

# CALL FOR ENTRIES

The Interstate Oil and Gas Compact Commission is seeking nominations for the 2017 Chairman's Stewardship Awards. The winners will be honored at the IOGCC Annual Conference in Pittsburgh, Pennsylvania, October 1 - 3. All nominations received will be mentioned in the Winners Booklet along with project title. All past winners and their projects will also be mentioned in the Winners Booklet.

You may apply on your behalf or nominate another project. Past winners are encouraged to apply with new projects. If you have applied in the past and received honorable mention and you feel your project has been added to we encourage you to resubmit your project. In the nomination form you will find the four different categories. Please choose one that best fits your nomination and provide a brief project summary. To see previous winning nominations, visit the IOGCC website at [iogcc.ok.gov/chairmansstewardship](http://iogcc.ok.gov/chairmansstewardship). For any questions or additional information please contact Carol Booth, communications manager for the IOGCC at 405-525-3556 ext. 114.

**Nominations must be received on or before August 3, 2017.**

## HISTORY

The Chairman's Stewardship Awards represent the Interstate Oil and Gas Compact Commission's highest honor for exemplary efforts by the oil and natural gas industry in environmental stewardship.

Since 1935 the IOGCC has voiced the need for sound oil and natural gas environmental policy. Many organizations have gone far beyond the basic mandates of law and regulation to protect and enhance natural resources. The Chairman's Stewardship Awards are an effort to single out these achievements as examples for others in industry, government and the public.

## AWARD CATEGORIES

### Energy Education

This award is presented to a group or organization that has created a program to educate the public about oil and natural gas and the hundreds of ways it affects the lives of Americans.

### Small Company

This award recognizes an innovative project by a small oil and natural gas company that demonstrates positive environmental stewardship. Small companies are those that operate in a limited area or region.

### Environmental Partnership

The Environmental Partnership award recognizes an innovative project led by a non-industry organization(s) in cooperation with an industry partner(s).

### Large Company

This award recognizes an innovative project by a large oil and natural gas company that demonstrates positive environmental stewardship. Large companies are those that operate nationwide and in many instances internationally.



CHAIRMAN'S  
STEWARDSHIP  
AWARDS

Briefly describe the nominated program on a separate attachment. Please limit your summary to 3 pages or less. Key points to include in your project summary:

Provide a brief explanation of the project.

Describe the purpose of the project.

- Explain the process taken to complete the project.

Describe any contributions made to the environment.

Describe what has been accomplished.

### Nominee Information:

Company Fasken Oil and Ranch

Contact Jimmy D. Carlile

Address 6101 Holiday Hill Road

City/State/Zip Midland, TX 79707-1631

Phone (432) 687-1777 Fax \_\_\_\_\_

E-Mail jimmyc@forl.com

### Submitted by:

Company Railroad Commission of Texas

Contact Leslie Savage

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City/State/Zip Austin, TX 78701

Phone (512) 63-7308 Fax \_\_\_\_\_

E-Mail leslie.savage@rrc.texas.gov

Visual Aids, if available:  
(Electronic submissions are accepted)

\_\_\_ Video/DVD (10 minutes or less)

\_\_\_ Photos

\_\_\_ Brochures/Publications  
(10 copies)

\_\_\_ Other

### Category:

\_\_\_ Energy Education

\_\_\_ Environmental Partnership

Small Company

\_\_\_ Large Company

### SEND NOMINATIONS TO:

Stewardship Awards

IOGCC

P.O. Box 53127

Oklahoma City, OK 73152-3127

Email: [carolbooth@iogcc.state.ok.us](mailto:carolbooth@iogcc.state.ok.us)

Fax: 405-525-3592

For more information call

405-525-3556 or log on to

[iogcc.ok.gov/chairmansstewardship](http://iogcc.ok.gov/chairmansstewardship)

**IOGCC CHAIRMAN'S STEWARDSHIP AWARD**

**NOMINATION**

**Nominee Information:**

Company: Fasken Oil and Ranch  
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**Submitted by:**

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**Explanation of Project:**

Fasken Oil and Ranch, Ltd. (Fasken), a small oil and ranching company, operates oil and gas production on the 165,000 acre "C" Ranch located in Andrews, Ector and Midland Counties, Texas. There is very little fresh water located on the "C" Ranch. Fasken operates 600 Wolfberry producing wells drilled during the past 10 years. Approximately 65,000 barrels (bbls) of water is required to drill and complete each well. To preserve scarce fresh water resources for future ranch operations, the company has reduced its use of fresh water for drilling and completion of wells by recycling and using brackish water. The Midland-based company ended its use of fresh water in drilling and completion operations on its C Ranch by the end of 2014.

**Purpose of the Project:**

The purpose of the project was to end the use of all fresh groundwater on their C Ranch for drilling and completion operations by the end of 2014.

Fresh water is a critical need in the Permian Basin. Fasken has over 75 years of history in oil and gas production in the Permian Basin. As a large landowner, they understand the importance of protecting the land and environment as well as the as well as protecting resources that are important to the future of the Permian Basin. They are among the leaders in finding new and innovative ways to reuse and recycle water resources from oil and gas operations.

Fasken recognized that environmental stewardship and water conservation is more critical than ever because of the record high levels of oil and gas activity in the Permian Basin and the need for water in drilling and completion operations. In 2013 and continuing in 2014 Fasken begin using recycled produced water for use in their hydraulic fracturing operations. The company supplemented the water beginning in 2013 with brackish water from the Santa Rosa formation.

Fasken is building its system for long term use, including water for other beneficial use including residential and irrigation for landscaping, parks and recreational purposes as the company's Vineyard master-planned development expands.

**Process Taken to Complete the Project:**

In partnership with Water Rescue Inc. of Fort Worth, Fasken located a system at an SWD battery to take advantage of existing pipeline infrastructure. Through a process using electrocoagulation, flocculation, and chemical treatment produced water was made suitable for use for hydraulic fracturing by removing dissolved solids such as iron and other gross particulates.

Fasken first worked with new technology to remove sulfate from water produced from the brackish Santa Rosa aquifer located 900 to 1500 feet below ground level. Initial attempts were unsuccessful. Fasken performed fracture stimulation on several wells using 50 percent fresh water and 50 percent Santa Rosa water in an effort to dilute the sulfate concentration of the water that would be pumped into the producing wells.

Some of the producing zones produce water that contains strontium which when combined with the sulfate contained in the Santa Rosa water can form strontium sulfate and can permanently plug up the producing zones that are fracture stimulated with this water.

Beginning in March of 2013, Fasken began removing sulfate from Santa Rosa water produced from four Santa Rosa wells using nano filtration technology and stimulated 2-4 wells per month using this water.

In 2014, Fasken used this processed Santa Rosa water in approximately 50 percent of the wells that it stimulated.

Fasken placed into operation a membrane unit that removes both the sulfate and chloride in the Santa Rosa water to a level that will enable the treated water to be used for both drilling and cementing wells. In 2014, Fasken processed 12,000 barrels per day (bpd) of Santa Rosa water for use. This process allowed Fasken to discontinue the use of Ogallala fresh water for drilling operations.

The produced water recycling program began in July of 2013. By 2014, Fasken was recycling approximately 6,000-8,000 bpd and continues to do so today. Fasken has processed just over 13,000,000 bbls of non-potable brackish and recycled produced water for drilling and fracturing operations to date and since 2014 has not used potable water for drilling or fracturing operations in its operations on the C Ranch.

Produced water is gathered at a SWD facility. Until recently, the water was then piped into an electrocoagulation (EC) unit where DC electric current was applied which caused the suspended solids in the water to coalesce. The water was then pumped into an open top steel tank with baffles that accelerated the settling of solids to the bottom of the tank. From there the water flowed into two horizontal 500 bbl settling tanks. The water was then pumped into two 350,000 bbl capacity doubled lined storage pits. And finally, the water was pulled out of the storage pits and pumped to the well site to be used in the fracturing process. Currently the produced water is treated chemically to solubilize the iron contained in the water and then stored in the lined storage pits.

**Contributions to the Environment:**

Approximately 2.7 million gallons of fresh water is left in the ground that otherwise would have been used in drilling and completion operations for every well to be drilled. Fasken estimates another 1500 Wolfberry wells to be drilled on the C Ranch requiring an estimated 4.1 billion gallons of water.

**Accomplishment:**

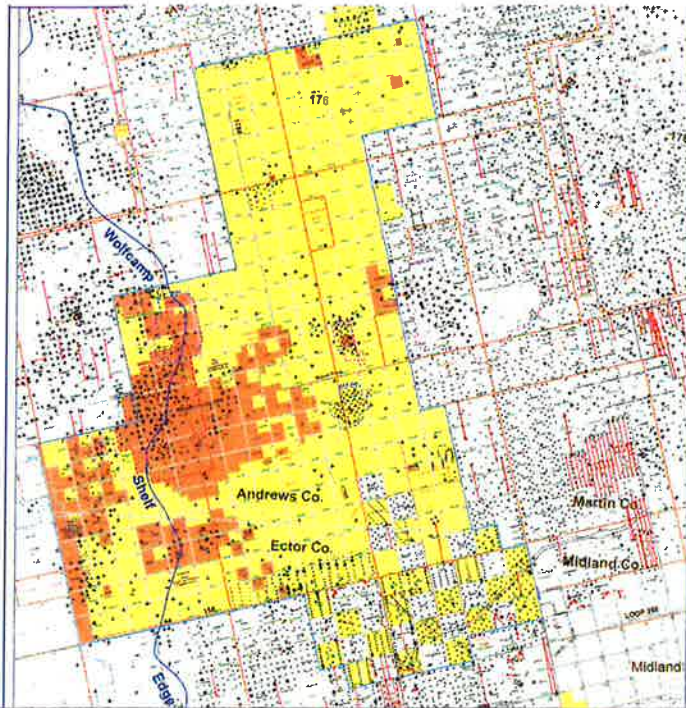
By the end of June of 2014, Fasken completely discontinued the use of fresh water for drilling and completion operations.



**FASKEN**  
OIL AND RANCH

**ELIMINATING FRESH WATER  
USAGE IN OILFIELD  
OPERATIONS**

September 27, 2016



**FASKEN**  
OIL AND RANCH

- Fasken Oil and Ranch, Ltd. operates oil and gas production on the 165,000 acre "C" Ranch located in Andrews, Ector and Midland Counties.
- We operate nearly 600 Wolfberry producing wells drilled during the past 10 years.
- Each well has to be hydraulically fractured in order to be able to produce oil and gas in economical quantities.
- The drilling and fracturing operations require approximately 65,000 bbls (2,730,000 gallons) of water and some 1,000,000 lbs of sand in order to frac ten separate pay zones in each well.

- There is very little fresh water located on the "C" Ranch with the most abundant on the very south end of the ranch.
- The decision was made in early 2013 to do our very best to preserve this fresh water for future ranch operations.
- We first tried to work with new technology and remove sulfate from water that was produced from the brackish Santa Rosa aquifer located 900' – 1500' below ground level. Initial attempts were unsuccessful. We frac'd several wells using 50% fresh water and 50% Santa Rosa water in an effort to dilute the sulfate concentration of the water that would be pumped into the producing wells.
- Some of the producing zones produce water that contains strontium which when combined with the sulfate contained in the Santa Rosa water can form strontium sulfate and can permanently plug up the producing zones frac'd with this water.



- Beginning in March, 2013 we began removing sulfate from Santa Rosa water produced from four Santa Rosa wells and frac'd 2-4 wells per month utilizing this water. Nano filtration technology is being utilized in this process.
- This process has a 12% rejection stream which means 12% of the water processed is rejected and cannot be used in our operation due to its high sulfate concentration. This reject water is disposed into our salt water disposal system. We have eliminated the use approximately 5,265,000 bbls of fresh water to date by using this processed Santa Rosa water in our fracturing operations.

- A membrane unit that removes both the sulfate and chloride in the Santa Rosa water to a level that allows this water to be used for both drilling and cementing wells was placed in operation in March, 2014 and continues today to provide all water for drilling and cementing wells in lieu of fresh water.
- This membrane unit combined with the use of processed Santa Rosa water and recycled produced water has resulted in totally eliminating the use fresh water on the C Ranch for oilfield use.

## Santa Rosa Sulfate Removal Unit



## PRODUCED WATER RECYCLING

- Began produced water recycling program in July, 2013. Currently recycling approximately 8,000 bbls per day. This coupled with our use of brackish Santa Rosa treated water provides 100% of our current frac water needs.
- We have recycled just over 7,700,000 bbls of produced water for fracturing operations to date.



## PRODUCED WATER RECYCLING

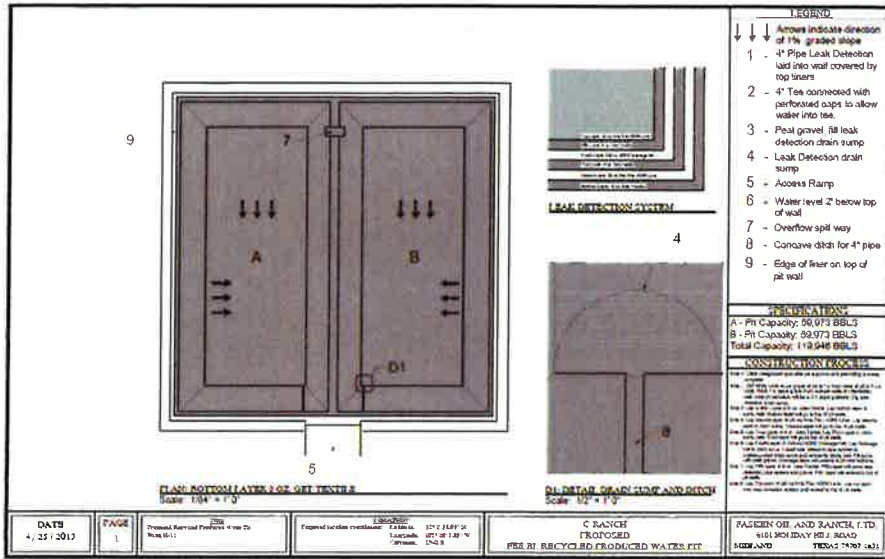
- Produced water is gathered at a SWD facility.



- The water is treated to solubilize the iron and is then pumped into two 350,000 bbl capacity doubled lined storage pits.



Storage Pit Design Complete with Double Liners and Leak Detection System



And finally the water is pulled out of the storage pit and pumped to the well site to be used in the fracturing process.



## SUMMARY

- BY THE END OF JUNE, 2014 WE COMPLETELY DISCONTINUED THE USE OF FRESH WATER FOR DRILLING AND FRACTURING OPERATIONS. THIS HAS RESULTED IN A TOTAL OF APPROXIMATELY 547 MILLION GALLONS OF FRESH WATER LEFT IN THE GROUND THAT OTHERWISE WOULD HAVE BEEN USED IN DRILLING AND COMPLETION OPERATIONS. WE ESTIMATE ANOTHER 1500 WOLFERRY WELLS LEFT TO BE DRILLED ON THE C RANCH. OUR CURRENT USE OF SANTA ROSA AND RECYCLED PRODUCED WATER TREATING WILL SAVE AN ESTIMATED 4.1 BILLION GALLONS OF FRESH WATER IN FUTURE WOLFERRY OPERATIONS ON THE C RANCH.