Toxic Release:
Colorado Oil & Gas Spills 2012

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Center for
Western Priorities

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Introduction & Summary

Every year the oil and gas industry is responsible for thousands of spills across the Western United States. In Colorado alone, hundreds of spills during 2012 contaminated surface waters, groundwater and agricultural land.

Impacted communities struggle with a lack of prompt notification after spills and without legal authority to control drilling within their community.

This analysis sheds new light on the frequency and severity of spills and releases that result from drilling, fracking, and other activities associated with oil and gas development. The analysis reviews oil and gas spills disclosed to Colorado Oil and Gas Conservation Commission that occurred in the State of Colorado between January 1, 2012 and December 31, 2012.

During the time period under review, oil and gas companies reported 402 spills. A spill is defined by state law as a discharge of more than 5 barrels (210 gallons) of product. There were undoubtedly many more oil or chemical spills that did not meet the reporting threshold.

The data compiled in this report reveals a startling portrayal not only of the frequency of spills, but also the proximity to communities, neighborhoods, and resources.

Overview of Findings

In the past year alone, numerous spills have occurred within close proximity to buildings, livestock, wetlands, and water sources, often contaminating surface water and groundwater.

Total Spills

In 2012, oil and gas companies reported 402 spills and releases to the COGCC.

402
Total Spills

Water Contamination

37%
Of Spills

Thirty-seven percent of spills occurred less than 50 feet from groundwater.

Approximately 20 percent of all spills in 2012 resulted in water contamination; 22 of those spills impacted surface water, while 63 impacted groundwater.

Fifty-seven percent of spills in 2012 occurred within 1,500 feet of surface water, and 28 percent of the spills occurred within 500 feet of surface water.

Thirty-seven percent of spills occurred less than 50 feet from groundwater, and eight percent occurred between 50 and 100 feet from groundwater.

Livestock and Wetlands

A total of 54 spills in 2012 occurred within 1,500 feet of cows, pigs, sheep, or other livestock.

A total of 38 spills in 2012 occurred less than 500 feet from wetlands, while 19 were between 500 and 1,000 feet.

54
Spills

A total of 54 spills in 2012 occurred within 1,500 feet of cows, pigs, sheep, or other livestock.

Buildings

18 percent of spills in 2012 occurred within the new 500 foot setback distance from buildings, while 37 percent of the spills occurred within 1,000 feet of a building. 49 percent occurred within 1,500 feet of a building.

Spill Size

53 spills in 2012 were larger than 1,000 square feet; 200 spills were less than 1,000 square feet; and eight spills were larger than 10,000 square feet.

278
Spills

Equipment failure or human error was listed as the cause of 278 of 402 spills reported in 2012.

Equipment Failure and Human Error Accounted For Seven Out Of 10 Spills

Equipment failure or human error was listed as the cause of 278 of 402 spills reported in 2012.

Human error was reported as the cause of 69 of 402 spills and equipment failure was listed as the cause of 209 of 402 spills.

Spills & Contamination

Parachute, Colorado
Hyrdocarbon Spill

Water Contamination Summary Stats

In 2012, 21 percent of all spills in Colorado resulted in water contamination: 22 spills contaminated surface water, while 63 spills impact groundwater.

402 Spills Were Reported To The COGCC

21% Of Spills Resulted In Water Contamination

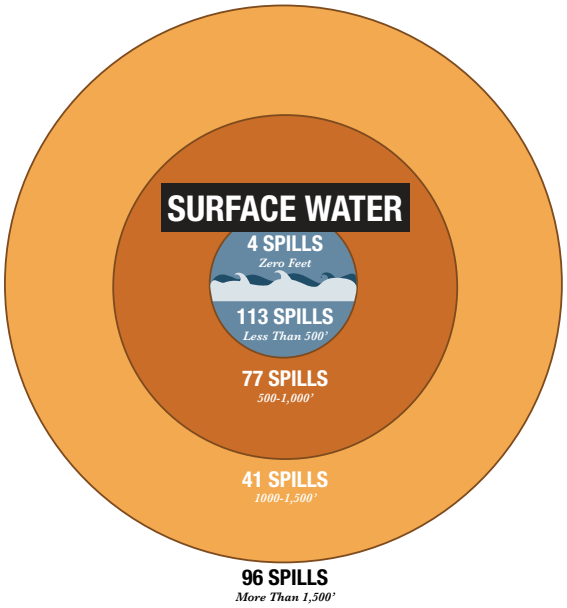
63 Spills Impacted Groundwater

22 Spills Impacted Surface Water

Surface Water

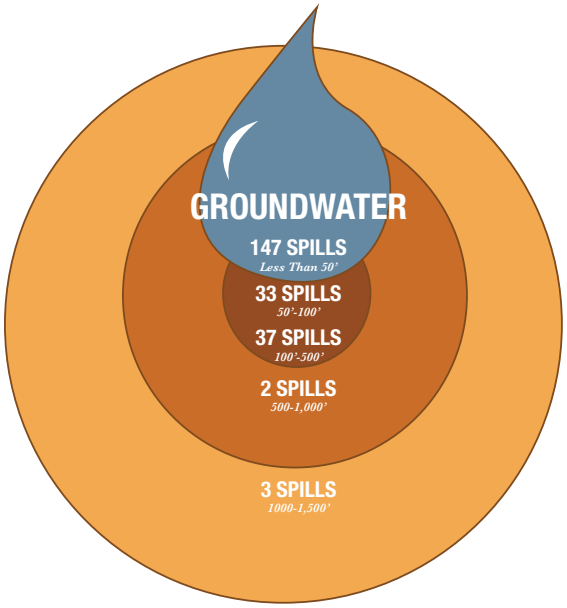
57 percent of the spills occurred 1,500 feet or less from surface water, while 28 percent of all spills reported in 2012 occurred less than 500 feet from surface water.

Number of Spills	Distance	Percent of Spills
4	0′	<1%
113	1-500′	28%
77	501-1,000′	19%
41	1,001-1,500′	10%
96	1,501-5,000′	23%
7	5,001′+	1%
68	None Reported	17%



Groundwater

A review of all spills in 2012 found that 37 percent occurred less than 50 feet from groundwater, eight percent occurred between 50 and 100 feet from groundwater, and nine percent occurred more than 100 feet from groundwater.



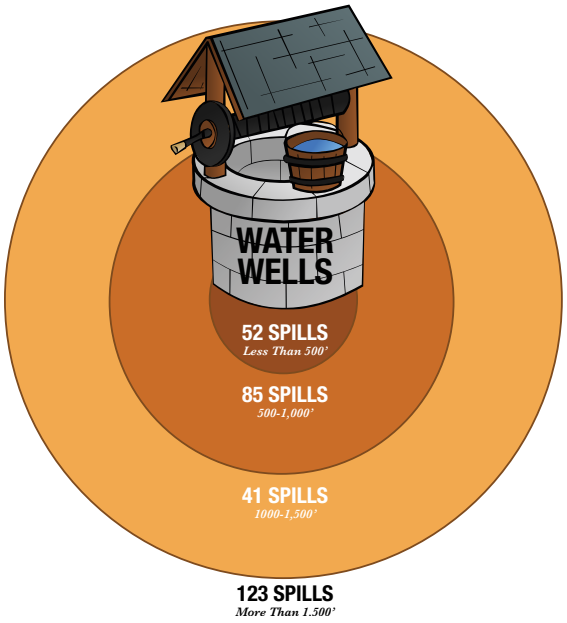
Number of Spills	Distance	Percent of Spills
147	<50′	37%
33	51-100′	8%
37	101-500′	9%
2	501-1,001′	<1%
3	1,000-5,000′	1%
180	No Reported Depth	44%

Spills & Contamination

Water Wells

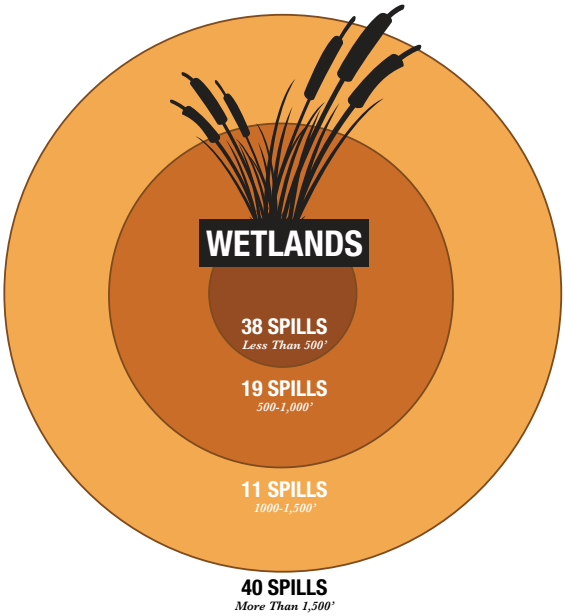
A review of all spills in 2012 found that 178 of 402 spills occurred 1,500 feet or less from a water well. 13 percent occurred within 500 feet, 21 percent between 500 and 1,000 feet, and 10 percent between 1,000 and 1,500 feet.

Number of Spills	Distance	Percent of Spills
52	<500′	13%
85	501-1,000′	21%
41	1,001-1,500′	10%
123	1,500′ +	30%



Wetlands

A total of 38 spills in 2012 occurred less than 500 feet from wetlands, while 19 were between 500 and 1,000 feet. An additional 11 were between 1,000 and 1,500 feet from wetlands, while 40 occurred more than 1,500 feet from wetlands.

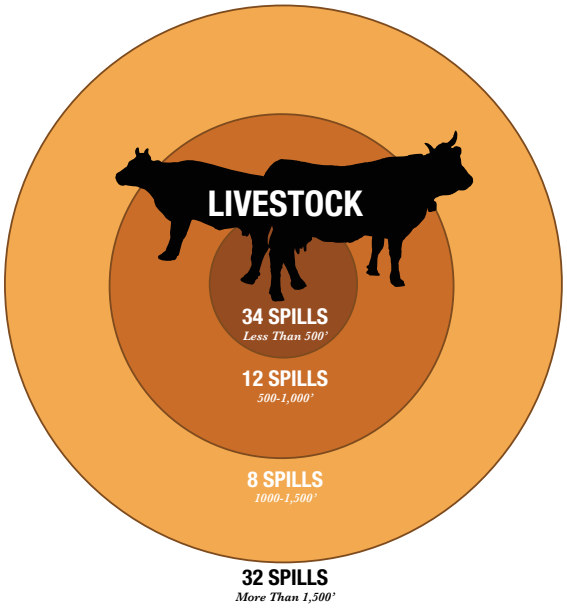


Number of Spills	Distance	Percent of Spills
38	<500′	9%
19	500-1,000′	5%
11	1,001-1,500′	3%
40	1,500′ +	10%

Livestock

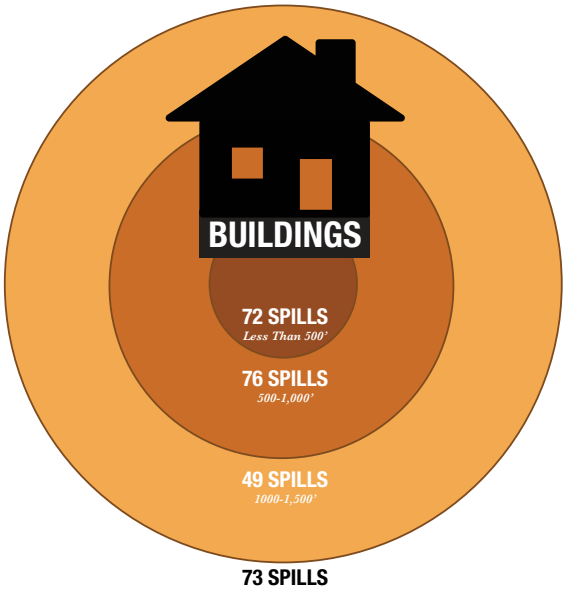
A total of 54 spills in 2012 occurred within 1,500 feet of cows, pigs, sheep, or other livestock. Eight percent of spills occurred less than 500 feet from livestock, three percent took place between 500 and 1,000 feet.

Number of Spills	Distance	Percent of Spills
34	<500′	8%
12	501-1,000′	3%
8	1,001-1,500′	2%
32	1,500′ +	8%



Buildings

Nearly half of all spills in 2012 occurred within 1,500 of a building, such as a home, school or business. 18 percent of spills in 2012 occurred within the new 500 foot setback distance from buildings, while 37 percent of the spills occurred within 1,000 feet of a building.

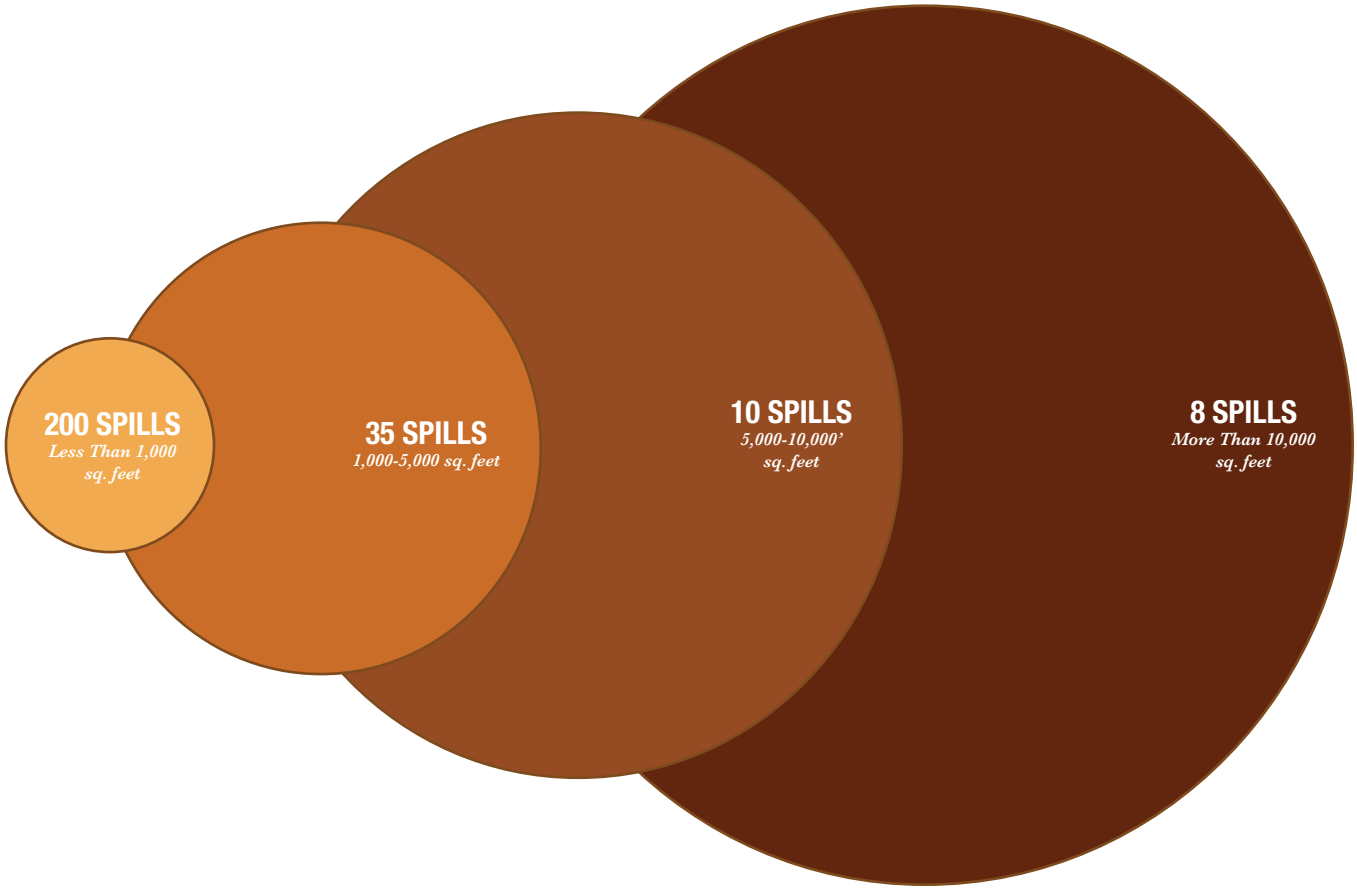


Number of Spills	Distance	Percent of Spills
72	<500′	18%
76	501-1,000′	19%
49	1,001-1,500′	12%
73	1,500′ +	18%

Spills & Contamination

Spill Size

53 spills were larger than 1,000 square feet, 200 spills were less than 1,000 square feet, and eight spills were larger than 10,000 square feet. For comparison, the average size of a new home constructed in the West in 2011 was 2,143 square feet, while an Olympic sized swimming pool measures 13,448 square feet.



Operators of Interest

62 percent (251 of the 402 reported spills) of spills in 2012 were linked to the operation of six companies: Anadarko subsidiaries Kerr-McGee Oil and Gas and Kerr McGee Gathering, Noble Energy and Noble Energy Production, Encana Oil and Gas, PDC Energy, WPX Energy Rocky Mountain, and Pioneer Natural Resources.

The six companies were responsible for 85 percent of spills resulting in water contamination in 2012.

In 2012, 63 spills impacted groundwater, while 22 impacted surface water, two spills impacted both. The six operators of interest were responsible for 58 spills that impacted groundwater and 14 spills that impacted surface water. Four of the six operators of interest (Kerr-McGee, Noble Energy, Encana Oil, and PDC Energy) were responsible for 92 percent of all spills that impacted groundwater.

Operators of Interest

Anadarko

Anadarko acquired Kerr-McGee Corporation in 2006. Kerr-McGee was linked to 70 spills in 2012, 38 percent of which resulted in water contamination. 17 percent were within 500 feet of a building. Equipment failure was listed as the cause of 39 of 70 spills reported by the company in 2012, while human error was reported as the cause of 17 spills.

Encana

Encana Oil and Gas was linked to 41 spills in 2012. Human error was the reported cause of 19 percent of the spills, and equipment failure was the result of 70 percent. Encana was linked to four spills resulting in water contamination during that time period, and six spills were within 500 feet of a building.

WPX Energy

WPX Energy was linked to 21 spills in Colorado in 2012. Over 80 percent of the spills linked to the company were the result of equipment failure or human error. Five spills were within 500 feet of surface water, and three were within 500 feet of a building.

Noble Energy

There were 71 spills linked to Noble Energy in 2012, 66 percent of which were the result of equipment failure and 15 percent that were linked to operator error. 25 percent of those spills resulted in water contamination and 25 percent of spills were within 500 feet of a building.

PDC Energy

There were 27 spills linked to PDC Energy in 2012, 92 percent of which were the result of equipment failure. One spill was linked to operator error. 48 percent of those spills resulted in water contamination and 26 percent of them were within 500 feet of a building.

Pioneer

Of the 21 spills recorded by Pioneer Natural Resources in 2012, 10 contaminated surface water. Human error accounted for 67 percent of Pioneer's spills, and equipment failure was responsible for 24 percent.

Center for Western Priorities

The Center for Western Priorities is a nonpartisan engagement center that serves as a source of accurate information, promotes responsible policies and practices, and ensures accountability at all levels to protect land, water, and communities in the American West.

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