

Conservation Committee Report

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Jack Walters—Conservation Chairman

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The Conservation Pledge

I give my pledge as an American to save and faithfully defend from waste, the natural resources of my country; the soil, the water, the air, the minerals, the plant life and the wildlife.

This is my Pledge!

Inside this issue:

DOE Advances Innovative CCS Polygeneration Plant Through NEPA Process

4

DEP Launches Long-Term Marcellus Shale Air Monitoring Study in Southwestern Pennsylvania

6

New Bill Would Require Pre-Drilling Water Tests For Gas Wells

7

DEP Declares Drought Watch for Western Pennsylvania Counties

The Department of Environmental Protection today issued a drought watch for 15 Western Pennsylvania counties.

“A hot, dry summer made it necessary to take this first step of declaring a drought watch in the affected counties,” DEP Secretary Mike Krancer said. “This measure will alert the public and water suppliers that there

are voluntary, common-sense ways to conserve.”

A drought watch declaration is the first and least severe level of the state’s three drought classifications. It calls for a voluntary five percent reduction in nonessential water use and puts large water consumers on notice to begin planning for the

possibility of reduced water supplies.

The 15 counties under the drought watch issued today are Allegheny, Beaver, Butler, Clarion, Crawford, Erie, Fayette, Forest, Greene, Lawrence, Mercer, Somerset, Venango, Warren and Washington.

(continued on page 2)

Vast Energy Resource in Residual Oil Zones, FE Study Says

DOE Research Will Lead to Enhanced Understanding and Additional Recovery

Billions of barrels of oil that could increase domestic supply, help reduce imports, and increase U.S. energy security may be potentially recoverable from

residual oil zones, according to initial findings from a study supported by the U.S. Department of Energy’s Office of Fossil Energy (FE). The recently completed study, conducted by researchers at the University of Texas—Permian Basin

(UTPB), is one of several FE-supported research projects providing insight that will help tap this valuable-but-overlooked resource.

Residual oil zones, called ROZs, are areas (continued on page 3)

DEP Declares Drought Watch for Western Pennsylvania Counties (continued)

Precipitation deficits over the past 90 days are as great as 5.5 inches below normal in Beaver County and 4.9 inches below normal in Lawrence and Mercer counties.

DEP is notifying all water suppliers in the affected areas of the need to monitor their supplies and update their drought contingency plans as necessary.

Through a cooperative program with the U.S. Geological Survey (USGS), DEP helps fund a state-wide network of gages to monitor groundwater levels and stream flows. This network provides the state's drought coordinator with comprehensive data that is used to determine drought classifications. In addition to precipitation, groundwater and stream flow levels, DEP monitors soil moisture and water supply storage. This data is shared with other state and federal agencies.

Residents can take a number of steps to conserve water, including:

Install low-flow plumbing fixtures and aerators on faucets.

Check for household leaks. A leaking toilet can waste up to 200 gallons of water each day.

Take short showers instead of baths.

Replace older appliances with high-efficiency, front-loading models that use about 30 percent

less water and 40 to 50 percent less energy.

Run dishwashers and washing machines only with full loads.

Keep water in the refrigerator to avoid running water from a faucet until it is cold.

DEP also offers water conservation recommendations and water audit procedures for commercial and industrial users, such as food processors, hotels and educational institutions. These recommendations and additional drought information are available by visiting DEP's website, www.dep.state.pa.us, keyword: drought.

Source: The PA Department of Environmental Protection

Vast Energy Resource in Residual Oil Zones, FE Study Says

(continued)

of immobile oil found below the oil-water contact of a reservoir. ROZs are similar to reservoirs in the mature stage of "waterflooding," in which water has been injected into a formation to sweep oil toward a production well. In the case of ROZs, the reservoir has essentially been waterflooded by nature and requires enhanced oil recovery (EOR) technologies, such as CO₂ flooding, to produce the residual oil.

The UTPB study focused on understanding and modeling fluid flow within ROZs in the Artesia Fairway—a dolomitized trend in the San Andres formation containing oil-producing fields—of eastern New Mexico and west Texas. Utilizing geologic and production data, UTPB researchers determined that oil saturations within ROZs range from 20 percent to 40 percent, with an average of 32 percent, which is similar to that of mature, waterflooded reservoirs. The study also found that ROZs exist in all fields producing from the San Andres formation where it has been uplifted in the western part of the Permian Basin resulting in a tilted oil-water contact. The project's final report should be available within 90 days from the Research Part-

nership to Secure Energy for America (RPSEA).

In another FE-sponsored research effort, UTPB is developing a state-of-the-art geologic and reservoir characterization model of the main pay zone and residual oil zone in the Goldsmith field, Ector County, Texas, where Legado Resources has initiated a CO₂-EOR pilot project. A numerical simulator will then be used to match past reservoir performance and to examine the performance of the CO₂ EOR flood under alternative flood design and operating practices. The goal of the research effort is to optimize the technical and economical performance of an ROZ CO₂ flood and transfer the knowledge to other operators. This will be the first publicly available comprehensive case study of a ROZ flood.

A third study, awarded to UTPB in June 2012, will further delineate the presence and size of ROZ areas in the Permian Basin of Texas and New Mexico using geophysical well logs and well test data, core and fluid samples, and water chemistry data. Researchers will also determine if 3D seismic can be

used for identifying the higher quality portions of the ROZ resource to assist small oil producers within the Permian Basin and other ROZ basins in the United States.

According to the 2012 worldwide EOR survey published in *Oil & Gas Journal*, U.S. CO₂-EOR production is approximately 350,000 barrels of oil per day. There are currently nine industry ROZ CO₂-EOR pilot projects in the Permian Basin of Texas, accounting for approximately 10,000 barrels of oil per day. Results and findings from FE-supported research should help to increase recovery from this domestic resource and create American jobs.

Source: U.S. Department of Energy

DOE Advances Innovative CCS Polygeneration Plant Through NEPA Process

Power Plant Will Produce Clean Power, Increase Domestic Oil Production

The U.S. Department of Energy (DOE) and the California Energy Commission (CEC) are working together to advance an innovative carbon capture and storage (CCS) plant simultaneously through the federal National Environmental Policy Act (NEPA) review and a complementary California Energy Quality Act process.

As part of the NEPA process, DOE and CEC will hold a public meeting on July 12, 2012, at the Elk Hills Elementary School at 501 Kern St. in Tupman, Calif., at 5 p.m. PDT. This will be an opportunity for the public to offer their comments and view the project site in Elk Hills, Kern County, Calif. DOE is coordinating its NEPA review with the environmental review conducted by CEC as lead agency under the California Energy Quality Act for deciding whether to certify the project.

Part of DOE's Clean Coal Power Initiative (CCPI), the new "polygeneration" plant will incorporate CCS as well as utilize CO₂ for enhanced oil recovery. Hydrogen Energy California (HECA),

which is owned by SCS Energy LLC, is developing and designing the new plant, whose polygeneration process will demonstrate the co-production of fertilizer and hydrogen-based electric power.

The HECA project offers multiple benefits: it furthers California's low carbon power policies, will replace imported fertilizer with domestically-produced fertilizer, and adds to domestic oil production. The polygeneration plant will comprise an advanced integrated gasification combined cycle (IGCC) power plant, which will convert coal fuel into hydrogen to generate enough power to support 160,000 homes, and a chemical plant that will produce nitrogen-based fertilizers. The plant will also capture more than 90 percent of the CO₂, which means that the fertilizer and power produced by the project will have a significantly smaller carbon footprint than those produced by conventional facilities, including those using natural gas.

Approximately 2.6 million tons per year of CO₂ will be transported via pipeline to Occidental Petroleum's Elk Hills Oil Field, located less than 4 miles away. With oil fields as the CO₂ injec-

tion site, HECA will enable oil production to be increased, while storing CO₂. Michael Peevey, President of the California Public Utilities Commission, has said: "They have developed an innovative business model that improves the economic viability of the project. HECA intends to ramp up the facility to produce more electricity during peak hours of need in order to maximize the energy and capacity value of the plant. This is an example of the kind of creative thinking we will need to solve the climate crisis."

"The HECA project underscores the significance of Carbon Capture, Utilization, and Storage—the creative combination of business drivers and environmental responsibility. It demonstrates how carbon capture technology will help us fully develop and use our vast domestic energy resources in a sustainable way. And, by utilizing the captured CO₂ for enhanced oil recovery, the project provides significant economic and job creation benefits" said Chuck McConnell, DOE's Assistant Secretary for Fossil Energy.

(continued on page 5)

DOE Advances Innovative CCS Polygeneration Plant Through NEPA Process (continued)

Still other benefits will be realized from the new concept plant:

- The plant will preserve California's limited fresh water resources by using non-potable water for its power production needs.
- The plant will use petroleum coke that is currently being burned overseas without the benefit of CO₂ capture.

The project will create more than 2,000 construction jobs over 3 years and approximately 100 permanent operational positions.

CCPI is a cost-shared collaboration between the federal government and private industry to increase investment in low-emission coal technology by demonstrating advanced coal-based power generation technologies prior to commercial deployment. The estimated capital cost for the project is approximately \$4 billion. The DOE cost-share is limited to \$408 million, or approximately 10 percent of the total project costs. The project consists of three phases: Project Definition (Phase I), Design and Con-

struction (Phase II), and Demonstration (Phase III). Plant operation and sequestration of CO₂ in the Elk Hills Oil Field will commence in 2017. The project is being administered by DOE's Office of Fossil Energy and National Energy Technology Laboratory.

The continued progress of the project marks a major step toward commercialization of a clean technology that enables use of vast domestic fossil energy resources, while providing an innovative and economical route to reducing greenhouse gas emissions.

Source: The U.S. Department of Energy

DEP Launches Long-Term Marcellus Shale Air Monitoring Study in Southwestern Pennsylvania

The Department of Environmental Protection announced today it has started a long-term, one-year air monitoring study of Marcellus Shale development. The study in Washington County will measure ambient airborne pollutants in an effort to determine potential air quality impacts associated with the processing and transmission of unconventional natural gas.

“We operate on facts and sound science, and this study will provide us with data on long-term air quality in an area of active natural gas extraction,” DEP Secretary Mike Krancer said. “There has been a documented downward trend in airborne pollutants across the state over the past 10 years, and Marcellus Shale development holds the promise of emissions benefits from the use of this cleaner-burning fuel in the transportation and electricity generation sectors.”

The data from the study will allow DEP to assess any potential long-term impact of air emissions from unconventional natural gas operations to nearby communities, and it will help DEP address the cumulative impact of the operations in the Marcellus Shale region.

In 2010 and 2011, the agency conducted short-term ambient air quality sampling in the southwest, north-central and

northeast parts of the state, where Marcellus Shale drilling was taking place. The sampling did not identify concentrations of any compound that would likely trigger air-related health issues. DEP also tested for carbon monoxide, nitrogen dioxide, sulfur dioxide and ozone, but did not detect concentrations above National Ambient Air Quality Standards at any of the sampling sites.

The primary site of the long-term study will be downwind of the Houston gas processing plant in Chartiers Township, Washington County, where DEP will monitor for ground-level ozone, particulate matter, carbon monoxide, nitrogen oxides, hydrogen sulfide and methane. The ambient air will also be tested for more than 60 volatile organic compounds, including hazardous air pollutants, and meteorological data will be collected continuously.

DEP will also monitor for volatile organic compounds and collect meteorological data at three additional sites in Chartiers Township and Hickory Township, Washington County. Of the two additional Chartiers Township sites, one is upwind of the Houston gas processing plant, and the other is downwind of the Brigich compressor station. The site in Hickory Township will be located downwind of the Stewart compressor stations.

DEP intends to collect at least one year of data and compare those results to national ambient air quality standards, then conduct a long-term risk analysis. The Washington County results and risk analysis will aid in determining the need for any further long-term sampling in other regions of the state.

For more information or to view the study’s sampling protocol, visit www.dep.state.pa.us and click “Air,” or call 717-787-9702.

Source: The PA Department of Environmental Protection

New Bill Would Require Pre-Drilling Water Tests For Gas Wells

Rep. Camille “Bud” George (D-Clearfield) Friday unveiled House Bill 2556 which would require pre-drilling water quality surveys upon request by landowners residing within 5,500 feet of a proposed Marcellus shale gas well.

“This legislation is needed to protect our water supplies and would be a win-win for everyone,” said Rep. George, Democratic chair of the House Environmental Resources & Energy Committee. “House Bill 2556 allows for landowners whose water has been polluted by gas drilling to be compensated, and it protects gas companies from frivolous lawsuits for conditions for which a gas company is not at fault.”

Under House bill 2556, permit applicants would contract with certified laboratories to provide landowners the test results for chemicals commonly used in hydraulic fracturing, the process that fractures rocks by injecting chemicals, liquids and other materials at high pressure to allow natural gas to flow into a well shaft.

Besides data on chemicals ranging from arsenic to xylenes, the test results also would cover information on dissolved solids and methane, salt compounds, nutrients and radionuclides.

“Pennsylvania has inadequate safeguards for water -- including minimal standards for water-well construction and the scant protections in the Act 13 Marcellus shale legislation,” Rep. George said. “My measure would be one more step needed to address the mounting threats to water.”

Under Act 13, a driller is presumed liable for polluting a water supply located within 2,500 feet of an unconventional well bore, a protection Rep. George believes is wholly inadequate given Pennsylvania’s unique geology.

“It’s past time to address all the ill will and litigation spawned by Marcellus shale gas drilling,” Rep. George said. “House Bill 2556 would serve landowners, water supplies and industrial gas drillers.”

Rep. George, who also recently introduced House Bill 2350 to provide a two-year moratorium on the drilling of new deep injection wells used to dispose of waste fracking fluids, said his pre-drilling survey measure has drawn bipartisan support and has been referred to the House Environmental Resources & Energy Committee.

“I hope that this new legislation is put on the fast track for consideration,” Rep. George said. “Our water is too valuable to

lose by reacting only after learning from our mistakes.”

Rep. George’s pre-drilling survey language was approved by the House during deliberations of the Marcellus shale bill that became Act 13. However, the language was removed from a later version of the bill.

Source: PA Environment Digest