



# Newsletter

## Environmental Connection

November - December 2012

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Sponsored by the Utah Department of Environmental Quality

Donna Kemp Spangler, Editor

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## DEQ Applauds 3form For Going Beyond Recycling

West Valley City, Utah – 3form is not talking trash when it comes to its commitment to reducing its overall environmental footprint.

The manufacturer of hardware products for the architectural design industry has launched “Path to Zero” initiatives that move beyond recycling by focusing on preventing waste itself.

“Our ‘Path to Zero’ initiatives are a set of ambitious goals that keep us striving for continual improvement,” said Crystal Frost, 3form’s director of sustainability.

3forms goals:

- Stop sending manufacturing waste to the landfill
- Be carbon neutral by 2017
- Continue to increase the recycled content of their products.

The goals may sound ambitious, but at 3form sustainability has become part of the normal day to-day operations. 3form’s efforts are an example of how Utah businesses are reducing waste, saving energy, and conserving natural resources while saving money.

Utah Department of Environmental Quality’s business assistance program works with manufacturers, like 3form, to help evaluate current programs, create environmental goals, and establish an action plan to implement those goals. At 3form, specific departmental environmental objectives are established for each key function directly supporting the three overarching ‘Path to Zero’ initiatives.

3form takes great pride in its zero-waste-to-landfill initiative that diverts waste away from landfills and into recycling programs. The company has not sent waste to the landfill for months and has adopted

several waste reduction efforts, including: reducing blemish rates, designing packaging to address waste reduction and recyclability, reincorporating scrap into new products, and taking products back from customers at the end of their use.

In order to meet its carbon neutral goal, 3form reduces its air emissions by supporting renewable energy projects and implementing energy efficiency measures throughout the facility. The company also provides incentives to its 400 employees to travel to work by carpooling, taking public transportation or other means that produces fewer air emissions.

3form recognizes the need to increase the percentage of recycled content in their products instead of relying on only virgin raw materials. Most of 3form's resin products contain recycled content. Most notably, 3form's 100 Percent panels are made from 100 percent post-consumer recycled HDPE (#2 milk jugs). By using post-consumer recycled content, 3form is helping to strengthen the market for recyclable materials.

"Achieving our Path to Zero goals is an example of what can be accomplished when a company makes sustainability part of their company culture," said Frost. The company's vision: "Committed people. Break through products. Better planet."

Others in the recycling industry have taken notice.

The Recycling Coalition of Utah named 3form the 2011 Utah Recycler of the Year and the Utah Recycling Alliance awarded them with URA's first-ever Zero Waste Award.

For more information, visit: [www.3-form.com/pathtozero](http://www.3-form.com/pathtozero).

*This article was written by Frances Bernards, who provides business assistance through DEQ's Office of Planning and Public Affairs.*

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## Lake Powell and Quail Creek on Fish Advisory List

Division of Water Quality (DWQ) scientists have found elevated levels of mercury in striped bass along the southern portions of Lake Powell and largemouth bass in Quail Creek Reservoir reserving them a seat on Utah's mercury fish consumption advisory table.

In addition, officials have revised consumption advisories to include new guidelines for women past childbearing age and men over 16 years old.

"We aren't saying don't eat fish but we are being protective of sensitive groups and caution them to limit their consumption," said John Whitehead, assistant director of DWQ.

The fish consumption advisory suggests that pregnant women and children under the age of 6 should limit their consumption of striped bass to one 4-ounce meal per month. Women of childbearing age and children between the ages of 6 and 16 should limit their consumption of striped bass to two 8-ounce meals per month. Adult women past childbearing age and men older than 16 should limit their consumption of striped bass to eight, 8-ounce meals per month.

An 8-ounce serving is equivalent to the size of two decks of playing cards. According to an analysis

completed by the Utah Department of Health, eating more than the amounts noted in the advisories, over a long period of time, could result in an intake of mercury that exceeds the U.S. Environmental Protection Agency health recommendations.

Mercury is a naturally-occurring element that can be transformed into methylmercury, a toxic form found in some natural waters. Those most vulnerable to the effects of mercury toxicity include women who are pregnant or may become pregnant, nursing mothers, and young children. Chronic exposure to low concentrations of methylmercury may result in neurological effects in the developing fetus and children.

Any health risks associated with eating fish from the Utah Mercury Fish Advisory areas are based on long-term consumption and are not tied to eating fish occasionally. Eating fish remains an important part of a healthy diet. The American Heart Association recommends that individuals eat at least two fish or seafood meals every week.

There are no mercury-related health risks associated with recreational usage (such as catch and release fishing, swimming, boating and waterskiing) in any of the listed Utah Mercury Fish Advisory lakes, reservoirs, streams, rivers or creeks.

Since 2000, fish in 322 water bodies in Utah have been tested for mercury. Fish with elevated levels of mercury have been found in only 21 of the 322 waterbodies. The 322 sites that were sampled include 200 river/stream sites and 122 lake/reservoir sites.

Not all Utah water bodies have been tested for mercury content in fish. Further testing may result in additional advisories. Utah fish consumption advisories are issued in a partnership between the Utah Department of Health, Utah Department of Environmental Quality and the Utah Division of Wildlife Resources.

For a complete list of fish advisories and revised consumption guidelines visit:  
[www.fishadvisories.utah.gov](http://www.fishadvisories.utah.gov)

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## **Air Quality Focuses on Winter Pollution**

*Show You Care about Utah's Air by signing up for UCAIR*

Starting today, Nov. 1, the Division of Air Quality (DAQ) begins to focus its three-day pollution forecasts on tracking the small particulate pollution that gets trapped during winter inversions. It also means wood burning restrictions are in place.

The restrictions—triggered when fine particle pollution (PM 2.5) from vehicles, woodstoves, and fireplaces reaches unhealthy levels—are in effect from November to March.

Voluntary restrictions on wood burning and reduced driving are encouraged when “yellow” air days are forecasted. Wood burning is prohibited on “red” air days and motorists are asked to limit driving as well. No restrictions are in place on “green” days.

The curb on wood burning is aimed at reducing hard-to-see particle pollution that builds up during inversion periods and impacts health. The children, elderly, and those with respiratory conditions are especially sensitive on red and yellow air days.

People don't have to wait for a yellow or red air days to take action to improve air quality. “There are opportunities every day,” said Bryce Bird, director of the Utah Division of Air Quality. “Trip-chaining,

carpooling, and taking mass transit are easy ways to curb air emissions.” Residents aren’t the only ones being asked to do their part. Red and yellow alerts can trigger emission cuts for industry as well.

Residents, businesses and government agencies are encouraged to sign up and pledge to reduce air emissions through Utah Clean Air Partnership or UCAIR at [ucair.utah.gov](http://ucair.utah.gov).

Governor Gary Herbert launched UCAIR in January to encourage all Utahns statewide to sign up and make a pledge at [ucair.utah.gov](http://ucair.utah.gov). UCAIR is now a registered nonprofit with the state of Utah and governed by an 11-member board of directors.

“We all know what it’s like to live here during a nasty inversion,” said Bo Call, manager of the Air Monitoring Center. “While we can’t control the weather, with a little help from everyone we can reduce how much pollution we’re breathing during an inversion” he added.

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## Uintah Basin Turning to Innovative Air Quality Solutions

### *“Ozone Advance” Encourages Industry to Reduce Emissions Early*

Is it possible to have an emissions reduction program that balances air quality with economic development? The Division of Air Quality (DAQ) and the Environmental Protection Agency (EPA) believe a new EPA strategy will accomplish just that.

The program, called “Ozone Advance,” is a collaborative effort between the EPA, DAQ, and Indian tribes that encourages early emission reductions in areas experiencing elevated levels of ozone. The program works with local stakeholders to develop voluntary control measures that address the specific needs of a particular area.

“This is great news for the Uintah Basin,” explains Brock LeBaron, deputy director of DAQ. “We are just beginning to understand the chemistry that leads to wintertime ozone. A local approach to local conditions gives all of us an opportunity to find workable solutions to a complex problem.”

Governor Gary Herbert looks forward to working with EPA through the Ozone Advance program.

“This wintertime ozone problem is unique to Utah and presents challenges to a regulatory program that has been focused on summertime ozone,” declared Herbert in a May 2012 letter to the EPA. “We want a proactive, meaningful plan that keeps the Uintah Basin in attainment without penalizing those who invest in early reductions. Ozone Advance provides the framework to achieve this goal.”

The Division of Air Quality (DAQ) is currently working with stakeholders to formulate strategies for emissions reductions, including approaches that could ensure permitting for new sources in the area.

### **How It Works**

Ozone Advance provides a structure for areas wishing to make emissions reductions prior to development of a State Implementation Plan (SIP) for ozone. Under Ozone Advance, industry can take quantifiable voluntary measures that can be credited towards a future SIP or banked for use during new source development. Reductions made through Ozone Advance will improve public health, allow industry to budget future costs for emissions reductions into their long-term business plans, and



provide companies with a voluntary phase-in period for control measures.

The ongoing Uintah Basin Winter Ozone and Air Quality Study will provide additional information on factors that contribute to the formation of wintertime ozone in the Basin. Findings from this research, coupled with last winter's data, will aid in the development of control measures that target the precursor emissions responsible for wintertime ozone.

DAQ is looking at the use of early reduction credits (ERCs) as a possible emissions reduction strategy. ERCs provide companies with an incentive to reduce actual emissions below allowable limits and bank the credits towards future development. Replacing older equipment on existing sources with lower-emitting control technologies or adopting emission control technologies beyond those currently required for new sources are two ways that companies can receive credit for emissions reductions.



DAQ has a registry in place that tracks ERCs, but these reductions must be “quantifiable, surplus, enforceable and permanent.” Additional types of reductions covered under Ozone Advance’s voluntary emissions hold promise for improving air quality in the Basin, but do not meet this stringent threshold. DAQ is looking at ways to expand the registry’s capabilities to track different levels of emissions reductions.

Emissions reduction strategies span a wide range of options, from early application of green completions and equipment upgrades on existing operations to establishment of best available technology (BACT) policies that can be applied across jurisdictions. Other strategies include clean diesel projects, coordination with the Bureau of Land Management on control measures through the National Environmental Policy Act (NEPA) decision making process, and seasonal and episodic control strategies during winter inversion periods.

Participants in Ozone Advance can use a mix of voluntary or mandatory traditional source control measures, energy efficiency, and controls on mobile (vehicular) sources. Local action plans must describe the methods used to implement controls, verification procedures, and how voluntary measures will be assessed for effectiveness. DAQ is developing a 2011 emissions inventory which will be used as a baseline for measuring emissions reductions and as a starting point for a future SIP should the Basin be designated as nonattainment. The inventory will also identify areas where more data is needed.

## **What’s Next**

DAQ will form working groups of stakeholders and division staff to assess the effectiveness of emission reduction strategies and make recommendations on how best to proceed with the program. The state must submit a “Path Forward” letter to the EPA within a year that explains the measures and programs slated for implementation in the Basin. Utah will provide the EPA with annual updates that report the effectiveness of program measures, current air quality, and whether or not program implementation is on schedule.

The voluntary nature of Ozone Advance fits well with the objectives of the Utah Clean Air Partnership (UCAIR). UCAIR plans to work with Basin to increase public awareness of the ways citizens, businesses, and government can make a difference by reducing emissions. UCAIR also hopes to facilitate the implementation of measurable emissions reductions in permitted and non-permitted oil and gas operations through its grants and loans program.

The response from industry, citizens, and government in the Basin towards Ozone Advance has been positive. Both DAQ and UCAIR are optimistic that Ozone Advance will provide the Uintah Basin with useful strategies that improve air quality and foster economic development.

*This article was written by Christine Osborne, communications coordinator for DEQ's Office of Planning and Public Affairs.*

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## **Air Quality Modeling at CHPC**

Collaboration between the Utah Division of Air Quality (UDAQ) and the University of Utah's Center for High Performance Computing (CHPC) now gives the air quality modeling group at UDAQ access to advanced computing resources. This cooperative agreement began with a request from the Utah office of the Bureau of Land Management (BLM) for consultation on air quality modeling to support environmental impact analysis needed to process natural gas drilling permits in the Uintah Basin. This collaboration between UDAQ and CHPC is now a critical element in UDAQ's ability to conduct air quality modeling for a wide variety of applications throughout the state, from the urbanized Wasatch Front to energy production areas of the Uintah Basin.

Air quality scientists at UDAQ have been doing regional air quality modeling for over 12 years to support efforts to improve air quality along the Wasatch Front. Since these models are run multiple times to assess the effect of different pollution control strategies, a significant amount of computational power to complete in a reasonable amount of time is required. UDAQ has used its own in-house computer resources to run the models for the State Implementation Plan for PM<sub>2.5</sub> in northern Utah. However, with the large increase in computer processing and disc storage space afforded by CHPC, large scale air quality simulations over the state of Utah can be run in about one-fifth the time required in the past. This capability will allow UDAQ to assist and analyze other air quality projects of interest to the state of Utah.

While high performance computer hardware is an important part of this work, the limited number of staff with the knowledge to set up and interpret the information also limits the number of projects that can be undertaken. CHPC provides computer support personnel to solve problems in the setup of the specialized computer programs used by UDAQ. This support, plus the day to day system administration that CHPC provides, allows the UDAQ scientists to spend their time working in the area that they know best.

Currently, outside of the PM<sub>2.5</sub> modeling being done along the Wasatch Front and in Cache County, there is need for a better understanding of the causes of episodic increases of wintertime ozone in the oil and gas producing region of the Uintah Basin. An air quality model that simulates winter ozone formation will be used to quantify the effectiveness of mitigation strategies and to tailor an emissions reduction program that is appropriate for the Uintah Basin. This modeling framework will rely on the data collected from studies in the Basin as well as state-of-the-science meteorological model output. This meteorological modeling, focused on the northeastern section of the state, will

begin this fall and preliminary air quality modeling will begin early next year. Working with the Regional Modeler for EPA Region-8, UDAQ will complete an initial modeling simulation of winter air pollution in the Uintah Basin. The model results will be compared to field measurements taken during the 2011 Winter Ozone Study as a means of testing the validity of the model to predict ozone concentrations.

There is also multi-agency cooperative agreement among state and federal regulatory agencies to assess the environmental impact of oil and gas development in the region of northeast Utah, northwest Colorado and southwest Wyoming. The addition of the computational capabilities will allow UDAQ to both contribute meaningful technical resources to the project as well as take advantage of the additional research and data that will result from this regional study.

*This article was written by Patrick Barickman, Environmental Program Manager for DAQ, which appeared in the University of Utah's Center for High Performance Computing's fall newsletter.*

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## High Levels of E. coli Threaten Water Quality in Zion Narrows

### *Division of Water Quality Working to Remedy Situation, Protect Public Health*

Hikers in Zion National may return from their daytrip through The Narrows with more than wet clothing and photos of spectacular scenery. Elevated levels of E. coli in the Virgin River pose a health risk to visitors to the Zion backcountry and have landed this stretch of the river on the [303\(d\)](#) list of impaired water bodies in Utah. The Division of Water Quality (DWQ) is working hard to find solutions to this longstanding water quality problem.



In 2000, the National Park Service (NPS) asked staff across the country to collect water samples in their NPS units to characterize water conditions. Samples in Zion National Park (Zion NP) showed high fecal coliform concentrations during the summer months in the North Fork of the Virgin River above The Narrows. Subsequent sampling and monitoring in 2006, 2007, 2008, and 2009 found persistent E. coli contamination. The sampling area covered a portion of the North Fork that passes through irrigated grazing pastures and the Narrows Trailhead. In 2009, Zion NP posted signs alerting hikers entering the park upstream of the Narrows that the water in North Fork of the Virgin River between Chamberlain's Ranch Trailhead and Deep Creek was "unsafe for human ingestion." This included use of the water for drinking, filtering, or swimming.

E. coli (*Escherichia coli*) is one of several types of bacteria that normally inhabit the lower intestines of warm blooded animals. While most E. coli strains are harmless, some can cause gastrointestinal illness. Since it is not feasible to monitor for all possible water borne pathogens, analysis for E. coli is

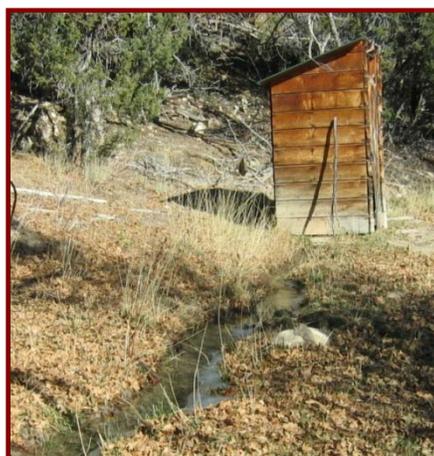
used as the standard indicator of fecal contamination. Sources of the bacterial contamination were presumed to include common land management irrigation practices and human use of the river.

In July 2009, the Park Service notified DWQ of the continuing E. coli problem, which exceeded state standards for drinking water and primary contact recreation, such as swimming or wading. Amy Dickey, an environmental scientist in the DWQ Watershed Protection Section, has been working for the past three years to discover the causes, and possible cures, for the E. coli contamination. Possible sources of contamination included human waste from hikers, return flows from flood irrigated pastures, wildlife, and cabins in the area.

“Over 2,000 people are in the water at the Temple of Sinawava (end the Narrows) on a typical summer day,” explained Dickey. “This is a high use area and we want to be sure visitors have a safe, healthy recreation experience.” According to Environmental Protection Agency (EPA) water quality standards, eight out of every thousand people exposed to levels of E. coli this high are at risk for illness.

“It is imperative that we begin working toward a solution to this problem.”

Beginning in 2006, persistent water quality standard exceedances prompted increased summertime monitoring on the North Fork. The Northern Colorado Network, one of 32 NPS inventory and monitoring conducted a study that covered the pasture site, several upstream, and a downstream site at the mouth of The This study showed that the contamination source was near the pasture, but was unable to definitively identify of the E. coli since the area included grazing lands, use, and second homes in the area, any or all of which contributing to the problem.



Plateau networks, sites Narrows. located the source human could be

DWQ hosted public meetings in 2010 which led to more monitoring efforts. DWQ provided funding from the state Source Program to construct a pit toilet on BLM land at Narrows trailhead, reducing the potential for water contamination from human waste.

intensive Nonpoint The

Between 2010 and 2012, DWQ, Zion NP, Bureau of Land Management collected water samples, making the river one of the heavily sampled waterways in the state. percent of the samples evaluated during period, using the EPA approved Coli-lect exceeded the 126 MPN<sup>1</sup>/100 ml water standard and 35% exceeded the NTE<sup>2</sup>. The exceedances occurred primarily over a stretch between the North Fork Bridge and boundary. The first observed exceedance the heavily-used downstream end of The Narrows raised further concerns that the E. coli contamination in the North Fork was spreading.

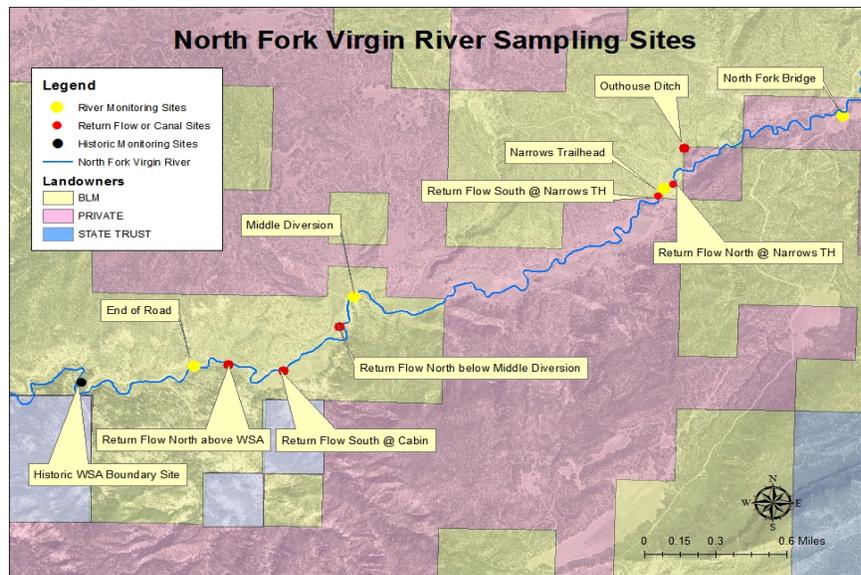


and the over 800 most Sixty-five this time method, quality standard. four mile the WSA in 2010 at

<sup>1</sup> Most Probable Number

<sup>2</sup> Not To Exceed

Upper watershed sites sampled in 2010 ruled out some potential upstream sources. Irrigation return flows from pasture land on BLM land appear to be the most likely source of the E. coli contamination. During the summer season, water diversions flood the pasture, often resulting in standing water. Return flows from the pasture discharge back into the North Fork, likely carrying fecal matter from the flooded pasture into the Virgin River. Flood irrigation is a common land management practice throughout Utah. Its usage in this instance may, however, be cause for concern.



Dickey has been actively involved in water quality monitoring on the relatively remote North Fork. She often finds herself watching the weather during her frequent trips south to collect samples.

“You have to travel across some pretty tough roads to get to the sample sites,” Dickey explains. “One rainstorm and the roads turn to mud. Not to mention that we have to get the samples to the lab for processing within hours of collecting them.” “Who knew water sampling could be so exciting?” laughs Dickey.

All the excitement seems to have paid off. DWQ has amassed a robust sampling data set, with more than 130 return flow samples showing E. coli exceedances.

On October 11, 2012, Division Director Walt Baker and DWQ staff traveled to Cedar City to meet with state and federal agency staff to discuss the problem and determine the next steps. DWQ will collect additional sampling data and continue to monitor water quality. Since this portion of the Virgin River is listed as a 303 (d) impaired water, DWQ is developing a Total Maximum Daily Load (TMDL) calculation for E. coli in the waterway. DWQ and other agencies will continue to work with landowners along the North Fork to implement best management practices to reduce bacterial loading into the river.

“It’s a complex process, but we are making progress,” adds Dickey.

*This article was written by Christine Osborne, communications coordinator with DEQ’s Office of Planning and Public Affairs*