

Spring 2012

# BASIN BITS

The Official Publication of the North Dakota Association of Oil & Gas Producing Counties

## Pushing the Edge of the Bakken

**North Dakota is Open for  
Business**

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Industry**

**Raising Authority,  
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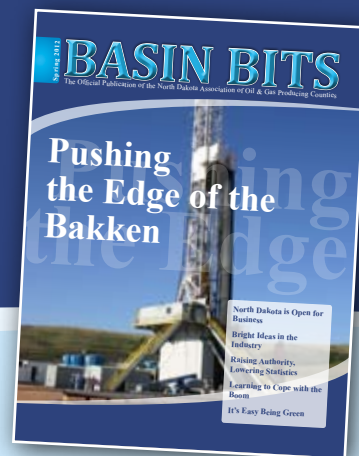


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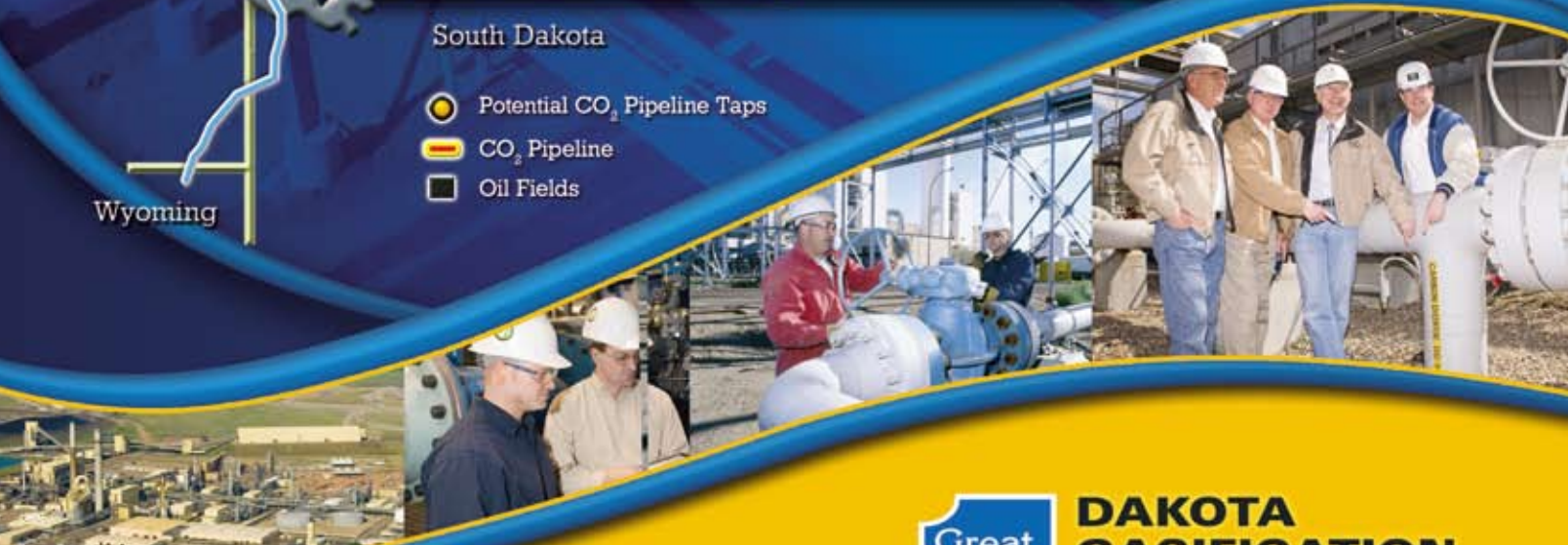
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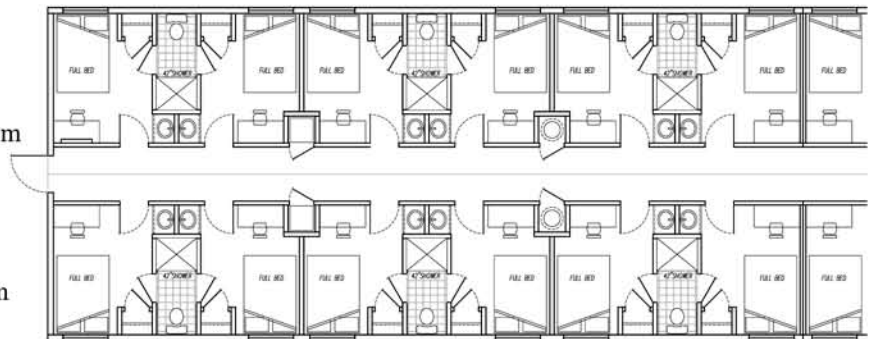
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# From the Desk of the North Dakota Association of Oil & Gas Producing Counties' President



Dan Brosz  
President  
North Dakota Association of  
Oil & Gas Producing Counties  
City of Bowman

*Another year should also make a difference in dealing with some of the impacts we are having with the growing oil and gas industry.*

## ABOUT THE NORTH DAKOTA ASSOCIATION OF OIL & GAS PRODUCING COUNTIES

The North Dakota Association of Oil & Gas Producing Counties (NDAOGPC) is the trusted and unified voice for the betterment of the citizens of North Dakota and the membership of the North Dakota Association of Oil & Gas Producing Counties.

For more information about our association, please go to [www.ndenergy.org](http://www.ndenergy.org) or use the information below to contact us.

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**A**s I sit in my office and wish I was outside enjoying the nice spring day—oh, wait, I must be dreaming; the calendar says it's only early March. What a difference a year makes. The last few winters—last year's in particular—were a challenge to say the least. It is nice to enjoy the open winter we have had out here in western North Dakota. Our counties and cities will be able to put more resources into infrastructure this coming summer instead of watching all those dollars run down the creek.

Another year should also make a difference in dealing with some of the impacts we are having with the growing oil and gas industry. The 2011 legislature appropriated several hundred million dollars for us to work on infrastructure. Governor Dallymple and his administration have been very helpful working with local agencies in investing those dollars mainly into infrastructure and housing. Some projects were completed in 2011 but the majority of them will be completed in 2012. This should have a good start but it is only the start. There are many, many needs that will have to be addressed as this play develops and expands.

Our association has been busy even though the legislature is not meeting this year. Interim committees of the legislature are meeting to gather information for next year's session. We gave testimony at the Energy Development and Transmission Committee in January. Persons

representing the schools, counties, cities, emergency and townships gave testimony. All were excellent presentations and the information given should help policy makers make informed decisions at next year's legislative session.

The association is participating in several studies being completed this year for presentation to the governor and the legislature. These studies cover not only roads, housing, sewer and water needs but many other impacts as well. The growing number of persons living in man camps and the steady rise in permanent housing has put a huge impact on services our local agencies must provide.

The schools are experiencing large increases in enrollment. Projections call for even larger enrollment numbers as more permanent housing is completed. Schools are in a unique position as they are mandated by law to educate all students in their district. Thus, when new students walk in the door, they need teachers, rooms, desks and books immediately. Some impacts can be put off or used in a deteriorated condition until resources are available but schools do not have this option. We need to work with the administration and the legislature to find a quick and effective solution to this growing problem.

We face many challenges in Oil Country, providing the services everyone expects and even sometimes demands. We need to stay together and work with the legislature, the governor and his staff and the industry to meet those challenges.



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**ENERGY ON THE MOVE**

# From the Desk of the North Dakota Association of Oil & Gas Producing Counties' Executive Director



**Vicky Steiner**  
Executive Director  
North Dakota Association of  
Oil & Gas Producing Counties  
North Dakota House Representative  
for District 37, Dickinson, ND

*I recently read an article about North Dakota's Bakken boom that lead off with "North Dakota's oil industry never looked better." That's almost an understatement! Job opportunities and young people are filling our communities along with investment dollars.*

I recently read an article about North Dakota's Bakken boom that lead off with "North Dakota's oil industry never looked better." That's almost an understatement! Job opportunities and young people are filling our communities along with investment dollars.

Every day I see my community of Dickinson, ND changing in some way—I see a new camper pulling off the second exit from Interstate 94, I see four industry workers walking to the laundromat with their duffel bags of dirty clothes on a Saturday. I wonder how long they've lived in Dickinson. Perhaps they've been here seven days or seven months. How long will they live and work in western North Dakota? Will they bring their families? These seem to be common questions our local governments are asking themselves.

Williston Public School District's superintendent, Dr. Viola LaFontaine, is estimating there may be 800 to 1,200 new students by the fall of 2012. She has to hire the teachers in April for the August school start date. Quite often, she is challenged on her estimates. Her district has seen its new student numbers dramatically increase. What if the trend breaks and there are only 300 new students? She may end up with too many teachers under contract. Her dilemma is trying to plan without good population projections.

To find better data for schools in western North Dakota, our association has contracted with North Dakota State University (NDSU) in Fargo, ND. The study will be finalized by November 1, 2012, and will encompass population modeling already underway by other researchers. The study will cost approximately \$44,000. NDSU researcher Nancy Hodur will be taking input from the oil industry, analyzing existing data and looking at modeling some of the rates of change as they try to predict possible fall student enrollment over the next five years. All schools are different from each other in terms of oil activity and size.

The State Land Board, with leadership from Governor Jack Dalrymple, granted additional oil impact dollars in March to western North Dakota schools for classrooms. The board also provided grant funding for emergency services such as ambulances. The oil impact fund recommendations come from an advisory committee and those members live and work in western North Dakota. One of our association's board members, Jim Arthaud, Billings County Commission, serves on that committee. Thanks, Jim!

Beyond our education committee, our association has created an ad hoc Crew Camp Best Practices Taskforce. Members met after a southern county Best Practices Workshop. Several presentations from the

workshop on March 14, 2012 are posted on NDAOGPC website at [www.ndenergy.org](http://www.ndenergy.org) under the "News" tab. Special thanks to Target Logistics, ATCO, Burke Lodge and Morgan Chase Management/Pioneer Lodge & Commons as they sponsored part of the costs of the workshop.

Over 80 local county and city officials heard presentations on how crew camps operate under their own versions of "best practices." Officials learned some of the crew camp language—a "dry" camp means alcohol is prohibited; a "closed" camp means crew camp providers have contracted all their beds to a specific oil company; an "open" camp means an individual worker can contract on his/her own to secure lodging and workers from various companies may be located in that camp.

Crew camp operators stressed that a reputable crew camp operation can add value to a community because there may be a smaller amount of pressure on the lower cost rental units, apartments and RV parks. It's estimated that about two-thirds of the new population of workers will leave western North Dakota as the exploration phase wraps up, as pipeline gets laid and housing needs are met. One-third of the new population may stay on to support production, so temporary housing provides a bridge to that end. Communities in western North Dakota want to find the balance so that their residents don't



end up paying for empty subdivisions on the end of new water and sewer lines. We have another crew camp workshop planned for May 9, 2012 in Minot and the public is invited. Registration is \$20 and is available on our website, [www.ndenergy.org](http://www.ndenergy.org).

Our association, along with South West Rural Economic Area Partnership (REAP) and the REAP Investment Board, are also executing a \$1.5 million HUD USDA grant to bring some planning expertise to western cities and counties. The project is called Vision West ND—you can learn more about this project by visiting their website at [www.visionwestnd.com](http://www.visionwestnd.com). The State Land Board authorized an additional pool of state dollars at the amount of \$300,000 as a state match for that federal grant. Loren Hoffman, former Parshall city auditor, now employed with AE<sub>2</sub>S, is meeting with 18 western cities that responded to a survey about this grant. How will western North Dakota accommodate the rapid influx of workers? There is additional information on Vision West ND in this issue of *Basin Bits* on pages 44-46.

Bakken oil industry insiders predict that the rig count in North Dakota will likely rise no greater than 20 per cent and stabilize at that number for at least five—but

no more than eight—years. Production of the Bakken wells is expected to provide employment for at least another 25 years and beyond.

While this is relatively short when it comes to an eternity, it may seem like an eternity for those looking for more choices in terms of restaurants, hotel space and wider highways. As the saying goes, however: things take time and money.

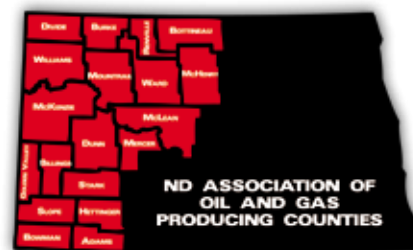
I suggest that North Dakotans are a stoic bunch. My German-speaking ancestors jumped off a train in Jamestown, ND, somehow walked or caught a horseback ride to Fredonia, ND, located 62 miles south and homesteaded a small acreage. They built a small sod-stick house they shared with their livestock. Spending my youth in Fargo, ND, I can't say I walked to school uphill both ways in a blizzard but I still joke with our kids that I did. We are also a people of independent spirit and we are proud to contribute to our country's national security by supporting this industry and working with its members. The federal government could take a teaching moment from North Dakota.

It's no coincidence North Dakota raised quickly from the ninth largest oil producer in the country to number three.

It's expected, in fact, that North Dakota will take the second place spot by the end of 2012. Our state government maintains a common-sense approach that recognizes fossil fuels are part of the nation's energy policy. No one wants an oil well outside their kitchen window—even those who own the royalties want the well back out of view. North Dakota's top oil regulator, Lynn Helms, came from industry. He works with them to get the job done, knowing that some company hands may try to cut a corner now and again.

Many states say to the oil industry, "Not in my back yard." They are often called NIMBYs. North Dakota is an "In My Back Yard" state and proud of it. It's good for the country and it creates well-paying jobs. Look at that; here comes another travel trailer off the interstate.

God Bless!



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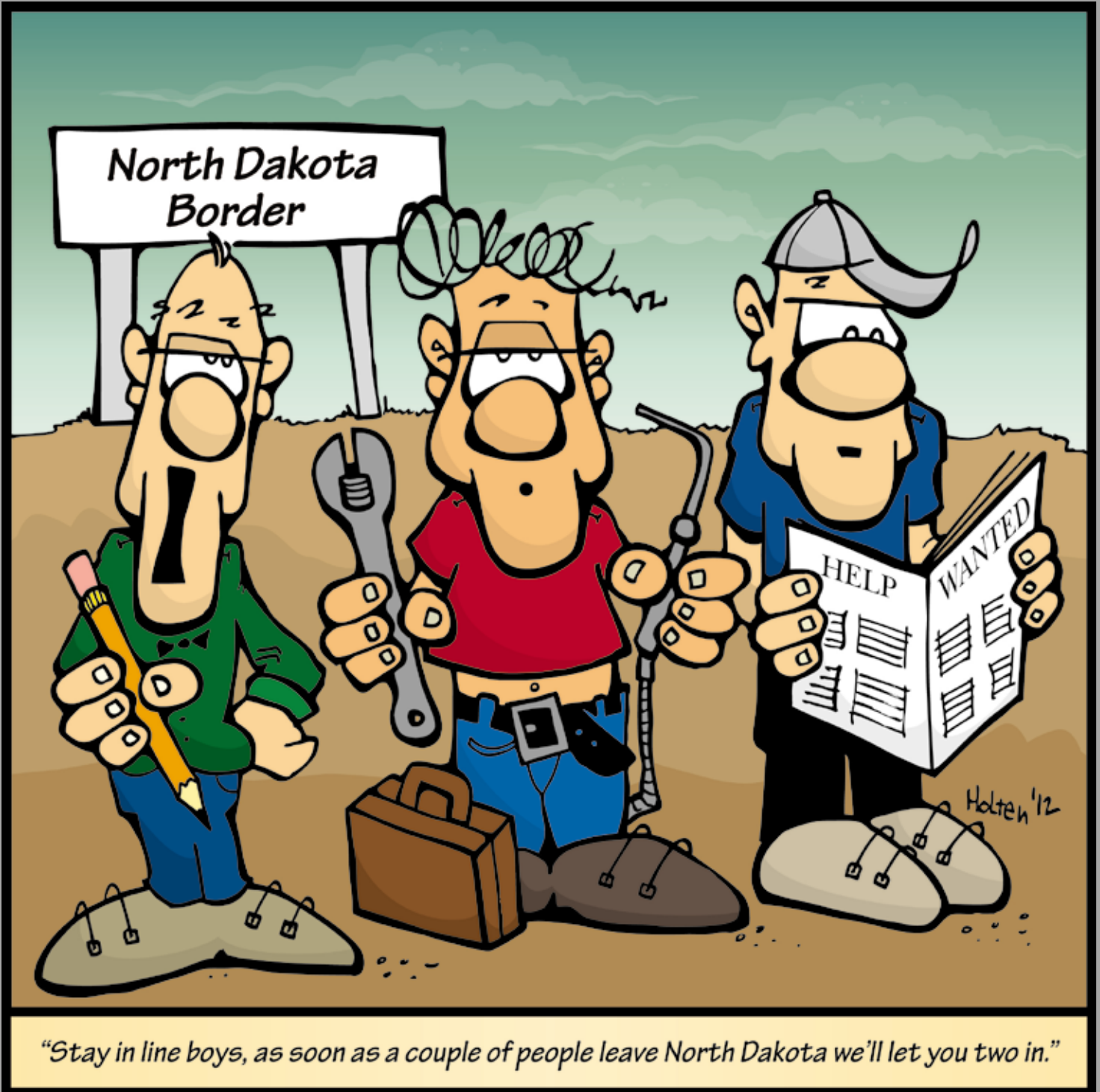
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# Meet the North Dakota Association of Oil & Gas Producing Counties' Executive Committee

**DAN BROSZ**  
PRESIDENT  
CITY OF BOWMAN



I was asked to represent the City of Bowman on the North Dakota Association of Oil & Gas Producing Counties (NDAOGPC) in 2008 because of my

work with the City of Bowman and Bowman County. I have been the County Engineer for Bowman County since the early 1980s and have served as the City Engineer for the City of Bowman since the mid 1990s. I am a consulting civil engineer who works on roads and bridges, sewer and water, streets, airports and does all types of surveying.

I have been involved with the oil and gas industry as a consultant for cities, counties and state as well as private industry. My involvement has been in addressing impacts and finding the funds to deal with those impacts. The Bowman area experienced the boom beginning in 1996 and it was very intense until 2006, about the start of the Bakken play north of us. We faced similar impacts during that time and are able to share some of our experiences with the government agencies that have been impacted over the past several years.

Serving on the NDAOGPC's executive committee has been challenging at times. Understanding and helping meet the needs of cities, counties and schools as well as the other governmental entities affected by the rapid growth of the oil industry has certainly been a learning experience. The 17 oil and gas producing counties have come together and are working toward a common goal, which has been the rewarding part of serving on this committee.

We face many challenges in the coming years and I hope we can continue to work together for the common good of western North Dakota and the entire state.



*If you have questions or concerns you want to share with NDAOGPC's Executive Committee, contact the office at (701) 483-8326.*

**SUPERINTENDENT STEVE HOLEN**  
PRESIDENT-ELECT  
MCKENZIE COUNTY PUBLIC SCHOOL DISTRICT #1



I have served as superintendent of schools for the McKenzie County Public School District #1 for seven years and a member of the NDAOGPC executive committee for five years. I was born and raised in western North Dakota and enjoyed the rural lifestyle and atmosphere as a youth and now raising a family. With a wife and three children, it is important they can experience the quality of life I enjoyed growing up in western North Dakota.

After years of outmigration and an uncertain future for most rural communities in western North Dakota, it is imperative communities are able to take advantage of the opportunities currently available with oil and gas development. As an educator, I believe schools play a significant factor in the quality of life offered in our communities.

School districts are currently faced with difficult decisions on how to address this rapid growth and maintain current educational standards and expectations. It is important for the association to remain the unified voice of our counties, cities and schools and advocate for the support needed in adapting to our changing landscape. I look forward to addressing the challenges ahead for the association and the executive committee to ensure prosperity for present and future citizens of western North Dakota.

## GREG BOSCHEE PAST PRESIDENT MOUNTRAIL COUNTY



My name is Greg Boschee and I am a farmer, Mountrail County Commissioner and the current past president of the NDAOGPC. I live seven

miles southwest of Parshall and farm about one mile from the first three Bakken wells drilled by EOG Resources in the Parshall field. They said, "If these wells come in like we think, all hell will break loose." They came in better than predicted and the rest is history!

Western North Dakota has seen the big pluses—wages, jobs, new business, mineral royalties, in-migration not outmigration—and the big minuses—terrible roads, high traffic on rural township roads, higher prices, loss of the rural way of life, burnout of county, city, school, ambulance, fire and other officials.

With some of the new money for infrastructure from the last legislative session, we have a good start on making this work for everyone. The next session will be pivotal to see if this progress continues.

As one of the McKenzie County Commissioners stated early on, "We hope in the end the pluses outweigh the minuses." The NDAOGPC is the united voice that is trying to make this statement come true!

## JIM ARTHAUD BILLINGS COUNTY COMMISSIONER



My name is Jim Arthaud and I am CEO and owner of MBI Energy Services, Inc., an oil field services and transportation company providing

transport of freshwater, production water, oil and sand, workover rigs, wireline and other ancillary services. MBI currently has locations in North Dakota, Wyoming, Pennsylvania, Colorado and Texas. MBI currently has over 1,200 employees, runs 700 service units and also contracts with over 235 owner operators. I started the business as a well-site supervision company in 1979 and started the trucking division in 1981.

Currently, I am also chairman of the Billings County Commissioners, sit on the executive board of the NDAOGPC and am also a board member of the North Dakota Petroleum Council.



## SHAWN KESSEL CITY OF DICKINSON ADMINISTRATOR



My name is Shawn Kessel and I am the current city administrator in Dickinson, ND, a fast growing energy hub city in southwest North Dakota. I currently sit on several statewide and local boards and commissions, including the North Dakota Insurance Reserve Fund, Advisory Commission on Intergovernmental Relations, NDAOGPC, Stark Development Corporation, Badlands Activity Center Board and the Dickinson Convention and Visitors Bureau.

I am a former president of the North Dakota League of Cities, American Marshall Fellow and "Seven Habits of Highly Effective People" trainer. Prior to arriving in Dickinson (my place of birth),

I was the city Administrator in Wahpeton, ND. While serving nine years as city administrator, the city was named "City of the Year" by the North Dakota League of Cities. I am an active Rotarian, have a Master's degree in business administration, have been married to my wife Tina for over 15 years and have one son, Braden, at home.

## RON ANDERSON MCKENZIE COUNTY COMMISSIONER



I have spent my life on the family farm-ranch at Keene, ND, which is located in McKenzie County. Me and my wife Myra have two sons and daughters-in-laws plus four very special grandchildren.

I graduated from Watford City High School and North Dakota State University. After that, I served three years in the US Army and am a Vietnam veteran.

From 1980 to 1992, I served in the North Dakota House of Representatives and while there, I was a committee chairman, assistant majority leader and Speaker of the House in 1991. I was appointed to the McKenzie County Commission in 1998 and have served there ever since.

In 2005, I was president of the North Dakota Association of Counties and am presently a director of the National Association of Counties. I've been a member of several state boards and commissions over the years and am now also serving as a director of the NDAOGPC Board and as chairman of the Oil and Gas Research Council.

This is a crucial time for oil producing counties; it is important to realize the potential of this oil discovery but to see that the landscape and the communities in the area are not sacrificed in the process.





## SUPERINTENDENT ANTHONY DULETSKI BOWMAN COUNTY PUBLIC SCHOOL DISTRICT #1



My membership with the NDAOGPC has spanned over a 14-year period. During that time, I served as the association's president, chaired the Education Committee and am currently serving on the executive board. Over my 14 years of membership, the association has witnessed and been involved with many issues/changes regarding the oil and gas industry for our state of North Dakota. The most current is the Bakken play in western North Dakota.

Such play has brought many changes on our state's prairie landscape. With the many changes that have occurred in the oil and gas industry in the state of North Dakota, the NDAOGPC has taken an active role in assisting and keeping its membership (local counties, cities, schools, etc.) well informed of the issues at hand and those on the horizon. The association's involvement has also brought about positive changes at the state level.



## SUPERINTENDENT JASON KERSTEN BOTTINEAU PUBLIC SCHOOL



My name is Jason Kersten and I am the Superintendent of the Bottineau Public School and Newburg United Public School. My wife Jodie and

I have one daughter, Sydney, who is in the second grade.

I am a 1984 graduate from Newburg United Public School. I then graduated from Mayville State University in the spring of 1989 with a Bachelors Degree in Education. My major was mathematics and my minor was in business education. I received my Masters Degree in Administration from Northern State University in the summer of 1996. I taught mathematics in the Westhope Public School from 1989 to 1994. I then took a secondary principal and teaching position at Newburg United in the fall of 1994. In 1998, I became the superintendent/secondary principal at Newburg United. I then took the Superintendent position at the Bottineau Public School and have been superintendent at both schools since 2005.

I got involved with the NDAOGPC because I feel my districts will be impacted by the oil activity in the state and I believe that serving on this board will give me a better understanding of how the oil activity might impact my districts. This board has been very interesting. Although this is my first year on the board, I have enjoyed the opportunity and the chance to work with some very good people.

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**BRADY PELTON**  
**ASSISTANT EXECUTIVE DIRECTOR, NDAOGPC**



Brady began working with the NDAOGPC in August 2011. A graduate of the University of North Dakota, Brady manages the office of the association. He is also chair for the new Best Practices Crew Camp Committee and is the contact for the Mind Mixer social media program of the Vision West ND project.

**JANE PERDUE**  
**SECRETARY-TREASURER, NDAOGPC**



Jane Perdue is Secretary-Treasurer of the NDAOGPC. She lives in Minot, ND with her husband, Art. They enjoy traveling and visiting grandchildren.

**GARY MELBY**  
**CITY OF BOWBELLS**  
**COUNCILMAN**



Hello neighbors! My name is Gary Melby and I represent the City of Bowbells on the NDAOGPC's executive committee. I have lived and farmed

in my community for several years. Because of this, I have come to appreciate all that living in western North Dakota has to offer.

With our region's recent increase in oil activity, there are a lot of changes that come with such massive development. With any economic expansion comes challenges. I've stayed involved in local affairs as much as possible over the years, serving on the Bowbells city council for 14 years and as the city's mayor for 10 years. I've also had the pleasure of serving to protect North Dakota's outdoors as a member of the North Dakota Game and Fish Advisory Board and the North Dakota Natural Resources Trust Board.

North Dakota's oil patch offers an opportunity—an opportunity to grow our local communities and economies with a long-term mindset. We can use these opportunities to our advantage in providing a better place to live, work and play for future generations. I look forward to continuing to help our area of North Dakota as much as possible as we move forward to even greater levels of development and prosperity.

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## TRIVIA TIME

### ENERGY BY THE NUMBERS

1. The number of direct, indirect and induced jobs supported by US oil and natural gas industry is 9.2 million;
2. With the right government policies in place to expand access to domestic natural resources, the number of jobs created by 2030 is expected to be 1.4 million;
3. The average US citizen uses two barrels of oil per month;
4. The percentage of US energy demand met by oil and natural gas is 62 per cent;
5. The daily amount that companies pay to the federal government in corporate taxes, royalty payments, rents and bonus fees is \$86 million;
6. Wages paid to US employees, plus benefits and payments to oil and natural gas leaseholders in 2009 is \$176 billion;
7. The amount of industry invested in new US capital projects in 2010 is \$266 billion;
8. Bismarck's population is 672,591, with an unemployment rate of 3.1 per cent. While there are 13,300 unemployed people in Bismarck, there are 19,119 potential jobs in the oil and gas industry;
9. A North Dakota pipeline carries oil from Canada to Midwest refineries;
10. North Dakota accounts for over two per cent of us crude oil production; and
11. If API's suggested energy policies are followed, US oil and natural production could generate more than 1.4 million new jobs, \$800 billion in additional cumulative government revenue and make 10 million barrels worth of added daily oil and natural gas available by 2030, all while making American more energy secure by providing 100 per cent US liquid fuel needs from North American sources within 15 years.

*Source: [www.vote4energy.org/state-impact/nd](http://www.vote4energy.org/state-impact/nd), Energy API.*

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# Pushing the Edge of the Bakken

*The oil play in North Dakota just got bigger.*

*What this could mean for the boom.*

By Holli Moncrieff

With the oil business booming in the Bakken, more companies are searching the fringes, hoping to find their own black gold. While the 30 to 40 primary operators in the area have staked out their leases on the most prime locations the region has to offer, others are testing the fairways on the chance that there might be more to find.

"Most of the testing will be conducted in the fringes of the fairway. Some companies are getting outside the proven areas. Time will tell and there will be variable success," says Rick Muncrief, senior vice-president of operations for Continental Resources. "We don't know how significant this will be yet but that's how big fields are sometimes discovered."

Continental Resources is at the forefront of the exploration and production of oil and natural gas resources in the United States and is the largest producer of oil in the Williston Basin. Using the latest technology in horizontal drilling, Continental is leading the development of key oil and natural gas resources in the continental U.S., including the Woodford resource play in Oklahoma and the nation's premier oil play, the Bakken resource play in North Dakota and Montana.

The counties of Killdeer, Watford City, Williston, Stanley and Newtown are considered to be the heart of the Bakken, where most of the 200 rigs are drilling. If new companies want a piece of the action, they have to move farther out.

Lynn Helms, director of the North Dakota Department of Mineral Resources, discussed this development in an interview with KX News in western North Dakota.

"They can lease and drill along the margins where the risk is a little higher along the Bakken and Three forks and that's happening. They can lease some of the new plays like the Tyler and get that started and that's happening," he said. "A well is being drilled soon as far south as New England, on the eastern edge. There's a big play getting ready to take place in western McLean county. There's some interest in pushing the edge of the margin. A couple wells are likely to be drilled in western Mercer County to understand the geology over there."

## PUSHING THE EDGE

The Bakken Shale, an underground rock formation estimated to contain billions of barrels of oil, predominately falls

*Continued on page 30*

*Oil companies are now rushing to tap the ground before the cheap pre-boom leases they signed with mineral rights owners expire.*





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## TRIVIA TIME

The top five average weekly wages in coal mining, gravel, oil and gas extraction jobs, according to Job Service North Dakota, March 2012:

1. Stark County (Dickinson area): \$2,010 per week;
2. Williams County (Williston area): \$1,848 per week;
3. Ward County (Minot area): \$1,777 per week;
4. Mountrail County: \$1,686 per week; and
5. Mercer County: \$1,618 per week.

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*Continued from page 27*

in North Dakota but also covers parts of Montana and Saskatchewan, Canada. Drilling has been going on in the area in phases since the 1950s but the current boom is expected to produce the largest amount of oil.

Some 417 million years ago, a large oil deposit formed under the border between North Dakota and Saskatchewan. In the 1950s, the first well was tapped into the oil on land owned by a farmer named Henry Bakken. But its production back then was minor and it was eventually forgotten. Today, the Bakken Formation is thought to be the largest oil deposit in the lower 48 states. Its 15,000 square miles—spanning two states and two Canadian provinces—hold some 4.3 billion barrels of oil ready to be tapped for drilling. Some say upcoming federal studies may increase that estimate.

"Bakken and Three Forks are such a big story. There's so much production in the area and that's what people are focused on," says Muncrief. "There's a lot of work ahead of us—thousands of wells left to drill in the Bakken and Three Forks formations. We still say we're in the first or second inning of the game."

While oil companies have been drilling into the Bakken for 60 years, a few factors have recently converged to bring a frenzy of new activity to the area. For one thing, new technologies involving hydraulic fracturing and horizontal drilling have made it possible to extract oil from rock as thick as concrete. The high price tag of those techniques means they're only economically feasible now that the price of a barrel of crude oil hovers around \$100. Oil companies are now rushing to tap the ground before the cheap pre-boom leases they signed with mineral rights owners expire.

"We're going to see a transition within two years, when the acreage the companies have leased will be producing. The clock won't be ticking like it is now," Muncrief explains. "Once you take a lease, you have to drill a well which holds the lease so no one else can come and drill on it. Until you drill, the land has a lease on it—usually a three-year term."

Muncrief doesn't believe this new activity off the fairways will affect the production that continues to take place in the heart of the Bakken region. Experts surmise that this could be the largest oil discovery the world has seen in 30 to 40 years. Muncrief says that Continental Resources has nine million acres already estimated.

"Some people are late to the party and that's (the fringes) all that's available. I don't think it's going to move the needle much in the short-term. It would have to be a significant finding because there's fairly high activity within the boundaries," he says.

## EXPANDING OPERATIONS

Marathon Oil Company in Texas continues to expand its operations in the region. Since December, the company ramped up production in the Bakken with eight rigs currently drilling.

From its December exit rate of 24,000 net boed, Marathon Oil now expects a

2012 annual average of 27,500 net boed and 38,000 net boed by 2016, a 15 per cent increase from the company's previous 33,000 net boed projection. The Company's production from the Bakken is approximately 95 per cent crude oil.

"We continue to raise our expectations for Bakken production growth. Our recent wells are generating 24-hour peak initial production rates in the range of 1,200 to 1,400 barrels per day (bpd). We've also moved to 30-stage fracture jobs," says Chairman, President and CEO Clarence P. Cazalot, Jr.

In addition to the exploration that began last winter in the Tyler formation,

which runs south of Dickinson to South Dakota, Helms says the spearfish formation in Bottineau County shows promise. He expects 200 wells to be built there.

State geologist Ed Murphy gave a public talk at an oil information meeting in Beulah, Mercer County in March about the potential of finding oil outside the fairways. Dismissing the potential of the Tyler formation, he feels that the most promise lies in formations deeper than the Bakken, known as the Winnipeg and Red River groups, which are located nearly 12,000 feet deep under the earth.

The geologist explained that it's all about the oil window and when it's not in

## OIL EXECUTIVES ARGUE U.S. ENERGY RESOURCES NOT BEING FULLY TAPPED

Oil and Gas exploration stocks have been on an impressive run this year as crude prices continue to surge. The SPDR S&P Oil & Gas Exploration & Production ETF (XOP) has surged more than 13 per cent year-to-date, handily outperforming the Dow Jones Industrial Average in 2012. Congressional Republicans and Democrats continue to argue about the price of gas as Republicans and oil industry leaders called for more U.S. production.


The Paragon Report examines investing opportunities in the Oil & Gas Sector and provides equity research on Triangle Petroleum Corporation and Lucas Energy Inc. Access to the full company reports can be found at [www.paragonreport.com/TPLM](http://www.paragonreport.com/TPLM) and [www.paragonreport.com/LEI](http://www.paragonreport.com/LEI).

The Paragon Report provides investors with an excellent first step in their due diligence by providing daily trading ideas and consolidating the public information available on them.


In recent years, North Dakota has become a hotbed for U.S. oil drilling. Earlier this year, North Dakota overtook California as the third-largest U.S. oil-producing state, as fracking technology boosted shale oil output. Data from the North Dakota Industrial Commission showed the state's January oil output rose to 546,050 barrels per day (bpd), up 59.2 per cent from a year earlier, after output in the Midwest state's Bakken and Three Forks shale prospects rose some 11,000 bpd to a record 480,700 bpd.

California's oil production has declined over the past few years and was an average 14,000 bpd lower in 2011 compared with the previous year.

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*Whiting Petroleum's oil field near Stanley, ND (above) is just one of many busy oil fields in and around the Bakken.*

*Last year, the state produced 113 million barrels of oil—nearly tripling its pre-boom rate and making North Dakota the fourth-largest oil producing state, up from ninth just a few years ago.*

## CONNECTING INVESTORS AND OPPORTUNITIES IN THE BAKKEN SHALE PLAY

Spurred on by billions of dollars in capital spending by the oil and gas industry, economic activity throughout Western North Dakota is at record heights while unemployment has fallen below one per cent in some communities. The capital expenditure budgets for 2012 for Hess Corporation, Whiting Petroleum Corporation and Continental Resources account for about \$4 billion of investment in the Williston Basin.

The activity is focused on a region in Western North Dakota with only three cities whose population is greater than 10,000 people and several more whose population is less than 2,000 people. The result is an acute demand for real estate development that spans residential and commercial projects from Dickinson to Williston to Minot, North Dakota and everywhere in-between.

The 2<sup>nd</sup> Annual Bakken Investor Conference connects energy sector and real estate investors with opportunities in the Bakken Shale Play and throughout the Williston Basin. The 2012 Bakken Investor Conference is produced in partnership between Dawa Solutions Group, LLC and Minot Lodging Expo, LLC and took place April 2-4, 2012 in Minot, North Dakota.

The conference provided opportunities to hear the latest information on emerging topics critical to the ongoing development of the Bakken. Attendees connected one-on-one with investors, operators, service companies and real estate developers to gain an ear-to-the ground, first-hand perspective of the opportunities and activities in the area.

## REAL ESTATE INVESTMENT PRESENTATIONS

Panel presentations provided critical information updates on infrastructure, builder and developer perspectives and the commercial and residential financing challenges and opportunities—critical information you need to evaluate your investment options.

Wednesday afternoon featured real estate opportunity presentations by specific companies and projects seeking investors and outside capital. Both commercial and residential projects were presented including hotels, apartments, residential developments and condominiums.

Among those in attendance are exploration and production companies, oil and gas service companies, analysts, fund managers, private equity firms, real estate investors and developers and accredited individual investors.

the Bakken or formations above it, the best place to look is below it.

“We’re using the best science available. I thought about this coming here and I don’t want to dash anybody’s hope. These are maps we’ve had out there since 2008 and companies are well aware,” he says.

Most primary operators are focused on the thermally-mature area but the expulsion area might be a way for some companies to get into the oil patch out on the edge with much cheaper leases.

Figures from the state Department of Mineral Resources showed that 225 rigs could drill another 4,500 wells in two years to finish the first phase of Bakken development when leases are secured by at least one well. Murphy projects it will take another 16 years to drill 27,500 more wells to fully develop the spacing units.

## DEVELOPMENT DRILLING

Muncrief says that North Dakota is now one of the biggest oil producing states in the lower 48, second only to Texas, and feels it has now bypassed even California and Alaska. He calls the production in the area very significant.

“Williston Basin is a multi-producing basin but most of the activity focuses on Bakken and Three Forks,” he adds. “We’re

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going to more pad-type drilling, where there's minimum impact to the surface. We're focusing on long-term drilling in the area—this is true development drilling.”

With this much oil being produced, the result is a desperate need for storage facilities and processing plants—a need most oil companies currently cannot meet. The North Dakota countryside is lined with flames due to flaring—burning excess natural gas that is drawn up with the oil because of the lack of storage facilities and plants. Because no oil company wants to see its profits go up in smoke, a greater demand for processing plants exists than the supply of contractors and materials to build them.

Last year, the state produced 113 million barrels of oil—nearly tripling its pre-boom rate and making North Dakota the fourth-largest oil producing state, up from ninth just a few years ago. By the end of last year, there were more than 6,000 wells capable of producing oil and gas in North Dakota and an additional 20,000 wells could be drilled within the next 10 or 20 years, followed by more than 30 years of pumping oil. The only thing that could stop a boom, experts say, is if oil plummeted below \$40 or \$50 per barrel or the government cracked down on fracking.

“This boom is just wild and crazy,” says Ward Koeser, mayor of Williston, the largest city in the center of the oil activity. “It’s more than you can fathom.”

Along with oil, concrete is one of the most desired commodities in the area. The oil companies need concrete to build their oil wells, while the construction industry requires it to meet the housing demands of all the oil industry employees.

“The development in the Bakken is going quite well. This is a transformation story—cities are growing, jobs and wealth are being created, especially for the people who live there,” Muncrief says. “North Dakota is a great place to operate. Most companies that operate out there are high quality producers.”



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Cartoonist Kevin Holten, [holten24@gmail.com](mailto:holten24@gmail.com)



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# North Dakota is Open for Business

*The oil and gas industry is making huge investments and changes to regulations to keep its businesses open.*



By Holli Moncrieff

New regulations recently passed by the State Industrial Commission of North Dakota will act to protect the state's environment and wildlife in the midst of a flourishing oil and gas industry.

There are 26 new regulations that came into effect on April 1, 2012. Highlights of the rule changes include increased bond amounts, the implementation of drilling pits, tougher hydraulic fracturing requirements and required hydraulic fracturing chemical disclosure on the national website [fracfocus.org](http://fracfocus.org).

"The 2012 final rules being adopted by the commission are truly a historical event," says Bruce Hicks, Assistant Director of the Oil and Gas division of the North Dakota Department of Mineral Resources. "These rule changes are the most significant changes we have made in the 31 years I've been with the commission. We believe the 2012 final rules will ensure the oil industry remains good stewards to our land, while maintaining North Dakota's attractive business climate."

## SEMI-CLOSED LOOP SYSTEMS

The new rules require that a semi-closed loop system is used for every well drilled. The

systems separate liquids and drilling mud right at the rig for disposal or recycling, so they are never run into the reserve pit and therefore are never mixed in with the rock cuttings. Hicks says the semi-closed systems are already required for multiple well sites, where companies use one pad to drill more than one well.

The reserve pits are a side-effect of oil drilling. In theory, there's one for every oil well in North Dakota, a number that now exceeds 18,000, though about 5,500 are currently producing oil.

Though pit practices have changed, it still amounts to many thousands of small



*The systems separate liquids and drilling mud right at the rig for disposal or recycling, so they are never run into the reserve pit and therefore are never mixed in with the rock cuttings.*

landfills the size of a swimming pool scattered throughout the oil zone.

The clay or geofabric-lined pits hold everything that goes down the hole and comes back up during drilling. That's somewhere in the range of 650 tons of solid waste and 200 barrels of liquid waste for each well drilled, now that Bakken wells are drilled two miles deep and two more miles laterally. The Bakken field covers a vast area straddling the North Dakota/Montana border and into Saskatchewan.

"A semi-closed loop results in a much smaller pit and will not have any fluids introduced into it," Hicks explains. "They have a smaller footprint on the surface. The initial concern was that it's pretty expensive but the additional cost is a wash if a company has a multiple drill system."

Reserve pits came under fire last summer when the U.S. Department of Justice, acting on allegations made by agents of the U.S. Fish & Wildlife Service, brought criminal indictments against three oil companies operating in the Bakken. Brigham Oil & Gas, Newfield Production and Continental Resources were charged with violating the Migratory Bird Treaty Act. Brigham was charged with unlawfully killing two mallards, Newfield with killing two mallards,

one northern pintail and one red-necked duck, while Continental was charged with killing one bird called a Say's phoebe. All of the birds, according to the Wildlife Service investigation, died in the companies' reserve pits. Birds can get into these ponds when they're not properly netted, get covered in the oily muck and die.

Although the oil companies were found not to be criminally responsible, the death of migratory birds raised concerns among environmentalists and the public.

"A lot of people think these rules were brought about because of the bird deaths but these rules were thought of long before," says Alison Ritter, Public Information Specialist for the North Dakota Department of Mineral Resources. "Still, this will eliminate these concerns as well."

Trevor Hushagen, Director of Sales for Peak Energy Services, a Clean Harbors Company, agrees that moving to a semi-closed or closed loop system is a step in the right direction. Clean Harbors' major business is oil spill clean-up and hazardous waste removal. They conduct a lot of training in spill prevention and quick clean-up.

"With a closed-loop system, you're guaranteed not to harm wildlife. Birds

will never land in them," he says. "All the fluids are contained within the equipment on location—it could be between 500 to 1,200 barrels. It's much better for the environment."

The semi-closed loop system also guards against unforeseen weather situations, such as unusual rainfall.

"Last year with the flooding, contaminated fluid (from the reserve pits) ended up in fields and roadside ditches. That is guaranteed not to happen again. This is one great step towards the prevention of spills and environmental issues, as everything is contained within spill-proof tanks, and if done correctly, these spills and environmental issues won't happen," says Hushagen, warning that there's always the chance for human error.

As for the cost of adopting a semi-closed loop system, Hushagen doesn't feel it will be a strain on the oil companies.

"It will cost companies the same amount of money—it's very comparable and once you include the environmental benefits, it's definitely a better way of doing things," he adds. "Many producers will put the cost of reclaiming the pit over to the construction side but the cost of a semi-closed loop system is comparable to digging a reserve pit, installing the liner and reclaiming that pit."

Hicks says that this new regulation will eliminate 95 per cent of the reserve pits in North Dakota.

"Most of the issues we've had are going to go away. There is a waiver which dictates which companies can still use reserve pits but they have to be salt-free or very low sodium and the companies have to convince the commission," he adds.

Scott Radig, Director for the Division of Waste Management at the North Dakota Department of Health, is also in favor of the move toward semi-closed loop systems.

"It will reduce the size of the pits located on drill sites and reduce the volume of waste on drill sites, making them easier



to reclaim," he says, explaining that cutting pits are much smaller than oil reserve pits. "Any time you can reduce the liquid in the pit, you reduce the potential of the migration of contaminated liquid in that pit. Solidifying the cuttings right away is a lot easier and there's also much less risk of ripping the liner."

## HYDRAULIC FRACTURING

The new rules governing hydraulic fracturing will increase the protection of potable waters to five layers to keep any fluids used in drilling from migrating. Fracking uses a specially blended liquid which is pumped into a well under extreme pressure, causing cracks in rock formations underground. These cracks in the rock then allow oil and natural gas to flow, increasing resource production. A combination of liquids are used in drilling, which can damage the environment if they escape or overflow, including salt water brine or diesel, petro and other chemicals.

The five layers now required are surf casing, cement, intermediate casing two miles under, more cement and the frac string (the pipe the runs from the surface to the formation).

This regulation is especially timely, with the Wyoming case on many minds. Last December, the Environmental Protection Agency ruled that the chemicals that were contaminating the drinking water of a small Wyoming town were the result of fracking.

"These additional layers protect the integrity of the well and make sure those liquids are never going to be able to reach potable water," says Hicks, adding that in North Dakota, fracking is done two miles under the surface. "This new regulation keeps the mechanical integrity of the well itself, so there's no chance of contamination from fracking. There are protections in place that will prevent the layers from being compromised."

Companies drilling in North Dakota will now have to declare what chemicals they are using in the fracking liquids on FracFocus ([www.fracfocus.org](http://www.fracfocus.org)), a national registry.

"All projects have to be posted. This addresses the people's right to know what's in the frac fluid itself," Hicks says, explaining that there have been 10 incidents of concern in the Bakken region over the last three years but no further episodes since June. "These incidents caused us to want to beef up regulations to prevent future incidents. Protections and auto shutdowns will occur (if the layers are compromised)."



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## AUTOMATIC SHUT-DOWN SYSTEMS

Automatic system shutdowns have now become mandatory on product wells that may cross waterways or streams.

"The committee already has the authority to beef up regulations to make sure there's no doubt we could impose automatic shutdowns. There's ongoing inspection in the field. If we see (an operation that is) close to waterways, drains or sensitive areas, we'll add a shutdown system or do pressure tests," says Hicks. "The purpose for the 40-day timeframe is that it gives us time to schedule a hearing and gives people an opportunity to explain their case."

Radig feels this particular regulation could greatly minimize the opportunity for oil spills to occur.

"This reduces the likelihood of spills and overflows from the tank. It's better to prevent spills than it is to do a really good job of cleaning them up," he says. "There have been an increasing number of spills being reported but then again, so much more activity is going on. Having increased testing requirements is a good thing."

While the new regulations won't prevent every type of spill, they are a step in the right direction, says Radig.

"The automatic system shutdown eliminates at least this type of spill from occurring. This is one area where they can be proactive and I think it will help but it won't stop every kind of spill. For instance, it won't stop a salt tank from rolling over," he adds.


## SINGLE WELL BONDS

Under the new regulations, the price of bonds has also increased. Single well bonds have gone from \$20,000 to \$50,000. One previously existing \$50,000 bond has been eliminated, while the \$100,000 blanket bond remains, Hicks explains.

"We just want to have assurance that companies will follow our regulations and that the incentive is high enough to conform," he says.

In total, Hicks estimates that these new regulations might result in an additional \$400,000 cost per well.

"These are real strong increases in environmental regulations. The costs are rising quite a bit out there, so the time was right," he says. "As long as the price of crude oil stays high, it's sustainable. If prices drop, (these regulation charges) could become a burden. We don't want to over-regulate but at the same time, we want to protect our environment and these rules are doing that."

A PDF of the complete list of regulations changes is available on the North Dakota Department of Mineral Resources' website at [www.dmr.nd.gov/oilgas](http://www.dmr.nd.gov/oilgas). 





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# Grant to Assist Local and Regional Planning Initiatives

*A \$1.5 million federal grant will help small and large cities plan for and grow with the oil boom.*

By Andrea Danelak

**B**ecause of North Dakota's rapidly expanding oil industry, communities have been dealing with impacts in many areas. Enter the U.S. Department of Housing and Urban Development's Sustainable Communities Regional Planning Grant program, which recently awarded North Dakota a \$1.5 million grant.

The program encourages grantees to support regional planning efforts that will

empower them to create more jobs and economic opportunities. Thanks to the Sustainable Communities Grant, as well as grants from the North Dakota Departments of Trust Lands and Commerce, the Vision West ND Project was made possible.

A regional planning project that covers the 17 oil and gas producing counties in western North Dakota, Vision West ND is guided by the Western North Dakota Regional Planning Consortium, a collaborative

team of representatives from various counties, economic development regions, universities and other regional programs. The team proposed a six-initiative approach to address growth challenges in the state.

"The big picture is that it is a tool and process for communities to take charge of their own futures," says Brian Cole, president of Building Communities, lead planning consultant for Vision West ND.

Cities and counties participating in the project benefit from a plethora of planning services, which will help them deal with the challenges of rapid growth while setting the stage for long-term economic diversification through the development of local and regional strategic plans. Through an initial planning survey, communities had the opportunity to choose which planning activities they needed most.

"Each community can sit down with a professional planner and come up with what they want to see," says Vicky Steiner, executive director of the North Dakota Association of Oil & Gas Producing Counties.

"First, there's the economic development/diversification strategic planning, which basically helps communities to identify, select and implement strategies that help diversify the economy and maintain and improve their quality of life," says Cole.

Next is infrastructure needs planning, as well as planning and zoning recommendations. "It is a systematic approach for communities to inventory their water, sewer and road needs in such a way that the information can be shared with a number of audiences, including the North Dakota legislature," says Cole of the former. "And the assumption that we're making is that cities and counties have local planning commissions but have never dealt with these dynamics of growth before."

Individual project schematics consist of drawings of key projects that are



identified in the local strategic planning approach, while the entrepreneurship initiative helps entrepreneurs start and grow businesses, looking at how other states have dealt with fast growth dynamics. "We want to learn from their experiences," says Cole, whose company is responsible for delivering all of the planning products

with the exception of the entrepreneurship initiative.

Once the majority of the planning is completed, the consortium prepares a comprehensive overall plan that incorporates all of the planning elements. While most of them focus on the immediate or near future, the regional plan has a 20-year horizon that

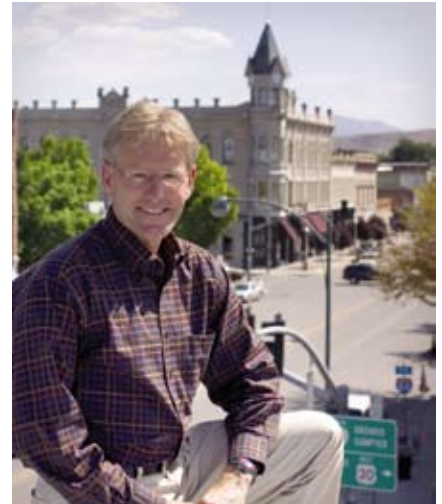
focuses on issues that impact the region as a whole. "It's not just a community-facing summary but a look at what the bigger issues are," says Cole.

Cole says that each year of the three-year funding commitment from Housing and Urban Development will essentially have a different focus: local planning in 2012, regional

*Continued on page 46*

## VISION WEST ND BY THE NUMBERS

- Vision West ND focuses on addressing immediate and short-term needs to meet growth challenges and establish diversified economies for the 19 oil and gas producing counties of North Dakota.
- As a major component of the project, Express Plan Weeks are conducted in a 2-3 day format in participating communities/counties.
- Approximately 20-22 Express Plan Weeks will be completed by the end of August 2012.
- A local steering committee of 10-12 community and business leaders must be assembled to take part in Express Plan Week and will on the process after Express Plan Week takes place.
- Express Plan Week involves seven sessions focusing desired strategies, initiatives and projects and specific action steps. Every Express Plan Week includes a public Town Hall meeting to engage citizens in the process.
- By the end of 2012, these 19 participating cities/counties will have planning and zoning recommendations and best practices training, municipal infrastructure summaries with conceptual cost estimates and complete economic development strategic plans.
- By the end of 2013, there will be a complete regional plan incorporating strategies from the local level. By the end of 2014, implementation of the strategies will take place.
- The project was made possible by a \$1.5 million grant from the US Department of Housing and Urban Development and a \$300,000 grant from the North Dakota Departments of Trust Lands and Commerce.



*Brian Cole's Building Communities, Inc. is the lead planning consultant for Vision West ND.*

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*Continued from page 45*

planning in 2013 and implementation of both in 2014. "We see the most intensive year as being 2012—we're off to a very fast start."

Communities and counties that are participating in the project must first identify a steering committee that will commit to the planning process. As of mid-March, a handful of communities had completed Express Plan Week sessions, a major portion of the project that covers everything from identifying the strategies most likely to succeed to selecting the appropriate strategies and drafting a plan. Approximately 20 Express Plan Weeks will be conducted across the western half of North Dakota by the end of July 2012.

"I was really impressed with the commitment from steering committee members and the attendance from the communities at large," says Cole. "People in these communities very much want to preserve the quality of life they have enjoyed for generations. People are optimistic about the positive impacts from the oil."

For more information about Vision West ND, visit [www.visionwestnd.com](http://www.visionwestnd.com). 

## VISION WEST ND PROJECT OFF TO A GREAT START

A steering committee of 16 people evaluated the strengths and challenges that Watford City is under with the Bakken oil boom during the day-and-a-half planning session, which included an evening town hall meeting with 50 participants.

AE,S engineering staff is also assisting with the plans for the community, which has grown from 1,200 to an estimated 6,500 temporary and permanent residents. Some specific items of discussion in Watford City were lack of daycare, increased litter, long lines at the post office, lack of foster care, ambulance pressure, counseling needs, police and family services, increased traffic, lack of parking, lack of fast food and sit-down restaurants and lack of housing, especially affordable housing for non-oil workers. The Watford City plan will be under the care of its steering committee for implementation.

The first Vision West ND Consortium meeting was held March 12, 2012 in Dickinson. The consortium board gave oversight and guidance to the regional plan and each county has appointed a consortium representative.



## TRIVIA TIME

### FLOOD BY THE NUMBERS

- Crest of Souris River on June 26, 2011: 1,561.72 ft. above sea level;
- Flow of water, measured in cubic feet per second, that came through the gauges near Minot: 26,000+ cfs;
- Homes flooded in Ward County: 4,115;
- People evacuated from their homes: 11,000+;
- Approximate amount of land in Ward County inundated with water, ranging from two to 15 feet deep: 11,456 acres; and
- Damage sustained to City of Minot infrastructure as a result of the flood: \$100 million+.

Go to page 64 to find out how Minot is faring after the flood.

## FATAL CRASH DATA FOR NORTH DAKOTA

Table 1. North Dakota Fatal Crash Summary

	Year-to-Date		Previous Year-End		
	April 1, 2011	April 3, 2012	2009	2010	2011
<b>Fatalities</b>	12	28	140	103	148
Alcohol Related	17 per cent	39 per cent	39 per cent	48 per cent	42 per cent
No Seat Belt	73 per cent	75 per cent	67 per cent	69 per cent	73 per cent

Table 2. Year-to-Date Fatal Crash Data – Current Total and Total From Same Period Last Year

	April 1, 2011	April 3, 2012
<b>Fatalities</b>		
Fatal Crashes	12	26
Fatal Victims	12	28
<b>Alcohol Related</b>		
Alcohol Related Fatal Crashes	2	11
Alcohol Related Fatal Victims	2	11
<b>Seat Belts</b>		
Wearing Seat Belts	3	6
Not Wearing Seat Belts	8	18
<b>Rollover Crashes</b>		
Number of Fatalities	N/A	9
Victims Ejected	N/A	7

Go to page 51 to read an article about how state troopers are making roadways in western North Dakota safer for the public and those who are working in the industry.

Source: [www.minotrecoverinfo.com](http://www.minotrecoverinfo.com).  
 Note: Total fatality count also includes pedestrians, motorcycles, bicycles, etc., where safety belts are not applicable.  
 Source: [www.nd.gov/hdhp](http://www.nd.gov/hdhp), ND Highway Patrol, ND Department of Transportation.



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# Raising Authority, Lowering Statistics

*New highway patrolmen will enforce safe driving on Highway 85 and the western highway state system to help lower accident and fatality statistics.*

By Jennifer Ryan

When vast quantities of oil were found in North Dakota, populations, property values and job opportunities increased across the state. Unfortunately, the oil play in the Bakken also affected traffic violations, commute times and highway fatalities.

Highway 85, designated a high priority transportation corridor on the national highway system, spans north-south from the Canadian border at Saskatchewan to the Texan-Mexican border. The North Dakota portion, known as the Theodore Roosevelt Expressway (TRE),

stretches from Rapid City, South Dakota to the Canadian border and serves as a main transportation artery for the Williston Basin, seeing over 500,000 barrels of production per day and serving over 1,000 oil service companies.

As the Bakken formation flourished and became an increasingly populated workplace, Highway 85 and surrounding highways naturally became steadily more congested; some of the side effects were more dangerous road conditions and higher incidences of car accidents but officials are taking precautions to keep everyone as safe as they can.



*Photo provided by the North Dakota Highway Patrol.*



*In response to the state's evolving traffic patterns, the North Dakota Highway Patrol has received funding last November for four additional troopers and hired another nine troopers in early March for a total of 13 new troopers.*

Lieutenant Jody Skogen, the Safety and Education Officer for the North Dakota Highway Patrol, explains, "Increased traffic numbers equates into higher probabilities of traffic violations, crashes and fatalities."

In 2008, according to the North Dakota Department of Transportation, the Average Annual Daily Traffic (AADT) on Highway 85 between Belfield and Highway 2 near Williston was 1,833. There were 71 crashes on this stretch of highway. Two years later, the AADT increased to 2,198 and there were 82 crashes. None of the crashes resulted in a fatality.

Lieutenant Skogen isn't surprised by these numbers. "Not all motorists necessarily drive responsibly and, often times, more traffic means more traffic violations. The increases are predictable."

### INCREASING SAFETY

The Theodore Roosevelt Expressway Association (TREA) lobbied to transform Highway 85 into a super two-highway format, meaning wider shoulders, an increased number of passing lanes and turning lanes at important intersections—all measures taken to help increase safety on the highway. The passing lanes are now completed between Watford City and Williston, says executive director Cal Klewin. The next phase of the TRE expansion would be to develop a complete four-lane system.

"Four-lane infrastructure is proven to significantly reduce accidents and deaths," he says. "Serious consideration must be given to a four-lane highway in our north-south corridors because the leading exports from North Dakota are to Canada and Mexico. We rely on our exports for economic vitality."

New citizens of North Dakota—those who are part of the huge population boom who sought employment opportunities caused by the oil fields and resulting economic boom—may not know anything other than bumper-to-bumper traffic and long rush hour periods on Highway 85. North Dakota natives, however, are used to fairly different traffic patterns.

"Commutes that used to take seven minutes now take 27 minutes; that's sometimes the reality of a growing community. This growth is relatively unprecedented and it's going to take time to build up an infrastructure that sustains it," Lt. Skogen says.

### POPULATION EXPLOSION

Many towns in North Dakota had been facing stagnancy issues, as the United States Census Bureau estimated North Dakota's 2008 population to be around 640,000. Contrast that with a population of around 680,000 in 1930. As of the 2011 US Census, North Dakota had once again surpassed that 680,000 mark and was reflecting a 4.7 per cent overall population increase over the past decade.

"The evolving economy in our state has changed traffic patterns," Lt. Skogen says. "This doesn't appear to be something that's going to go away in the next few years. This is a change we're still going to see on the landscape as North Dakota continues to grow."

In response to the state's evolving traffic patterns, the North Dakota Highway Patrol has received funding last November for four additional troopers and hired another nine troopers in early March for a total of 13 new troopers. These recruits are attending the North Dakota Law Enforcement Training Academy in Bismarck and are scheduled to graduate in July.

"These positions will bolster our presence in Western North Dakota," Lt. Skogen reports. "We've already reallocated resources in an attempt to keep up with the unprecedented growth. At this time, that means we're stationing more troopers in the west. There are more needs in the west than there were a few years ago."

That doesn't mean the new recruits will automatically be placed in the west. "We've had to draw resources from the east to enhance our capabilities in the west," Lt. Skogen says. Some of those new troopers will fill vacant positions in the eastern half of the state to compensate for the presently lowered patrol force in those areas."

*Continued on page 54*

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Continued from page 52

The new troopers will be trained to fulfill both traffic and motor carrier duties.

"The Highway Patrol has 15 specially-equipped motor carrier troopers to enhance our truck regulatory capabilities," Lt. Skogen says. "Eleven of these motor carrier positions are now stationed in the western half of North Dakota due to the prevalence of overloaded trucks and industry-related trucking in the area."

## ENFORCING THE RULES

Since the deterioration of any given highway is correlated to the amount of weight that drives over it, its normal lifecycle is accelerated

by overweight trucks. When a truck exceeds the lawful maximum amount by even a small amount, the added stress to the state's infrastructure increases exponentially.

"There's no question the economic boom has affected the highways. That's an industry that requires heavy transportation and oil industry activities can go around the clock," says Lt. Skogen. "Our troopers have the ability to enforce overload violations and encourage all truckers to follow regulations to allow that roadway surface a normal aging process."

The normal aging process accounts for regular repairs, ensuring the roads are in fair driving conditions. But Klewin says some

roads are falling apart due to increased traffic of trucks and freight.

"The traffic and freight is so intense on that whole TRE corridor through North Dakota based on the energy exploration, tourism and agriculture-related needs," says Klewin. "Issues have to be dealt with that take into account both safety and freight movement. In short, we need a more modern way of dealing with large volumes of truck traffic and freight moving along the corridor that also ensures safety for the traveling public."

## DRIVING RESPONSIBLY

The North Dakota Highway Patrol is eager to educate motorists about their responsibility when they take to the highway.

"Measures are underway to make a transportation system that meets the needs of our growing economy. The systems that are there are safe. The biggest concerns we have are motorists who view traffic laws as mere guidelines or even optional," Lt. Skogen says. "No system can be safe if a handful of irresponsible motorists fail to follow traffic laws."

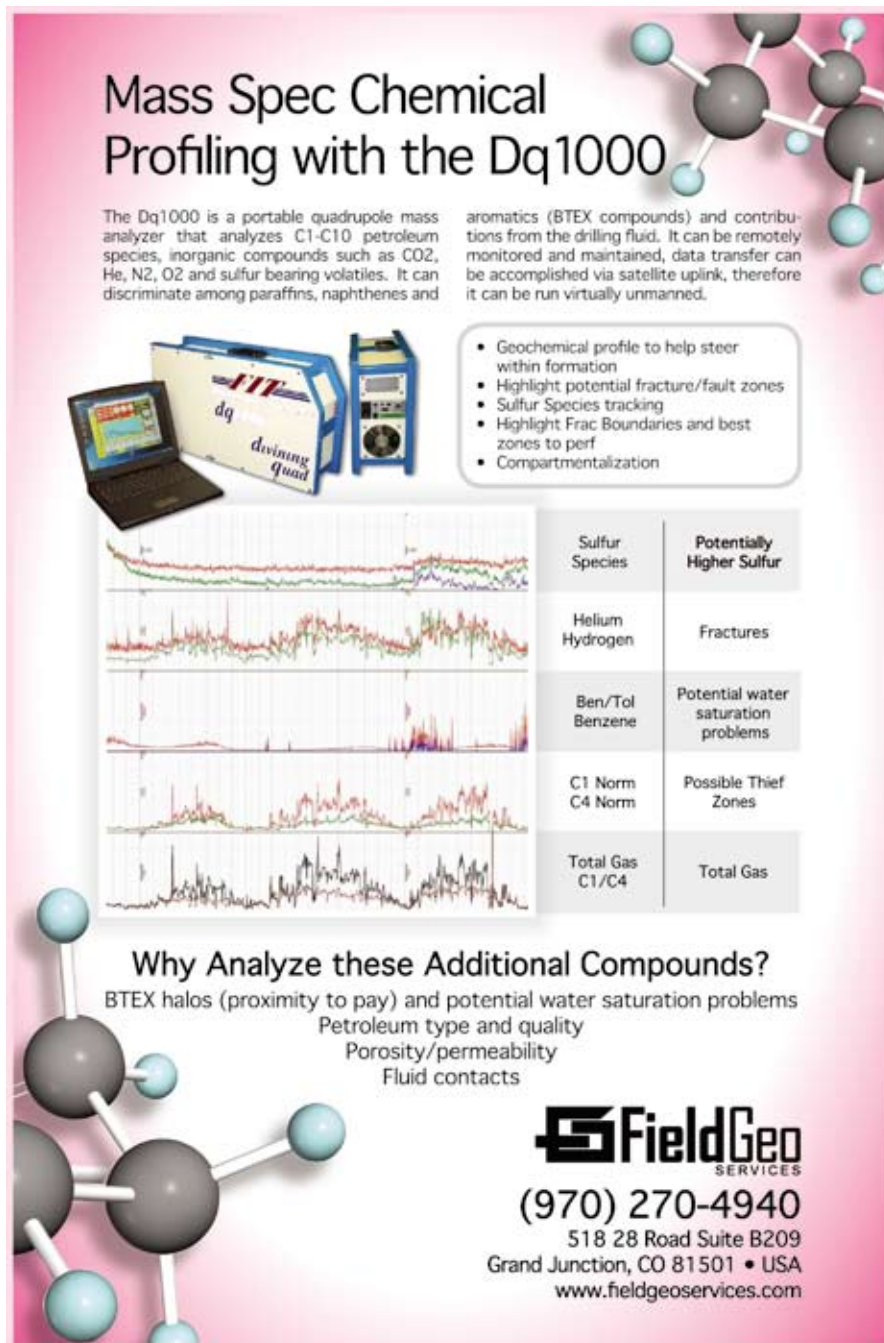
Regardless of the longer commute times, increased traffic congestion and number of trucks on the roads, Lt. Skogen says the North Dakota Highway Patrol delivers the same safety messages for Highway 85 as any other roadway.

"Our traffic safety advice remains the same. Most of our crashes are behavior-related and preventable. We encourage drivers to be patient and follow traffic laws. Not following those rules puts you and others at risk."

The infusion of eight or nine new troopers this summer can likely solve some of the issues on Highway 85 and hopefully reduce the number of traffic violations and crashes.

With the significant population increase in towns across the state, vacancies are now a thing of the past, which can make finding a place to live tricky, even for the newly-appointed highway patrolmen. As an effect of the boom, property value has skyrocketed, making purchasing a home a less attainable goal for some. Troopers who already live in North Dakota could have an advantage but if they are asked to relocate from the east to the west side of the state, they may also struggle to find a new home. To assist, the North Dakota Highway Patrol is trying to source locations for the new recruits.

"We are researching every housing opportunity available to us. We have the same issues everyone else is dealing with," Lt. Skogen says.



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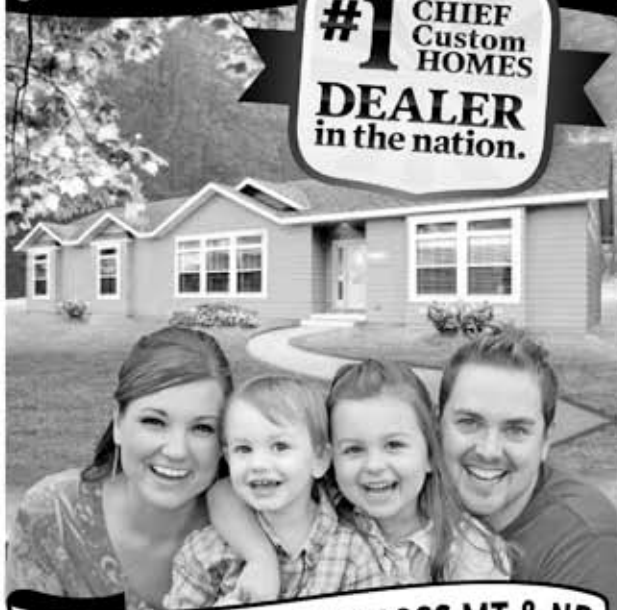
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# CARTOON CORNER



Cartoonist Kevin Holten, [holten24@gmail.com](mailto:holten24@gmail.com)



# Learning to Cope



*A look at how schools in McKenzie County are handling the oil boom and what is expected for the future.*

By Andrea Danelak

Parts of North Dakota are experiencing growth unlike anything they have ever seen, with the current oil boom likened to the gold rushes of yesteryear. The population explosion has meant that some communities have seen their numbers grow significantly over the past few years. And while many North Dakotans can vouch that the oil boom has impacted their daily lives—in terms of everything from increased road traffic to water system issues—there is one area that is often overlooked: schools.

“Our schools have been affected for the past year-and-a-half to two years,” says Steve Holen, superintendent of McKenzie County School District #1 in Watford City, of the impact of oil production. “We’ve gained 200 students, so we’ve renovated the buildings, added classrooms and hired teachers to accommodate that growth.”

Neighboring communities are in similar situations, with school districts bursting at the seams. The Williston Public School District #1 in Williston, for example, has acquired 450 more students in the past two years and smaller districts are also feeling the effects of the rapid growth.

“We’re up by about 180 students and since we’re not a very large district that is a big number for us,” says Dr. Kent Hjelmstad, superintendent of Stanley Community Schools in Stanley. “We expect to grow by about 150 students next year. We’re using past growth patterns to estimate numbers but we can’t be sure.”

## ANTICIPATING FUTURE NEEDS

Because of the sudden influx of students, the McKenzie County district required some help to figure out how to accommodate all of the new children. It is working with an

architectural firm to come up with a definitive plan for the district and its expansion needs. Much of the planning has consisted of taking a proactive approach and anticipating future needs since enrollment is expected to continue to climb.

“We are trying to see what our needs are going to be over the next three to five years—what is essential to build and what is going to come in the next few years,” says Holen.

Other parts of the planning process have looked at potential improvements to current buildings and the possibility of adding new ones. “Our elementary school is basically at capacity, so we are looking at building and facility planning,” says Holen of the “fairly substantial” building project that will renovate the elementary school to add some much-needed space. The district is also seriously exploring the possibility of constructing a third building—a middle



# with the Boom



*Left to right: Watford City Elementary School; Watford City High School; Watford City High School Library; and Watford City Elementary School Playground. Photos provided by McKenzie County School District #1.*

school. “We’re getting too large for two buildings.”

Stanley Community Schools, too, have just started the first part of a major building project, which will see them gain about 11 new classrooms at a cost of approximately seven million dollars. Hjelmstad hopes to see the state help them offset the costs of the construction. “We’ve started the project hoping the state will help us because we really can’t afford to do that much building,” he says.

Dr. Viola LaFontaine, superintendent of Williston Public School District #1, has also turned to government for financial aid to obtain some modular classrooms for her district. “We are trying to get more modular classrooms but we don’t really have the funding. We’ve gone to the state and the governor for assistance in trying to obtain them,” says LaFontaine, whose district is anticipating anywhere from 800 to 1,200 more students in the fall.

## HOUSING CRUNCH

While lack of space remains a growing concern for schools in the area, housing remains a critical issue as well, with all three districts trying desperately to acquire more housing for their teachers.

“We’re hiring all of these teachers and yet there’s no place for them to live,” says Holen. Because many people tend to remain in the

area after entering the workforce, teachers in Holen’s district have been creative in finding housing. “Some teachers are staying with relatives; some are staying with their parents,” he says.

The problem, though, is finding housing for—and retaining—new recruits to McKenzie County, which lies in the heart of the oil drilling. “It’s not fair, for example, to ask

people to live in an extremely small apartment with three children,” says Holen.

Like those in McKenzie County, teachers in the Stanley and Williston districts have also been majorly affected by the housing shortage. “With new students, we have to add new teachers and when we’re about to add a teacher, we have to ask ourselves, ‘Where will this person live?’” says Hjelmstad.





Even when housing is available, the high rental costs may deter some from considering a move to the area, a challenge LaFontaine has faced with potential recruits. “Our teachers make \$30,000 a year and many apartments are being rented for more than \$2,000 or \$3,000 a month, so they can’t afford to come here and work for us,” she says. To lessen the impact of the housing crunch, Hjelmstad’s district has taken a somewhat unique approach. “We’ve attempted to become a landlord,” he says. “We’re in the education business but I oversee and facilitate the housing in different living

*Like those in McKenzie County, teachers in the Stanley and Williston districts have also been majorly affected by the housing shortage.*

quarters.” While the arrangement has proven beneficial, it has also raised some difficult questions for the district.

“Do we need to build more (housing)? If the answer is yes, when we spend money on that, that’s money we don’t spend on textbooks, computers or staffing.” LaFontaine’s district also bought two four-plex apartments, which it rents to staff at an affordable cost. “But still, that’s only eight apartments,” she says.

## PLANNING FOR THE UNPREDICTABLE

Though all three superintendents are trying their best to deal with the impacts of the rapid growth, planning for the future remains difficult due to the unpredictable nature of the oil industry.

“It all happened fairly rapidly and it’s generally been pretty steady but it does fluctuate in the winter time,” Holen says of Watford City’s booming growth. “It’s uncertain how the 1,500 to 2,000 planned homes in the area are going to impact the schools. Once the housing issue is solved, everything will ramp up even more.”


“In general, we’re expecting continued growth and we have to plan for lots of developments, expansions and new housing, which will all attract more children,” adds Hjelmstad. “The big question that comes up is ‘What if?’ What if we get 280 new students instead of the 150 we’re estimating? What if we’re ready to hire four new teachers and they don’t have a place to live?”


Hjelmstad, along with several other superintendents, recently spoke to the energy commission to ask for help in dealing with the projected growth, as well as the growth they have already experienced.

“I really think they’re beginning to understand that we need help,” he says. “We will be designing some proposals for schools experiencing this rapid and rather amazing growth and hope that the legislature will consider assisting us.”

Despite the many challenges associated with the multiplying oil rigs, the superintendents are viewing the overall situation optimistically.

“While there are certainly challenges, we’re taking them and making them into positives,” says Holen. “It’s a great opportunity for us to have an increased student base. We’re really focusing on welcoming the children to our district and embracing the diversity that we’re now seeing. It really is an exciting time for us.”



And Hjelmstad agrees. “This brings new energy, brings diversity and brings new opportunities for staff and students. Everyone is lively, full of energy—but it’s a positive energy.” 



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# Minot: One Year Later

*After the worst flooding in Minot's history, we look at how the city is faring and dealing with the oil boom.*

By Jennifer Ryan

**T**he Souris River surged nearly four feet past a 130-year record and crested on June 25, 2011 at 1,561.72 feet. Floodwater flowed through the town at 27,400 cubic feet per second. Close to 12,000 people were evacuated and despite levees, approximately 4,000 homes were surrounded by the untamed waters—some leaving only their rooftops visible.

One year later, the city of Minot is putting itself back together again through the determination of its residents and the assistance of the Federal Emergency Management Agency (FEMA), local businesses, volunteers and all levels of government.

Minot city council had a particularly busy winter, as it continued to put flood recovery and prevention measures into place.

"Through the efforts of the U.S. Corps of Engineers, we have restored all of our

existing 100-year flood protection measures," says Minot City Manager, David Waind. "We have completed repairs to the existing dike system to ensure we have that level of protection again."

## PROTECTION PLAN

The city of Minot also approached the State Water Commission to analyze the current situation and explore possible safeguards against future floods of this magnitude, taking into account both the strategic and financial ramifications. The State Water Commission hired engineering consultants to analyze the merits of plans that would either work within the river channel or ones that would build diversions.

Those studies have been completed and were submitted to City Council in early March. A decision has not been made yet but regardless of which path council

decides to pursue, Waind explains that they are currently in the preliminary stages of acquiring 117 residential properties along the basin.

"Our intent is to gain better access to the river in the instance of a future flood fight," Waind says.

All 117 property owners have been approached and Waind says an approximate 80 per cent are interested in selling. There's no word on when City Council may approve the protection plan, though city residents are warned it could be awhile.

"It's a big decision to make," says Waind. "It doesn't just affect Minot but everyone upstream and downstream. We have to consider other communities, ranching interests, farming interests, rural subdivisions and everyone else affected. And we will need to weigh the costs and benefits of building to the flood of record







*Photos provided by the City of Minot.*

[27,400 cfs]. With an estimated cost of \$820 million for the enhanced flood protection plan, our council will be carefully considering the plan and alternatives before moving forward.”

## FLOOD RECOVERY

In the meantime, the city has used the winter to address other flood recovery efforts. “Every facet of our infrastructure is in need of work. It’s clearly going to take some time to get things done,” he says.

Following the flood in 2011, the federal government provided immediate monetary assistance to individuals through FEMA. In Minot, the average amount of assistance was \$16,000, though many individuals received the maximum \$30,200. By the end of August 2011, FEMA had distributed approximately \$89 million to flood-impacted individuals.

With approximately 4,000 buildings affected, and with two-thirds of those experiencing up to six feet of water on the first floor, it’s no surprise that the rebuilding efforts are ongoing.

However, a survey completed in December 2011 by the Great Plains Center for Community Research and Service at Minot State University reported 42 per cent of homes in the valley are now, or are very close to being, re-inhabited. Over 100 structures reflect that no work has been done to them.

Waind says there are “a plethora of programs” providing people with assistance, including the Community Development Block Grant totaling around \$67.5 million. Fifty per cent of that fund has been earmarked for assistance to low- and moderate-income individuals. The exact form of assistance is still being worked on. The

state has also set aside \$3.5 million to help those whose unmet needs have not yet been addressed. A further \$30 million is available in the form of low-interest loans.

Since November, the Minot Area Recovery Fund has distributed expense reimbursement checks to approximately 1,700 flood-impacted individuals or families and they are reaching out to a further 1,200 who are eligible for assistance. Many of the programs have income qualifications and agencies are monitoring the duplication of benefits to ensure fairness.

Even with this money being distributed as quickly and fairly as possible, Waind admits “There is a lot of frustration from the people without resources who are waiting for the programs to be in place.”

Ken Kitman, president of the Minot Area Community Foundation, says FEMA trailers dot the city, grassroots volunteer



*One year later, the city of Minot is putting itself back together again through the determination of its residents and the assistance of the Federal Emergency Management Agency (FEMA), local businesses, volunteers and all levels of government.*

projects are popping up everywhere and money is being distributed as quickly as possible. Even still, “The help isn’t nearly enough to get people close to whole again.”

### FLOOD OF EMOTIONS

The spirit of Minot has certainly taken a heavy blow. Both Waind and Kitzman liken citizens’ reaction to the grieving process.

During the flood event last fall, Waind says, “Experts told us to expect an immediate range of emotions starting with shock and fear. After the crest, there was a lull before disillusionment and grieving kicked in.”

Kitzman concurs. “Before the flood, it was a real tug-of-war on the emotions. It was a real somber time. I don’t think people—even ourselves—understood what was going to happen. The devastation was unbelievable: emotionally, physically, financially. It’s like a grieving process and everybody grieves differently. Some said, ‘I’m not a flood victim; I’m a survivor.’ And they’re going to get up and rebuild.”

“Now we’re in the reconstruction phase,” Waind adds. “Things are beginning to look up.”

Hallie Lock of Gravel Products Inc. agrees. “When the flood hit, we observed panic. But now we’re observing positive attitudes, probably because of the good

weather this winter,” she says. “Mother Nature gave us a chance to recoup, so now people are eager to get going on the projects that will help them feel like they’re getting their homes back together.”

Kitzman predicts, “We’re going to see an unbelievable surge of recovery this spring and summer. Getting back to normal, watching the neighborhood survive.”

Waind has seen this firsthand on a personal level. Two of his children have homes that were damaged in the valley. “It lifted their spirits to be back in their own home again after nine months,” he says. “That’s happening around the valley.”

### HELPING HANDS

Recovery is a slow process, though it has undoubtedly been sped up by the giving nature of volunteers and local businesses. Gravel Products Inc. was just one of several companies who worked around the clock to bolster flood recovery efforts.

“Being a supplier for material that’s needed in an emergency situation, we did everything we could to make sure all contractors were able to get the materials they needed,” Lock says.

As for the 12,000 displaced individuals, only 300 needed to live in shelters. “The rest were absorbed into the community,” Kitzman says. “Every garage was filled with other people’s stuff. It was people helping people you don’t even know.”

The booming oil industry in North Dakota may also provide a silver lining for homeowners still struggling to cope with the aftermath of the greatest flooding Minot has ever seen.

“We’re living in a huge boom economy in North Dakota,” says Kitzman. “If we’d been in a down economy like the rest of the U.S., I think we would have seen a lot of people leave.”

“The impact of the growing oil industry is providing some hope,” Waind says. “Many of those who owned their home before the flood had to take out another mortgage to rebuild. As a result, many have found themselves with an upside-down mortgage situation. The strong economy brought on by oil industry growth is increasing home values and giving these homeowners hope.”

Recovery will continue but the people of Minot are unlikely to forget the devastation for a long time to come, especially living among obvious reminders nearly a year later.

“You can’t understand unless you see it,” says Kitzman. “I call it a tale of two cities: the hill is a boom town and down in the valley it’s a war zone. But it’s amazing the resilience you can see.”



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# It's a Rough Life

*The days of old, rough men undertaking intense physical labor and throwing chains around are no more. Today, computers and machines take care of much of the work. How things have changed over the years.*

By Brent Hirose



*Photo provided by Halliburton.*

As long as there have been rigs pumping oil out of the ground, there has been the need for men to man them. While changes over time to technology and work conditions have changed many aspects of the oil industry, there is still the need for roughnecks to brave the rigs and put in the long hours necessary to keep them operating. With reality TV shows chronicling the lives of modern rig workers, interest and exposure into the essential work that roughnecks and their fellow rig workers do is high, it is both important and interesting to take a moment and see how far things have changed from the lives of the roughnecks of yesterday to those of today. Equally interesting is how many things have managed to remain the same.



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In his book *Roughnecks and Wildcatters*, Allan Anderson quotes former roughnecks John Gove and Tom Sparrow saying, "A good roughneck is damn hard to find. It's often 12-hour shifts, two weeks every day for 12 hours. The rigs work 24 hours a day." Even with new technology, working on an oil rig is hard work and requires a certain kind of worker. In the early days, many roughnecks would be young men from nearby farms, looking for ways to earn a better living off of their labor.

In the same book, Harry Alger describes the physical needs of the job: "It's nice to weigh about 200 pounds, if you can, if you're going to roughneck, because the work is

heavy... too little a man can't work very successfully around a rig, but neither can too big a man, either. You've got to be fairly athletic and able to move about and it's a torturous style of work."

### ATTRACTED TO THE ROUGHNECK LIFESTYLE

While working on a rig is tough work, it does offer the possibility of good money, something that has always attracted workers to the roughneck lifestyle. Where farm workers in the 1920s could expect to make around two dollars per day (or \$25, adjusted for inflation), working on a rig at the lowest levels

promised wages of three times that much, paying six dollars per day. As companies began to shift to hourly systems in order to save costs when rigs were not operational, workers could make as much as \$250 per month. While the great depression of the 1930s lowered wages, things quickly stabilized in the aftermath of the Second World War. While the war proved detrimental to the day-to-day running of the rigs, with many skilled workers being shipped overseas, once the fighting had finished, the returning workers, newly-educated through their military training, came back into the industry with new skills and awareness.

Safety standards have been another obvious change in the oil industry over the years. While working on an oil rig remains a dangerous job, increased safety standards and vigilant work practices have drastically improved working conditions. Safety training, drug screening and, of course, improved equipment with cutting-edge safety features and redundancies are just a few of the ways the industry has added new regulations over the years to improve working conditions on the oil rigs.

While the very nature of the work remains dangerous, companies and workers alike strive to ensure that accidents are avoided wherever possible and in the unfortunate cases where they do, medical coverage is a modern convenience that the roughnecks of bygone days couldn't imagine.

### QUALITY OF LIFE

Those same roughnecks might also have trouble seeing the quality of life for modern rig workers in remote locations. Early crew camps were just that, with few amenities of civilization for the workers to return to between shifts. As companies began working to retain their skilled workers and new possibilities for lodging became available, additional effort was made to improve the standard of living for their employees.

A 1952 issue of *Drilling Engineering Reports* states, "Every effort has been made by the company to maintain drilling crews in comfortable surroundings on the lease. Food of the highest quality is provided along with entertainment in the form of picture shows and a reading library. The personnel problem, however, continues to be acute where men often work 40 days or more on location without a change."

Now, modern crew camps offer amenities like television, internet, gym facilities and more. For more information on modern crew camps, read the article *Crew Camps: An Alternative to RV Parks*, featured on page 104 in this issue of *Basin Bits*.

With oil demand continuing to increase every year, the oil industry will be digging


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*While working on a rig is tough work, it does offer the possibility of good money, something that has always attracted workers to the roughneck lifestyle.*

new wells and hiring new roughnecks for years to come. The work remains difficult and as the lowest man on the totem pole, they receive the menial tasks the other crew members don't have time—or don't want!—to do. However, seeing how far the job has come from its humble beginnings, roughneck work has never been safer, more comfortable or paid better. It's a rough life, to be sure, but not as rough as it has been. 

#### DID YOU KNOW?

- At 3.5 per cent, North Dakota's unemployment rate is the lowest in the country. Nationwide, the rate is 9.1 per cent. In small towns like Williston, Watford City and Belfield, unemployment is just 1.5 per cent.
- Halliburton, Continental Resources, Hess and Whiting Petroleum are among the biggest players in the area.
- Oil company workers make an average salary of about \$100,000, often with little-to-no experience or need for a college degree.
- Williston, ND has the highest average salary in the state of a little more than \$57,000 and about 2,500 job openings at any given time.
- Every industry—from hospitality to retail—has been hit as a result of the boom. At fast-food chains, the going rate is about \$15 per hour. Hair salons, pharmacies, banks, hospitals, gas stations, bars and clothing stores are desperately looking for employees and are increasing wages.
- Some housing rental prices have tripled. Single-bedroom apartments are currently going for more than \$1,500 per month, while two-to three-bedroom apartments are renting for upwards of \$3,000.

Source: CNN Money, [www.money.cnn.com](http://www.money.cnn.com).


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# Bright Ideas in the Industry:

## Responding to Environmental Challenges



*Flaring may one day be a thing of the past, as new innovations look towards discovering ways to utilize gas that would typically be flared at a well site. Photo provided by Blaise Energy.*



*Tapping into the line as it goes out to flare, gas is captured and run it to the generator, which then provides power that can be returned into the power grid or used on-site. Photo provided by Blaise Energy.*

*Some of the newest and smartest ideas in the oil and gas industry.*

By Brent Hirose

It almost goes without saying but environmental awareness has never been higher than it is at this point in time. As the gas and oil industry continues on into the future, new technologies are necessary, not only to ensure that business is run efficiently in terms of production and cost but also to reduce the impact industry practices have on the environment.

With new, strict environmental guidelines being put into place and a genuine desire to minimize waste and ensure that the natural world is left as pristine as possible, technologies are quickly emerging, showing the way to the future of the industry. Here are but a few examples of great new technologies and the companies behind them.

### A FLARE FOR THE ENVIRONMENT

The iconic image of a flare stack may one day be a thing of the past, as new innovations look towards discovering ways to utilize gas that would be typically be flared at a well site. Flaring is not an insignificant problem in North Dakota; Jeff Anderson, regional manager for Eco Alternative Fuel Systems states that approximately 51 per cent of the natural gas in the region is flared due to lack of infrastructure to capture it. However, Eco Alternative and companies like it are attempting different ways to harness this resource, both reducing its



environmental impact and finding ways to put it to use.

Steffes Corporation has created a burner that is capable of efficiently burning the released natural gas.

"The best case is to utilize [the gas] and put it to productive use but if that can't be done, we want to do a good job of burning it," says Todd Mayer, new product development manager for Steffes Corp. Since the release of raw gas into the atmosphere can be very harmful, Steffes' burner is capable of burning the gas without creating smoke while dealing with the huge variances in gas flow and site temperature that make reliable burning a challenge. In the end, Steffes' solution is able to greatly reduce the volatile organic compounds released into the air, claiming a 98 per cent destruction rate.

Eco Alternative Fuel Systems uses technology that allows diesel engines to run on up to 70 per cent natural gas. The company currently has over 150 generators installed on sites, many of which are not connected to the power grid. Tapping into the natural gas and using it for their engines, they reduce diesel usage by 55 to 65 per cent.

"This saves the operator about \$6,000 to \$12,000 a month in fuel costs," Anderson claims. The technology can also be used for drilling rigs, retrofitting boilers and even employed on frac heaters and frac trucks.

"The numbers we have right now is one year for one rig—conservatively, you'll save one million dollars in diesel costs." This, in turn, reduces the fuel being brought into the site and brings down traffic and emissions accordingly.

## GENERATING POWER WITH WASTED GAS

Mark Wald is the co-founder of Blaise Energy, a North Dakota company founded in 2008, with an eye focused on making use of the potential energy being lost to flaring.

"You see the flaring; it's obviously a great waste of a resource and you say, 'There has to be a better way.'" Wald says. "You ask, 'How can we approach the market differently? How can you come up with pragmatic solutions?'"

In 2010, Blaise set up its first attempt at that solution with the installation of its first on-site generator. Tapping into the line as it goes out to flare, they capture the gas and run it to their generator, which then provides power that can be returned into the power grid or used on-site. The technology is modular, so multiple generators can be run in parallel off of high-volume sites and modules can be redirected as required as volume lowers over time.

With two sites currently running, Blaise is generating around a megawatt of electricity, roughly enough to power 1,000 homes. With several more sites in the works, they hope to have energy production reach five or six megawatts by the end of 2012.

"We're continually adding more value and incentive for the operator," says Wald, noting that the technology can be used to power a well that has begun pumping, which avoids the need of having to install a diesel generator and the expense of trucking fuel to continue operating it.

On top of this, Blaise claims that they reduce emissions by 75 per cent versus flaring.

The technology also generates Recycled Energy Credits due to the unique method of re-purposing flared gas, making Blaise the first company in North America to do so.

## WORKING WITH WASTEWATER

Obtaining adequate water for the fracturing process is a huge environmental cost for oil rigs, both in the transportation of water to site and the water itself. With water in high demand for residential, agricultural and industrial use, making the most of every drop is not only incredibly useful in terms of environmental impact but is also very efficient and cost-conscious. One of the ways to do this, which has been met with great success, is finding ways to re-use and recycle wastewater.

On December 15, 2011, Target Logistics opened a brand new wastewater treatment plant near Tioga, a \$3.1 million investment that is capable of processing 180,000 gallons of water per day. The wastewater is taken from its nearby crew camp, which makes it the first wastewater treatment plant built at a temporary housing facility in North Dakota and one of the only mechanical treatment plants in the state. Constructed by Double Tree Inc. from Bozeman, MT, the plant has the capacity to



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easily handle waste from the site itself, as well as waste hauled in from other areas.

Travis Kelley, regional vice president of Target Logistics is proud of the impact the new plant has made. "Before we would have hauled [the wastewater] off to one of the municipalities. We got to the point that we realized we were having this huge impact on [the municipalities] and they couldn't handle all the wastewater that we were generating," he says.

Not only does the plant allow Target Logistics to process its own waste and lessen the burden on other facilities but it has also cut down on truck traffic, no longer requiring trucks to haul off waste or bring in more water for fracing.

"We're taking something that's undesirable and creating something desirable. It's almost a 1:1 ratio in terms of the water being re-used," Kelley says. While the \$3.1 million price tag is initially steep, he says that with savings from constantly having to haul away waste, the plant is capable of paying for itself very rapidly.

#### AWARD-WINNING WATER TREATMENT SOLUTIONS

Oil giant Halliburton is also looking at new ways to utilize waste water. As Larry Ryan, global manager for water treatment at Halliburton describes it, "Clean wave is an electro-

coagulation technology that we use to remove total suspended solids, iron and some other metals that are produced in flow back water, which we can then recycle into a new fracturing fluid, thereby reducing the amount of water that people use in their fracturing process."

Capable of producing water at rates up to 26,000 barrels per day with minimal power usage, the technology has received an Offshore Technology Conference Spotlight Award, recognizing it as an innovative solution for the future of the industry.

In a case study in Price, UT, Halliburton was able to install a unit to the remote area in

only four days, taking less than 2,500 square feet. In an area difficult to reach by truck and isolated from its nearest water source, the installation proved invaluable, especially in the harsh winter months, which would frequently make the only road to the site impassable due to heavy snowfall. Treating over 55,000 barrels of water in these months, 1,000 truck trips were eliminated and an estimated \$250,000 was saved from the water treatment plan. As such, the technology has proved quite successful, with Halliburton's backing promises to be a force in the industry for years to come.



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## TRIVIA TIME

### STATISTICS ON DRUG USE IN THE INDUSTRY

1. Of adult drug users, 77 per cent are employed.
2. Forty-four per cent of full-time employed drug users are employed at small companies (1-24), 43 per cent at medium companies and 13 per cent at large companies (500+).
3. Forty-seven per cent of full-time employed heavy drinkers are employed at medium companies, 36 per cent at small companies, 17 per cent at large companies.

4. Alcohol and drug abuse cost businesses in excess of \$81 billion in lost productivity each year.
5. Over 60 per cent of adults know someone who has reported for work under the influence of alcohol or drugs.
6. As a result of an employee's drinking, 20 per cent of workers report that they have to work harder, had to re-do work and/or been put in danger or injured.
7. The highest rates of drug use and heavy drinking were reported by food and bar workers, construction workers, service occupations and transportation and material moving workers.

*Source: US Department of Labor.*

### TOP 10 STEPS FOR EMPLOYERS TO ACHIEVE A DRUG-FREE WORKPLACE

1. Understand substance abuse and addiction.
2. Assess your workplace.
3. Develop a drug-free workplace committee (employer representative, program administrator, worker representative, union representative, employee assistance professional; substance abuse professional and monitor.
4. Develop a drug-free workplace policy (a legal review is critical; consider a "zero-tolerance" policy on alcohol; think carefully before drug-testing; and get help developing your policy).
5. Train supervisors.
6. Educate employees.
7. Respond to crisis.
8. Refer the troubled employee to get help.
9. Hold a back-to-work meeting with the employee and co-workers.
10. Help the employee by providing a return-to-work program.

*Source: [www.enform.ca](http://www.enform.ca), 10 Steps for Employers to a Drug-Free Workplace.*

**For more information on this topic, go to page 100 for an article on how you can keep drugs and alcohol away from the oil field.**

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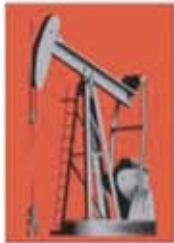
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# Pipeline Capacity:

*Oil production is exceeding pipeline capability.  
How companies are getting around this problem.*

By Holli Moncrieff

**T**he oil business is booming in the Bakken region. Unfortunately, production is exceeding the pipeline capacity needed to move the crude to more profitable markets on the Gulf and East coasts.

Experts say this lack of infrastructure is creating a bottleneck and driving oil prices down in the region but several companies are coming up with creative solutions to the problem.

## PIPELINE EXPANSIONS

Enbridge Inc. is proposing a number of pipeline system expansions in North Dakota and Saskatchewan to add transport capacity that will help address current and future increases in crude oil production from the Bakken and Three Forks formations.

"We have quite a few expansion projects that will open up markets off the mainline, so North Dakota can see relief from the roads," says Katie Haarsager, community relations advisor for Enbridge Inc. "The Bakken Expansion Project, which will be completed in January 2013, will add another 120,000 barrels per day to the existing 25,000 barrels per day, which means sending a total of 145,000 barrels per day to the north, which comes back down to our system on the mainline. Producers will be seeing a lot of pipeline options become available to them."

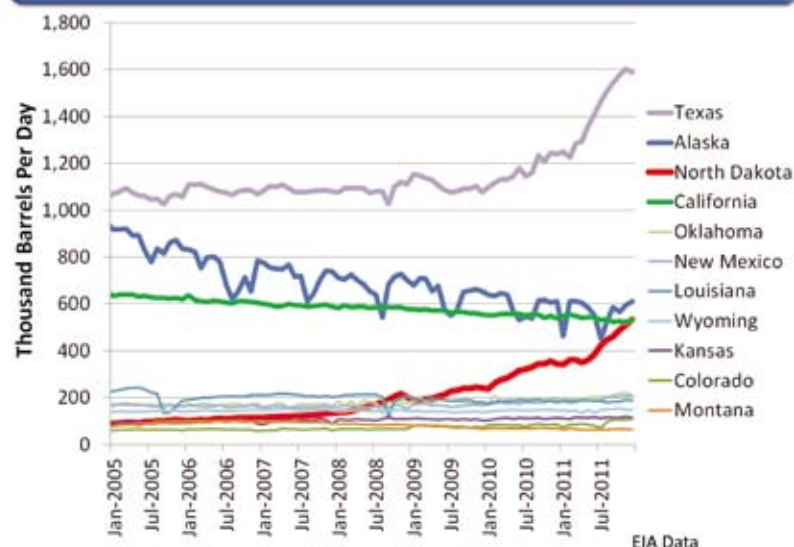
The company's Beaver Lodge Loop Project proposes to build new pipeline segments along the existing route where Enbridge has been operating since the mid-1960s. Those segments include:

- 26 miles of 16-inch diameter pipeline between Enbridge's Beaver Lodge Station (Near Tioga, ND) and Enbridge's station in Stanley, ND; and
- 29 miles of new 16-inch diameter pipeline between Enbridge's Stanley,

## North Dakota Crude Oil



## Crude Oil Production By State



# When Will the Bottleneck End?

ND station and Enbridge's station in Berthold, ND.

Once constructed, the projects will add up to 148,500 barrels per day of pipeline capacity into Enbridge's North Dakota System Berthold, ND station. In addition to the construction of new pipelines, the project scope will also include expansions within Enbridge's existing terminal facilities in the following locations:

- Two new 80,000 barrel tanks at the Berthold, ND terminal;
- One new 80,000 barrel tank at the Stanley, ND terminal; and
- One new 150,000 barrel tank at the Beaver Lodge terminal near Tioga, ND.

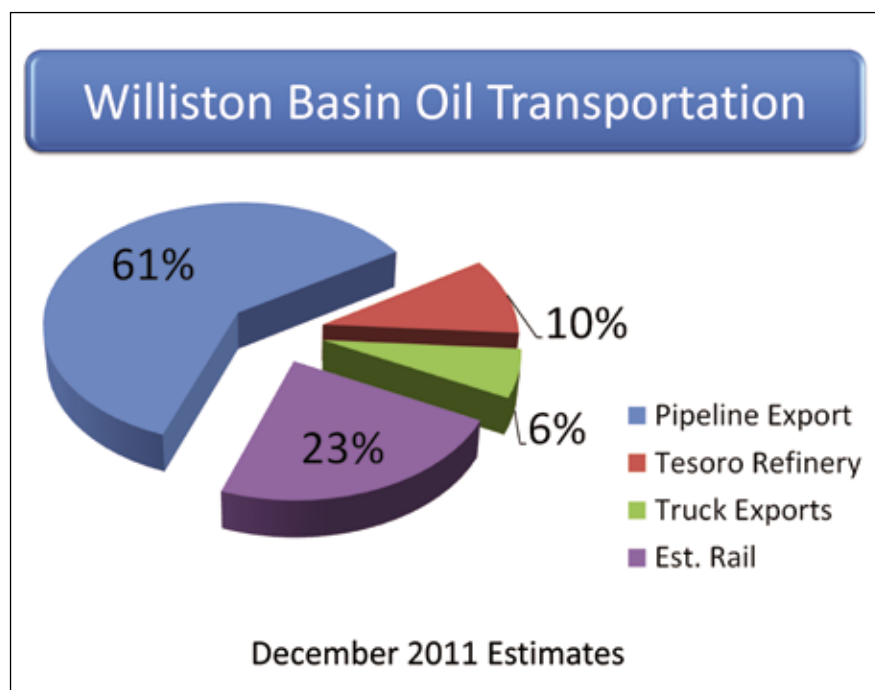
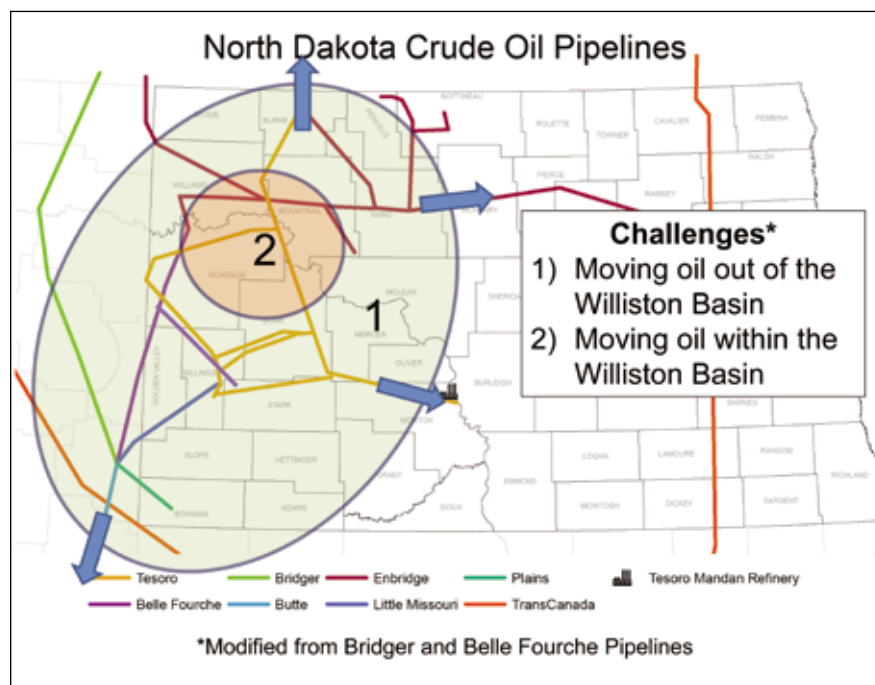
Interconnection valves, pipes and metering stations will also be built. The original system was portal pipelines running 80,000 barrels per day.

"We're adding options for producers in the Bakken. Our system has increased by 600 per cent since 2008," Haarsager says. "We've seen tremendous growth and opportunity here in North Dakota. The roads are still busy but people will see relief in the near future. The long haul trucks will slowly start to decrease. The main concern of many people around here has been the burden on the roads. Safety is the top priority on everyone's mind—the safety of the people who work, play and live near our pipelines."

## AFFECT ON PRICES

Trisha Curtis, Research Analyst at the Energy Policy Research Foundation, Inc., says that oil prices in the region first diverted from WTI prices two years ago, when oversupply in the region became an issue.

"North Dakota prices are fairly low right now and that's definitely a concern. We have growth in the Canada supply coming on at the same time as growth in





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*“Once constructed, the projects will add up to 148,500 barrels per day of pipeline capacity into Enbridge’s North Dakota System Berthold, ND station.”*

the US domestic supply,” she explains. “There’s a supply glut in Cushing, OK and also in Clearbrook, MN, which are the physical places where the pricing point gets set. They have all this oil and no way to get it out. North Dakota and Canadian crude are not located close to any market.”

Some producers are relying on railways to help ease the pressure on the existing pipelines. Justin Kringstad, director of the North Dakota Pipeline Authority, believes that the bottleneck is a mid-continent problem but is not affecting producers in the Bakken region.

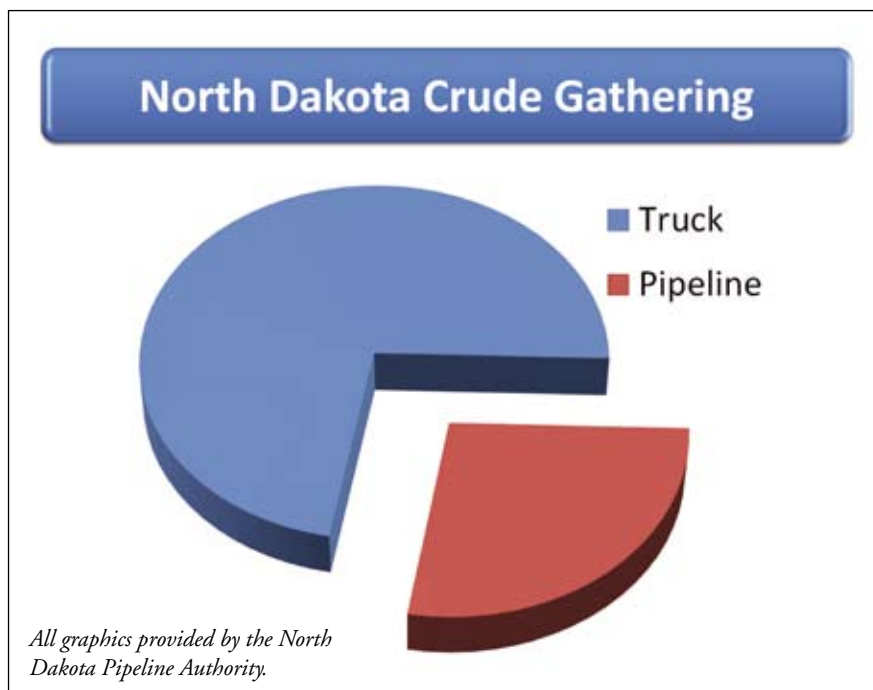
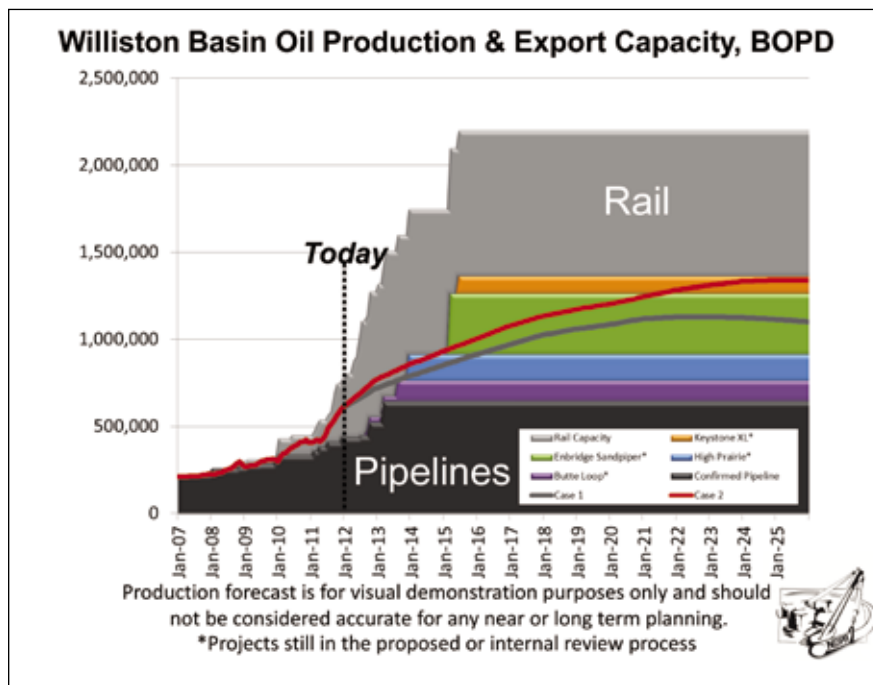
“Currently, we are using railways along with pipelines to meet the transportation needs of the basins in North Dakota. The idea that we have a bottleneck in North Dakota isn’t true. We can move all the products through pipelines and railways,” he says. “Our pipeline capability can only take us so far but the railways take us the rest of the way. If someone was looking just at our pipelines, yes, we are low on pipeline capacity but with rail, we can move all our crude oil out of the region. We can get oil out of North Dakota but where do we send it?”

The increased cost of railway transport is partly alleviated by the ability to transport crude to higher paying markets on the coasts, Kringstad adds.

“We were able to take advantage of railcars to reach these destinations. We can get significantly higher prices on the coasts than if we sell in the mid-continent region,” he says. “You have to spend a little bit more money with the railcars but the producers make that up and a lot more by getting to these premium markets. Rail is a very attractive option.”

Kringstad is confident that the proposed pipeline and railway projects will ensure adequate transport capacity for the foreseeable future.

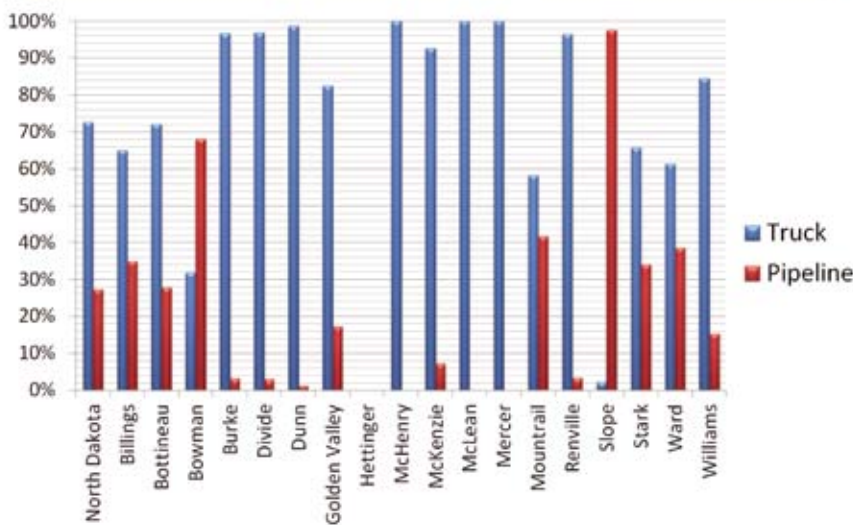
“I wouldn’t say it’s no longer a challenge. This is a very active and dynamic





*The main concern of many people around here has been the burden on the roads. Safety is the top priority on everyone's mind—the safety of the people who work, play and live near our pipelines.*

### Crude Gathering By County



industry but there are four solutions out there to alleviate future transportation challenges," he says. "These challenges will be ongoing and ever-changing as different projects come up."

### ALLEVIATING FUTURE CHALLENGES

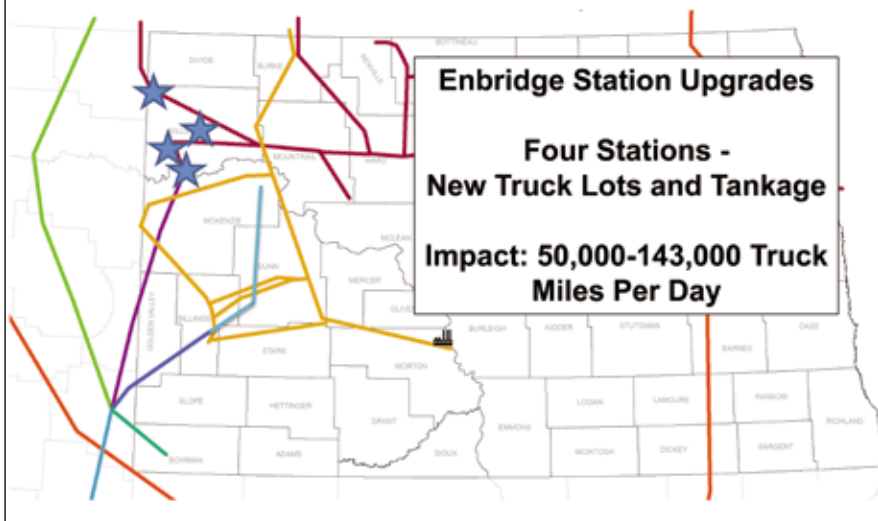
One of the projects that gives him hope is the Butte Pipe Line. The Butte Pipe Line is a 16", 323-mile crude oil pipeline system from Baker, MT to Ft. Laramie and Guernsey, WY. The system gathers crude from the Cedar Creek Anticline area near Baker and transports, via other incoming pipelines, crude from the Williston Basin, Eastern Montana and Canada. Deliveries of several different crude grades on the system are made to connecting carriers at Ft. Laramie and Guernsey, WY.

Another is the TransCanada Keystone XL Pipeline, which is expected to be in service by early 2015. Keystone XL is a 1,897-km (1,179-mile) pipeline running from Hardisty, AB in Canada to Steele City, NE. TransCanada will continue to work collaboratively with the State of Nebraska on determining an alternative route for Keystone XL that avoids the Sandhills.

Currently, Curtis says there's a difference of over \$90 per barrel between WTI prices and Clearbrook prices.

"These prices haven't impacted the Bakken as much as you'd think. It costs [the producers] more to rail the product down but the price gap is so high, it's well worth it," she says, adding that the break-even price is between \$40-60 per barrel. "Many companies are drilling simply to keep their lease, as we have a lack of infrastructure. Once the infrastructure is built, these prices will pick up. The bottleneck will be alleviated when we have infrastructure and pipeline capacity to move it but that's going to take awhile."

### Reducing Truck Traffic



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# The Boom Heads South

*The boom could be heading south. What affect this could have on the area, its population and its infrastructure.*

BELOW: Photo provided by the City of Dickinson

By Brent Hirose

**D**ickinson, North Dakota is the seventh largest city in North Dakota, sporting a population of about 18,000 people, with just fewer than 25,000 in the greater metropolitan area. Well tests are in various stages south of Dickinson, which means this may not be the case for much longer. Even now, planning has begun in earnest to prepare the city and surrounding area for the potential changes to come with the influx of people and industry that the oil and gas industry could bring. With potential economic windfall comes the burden of supporting the additional population and industry, and that requires a difficult balancing act which must weigh multiple factors very carefully in order to maintain equilibrium.

## **WATER WOES**

Water is a key factor in accommodating increases to the population of the area and serving the industrial needs of the oil industry. Mary Massad is the Manager/CEO of the Southwest Water Authority







*Along with the needs of the oil industry, the Southwest Water Authority must also account for the needs of potable water and serving over 4,000 farms and ranches, small businesses and a population of around 38,000 people. Photo provided by the Southwest Water Authority.*

## OVERCOMING HURDLES

Since there are still communities under the authority's jurisdiction that are stuck using well water, there are still hurdles to overcome. "I could tell you stories," Massad notes. "Third generation families hauling water to the farmstead. Some people are fortunate; their quality isn't bad but some others...It can be high in nitrate, so the kids can't drink it or they'll get blue baby syndrome. North of Belfield there's uranium in the water, there's water with coal and iron and it's the color of coffee. It just goes on and on."

With all of these difficulties and issues, Massad isn't dissuaded. "We need to increase supplies, we need additional pumps,

a second intake, we'll see what happens when we've got permits from the commission for additional appropriation," she says. "Worst case scenario, if the oil industry needs water, they'll get it. People have water for sale and if they need it, it's there to be had."

## ROADS TO THE FUTURE

Representative Mike Schatz is the elected member of the house for district 36. A member of the Legislative Agriculture committee, he, too, is weary of the water usage that will come with an oil boom but he also has other potential issues on his mind. Seeing the possibilities of an influx of industry has him looking down, specifically at the

infrastructure and roads that will be used if production ramps up in the area.

"One of the main concerns I have is Highway 21, which goes west of New England. Part of it would have to be a main artery to get water and equipment to and from the well sites, being the only paved road," he says. "It's an older highway, not a full 12 feet in some spots."

In fact, on January 13, 2012, a bus holding 28 high school students rolled on that very road, thankfully delivering no life-threatening injuries. "We want it to be in the best possible shape if we have multiple sites operating trucks through that area."

With no other routes available, Schatz is resolute that major work must be done


to the highway as things stand—even more so, should industry increase and traffic rise as well. In addition, other roads will have to be looked at in order to accommodate additional drivers.

“We also have a definite need for turning lanes and off-ramps. Right now, with the agricultural traffic that we already have, you’ll have three or four trucks waiting to make a turn and suddenly you’ve got a big snarl.”

Schatz also has his eyes on a potential alternate route around Dickinson. “You need to be able to get around the railroad

tracks,” he says. “Right now, if you come into Dickinson at eight o’clock in the morning, traffic will pile up.” With an extremely outdated underpass prone to flooding in the spring and inundated with snow in the winter, the transport options remain less than ideal but Schatz hopes to find them addressed as soon as possible.

“At the moment, this is all theoretical,” he says, pointing out that nothing is yet set in stone for the area. While plans are underway in the area in case the boom does head south, the attitude at the moment seems to be one of “wait-and-see.”

Both Massad and Schatz are confident they will be capable of handling what is to come, although for the time being, their plans remain like those of most political entities: stuck between the practical goals that can be accomplished today and the ideal goals they hope to accomplish tomorrow. However, with permits requiring very little time (30-90 days), once a company decides they wish to drill, it may be a race to put plans in place once they are finally required. Schatz says it plainly. “We’re going to have to go pretty fast to get ahead of things if they start drilling.” 

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Technologies that work in the field

# It's *Easy* Being Green



*Diesel may be on its way out for hydraulic fracturing as more companies go green.*

By Drew Kozub

**H**ydraulic fracturing is a stimulation technique used in areas that are resource rich but where formation conditions make it difficult to recover oil and gas from older wells that have been previously produced using other methods. Through hydraulic fracturing, oil and natural gas can be coaxed out of the strata into the wellbore but the process can raise environmental concerns because of the volume of fresh water required to create hydraulic fracturing fluid and the addition of chemicals to this fluid.

Since hydraulic fracturing was first introduced, innovations have been made. Today, companies are finding green and unconventional solutions to make hydraulic fracturing safer for workers and the environment. By replacing hydrocarbons and biocides in frac fluid with natural ingredients, the future of hydraulic fracturing is looking greener than ever.

Hydraulic fracturing can begin once a well is drilled and casing is installed inside the wellbore. Fracing fluid (a mixture of water, proppant and chemicals) is then pumped into the well under high pressure. The pressurized fluid eventually cracks or fractures the rock and the pressure forces the fluid into these cracks, extending them vertically and making them longer. At the end of the treatment, the created cracks are only about 1/10 of an inch wide and exist only within the hydrocarbon-bearing rock layer.

When the frac fluid flows out, the proppant particles—usually sand or ceramics—deposits itself along the crack to help keep the newly-formed cracks open and enable the formerly trapped resources to flow out into the well. The frac fluid is removed and oil or gas flows. This process is effective but a major environmental concern exists due to the amount of water being used for hydraulic fracturing fluid and the chemicals that go into this fluid.

## CUTTING DOWN CHEMICALS

While the majority of the fracturing fluid is water, a small amount of chemicals are used (approximately one-half of one per cent of the total fluid) to aid in the stimulation process as surfactants, clay control materials, breakers, etc. Some of these chemicals can be toxic to human and wildlife and although the ratio of chemical to water isn't high, when we are talking about tens of thousands of gallons of water used in each well, companies with a green focus like Halliburton recognized the need to find innovative ways to reduce their environmental footprint.

Halliburton is a worldwide provider of products and services to the energy industry with operations in approximately 80 countries. Involved in all facets of energy services, from locating hydrocarbons to well construction and optimizing production, they have been players in the industry for over 90 years and successfully performed hydraulic fracturing as a stimulation method in 1947.

## MORE INNOVATIVE INDUSTRY IDEAS

Oil and gas companies have been making innovations when it comes to hydraulic fracturing. Proppant substrates can be made up of naturally-occurring or synthetically produced materials and naturally-occurring organic substrates can include:

- Ground or crushed nut shells (walnut, pecan, almond ivory nut, Brazil nut, peanut, pine nut, cashew nut, sunflower seed, hazelnuts, macadamia nuts, soy nuts, pistachio nuts or pumpkin seed);
- Ground or crushed seed shells—including fruit pits (plum, peach, cherry, apricot, olive, mango, jackfruit, guava, custard apples, pomegranates, watermelon, ground seed shells from maize, wheat rice or jowar);
- Processed wood—including those processed by grinding, chipping or particlealization (oak, hickory, walnut, poplar, mahogany);
- Ground or crushed animal bones; and
- Ground olive pits, which is a great, naturally-occurring organic substrate.

Source: [www.faqs.org/patents/app/20090238988](http://www.faqs.org/patents/app/20090238988), "Particles for Use as Proppants or in Gravel Packs, Methods for making and Using the Same" by Robert McDaniel, Avis McCrary, John Green and Liang Xu.



*Industry experts believe that in the next 10 years, more than half of all wells drilled in the United States will require hydraulic fracturing for extended economic production in oil and natural gas fields.*



*Innovations to the hydraulic fracturing process make a safer environment for workers. All photos in this layout provided by Halliburton.*

In the 1980s, Halliburton began its commitment to shift the chemical portfolio to become more environmentally-friendly. The company's director of technology for production enhancement, Ron Hyden, says their decision to move in a greener direction not only benefited the environment—it paved the way for safer working conditions for their employees.

"As a person who works in the field, we had a desire to work with safer products," says Hyden. "Typically in technology, you find a product that will answer the technical challenge and once you have that squared away, you want to start asking yourself, 'How can I do this better? How can I do this safer, at a lower cost, that's easier to handle?'" Today, Halliburton employs a variety of innovative methods that not only do the job as effectively as possible but are also safer for their employees and the environment.



*Halliburton's ingenuity has helped give the oil and gas industry a greener future.*

## FRACGING WITH FOOD

CleanStim™ Hydraulic Fracturing Fluid Systems provide effective frac fluid made entirely with ingredients sourced from the food industry. While you should certainly not consume a glass of CleanStim™ frac fluid to help your daily fruit and vegetable intake, Hyden says it was necessary for the company to create the cleanest fracturing fluid possible to meet the environmental standards to which they hold themselves accountable.

While there are a lot of companies out there that may have targets of being “green,” Halliburton set out to quantifiably measure what constitutes being green based on a variety of criteria, including the environmental standards set by a variety of locales where their energy services operations take place. Once they established their environmental green baseline, Halliburton began envisioning ways to reduce their environmental impact even further; hence, the creation of new technology like CleanStim™ Hydraulic Fracturing Fluid Systems.

“I would characterize the work we did in the 80s [to reduce our environmental impact] as something we did tactically, one aspect at a time,” says Hyden. “In the 2000s, we became more strategic in terms of looking at the bigger vision as a whole. The point is not to only

*Continued on page 98*



*Halliburton's CleanStim Formulation is a new hydraulic fracturing solution made up of ingredients sourced entirely from the food industry.*



*In order to control harmful bacteria growth in fracturing fluid, Halliburton's CleanStream service uses Ultraviolet light to damage the bacteria's DNA structure, making it unable to replicate.*

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Continued from page 97

clean up one chemical but our entire portfolio. That way, we can say we have made a positive impact.”

### BEATING BACTERIA

To help the company be greener on location, Halliburton found ways to reduce the amount of biocide they use. A common problem in fracking is the amount of chemical required to remove bacteria in fracturing fluids. Bacteria naturally exists in varying degrees in all kinds of water and as water is the major component of frac fluid, this bacteria can cause problems like pipe corrosion, pipe clogging and bio-fouling as the bacteria replicates.

The most common method to disrupt the growth of bacteria is to use a chemical biocide; however, the volume of biocide typically used is undesirably high from an environmental perspective. Fortunately, Halliburton has come up with a method to treat bacteria growth in frac fluids that uses only one-tenth the amount of biocide normally required and, in some cases, eliminates it completely.

The way Halliburton is able to reduce the amount of biocide in its frac fluids is thanks to the CleanStream® technology, which uses ultraviolet light to disinfect bacteria found in the fracturing fluids. A mobile unit is set up

on the jobsite, which the fracturing fluid is pumped through. Inside of the unit are several ultraviolet light chambers that treat the bacteria, helping to keep frac fluid and frac tanks cleaner. The ultraviolet light breaks down the bacteria's DNA structure, making it unable to replicate. Less replication means a reduced amount of biocide needs to be added to the frac fluid. This process has been used for years in hospitals, food processing and water treatment industries, and Halliburton's ingenuity found a place for it in the oil and gas industry.

### FLOWBACK WATER FOR FRACTURING FLUID

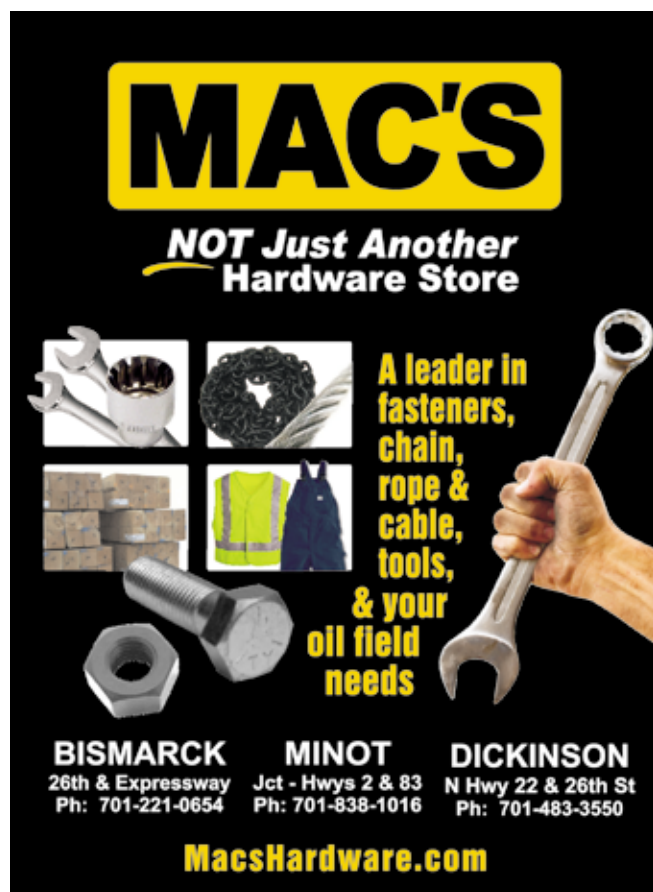
Another aspect of the initiative is a process that enables using produced and flowback water for other well site applications, including fracturing fluid. The process, called CleanWave® service, cleans the suspended solids from produced water, enabling the water be reused for other purposes, something of which Halliburton's senior manager of marketing for production enhancement, Walt Glover, is proud.

“I think our focus on water solutions is a significant advancement for the industry and our ability to use flowback and produced water for fracturing and other well site

operations is really a significant step forward,” says Glover. “Right now, most wells produce more water than hydrocarbon but our new technology improves our processes, allowing us to use the water for other work. Our water solutions are all focused on conserving fresh water and this is something we are very successful at.”

Industry experts believe that in the next 10 years, more than half of all wells drilled in the United States will require hydraulic fracturing for extended economic production in oil and natural gas fields. Because of the importance and anticipated demand for this stimulation technique, it is important that companies—like Halliburton—are embracing a greener approach to oil and gas production.

Advancements to improve the chemistry of water, like the creation of Halliburton's CleanSuite™ technologies, reduce the requirement for fresh water, replacing old equipment with more environmentally-friendly technology, reducing on-site carbon emissions and monitoring their environmental profile for continued improvement helps make Halliburton an environmental innovator in the area of hydraulic fracturing. Oil and gas companies that follow in their footsteps, promoting green initiatives can be sure to see similar successes.



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3. According to the Department of Transportation, of the 100 loads necessary to move a drilling rig, 40 to 50 are either oversized or overweight. North Dakota Highway Patrolmen are enforcing highway speeds and load sizes and weights—when a truck exceeds the lawful maximum amount by even a small amount, the added stress to the state's infrastructure increases exponentially.
4. To find a job in Williston or any of the nearby oil towns, including Stanley, New Town, Tioga, Dickinson or Minot, check out North Dakota's official job service portal, Job Service North Dakota, or visit job portals or Craigslist.org.



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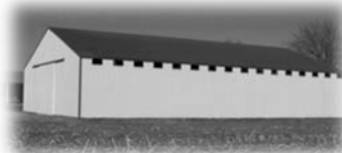
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# SPOTTING THE SIGNS:

## How You Can Keep Drugs Clear of the Oil Field

*Drug testing—how you can spot people who are using and help them beat their addiction.*

By Alexandra Walld

**M**ary-Jane, Barbara Jean, Crystal, Lady Caine, Sweet Lucy—just a few of the so-called “women” you want to make sure stay clear of the oil field. Substance abuse—drug use and alcohol addiction—can impair workers and have catastrophic effects on those who are using and those who are working with or around someone who’s under the influence. Sometimes it’s easy to spot someone who’s flying high or been on a bender but sometimes it can be hard to see the signs (and even harder to be sure) that someone’s involved in substance abuse.



Jennifer McGregor is the drug testing program manager at Medcenter One Occupational Health Clinic in Bismarck, North Dakota.



*[Working in this industry is] dangerous in the first place, then you throw drugs and alcohol in with it and it becomes more dangerous.*

Jennifer McGregor is the drug testing program manager at Medcenter One Occupational Health Clinic in Bismarck, North Dakota. She's a certified Department of Transportation collector, has more than 10 years of drug and alcohol testing experience and is a member of the National Association of Occupational Health Professionals. Over the years, she says she's reconfirmed that talking to employers about drug and alcohol use in the workplace is very important because it's so prevalent.

"What happens with drug testing when you go on oil rigs is it starts out with contact made to us, and then we coordinate that service. We try to make that service very convenient for the employer or oil rig and bring everything right to them, including our certified drug and alcohol technicians. And all of our drug testers follow Department of Transportation guidelines," McGregor says. "We have a portable set-up and secure that bathroom site—remove anything in the bathroom, secure water sources, add blueing to the toilet to ensure individuals aren't trying to adulterate their specimens."

In the oil business, McGregor says they typically do both drug and breath alcohol testing because employers have concerns. A lot of oil companies request quick screen products that give them a preview that someone could potentially be using. Then Medcenter One also conducts testing that is sent to the lab and processed and then does a breath alcohol screen, which provides immediate results.

### SPOTTING THE SIGNS

While it may be difficult for someone to be sure if a co-worker is using or not, there are common signs that employees and supervisors can look for, including:

- Patterns of obsessive absence from work or disappearing from the workplace to use.
- Someone asking to be off for a certain amount of days (holidays or long weekends), although McGregor says that on oil rig sites it may be harder to do this because of the "on-off" schedule.
- Secretive behavior, isolation from supervisors or not being in plain sight.
- Numerous accidents with no explanation or violating safety protocols—they

## Tips from Corporate Drug and Alcohol Specialists Inc. (CDAS)

By Bryan Schafer, President, CDAS

Since 1995, CDAS has provided specialized drug and alcohol training for businesses, schools, corporations, hotels, restaurants and casinos on how to make their environments safer for employees, students and patrons. Recognition is the first step in prevention and treatment for substance abusing employees and patrons; early recognition and intervention prevents disruptions and promotes safety on your premises.

While it is easy to spot an obviously intoxicated person on alcohol, supervisors and other employees must be trained on how to recognize the signs and symptoms of drug and alcohol influence, including prescription medications. Looking at someone's behaviors and demeanor is not enough. One must be able to articulate the specific symptoms as they relate to a certain drug category. Training is of the utmost importance to prevent someone being wrongfully accused or removed from the worksite because of an inaccurate diagnosis. Conversely, knowing what to look for insures safety and protects the company from liability.

A trained supervisor who takes an employee out of service for suspected impairment should document their observations on a standardized report and seek the assistance of another supervisor to verify their observations. Most companies should have a drug testing policy that includes transporting the subject to a local hospital or occupational medical clinic for a urine or blood test. Some larger companies do this on-site under the supervision of a medical review officer. Company policy dictates as to whether or not the employee will be disciplined or terminated. If allowed to return to work, most require another drug test prior to returning to work and are often subject to random testing from that point forward. That being said, regulations found in Part 382 of the Federal Motor Carrier Safety Regulation (FMCSR) may dictate otherwise.

For more information on substance abuse training, go to [www.cdasinc.com](http://www.cdasinc.com).



may be re-trained and still have those problems.

- What their work performance says about them—when people are using they're not focusing on what they're doing.
- Lack of coordination, changes in speech patterns—someone who's taking depressants may have slow, mellow speech patterns, whereas someone who's taking stimulants could be wired and trying to be a "super employee."
- If their pupils are dilated or constricted, you can tell if they're using substances or if they're bloodshot, they could be drinking alcohol.

- Changes in moods and attitudes—if a happy, go-lucky person turns moody, you might wonder what's changed. If they don't want to work with you or are more combative, those are key things to look for because when people use, they tend to veer to the opposite of how they normally act.

Medcenter One, which also has occupational health clinics in Dickinson and Minot, has the ability to meet the needs of the employer with drug testing, pre-placement exams, pre-work screens and workers' compensation injuries. The company also offers training for employers to

train employees who are using. McGregor says it's important to make sure your company drug policy is in place and that employees are aware.

"Make employees aware you're concerned about drug and alcohol use in the workplace. They will become more aware of it and might look at the signs and symptoms and put it together," she says. "Make sure everyone's aware and comfortable to talk to their supervisors when they see the signs and symptoms. Supervisors need to be able to take action and offer assistance to that person—it's really key to that whole process."

While McGregor isn't sure how many oil-related businesses have employee assistance programs in place, she knows some do and that they're usually linked with a health system or addiction counsellor nearby.


## BENEFITS TO BEATING AN ADDICTION

There are many benefits related to helping someone kick their addiction, like a healthier and safer workforce. A person may be able to come back to work, focus and be much more productive in the workforce. McGregor says a lot of employers need to think about the safety factor, which in the oil industry is huge.

"[Working in this industry is] dangerous in the first place, then you throw drugs and alcohol in with it and it becomes more dangerous. Will a person always come out of the treatment cycle and not use again? It isn't always the case," she says. "For example, a person using methamphetamine may require multiple cycles of treatment and still be addicted to the substance. There are always challenges and it's definitely not a perfect system but I think an employer needs to be proactive and promote the drug free workplace policy to their employees."

Businesses face higher health care premiums because individuals who use are very unhealthy when they're using, McGregor says; they use the medical system more frequently and file six times more health safety claims.

"I think most oil companies out there are pretty proactive. You just have to be aware," she says. "So many people are coming into North Dakota right now and we just have to be aware of those signs and symptoms, know their policy and take actions."

To see a sidebar with some statistics on substance abuse in the workplace, go to page 80. For more information, go to [www.medcenterone.com/occhealth](http://www.medcenterone.com/occhealth). 



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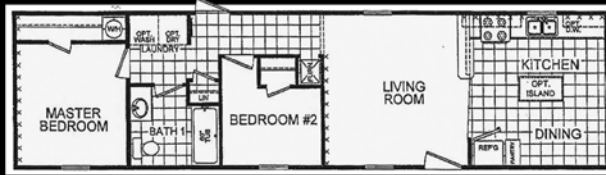
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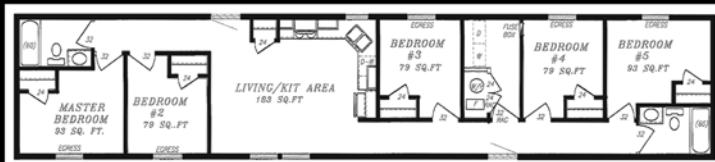


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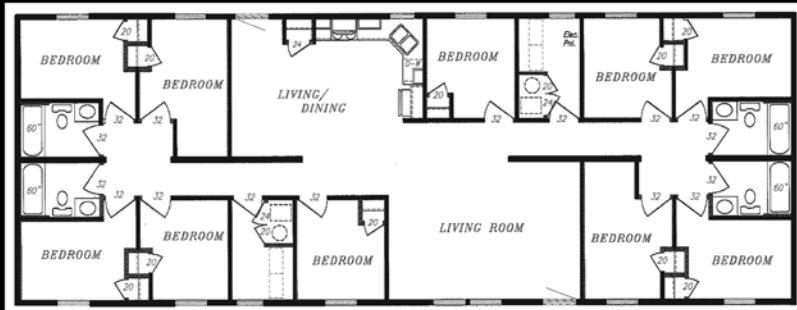
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# CREW CAMPS:

## An Alternative to RV Parks

*Temporary housing is essential for any development plan. Over the years, options have evolved to produce attractive selections for oil companies and their employees alike.*

By Brent Hirose

With the gas and oil boom, workers are flocking to previously sparsely-populated area of North Dakota. To accommodate these workers, temporary housing is an essential part of any development plan and options have evolved greatly over the years to produce attractive selections for oil companies and their employees alike. While RV parks have been a familiar sight for decades as trailers replaced make-shift shacks in the early 20<sup>th</sup> century and provided a quick, portable solution to temporary housing, another

alternative exists in the crew camp, which offers many attractive features well worth considering.

Travis Kelley is the regional vice president at Target Logistics, a company that handles temporary housing with varied projects all over the world. Established in 1987, they have been involved with the Vancouver Olympics, Woodstock, housing for people displaced during Hurricane Katrina and, of course, meeting the needs of the oil and gas industry, with particularly strong ties to North Dakota. A veteran of the modular construction field for the past 13 years, Kelley is a strong

booster of crew camps and their various advantages.

"Number one is aesthetics," says Kelley, comparing RV parks to crew camps. "That can't really be argued." Not only does a crew camp allow for a much more aesthetically-pleasing site but it also allows for one that accommodates more people in far less space. "An RV park isn't big enough for some of our larger clients that require 200, 300, maybe 400 beds at a time."

### EMPLOYEE BENEFITS

With fire code requiring RVs to be spaced out 15 feet between each other, as

*Crew camps, like this Target Logistics one, are a great alternative to RV parks and have many benefits. Photo provided by Target Logistics.*



the population goes up, so must the footprint of an RV site. This is significantly less of an issue with a crew camps. Target Logistics' North Dakota Facilities include Bear Paw Lodge, which houses 590 people on a mere 12 acres, and another camp in Tioga sports over 1,200 beds. These numbers are impractical if not impossible to achieve with an RV camp and provide a clear benefit for larger work sites.

Another advantage considers the varying temperatures of the region. This can be particularly difficult in the cold winter months, when workers may be required to skirt their RVs in an effort to keep them from freezing up. With a single facility, these concerns are tended to by the on-site support staff and can provide a much more efficient use of resources to maintain a comfortable living area. If this were not attractive enough, there are dozens of other benefits to crew camps.

For employees, top of the line crew camps offer a controlled environment with great facilities. These include a fully-staffed dining hall providing three healthy, hearty meals a day, recreation areas that allow for exercise, games of pool, watching movies and even dry saunas. And, of course, they also offer a

warm, comfortable bed every night, in a safe and clean living environment tended to by a team of security and cleaning staff. For workers who would otherwise be searching out temporary housing in the area, it also offers a peace of mind, having no worries about procuring accommodations otherwise. "We really take care of our guys," Kelley emphasizes. "It creates a better worker. A guy comes back, gets a good, healthy meal, gets to go to sleep in a warm, comfortable bed and is ready for work the next morning."

## EMPLOYER BENEFITS


The affect of accommodations on workers is an obvious benefit for the employer but not the only one. Besides the comfort of knowing all your employees are under one roof, there are also controls to ensure that employees are well looked after. While it differs from company to company, Target Logistics runs dry camps, which are closed off and allow no visitors. These policies, along with the security staff have been very effective at creating relatively incident-free habitations.

With over 8,700 beds in the region, "There's only been a handful of times were we've had to contact the local authorities

to help us with problems," says Kelley "We can normally deal with things in-house." Crew camps can also be created quite quickly; Target Logistics' Bear Paw facility took 87 days from the breaking of the ground to the first occupant.

## COMMUNITY BENEFITS

Kelley is also quick to note the benefits crew camps can bring to the community at large. Not only do they help mitigate housing cost increases that are driven by increased demand during an oil boom, they also help avoid issues when activity begins to taper off, avoiding situations where vast amounts of houses suddenly become empty. More than this, however, he feels that a crew camp creates the perfect situation to allow a worker to experience and perhaps eventually join a community.

"A worker comes up here, spends time at the crew camp, makes money to send back home and gets to experience the community," he says, noting how many workers come from out of state. "They find they enjoy the experience, maybe buy permanent housing and bring their family out when they're invested in the area. Those are the kind of people you want entering your community." 

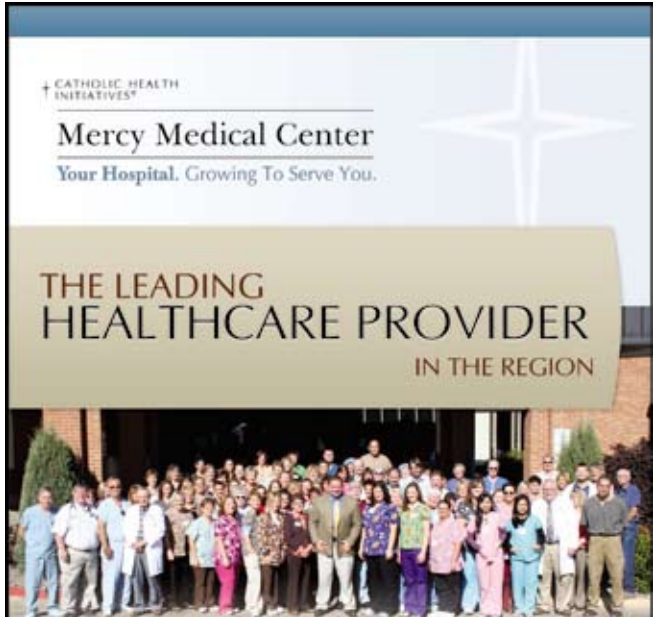


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# CREW CAMPS

## Best Practices

By Basin Bits Staff

*Western North Dakota is in great need of crew camps. How best practices workshops are helping companies and communities find the right balance.*

Over 80 people attended the NDAOGPC's first Crew Camp Best Practices Workshop held March 14, 2012 at the Badlands Activities Center in Dickinson, ND. City, county and state officials from western North Dakota, northern South Dakota and eastern Montana came to the workshop to hear eight presentations about temporary crew camps, state regulations

on waste management, emergency services and fees charged by counties and cities for use of services. The presentations can be viewed on the NDAOGPC website, [www.ndenergy.org](http://www.ndenergy.org).

Sponsorships from ATCO, Morgan Chase Management and Burke Lodge defrayed the cost of the workshop for those in attendance; their assistance in putting on this first workshop was very much appreciated. Crew camps provide a valuable service so

that city services are not stressed by temporary workers as a result of the boom. It's estimated that up to one-third of the new population will remain after the initial Bakken formation drilling ends. The new population includes pipeline crews, gas plant installers, rail spur construction and builders/construction workers. As the area is built, the jobs will decrease and some of the trades people will follow to the next area of the country needing their service.

*Representatives from five lodging companies showcased their crew camp practices to city, county and state officials from Montana, North Dakota and South Dakota during the NDAOGPC's first Crew Camp Best Practices Workshop.*



Vicky Steiner, executive director for the NDAOGPC, says some communities fear crew camps because they don't understand how they work, so the workshops act as a means of making sure officials have all the information they need before deciding if a company can be a solution to the population spike resulting from the boom or if they should be turned away. The workshop allowed crew camp companies to come into the community, introduce themselves and explain what they do.

"The communities don't want to over-build and have vacancies when the drilling phase is finished. The communities are trying to find that balance," Steiner says. "It's a way for them to introduce themselves to a wide group of community people and say this is what we do."

## UP FOR DISCUSSION

Representatives from lodging companies (ATCO, Target Logistics, Morgan Chase Management/Pioneer Lodge & Commons, Burke Lodging and Joy Haven) showcased their operating practices—the advantages and disadvantages, the rules and policies, security measures, the best ways to site camps, if they're fenced or not, whether or not they allow liquor, etc. Crew camp waste disposal issues were discussed by Dave Glatt, Environmental Health Section Chief for the North Dakota State Health Department. Dickinson City Administrator Shawn Kessel covered crew camp city fees and Dunn County Emergency Manager Denise Brew discussed the issues surrounding emergency management services.

Well-versed in helping communities deal with emergencies, population spikes and housing shortages, Sonny Alford, national project manager for Morgan Chase Management/Pioneer Lodge & Commons in Watford City, says they've been focusing on North Dakota since April of last year.

"When we first landed here, one of the first things we did was get some idea as to the community's impression of man camps. We wanted their perspective on what's acceptable and what's not," Alford says. "One of the biggest concerns we found was that when the booms ends, our image is known as the companies who leave their things behind...or that the property's not restored to its original state because of the historical trend that occurred in the past."

Alford says their goal is to bring different perspectives to the idea of crew camps as the industry is expanding and diversifying so that they can improve the quality in the community and its acceptance of the camps.

*Carolyn Best, ATCO, led the list of speakers at the workshop. Other speakers included Travis Kelley of Target Logistics, Sonny Alford of Morgan Chase Management, Roger Thomas with Burke Lodge, and Ken Kubischta with Joy Haven.*



*Dave Glatt, Environmental Health Section Chief for the North Dakota State Health Department talks about crew camp waste disposal issues.*



*Sonny Alford is national project manager for Morgan Chase Management/Pioneer Lodge & Commons in Watford City.*





"We learned a lot from the community, from county officials, from other best practices but our goal was to try to do something unique but also appealing to the community. I think the local and state level officials are trying to get their heads around the process, so we hope to be able to contribute to that process throughout," he says. "I know it's a tough thing to do, especially with the expansion in communities. We certainly understand the importance of this community to help bridge that gap in this growth and I think it'll be an excellent tool for the state to get their heads around this process."

## CHALLENGES VS. BENEFITS

When it comes to the challenges and benefits of bringing new crew camps into the area, Alford says it's a bit of a Catch 22—if you put too much restriction on crew camps, it will eventually spill over into traditional housing.

"Companies are buying up homes and going over prices and housing there and that drives up the cost for local communities, maybe even the inability for cities, counties and the medical industry to house people for employment because they've been absorbed by some oil companies to

house their employees," Alford says. "I think the goal is to how we can improve the design and features of crew camps so as not to put a restriction on them but allow them to flourish so that there will be affordable housing."

One of the key areas relating to the introduction of crew camps into communities is safety. The camps have to be designed with a layout where first responders for any kind of emergency can get to victims quickly, he says.


"There are so much feedback and great ideas coming out of the community that will address many of those concerns. Say you've got a crew camp and don't have an efficient identifying program to where they can reach the victim in a good time frame; that's a major concern for first responders so that's going to be one cornerstone of the design," Alford says. "I know it's important to volunteers who are putting their time and effort into this. RV properties all look alike so they've got to be identified—that's just one of the many things we're identifying after this process."

"After this first best practices workshop, I've learned this is particularly a needed process to address some of those areas and I'm anxious to learn more. I can see this forming

a good process for organizing the permitting process and approvals at state and local levels," he says, "and at the same time, letting these camps be built to new standards but not impacting the housing issues that communities are going through today, so hopefully there's a win-win on both sides and I think that's what the outcome is going to be."

## BEST PRACTICES TASK FORCE


To close the first workshop, Steiner implemented a crew camps best practices task force to develop a best practice guide for communities impacted by crew camp developments. It's their hope that both industry and community leaders can work together and design that strategy for western and central North Dakota and neighboring counties in Montana and South Dakota. "If our taskforce can become knowledgeable, we may be able to help other communities," Steiner says.

Some of the issues that county commissioners are concerned about so far include RV camping in rural tree rows and the uncertainty of the water quality and sewage issues for the campers. Brady Pelton, assistant executive director for the NDAO-GPC, is chair of the task force. 



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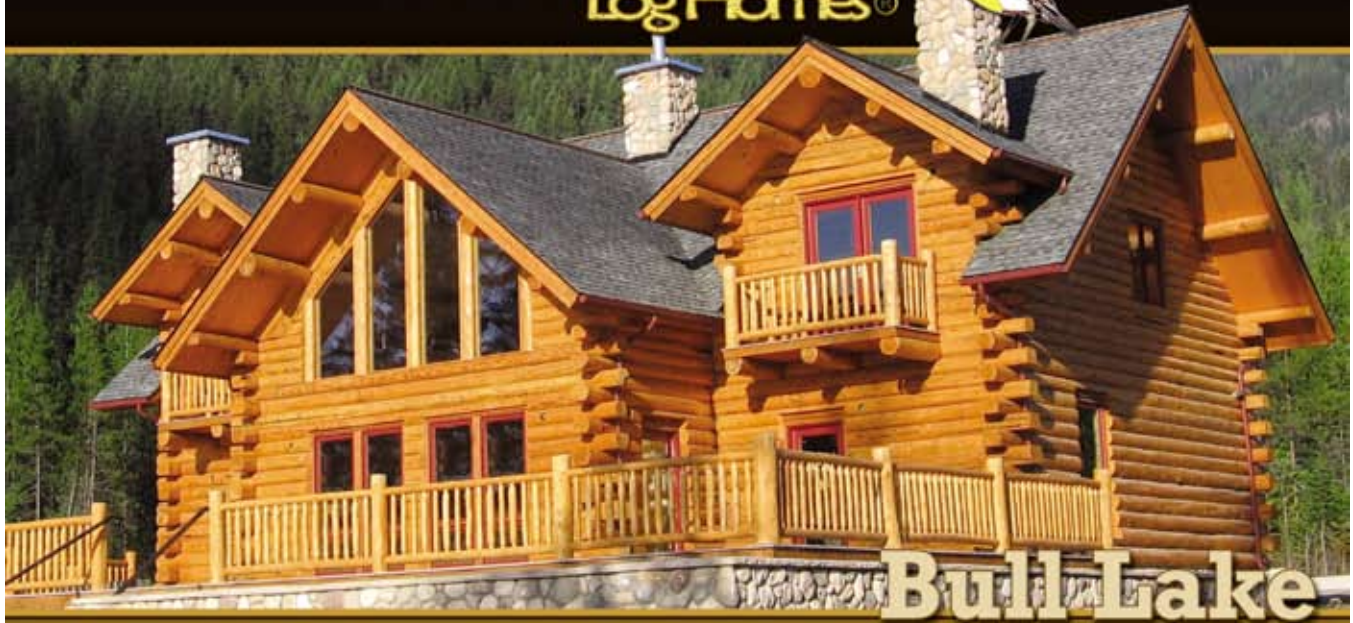
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# The Bakken's One-Stop-Shop

*MDU Resources' family of companies offer a full portfolio.*

By Tim Rasmussen



*A new oil transload facility was built near Trenton, ND to rail oil out of the Bakken. Knife River—the corporation's construction materials company—provided several thousand cubic yards of ready-mix for the job.*

From natural gas pipelines and road construction to utility service and oil and natural gas production, the MDU Resources family of companies has it all covered. In fact, you would be challenged to find a single company now working in the Bakken that has similar diversity in its product and service offerings.

You would also be hard-pressed to find a company with such a deep legacy of service to the area. With more than eight decades in the Bakken, the company is continuing its legacy of service to western North Dakota.

"All of our companies present a solid portfolio of valuable products and services that support energy and community infrastructure development," says Bill Schneider, executive vice-president of Bakken development for MDU Resources. "From natural gas pipelining, transmission line building, drilling oil wells and road construction, we can get it done. We want Bakken area businesses and communities to think of MDU Resources as the first company to call for their infrastructure needs."

## PIPELINE CAPACITY

Natural gas transmission and gathering pipeline services are an important part of the company's portfolio in the area. Strategically located in the heart of the play, Williston Basin Interstate Pipeline's high-pressure natural gas transmission pipeline has been actively engaged in moving natural gas out of the Bakken to markets across the Mid-Continent region through four strategic connections with Northern Border Pipeline, a massive intercontinental line that runs to America's urban heartland.

Williston Basin has been expanding its pipeline capacity in order to move more Bakken-produced natural gas out of the region. In 2011, the company doubled its transmission capacity out of the Bakken and in 2012 will nearly double it again.

In 2012, a key project for Williston Basin will be the construction of approximately 13 miles of high pressure transmission pipeline from the Stateline I and II natural gas processing plants in northwestern North Dakota to the Northern Border Pipeline. Construction began in March and is scheduled for completion mid-year. Last year, the company completed a similar pipeline construction project near Watford City, ND.

Along with natural gas pipelining, the company offers a wide variety of related energy services, including cathodic protection, natural gas measurement, conditioning and processing along with compressor



**ABOVE:** In 2011, Williston Basin Interstate Pipeline—the corporation's pipeline unit—built pipeline to connect a natural gas processing plant in the Bakken to Northern Border Pipeline. A similar project is underway this year in northwestern North Dakota.

**BELOW:** With oil, natural gas and energy field services that date back to the mid-1920s, the MDU Resources Group family of companies was among the first to develop energy in the Bakken.





*“From natural gas pipelining, transmission line building, drilling oil wells and road construction, we can get it done. We want Bakken area businesses and communities to think of MDU Resources as the first company to call for their infrastructure needs.”*

station design and construction through Total Corrosion Solutions (TCS). TCS can also provide facility inspections, pipeline leak detection, air/hydo excavation and solar power installations.

The corporation has oil and natural gas production operations through Fidelity Exploration & Production, its energy producer in the Bakken. The company works from a base of approximately 95,000 net acres located mostly in Mountrail and Stark counties in North Dakota and Richland County in Montana.

Currently, Fidelity has 58 operated wells in the Bakken and participates in over 180 non-operated wells. In 2012, Fidelity is targeting to drill approximately 30 more wells. The Bakken is a primary growth area for Fidelity, a company with operations focused throughout the Rocky Mountain Region with production coming from Montana, Wyoming, Utah, Colorado and Texas.

## **GROWING NEED FOR UTILITY SERVICE**

Another important service to the Bakken is electric and natural gas utility service. The tremendous growth of western North Dakota cities has enhanced the utility's natural gas and electric service operations. Currently, the corporation's utility division serves more than 60,000 customers in the Bakken and this number keeps growing.

The company's utility service is providing energy to homes and businesses along with oil wells, pumping stations and industrial parks throughout the Bakken region. In total, the utility division operates in eight states and serves nearly one million customers.

Rounding out the portfolio of energy services from MDU Resources is the construction services segment of the corporation. MDU Construction Services Group has 17 operating companies that perform work in 44 states. Three of its companies—Hamlin Electric, Rocky Mountain Contractors and Energy Electrical Distribution—are active in the Bakken.

Services offered include electric power line construction, substation construction and wiring services for industrial and commercial facilities. Electrical supplies and power line construction equipment also are available.


But, the MDU Resources family of companies provides more than energy services; it can provide construction materials and contracting services.

Knife River Corp. mines aggregates and markets crushed stone, sand, gravel and related construction materials, including ready-mix concrete, cement, asphalt, liquid asphalt and other value-added products. It also performs integrated contracting services. Knife River operates in the central, southern and western United States and Alaska and Hawaii. In total, Knife River works in 17 states.

To respond to the growing demand for aggregates for road-building, ready-mix concrete

and asphalt in the Bakken region, Knife River opened operation centers in Williston, Minot and Tioga, ND in 2011. These locations complement existing Knife River operations in Beulah, Washburn and Bismarck, ND.

The company is rapidly becoming the provider of choice for ready-mix concrete, asphalt production and paving, general contracting, construction services and aggregate sales and delivery.

The MDU Resources family of companies lives and works in the Bakken. With ongoing exploration and drilling for energy resources in the area, the portfolio of services offered through the corporation is a valuable component to the development of the area. Sensible and responsible operations that value safety and environmental stewardship as an embedded part of the culture will help maintain the integrity and vitality of the area. 

## **THE BAKKEN IS HOME GROUND FOR MDU RESOURCES**

From corporate headquarters in Bismarck, ND, the heart of the Bakken is only a 90-minute drive down the highway. The Bakken clearly is home territory for MDU Resources Group. And it should be because the corporation was essentially born in the region more than 85 years ago.

“We are more than proud to say this is our home turf,” says Terry Hildestad, president and CEO of MDU Resources, who himself is from a small town in western North Dakota. “The strong work ethic established by the hardy pioneers who first settled this land lives in our employees and has helped to form the culture of determination and integrity at our company.”

Hildestad works in the Bismarck, ND headquarters for MDU Resources and he joins approximately 8,000 others spread from Ohio to Hawaii and north to Alaska. Since its beginnings in the early 1920s in western North Dakota and eastern Montana, the corporation has spread its operations to 44 states.

The company was one of the first in the region to bring central station electric power to the rural communities of the area. In order to provide the energy to fuel the centralized electric stations, the company started exploring for and producing natural gas. Obviously, this natural gas needed to be transported from the fields to the towns, which started the company's work in pipelining.

In the mid-1940s, the company expanded its efforts to provide energy for electric generation by getting into the coal mining business, which served as the precursor to its construction materials division.

The rest, as they say, is history.

With more than eight decades in the Bakken, the company is aggressively continuing its legacy of service to western North Dakota.

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# The 20<sup>th</sup> Williston Basin Petroleum Conference

## May 22-24, 2012, Bismarck, ND

The 20<sup>th</sup> Annual Williston Basin Petroleum Conference will be taking place May 22-24, 2012 at the Bismarck Civic Center in Bismarck, North Dakota. With oil and gas activities reaching a feverish pitch in the Williston Basin, more than 3,500 people are expected to attend this year's conference. Ron Ness of the North Dakota Petroleum Council, Lynn Helms of the North Dakota Department of Mineral Resources and Melinda Yurkowski of the Saskatchewan Ministry of Energy & Resources will be your hosts for this international conference.

Anyone with an interest in the oil and gas business in the Williston Basin should attend. Topics will range from North American and world energy supply and demand, to highly technical Bakken talks, to managing community impacts and Bakken Basics education.

Revenues from the 2012 Williston Basin Petroleum Conference have been designated for the following:

- Contributions to the geological exhibits at the North Dakota Heritage Center;
- Contributions to western North Dakota non-profit organizations;
- Support for the North Dakota Petroleum Council Scholarship Fund; and
- Funding for the Oil Can! education and outreach program.

### THE 20<sup>TH</sup> WILLISTON BASIN PETROLEUM CONFERENCE TENTATIVE AGENDA

Tuesday, May 22, 2012		
7:00 a.m.	Core Workshop & Exhibitor Registration Opens	Upper Level Lobby
7:00 a.m.	Exhibitor Set Up Begins	Exhibit Hall
10:00 a.m.	Conference Registration Opens	Upper Level Lobby
<b>Bakken/Three Forks/Tyler Core Workshop #1</b>		Oak, Elm & Linden Rooms
8:00 a.m. – 11:30 a.m.	North Dakota Geological Survey	<b>(Pre-registration is required \$125/person)</b>
<b>Bakken/Three Forks/Tyler Core Workshop #2</b>		Oak, Elm & Linden Rooms
1:00 p.m. – 4:30 p.m.	North Dakota Geological Survey	<b>(Pre-registration is required \$125/person)</b>
<b>Emerging Bakken Technologies</b> <i>Session Chair – John Harju, Energy &amp; Environmental Research Center, &amp; Brent Brannan, Oil &amp; Gas Research Council</i>		Meeting Rooms 101 & 102
1:30 p.m. – 2:00 p.m.	Benchmarking, Geomechanics, Frac Water & Gas Utilization: Critical Applied	Meeting Room 101
1:30 p.m. – 2:00 p.m.	Research – James Sorensen, Energy & Environmental Research Center	Meeting Room 102
2:00 p.m. – 2:30 p.m.	Engineered Flare – Todd Mayer, Steffes Manufacturing	Meeting Room 101
2:30 p.m.	Reaming While Drilling – Lee Smith, Western Energy Products	Meeting Room 102
3:00 p.m. – 3:30 p.m.	<b>Break</b>	
3:30 p.m. – 4:00 p.m.	Logging While Tripping – Rob Duthie, Data Log	Meeting Room 101
4:00 p.m. – 4:30 p.m.	Manny Gonzalez, R360 Environmental Solutions	Meeting Room 101
4:30 p.m. – 5:00 p.m.	Laboratory Investigation of Proppants, Fluids & Bakken/Three Forks Core – Darren Schmidt, Energy & Environmental Research Center	Meeting Room 101
<b>Oil &amp; Gas Impacts</b> <i>Session Chair – Kathy Neset, Neset Consulting and Eric Dillé, EOG Resources</i>		Arena
1:30 p.m. – 3:00 p.m.	Bakken Basics – Lynn Helms, North Dakota Department of Mineral Resources	Arena
	Mineral Management 101 – Jerry Simmons, National Association of Royalty Owners	Arena
	Housing, Roads & Workforce – Al Anderson, North Dakota Commerce Commissioner	Arena
	Dust Control Strategies Study – Francis Schwindt, Oil & Gas Research Council	Arena
3:00 p.m. – 3:30 p.m.	<b>Break</b>	Arena
<b>How We Managed an Oil Boom</b> <i>Session Chair – Gene Veeder, McKenzie County JDA and Blu Hulsey, Continental Resources</i>		Arena
3:30 p.m. – 5:00 p.m.	Joel Bousman, Wyoming County Commissioners Association	Arena
	Ward Koeser, Williston Mayor	Arena
	Curtis Moen, Watford City Planner	Arena
	TBA	Arena
<b>Bakken Investment Session</b> <i>Session Chair – Kari Cutting, North Dakota Petroleum Council</i>		Meeting Rooms 103, 104, & 105

2:30 p.m. – 3:00 p.m.	Scott Hanold, RBC Capital Markets Corporation	Meeting Room 103
3:00 p.m. – 3:30 p.m.	Drilling Capital for the Small Producer – Michael Nepveux, Wells Fargo Energy Capital	Meeting Room 104
3:30 p.m. – 4:00 p.m.	Jay Goldfarb, Woodbridge Financial	Meeting Room 105
5:30 p.m. – 8:30 p.m.	Ice Breaker in Exhibit Hall Hosted bar from 5:30 p.m. – 6:30 p.m.	BBQ Provided by Halliburton
5:30 p.m. – 8:30 p.m.	Expo Opens	Exhibit Hall

<b>Wednesday, May 23, 2012</b>		
7:00 a.m.	Conference Registration Opens	Upper Level Lobby
7:00 a.m. – 8:30 a.m.	Hot Breakfast Buffet	Arena and Upper Level Lobby
8:00 a.m.	Expo Opens	Exhibit Hall
<b>Morning Session</b> <i>Introductions – Jim Olson, KXTV Minot</i>		Arena
7:55 a.m. – 8:00 a.m.	Welcome – Ron Ness, North Dakota Petroleum Council	Arena
8:00 a.m. – 8:20 a.m.	Opening Remarks – ND Governor Jack Dalrymple	Arena
8:20 a.m. – 8:35 a.m.	Saskatchewan Premier Brad Wall	Arena
8:35 a.m. – 8:55 a.m.	Williston Basin Outlook	Arena
8:35 a.m. – 8:55 a.m.	Saskatchewan – Melinda Yurkowski, Saskatchewan Ministry of Energy & Resources	Arena
8:55 a.m. – 9:10 a.m.	Manitoba – Keith Lowdon, Manitoba Innovation Energy and Mines	Arena
9:10 a.m. – 9:25 a.m.	Montana – Tom Richmond, MT Board of Oil & Gas Conservation	Arena
9:25 a.m. – 9:40 a.m.	South Dakota – Darren Johnson, South Dakota Department of Mineral Resources	Arena
9:40 a.m. – 10:00 a.m.	North Dakota – Lynn Helms, ND Dept. of Mineral Resources	Arena
10:00 a.m. – 11:00 a.m.	<b>Break – Visit the Expo</b>	Exhibit Hall
<b>Morning Session (Continued)</b> <i>Introductions – Brian Kroshus, Bismarck Tribune</i>		Arena
11:00 a.m. – 11:10 a.m.	ND Senator Kent Conrad	Arena
11:10 a.m. – 11:20 a.m.	ND Senator John Hoeven	Arena
11:20 a.m. – 12:00 p.m.	Bakken Impact on Global Oil Supply – David Hobbs, IHS CERA	Arena
<b>Keynote Luncheon Speaker</b> (Lunch is available in both the Arena and the Exhibit Hall)		Arena
12:00 p.m. – 1:30 p.m.	Introduction – Wayne Stenehjem, North Dakota Attorney General	Arena
12:45 p.m. – 1:30 p.m.	State of America's Energy Industry – Jack Gerard, American Petroleum Institute President & CEO	Arena
<b>Engineering</b> <i>Session Chairs – Jenette Hilton, Superior Well Services, &amp; Bruce Hicks, North Dakota Department of Mineral Resources</i>		Arena
1:30 p.m. – 2:00 p.m.	Understanding Vertical & Horizontal Communication: Bakken Reservoir – Russ Buettner, Marathon Oil	Arena
2:00 p.m. – 2:30 p.m.	Coral Creek Bakken Unit – Steve Carroll, ConocoPhillips	Arena
2:30 p.m. – 3:00 p.m.	Pad Drilling – TBA, Continental Resources	Arena
3:00 p.m. – 3:30 p.m.	<b>Break – Visit the Expo</b>	Exhibit Hall
3:30 p.m. – 4:00 p.m.	Options for On-Site Treatment of Flowback Water – Preston McEachern, CCS Midstream Services	Arena
4:00 p.m. – 5:00 p.m.	Advances in Frac Technologies Panel (Russell Rankin, Statoil; Rick Ross, Whiting Petroleum; Jim Thompson, Marathon Oil; and David McKay, Hess – Frac Efficiencies)	Arena
<b>Williston Basin Geology</b> <i>Session Chairs – Ed Murphy, North Dakota Geological Survey and Melinda Yurkowski, Saskatchewan Ministry of Energy &amp; Resources</i>		Meeting Rooms 101, 102 & 103
1:30 p.m. – 2:00 p.m.	USGS Bakken & Three Forks Assessment 2012 – Stephanie Gaswirth, USGS	Meeting Room 101
2:00 p.m. – 2:30 p.m.	Lower Three Forks – Jack Stark, Continental Resources	Meeting Room 102
2:30 p.m. – 3:00 p.m.	The Saskatchewan Bakken: Unconventional, Conventional or All of the Above – Dan Kohlruess, Saskatchewan Ministry of Energy & Resources	Meeting Room 103
3:00 p.m. – 3:30 p.m.	<b>Break – Visit the Expo</b>	Exhibit Hall



3:30 p.m. – 4:00 p.m.	Tyler Formation in North Dakota – Tim Nesheim, ND Geological Survey	Meeting Room 101
4:00 p.m. – 4:30 p.m.	Using Geophysics to Optimize Horizontal Well Performance – Marivi Molina, Petrobakken Energy	Meeting Room 101
4:30 p.m. – 5:00 p.m.	Integrated 3-D Geological Model of the Devonian Bakken Formation, Williston Basin, Elm Coulee Field – Adrian Almanza, Marathon Oil	Meeting Room 101
<b>Bakken Bottlenecks</b> <i>Session Chairs – Wayne Biberdorf, WB Consulting and Terry Kovacevich, Marathon Oil</i>		Meeting Rooms 104 & 105
1:30 p.m. – 2:00 p.m.	Williston Basin Export Capacity – Justin Kringstad, ND Pipeline Authority	Meeting Rooms 104 & 105
2:00 p.m. – 2:30 p.m.	New Bakken Markets via Pipeline – Perry Schuldhaus, Enbridge Energy Co.	Meeting Rooms 104 & 105
2:30 p.m. – 3:00 p.m.	You Can Get There From Here – Tom Williams, BNSF Railway Company	Meeting Rooms 104 & 105
3:00 p.m. – 3:30 p.m.	<b>Break – Visit the Expo</b>	Exhibit Hall
3:30 p.m. – 4:00 p.m.	Electric Power Supply – TBA	Meeting Rooms 104 & 105
4:00 p.m. – 4:30 p.m.	Best Practices for Good Relationships with Landowners – Daryl Dukart, Dunn County Commissioner and Rancher	Meeting Rooms 104 & 105
4:30 p.m. – 5:00 p.m.	Waste Water to Frac Water – David Lamb, Active Water Solutions	Meeting Rooms 104 & 105
5:00 p.m. – 10:00 p.m.	<b>Expo &amp; Social</b>	Exhibit Hall
5:00 p.m. – 7:00 p.m.	Hors d'oeuvres and Hosted Bar from 5:00 p.m. – 6:30 p.m.	Exhibit Hall
7:00 p.m. – 10:00 p.m.	<b>Social Gathering</b> Sponsored by the ND Oil PAC – Minimum donation \$20 at door. Music by Joe Friday Band	Ramkota Hotel, Dakota Ballroom

<b>Thursday, May 24, 2012</b>		
7:00 a.m. – 8:30 a.m.	Hot Breakfast Buffet	Arena and Upper Level Lobby
7:00 a.m. – 7:30 a.m.	Bakken Basics – Lynn Helms, ND Dept. of Mineral Resources	Arena
7:30 a.m. – 8:00 a.m.	Conference Registration Opens	Upper Level Lobby
8:00 a.m.	Expo Opens	Exhibit Hall
<b>Morning Session</b> <i>Introductions – Monica Hannan, KFYP TV Bismarck</i>		Arena
8:00 a.m. – 8:10 a.m.	Tex “Red Tipped Arrow” Hall, Three Affiliated Tribes	Arena
8:10 a.m. – 8:20 a.m.	ND Representative Rick Berg	Arena
8:20 a.m. – 8:35 a.m.	TBA	Arena
8:35 a.m. – 9:05 a.m.	The Role of Unconventionals in the Global Energy Future – Scott Tinker, Bureau of Economic Geology	Arena
9:05 a.m. – 9:35 a.m.	Extending the Bakken – Julie LeFever, ND Geological Survey	Arena
9:35 a.m. – 10:30 a.m.	<b>Break – Visit the Expo</b>	Exhibit Hall
<b>North Dakota Resource Management Panel</b> <i>Panel Moderator – Ron Ness, North Dakota Petroleum Council</i>		Meeting Rooms 104 & 105
10:30 a.m. – 12:00 p.m.	The Next Phase of Oil Development: Production, Efficiency, New Technology & Reducing Impacts	Meeting Rooms 104 & 105
10:30 a.m. – 12:00 p.m.	Taking the Responsible Leadership Role in the Bakken Development – Harold Hamm, Continental Resources	Meeting Rooms 104 & 105
10:30 a.m. – 12:00 p.m.	New Discovery Areas in the Bakken: It Just Gets Better – Jim Volker, Whiting Petroleum; Dave Roberts, Marathon Oil	Meeting Rooms 104 & 105
<b>Keynote Luncheon Speaker</b> (Lunch is available in both the Arena and the Exhibit Hall)		Arena
12:00 p.m. – 1:30 p.m.	Introduction – ND Agriculture Commissioner Doug Goehring	Arena
12:00 p.m. – 1:30 p.m.	License to Operate: Socioeconomic Impacts and the Public-Industry Partnership – Greg Hill, Hess Executive Vice President & President, Worldwide Exploration & Production	Arena
1:30 p.m.	Conference Adjourns	Arena
<b>Bakken/Three Forks/Tyler Core Workshop #3</b>		Oak, Elm & Linden Rooms
2:00 p.m. – 5:30 p.m.	North Dakota Geological Survey	<b>(Pre-registration is required \$125/person)</b>

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# AE<sub>2</sub>S: Putting an Emphasis on Quality

*Culture and values, leadership, compensation, benefits and growth opportunities make this one of the top 10 Best Civil Engineering Firms to Work For.*

By Jennifer Ryan

**A**dvanced Engineering and Environmental Services, or AE<sub>2</sub>S, recently celebrated its 20<sup>th</sup> anniversary. What began as a small and specialized two-person engineering consulting firm in October 1991 is now a 170-employee organization headquartered in Grand Forks, ND, with 13 locations across North Dakota, Minnesota and Montana.

"We've remained quite specialized but we certainly blew past our initial vision," laughs CEO, Steve Burian.

Today, AE<sub>2</sub>S continues to focus on its primary specialty of water systems but has expanded to include general civil, electrical and structural engineering; instrumentation and controls; integration, surveying and mapping; as well as financial services. When the demand arises, its sister company AE<sub>2</sub>S Construction works with its clients to build the projects AE<sub>2</sub>S has planned and designed.

A majority of AE<sub>2</sub>S's work comes from municipal clients and rural and regional water systems, as well as from oil and oil service companies. Offering a complete suite of services—from master planning, capital improvement planning, study and design to bidding administration and construction—AE<sub>2</sub>S considers quality above all else.



"We have a huge emphasis on putting the client first. We're very, very client-focused and we never want to let the client down," Burian explains. "So that means an added emphasis on quality."

Burian attributes the company's ability to deliver consistent quality to his team of 170 employees, which include engineers, technicians, surveyors, financial analysts and communication specialists. Because AE<sub>2</sub>S has spent the past two decades specializing in water system services, the employees have gained a great deal of experience working in a very specialized area.

"Our clients choose us because they know we're going to work aggressively with them to get exactly what they need," he says. "Clients tell us, 'You guys plain and simple get things done,'" he adds proudly.

## CUSTOM APPROACH

Though AE<sub>2</sub>S has developed a specialty in water systems, Burian explains there is no step-by-step manual on how to approach each new project.



"Consulting is a little grey; there's no black or white. There's no pre-set path to follow," he says. "We have to get to know our clients, care about their business and their success. We make sure to deliver value to them in the end."

For the past three years, the company has been recognized as one of the top 10 Best Civil Engineering Firms to Work For based on criteria such as culture and values, quality of leadership, compensation, benefits and professional growth opportunities.

"Our projects provide an environment that challenges our professionals," Burian says. "We are a hard-charging, hard-working team with a focus on the same goal."

That focus led to a prestigious national award given to AE<sub>2</sub>S by President Bill Clinton during the aftermath of the 1997 Red River flood, which affected southern Manitoba, Minnesota and North Dakota. Grand Forks was arguably the most devastated region, requiring the complete evacuation of East Grand Forks and approximately 95 per cent of Grand Forks' population.

*Offering a complete suite of services—from master planning, capital improvement planning, study and design to bidding administration and construction—AE<sub>2</sub>S considers quality above all else.*

“Grand Forks was inundated in 1997. No water was potable,” Burian remembers. “We supervised the resurrection of their water plant. In three days, we had that plant up and running. And within seven days, we had potable water.”

#### **VALUABLE LESSONS FOR SUCCESS**

With that flood well in the past, Burian still credits many of the company’s more recent successes to the lessons he and his company learned that year.

Amidst the current North Dakota oil boom, AE<sub>2</sub>S has become involved with a number of projects designed to respond to the effects of a swift population increase.

“Population growth is so much more significant than anyone had anticipated,” Burian says. “In fact, one of the biggest challenges is finding accurate predictions to utilize for planning. The growth in North Dakota is phenomenal. You can really see the benefits, all the work, all those jobs. There’s really an impact statewide.”

However, not all of the effects are positive. The rapid economic growth translates into a great need for public services—services that didn’t exist before—to be built quickly.

“All of these small communities realized they were inundated with population growth and infrastructure demands,” Burian explains. “The pace at which we needed to solve the problems [during the flood of 1997] served us well for our current North Dakota work.”

In 2011, the North Dakota Legislature announced it would dedicate about \$1.2 billion over the current 2011-2013 biennium to deal with the impacts of the oil boom—a 186



*AE<sub>2</sub>S workers laying pipe for the Western Area Water Supply Project (WAWSP).*



*AE<sub>2</sub>S CEO, Steve Burian.*



*Computer controls at the Williston Water Treatment Plant.*



per cent increase from the funds promised for the previous 2009-2011 period.

Burian says that when the North Dakota Legislature developed the Energy Impact Fund, it opened up opportunities for communities in oil and gas producing counties to extend streets and water and wastewater systems.

"Population growth is so much more significant than anyone had anticipated even two years ago. Given that these communities are growing at such a rapid pace—when before some of them were even concerned about lack of growth—we've worked with them to put together solid infrastructure plans."

These plans promise to flexibly handle the demands that could be placed on them in the future because, as Burian notes, there's no way of knowing when the current growth will slow.

## LOBBYING FOR FUNDING DEVELOPMENT

The Impact Fund is not the only time AE<sub>2</sub>S or its financial division, AE<sub>2</sub>S Nexus, has encouraged funding development legislation on behalf of its clients. Through working with a number of clients in the northwest corner of North Dakota, AE<sub>2</sub>S identified several entities that had inadequate or poor quality water supplies, including the City of Williston, BDW Rural Water System, McKenzie County Water Resource District, R&T Water Supply and Williams Rural Water District.

"The citizens being served by these entities were living with a combination of issues such as limited groundwater supplies, water quality issues and infrastructure capacity limitations," Burian says. "The entities involved all needed a solution and it was clear that it could be a regional solution."

In 2009, AE<sub>2</sub>S suggested bringing together the entities to discuss a mutually-beneficial solution to their water woes. The group envisioned a project that would pump water north and south under the Missouri River through pipelines from Williston to portions of Burke, Divide, McKenzie, Mountrail and Williams Counties.

It began through preliminary planning with the Garrison Diversion Conservancy District, and in 2010, AE<sub>2</sub>S and AE<sub>2</sub>S Nexus developed a business plan with the five entities to create the Western Area Water Supply Authority (WAWSA). Together, this collective urged North Dakota legislation to authorize the project. They did, and this past summer, AE<sub>2</sub>S was honored by the Williston Area Development Foundation for its involvement in the creation and passing of House Bill 1206.

"A very unique aspect of the project," notes Burian, "is funding the infrastructure of this massive project that will serve the citizens of northwest North Dakota."

The financial plan calls for the use of a small number of water depots—some already built and owned by the WAWSA entities and a handful that will be built specifically for this project—to sell extra capacity the system will have early in its life cycle to the oil industry. The oil industry water sales will, in turn, partially subsidize the long-term infrastructure, thus reducing taxpayer burden.

"It was a financial plan that won overwhelming support from the Legislature when the bill was passed by an 81 to 12 margin in the House and a 39 to 8 margin in the Senate and signed by the Governor last May," Burian reports.

It is an ambitious project—one that's going to keep AE<sub>2</sub>S busy in the near future.

## COMMUNITY FOCUS

In addition to the WAWSA project, AE<sub>2</sub>S is continuing to focus on community infrastructure plans.

"Those original five-year plans were constructed in two years. Most of our clients are coming back to us based on 2010 models to update for the 2013 legislative season," Burian says.

He also says he's excited for what those project updates may have in store for AE<sub>2</sub>S.

"I like the challenge and variety. There's significant opportunity in Western North Dakota and it's very energizing to get involved in meeting the infrastructure challenges."

Though the small-at-heart company exceeded its original vision—expanding from a two-person firm to a successful company with thirteen locations, trailing a number of recognitions and awards in its wake—Burian says AE<sub>2</sub>S remains committed to the original mission: providing valuable, quality services.

"We've built a solid foundation of the things we do. We understand there's constant change in terms of chasing our broad strategic aims. We embrace the change and the initiatives we'll have to implement. To be successful in this industry, we have to respond to change and keep providing value."

## FOR MORE INFORMATION:

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Grand Forks, ND 58201

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# NDAOGPC News

## REGIONAL ROUNDUP



### PICK UP THE PATCH!

Members of North Dakota's oil and gas industry have been busy planning efforts to pick up the oil patch this spring. Trash pick-up days have been held or are being planned by Marathon Oil, Badlands PowerFuels and Statoil. SM Energy is creating a program to keep a trash bin with each drilling rig and inspect each well site for trash. Many other companies have been working with their local communities to get involved in picking up the patch.

These efforts are part of a program launched by the North Dakota Petroleum Council (NDPC) in early April called Oil Can! Pick Up the Patch! Created to address the growing trash problem in the oil patch, Pick Up the Patch! encourages NDPC members to consider implementing and committing to four approaches in picking up the patch. These approaches include stressing the importance of proper trash disposal to employees and contractors daily, including trash disposal in employee training, participating in statewide clean-up efforts like the Adopt-a-Highway program, and working with local communities to coordinate cleanup efforts.

If you have ideas on how the NDPC can help pick up the patch or would like to include your city or organization's spring clean-up activities in the Pick Up the Patch! program, contact the NDPC at [abrinkman@ndoil.org](mailto:abrinkman@ndoil.org). For more information on Pick Up the Patch!, please visit [www.ndoil.org](http://www.ndoil.org).



### EDUCATION COMMITTEE SCHOOL POPULATION STUDY

The NDAOGPC Education Committee met March 6, 2012 in Dickinson, ND to continue its discussion of a study on school population projections during this Bakken oil boom. NDSU researchers will be evaluating population trend data so that local school boards and other officials can be prepared for the arrival of new students next fall. The study will cost \$44,000 and is expected to be finished by November 1, 2012.



*Dunn County residents explore the interior of Target Logistics' crew camp during an open house inside the Target Logistics building recently opened in southern Dunn County.*

### TARGET LOGISTICS HOSTS OPEN HOUSE IN DUNN COUNTY

Target Logistics hosted 100 guests at its open house south of Manning, ND, in Dunn County in early March. At that time, the crew camp held 300 crew but it was expected to double in size shortly thereafter. It's located approximately 10 miles north of Dickinson.

The Boston-based firm is looking at placing another camp near Dickinson after May 31. Called the Dunn County Lodge, the crew camp is fenced and has a security guard at the gate. They don't accept drop-ins. They contract with oil companies for their employed crews. Regional vice-president Travis Kelley welcomed the guests and invited them to check out the amenities.

"We are really happy to be in Dunn County," he told those in attendance. As a show of their appreciation on being welcomed into the county, the company will be donating 20 Apple iPads to the Killdeer Public School.

### MARK YOUR CALENDAR FOR THIS YEAR'S COOKFEST!

Make sure to attend one of the year's greatest barbecues at the North Dakota Petroleum Council's Cookfest! Mark down these dates and join the fun! Cookfest barbecues will take place July 24, 2012 in Ray, ND and July 26, 2012 in Belfield, ND.



## FISCAL IMPACT OF MEASURE TWO ESTIMATED TO BE OVER \$812 MILLION

Legislators learned in April 2012 that the estimated fiscal impact on the state would be over \$812 million, should ND voters choose to repeal property taxes effective January 1, 2012. Kathy Strombeck of the ND state Tax Commissioner's Office delivered a report to the interim Property Tax Measure Review Committee in Bismarck, ND in early April. Though the fiscal impact estimate was debated by both those in favor and opposed to the measure, some facts were made clear. The estimate assumes the effective date of the measure would be interpreted to initially repeal 2012 property taxes that would be due and payable in 2013, according to Strombeck. Strombeck also noted it is assumed that those 2011 property taxes, which are due and payable in 2012, would not be repealed.



## ASSOCIATION SCHOLARSHIP NOW AVAILABLE!

The NDAOGPC is sponsoring two \$1,000 scholarships for North Dakota students in their sophomore or junior years of college. Applicants should be pursuing degrees in engineering, chemistry, geology, petroleum sciences or other studies directly related to the oil and gas industry. Applications will be sent to all North Dakota colleges, universities, and vocational schools. We strongly encourage all readers to share this opportunity with anyone they believe may qualify. The application can be downloaded at [www.ndenergy.org](http://www.ndenergy.org). The deadline for these scholarships is May 31, 2012. Don't miss out on this great opportunity to gain financial assistance for an industry related education!

## SENATOR JOHN HOEVEN MAKES STOPS IN WILLISTON, DICKINSON

Senator John Hoeven visited with local officials in Williston and Dickinson in March about federal legislation, including a new highway bill that was passed in the Senate. Called MAP-21, the federal highway bill is now in the House. The Senate's version contains \$261.5 million in Fiscal Year 2012 and \$266 million in 2013. Hoeven says the bill gives more flexibility to states and reduces the number of federal highway programs from 90 to 30.

Hoeven continues to work on the Keystone XL pipeline and says he believes it has momentum. The US Geologic Survey is updating the study of Williston Basin oil reserves. Hoeven told the group in Dickinson, ND that a more accurate estimate of reserves will help communities with getting the long-term infrastructure investments needed by private investors. Dickinson City Commission President Dennis Johnson says Dickinson has the continuing issues of infrastructure, labor force, traffic and housing. Several projects that will be needed include a new, wider-grade separation (underpass or overpass) to connect north and south Dickinson.

Jim Arthaud, Billings County Commissioner, says federal regulations really slow projects down and that has cost local governments money. Hoeven added his support for widening Highway 85 to four lanes from Belfield to Williston. Stark County Commissioner Ken Zander said the county is bursting at the seams with requests for new veterans services, social services, ambulance, rural fire and jail needs.



*Senator John Hoeven speaks to a group of local officials in Dickinson on March 19, 2012.*

## STATE LAND BOARD ALLOCATES KEY IMPACTS FUND TO WESTERN NORTH DAKOTA EMERGENCY SERVICES AND SCHOOLS

The North Dakota State Board of University and School Lands recently awarded substantial grant monies from the Energy Infrastructure and Impact Grant Program.

Gov. Jack Dalrymple and other members of the state Board of University and School Lands unanimously voted to award a matching grant of \$3 million to the Williston Public School District. With the Energy Impact Grant funding, Williston school officials will be able to purchase or lease portable classrooms to meet the district's growing student enrolment. School officials are planning for a significant enrolment increase in September.

"Williston's public schools are experiencing rapid enrolment growth and the local funding sources that generally accompany growth haven't caught up to meet the district's needs," Dalrymple says. "The state Energy Impact Fund was created to address these types of situations and I am pleased that the state is able to help the school district move forward with expansion plans. With this financial assistance, Williston schools will be able to add needed classroom space for this fall, while they continue the district's long-term planning."

The state Board of University and School Lands (state Land Board) voted unanimously to adopt policy that establishes grant eligibility criteria for Oil Patch schools that face classroom shortages. The board allocated \$5 million in Impact Grant funding and awarded Williston School District a \$3 million matching grant. Dalrymple is chairman of the five-member state Land Board. Other board members are Attorney General Wayne Stenehjem, Secretary of State Al Jaeger, Superintendent of Public Instruction Wayne Sanstead and state Treasurer Kelly Schmidt.

Eligible school districts are located within the state's oil and gas counties. They must meet rapid enrolment criteria and demonstrate a need for state assistance to purchase or lease portable classrooms. The grants cover 80 per cent of costs, with 20 per cent required from eligible school districts. The maximum allowable cost for portable classrooms is \$150,000. Grants can be used to help pay leases for portable classrooms for the 2012-2013 school year or the first year of a lease-to-purchase agreement. Other allowable expenses include necessary classroom equipment, infrastructure costs including land preparation, electricity, sewer, water and the costs of architectural and construction design.



## ENERGY DEVELOPMENT AND TRANSMISSION COMMITTEE TALKS ENERGY ISSUES

The Legislative interim Energy Development and Transmission Committee met on March 20, 2012 to discuss ongoing energy developments throughout the state. A central topic was that of oil and gas production in the western North Dakota Bakken region. Updates were given by state Land Commissioner Lance Gaebe on the status of the energy infrastructure and impact grant program. Committee members discussed possible methods of making sure more of the impacts seen by Bakken communities are addressed faster and more effectively. Senator John Andrist of Crosby floated the idea of removing the \$100 million cap to the grant fund. There was also discussion of direct allocations of money into some of the larger western North Dakota cities' general fund for use as needed.

The next grant round will be undertaken in the next quarter and will focus on funding those political subdivisions that weren't funded previously. This grant round, according to EIIG Office Director Gerry Fisher, will act as a "catch all" and include infrastructure funding opportunities for political subdivisions like airport authorities, park districts, water resource districts and public schools.

Public Service Commissioner Kevin Cramer also gave the committee information on eminent domain and how it relates to transmission line and pipeline siting. Several members of the public, including Dunn County Commissioner Daryl Dukart, testified that the current regulation of some pipelines, namely gathering lines used by the oil and gas industry, are not stringent enough to prevent environmental catastrophes and landowner disputes. Committee discussion involved ways in which the state could assist in giving landowners assistance without interfering with private affairs.

North Dakota Department of Transportation Director Francis Ziegler gave the committee an update on the state highway situation. In terms of funding, North Dakota relies heavily on federal money to fund its projects. A federal highway bill is still in progress in Washington. In other state highway news, Ziegler reported that Highway 85's "Lost Bridge" between Watford City and Grassy Butte will not be replaced with another and should be repaired by early May.



## STATE LAND BOARD SENDS \$12 MILLION TO OIL COUNTRY FOR EMERGENCY SERVICES

Gov. Jack Dalrymple and other members of the state Board of University and School Lands (state Land Board) recently awarded nearly \$12 million in grants to help fund enhancements in emergency services throughout the state's oil and gas producing counties. The grants are part of the Energy Impact Fund, which was created to address the needs created by rapid oil development.

"These grant awards of \$12 million will make a significant difference in the delivery of emergency services in Oil Country," Dalrymple says. "State officials held 14 meetings in nine cities to help determine where the state's help is most needed."

The Land Board approved 106 grant applications, including 59 for fire departments and emergency responders, 29 grants for ambulance services and 12 for law enforcement services. The grants include funding for personnel and equipment at the Tioga Fire Hall; equipment for the McKenzie County Ambulance Service; a new ambulance and ambulance garage in Killdeer; a new rescue vehicle and equipment for the Dickinson Rural Fire District and training for emergency responders in Bowman. To view the full list of awarded grants, go to [www.nd.gov/energyimpact](http://www.nd.gov/energyimpact).

Following Dalrymple's recommendation, the Legislature created the Energy Impact Fund and has appropriated \$135 million for the 2011-13 biennium to offset direct impacts created by rapid development in the state's oil and gas producing counties. So far, the state has awarded about \$73 million to political subdivisions for critical infrastructure upgrade, emergency service enhancements and other needs. About \$45 million in additional grant funding will be allocated to projects early this summer.



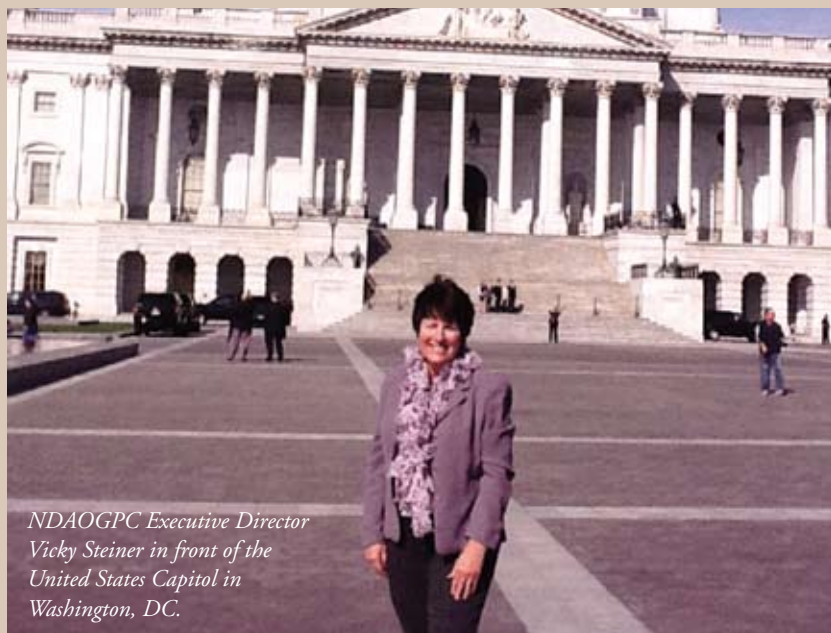


## HETTINGER COUNTY CONDUCTS VISION WEST ND PLANNING

Hettinger County kicked off their Vision West ND planning in mid-March with two steering committee meetings and two town halls, New England and Mott. The 12-person steering committee worked through the planning steps and they picked five economic development strategies and five quality of life priorities. The development strategies included infrastructure development, business retention, energy development, attraction of government funding and pass-through visitor services.

The quality of life priorities included housing, public safety/emergency medical services, daycare services, a letter to Congress on the importance of the federal farm bill to Hettinger County and availability of land for development.

Building Communities company president Brian Cole led the team for three days. Cole says he had several individuals tell him they were surprised at how entertaining the process was. "I never expected that but that means they were engaged," Cole adds. Local leaders will take the initiative on the priorities and they will continue their work toward their goals.



*NDAOGPC Executive Director Vicky Steiner in front of the United States Capitol in Washington, DC.*

## STEINER MEETS WITH NORTH DAKOTA CONGRESSIONAL DELEGATION

NDAOGPC Executive Director Vicky Steiner met recently with North Dakota's congressional officials in Washington, DC to discuss short- and long-term issues of oil and coal. Emphasis was placed on the rapidly-expanding oil development in western North Dakota.

The transportation bill that the Senate recently crafted is now slated for House review. Representative Rick Berg says the process is much slower in Washington when compared to his time in the North Dakota state legislature. Berg is concerned with affordable housing availability but says as the market responds, more new housing stock will eventually help ease the current situation.

Senator John Hoeven is continuing to pressure for the complete Keystone XL pipeline. Hoeven's energy correspondent, Ryan Bernstein also met with Steiner to discuss recent population estimates and how that has impacted the cities and schools in the western portion of North Dakota.

Senator Kent Conrad, in his meeting with Steiner and two staffers, said creating a national energy corridor could bring needed dollars to western North Dakota highways. Although he said he's now finishing his final term, it would be good to target key federal committee chairs. Also, US Transportation Secretary Ray LaHood is sympathetic to the infrastructure needs of a small rural state like North Dakota and that dialogue should continue after Conrad's term expires in January 2013.

## NDAOGPC IMPLEMENTS LOAD RESTRICTION COMMUNICATION SYSTEM

In preparation for the spring thaw ahead—and the county road load restrictions that come with it—the NDAOGPC has added an enhancement to the [ndenergy.org](http://ndenergy.org) website, which will provide one location for trucking companies to access information on the changing status of all NDAOGPC participating county road load restrictions. This tool was designed to improve communication between the NDAOGPC participating counties and the companies driving the roads.

The basic functionality of the system is that each participating county has the ability to log in to the online system and post information on restricted county roads in their county, including the effective date of the restriction. Optional information, including documents and/or additional comments regarding restrictions may be posted as well.

To access the system, a company may go to [www.ndenergy.org](http://www.ndenergy.org) and click on the "Complete Details of Restricted County Roads" tab. They can also sign up for Restricted Road E-mail Notifications so when a NDAOGPC county changes its load restrictions, a notification e-mail is sent to those who have registered.

The NDAOGPC permits only authorize overweight or over-dimension trips on non-restricted NDAOGPC county roads. If a restriction has been placed on a county road, authorization to travel overweight or over-dimension on that road must be obtained from the county that issued the restriction. For more information, go to [www.ndenergy.org](http://www.ndenergy.org) or contact the NDAOGPC Permit section at (701) 566-5576.

# Tools of the Trade

## GRISWOLD™ 811 SERIES ANSI PUMPS MEET NEEDS FOR SALTWATER TRANSFER IN OIL & GAS APPLICATIONS



Griswold™ Pump Company, a leading manufacturer of centrifugal pumps, is pleased to announce that as the pace of oil-and-gas production and recovery continues to grow in the United States—especially in the fertile shale-oil plays—its 811 Series ANSI Centrifugal Pumps possess a “speed to market” rate that enables oil and gas producers to maximize the production ability of their operations.

Griswold 811 Series pumps can be critical components for use in saltwater handling and transfer applications in oil and gas recovery. Saltwater is by-product of oil and gas production and needs to be separated during the product recovery process. The 811 Series pumps are ideal for transferring the collected saltwater out of the well bore and into storage tanks or trucks so it can be disposed.

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These pumps have casings that can be constructed of a wide choice of materials, including ductile iron, 316 stainless steel, CD4MCu and alloy 20. They are constructed through investment and no-bake casting processes to ensure smooth, precise, superior finishes that guarantee consistent, reliable

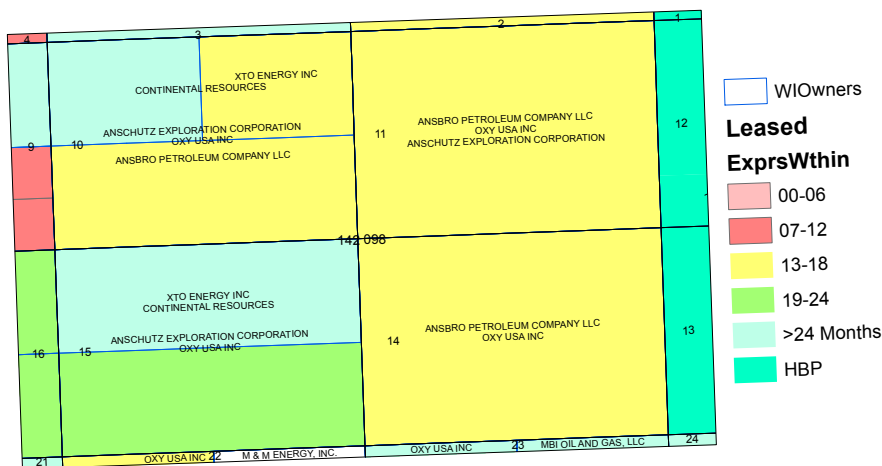
performance. Griswold employs metallurgists to strictly supervise all heat-treating operations so that maximum durability for all alloys is ensured.

Griswold 811 Series ANSI Centrifugal Pumps are available in a full range of sizes, options and upgrades that can be tailored to meet virtually any liquid-handling flow rate, up to and including 4,000 gpm (908 m<sup>3</sup>/hr). There is a wide array of mechanical-seal options, which allow the pumps to operate in temperatures as high as 500°F (260°C).

[www.griswoldpump.com](http://www.griswoldpump.com)

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PetroLease supplies maps and data to oil companies that can help them obtain leading ownership positions in the Bakken region of North Dakota. Delivering information from more than 200,000 lease and assignment documents, this centralized resource provides timely details to operators seeking to control a given area ahead of its competition.

“Competing oil companies in the Bakken own leases on the same acreage. As a result, competitors are also partners trying to obtain control of their shared acreage,” says Neil Job, general manager for PetroLease. “There can be many different mineral interest owners in any parcel of

land. PetroLease helps businesses determine if there are viable lease trades or acquisition opportunities.”

Leasing and mineral title research are time-consuming activities. PetroLease advances that research by mapping leases and assignments. It allows users to see opportunities for additional leasing around their core areas.

PetroLease data and maps are available for 15 North Dakota counties. Information is delivered as ready-to-use shapefiles.

[www.petrolease.com](http://www.petrolease.com)





## DYNABLEND™ LIQUID POLYMER BLENDING SYSTEMS IMPROVE PRODUCTION IN MATURE OIL & GAS WELLS

Fluid Dynamics™, a leading manufacturer of liquid and dry polymer blending systems and a division of Neptune™ Chemical Pump Co., Inc., has announced that its dynaBLEND™ Liquid Polymer Blending Systems can play an important role in realizing the true product-recovery potential of mature oil and gas wells. Field tests have shown that as much as 70 per cent of the actual recoverable reserves from an oil well can remain below ground because it has become too costly to extract the product.

A recovery system that features dynaBLEND liquid-polymer technology can help turn these marginal and/or abandoned fields and wells into big producers again through an Enhanced Oil Recovery (EOR) process known as alkali-surfactant-polymer (ASP) chemical flooding. In this process, an alkali agent, a surfactant and a polymer are blended together and injected into a water injection well that is energizing the formation. This chemical combination helps release the oil from the trapped formation and flow to the well's surface.

The dynaBLEND is ideal for ASP applications because it has been designed to effectively activate all types of liquid polymers. Its non-mechanical mixing chamber delivers an unequalled degree of reliability when compared to other mechanical technologies. The system features an injection check valve that has been designed for easy disassembly and inspection, which eliminates many of the maintenance concerns that affect other systems. This HydroAction Technology produces in excess of six times the mixing energy per unit volume than a comparably-sized mechanical mixer, enabling the dynaBLEND to provide polymer activation that is paired to a particular process and flow demand.

Control options range from manual systems to fully instrumental PLC-based units with an unlimited variety of inputs and outputs. Standard units are available to provide activated polymer solution from 30 gph (114 lph) to 21,000 gph (79,494 lph), with standard or custom dry-preparation systems with capacities to 2,200 pounds (998 kg) per day also available.

[www.dynablend.com](http://www.dynablend.com)

[www.neptune1.com](http://www.neptune1.com)

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With oil and gas activities reaching a feverish pitch in the Williston Basin, we are expecting more than 3,500 people at this year's Williston Basin Petroleum Conference & Expo!

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The conference will take place May 22-24, 2012 at the Bismarck Civic Centre, 315 South 5<sup>th</sup> Street in Bismarck, ND. With more than 277 indoor exhibitor booths and 35 outdoor spaces for large demonstrations, there will be lots for everyone in attendance to see and learn!



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# 20<sup>th</sup> Annual Williston Basin Petroleum Conference

May 22-24, 2012 • Civic Center • Bismarck, ND



- 275+ expo booths
  - 35+ outdoor exhibits
  - Sponsorships
  - 3,500+ expected to attend
- 
- Bakken CEOs and industry leaders discussing
    - Emerging technology
    - Geology
    - Development impacts
    - Williston Basin forecasts
    - Bakken investment
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