

From: Betty Tatham
Sent: Sunday, July 28, 2013 8:35 PM
To: Dr. David Dzombak; Hanlon, Edward
Cc: Balent, Jean
Subject: Important Information on Dimock and Pavillion

Dear Dr. Dzombak and Mr. Hanlon,

Yesterday's Los Angeles Times published the article cited below on the EPA's actions to discontinue its studies at the Dimock and Pavillion sites. I am hopeful that recommendations made by several members of the Hydraulic Fracturing Advisory Panel plus 3 of the 7 members who represented the public at this meeting, including a spokesperson for the LWV of the US who recommended on May 7 and 8 that the EPA reinstate Dimock, will be addressed by the Science Advisory Board and the EPA. Attached are four documents that may be helpful. I will copy in Ms. Balent since she may be able to assist with this.

Sincerely,
Elizabeth Tatham
Stakeholder on the EPA Study

The Los Angeles Times citation is:

"Internal EPA Report Highlights Disputes Over Fracking and Well Water", *Los Angeles Times*, July 27, 2013, by Neela Banerjee.



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DISTRICT OIL AND GAS OPERATIONS

April 24, 2013

CERTIFIED MAIL # 7012 3050 0001 4216 0365

Ms. Tammy Manning
20784 SR 29
Montrose, PA 18801

Re: 58 Pa. C.S. § 3218 Determination
Complaint No. 286492
Franklin Twp., Susquehanna County

Dear Ms. Manning:

The Department has investigated the possible degradation of your water supply well located at 20784 SR 29, Franklin Twp., Susquehanna County, in response to a 12/20/2011 complaint that recent gas well drilling activities may have affected your water supply well. The Department has since been conducting an investigation which included evaluating the integrity of nearby gas wells and the collection of samples from your home water supply on 12/22/2011 and 3/6/2012. The samples were submitted to the Department's laboratory in Harrisburg for analysis, and the analytical reports for the samples were previously submitted to you.

As previously shared with you, the sample results showed several compounds elevated above Department standards. Barium was present at 5.405 and 5.228 mg/L which exceeds the primary maximum contaminant level (MCL) of 2 mg/L, and Iron, Manganese, Total Dissolved Solids (TDS) and Chloride exceeded secondary MCLs. Primary MCLs are intended to reflect potential dangers to human health, while secondary MCLs reflect the aesthetics of the water (i.e. taste, smell, etc.). Additionally, the sample results showed methane is present at 38.9 and 58.4 mg/L in your water supply. The presence of dissolved methane in your water supply, and all other compounds exceeding primary MCLs and/or secondary MCLs, appear to be related to background conditions. Further, the Department did not document any naturally occurring phenomenon that could have caused the surging of water from the well or the claim of air in the water lines. At this time, the Department's investigation does not indicate that gas well drilling has impacted your water supply.

Methane is the predominant component of natural gas. Federal water standard limitations have not been established for methane gas. The level of concern begins above 28 mg/l methane, which is referred to as the saturation level. At this level, under normal atmospheric pressure, the water cannot hold additional methane in solution. This may allow the gas to come out of the water and concentrate in the air space of your home or building. There is a physical danger of fire or explosion due to the migration of natural gas into water wells or through soils into dwellings where it could be ignited by sources that are present in most homes/buildings. Natural gas can also cause a threat of asphyxiation, although this is extremely rare.

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When the Department is made aware of methane levels greater than 7 mg/l, we notify the water supply owner of the hazards associated with methane in their water supply. Please be aware however, that the methane levels can fluctuate. This means that even with a relatively low level of methane, you should be vigilant of changes in your water that could indicate an increase in methane concentration.

It is the Department's recommendation that all water wells should be equipped with a working vent. This will help alleviate the possibility of concentrating these gases in areas where ignition would pose a threat to life or property. Please note that it is not possible to completely eliminate the hazards of having natural gas in your water supply by simply venting your well.

Should you have any questions concerning this matter, please feel free to contact Eric Rooney, P.G. at 570-346-5543.

Sincerely,

Jennifer W. Means
Environmental Program Manager
Oil and Gas Management

cc:

Marc B. Cooley
Eric Rooney, P.G.
Michael O'Donnell
William Kosmer, P.G.
Sharon Steinbacher
Geoffrey Ayers
Complaint File #286492
Attorney Dubanevich, on behalf of Robert Lee

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In the Matter of:

Cabot Oil and Gas Corporation	:	Clean Streams Law,
Dimock and Springville Townships	:	the Oil and Gas Act, and
Susquehanna County	:	the Solid Waste Management Act

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is entered into this 4th day of November 2009, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection (“Department”) and Cabot Oil and Gas Corporation (“Cabot”).

Findings

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce The Clean Streams Law, Act of June 22, 1937, P.L. 1987, *as amended*, 35 P.S. §§691.1-691.1001 (“Clean Streams Law”); the Oil and Gas Act, Act of December 19, 1984, P.L. 1140, *as amended*, 58 P.S. §§601.101-601.605 (“Oil and Gas Act”); the Solid Waste Management Act, Act of July 7, 1980, P.L. 380, *as amended*, 35 P.S. §§6018.101-6018.1003 (“Solid Waste Management Act”); Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. §§510-17 (“Administrative Code”); and the rules and regulations promulgated thereunder (“Regulations”).

B. Cabot is a Delaware corporation registered to do business in Pennsylvania and is engaged in various oil and gas exploration and production activities in Pennsylvania, including in Dimock and Springville Townships, Susquehanna County. Cabot maintains a mailing address of 5 Penn Center West, Suite 401, Pittsburgh, PA 15276.

BACKGROUND ON GAS MIGRATION

C. Cabot is the “owner” and “operator,” as those terms are defined in Section 103 of the Oil and Gas Act, 58 P.S. §601.103, of certain gas wells, or has received permit authorization from the Department to drill wells, within an area defined as follows: South of 41 degrees 45 minutes latitude; East of -75 degrees 54 minutes 11 seconds longitude; North of 41 degrees 42 minutes 14 seconds latitude; and West of -75 degrees 50 minutes 48 seconds longitude in Dimock and Springville Townships, Susquehanna County, Pennsylvania (“Affected Area”). A list of Cabot’s drilled wells and wells permitted but not drilled in the Affected Area are listed as Exhibit A and incorporated herein (“Cabot Wells”). A map of the Affected Area is attached as Exhibit B and incorporated herein.

D. On January 1, 2009, an explosion was reported in an outside, below-grade water well pit at a home located in the Affected Area near the intersection of State Route 2024 and Carter Road in Dimock Township, Susquehanna County.

E. Due to the close proximity of the home described in Paragraph D, above, to the Cabot Wells, the Department began an investigation to determine if the incident was the result of gas drilling activities by Cabot.

F. During its investigation since January 2009, the Department documented that combustible gas was present in the headspaces of wells that provide drinking water to certain homes located near the Cabot Wells, and/or documented that elevated levels of dissolved methane was present in wells that provide drinking water to certain homes located near the Cabot Wells.

G. On February 27, 2009, the Department issued Cabot a Notice of Violation for, among other things, discharging natural gas, a polluting substance, to waters of the Commonwealth without authorization, and for failing to prevent gas from entering fresh groundwater.

H. On May 13, 2009, the Department issued Cabot a Notice of Violation for failing to properly cement casing at certain of the Cabot Wells, and for failing to prevent gas from entering groundwater from the Cabot Well known as the Gesford 3 Well.

Excessive Pressure/Improper or Insufficient Cemented Casings

I. Based upon its investigation since January 2009, the Department has determined the following:

1. Two Cabot Wells known as the Baker 1 Well and the Ely 4 Well had excessive pressures.
2. The Cabot Wells known as the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well have insufficient or improper cemented casings that allow gas to vent between various cemented casings and/or from behind the surface casing.
3. The Cabot Wells known as the Brooks 1H Well, Ely 5H Well, and Ely 7V Well have gas venting in the cellar of these Wells indicating that these Wells may have insufficient or improper cemented casings.
4. As of the date of this Consent Order and Agreement, Cabot has not corrected the insufficient or improper cemented casings at the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well.

Pollution of Private Water Supplies

J. During its investigation since January 2009, the Department has collected samples from wells that provide drinking water to 13 homes located near the Cabot Wells (“Affected Water Supplies”), and these samples contained elevated levels of dissolved methane gas. In addition, the Department identified combustible gas in the headspaces of seven of the Affected Water Supplies. A list identifying the Affected Water Supplies is attached as Exhibit C and incorporated herein.

K. Based upon its investigation since January 2009, the Department has determined the following:

1. Ten of the Affected Water Supplies are less than 1,000 feet from one or more of the Cabot Wells. These 10 Affected Water Supplies have elevated levels of dissolved methane and/or the presence of combustible gas in the drinking water wells.

2. The presence of dissolved methane and/or combustible gas in the 10 Affected Water Supplies occurred within six months of completion of drilling of one or more of the Cabot Wells. As such, Cabot is presumed to be responsible for the pollution to these 10 Affected Water Supplies, pursuant to Section 208(c) of the Oil and Gas Act, 58 P.S. §601.208(c).

3. Three of the Affected Water Supplies are within 1,300 feet of one or more of the Cabot Wells. Based upon the presence of elevated methane in the water supplies, the presence of combustible gas in water well headspaces, the close proximity of these three Affected Water Supplies to the Cabot Wells, the close proximity of these three Affected Water Supplies to the other 10 Affected Water Supplies, and other factors, the Department has determined that Cabot is also responsible for the pollution to these three Affected Water Supplies. A chart identifying the distances of all of the Affected Water Supplies from the Cabot Wells is attached as Exhibit D and incorporated herein.

Discharge of Natural Gas into the Groundwater

L. Based upon its investigation since January 2009, the Department has determined the following:

1. Cabot had caused or allowed the unpermitted discharge of natural gas, a polluting substance, into the groundwater, which constitutes a "water of the Commonwealth," as that term is defined in 35 P.S. §691.1.

2. As of the date of this Consent Order and Agreement, Cabot has taken certain actions approved by the Department to prevent the ongoing, unpermitted discharge of natural gas into the waters of the Commonwealth.

Gas Migration Violations

M. Cabot's failure to properly case and cement the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well to prevent the migration of gas or other fluids into sources of fresh groundwater is a violation of 25 Pa. Code §78.81(a).

N. Cabot's failure to correct the insufficient or improperly cemented casing at the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well is a violation of 25 Pa. Code §78.86.

O. Cabot's pollution of the Affected Water Supplies and failure to restore or replace the Affected Water Supplies to the quality at least equal of the water supply prior to becoming affected is a violation of Section 208(a) of the Oil and Gas Act, 58 P.S. §601.208(a), and 25 Pa. Code §78.51(d).

P. Cabot's unpermitted discharge of natural gas to the groundwater is a violation of Section 401 of the Clean Streams Law, §35 P.S. 691.401, and 25 Pa. Code §78.73(a).

Q. The violations set forth in the Paragraphs M through P, above, constitute unlawful conduct pursuant to Section 509 of the Oil and Gas Act, 58 P.S. §601.509, and Section 611 of the Clean Streams Law, 35 P.S. §691.611.

BACKGROUND ON OTHER VIOLATIONS

R. Cabot is the "owner" and "operator," as those terms are defined in Section 103 of the Oil and Gas Act, 58 P.S. §601.103, of the wells listed in Exhibit E, which is attached and incorporated herein.

Black 2H Well Site

S. On September 19, 2008, a representative of Cabot reported to the Department that he had observed drilling mud discharging to a spring seep located down-slope of the Black 2H Well site. At that time, he indicated that the drilling mud appeared to have migrated from an unlined trench that had been excavated at the Black 2H Well site to accommodate the drill mud circulating system.

T. Between September 19, 2008, and September 24, 2008, Cabot lined the trench described in Paragraph S, above, and constructed a series of controls below the spring seep to capture and contain the drilling mud discharge.

U. On September 24, 2008, the Department inspected the Black 2H Well site and documented that the drilling mud was not being contained by the liner which had been placed in the trench described in Paragraph T, above, that drilling mud was discharging to the ground under the liner, and that drilling mud continued to discharge from the spring seep.

V. The drilling mud described in Paragraph S, above, is an "industrial waste" as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1, and a "residual waste" as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

W. The spring seep described in Paragraph S, above, is a "water of the Commonwealth" as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1.

X. Cabot did not have a permit or authorization from the Department to discharge industrial waste and/or residual waste onto the ground or into waters of the Commonwealth from the Black 2H Well site.

Y. Cabot's discharge of industrial waste and/or residual waste onto the ground and into waters of the Commonwealth from the Black 2H Well site without first obtaining a permit or

approval from the Department is contrary to the requirements of 25 Pa. Code §§78.54 and 78.56(a), and is a violation of Sections 307 and 401 of the Clean Streams Law, 35 P.S. §§691.307 and 691.401, and Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

Gesford 3 Well Site

Z. On January 30, 2009, a representative of Cabot reported to the Department that approximately 100 gallons of diesel fuel spill had spilled at the Gesford 3 Well site.

AA. On February 2, 2009, the Department inspected the Gesford 3 Well site and documented that the spill occurred when a leak developed in a fuel line for a drilling mud pump at the site.

AB. Spilled diesel fuel is a "residual waste" as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

AC. Cabot's spill of diesel fuel onto the ground at the Gesford 3 Well site without first obtaining a permit or approval from the Department is a violation of Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

B Severcool 1 Well Site

AD. On February 18, 2009, the Department inspected the B Severcool 1 Well site and documented that drilling mud had discharged onto the ground at the site when the on-site drilling mud pump developed a leak. At that time, the Department estimated that 25 to 50 barrels of drilling mud flowed to a diversion ditch around the site, and approximately 5 to 10 barrels of drilling mud flowed from the diversion ditch into an adjacent field.

AE. The drilling mud described in Paragraph AD, above, is a “residual waste” as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

AF. Cabot’s discharge of residual waste onto the ground at the B Servercool 1 Well site without first obtaining a permit or approval from the Department is contrary to the requirements of 25 Pa. Code §78.56(a), and is a violation of Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

Gesford 1 Well Site

AG. On March 6, 2009, a Cabot representative reported to the Department that Cabot had caused or allowed a discharge of drilling mud at the Gesford 1 Well site. Cabot subsequently informed the Department that the drilling mud had flowed off-site and into Burdick Creek, and that the discharge occurred when the drilling mud traveled up and outside of the conductor pipe for the Gesford 1 Well.

AH. On March 9, 2009, the Department inspected the Gesford 1 Well site and verified that the discharge reported by Cabot as described in Paragraph AG, above, had flowed across the ground and into Burdick Creek.

AI. The drilling mud described in Paragraph AG, above, is an “industrial waste” as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1, and a “residual waste” as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

AJ. Burdick Creek is a “water of the Commonwealth” as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1.

AK. Cabot does not have a permit or authorization from the Department to discharge industrial waste and/or residual waste onto the ground or into waters of the Commonwealth from the Gesford 1 Well site.

AL. Cabot's discharge of industrial waste and/or residual waste onto the ground and into waters of the Commonwealth from the Gesford 1 Well site without first obtaining a permit or approval from the Department is contrary to the requirements of 25 Pa. Code §§78.54 and 78.56(a), and is a violation of Sections 307 and 401 of the Clean Streams Law, 35 P.S. §§691.307 and 691.401, and Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

AM. The violations described in Paragraphs Y, AC, AF, and AL, above, constitute unlawful conduct under Section 611 of the Clean Streams Law, 35 P.S. §691.611, Section 509 of the Oil and Gas Act, 58 P.S. §601.509, and/or Section 302 of the Solid Waste Management Act, 35 P.S. §6018.302, and subject Cabot to a claim for civil penalties under Section 605 of the Clean Streams Law, 35 P.S. §691.605, Section 506 of the Oil and Gas Act, 58 P.S. §601.506, and/or Section 605 of the Solid Waste Management Act, 35 P.S. §6018.605.

Failure to Submit Well Records

AN. On February 18, 2009, a review of the Department's files documented that Cabot had failed to submit the required well records to the Department within 30 days of cessation of drilling for all of the Wells identified at Exhibit E, except for the B Servercool 1 Well and the Gesford 1 Well.

AO. Cabot's failure to submit well records as specified in Paragraph AN, above, is a violation of Section 212(b) of the Oil and Gas Act, 58 P.S. §601.212(b). As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

Failure to Maintain Driller's Log at Well Site

AP. On March 5, 12, and 18, 2009, the Department inspected the Gesford 1 Well site and documented that Cabot had failed to keep a detailed drillers log at the Well site available for inspection until drilling is completed.

AQ. Cabot's failure to keep a detailed drillers log at the well site available for inspection until drilling is completed is a violation of 25 Pa. Code §78.122(a). As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

AR. The violations described in Paragraphs AO and AQ, above, constitute unlawful conduct under Section 509 of the Oil and Gas Act, 58 P.S. §601.509, and subject Cabot to a claim for civil penalties under Section 506 of the Oil and Gas Act, 58 P.S. §601.506.

Order

After full and complete negotiation of all matters set forth in this Consent Order and Agreement, and upon mutual exchange of the covenants contained herein, the Parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by Cabot as follows:

1. **Authority.** This Consent Order and Agreement is an Order of the Department authorized and issued pursuant to Section 5 of the Clean Streams Law, 35 P.S. §691.5; Section 503 of the Oil and Gas Act, 58 P.S. §601.503; Section 602 of the Solid Waste Management Act, 35 P.S. §6018.602; and Section 1917-A of the Administrative Code.

2. **Findings.**

a. Cabot agrees that the Findings in Paragraphs A-L, R-U, W-X, Z-AA, AD, AG-AH, AJ-AK, AN, and AP, above, are true and correct and, in any matter or proceeding involving Cabot and the Department, Cabot shall not challenge the accuracy or validity of these Findings.

b. The Parties do not authorize any other persons to use the Findings in this Consent Order and Agreement in any matter or proceeding.

3. ***Compliance with Environmental Laws And Regulations.*** Cabot shall take all actions necessary, including the corrective actions set forth in this Consent Order and Agreement, to maintain compliance with all applicable environmental laws and regulations, including all applicable provisions of the Clean Streams Law, Oil and Gas Act, Solid Waste Management Act, and the Regulations.

4. ***Corrective Actions.***

a. Cabot shall not begin hydrofracturing of Cabot Wells in the Affected Area until it has received written authorization from the Department.

b. Cabot shall not complete the drilling of any existing Cabot Well within the Affected Area and shall not begin the drilling of any new Well within the Affected Area except in accordance with the requirements of this Consent Order and Agreement.

c. As of the date of this Consent Order and Agreement, Cabot has submitted and the Department has approved both the cement bond logs for the surface water protection casing and the casing and cementing plan for the Ely 7H Well, Gesford 5H Well, and the Gesford 8H Well.

d. Upon execution of this Consent Order and Agreement, Cabot may resume further drilling of the Ely 7H Well, Gesford 5H Well, and/or the Gesford 8H Well.

e. Regarding any new Well within the Affected Area, Cabot shall submit to the Department the casing and cementing plan for a new Well at least 10 business days before it proposes to begin drilling the new Well within the Affected Area.

f. Cabot may begin drilling a new Well within the Affected Area only upon the Department's written notice that it has approved the casing and cementing plan for the new Well.

g. Cabot shall complete the drilling of the Ely 7H Well, Gesford 5H Well, and Gesford 8H Well, and shall complete the drilling of any new Well within the Affected Area in compliance with the requirements of this Consent Order and Agreement, including the requirements of Paragraphs 3, above, and any documents approved by the Department under this Consent Order and Agreement.

h. Within 10 days of the date of this Consent Order and Agreement, Cabot shall notify the Department, in writing, of the names and addresses of all other persons in the Affected Area not listed at Exhibit C that Cabot is providing and maintaining temporary potable water and/or gas mitigation devices for, and/or has received complaints from alleging that their water supply quantity or quality has been affected by Cabot's drilling activities. For any persons that reside within the Affected Area and are not listed at Exhibit C, Cabot shall continue to provide and maintain temporary potable water and/or gas mitigation devices for such persons in accordance with 25 Pa. Code §78.51, or as otherwise approved by the Department.

i. Within 15 days of the date of this Consent Order and Agreement, Cabot shall submit a plan to the Department that identifies, in detail, how Cabot shall test for and ensure the integrity of the casing and cement on the Cabot Wells identified in Paragraphs I.1., I.2. and I.3., above. The plan shall include an implementation schedule and, at a minimum, the following:

- 1) a date by when Cabot proposes to start the integrity testing;
- 2) a schedule for submitting to the Department a report within 60 days of the date of this Consent Order and Agreement that describes the tests completed, test results, and any corrective actions needed; and
- 3) a final compliance date no later than March 31, 2010, unless otherwise approved by the Department in writing, by when Cabot shall complete all of the actions specified in the plan to correct the deficiencies to the casing and cement in the identified Wells, or plug the Wells in accordance with Paragraph 4.j., below.

j. Unless otherwise agreed to by the Department in writing, if Cabot fails to correct, in accordance with 25 Pa. Code §78.86, the improper and/or insufficient cemented casings in the Cabot Well(s) identified by the Department in Paragraphs I.1., I.2, and I.3., above, Cabot shall plug such Cabot Well(s) by March 31, 2010, in accordance with Section 210(a) of the Oil and Gas Act, 58 P.S. §601.210(a), and 25 Pa. Code §§78.91-78.98.

k. As of the date of this Consent Order and Agreement, Cabot has either provided whole house potable water and/or gas mitigation devices to the Affected Water Supplies, or has identified an alternative to such that has been approved in writing by the Department. If Cabot provides water by purchasing from a water purveyor, Cabot shall assure that the users of the Affected Water Supplies will receive water in amounts sufficient to continually satisfy water usage needs until the Department notifies Cabot, in writing, that the Department has determined that the Affected Water Supply has been restored such that Cabot is no longer required to provide such purchased water.

l. By March 31, 2010, Cabot shall have completed any and all actions to prevent the unpermitted discharge of natural gas (if any) from the Cabot Wells or any other well owned and/or operated by Cabot within the Affected Area and into the waters of the Commonwealth.

m. By March 31, 2010, Cabot shall submit to the Department a plan and an implementation schedule, to permanently restore or replace, in accordance with Section 208 of the Oil and Gas Act, 58 P.S. §601.208, and 25 Pa. Code §78.51, the Affected Water Supplies, and the other water supplies identified by Cabot pursuant to Paragraph 4.h., above, that the Department determines have been affected by Cabot's drilling activities. Upon approval by the Department, Cabot shall implement the plan in accordance with the approved implementation schedule.

5. ***Submission of Documents.*** With regard to any document that Cabot is required to submit pursuant to this Consent Order and Agreement, the Department will review Cabot's document and will approve or disapprove the document, or portion thereof, in writing. If the document, or any portion of the document, is disapproved by the Department, Cabot shall submit a revised document to the Department that addresses the Department's concerns within a reasonable time, as specified by the Department. The Department will approve or disapprove the revised document in writing. Upon approval by the Department, the document, and the Department-approved schedule therein, shall become a part of this Consent Order and Agreement for all purposes and shall be enforceable as such.

6. ***Civil Penalty Settlement.*** Upon signing this Consent Order and Agreement, Cabot shall pay a civil penalty of \$120,000. This payment is in settlement for the violations set forth in the Findings, above, covering the dates set forth herein. The payment shall be made by corporate check or the like made payable to "Commonwealth of Pennsylvania" and sent to the Department at the address set forth in Paragraph 11, below.

7. ***Stipulated Civil Penalties.***

a. If Cabot fails to comply with the provisions of this Consent Order and Agreement, Cabot shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty as follows:

1) If Cabot drills a new well within the Affected Area before complying with all of the obligations set forth in Paragraphs 4.e.-4.f., above, Cabot shall pay a stipulated penalty of \$15,000 per each well where such drilling has commenced.

2) If Cabot fails to meet the obligations set forth in Paragraphs 4.g.-4.m., above, Cabot shall pay a stipulated penalty of \$1,000 per day for each violation.

b. Stipulated civil penalty payments shall be payable monthly on or before the 15th day of each succeeding month, and shall be made by corporate check or the like made payable to "Commonwealth of Pennsylvania" and sent to the Department at the address set forth in Paragraph 11, below.

c. Any payment under this Paragraph shall neither waive Cabot's duty to meet its obligations under this Consent Order and Agreement nor preclude the Department from commencing an action to compel Cabot's compliance with the terms and conditions of this Consent Order and agreement. The payment resolves only Cabot's liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

8. ***Reservation of Rights.*** The Department reserves the right to require additional measures to achieve compliance with applicable law. Cabot reserves the right to challenge any action which the Department may take to require those measures.

9. ***Liability of Cabot.*** Cabot shall be liable for any violations of the Consent Order and Agreement, including those caused by, contributed to, or allowed by its officers, directors, agents, employees, contractors, successors, and assigns.

10. ***Transfer of the Cabot Wells and/or Leases.***

a. Cabot's duties and obligations under this Consent Order and Agreement shall not be modified, diminished, terminated, or otherwise altered by the transfer of the Cabot Wells, leases, any other wells owned and/or operated by Cabot within the Affected Area, and/or any parts thereof, except as hereinafter provided.

b. If before the termination of this Consent Order and Agreement, Cabot intends to transfer the Cabot Wells, leases, any other wells owned and/or operated by Cabot within the Affected Area, and/or any parts thereof, Cabot shall provide a copy of this Consent Order and

Agreement to the prospective transferee at least 30 days prior to the contemplated transfer and shall simultaneously inform the Department of such intent pursuant to Paragraph 11 (Correspondence with Department), below.

c. The Department, in its sole discretion, may agree to modify or terminate Cabot's duties and obligations under this Consent Order and Agreement and may agree to a transfer upon determination that Cabot is in full compliance with this Consent Order and Agreement, including payment of any stipulated penalties owed, and upon the transferee entering into a Consent Order and Agreement with the Department concerning the Wells and/or leases at issue. Cabot agrees to waive any right that it may have to challenge the Department's decision in this regard.

11. ***Correspondence with Department.*** All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

Oil and Gas Management
Department of Environmental Protection
230 Chestnut Street
Meadville, PA 16335-3481

12. ***Correspondence with Cabot.*** All correspondence with Cabot concerning this Consent Order and Agreement shall be addressed to:

Mr. Jason Clark and
Mr. Phil Stalnaker
Cabot Oil and Gas Corporation

Pittsburgh, PA 15276

Cabot shall notify the Department whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent Order and

Agreement, including its enforcement, may be made by mailing a copy by certified mail, return receipt requested, to the above address.

13. **Decisions Under Consent Order and Agreement.** Except as provided in Paragraph 10.c, above, any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that stipulated civil penalties are due, is intended to be neither a final action under 25 Pa. Code §1021.2, nor an adjudication under 2 Pa.C.S.A. §101. Any objection, which Cabot may have to the decision will be preserved until the Department enforces this Consent Order and Agreement.

14. **Severability.** The Paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the Parties.

15. **Entire Agreement.** This Consent Order and Agreement shall constitute the entire integrated agreement of the Parties as to the subject matter hereof. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or intent of any provisions herein in any litigation or any other proceeding.

16. **Attorney Fees.** The Parties shall bear their respective attorney fees, expenses, and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

17. **Modifications.** No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the Parties.

18. **Titles.** A title used at the beginning of any Paragraph of this Consent Order and Agreement may be used to aid in the construction of that Paragraph, but shall not be treated as controlling.

19. **Termination of Consent Order and Agreement.** Cabot's obligations, but not the Findings, of this Consent Order and Agreement shall terminate when Cabot has: completed all of the requirements of this Consent Order and Agreement, and paid any outstanding stipulated penalties due under Paragraph 7, above; or by September 30, 2010, whichever is sooner.

IN WITNESS WHEREOF, the Parties have caused this Consent Order and Agreement to be executed by their duly authorized representative. The undersigned representative of Cabot certifies under penalty of law, as provided by 18 Pa.C.S.A. §4904, that he/she is authorized to execute this Consent Order and Agreement on behalf of Cabot, that Cabot consents to the entry of this Consent Order and Agreement as a final ORDER of the Department; and that Cabot hereby knowingly waives its right to appeal this Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, the Act of July 13, 1988, P.L. 530, No. 1988-94, 35 P.S. §7514; the Administrative Agency Law, 2 Pa.C.S.A. §103(a) and Chapters 5A and 7A; or any other provision of law. Signature by Cabot's attorney certifies only that the Consent Order and Agreement has been signed after consulting with counsel.

FOR CABOT OIL AND GAS CORPORATION:

Vice President/Regional Manager

Attorney for Cabot

FOR THE COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION:

Craig Lobins
Regional Manager
Oil and Gas Management Program
Northwest Region

Regional Counsel



EXHIBIT A**CABOT WELLS WITHIN AFFECTED AREA**

WELL NAME	PERMIT NO.	WELL NAME	PERMIT NO.
TEEL 1	115-20007	BLACK 2H	115-20056
TEEL 2	115-20010	ROZANSKI 1	115-20057
TEEL 6	115-20011	GREENWOOD 2H	115-20085
TEEL 7	115-20023	GESFORD 4R	115-20091
BROOKS 1	115-20014	J GRIMSLEY 1	115-20095
TEEL 5	115-20024	ELY 7V	115-20096
ELY 1	115-20029	RATZEL 2H	115-20152
ELY 2	115-20015	R HULL 1H	115-20122
ELY 4	115-20016	R HULL 2H	115-20121
HUBBARD 1	115-20039	GREENWOOD 3V	115-20142
HUBBARD 2	115-20017	HUBBARD 3	115-20131
KAHLE 1	115-20018	RATZEL 3V	115-20117
RATZEL 1	115-20025	HEITSMAN 3V	115-20123
GESFORD 1	115-20040	HEITSMAN 2	115-20140
GESFORD 2	115-20033	HUBBARD 5H	115-20148
GESFORD 3	115-20019	HUBBARD 6H	115-20147
HEITSMAN 1	115-20020	A & M HIBBARD 2H	115-20149
HEITSMAN 2	115-20021	HEITSMAN 4H NW	115-20162
BAKER 1	115-20026	GESFORD 7H NW	115-20163
BLACK 1	115-20028	BROOKS 3V	115-20161
LEWIS 2	115-20030	TEEL 12H NW	115-20167
ELY 4H	115-20034	BLACK 3V	115-20133
LEWIS 1	115-20035	J GRIMSLEY 2H SE	115-20171
COSTELLO 1	115-20036	R HULL 3V	115-20173
ELY 6H	115-20041	ELY 7H SE	115-20160
COSTELLO 2	115-20043	GESFORD 8H NW	115-20183
BLACK 1H	115-20048	GESFORD 9	115-20187
ELY 1H	115-20049	P KELLEY 1	115-20196
HEITSMAN 1H	115-20050	GESFORD 5H NW	115-20201
RATZEL 1H	115-20047	A & M HIBBARD 4	115-20222
BROOKS 1H	115-20051	BAKER 3	115-20226
ELY 5H	115-20054		

EXHIBIT C

AFFECTED WATER SUPPLIES

Norma Fiorentino
RR 6, Box 6212
Montrose, PA 18801

William and Sheila Ely
RR1, Box 6176
Montrose, PA 18801

Craig and Julie Sautner
RR 6, Box 6147
Montrose, PA 18801

Victoria Switzer
P.O. Box 113
Dimock, PA 18816

Michael Ely
RR 6, Box 3176
Montrose, PA 18801

Nolan Ely
P.O. Box 39
Dimock, PA 18816

Victoria Hubert
P.O. Box 111
Dimock, PA 18801

Ronald Teel
RR 6, Box 6182
Montrose, PA 18801

Ronald and Jean Carter
P.O. Box 82
Dimock, PA 18816

Michael and Suzanne Johnson
1129 Timber Ridge Drive
Tampa, FL 33625

Timothy and Deborah Maye
RR 6, Box 6147A
Montrose, PA 18801

Richard Seymour
RR 6, Box 6177A
Montrose, PA 18801

Eric and Susan Roos
RR 6, Box 6194
Montrose, PA 18801

EXHIBIT D

CABOT WELL / AFFECTED WATER SUPPLY DISTANCE RELATIONSHIPS

API	Well Farm Name	Drill End Date	Ronald Carter	Michael Ely	Nolan Ely	William Ely	Norma Fiorentino	Victoria Hubert	Michael Johnson	Timothy Maye	Eric Roos	Craig Sautner	Richard Seymour	Victoria Switzer	Ronald Teel
115-20117	Ratzel #3V	4/8/2009									X				
115-20047	Ratzel #1H	4/8/2009									X				
115-20019	Gesford #3	12/16/2008		•	X			X							
115-20026	Baker #1	8/31/2008					•			•		X			
115-20030	Lewis #2	9/6/2008							X					X	X
115-20033	Gesford #2	10/14/2008	X												
115-20036	Costello #1	10/14/2008		•		X			X				X		
115-20187	Gesford #9 (3, formerly 3 & 3A)	10/8/2008		•	X			X							

X denotes water supply is within 1000 feet of one or more Cabot gas wells

• denotes water supply is within 1300 feet of one or more Cabot gas wells

EXHIBIT E**WELLS WITH OTHER VIOLATIONS**

WELL NAME	PERMIT NUMBER
Teel 1	115-20007
Greenwood 1	115-20008
Teel 2	115-20010
Teel 6	115-20011
Ely 2	115-20015
Gesford 3	115-20019
Teel 7	115-20023
Teel 5	115-20024
Baker 1	115-20026
Lewis 2	115-20030
Gesford 2	115-20033
Ely 4	115-20034
Lewis 1	115-20035
Costello 1	115-20036
Hubbard 1	115-20039
Gesford 1	115-20040
Ely 6H	115-20041
Costello 2	115-20043
Black 1H	115-20048
Ely 1H	115-20049
Heitsman 1H	115-20050
Brooks 1H	115-20051
Black 2H	115-20056
B Severcool 1	115-20080

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Subject: Action Memorandum - Request for Funding for a Removal Action at the Dimock Residential Groundwater Site, Intersection of PA Routes 29 & 2024
Dimock Township, Susquehanna County, Pennsylvania

From: *f* Richard M. Fetzer, On-Scene Coordinator
Eastern Response Branch (3HS31)

To: Dennis P. Carney, Associate Division Director
Hazardous Site Cleanup Division (3HS30)

JAN 19 2012

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of an emergency removal action to prevent, limit, or mitigate the threats posed by the presence of hazardous substances at the Dimock Residential Groundwater Site (the "Site"), pursuant to Section 104(a) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9604(a) (CERCLA). The Site is located in Dimock Township, Susquehanna County, Pennsylvania. The OSC has initiated a removal site evaluation in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. The OSC has determined, based on Pennsylvania Department of Environmental Protection (PADEP) and Cabot Oil and Gas Corporation (Cabot) sampling information, consultation with an EPA toxicologist, the Agency for Toxic Substances and Disease Registry (ATSDR) Record Of Activity (ROA), issued 12/28/11, and the recent EPA well survey effort, that a number of home wells in the Dimock area contain hazardous substances, some of which are not naturally found in the environment. Inorganic hazardous substances are present in four home wells at levels that present a public health concern. These four specific homes have been dependent upon donated water for drinking and/or household use and the reliability of the sources for donated water is at this point uncertain.

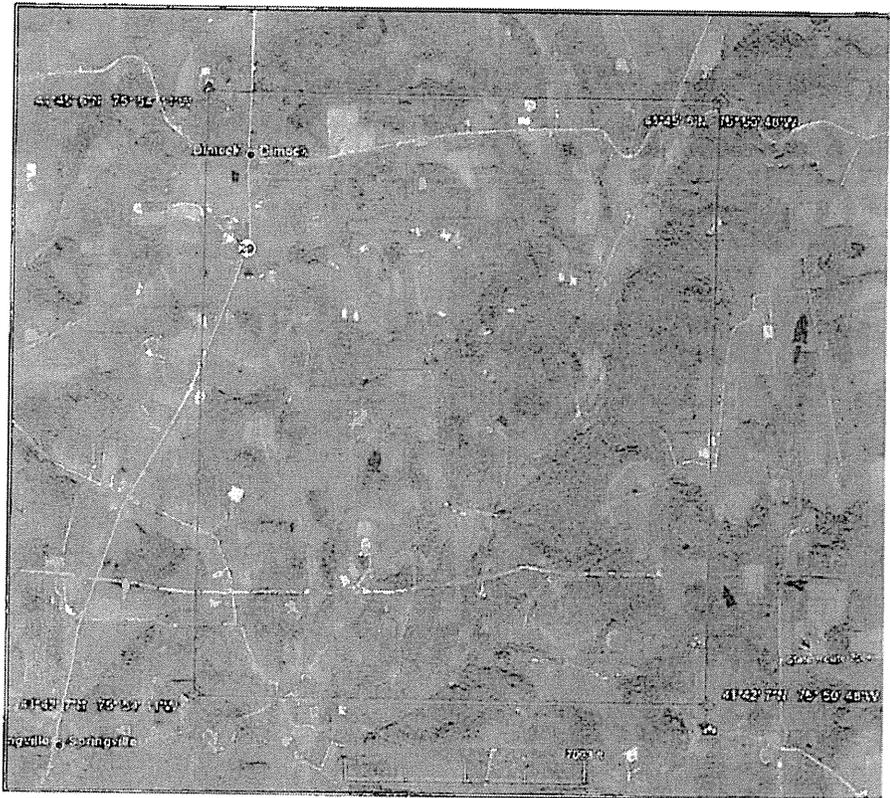
Historic drilling activities in the Dimock area may have used materials containing hazardous substances. Spills and other releases have been documented by PADEP from these drilling activities. There is reason to believe that a release of hazardous substances has occurred. The presence of hazardous substances in the four home wells constitutes a release or substantial threat of a release and the situation meets the criteria for conducting a removal action under Section 300.415 of the NCP. The OSC has determined that funds in the amount of \$100,000 are needed to mitigate the human health concern initially at four homes and therefore proposes the actions included in this Action Memorandum. This action includes provision of alternate water to four homes and home well sampling at approximately 61 homes within the Site area.

II. SITE CONDITIONS AND BACKGROUND

A. Background

1. Site Description - The Site area is located in Dimock, a rural area of northeastern Pennsylvania in Susquehanna County. A map of the area is included below.

2. History - Cabot began drilling for natural gas in the Dimock area in 2008. Methane contamination was detected in private wells thereafter in concentrations exceeding those previously found. PADEP had the lead in investigating the environmental complaints in Dimock. PADEP entered into a Consent Order and Agreement (CO&A) with Cabot which required permanent restoration or replacement of the



affected water supply. A public water line was initially considered. PADEP later modified the CO&A to require installation of “gas mitigation” systems for 19 homes served by 18 private wells in the Site area.¹ Until the gas mitigation systems were installed, Cabot was to provide a temporary water source. Some well owners, within the scope of the PADEP CO&A, have gas mitigation systems installed, but others do not. While the gas mitigation systems were designed to remove methane, a potential exists that they may remove some hazardous substances as a by-product of their operation. Regardless, EPA does not know what, if any, hazardous substances these “gas mitigation” systems, originally designed to address methane, are removing. Therefore, EPA is including both pre- and post-treatment sampling in the scope of this action. Furthermore, there are

¹ It had originally been reported that 19 homes were served by the 18 wells included within the scope of the CO&A but the door-to-door home well survey conducted to date by EPA has identified that there are currently 21 homes served by 20 wells on those same properties.

other homes served by private wells that were not covered by the scope of the PADEP CO&A, but are within this Site area.

III. Quantities/Types of Substances Present

1. Arsenic* – Arsenic is a naturally occurring element widely distributed in the earth's crust. Arsenic may also be present at elevated concentrations in the groundwater due to the use and effects of drilling fluids. Arsenic is classified as a known human carcinogen. This classification is based on animal and human studies, which indicate an increased risk for developing cancers of the skin, lung, bladder, kidney, liver, and prostate from consuming arsenic containing water. Non-cancer health effects associated with ingestion of arsenic include circulatory problems and skin damage.
2. Barium – Barium is a silvery-white metal that exists in nature only in ores containing mixtures of elements. It combines with other chemicals such as sulfur or carbon and oxygen to form barium compounds. Barium sulfate is sometimes used by doctors to perform medical tests and to take x-rays of the gastrointestinal tract. Ingesting drinking water containing levels of barium above the EPA drinking water guidelines for relatively short periods of time can cause gastrointestinal disturbances and muscle weakness. Ingesting high levels for a long time can damage the kidneys. Barium is known to be a common constituent of drilling fluids.
3. Bis(2-ethylhexyl)phthalate (DEHP)* - DEHP is a manufactured chemical that is commonly added to plastics to make them flexible. The phthalates are generally considered to be of slight to moderate toxicity. DEHP may be irritating to the eyes, skin, and mucous membranes. Mild gastric disturbances and diarrhea may occur following ingestion of larger doses. Central nervous system (CNS) depression may occur if large amounts of phthalate acid esters are absorbed. EPA has determined that DEHP is a probable human carcinogen. These determinations were based entirely on liver cancer in rats and mice. DEHP is known to be associated with drilling activities.
4. Glycol Compounds (including Ethylene Glycol* and 2-Methoxyethanol) – Glycol compounds are a class of organic compounds belonging to the alcohol family. Exposure to large amounts of ethylene glycol can damage the kidneys, nervous system, lungs, and heart. Exposure to high concentrations of 2-methoxyethanol is associated with testicular damage, impaired nervous system, and anemia. Glycols are known to be common in drilling fluids.
5. Manganese* – Manganese is a naturally occurring substance found in many types of rock and soil. Manganese is also known to be a constituent of some specialized drilling fluids. Eating a small amount of manganese from food or water is needed to stay healthy. At high levels, it can cause damage to the nervous system.

6. Phenol* - Phenol is both a manufactured chemical and a natural substance. Phenol is used as a disinfectant and is found in a number of consumer products. Skin exposure to high amounts can produce skin burns, liver damage, dark urine, and irregular heart beat. Various phenols are commonly associated with drilling fluids.
7. Sodium* - Sodium is an essential nutrient and occurs naturally in most foods. Excessive sodium intake is associated with high blood pressure. Various sodium containing compounds are associated with drilling fluids.

*A hazardous substance, as defined under CERCLA Section 101(14) and designated in Section 302.4 of the National Contingency Plan (NCP), 40 C.F.R. Section 302.4.

B. National Priorities List

The Dimock Residential Groundwater Site is not on the CERCLA National Priorities List (NPL).

C. State and Local Authorities' Roles

Cabot had been sampling the home wells and providing bottled drinking water and alternate water for non-potable use, through a Consent Order and Agreement (CO&A) with PADEP. The CO&A applies only to a specific list of homes, and does not include other homes, also located within the same geographic area. Some of these additional homes have had limited sampling conducted by Cabot and/or PADEP. PADEP determined that Cabot has complied with the terms of the CO&A, as it applies to the provision of temporary water, and subsequently approved Cabot's request to stop the delivery of alternate water.

IV. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

Section 300.415 of the NCP lists the factors to be considered in determining the appropriateness of a Removal Action. Paragraphs (b)(2)(i), (ii), and (vii) of Section 300.415 directly apply to the conditions found at the Dimock Residential Groundwater Site.

In evaluating the situation, the OSC first considered whether hazardous substances were present in a home well. The levels of those hazardous substances were then considered against primary Maximum Contaminant Levels (MCLs). They were also considered for non-cancer risk to determine if the levels generate a hazard quotient greater than 2. The presence of inorganic and organic chemicals in a number of wells supports the need for this action.

300.415 (b)(2)(i) “Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants”

The hazardous substances listed above, present in water from home wells at this Site based on sampling data described below, could cause adverse health impacts when chronic exposure through drinking water or other uses of water in the home occurs. There are other contaminants discussed in the Agency for Toxic Substances and Disease Registry’s (ATSDR) Record of Activity (AROA) issued on December 28, 2011, which could also cause adverse health impacts. ATSDR has concluded for the area originally included with the PADEP/Cabot CO&A, which includes the four homes being considered here for alternate water, that a chronic health risk exists for most wells and that the situation supports a “Do Not Use the Water” action including the consideration of alternative home water supplies until further characterization is completed. An EPA Region III toxicologist’s opinion is that, of the homes evaluated to date in an on-going effort, that four home wells contain contaminants at levels that present a public health concern. In one home, manganese was detected at 628 ug/L. Exposure to this concentration would yield a Hazard Quotient of approximately 2. In another home, manganese (1360 ug/L) was detected at a level that generates a Hazard Quotient of approximately 4. Note that children reside at this location. In the third home, arsenic was observed at a concentration (37 ug/L) that exceeds its MCL of (10 ug/L) and would pose a long-term cancer risk of 8E-04. Note that children reside at this location. In the fourth home, manganese was detected at 669 ug/L. Exposure to this concentration would yield a Hazard Quotient of approximately 2.3. Available data also indicate that hazardous substances may be present in a number of other homes. Because the available data is not complete and is of uncertain quality, additional sampling is needed to facilitate a further evaluation of any potential health concerns from the drinking water at home wells in the Site area.

EPA is providing water based upon a risk of exposure to hazardous substances above health-based levels. Furthermore, the OSC notes that for those homes where the EPA toxicologist has not identified contaminants that present a public health concern, that the limited data available does identify the existence of hazardous substances. In addition, PADEP’s CO&A determined that 18 home wells were impacted by drilling activities; such impact may be evidence of the migration of hazardous substances.

Again, it is noted that this determination is based upon data which was collected by parties other than EPA (Cabot and PADEP). The quality assurance/quality control (QA/QC) information has not been verified. However, what is clear is that this data strongly suggests that hazardous substances have been released and are present in some home wells at levels that may present a public health concern. Current data does show arsenic and manganese at higher levels than may be typically found, in post drilling samples. Since arsenic and manganese are naturally occurring substances, EPA’s assessment will include comparisons of background concentrations and post drilling concentrations present. EPA routinely acts under CERCLA to protect public health first while it acts to further define contamination. Thus, within this action, EPA will complete an assessment of the water quality of the home wells in the Site area to close information gaps as soon as possible. This sampling will be focused initially on evaluating those homes in the Site area that have been sampled in the past. Beyond that, sampling at homes will be based upon a sampling rationale using information regarding alleged health impacts and

data gaps. In addition, EPA will continue to evaluate the updated data, and may revise its actions to provide water to any of the additional homes, or to cease provision of water, as warranted by the data.

300.415 (b)(2)(ii) “Actual or potential contamination of drinking water supplies or sensitive ecosystems”

The discussion of 300.415 (b) (2) (i) above applies to this factor. Both organic and inorganic contaminants have been detected in home wells. Although this action is predominantly based upon inorganic data at the four homes, it should be noted that organic compounds have been detected at other homes as detailed in the ATSDR AROA. Glycol detections included ethylene glycol, triethylene glycol, and 2,2’oxybisethanol (diethylene glycol). Some wells had all three reported glycols present in their wells but no exceedances of risk based screening criteria (note: the analytical detection level used appeared to be higher than screening levels). Bis(2-ethylhexyl) phthalate (DEHP) was detected in five samples and ranged from 0.14 µg/L to 22 ug/L. 2-methoxyethanol concentrations (ranging from 880 ug/L to 1,300 ug/L) were detected in each of six wells.

300.415 (b) (2) (vii) “The availability of other appropriate federal or state response mechanisms to respond to the release”

The four homes being considered for alternate water under this action were all dependent upon donated water, either bottled, water buffaloes (temporary storage tanks) or both. It is the OSC’s understanding that the last delivery of bulk water from those organizations ceased on January 3, 2012. In any case the reliability of sources for donated water is at best uncertain.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Action

1. Proposed Action Description

Throughout the duration of Site activities, all personnel involved with execution of this proposed action will comply with the requirements of CERCLA and with all other applicable Federal and State regulations to the extent practicable considering the exigencies of the situation in accordance with 40 CFR § 300.415(j). Available data indicate that a number of homes in the area have hazardous substances present in the home wells, but only four indicate concentrations identified by the EPA toxicologist at a level of concern. Thus, those four homes will be immediately supplied with water. At the same time, approximately 61 home wells will be sampled by EPA to obtain data of known quality assurance to support future evaluations and response decisions. EPA will continue to evaluate the updated data, and may revise its actions to provide water to any of the additional homes, or to cease provision of water, as warranted by the data. The Removal activities at the Site will include the following:

1. Mobilize and demobilize personnel and equipment to conduct the action;
2. Delivery of a temporary source of clean water for household use to the four (4) homes with wells that contain contaminants at levels of public health concern. This provision of temporary water will continue until potential exposures are further understood and mitigated as needed.
3. The sampling program will include analysis for a broad range of parameters with a special priority being placed on quick turnaround for those parameters which are most frequently observed in the data available to EPA at this time. The Agency will also do some limited sampling for methane and bacteriological constituents. Home well water sampling will be performed by EPA in the Site area using the following assigned priority:
 - i. The four (4) homes considered for provision of alternate water, to assess the potential exposure to hazardous substances and to determine whether continued temporary provision of clean water for household use is required.
 - ii. The seventeen (17) remaining homes located on properties included in the PADEP/Cabot CO&A², which were identified as being impacted by drilling activities.
 - iii. Approximately thirty (30) additional homes in the immediate area that have been sampled in the past.
 - iv. Additional homes in the Site area where one or more of the factors below supports sampling.
 1. Direct observation or other evidence (home well surveys) of adverse health effects potentially attributable to contaminated groundwater use.
 2. Where data gaps in groundwater measurement or sampling need to be filled to gain an adequate understanding of Site conditions.

Approximately ten (10) homes are currently identified from well surveys, but more could be added based upon data review.
4. Maintain necessary documentation of Site activities.
5. Develop and implement appropriate health and safety protocols for the removal activity.

² It had originally been reported that 19 homes were served by the 18 wells included within the scope of the CO&A but the door-to-door home well survey conducted to date by EPA has identified that there are currently 21 homes served by 20 wells on those same properties.

2. Contribution to Remedial Performance

A remedial action is not anticipated and therefore this removal action is not inconsistent with any proposed remedial action.

3. Applicable or Relevant and Appropriate Requirements (“ARARs”)

Actions will be conducted in compliance with Applicable or Relevant and Appropriate Regulations (ARARs) to the extent practicable considering the exigencies of the situation, in accordance with 40 CFR 300.415(j).

B. Estimated Costs

Extramural Costs	Total
Regional Allowance Costs: (ERRs Contractors and Subcontractors)	\$ 50,000
Other Extramural Costs Not Funded From the Regional Allowance: START Contractor	\$ 25,000
Subtotal, Extramural	\$ 75,000
Extramural Costs Contingency	\$ 25,000
Total Removal Action Project Ceiling	\$100,000

VI. EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If no action is taken, the residents may utilize well water which poses a potential public health concern.

VII. OUTSTANDING POLICY ISSUES

Because this response action could be considered nationally significant or precedent setting, it requires the prior concurrence of the Assistant Administrator, Office of Solid Waste and Emergency Response (AA-OSWER). Furthermore, because the action appears to be nationally significant and/or precedent-setting, the Region will continue to coordinate closely with Headquarters. EPA also will maintain coordination and communications with PADEP. In taking this action, EPA is aware of and has considered the potential applicability of the natural gas exclusion under CERCLA, the Bentsen Amendment under the Resource Conservation and Recovery Act (RCRA), and the exclusions to the definition of ‘underground injection’ under the Safe Drinking Water Act (SDWA). EPA has concluded that this action is appropriate under CERCLA at this time.

VIII. ENFORCEMENT

The total EPA costs for this removal action based upon full-cost accounting practices that will be eligible for cost recovery are estimated below as follows:³

Direct Extramural Costs	\$100,000
Direct Intramural Costs	\$ 25,000
Total Direct Costs	\$125,000
Indirect Cost (67.13% x Direct Costs)	\$ 83,912
Total Costs (Direct and Indirect)	\$208,912

IX. RECOMMENDATION

This Action Memorandum represents the selected Removal Action for the Dimock Residential Groundwater Site in Dimock Township, Susquehanna County, Pennsylvania, developed in accordance with CERCLA, as amended, and is consistent with the NCP. This decision is based on the administrative record for the Site. The administrative record consists of the following documents

1. 1/13/12 "Dimock Home Well Data" memo from EPA Toxicologist Dawn Ioven.
2. ATSDR AROA Issued 12/28/11.
3. Summary of Portions of data received by EPA and reviewed by the OSC.
4. PADEP Consent Order and Agreement, dated December 15, 2010.
5. EPA Data Review Memo, January 13, 2012.
6. EPA 104e request to Cabot, January 6, 2012

Conditions at the Site meet the Removal Action requirements of Section 300.415(b) of the NCP and I recommend your approval of the proposed removal action and exemption from the statutory limits. The total project ceiling, if approved, will be \$100,000. Of this, as much as, \$50,000 comes from the Regional removal allowance. Please indicate your approval or disapproval below.

³ Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

Action by the Approving Official:

I have reviewed the above-stated facts and, based upon those facts and the information compiled in the documents described above, I hereby approve/disapprove the selected removal action.

APPROVED: _____
Dennis P. Carney, Associate Division Director
Hazardous Site Cleanup Division
EPA Region 3

DATE 1/19/2012

DISAPPROVED: _____
Dennis P. Carney, Associate Division Director
Hazardous Site Cleanup Division
EPA Region 3

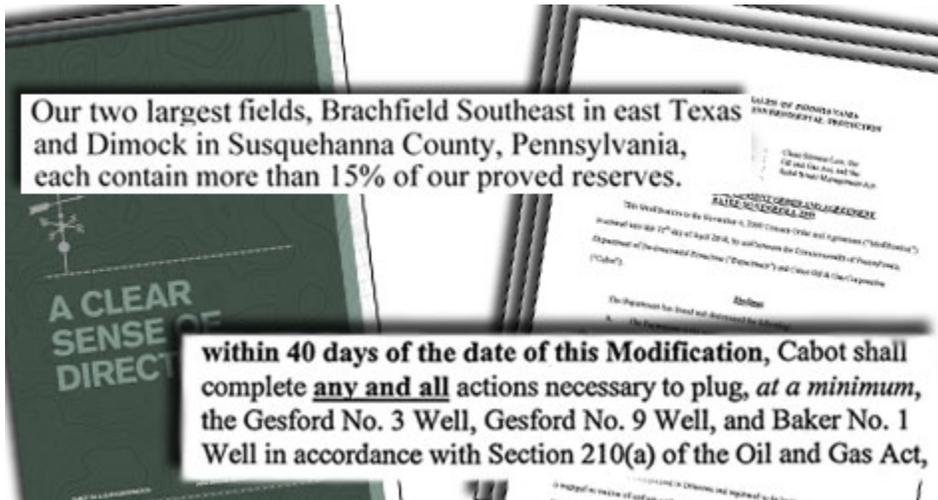
DATE _____

Cabot Oil & Gas's Marcellus Drilling to Slow After PA Environment Officials Order Wells Closed



by [Abraham Lustgarten](#); ProPublica, April 16, 2010 12:04 p.m.

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More than 15 months [after natural gas drilling contaminated](#) drinking water in Dimock, Pa., state officials are ordering the company responsible -- Houston-based Cabot Oil and Gas -- to permanently shut down some of its wells, pay nearly a quarter million dollars in fines, and permanently provide drinking water to 14 affected families.

The [order](#) is among the most punitive in Pennsylvania's history and reflects officials' frustrations [over a string of drilling-related accidents](#). The record of spills, leaks and water contamination in Pennsylvania -- several of which are tied to Cabot -- has spotlighted the environmental risks of drilling for natural gas across the country, jeopardized development of the massive Marcellus Shale resource deposit, and contributed significantly to actions by both [Congress](#) and the [U.S. Environmental Protection Agency](#) to bolster federal oversight of drilling.

"The events at Dimock have been the black eye for the industry and have also been a black eye for Pennsylvania," the state's chief environment official, John Hanger, told ProPublica. "It's been an enormous headache. If Cabot doesn't get this message, the company has got an amazing hearing problem."

ProPublica was [among the first to report](#) about the water contamination problems in Dimock -- and about more than 50 other similar cases that have emerged as drilling development has spread across the state -- in an article published last April that was [part of a series about drilling concerns](#) across the country. Since then the state Department of Environmental Protection has

more than doubled its enforcement staff, and legislation has been introduced to revise Pennsylvania's rules for drilling and strengthen protections for groundwater.

Cabot did not respond to a request for comment. In a statement Thursday, Cabot Oil and Gas said that it agreed to the DEP's measures and that the state's order represents "a continuing joint effort by Cabot and the PADEP to ensure the safety of people, water resources and the environment of Susquehanna County."

DEP officials [determined last fall](#) that methane gas and drilling waste had leaked through cracked underground casing on Cabot's gas wells and seeped into drinking water in the Dimock area. They fined the company, which is also [being sued by a group of area residents](#), \$120,000 at the time. In its most recent order, which is an update of that 2009 action, the Department of Environmental Protection expressed frustration with Cabot's failure to address the contamination and said it found gas bubbling up in well water as recently as March, even though the company had submitted a plan to fix it last November.

On Thursday, the DEP gave Cabot -- which Hanger described as one of "[the worst](#)" oil and gas operators he has seen -- [40 days to plug the three wells](#) it believes are responsible, and threatened that Cabot would have to plug more if the problems didn't subside. It gave the company [a month to install permanent water treatment systems in 14 homes](#) where water was found to contain high levels of methane, iron and other metals, and where residents have complained of headaches, skin rashes and sick animals. In addition, it [ordered Cabot to pay a \\$240,000 fine](#), plus \$30,000 for each month in which it fails to fix the problems.

The DEP is also suspending its review of Cabot's pending applications for new drilling permits across the state and won't allow the company to drill any new wells at all in the Dimock area -- even those already permitted -- for 12 months. It said it will continue to investigate 10 more Cabot wells near Dimock and could order some of them plugged as well.

The Dimock gas wells are among the most important for Cabot Oil and Gas, a \$4.2 billion publicly traded corporation. According to Cabot's 2009 annual report, the Dimock field accounts for 15 percent of the corporation's gas assets and is its [second largest development area](#), after a region in Texas. At current prices the Dimock wells produced \$55 million worth of natural gas last year. Much of the company's growth is tied to its plans for expansion in Pennsylvania's part of the Marcellus Shale. It planned to drill 100 new wells in the Dimock area in 2010.

Cabot CEO Dan Dinges, however, promised the enforcement action would "not impact the number of wells scheduled to be drilled under Cabot's 2010 drilling effort, nor will it impact our production guidance," according to the company's statement.

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