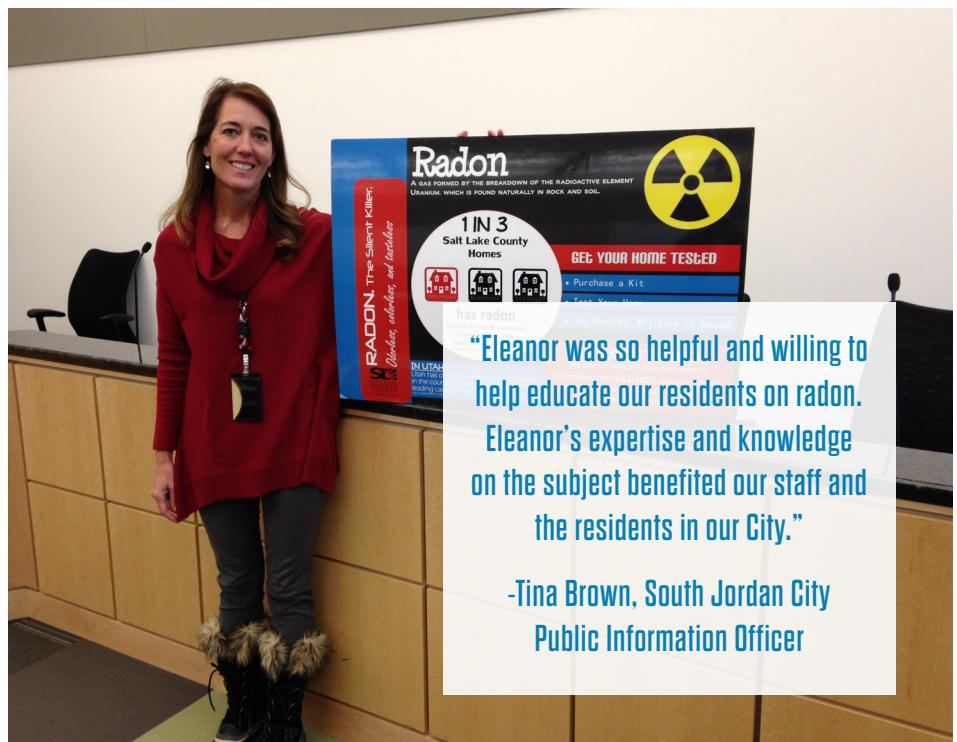
The radon program provides the following services:

- Radon awareness through public outreach and education
- Low-cost test kits to Utah residents
- Indoor radon surveys in target areas
- Individualized assistance to homeowners and public agencies
- Public school testing
- Real estate training on testing, disclosure, and mitigation

## Radon Program

- **Homes tested for radon by individuals: 7,525**
- **Homes tested for radon by professionals: 675**
- **Homes mitigated: 1,135**
- **Test kits distributed through DEQ's newborn radon program with local hospitals: 700**
- **Schools tested for radon: 11**
- **School mitigated for radon: 1**

WMRC offers an online link through its website to access and order \$8.00 test kits, provides information on test results by zip code, sponsors a radon poster contest in the schools, works with home builders and organizations such as Habitat for Humanity to incorporate radon resistant designs into new construction projects, and provides free continuing education (CEU) courses on radon for real estate professionals throughout Utah. Partnerships between the radon program and local health districts, hospitals, Utah Department of Health, Utah Builder's Association, and community outreach programs have increased public and professional awareness of the risk of indoor radon exposure in the state.



**"Eleanor was so helpful and willing to help educate our residents on radon. Eleanor's expertise and knowledge on the subject benefited our staff and the residents in our City."**

**-Tina Brown, South Jordan City  
Public Information Officer**



# Waste Management and Radiation Control

## X-ray Inspections

WMRC's X-ray inspection program safeguards patient health by making sure that diagnostic and therapeutic radiological equipment uses the lowest amount of radiation necessary for a given procedure. Highly trained radiological inspectors evaluate the performance of X-ray units and radiation safety practices at these facilities on a regular basis.

WMRC provides support and guidance to facilities with X-ray equipment, including procedures for measuring and reducing patient and non-patient exposure. Regularly scheduled visits from inspectors provide medical and dental professionals with the opportunity to ask questions, receive additional safety guidance, and review exposure levels and instrument calibration. Inspections and radiation safety advice during inspections have increased compliance rates from 70 percent to 90 percent over the past seven years. As the use of radiological diagnostics increases in medical, dental, veterinary, and industrial practices, the proper operation of X-ray units is crucial for protecting individuals from unnecessary or even harmful exposure to radiation.

## Low-level Radioactive Waste (LLRW) Oversight

WMRC is responsible for licensing, permitting, and compliance monitoring for the EnergySolutions waste management facility in Clive, Utah. The division is also responsible for the Generator Site Access program that regulates all radioactive waste generators, processors, and collectors that utilize the Clive facility for waste disposal. WMRC licensing and oversight ensures that radioactive waste entering Utah meets Class A state requirements and that the handling and disposal of LLRW at the site is protective of public health and safety.



*Boyd Imai surveys a containerized waste shipment at EnergySolutions*



# Waste Management and Radiation Control

## Depleted Uranium

In 2009, EnergySolutions requested a license amendment for the disposal of large quantities of depleted uranium (DU) at its facility. DU is a unique form of low-level radioactive waste that becomes more radioactive with time. State rules require the company to complete a performance assessment (PA) to determine whether it can meet federal and state performance standards to protect public health and safety before accepting DU at the facility. EnergySolutions submitted a site-specific performance assessment in 2011 and WMRC, in recognition of the inherent scientific and technical complexities, hired outside contractor S. Cohen & Associates (SC&A) at the request of the licensee to provide technical support in evaluating the PA for adequacy.

WMRC and SC&A conducted meticulous reviews of the PA and submitted detailed questions, observations, and concerns regarding technical and regulatory issues surrounding the disposal of DU. EnergySolutions requested and was granted several extensions to perform and submit additional analyses and respond to the various items raised in the technical evaluations conducted by WMRC and SC&A.

DEQ's consultant finalized its Safety Evaluation Report (SER) in April 2015 and identified eight issues in the PA that remained unresolved. EnergySolutions requested additional time to address these issues. WMRC subsequently held two public information meetings on the SER to provide the public with the opportunity to discuss report findings with DEQ and its consultants. EnergySolutions submitted a revised model to address the division's concerns at the end of November 2015. Division scientists and SC&A are currently analyzing EnergySolutions' revised model.



*DEQ conducts regular inspections on all low-level radioactive waste disposed at EnergySolutions to ensure the health and safety of facility workers and Utah residents*



# Waste Management and Radiation Control

## Improved Efficiencies

Over the past few years, WMRC has maximized business processes to decrease expenses, resulting in a reduction in the cost per inspection by 30-38 percent over a two-year period. Adding staff with skills that complement in-house expertise allowed WMRC to cut outsourcing costs for EnergySolutions licensing and permitting actions by 91 percent.

In 2014, the X-ray program purchased new, lighter equipment that cuts the time required for setup and inspections, giving inspectors more time to discuss radiation safety with staff during inspection visits. WMRC has developed a tablet-based data entry system for X-ray facility inspections and is working on a process for online fee payments.

## X-rays

- **Approximately 2,700 facilities with registered X-ray units and approximately 9,000 X-ray tubes requiring inspection**
- **In FY2015, 576 facilities and 1,461 tubes inspected**
- **In FY2015, qualified experts inspected 309 facilities and 1,148 tubes**

## Hazardous Waste

### Generators

- **Large Quantity Generators: 152**
- **Small Quantity Generators: 284**
- **Conditionally Exempt Small Quantity Generators: 1,315**

**Permitted treatment, storage and disposal facilities: 14**

**Number of tons of hazardous waste (based on 2013 Biannual Report) generated in Utah: 40,362 tons**

**Hazardous waste managed from top three facilities**

1. **Clean Harbors Aragonite: 67,587 tons**
2. **Clean Harbors Grassy Mountain: 45,947 tons**
3. **EnergySolutions: 2,131 tons**



# Environmental Response and Remediation

The Division of Environmental Response and Remediation (DERR) continues its ongoing commitment to clean up properties to protect human health and the environment and provide beneficial reuse, deliver exceptional customer service, and develop collaborative partnerships. Program objectives include:

- Assessment and cleanup of contaminated properties to protect human health and the environment and return the lands to beneficial reuse
- Prevention of spill release through compliance inspections of underground storage tanks (USTs)
- Improvements to program operational efficiencies
- Easier access to agency documents
- Community involvement in cleanup decisions

- **Superfund Remedial Sites: 26**
- **Sites needing assessment: 53**
- **Active Voluntary Cleanup Sites: 37**
- **Enforceable Written Assurances issued: 74**
- **Emergency incidents reported: 357**
- **Number of emergency incidents: 364**
- **USTs in Utah: active tanks: 3,991**
- **USTs on the PST Fund: 2,840**
- **Open LUST sites: 370**
- **LUST Sites closed: 117**
- **LUST Sites closed (State Fiscal Year 2015): 126**

## Utah Toxic Release Inventory General Release Numbers for RY 2014

	Air	Water	Land	Grand total
RY 2014	6,400,000	126,100	200,200,000	209,400,000
RY 2013	6,100,000	112,300	516,700,000	526,600,000
Change	300,000	13,800	-316,500,000	-317,200,000
% Change	4.92%	12.29%	-61.25%	-60.24%

Air, land, and water release values represent on-site releases.

Grand Total release numbers represent both on- and off-site totals.



# Environmental Response and Remediation

## Site Cleanups

DERR provides oversight for Superfund cleanups, administers the Voluntary Cleanup and Brownfields programs, and regulates Underground Storage Tanks (USTs) through implementation of the state UST program. These programs serve to protect human health and the environment and return property to beneficial reuse. The division has had great success in preventing petroleum releases from USTs and remediating contaminated lands and revitalizing areas through these programs.



*Little Mountain Power Plant Voluntary Cleanup Program site*

## Superfund

### ***MIDVALE SLAG NATIONAL PRIORITIES LIST (SUPERFUND) DELISTING***

The 446-acre Midvale Slag site, a former smelter in Midvale City that processed lead and copper ore from 1871 to 1958, was removed from the National Priorities List (Superfund) in April 2015. The five smelters on the site had contaminated ground water, soils, and residential properties, leading to its listing by the EPA on the National Priorities List in 1991.

Cleanup included soil removal, ground water monitoring, and institutional controls. Throughout the cleanup process, EPA, state agencies, Midvale City, local citizens, and the site's owner worked together to link the site's cleanup and redevelopment with land revitalization goals. In 1999, Midvale City became the first community in EPA Region 8 selected as a Superfund Redevelopment pilot project. The project provided support for development of the community's Bingham Junction Reuse Assessment and Master Plan.

Today, Bingham Junction is a thriving mixed-use development, with onsite businesses generating an estimated \$92 million in employee income each year. The development includes office buildings, a supermarket, and other stores, with plans for up to two million additional square feet of office and retail space. FL Smith, an international engineering company, has Gold and Silver LEED-certified offices and laboratories onsite and employs over 900 workers. In 2012, Intermountain Healthcare opened a Gold LEED-certified medical distribution center and office complex onsite near Bingham Junction's light rail station. The Junction also houses over 1,000 residential units, including units dedicated to moderate- and low-income residents.



# Environmental Response and Remediation

## Underground Storage Tank Program

There are nearly 4,000 underground storage tanks (USTs) in the state of Utah. 76 percent of these tanks utilize the Petroleum Storage Tank Trust Fund as their financial assurance mechanism for the assessment and cleanup of releases. The UST program focuses on prevention through inspection and compliance follow-up. In the event of a release, DERR oversees the cleanups to ensure that state standards are met. The division also conducts UST cleanups where the responsible party is unknown, unwilling, or unable to conduct the cleanup themselves to assure that contaminated sites are ultimately cleaned up.

In 2015, DERR UST staff conducted over 940 compliance inspections. UST owner/operators in the state have a 95 percent compliance rate within 60 days of the time of inspection. While more than 80 new release sites were reported this year, over 110 reported release sites were remediated and closed, paving the way for some properties to be developed for a better and higher use.



**"The Board and staff [of the Ronald McDonald House] are grateful that the planned housing expansion was able to move forward. Further delays would have meant fewer families could access the critical housing we provide. We can't thank the staff at DERR enough for their help and support."**

**-Carrie Romano, Executive Director, on the DERR's help in addressing gasoline contamination on the expansion site**



# Environmental Response and Remediation

## Brownfields

Brownfields include property where the expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. The assessment and cleanup of these sites is a significant step in returning brownfields properties to beneficial reuse.

### ***MEADOWBROOK BROWNFIELDS ASSESSMENT GRANT***

Meadowbrook is located in the central portion of unincorporated Salt Lake County, sharing its northern border with the City of South Salt Lake and its southern border with Murray City. Due to its long history of commercial and industrial uses, Meadowbrook contains numerous potential brownfields. Salt Lake County, working with DERR, applied for an EPA Brownfields Community-Wide Assessment grant in 2008. The county received the grant and conducted assessment work on various eligible properties.



*Meadowbrook Brownfields Assessment Area*

In December 2014, the county applied for an additional Community-Wide Assessment grant to augment the previous work conducted in Meadowbrook. EPA awarded the county additional funding in May 2015. An EPA Brownfields assessment grant is a good tool for local government to help address potential environmental issues that may be impacting public health and impeding redevelopment.

The new grant will help the county implement the Meadowbrook Final Small Area Plan (FSAP). The FSAP envisions a transit-supported district that connects two areas of development concentrated around the Meadowbrook light rail station and the Murray-North light rail station. The plan addresses various brownfields on the property to promote beneficial reuse of the site for high-density housing, neighborhood retail, and open space.



*Meadowbrook Brownfields Assessment Area (Proposed)*



# Environmental Response and Remediation

## Voluntary Cleanup Program

The Utah Voluntary Cleanup Program (VCP) was created to promote the voluntary cleanup of contaminated sites and encourage redevelopment of brownfields and other impacted properties through a streamlined cleanup program. The VCP has been a success, providing communities and businesses with an avenue to partner with DEQ to implement solutions for difficult environmental challenges on contaminated properties. This program protects public health and the environment and returns impacted properties to beneficial reuse, which creates new economic opportunities for affected communities.



*Completed Little Mountain Power Plant cleanup*

### **LITTLE MOUNTAIN POWER PLANT VCP**

The Little Mountain Power Plant is a three-acre parcel on the east side of Little Mountain, approximately 20 miles west of Ogden. The site was constructed in 1971 to provide power and steam to the adjacent Great Salt Lake Minerals Corporation Plant. The power plant was decommissioned and demolished in 2013.

PaciCorp entered into the VCP in 2014 to address petroleum-impacted soil from historical plant operations. Previous site investigations indicated that petroleum hydrocarbons diesel range organics (DRO) contamination was present in soil at concentrations exceeding residential screening levels.

Between October 2014 and February 2015, a total of 9,113 tons of impacted soil and rock were excavated and properly disposed. Based on the data, no impacts above residential screening levels remain at the site and no groundwater was encountered in the deep excavations. A Certificate of Completion for the project was issued May 26, 2015, and the property is now planned for reuse by Great Salt Lake Minerals.



# Environmental Response and Remediation

## Improved Efficiencies

DERR employs technological tools to increase public access to information and improve operational efficiencies, including the following program initiatives:

- The DEQ Interactive Map, a web-based tool that helps the public locate information about Superfund sites, Voluntary Cleanup Program (VCP) sites, Brownfields, underground storage tanks, and areas with potential contamination. The revised Interactive Map, designed to be more user-friendly and comprehensive, was released to the public April 2015. The new mapping tool offers location-based information for everything from permits to Superfund sites.
- A tracking system that reports the rate at which owners meet underground storage tank (UST) program requirements.
- A database-driven reminder system that lets tank operators know when their tank tests are due.
- Increased uploads of documents into the agency's electronic documents system (eDocs) to ensure that the public, businesses, and environmental consultants have easy access to the documents they need.
- An underground storage tank (UST) tablet inspection app to increase efficiencies in conducting and following up on tank compliance inspections. A version is currently being tested for data push-pull to the database.
- Online tank portal for underground storage tank certification and operator training registration that makes it easy for operators to register for certification and training.
- Collaboration between DERR and the Governor's Office of Management and Budget (GOMB) to set tracking parameters for reporting the VCP program's Efficiency Project into the SUCCESS Management Information System (SMIS).

## Community Involvement

DERR is committed to effective community outreach and works diligently to involve residents, property owners, elected officials, and health agencies in cleanup decisions for Superfund sites. Listening to community concerns and building strong relationships helps the division collect and disseminate information about the site and find workable solutions for cleaning up contaminated areas.

Public involvement is crucial to the success of a Superfund cleanup project. DERR's community involvement activities are designed to:

- Inform the public of the nature of the environmental issues associated with the site
- Involve the public in the decision-making process that will affect them
- Involve the public in evaluating the responses under consideration to remedy these issues
- Inform the public of the progress being made to implement the remedy

DEQ has been working in 2015 with residents affected by the 700 South 1600 East PCE Plume site in Salt Lake City, the Five Points PCE Plume in Woods Cross/North Salt Lake, and the Jacobs Smelter site in Stockton.



# Environmental Response and Remediation

## **700 SOUTH 1600 EAST PCE PLUME SITE**

The 700 South 1600 East PCE Plume was detected during routine sampling of the Mount Olivet irrigation well. The suspected source of the tetrachloroethylene (PCE) contamination is historic dry-cleaning operations at the nearby Veteran's Affairs Medical Hospital.

The Veterans Administration (VA) Remedial Team conducted limited indoor air vapor testing last winter and spring at residences in the area and will conduct more testing this winter where the ground water and spring water are most shallow. The VA provided an update of the indoor sampling results to the community last September and is currently organizing a Community Advisory Group (CAG) to learn more about the site and share issues and concerns with residents, local officials, DEQ, EPA, and the VA.

## **FIVE POINTS PCE PLUME**

The Five Points PCE Plume is located in Woods Cross, North Salt Lake, and Bountiful, and consists of a ground water plume of tetrachloroethylene (PCE) that likely originated at a dry-cleaning facility in Bountiful. The division produced a proposed plan outlining DERR's and EPA's preferred alternative to contain the plume through ground water extraction and treatment as necessary along with other possible alternatives.

Public comments were received at two public meetings and written comments were also received during a 60-day comment period. The comments will be documented in the responsiveness summary of the record of decision (ROD). This summary provides an overview of community concerns regarding the contamination identified at the site, the community's views on remedial alternatives, and how community concerns were incorporated into the ROD that formally documents the remedial alternative chosen to protect human health and the environment.

## **JACOBS SMELTER**

The Jacobs Smelter site is located within Rush Valley, Tooele County, near the town of Stockton, Utah. The smelting and mining activity at the site occurred primarily in the 1860s and 1870s, leaving behind heavy-metal contamination of the soils, mill tailings, and smelter wastes.

DEQ and EPA conducted a public meeting for the community in October 2015 to present the proposed cleanup plan for Operable Unit 2 (OU2) of the site, the area affected by the Waterman Smelter. Both agencies recommended excavation and disposal of contaminated soil as the preferred alternative. A Record of Decision (ROD) documenting the selected cleanup alternative for OU2 will likely be issued in Fall 2016.



# WATER



# Water Quality

The Division of Water Quality (DWQ) protects surface and ground water through programs designed to prevent water pollution in state waters. DWQ issues permits for point discharges into waterbodies, works with stakeholders to reduce nonpoint pollution from agricultural operations and residential runoff, and uses scientific data to develop strategies to protect the water quality of Utah's lakes, rivers, and streams.

DWQ is particularly concerned about the impacts of growth on water quality. Utah's population carries the potential for significant impacts to the state's water quality. To address these growth-related issues, DWQ has focused its protection efforts on the following areas:

- Nutrient pollution
- Spill response
- Water quality funding
- Nonpoint source reduction

The division is also working to improve operational efficiencies through increased online permitting, ongoing development of a centralized database for onsite wastewater treatment data, and electronic report submissions.



*Nutrient reductions in Utah Lake will help protect this valuable recreation resource*

## Nutrient pollution

Excess nitrogen and phosphorus in waterbodies, known as nutrient pollution, is a growing problem in Utah and across the country. This pollution comes from a variety of sources, including wastewater treatment plants, nonpoint pollution from agricultural operations, and residential and municipal stormwater runoff. Nutrient pollution poses a significant threat to Utah's economic growth and quality of life, leading to substantial costs to the state and taxpayers if left unaddressed.

A DWQ administrative rule requiring all wastewater treatment plants to monitor for nitrogen and phosphorus went into effect in 2015. This monitoring requirement will allow the division to characterize the magnitude of the state's nutrient pollution problem and help ascertain how the division's nutrient reduction strategy is working. Under the rule, some treatment plants will need to meet more stringent effluent limits as an adaptive and interim step until protective nutrient standards can be developed for each waterbody in the state.



# Water Quality

## HARMFUL ALGAL BLOOMS (HABs)

Nutrient pollution of waterbodies can lead to harmful algal blooms. These blooms occur when high levels of nitrogen and phosphorus in the water combine with warm temperatures and calm water to create explosive growth in the cyanobacteria (blue-green algae) that occur naturally in the water. Some types of cyanobacteria produce potent toxins that are harmful to people, pets, and wildlife.

Utah has seen an increase in the occurrence of HABs in recent years. In summer 2015, Salem Pond, Payson Lake, and Blackridge Reservoir experienced toxic algal blooms that forced their closure, and a health advisory for HABs was posted at Lindon Marina on Utah Lake. DWQ is currently developing a Nutrient Reduction Plan that will help reduce the excess nutrients that contribute to these blooms.

DWQ recently organized a HABs coordinating committee composed of representatives from DWQ, the Utah Department of Health, local health departments, the Division of Drinking Water, State Parks and Recreation, the Utah Department of Natural Resources, and other stakeholders. The committee will develop outreach campaigns to educate the public about health risks from HABs, train state park personnel to recognize harmful blooms in lakes and reservoirs, and coordinate agency messaging and the issuance of health advisories at affected waterbodies.

Comprehensive information on HABs was added to the DEQ website to educate the public about possible health effects from exposure to toxic algal blooms, recreation restrictions, drinking water safety, and protective measures to take in the event of a bloom.



*A harmful algal bloom (HAB) at Blackridge Reservoir caused its closure this summer*

## UTAH LAKE STUDY

In 2015, DWQ launched Phase One of an in-depth study of phosphorus and nitrogen levels in Utah Lake and their impacts on recreation, aquatic life, and agricultural use in and around the lake. The study will be done in partnership with State Parks and Recreation, the Utah Lake Commission, and other stakeholders.

Researchers plan to develop a model that simulates the complex interplay of nutrients, algae, and oxygen in the lake under different conditions. The study will also revise the method used to calculate nutrient loadings into Utah Lake from various sources as well as identify data gaps for further study. The Utah Lake study will inform Phase Two of the ongoing Jordan River Total Maximum Daily Load (TMDL) study as well as related studies on the Great Salt Lake.



# Water Quality

## Spill response

The frequency of oil and chemical spills in Utah waters has increased in recent years, and DWQ responded by identifying more effective and efficient ways to respond to spills and improve coordination with other agencies. The 2014 Spills Kaizen helped the division pinpoint the areas where it could improve its process and streamline its spills response.

This planning helped the division respond effectively to a massive Gold King Mine waste spill this summer that contaminated rivers in three states. DWQ's response—including rapid mobilization of resources, regular updates on San Juan River quality, and findings on human health risks from waters contaminated by the spill—won praise from numerous national, state, and local media.

### **GOLD KING MINE RELEASE**

In August 2015, EPA workers at the Gold King Mine near Silverton, Colorado, triggered a release of 3 million gallons of toxic mine wastewater into the Animas River. Water from the Animas flows into Utah's San Juan River and ultimately Lake Powell, which presented a possible contamination issue. The spill made national news and led to the mobilization of state and federal personnel in Colorado, New Mexico, and Utah.

DWQ immediately sent sampling crews to the San Juan River to gather background water quality data before the toxic plume reached Utah. Scientists sampled four sites along the river to assess the impact of the contaminated water on the river. Working around the clock, DWQ staff took samples of the river before, during, and after the plume arrived in Utah and then shuttled these samples back to Salt Lake City for lab analysis.

While data about impacts of the spill provided by the EPA and environmental quality agencies from other states were sparse or nonexistent, DWQ was posting data analyses immediately, including Statements of Evaluation from the Utah Department of Health on the human health risk in Utah waters from the toxic plume. The division was consistently praised by the media and government for its rapid response, thorough analyses, and collaboration with other state agencies, including the Division of Public Safety, Division of Wildlife Resources, Department of Agriculture and Food, and Department of Health.



*Ben Brown and other DWQ scientists took samples around the clock on the San Juan River following the Gold King Mine spill*



# Water Quality

## Water Quality Funding

Water quality improvements can carry significant costs, which is why DWQ provides low-cost and no-cost funding for wastewater infrastructure and water quality projects in the state. The Clean Water State Revolving Loan Fund (SRF) receives, on average, a combined \$9 million each year from state and federal funding, with an additional \$15 million, on average, from loan repayments. The financial assistance program helps communities leverage or supplement funding for water quality improvement activities.

Wastewater treatment plant construction and upgrades are vitally important for reducing nutrient pollution in Utah waters. The state's aging wastewater treatment infrastructure will mean many communities will turn to DWQ's low- or no-cost funding program for plant upgrades and construction in the future.



DWQ staff attended the ribbon-cutting for the new Coalville Wastewater Treatment Plant

## COALVILLE WASTEWATER TREATMENT PLANT

This year, Coalville City celebrated the completion of a new wastewater treatment plant built with financing assistance from the SRF. The process, which began in 2008 with a proposed upgrade to a 50-year-old wastewater treatment plant, ran into roadblocks when the city discovered that the Bureau of Reclamation actually owned the property under the existing plant.

Coalville City, with help from DWQ, put together \$13 million to relocate and build a new plant. When a \$5 million grant from the Army Corps of Engineers fell through at the last minute, DWQ stepped up with additional funding to get the project back on track. In total, the division provided the city with a \$1.1 million zero-interest loan and a \$4.1 million Hardship Construction Grant.

The new wastewater treatment plant utilizes the latest wastewater treatment technology to treat for nitrogen and phosphorus and reduce nutrient loading into the Weber River and Echo Reservoir.

**"I just want [Lisa Nelson] to know how much the City of Coalville appreciates your efforts on our behalf. You and your staff [are] everything that is right with government. Again thank you."**

**-Duane Schmidt, former mayor, Coalville**



# Water Quality

## ***LOGAN WASTEWATER TREATMENT PLANT***

The Water Quality Board authorized a low-interest loan of \$70 million to replace one of the country's largest wastewater lagoon systems with a new mechanical wastewater treatment plant. This regional plant will provide wastewater treatment for Logan and surrounding communities and reduce phosphorus and nitrogen loadings into Cutler Reservoir.

## ***HELPER CITY SEWER SYSTEM***

DWQ provided Helper City with a \$2.3 million zero-interest loan for construction of needed sewer improvements. The division partnered with the Community Impact Board to support Phase 5 of a sewer rehabilitation project totaling \$7.8 million. The new facilities will replace nearly all of the existing sanitary sewer piping, manholes, and other equipment within the city. The rehabilitation project will protect the health of city residents, prevent ground water pollution, significantly reduce sewer maintenance costs, and provide affordable long-term disposal of city wastewater.

## ***WILLARD CITY WASTEWATER TREATMENT PLANT***

Willard City received a \$10.7 million refinanced, low-interest loan for major new sewer and wastewater treatment infrastructure. The loan supports infrastructure improvements of \$17.6 million. New facilities will include a regional treatment system co-owned with Perry City and new sewers. These improvements will help Willard City eliminate many old and failing septic systems.



*Alex Anderson samples water to test for contamination following a spill*



# Water Quality

## Nonpoint Source Projects

Nonpoint source pollution (NPS) can come from a number of sources, including streets, parking lots, agricultural lands, and construction sites. Nonpoint source pollution can include:

- Excess fertilizers, herbicides, and pesticides from agricultural lands
- Sediment from erosion or construction activities
- Bacteria and nutrients from livestock, pets, and septic systems

The NPS program provides funding to improve the water quality of impaired waterbodies using a voluntary, incentive-based approach. Cooperators receive financial assistance to offset the cost of implementing projects that protect and improve water quality. Projects use Best Management Practices (BMPs) and follow a watershed-based planning strategy. Because nutrient pollution is one of the primary causes of waterbody impairments, many of the funded projects are designed to reduce nitrogen and phosphorus loading into Utah waterways.

In Fiscal Year (FY) 2015, DWQ awarded \$1 million in state NPS funds to 33 projects and nearly \$900,000 in federal funds to four projects around the state.

### MAIN CREEK

Deer Creek Reservoir is a significant source of drinking and irrigation water for Utah and Salt Lake Counties. Unfortunately, the reservoir has experienced excess algae growth from nutrient loading along with low dissolved oxygen and high water temperatures. Main Creek, one of several tributaries to the reservoir, has high levels of phosphorus and *E. coli* as well as high water temperatures. Although the creek provides only eight percent of the inflow into the reservoir, it contributes 17 percent of the nutrient loading.



*NPS projects reduce nutrient loading into rivers and streams, ensuring the waters meet their beneficial uses*

In 2007, the Wasatch Conservation District and local stakeholders initiated the Main Creek Restoration Project at a cost of \$1 million. The project worked with upstream landowners to implement best management practices (BMPs) that target nonpoint sources of pollution, including nutrients and sediment. Streambank restoration from the project led to a decrease in phosphorus, *E. coli*, and water temperatures in Main Creek. Depending on funding availability, the District plans to assist additional landowners on other tributaries of Deer Creek Reservoir in the Wallsburg watershed. One of the biggest successes of the project was the funding support provided by state and federal agencies, including DWQ.

### STRAWBERRY RIVER

The Strawberry River, historically also one of the largest sources of phosphorus and sediment loading into Strawberry Reservoir, posed a threat to this premier cold-water fishery. High levels of total phosphorus (TP) and low dissolved oxygen in the reservoir resulted in its listing as impaired for cold-water aquatic life.

Significant reductions in TP were needed to protect habitat conditions for the reservoir's cutthroat trout and kokanee salmon.

Federal and state agencies, including the Division of Wildlife Resources and the U.S. Forest Service, joined DWQ in providing the \$1.9 million funding needed for the Strawberry Restoration Project. Restoration efforts included stabilizing streambanks, creating pond oxbow habitats, improving channel alignment, planting native vegetation, and installing livestock enclosure fencing along the river.

These restoration efforts have led to a 91 percent decrease in total phosphorous loading into the reservoir. Strawberry Reservoir's water quality conditions are currently adequate to support the fishery. Watershed-scale improvement projects will further improve water quality and the sustainability of the fisheries.



# Water Quality



## Permits administered (total)

- Surface water: 415
- Industrial stormwater: 653
- Construction stormwater: 2810
- Operating permits: 88
- Large underground systems: 85
- Municipal stormwater: 90

## Funding assistance (since 1984)

### Projects

- Utah State Revolving Fund: 220
- Nonpoint Source Projects: 197

### Funding assistance

- Utah State Revolving Fund: \$688,600,000
- Nonpoint Source Projects: \$7,700,000
- Total: \$697,300,000

Photo: abbyread - www.flickr.com/photos/19778888@N07/



# Drinking Water

The Division of Drinking Water (DDW) is responsible for implementing programs that ensure safe and reliable drinking water throughout the state. Programs include:

- Source protection for drinking water supplies
- Financial assistance for construction or upgrades to water systems
- Engineering plan review
- Implementation of EPA water quality and monitoring requirements
- Community assistance with contamination issues
- Site inspections of public water systems
- Certification and training for system operators

Online training and testing offered by the division helps systems operators, particularly those in rural areas, obtain continuing education unit (CEU) credits and certification. DDW also makes extensive use of technology and planning tools to streamline its processes, increase operational efficiencies, and reduce costs. The Governor's Office of Management and Budget (GOMB) recognized DDW's engineering program for its work to improve plan review efficiencies by 20 percent.



*DDW staff, such as Julie Cobleigh, help ensure that the 1,023 public drinking water systems in Utah provide safe drinking water to residents*

- **Approximately \$354.17 million in State Revolving Fund assistance awarded to 424 drinking water system improvement projects since 1983**
- **Planning financial assistance: \$576,000**
- **Construction financial assistance: \$14,641,467**
- **Closed Construction financial assistance: \$24,824,625**
- **Public drinking water systems - 1023**
- **Source protection plans reviewed - 297**
- **Certified operators - 2309**
- **Backflow technicians - 788**
- **Inspections of water utilities - 105**
- **Enforcement actions - 1154**



# Drinking Water

## Operational Efficiencies

DDW continues to develop strategies to improve the allocation of resources. Federal funding has decreased in recent years, requiring the division to do more with less. In addition, federal requirements have increased. Optimizing staff time and reducing costs has been a necessity as well as a top priority for the division and has led to impressive results:

- **SUCCESS FRAMEWORK EFFICIENCIES**

The engineering review team used the fundamentals of the SUCCESS Framework to track and manage performance on a programmatic and individual basis. The team also leveraged existing resources to provide increased benefits to the public at a lower cost. Their hard work led to a 20 percent improvement in program efficiencies.

- **ONLINE REPORTS**

Five standard reports are now available online for each water system. These public water system reports are one of the most popular resources on the DEQ website, providing public water systems with information on how the state identifies water system elements, monitoring requirements, bacteriologic sample results, operator certification expiration dates, and continuing education credits.

- **DATA INPUT FROM ONSITE INSPECTIONS**

Information found during the onsite inspections can now be inputted by staff into handheld tablets for direct upload to DDW's database. This streamlines the previous process of writing field notes followed by data entry of inspection data in the office.

- **ELECTRONIC DATA ENTRY TO LABS**

Some laboratories are able to transmit bacterial and chemical sampling test results electronically into DDW's database, eliminating staff time spent reentering data into the database. DDW continues to work with laboratories to increase the percentage of electronically transmitted data.

- **STREAMLINED ENGINEERING PLAN AND SOURCE PROTECTION PLAN REVIEWS**

Increased collaboration among staff in division programs has simplified the review process, making it easier for water systems to prepare plans and staff to assist in plan preparation. In addition, DDW has streamlined the plan submittal and approval process through the use of comprehensive checklists that help consultants and staff process and review plans more effectively and efficiently.

- **GEOGRAPHIC OR ADMINISTRATIVE GROUPING OF WATER SYSTEMS FOR SITE INSPECTIONS**

DDW makes more efficient use of division personnel by organizing regularly required site inspections into geographic or administrative groupings. Geographic grouping let inspectors travel to sites located near each other and inspect the water systems in the group in one day, saving travel time. By administratively grouping commonly owned or commonly managed water systems, DDW makes site inspections more convenient and efficient for both staff and common owners.



# Drinking Water

## Financial Assistance

DDW administers two financial assistance programs: the state revolving fund (SRF) and the federal state revolving fund (DWSRF). The state revolving fund program provides funding to political subdivisions such as cities, towns, and districts. Federal SRF funds are available for privately and publicly owned community water systems and nonprofit, non-community water systems.

State SRF assistance helps water systems plan, design, build and/or repair drinking water system infrastructure, much of it in rural areas of the state. Financial assistance is also available for engineering studies and master plans to determine community needs and identify best alternatives to correct system problems. During Fiscal Year 2015, the State of Utah authorized \$576,000 to help drinking water systems prepare master plans or engineering studies, and another \$14.6 million to 14 drinking water systems for construction projects. In addition, financial assistance packages totaling \$24.8 million for 10 previously authorized water system improvement projects were finalized through loan closings or bond purchases.

Since 1983, approximately \$354.2 million in SRF assistance has been awarded to 424 drinking water system improvement projects.

## Helper City

DDW recently closed on a \$2.4 million loan and a \$1 million grant to replace old leaking water lines within Helper City. This package complements the city's \$7.8 million sewer rehabilitation project to replace existing sanitary sewer piping. These two projects will help repair the city's aging water infrastructure.

## Woods Cross Drinking Water Treatment Plant

In the 1990s, tetrachloroethylene (PCE) was discovered in the city's drinking water wells, posing a serious health risk to residents. While Superfund cleanup activities in the mid-to-late 2000s reduced PCE levels below those deemed a risk to the public, the residents of Woods Cross wanted to ensure that no traces of the chemical remained. The city secured a \$5 million loan from the Drinking Water Board to build a state-of-the-art treatment plant.



*State Revolving Fund assistance helped Woods Cross build a state-of-the-art treatment system to remove PCE and other contaminants from their drinking water*



# Drinking Water

## Energy Cost Savings Program

The water-energy nexus—water use in energy production and energy use in water delivery—has received more attention in recent years as public water systems look for ways to deal with rising energy costs. DDW has been at the forefront of these discussions, producing, with pro bono help from water utility personnel and consultants, a “Drinking Water Energy (Cost) Savings Handbook” that provides water system operators and managers with multiple strategies to reduce their energy costs. The 50-page handbook contains:

- A list of over 400 efficiency strategies that can cut a water system’s power costs
- Steps for obtaining the services of a qualified consultant
- Funding sources for implementing efficiency strategies
- Additional sources of information on the Internet, including how to conduct an energy audit

Cost savings from energy efficiency measures can be used to keep water rates low, fund equipment upgrades, and meet changing regulatory requirements.

DDW presented its savings handbook to attendees at the inaugural Water-Energy Nexus Summit in January 2015. The division, with the help of training partners, continues to promote this effort.

**“Mountain Regional Water District is deeply committed to an energy efficient water resource management strategy. We strongly feel that the resources and assistance provided by the Department of Environmental Quality has been key to promoting energy efficiency strategies to other water systems in Utah. We enjoyed working with Frances Bernards in the Department on a case study that highlights our energy efficiency measures and cost savings.”**

**-Doug Evans, Energy and Water Manager**



# Drinking Water

## Community Assistance

Numerous boil water orders were issued by the division and local health departments in Summer 2015, often due to backflow contamination from cross-connections. A cross-connection is a physical connection between a potable source and a non-potable source of water such as a pressure irrigation line and a drinking water line, improper lawn irrigation connections to a culinary water system, or improper connections at a commercial or industrial facility between the culinary water system and the fire suppression system. A single cross-connection can contaminate an entire water system.

DDW assists water systems in the development of cross-connection control programs to protect public drinking water. In addition, the Drinking Water Board has established rules that govern the certification of backflow technicians to test and install backflow prevention assemblies.

Because flooding can also contaminate drinking water supplies, DDW provides support services to help communities remedy flood-related problems to their drinking water systems. Division staff assisted Hildale City following the tragic flash flood in September 2015 that washed out water mains and caused bacterial contamination to the towns' drinking water. DDW staff also found emergency money to help fund replacement of the Jan's Canyon Spring water line after the distribution system was wiped out by the flood.



*DDW helped fund replacement of the Jan's Canyon water line after the Hildale flash flood wiped out the distribution system*

## Water Use Study

DDW sets minimum source capacity requirements for water systems so they have adequate water to meet customer demand. A legislative audit recommended that the division reassess and update its current source capacity requirements to ensure that water use projections are realistic. The division proposed a multi-year study to collect up-to-date water use data from community systems across the state. While data are available for average water usage, peak day demand data are necessary to ensure that source sizing regulations are sufficient to maintain adequate flow and minimum water pressure in pipes every day of the year.

While the primary purpose of the study is to collect water use data for drinking water source sizing requirements, the data will have broader applications. Benefits of the study include:

- Representative sampling of water systems to project annual statewide water use
- Better data for the evaluation of conservation efforts and water losses
- More efficient planning, design, and construction of drinking water infrastructure based on accurate water use data
- Better management of growth and water needs based on realistic water use projections

DDW plans to contract out implementation of the study, but will provide oversight, direction, and outreach to water system operators and members of the public participating in the study.



## Credits

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