Energen Resources Corporation
San Juan Basin Operating Area

Drill Cuttings Costs Report

Evaluation of 12 Projects completed in 2011 for the Oil Conservation Commission in response to the proposed pit rule

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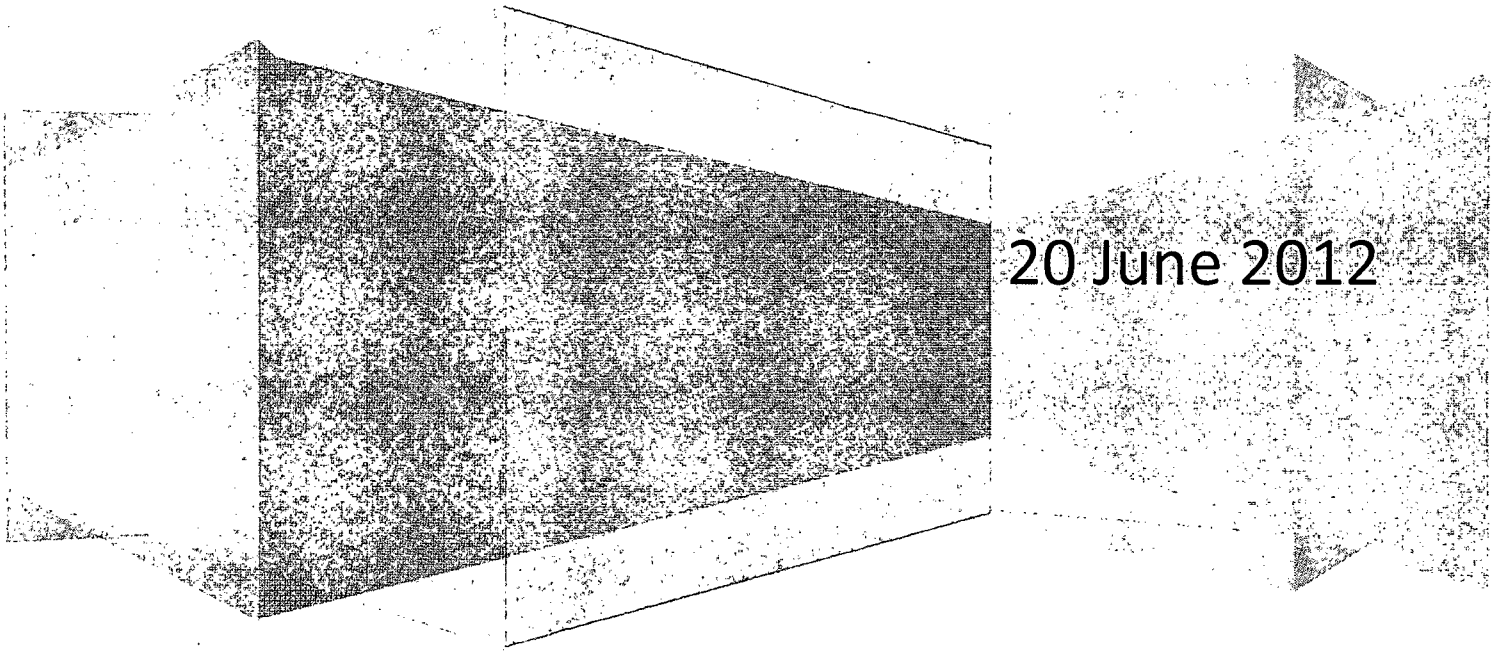

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Drill Cuttings Cost Report

I. Purpose

This report is to provide a synopsis of cost for the handling of drill cuttings using scenarios of closed loop systems and onsite burial in a lined pit. It is intended that this report will:

- show what can be usefully applied to other projects, and
- provide details to assist in the analysis of the impacts of the current pit rule.

II. Background of Energen Resources San Juan Basin

The San Juan Basin, considered one of the Nation's top natural gas deposits, is home to approximately 65 percent of Energen Resources' (ERC) natural gas reserves and 38 percent of the company's total proved reserves.

ERC first established a presence in the San Juan Basin in 1997 with the acquisition of 319 Bcfe of proved reserves from Burlington Resources. The company has substantially expanded its operations through subsequent acquisitions and successful development and is now the 3rd largest gas producer in the basin, with 88 employees in the Farmington District.

ERC's San Juan wells are located primarily in northwestern New Mexico and southwestern Colorado.

ERC's efforts to be good stewards of the environment have gained recognition. In 2010 at the Four Corners Oil and Gas Conference in Farmington, New Mexico, ERC's San Juan District was recognized by the U.S. Forest Service for using existing well pads and horizontal drilling techniques to minimize the impact of its development activities in the Carson National Forest, Jicarilla Ranger District.

In addition, ERC was recognized in 2010 with the Colorado Oil & Gas Conservation Commission's annual Environmental Awards-Outstanding Operator Award for E&P Waste Management through utilization of closed-loop systems. Approximately 94 percent of ERC's activity during the past several years required minimal location expansion to complete activities.

ERC continues to explore and utilize methods and systems to improve their stewardship to the environment and community.

III. Scope

The scope of this report is to present the cost associated of cuttings disposal when using either closed-loop systems or lined pits from actual costs derived from authority for expenditures (AFE's) via Energen's invoicing records system. Even though due diligence was taken throughout the review process, some costs are not broken out in contractors invoices. This may lead to slightly higher costs than what is listed in the report, but is estimated to be less than a 2% variance.

The costs analysis report separates invoiced cost into multiple categories for each well using closed loop systems. Significant differences in individual line item cost comparatively for the wells were reviewed to identify the variances.

In addition, the cost associated for building a location with a lined pit (including the closure) up to, but not including the reclamation, was used as a comparative analysis point.

A total of 12 wells were reviewed, representing nearly 30% of the total wells ERC drilled in 2011 in San Juan Basin.

IV. Derivation

The Drill Cuttings Cost Report information was derived from the following:

- Hauling
- Waste disposal
- Labs
- Equipment
- Construction costs when lined pit was utilized for onsite burial

V. Review of Wells

A. Group 1

The first group (1-4) compares cost of closed-loop systems to in place burial in a lined pit. Four wells located within the Jicarilla Reservation Lands south of Bloomfield off of Highway 550 and north on Highway 537are adjacent to Highway 537 with no significant dirt road for travel.

Wells 1 and 3 were closed loop systems with one-hundred percent haul off of all cuttings. Well 2 & 4 utilized lined pits with onsite burial according to current pit rules. All were completed between June and July of 2011. There were no critical adverse weather conditions impacting the hauling of drill cuttings of these wells.

Well 1: The well was drilled in 2011 with a complete closed loop system and 100% transport of all drill cuttings. There was no onsite disposal. This well was drilled to a total depth of 8261' MD.

Well 2: The well was drilled in 2011 with the use of a pit and on site burial. This well was drilled to a total depth of 7980' MD.

Well 3: The well was drilled in 2011 with a complete closed loop system and 100% transport of all drill cuttings. There was no onsite disposal. There was a significant increase in rental equipment costs compared to Well 1 due to complications increasing time on location extending longer than anticipated. This well was drilled to a total depth of 8060' MD.

Well 4 The well was drilled in 2011 with in the use of a pit and in place burial. This well was drilled to an estimated 8276' MD.

B. Group 2

Wells 5 and 6 were drilled directional during the summer of 2011 on Carson National Forest surface. Depths exceed 7000' (MD). The number of drilling days average around thirty days and the wells are located greater than 100 miles from an approved facility for disposal. The access to

this area is limited from Highway 64 via FR 310 across over 25 miles of dirt roads or through Colorado through an entrance on the northern access of the forest.

Well 5 The drilling of this well utilized a closed loop system with 100% haul off of cuttings. This well was drilled to a depth of 9035' MD.

Well 6 The drilling of this well utilized a lined pit. The costs associated with the construction of this location and pit is of a 'higher cost' as large boulders were encountered and special services were required to construct the pit resulting in an additional $6800.00. Well #6 was drilled to a depth of 8200' MD.

C. Group 3

Wells 7-12 were drilled vertically are located in close proximity to a disposal facility, (less than twenty miles) and are of shallow depth, average of 2500' (MD). The total individual costs of these wells are approximately 10-15% of any one of the wells in group 1 or 2. The overall cost difference of these wells is due to the shallow drilling depth, the use of smaller rigs, and shorter distances of travel.

Well 7 It was drilled to a depth of 2400' MD using a closed loop system and did not require a large rig for drilling operations. Less equipment was required and waste was minimal due to depth.

Well 8 It was drilled to a depth of 2500' MD and did not require a large rig for drilling operations. Less equipment was required and waste was minimal due to depth. Drilling took a little longer on this well than well #7.

Well 9 It was drilled to a depth of 1820' MD and did not require a large rig for drilling operations. Less equipment was required and waste was minimal due to depth.

Well 10 It was drilled to a depth of 1745' MD and did not require a large rig for drilling operations. Less equipment was required and waste was minimal due to depth.

Well 11 It was drilled to a depth of 1535' and did not require a large rig for drilling operations. Less equipment was required and waste was minimal due to depth.

Well 12 It was drilled to a depth of 1860'' and did not require a large rig for drilling operations. The well was drilled in 2011 with in the use of a pit and in place burial.

VI. Summary of Comparative Costs Analysis

As shown in Table 1-1, it is plausible to surmise if a well is drilled within 20 miles of an approved disposal facility with a depth less than 2400' (MD) and using a smaller drilling rig with no operational issues during the drilling process, a closed loop system can be used for slightly more than a lined pit. This is highly dependent on several factors including but not limited to: the time spent on location, distance between wells, transportation rates, availability of equipment, and contractual obligations to equipment rental companies for the closed-loop system components.

The construction of a lined pit is a fixed cost. Once the pit is built, there is no substantial additional cost. Furthermore, the closed loop system is variable in that significant daily cost is incurred when either located on location in use or in a yard on standby. Standby time is required if an operator is to ensure the equipment availability for future wells.

Closed-loop systems have created substantial additional cost for the following reasons:

1. The movement of additional equipment.
2. Equipment rental during periods of rig moves, stand by time, and ensuring the equipment is available for the upcoming projects.
3. Movement of drill cuttings from catch bin to drying pads or transport bins.
4. Handling drill cuttings and transporting them to a disposal facility.
5. Disposal of drill cuttings.

Two of the wells would not have required a closed loop system under the newly proposed siting criteria. Wells 1 and 3 are within a distance of 500 horizontal feet of a non-functioning agricultural water well, but greater than 300 feet. This had a potential cost impact in excess of $400,000.

Table 1-1 Costs Associated with Disposal of Drill Cuttings

Work Area	Jicarilla Reservation Group 1-Days to drill >30				Carson Forest-Carracas Group 2-Days to drill >30		San Juan County Group 3-Days to drill < a week					
Distance from disposal facility	>100 miles				>100 miles		Facilities all located less than 20 miles from disposal facility					
Well #	1	2	3	4	5	6	7	8	9	10	11	12
CL=Closed-Loop P=Pit	CL	P	CL	P	CL	P	CL	CL	CL	CL	CL	P
Siting Criteria	Yes	No	Yes	No	No	No	No	No	No	No	No	No
Well Total Depth (MD)	8261'	7980'	8060'	8276'	9035'	8200'	2400'	2500'	1820'	1745'	1535'	1860'
Trucking for waste material	$ 90,005		$87,676		$81,431		$23350	$39123	$29665	$19,668	$11,285	
Closed loop rental equipment	$ 98,020		$143,668		$181,401		$12899	$15558	$14800	$14,045	$10,940	
Disposal of cuttings	$ 34,045		$24,651		$46,000		----------Included in trucking costs----------					
Cost for construction of well pad, pit, and closure		$24,257		$30,768		$43,619						$16,603
Laboratory costs		$157		$158		$281						$281
Total Cost	**$222,070**	**$24,414**	**$255,995**	**$30,926**	**$308,832**	**$43,900**	**$36,249**	**$54,681**	**$44,465**	**$33,713**	**$22,225**	**$16,884**
Estimated additional cost of Closed-Loop	$192,070	-	$225,995	-	$264,932	-	$19,365	$37,797	$27,581	$16,829	$5341	-
Total additional CL cost for 9 wells	**$789,910**											

Public Comment and Summary of Report

My name is Kellie J. Campbell and I am the Safety and Environmental Coordinator for Energen Resources San Juan Basin. Madam Commissioner and commissioners, thank you for this opportunity to provide comment regarding the cost associated with closed-loop systems and onsite disposal.

Energen Resources Corporation (ERC) located primarily in northwestern New Mexico and Southwestern Colorado is the 3rd largest gas producer in the basin, with 88 employees in the Farmington District.

In response to the newly proposed pit rule, Energen Resources has prepared a cost analysis report. The report separates invoiced costs into multiple categories for each well utilizing closed loop systems or on site disposal.

In 2011, ERC San Juan Basin drilled a total of 42 wells. Twelve wells were reviewed demonstrating approximately 30% of the overall wells. There were no adverse weather conditions impacting the transportation of drill cuttings.

The first group of four wells is within the Jicarilla Reservation located south of Bloomfield off of Highway 550 and north on Highway 537. The disposal facility was a distance of approximately one hundred miles. Well 3 encountered drilling complications which resulted in additional days on location significantly increasing the cost of the closed-loop equipment rental.

Wells 1 and 3 utilized closed loop systems with one-hundred percent transport of all cuttings with a total cost in excess of $200,000 each. Wells 2 and 4 used lined pits with onsite burial according to current pit rules with a total pit construction and closure cost less than $30,000 each.

The second group, wells 5 and 6 are located on the Carson National Forest. Depths are in excess of 7000' (MD), thirty drill days or more, and are located greater than 100 miles from an approved facility for disposal. Well 5 was a closed loop system and well 6 was an onsite burial with an approved lined pit. Well 5 had a total cost in excess of $300,000 while Well 6 cost less than $44,000.

The third group, wells 7 thru 12, is located in close proximity to a disposal facility, less than twenty miles, and are of shallow depth, less than 2500' (MD). Wells 7-11 utilized closed loop systems with one-hundred percent transport of all cuttings with a cost ranging between 22,000 and 54,000 each. Well 12 utilized a lined pit with onsite burial with a total pit construction and closure cost less than $17,000.

The overall costs differences of drilling Group 3 wells compared to Group 1 & 2 are due to the shallow drilling depth, the ability to utilize smaller rigs, and shorter distances of travel. The closed loop systems cost were in excess of $30,000 each. Even though the analysis indicates Wells 7-11 may be cost affordable, they are a small percentage of the future wells proposed on Federal or Tribal surfaces. Wells located on Federal or Tribal surfaces do not have equitable disposal options. Shallow wells located near a disposal facility still have uncertainty with operational issues which could cause a well to exceed the economic practicality.

In summary, the closed-loop systems in Groups 1 & 2 cost the operator an average of $200,000 more than using onsite burial each as demonstrated in Table 1-1 of our report.

Key factors when evaluating closed-loop systems are: cost of equipment rental, additional movement of equipment, increased hauling, and disposal fees. With the use of newer techniques such as directional drilling, it has led to some uncertainties such as the number of days to drill. This uncertainty creates a

variable cost when evaluating closed-loop systems unlike a lined pit which has a fixed cost. Onsite disposal options do not incur additional cost per day if there are delays in drilling.

Additionally, wells 1 and 3 were required to utilize closed loop systems due to siting criteria in the existing rule. If applied, the newly proposed siting criteria would not require closed-loop systems. This had a potential cost savings in excess of $400,000 on these two wells.

There is no question that closed-loop systems have extensive cost. These costs can be enough to adversely affect development, particularly on economically marginal wells drilled mainly with fresh water mud systems in the northwest. The eight wells that utilized closed-loop systems added an approximated $800,000 to drilling cost in 2011 for ERC.

Thank you for this opportunity to address the Commission.