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U.S. ENVIRONMENTAL PROTECTION AGENCY

DRAFT QUESTIONNAIRE FOR THE COALBED METHANE EXTRACTION SECTOR

Form Approved
OMB Control No. 2040-NEW
Approval Expires XXX

The public reporting and recordkeeping burden for this collection of information is estimated to average approximately 80 hours per response. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions, develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this ICR under Docket ID No. EPA-HQ-OW-2006-0771, which is available for public viewing at the Water Docket in the EPA Docket Center (EPA/DC), EPA West, Room B102, 1301 Constitution Ave., NW, Washington, DC 20004. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Water Docket is (202) 566-2426. An electronic version of the public docket is available through the federal data management system (FDMS) at http://www.regulations.gov. Use FDMS to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, Attention: Desk Officer for EPA. Please include the EPA Docket ID No. EPA-HQ-OW-2006-0771 and OMB control number (2040-NEW) in any correspondence.

DATE

Operator ID: _____

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is conducting a survey of coalbed methane (CBM) extraction operations. EPA will use the responses collected in this detailed questionnaire to inform its decision on whether to initiate a rulemaking to potentially revise the effluent guidelines for the Oil and Gas Extraction Point Source Category (40 CFR 435) to include limits for pollutants discharged in CBM produced water. This questionnaire is not focused on conventional oil and gas extraction. Any regulation decisions resulting from this survey will not affect conventional oil and gas operations. The technical data collected will be used to determine the characteristics of CBM produced water, potential environmental impacts, existing management, beneficial use, and disposal practices for CBM produced water, and the related costs for this industry sector. The financial and economic data collected will be used to characterize the economic status of the industry sector and to estimate the possible economic impacts of potential technology and beneficial use options for CBM produced water. EPA is conducting this survey as part of its annual review of existing effluent guidelines, which is required by the Clean Water Act (CWA) sections 301(d) and 304(b). You must respond to this questionnaire if you operated a CBM well in 2008.

EPA is conducting this survey under the authority of Section 308 of the Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. Section 1318). **You must respond to this questionnaire within 60 days** of receiving it unless EPA authorizes an extension (see page 2). Failure to respond, late filing, or failure to comply with the instructions may result in criminal fines, civil penalties, and other sanctions, as provided by law.

OVERVIEW OF THE QUESTIONNAIRE

The questionnaire is divided into three parts: Part A lists the projects operated by your company that have been selected for this questionnaire, Part B contains financial and economic Information, and part C contains produced water management information. The parts are divided into the following sections:

PART A: CBM PROJECTS SELECTED FOR QUESTIONNAIRE AND CERTIFICATION

Part A of the questionnaire identifies the projects selected for this questionnaire. The questions in Parts B and C pertain only to the projects listed in Part A. You are required to provide information in Part B, Section 3, and Part C, Sections 2 through 4, for each of the projects identified in Part A.

PART B: FINANCIAL AND ECONOMIC INFORMATION
INSTRUCTIONS FOR PART B
SECTION 1: CONTACT INFORMATION
SECTION 2: FIRM-LEVEL FINANCIAL QUESTIONS
SECTION 3: PROJECT-LEVEL QUESTIONS

The financial and economic data collected in Part B of this questionnaire will be used to characterize the economic status of the industry and to estimate the possible economic impacts of wastewater regulations. The questions in Part B pertain to calendar years 2006 through 2008.

PART C: PRODUCED WATER MANAGEMENT INFORMATION
INSTRUCTIONS FOR PART C
SECTION 1: GENERAL OPERATOR INFORMATION
SECTION 2: PRODUCED WATER MANAGEMENT SYSTEM GENERAL QUESTIONS
SECTION 3: DETAILED PRODUCED WATER MANAGEMENT AND TREATMENT QUESTIONS
SECTION 4: PRODUCED WATER QUALITY DATA

The information requested in Part C of this questionnaire will be used to analyze produced water production rates, produced water characteristics, and produced water management, treatment, and disposal practices. Part C requests information for calendar year 2008.

PART D: SUPPORTING INFORMATION
LIST OF ACRONYMS
DEFINITION OF KEY TERMS

Operator ID: _____

COMPLETION OF THE QUESTIONNAIRE

Each section of the questionnaire should be completed by the person(s) most knowledgeable about the information requested. The corporate official or designee responsible for directing or supervising the response to the questionnaire must sign the Certification Statements on page 5 to verify and validate the information provided.

Keep a Copy of the Completed Questionnaire

Please keep a copy of the completed questionnaire, including attachments. EPA will review the information submitted and may request your cooperation in answering follow-up questions, if necessary, to complete analyses.

QUESTIONNAIRE ASSISTANCE

EPA Coalbed Methane Help Lines

Phone Line (Leave Voice Mail for a Response within One Business Day).....XXX-XXX-XXXX
Internet Electronic Mailing Address (Response within One Business Day).....XXX@XXX.com

WHEN TO RETURN QUESTIONNAIRE

You must respond to this questionnaire within 60 days of receiving it.

If you wish to request an extension, you must do so **in writing** within 30 days of receipt of this questionnaire. Written requests may be e-mailed to Mr. Carey Johnston at johnston.carey@epa.gov with "CBM Survey Extension Request" in the e-mail subject line or may be mailed to:

United States Postal Service
Mr. Carey Johnston
U.S. EPA, Office of Water
Mail Code: 4303T
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

One- or Two-Day Delivery (e.g., FedEx)
Mr. Carey Johnston
U.S. EPA, Office of Water
Room 6231G, EPA West
1301 Constitution Avenue, NW
Washington, DC 20004

Extension requests will be evaluated on a case-by-case basis. Submittal of an extension request to EPA does **not** alter the due date of your questionnaire unless and until EPA agrees to the extension and establishes a new date.

WHERE TO RETURN QUESTIONNAIRE

After completing the questionnaire and certifying the information that it contains, please use the enclosed mailing label to mail the completed questionnaire to:

U.S. Environmental Protection Agency
CBM Industry Survey
c/o PG Environmental, LLC
447B Carlisle Drive
Herndon, VA 20170

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REQUESTING AN ELECTRONIC VERSION OF THE QUESTIONNAIRE

If you would like an electronic version of the questionnaire, it is available on the EPA Web site at:

http://www.epa.gov/guide/cbm/.

CONFIDENTIAL BUSINESS INFORMATION

If no business confidentiality claim accompanies the information when it is received by EPA, EPA may make the information available to the public without further notice.

Regulations governing the confidentiality of business information are contained in the Code of Federal Regulations (CFR) at Title 40 Part 2, Subpart B. You may assert a business confidentiality claim covering part or all of the information you submit, other than effluent data and information or data that is otherwise publicly available, as described in 40 CFR 2.203(b):

> "(b) *Method and time of asserting business confidentiality claim.* A business which is submitting information to EPA may assert a business confidentiality claim covering the information by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet, stamped or typed legend, or other suitable form of notice complying language such as 'trade secret,' 'proprietary,' or 'company confidential.' Allegedly confidential portions of otherwise non-confidential documents should be clearly identified by the business, and may be submitted separately to facilitate identification and handling by EPA. If the business desires confidential treatment only until a certain date or until the occurrence of a certain event, the notice should so state."

You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Alternatively, all questions marked with a CBI check box may be claimed confidential now by checking the box at the end of this paragraph. If you do not check this box, any individual response where "CBI" is **NOT** checked will be considered nonconfidential. Note that you may be required to justify any claim of confidentiality at a later time. Note also that facility effluent data are not eligible for confidential treatment, pursuant to Section 308(b) of the Clean Water Act, and thus will be treated as non-confidential even if the CBI box is checked. In addition, information that is publicly-available should not be claimed confidential. Note also that information claimed confidential cannot be accessed, verified, or used by the industry at a later date to evaluate data and analyses supporting the results of the CBM study.

☐ **Check Here to Claim All Eligible Data are CBI**

Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the Clean Water Act. Exemption 4 of the Freedom of Information Act (FOIA) protects from disclosure "trade secrets and commercial or financial information obtained from a person and privileged or confidential." See 5 U.S.C. 552(b)(4).

Information covered by a claim of confidentiality will be made available to EPA contractors under EPA Contract Numbers No. 68-C02-095, EP-C-07-029, and EP-C-05-030 to enable the contractors to perform the work required by their contracts with EPA. All EPA contracts provide that contractor employees use the information only for the purpose of performing the work required by their contracts and will not disclose any CBI to anyone other than EPA without prior written approval from each affected business or from EPA's legal office. EPA has approved written procedures for each contractor on how they will gather, safeguard, and secure CBI. Any comments you may wish to make on this issue must be submitted in writing along with your completed survey.

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PART A. CBM PROJECTS SELECTED FOR QUESTIONNAIRE

A.1.1. Did you respond to EPA's screener questionnaire on CBM projects?

☐ Yes. Continue with Question A.1.2.
☐ No. **Skip to Question A.1.3.**

A.1.2. You have been selected by EPA to respond to questions about projects you identified in EPA's screener survey sent to you on XXX, 2009. EPA has selected the following projects in its representative sampling of CBM projects for this survey:

[This table will be pre-populated based on information collected in the screener questionnaire.]

Table A-1. Projects Selected for this Questionnaire

Project Identifier	Count of Wells Productive in 2008 (from screener)

For each of the projects listed in Table A -1, EPA requests that you provide identifying information on all wells that were actively producing either water or gas in 2008. The number of wells with identifying information submitted should match the number of wells listed in Table A -1 (reported in your screener survey). Reasons for any discrepancies should be reported in the Comments section in Question A.1.4. You may use Table A -2 to fill in this information or you can submit your own printout or electronic form, whichever is more convenient. Make as many copies of the table as you need, ensuring that the relevant project identifier is written on the top right hand corner of the page.

Please provide the API number for each well in the project unless the well is located in Kansas, Virginia, or Indiana. List the API number in Column A of Table A -2 if you choose to use this table. Please follow the instructions below for Kansas, Virginia, and Indiana and enter the information into Column B of Table A -2 if using this table.

- Kansas -The well identifying information should be the lease/permit number that is in the form of a six-digit number, e.g., 221405.
- Virginia -The well identifying information should be the permit number that is in the form of a 2-letter and 4-digit number combination, e.g., BU-0390.
- Indiana -The well identifying information should be the permit number that is in the form of a 5-digit number, e.g., 50125.

If you have projects listed in Table A -1, please skip Question A.1.3. Remember to sign the Certification Statement on page 5 after completing the rest of the questionnaire.

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Operator ID: _____

Project ID: _____

A.1.3. According to EPA's information, you did not receive a screener questionnaire, but most likely you operated only one or two CBM projects in 2008. *A CBM project comprises a well, group of wells, lease, group of leases, or recognized unit for which you operated as an economic unit when making production decisions in 2008*. If you did not operate any CBM wells in 2008 or if you had another concern about whether your organization is the appropriate respondent for this questionnaire, please contact the EPA help line for further instructions. Otherwise, EPA requests that you provide identifying information on all CBM wells that were actively producing water or gas in 2008, by project. EPA recognizes that such groupings can change over time, so define your project(s) in a way that is best representative of your production decision grouping in 2008.

Please provide an identifying name or number for your project in the top right-hand corner of Table A -2. Table A -2 must be completed for **each** CBM project you identify (you will need to copy the table if you have more than one project). You will need to use this project identifier in other sections of this survey questionnaire.

Please provide the API number in Column A of Table A -2 for each well in the project unless the well is located in Kansas, Virginia, or Indiana. Please follow the instructions below for Kansas, Virginia, and Indiana and enter the information into Column B of Table A -2 if using this table.

- Kansas – The well identifying information should be the lease/permit number that is in the form of a six-digit number, e.g., 221405.
- Virginia – The well identifying information should be the permit number that is in the form of a 2-letter and 4-digit number combination, e.g., BU-0390.
- Indiana – The well identifying information should be the permit number that is in the form of a 5-digit number, e.g., 50125.

Remember to sign the Certification Statement on page 5 after completing the rest of the questionnaire.

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Table A-2. Well Identifying Information for All Actively Producing Wells for Project ID _____
(Submit One Copy for Each Project Listed in Table A-1 or Requested in Question A3-1.)

Column A API Number (Excluding Kansas, Virginia, Indiana)	Column B Permit Number (Kansas, Virginia, Indiana Only)

DRAFT

Operator ID: _____
Copy _____ of _____

A.1.4. **Comments on Part A.** Please cross-reference your comments by question number. **If you need additional space, please photocopy this page before writing on it**, and number each copy in the space provided.

CBI?	Question Number	Comment
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		

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Operator ID: _____

CERTIFICATION STATEMENT

I certify under penalty of law that the attached questionnaire was prepared under my direction or supervision and that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, accurate and complete. In those cases where we did not possess the requested information for questions applicable to our operations, we provided best estimates. We have to the best of our ability indicated what we believe to be company confidential business information as defined under 40 CFR Part 2, Subpart B. We understand that we may be required at a later time to justify our claim in detail with respect to each item claimed confidential. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment as explained in Section 308 of the Clean Water Act.

_____ _____

Signature of Certifying Official Date

_____ (____)_____

Printed Name of Certifying Official Telephone Number of Certifying Official

_____

Title of Certifying Official

_____

Facility Name

(Continue to Part B, Section 1 of the questionnaire, complete all sections, and return the questionnaire along with the signed Certification Statement to the address provided on page 2.)

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Operator ID: _____

PART B. FINANCIAL AND ECONOMIC INFORMATION

SECTION 1: CONTACT INFORMATION

GENERAL INSTRUCTIONS FOR SECTION 1

This section of the questionnaire is designed to collect general operator information pertinent to Part B, including contact information.

Indicate information that should be treated as confidential by checking the Confidential Business Information (CBI) box next to each question number with responses containing CBI. Any response where "CBI" is not checked will be considered non-confidential unless you have previously indicated that all eligible information should be considered confidential. Refer to the instructions given in the CONFIDENTIAL BUSINESS INFORMATION section on page 3 for additional information regarding EPA's confidentiality procedures set forth in 40 CFR Part 2, Subpart B.

CBI? ☐ Yes

B.1.1. Provide the name, title, telephone and facsimile numbers, and e-mail address of the primary contact at your operation for information supplied in the firm-level financial and economic portions of the questionnaire (**Part B, Section 2)**.

_____ ( ) _____
Primary Contact Name Telephone Number

_____ ( ) _____
Primary Contact Title Facsimile Number

_____ Convenient time to call between:
Email Address _____ ☐ am / ☐ pm and
_____ ☐ am / ☐ pm (Eastern Time)

CBI? ☐ Yes

B.1.2. Provide the name, title, telephone and facsimile numbers, and e-mail address of the primary contact at your operation for information supplied in the project-level economic and financial portions of this questionnaire (**Part C**), **if different from the primary contact above.**

_____ ( ) _____
Primary Contact Name Telephone Number

_____ ( ) _____
Primary Contact Title Facsimile Number

_____ Convenient time to call between:
Email Address _____ ☐ am / ☐ pm and
_____ ☐ am / ☐ pm (Eastern Time)

CBI? ☐ Yes

B.1.3. If you know that other facilities in your firm have received this questionnaire and would like to reference the firm-level information provided by another respondent, please provide the operator ID (shown at the top of each page of the questionnaire) of the respondent who is submitting Part B Section 2 for your firm:

_____

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Operator ID: _____

SECTION 2: FIRM-LEVEL FINANCIAL QUESTIONS

Instructions: Section 2 of this survey is focused primarily on collecting firm-level financial information at the lowest corporate level for which it is available or can be reasonably estimated. This level is considered the "immediate owner/operator." Most respondents to this detailed questionnaire were identified using a screener survey.

For those who were not asked to respond to a screener survey, the detailed questionnaire has been sent to the entity that is listed in state oil and gas commission (or similar agency) databases as the operator of one or more CBM wells within the state. Because the survey is focused on the lowest corporate level, the appropriate respondent should be the "immediate owner/operator," who is the entity responsible for management and/or day-to-day operation of this project and makes the following types of decisions:

- Whether well(s) should be shut-in, worked over or abandoned.
- Whether additional or replacement wells should be drilled into a reservoir
- Whether additional or different production equipment should be installed; and
- Any other decision factor used by DOE in the General Instructions to Form EIA-23 (see also definition of management decisions in the Definitions of Key Terms section at the end of the questionnaire).

If you are an owner who manages a contract operator to oversee the operation of the project or projects, you are still considered the immediate owner/operator for the purposes of this questionnaire. EPA is aware that you might need to consult with or send portions of this questionnaire to your contract operator for assistance in completing the survey.

If you have any concerns that your organization is not the appropriate respondent for this survey, please contact the EPA help line. As an example, if you have a working interest in one or more CBM wells but do not operate or manage the well or wells yourself, nor do you oversee a contract operator for this work, you will need to contact the EPA help line.

EPA would like at least some minimum information on three levels of corporate hierarchy, if applicable: immediate owner/operator, owner, and parent or ultimate parent. Some immediate owner/operators are independent (not owned by any other firm). Others have owner firms above them in the hierarchy. The owner firm, in turn, may be owned directly or through other intermediate parents by an ultimate parent, which is the highest level of the corporate hierarchy. In many cases, information requested from higher levels of the corporate hierarchy will include only the names of key corporate entities.

Additionally, some immediate owner/operators are owned by more than one owner firm (e.g., joint ventures). EPA will be requesting only the corporate names of joint owners; financial information will be requested only from the firm created as the joint venture (e.g., a limited liability corporation).

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CBI? ☐ Yes

B.2.1. Describe the position in the corporate hierarchy of the immediate owner/operator (as defined above). If the location to which this questionnaire was mailed is, for example, a field office and not considered a separate corporate entity for accounting purposes, you may need to confer with corporate staff to complete Part B, Section 2. In this case, check the box that applies to the lowest level in your corporate hierarchy where accounting statements (audited or unaudited) are recorded. This may be at the division level or at a higher firm level, depending on your circumstances. If you are not sure how to answer this question, please contact the EPA help line.

(Choose only one of the following.)

☐ Independent owner/operator. This firm is not owned or affiliated with any other firm. **Skip to Question B.2.4.**

☐ Joint venture. This firm is owned by at least two other firms (not individuals). Continue with Question B.2.2.

☐ Division or profit center. This entity is owned by no more than one owner firm, although the owner firm, in turn, might be a subsidiary or a joint venture. Continue with Question B.2.2.

☐ Subsidiary firm. This firm is owned by no more than one owner firm (portions may be publicly held). The owner firm, in turn, might be a subsidiary or a joint venture, however. Continue with Question B.2.2.

CBI? ☐ Yes

B.2.2. If the immediate owner/operator is, in turn, owned by an owner firm or firms (is not an independent owner/operator), what is the corporate name (or names, if a joint venture) of the owner(s)?

_____

_____

_____

CBI? ☐ Yes

B.2.3. What is the name of the ultimate parent company (or companies, if a joint venture) for the immediate owner/operator (if there is only one owner firm above the immediate owner/operator, it should be listed in Question B.2.2. In this case, please respond “none”)?

_____

_____

_____

CBI? ☐ Yes

B.2.4. In 2008, was your highest level of corporate ownership a small business under the Small Business Administration (SBA) definitions? If you responded to this question in EPA’s screener questionnaire, the response you provided at that time has been transferred to this questionnaire and you do not need to respond further to this question. Otherwise, please refer to page 10 for definitions that may assist in answering this question. If you need further assistance beyond that provided in Part D, please contact the EPA help line. [NOTE: Question will be prepopulated if they provided a screener answer.]

☐ Yes
☐ No

CBI? ☐ Yes

B.2.5. What is the 6-digit NAICS code for the immediate owner/operator? Please refer to page 10 for definitions that may assist in answering this question. If you need any further assistance, please contact the EPA help line and EPA will help you make this determination.

_____

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CBI? ☐ Yes

B.2.6. Is the immediate owner/operator a contract operator only (owns no working interests in any CBM projects)?

- ☐ Yes
- ☐ No

CBI? ☐ Yes

B.2.7. What is the organization type of the immediate owner/operator?

- ☐ C Corporation
- ☐ S Corporation, Limited Liability Corporation, or Limited Liability Partnership
- ☐ Division or Profit Center. Owner firm is a:
  - ☐ C Corporation
  - ☐ S Corporation, Limited Liability Corporation, or Limited Liability Partnership
  - ☐ Other: _____
- ☐ Other: _____

CBI? ☐ Yes

B.2.8. Are you required to use the cost-depletion method (unit of production) in computing your depletion allowance for tax purposes (i.e., you, your owner firm, or your corporate parent is considered a vertically integrated firm under IRS rules)?

- ☐ Yes
- ☐ No

CBI? ☐ Yes

B.2.9. What was the 2008 employment at the immediate owner/operator? Please include any local contract labor, but do not allocate overhead employment from higher corporate levels.

a. Total 2008 employment was _____

b. 2008 employment attributable to CBM operations was _____ (estimate if necessary).

CBI? ☐ Yes

B.2.10. In 2008, was **all** produced water from **all** CBM projects operated by the immediate owner/operator injected into a receiving formation in a Class II injection well under the UIC program?

- ☐ Yes. You have completed Section B, Part 2. Continue with Section B, Part 3.
- ☐ No. Continue with Question B.2.14.

Instructions: The following questions should be answered at the **lowest level** of firm organization at which **substantial financial** decisions are made on CBM operations (e.g., decisions on major capital investments or major production decisions for an individual project, such as converting from discharge of produced water to subsurface injection, or whether to develop a new or abandon an existing CBM project). This may be the operator or the operator's owner firm, for example, or even higher in the corporate hierarchy, such as at a parent firm. Questions B.2.11 through B.2.14 ask for information critical to evaluating CBM project decisions and/or understanding the financial situation reflected in the information provided in this section.

CBI? ☐ Yes

B.2.11. Indicate the corporate level at which major investment decisions (such as those discussed above) are made:

- ☐ Immediate Owner/Operator
- ☐ Owner Firm(s)
- ☐ Other. Name of entity:

_____

EPA intends to make assumptions about the method of capital investment analysis and cost of capital for projects you operate. You can agree to these assumptions if they seem to reflect your operation adequately, or you can provide alternative assumptions if you feel these assumptions are not appropriate to your operation. If this decision is made at a higher level and you do not know the answers to these questions, you

have the option of indicating you do not know. **If you leave the questions unanswered or you indicate that you do not know, EPA will use the assumptions outlined in the questions.**

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CBI? ☐ Yes

B.2.12. EPA plans to use a net present value analysis to determine the extent to which costs of various produced water alternatives that are analyzed affect the profitability of the project, up to and including a finding that it is not economical to install and operate produced water management alternatives (i.e., a project with an estimated positive net present value is estimated to have a negative net present value if additional costs of produced water management are incurred). (Choose one answer.)

☐ Agree or Don't Know. We understand EPA will use the assumption discussed above.
☐ Disagree. We would prefer EPA consider an analysis as described in the comments section on page 36.

CBI? ☐ Yes

B.2.13. EPA plans to use the average pre-tax cost of capital as recommended by OMB, which assumes an average investment risk. With no inflation considered, this rate is 7 percent. This rate corresponds roughly to a 10 percent interest rate, for example, if a 3 percent inflation rate is assumed throughout the time frame of the analysis. (Choose one answer).

☐ Agree or Don't Know. We understand EPA will use the assumption discussed above.
☐ Disagree. We would prefer EPA to use the following figure to represent our pre-tax cost of capital. Provide the nominal rate (i.e., do not subtract an inflation rate from this figure).

_____%

CBI? ☐ Yes

B.2.14. EPA will also investigate the impact of alternative produced water management costs using a hurdle rate for future projects (the return required to undertake a project). EPA plans to use a hurdle rate (not including inflation) in sensitivity analyses ranging from 12% to 22%. This would be equivalent to a hurdle rate that includes a factor for inflation of roughly 15% to 25% (assuming a 3 percent factor).

☐ Agree or Don't Know. We understand EPA will use the assumption discussed above.
☐ Disagree. We would prefer EPA to use the following figure (nominal, including inflation) to represent our hurdle rate:

_____%

Instructions: The following questions ask for income statement (through net income) and balance sheet information. Information is requested at the **lowest level** in the corporate hierarchy at which such information is kept.

CBI? ☐ Yes

B.2.15. If you qualify as a small business under SBA definitions and answered YES to Question B.2.4, you have the option of providing just your accounting reports or income tax returns (e.g., Schedule C) for the years 2006, 2007, 2008, showing income and balance sheet information. EPA will fill out most of the information needed using your accounting reports or returns.

☐ Yes. We are a small business and are opting to have EPA prepare the answers to Questions B.2.16 to B.2.22 for us. We are providing an estimate of the percentage of our earnings (net revenues minus operating costs minus depreciation) attributable to CBM production in 2006, 2007, and 2008:

2006: _____%

2007: _____%

2008: _____%. **Skip to Question B.2.23.**

☐ No. **Continue with Question B.2.16.**

CBI? ☐ Yes

B.2.16. **Instructions:** If you are a small business and have opted to have EPA prepare answers to Questions B.2.16 to B.2.22, **please skip to Question B.2.23**.

EPA understands that audited financial data may not be available at the immediate owner/operator level in the corporate hierarchy, but wishes to assess impacts on the most sensitive portion of the corporation and encourages good faith estimates or unaudited financial data if this is what is available at this level. If you are not comfortable with an estimate, you can opt to answer at a higher level, but please answer all income statement questions (Questions B.2.16 through B.2.19) at the same corporate level. You will be able to use either an estimate or "NA" to apply to some line items that might not be recorded at a division level, if this is the level at which you are responding.

Income Statement Information: Questions Error: Reference source not found through B.2.19 ask for revenues, costs and expenses, and earnings, interest, taxes and net income (loss). To the extent possible, provide this information at the immediate owner/operator level, whether a profit center or firm. EPA acknowledges that some items, such as depreciation, taxes, and interest might be kept only at a higher corporate level in some cases, although some or all of these may be routinely estimated for planning purposes. In this case, EPA would like these estimates. If you can provide all but depreciation, taxes, and interest at the immediate owner/operator level, please do so, using "NA" for depreciation, taxes and interest. Otherwise, information at the next higher level (owner firm) is acceptable. Please indicate the corporate level at which these income statement data are being provided.

☐ Immediate Owner/Operator
☐ Owner Firm (from Question B.2.2)
☐ Other (list corporate name):
_____

CBI? ☐ Yes

B.2.17. What were your organization's revenues for 2006-2008? Report in nearest thousands of dollars (i.e., if net sales were $1,253,779, please report as $1,254,000; zeroes have been provided already). If you would like EPA to know that you estimated any line item, you can indicate this by checking (☒) the estimate column (Est.).

	Est.	Revenues	2006	2007	2008
a.	☐	Net sales and other operating revenues (all operations, including non-oil and gas related revenues)	_____,000	_____,000	_____,000
b.	☐	Revenues attributable to all oil and gas operations (including CBM)	_____,000	_____,000	_____,000
c.	☐	Revenues attributable to CBM operations only	_____,000	_____,000	_____,000
d.	☐	Other income (Specify): _____	_____,000	_____,000	_____,000
e.	☐	Total revenues (a plus d)	_____,000	_____,000	_____,000

CBI? ☐ Yes

B.2.18. What were your organization's operating expenses for 2006-2008? Report in nearest thousands of dollars (i.e., if operating costs were $1,253,779, please report as $1,254,000; zeroes have been provided already). If depreciation information is not recorded at the corporate level represented in the income statement information provided above, or is not usually estimated for your corporate level, please insert NA. If depreciation is routinely estimated or you opt to estimate depreciation, please provide the information. If you would like EPA to know that you estimated any line item, you can indicate this by checking (☒) the estimate column (Est.).

	Est.	Costs and Expenses	2006	2007	2008
a.	☐	Operating costs (all operations)	,000	,000	,000
b.	☐	Operating costs attributable to all oil and gas operations (including CBM)	,000	,000	,000
c.	☐	Operating costs attributable to CBM operations only	,000	,000	,000
d.	☐	Selling, general, and administrative costs	,000	,000	,000
e.	☐	Depreciation, depletion, and amortization	,000	,000	,000
f.	☐	Royalty payments	,000	,000	,000
g.	☐	Severance tax payments	,000	,000	,000
h.	☐	Other costs (Specify): _____	,000	,000	,000
i.	☐	Total costs and expenses (a plus d through h)	,000	,000	,000

CBI? ☐ Yes

B.2.19. What were your organization's earnings and net income for 2006-2008? Report in nearest thousands of dollars (i.e., if earnings were $1,253,779, please report as $1,254,000; zeroes have been provided already). If tax and/or interest information is not recorded at the corporate level represented in the income statement information provided above, or is not usually estimated for your corporate level, please insert NA. If these items are routinely estimated or you opt to estimate them, please provide the estimates. If you would like EPA to know that you estimated any line item, you can indicate this by checking (☒) the estimate column (Est.).

	Est.	Earnings and Net Income	2006	2007	2008
a.	☐	Earnings before interest and taxes (Question Error: Reference source not founde minus Question B.2.18i)	,000	,000	,000
b.	☐	Interest expense	,000	,000	,000
c.	☐	Federal and state income tax	,000	,000	,000
d.	☐	Net income or net loss (a minus b minus c)	,000	,000	,000

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CBI? ☐ Yes

B.2.20. **Balance Sheet Questions:** Questions B.2.21 through B.2.23 ask for assets, liabilities and equity information, as well as information on payments to principal. EPA acknowledges that balance sheets might be kept only at a higher corporate level than the income statement information provided, in some cases, although some or all of these may be routinely estimated for planning purposes. In this case, EPA would like these estimates. If you can provide estimates at the immediate owner/operator level, please do so. If not, information at the next higher level (owner firm) is preferred to information at higher levels of the corporation, even if at this level, the information is unaudited. Please indicate the level at which these balance sheet and other data are being provided:

☐ Immediate Owner/Operator
☐ Owner Firm (from Question B.2.2)
☐ Other (list corporate name):
_____

CBI? ☐ Yes

B.2.21. What were your company's assets in 2008? Report in nearest thousands of dollars (i.e., if assets were $1,253,779, please report as $1,254,000; zeroes have been provided already). If you would like EPA to know that you estimated any line item, you can indicate this by checking (☒) the estimate column (Est.).

	Est.	Assets	2008
a.	☐	Current assets	_____,_____,000
b.	☐	Property, plant, and equipment (net of depreciation)	_____,_____,000
c.	☐	Other assets (net of depreciation)	_____,_____,000
d.	☐	Total assets (sum of a through c)	_____,_____,000

CBI? ☐ Yes

B.2.22. What were your company's liabilities and equity in 2008? Report in nearest thousands of dollars (i.e., if total liabilities were $1,253,779, please report as $1,254,000; zeroes have been provided already). If you would like EPA know that you estimated any line item, you can indicate this by checking (☒) the estimate column (Est.).

	Est.	Liabilities and Equity	2008
a.	☐	Current liabilities (including accounts payable, accrued expenses and taxes, and the current portion of long-term debt)	_____,_____,000
b.	☐	Long-term debt (including bonds, debentures, long-term leases, bank debt, and all other noncurrent liabilities such as deferred income taxes)	_____,_____,000
c.	☐	Retained earnings	_____,_____,000
d.	☐	Other owner equity (not including retained earnings)	_____,_____,000
e.	☐	Sum of liabilities and owner equity (sum of a, b, c, and d)	_____,_____,000

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CBI? ☐ Yes

B.2.23. This question asks for payments to principal over 3 years. Payments to principal are cash outlays made to pay back long-term debt, excluding interest payments (similar to a mortgage payment, which can also be split between payments to principal and interest). These payments should relate to the long-term debts reported in Question B.2.22 or those shown in the financial statements submitted in response to Question B.2.15. Please provide these payments in:

a. 2006? $_____,_____,000 This is an estimate: ☐ (optional check box)

b. 2007? $_____,_____,000 This is an estimate: ☐ (optional check box)

c. 2008? $_____,_____,000 This is an estimate: ☐ (optional check box)

CBI? ☐ Yes

B.2.24. The income statement and balance sheet information reflect a fiscal year starting in (month):

_____

IMPORTANT: If you have provided your financial information in Questions B.2.16 through B.2.22, submission of financial reports is **optiona**l and you may **skip to Section 3, Part B**. Please note that a benefit of submitting your financial reports in addition to completing Questions B.2.16 through B.2.22 is that submission of these financial reports may reduce the need for EPA to contact you for clarifications on your answers to Questions B.2.16 through B.2.22. If, however, you opted to have EPA complete these questions for you as a small business as indicated in Question B.2.15, the submission of financial reports or tax returns **is not optional**.

CBI? ☐ Yes

B.2.25. Please provide financial statements.

Instructions: For those who choose to or must provide such information, please include copies of all 2006-2008 financial statements that would be needed or were used to compile the answers to Questions B.2.16 through B.2.22 above with your completed questionnaire. These may be accountant reports, annual reports, Federal income tax returns (e.g., Schedule C), and/or 10-K reports. Include income statements, balance sheets, and associated notes for your organization to the extent possible, preferably at the lowest level in the corporation at which information is kept. If you have included such financial statements, please check the “attached” box.

☐ Attached.

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SECTION 3: PROJECT-LEVEL QUESTIONS

Instructions: This section asks for information from the operator of the project or projects identified in Part A, where operator is defined as the person responsible for the management and day-to-day operation of this project or projects as defined in Section 2 and in the definitions section of this questionnaire. **If your project numbers have not been prepopulated in the tables that follow, please provide the project identifiers you assigned the project in Table A -2.**

If you own but do not operate the project in question, and you are not able to complete some or all of the information, please contact your contract operator to obtain answers to questions or remove Section 2 of the questionnaire and provide the remaining portions of the questionnaire to your contract operator. You are responsible for obtaining the questionnaire from your contract operator, recompiling the questionnaire, signing the certification pages, and returning the entire questionnaire to EPA.

If your project(s) operates in a reservoir that has been unitized, please include information only for that portion of the unit you operate, and provide the unit number or other group identifier in Question B.3.9.

[Note: Additional copies will be provided if Part A contains more than 3 projects].

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Table B-3. General Project Information—Projects through Year End 2008 [project identifiers will be pre-populated, where possible]

	Question	Project _____	Project _____	Project _____
	Project Identifier Information			
CBI? ☐ Yes	B.3.1. Name or Identifier of Project.	Prepopulated	Prepopulated	Prepopulated
CBI? ☐ Yes	B.3.2. Name of Field(s). Indicate "unnamed" if no name has been assigned.			
CBI? ☐ Yes	B.3.3. Is this project considered a wildcat project?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
CBI? ☐ Yes	B.3.4. Does this project commingle CBM with conventional oil and gas production? NOTE: ***unless otherwise specified, all further questions relating to gas production or water production in Part B pertain to total (conventional and CBM) production***.	☐ Yes. Continue with Question B.3.5. ☐ No. **Skip to Question B.3.9.**	☐ Yes. Continue with Question B.3.5. ☐ No. **Skip to Question B.3.9.**	☐ Yes. Continue with Question B.3.5. ☐ No. **Skip to Question B.3.9.**
CBI? ☐ Yes	B.3.5. **If you commingle CBM with conventional production,** what percentage of the gas and water produced from this project was extracted from coalbeds in 2008 (%) (estimate if necessary)?	a. Gas _____% b. Water _____%	a. Gas _____% b. Water _____%	a. Gas _____% b. Water _____%
CBI? ☐ Yes	B.3.6. **If you commingle CBM with conventional production,** what was the oil production from this project in 2008 (bbls)?	_____ bbls	_____ bbls	_____ bbls
CBI? ☐ Yes	B.3.7. **If you commingle CBM with conventional production,** is the average royalty rate on this oil the same as that for gas? If no, please provide the royalty rate; if not applicable or the rate is the same as that for gas, please insert "NA."	_____%	_____%	_____%
CBI? ☐ Yes	B.3.8. **If you commingle CBM with conventional production,** in what year did conventional gas and/or oil production begin?			
CBI? ☐ Yes	B.3.9. Unit Number, or other group identifier (if relevant) **Skip to Question B.3.11 if not part of a formal unit.**			

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	Question	Project _____	Project _____	Project _____
CBI? ☐ Yes	B.3.10. Indicate the percentage of annual production on the unit in 2008 associated with your portion of the unit (%).	_____%	_____%	_____%
	Numbers of Wells in Project at Year End 2008			
CBI? ☐ Yes	B.3.11. Total actively producing (water or gas) in 2008.	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____
CBI? ☐ Yes	B.3.12. Total approved drilling permits considered applicable to this project in 2008.	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____
CBI? ☐ Yes	B.3.13. Spudded, drilling, or completed (production pending) in 2008.	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____
CBI? ☐ Yes	B.3.14. Inactive (shut in, temporarily abandoned, or other non-productive status during all of 2008).	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____	Vertical _____ Horizontal _____
	Basic Historic Information			
CBI? ☐ Yes	B.3.15. Did you initiate development for this project or did you acquire a project that another operator developed? If you initiated development, enter the year in which you acquired the first lease. If you acquired all or part of an existing project, enter the year in which you acquired the project. For the purpose of this questionnaire, any projects or portions of projects acquired from another operator after lease acquisition **but before development** are considered part of the lease acquisition process. However, if you acquired any projects or portions of projects **after** initiating development of the first lease to create a larger project, complete both the "first lease acquired" and "acquired project" dates.	First Lease Acquired _____ Acquired Project (if you answer here, please **skip to Question B.3.45**). _____	First Lease Acquired _____ Acquired Project (if you answer here, please **skip to Question B.3.45**). _____	First Lease Acquired _____ Acquired Project (if you answer here, please **skip to Question B.3.45**). _____
CBI? ☐ Yes	B.3.16. Did you answer the "first lease acquired " question with any answer that was ***earlier than 2004*** OR did you answer the "project acquired" question?	☐ Yes. **Skip to Question B.3.45.** ☐ No. Continue with Question B.3.17.	☐ Yes. **Skip to Question B.3.45.** ☐ No. Continue with Question B.3.17.	☐ Yes. **Skip to Question B.3.45.** ☐ No. Continue with Question B.3.17.

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STOP BEFORE PROCEEDING!

Please review Part C of this questionnaire before beginning the remainder of Part B. Part C covers all costs of produced water management after final gas/water separation. Exclude all of these produced water management costs in Part B Section 3 of this questionnaire.

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Table B -4 requests additional historic information on your projects. Note that good faith estimates are acceptable, including averages or typical values, where information is difficult to quantify. You may note if you have provided an estimate, where applicable, in the box to the far left shown as "Est."

Instructions: If you indicated this project began prior to 2004, or if you acquired any portion of the project after development began (i.e., beyond just lease acquisition), **skip to Question B3-45.** Otherwise, provide information for Questions B.3.17 through B.3.44 on project costs and timing for **any project you initiated as of January 2004 or later that you have operated continuously since that time** (i.e., you did not acquire any portion of the project in any stage of development beyond lease acquisition). Report dollar amounts in nearest thousands of dollars where indicated (i.e., if lease development costs were $1,253,779, please report as $1,254,000; zeroes have been provided already**). Note: if you have less than 100 percent working interest, provide the financial information for the *entire* project, not just your share.**

Remember to exclude all produced water management costs covered in Part C from Table B -4.

One term that EPA uses in this table is *unusual expenditures*. There might be two types of unusual expenditures—those that are amortized (i.e., capitalized) and those that are expensed (i.e., generally considered a part of O&M but the expenditure *does not occur in every year* and is a relatively large percentage of O&M). For the purposes of this survey, an unusual expenditure is defined as:

1) An expenditure that does not occur every year and that is more than 10 percent of O&M (e.g., major storm damage causes large outlay for repairs); or

2) A capitalized one-time or capital cost not considered a lease acquisition or development cost (e.g. construction of a septic system or a building not directly associated with production) and is not a cost covered in Part C.

If you are uncertain of which cost category any of your expenditures belong, you can provide the expenditure(s) with a description in the comments section, or you can contact the EPA help line.

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Table B-4. Project History

Question	Project _____	Project _____	Project _____
General Questions			
CBI? ☐ Yes Est.? ☐ Yes B.3.17. Between January 1, 2004 and December 31, 2008 (2004-2008), did you do any exploratory drilling for CBM in the basin in which this project is located (including for this project, if applicable)?	☐ Yes. Continue with Question B.3.18. ☐ No. **Skip to Question B.3.20.**	☐ Yes. Continue with Question B.3.18. ☐ No. **Skip to Question B.3.20.**	☐ Yes. Continue with Question B.3.18. ☐ No. **Skip to Question B.3.20.**
CBI? ☐ Yes Est.? ☐ Yes B.3.18. In this basin, between 2004 and 2008, what was your average exploratory well success rate for CBM (% of exploratory wells that result in a project that produces or is expected to produce commercial gas)? (including for this project, if applicable)? (%)	_____ %	_____ %	_____ %
CBI? ☐ Yes Est.? ☐ Yes B.3.19. Between 2004 and 2008, what was your average cost per well to drill exploratory wells in this basin (including for this project, if applicable)?	$_____,_____,000	$_____,_____,000	$_____,_____,000
Lease Acquisition Costs			
CBI? ☐ Yes Est.? ☐ Yes B.3.20. Sum of lease acquisition amounts, 2004-2008. Include legal and administrative costs but exclude lump sum payments or cost of amenities provided to surface owners. ($000)	$_____,_____,000	$_____,_____,000	$_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes B.3.21. Year(s) of lease(s) acquisition (e.g., 2004, 2005).			
CBI? ☐ Yes Est.? ☐ Yes B.3.22. Total *lump sum* (2004-2008) payments associated with securing the leases other than those to mineral rights owners, such as those to surface owner(s) (all leases). Also include total costs incurred to provide surface owners with amenities in lieu of lump sum payments. Do not include royalties, rents, or other recurring payments. ($000)	$_____,_____,000	$_____,_____,000	$_____,_____,000

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	Question	Project _____	Project _____	Project _____
	Lease Development Costs			
CBI? ☐ Yes Est.? ☐ Yes	B.3.23. Total one-time outlays on project development **through December 31, 2007** Include all planning, geological and geophysical costs, and any site development costs not included as drilling costs (see definition of well drilling costs in Appendix D). Exclude all permit costs, drilling costs (as defined in Appendix D), stimulations, recompletions, and any costs for water management systems included in Part C). Note: 2008 data is requested later. ($000).	$_____,____,000	$_____,____,000	$_____,____,000
CBI? ☐ Yes Est.? ☐ Yes	B.3.24. Total costs of all well drilling through December 31, 2007 (through tophole equipment, e.g., Christmas tree); see definition of drilling costs in Appendix D ($000). Do not include recompletions. Note: 2008 data is requested later.	$_____,____,000	$_____,____,000	$_____,____,000
CBI? ☐ Yes Est.? ☐ Yes	B.3.25. Total costs of permit application fees and associated costs to prepare permit applications (e.g., one-time costs to perform permit-related studies, etc.) through end of 2007. (Do not include ongoing costs of monitoring, recordkeeping, and reporting or any costs related to produced water management permitting, e.g., NPDES or UIC permits, covered in Part C.) ($000)	$_____,____,000	$_____,____,000	$_____,____,000
	Project Development Schedule			
CBI? ☐ Yes Est.? ☐ Yes	B.3.26. Year site preparation work began (e.g., 2004).			
CBI? ☐ Yes Est.? ☐ Yes	B.3.27. Year drilling began.			
CBI? ☐ Yes Est.? ☐ Yes	B.3.28. Year water production began.			

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Question	Project _____	Project _____	Project _____
CBI? ☐ Yes Est.? ☐ Yes B.3.29. Year CBM gas production began (do not include conventional gas or oil, if applicable).			
CBI? ☐ Yes Est.? ☐ Yes B.3.30. Year of peak water production (NA if water production has not yet peaked).			
CBI? ☐ Yes Est.? ☐ Yes B.3.31. Water produced in peak year (bbls) (NA if water production has not yet peaked).	_____ bbls	_____ bbls	_____ bbls
CBI? ☐ Yes Est.? ☐ Yes B.3.32. Year of peak gas production (CBM and conventional if applicable) (NA if gas production has not yet peaked).			
CBI? ☐ Yes Est.? ☐ Yes B.3.33. Gas produced in peak year (MMBtu) (CBM and conventional, if applicable) (NA if gas production has not yet peaked).	_____ MMBtu	_____ MMBtu	_____ MMBtu
Operating and Maintenance Costs of Project			
CBI? ☐ Yes Est.? ☐ Yes B.3.34. In 2004 through 2007, what were your O&M costs for this project by year? Include any regularly recurring costs, such as labor and energy costs, lease rental costs, annual payments to surface owners, or recurring costs associated with permits (e.g., monitoring, recordkeeping and reporting or other such payments) that are not related to produced water management. Exclude all costs of produced water management covered in Part C. Also exclude any costs of workovers, stimulations, recompletions, or other activities if these are considered *unusual expenditures* and reported in Questions B.3.35 or B.3.44 (see definition of *unusual expenditures* in the instructions to Table B -4 or in the Part D, Definition of Key Terms). If your project was not active in a year shown, please indicate with NA. ($000)	2004: $_____,_____,000 2005: $_____,_____,000 2006: $_____,_____,000 2007: $_____,_____,000	2004: $_____,_____,000 2005: $_____,_____,000 2006: $_____,_____,000 2007: $_____,_____,000	2004: $_____,_____,000 2005: $_____,_____,000 2006: $_____,_____,000 2007: $_____,_____,000

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	Question	Project _____	Project _____	Project _____
	Other Expenditures Associated with Project			
CBI? ☐ Yes Est.? ☐ Yes	B.3.35. What was the total cost of workovers, stimulations, and recompletions through year end 2007 ($000)? If not incurred, indicate 0. If any of these activities is considered routine O&M and was included in Question B.3.34, indicate NA: Workovers Stimulations Recompletions	$_____,_____,000 $_____,_____,000 $_____,_____,000	$_____,_____,000 $_____,_____,000 $_____,_____,000	$_____,_____,000 $_____,_____,000 $_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes	B.3.36. Total number of such activities through year end 2007. If not incurred indicate 0. If any of these activities is considered routine O&M and was included in Question B.3.34, indicate NA: Workovers Stimulations Recompletions	_____ _____ _____	_____ _____ _____	_____ _____ _____
CBI? ☐ Yes Est.? ☐ Yes	B.3.37. Were any one-time outlays on *unusual expenditures* for amortized items incurred as of year end 2007 on this project that were not included in development or drilling costs (Questions B.2.23 and B.2.24) or in B.3.35 as stimulations and recompletions? (See definition of *unusual expenditures* above in instructions to Table B -4.)	☐ Yes. Continue with Question B.3.38. ☐ No. **Skip to Question B.3.41.**	☐ Yes. Continue with Question B.3.38. ☐ No. **Skip to Question B.3.41.**	☐ Yes. Continue with Question B.3.38. ☐ No. **Skip to Question B.3.41.**
CBI? ☐ Yes Est.? ☐ Yes	B.3.38. If you incurred *unusual expenditures* that were amortized, what were they for? If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____

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Question	Project _____	Project _____	Project _____
CBI? ☐ Yes Est.? ☐ Yes B.3.39. When did these *unusual expenditures* that were amortized occur (Year, e.g., 2004)? If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____
CBI? ☐ Yes Est.? ☐ Yes B.3.40. What was your one-time total outlay on these *unusual expenditure* amortized items? ($000) If more space is needed, please use the comments page at the end of this section.	$_____,_____,000 $_____,_____,000 $_____,_____,000	$_____,_____,000 $_____,_____,000 $_____,_____,000	$_____,_____,000 $_____,_____,000 $_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes B.3.41. Were any other *unusual expenditures* for O&M incurred as of year end 2007 on this project that you excluded in Question B.3.34 (O&M costs) but did not include in Question B.3.35 (workovers, stimulations, recompletions)? Do not include produced water costs reported in Part C. See definition of *unusual expenditures* in instructions to Table B -4.	☐ Yes. Continue Question B.3.42. ☐ No. **Skip to Question B.3.45 (Table B -5).**	☐ Yes. Continue Question B.3.42. ☐ No. **Skip to Question B.3.45 (Table B -5).**	☐ Yes. Continue Question B.3.42. ☐ No. **Skip to Question B.3.45 (Table B -5).**
CBI? ☐ Yes Est.? ☐ Yes B.3.42. If you incurred *unusual expenditures* for O&M costs, what were they for? If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____
CBI? ☐ Yes Est.? ☐ Yes B.3.43. When did these *unusual expenditures* for O&M occur (Year, e.g., 2004)? If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____
CBI? ☐ Yes Est.? ☐ Yes B.3.44. How much did these *unusual expenditures* for O&M cost? ($000) If more space is needed, please use the comments page at the end of this section.	$_____,_____,000 $_____,_____,000 $_____,_____,000	$_____,_____,000 $_____,_____,000 $_____,_____,000	$_____,_____,000 $_____,_____,000 $_____,_____,000

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Table B -5 requests information about your project in 2008. Note that good faith estimates, including averages or typical values, where information is difficult to quantify are acceptable. Please note if you have provided an estimate, where applicable, in the box to the far left shown as "Est." **Instructions:** Respond to questions for **all projects**, regardless of when the project began development or when you acquired the project. Report large dollar amounts in nearest thousands of dollars where indicated (i.e., if fixed operating costs were $1,253,779, please report as $1,254,000; zeroes have been provided already). **Note: if you have less than 100 percent working interest, provide the financial information for the *entire* project, not just your share.**

Remember to exclude all produced water management costs covered in Part C from Table B -5.

One term that EPA uses in this table is *unusual expenditures*. There might be two types of unusual expenditures—those that are amortized (i.e., capitalized) and those that are expensed (i.e., generally considered a part of O&M but the expenditure *does not occur in every year* and is a relatively large percentage of O&M). For the purposes of this survey, an unusual expenditure is defined as:

1) An expenditure that does not occur every year and that is more than 10 percent of O&M (e.g., major storm damage causes large outlay for repairs); or

2) A capitalized one-time or capital cost not considered a lease acquisition or development cost (e.g., construction of a septic system or a building not directly associated with production) and is not a cost covered in Part C.

If you are uncertain of which cost category any of your expenditures belong, you can provide the expenditure(s) with a description in the comments section, or you can contact the EPA help line.

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Table B-5. Current (2008) Operations at Your Projects

	Question	Project _____	Project _____	Project _____
	General Information			
CBI? ☐ Yes Est.? ☐ Yes	B.3.45. If this is a single lease project, indicate type of lease (fee, federal, state, tribal, other) and **skip to Question B.3.47**. Otherwise indicate NA and answer B.3.46.			
CBI? ☐ Yes Est.? ☐ Yes	B.3.46. If this is a unit or multi-lease project, list the number of each type of lease.	_____ Fee _____ Federal _____ State _____ Tribal _____ Other	_____ Fee _____ Federal _____ State _____ Tribal _____ Other	_____ Fee _____ Federal _____ State _____ Tribal _____ Other
	2008 Drilling Expenditures			
CBI? ☐ Yes Est.? ☐ Yes	B.3.47. What was the total cost of all well drilling in this project in 2008 (excluding recompletions)? See definition of drilling cost in Appendix D. ($000)	$_____,_____,000	$_____,_____,000	$_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes	B.3.48. What was the total number of all wells drilled in this project in 2008 (excluding recompletions)?			
	2008 Project Development Costs			
CBI? ☐ Yes Est.? ☐ Yes	B.3.49. What was the total outlay on all activities related to project development in 2008? Exclude drilling costs, stimulation costs and any produced water management costs that are reported in Part C. Also exclude any lease acquisition costs if included in Table B -4. ($000)	$_____,_____,000	$_____,_____,000	$_____,_____,000

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Question	Project _____	Project _____	Project _____
2008 Operating and Maintenance Costs of Project			
CBI? ☐ Yes Est.? ☐ Yes B.3.50. What were your 2008 total operating and maintenance costs of gas production? Include any regularly recurring costs, such as labor and energy costs, lease rental costs, annual payments to surface owners, or recurring costs associated with permits (e.g., monitoring, recordkeeping and reporting or other such payments) that are not related to produced water management. Exclude all costs of produced water management covered in Part C. Also exclude any costs of workovers, stimulations, recompletions, or other activities if these are considered *unusual expenditures* and reported in Questions B.3.52 or B.3.58 (see definition of *unusual expenditures* in the instructions to Table B -5 or in the Part D, Definition of Key Terms). ($000).	$_____,_____,000	$_____,_____,000	$_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes B.3.51. In 2008, please estimate the percentage of O&M costs that would have been incurred had the project been temporarily shut in throughout the year. This factor should account for any labor to check on equipment, any annual payments to surface owners, leasehold payments, permit costs not related to produced water management or other expenditures that might occur regardless of production. EPA will assume this percentage is 5 percent of total 2008 O&M unless you specify otherwise.	☐ We estimate _____% ☐ We accept the 5% estimate	☐ We estimate _____% ☐ We accept the 5% estimate	☐ We estimate _____% ☐ We accept the 5% estimate
Other Expenditures Associated with Project			
CBI? ☐ Yes Est.? ☐ Yes B.3.52. What was the total cost of workovers, stimulations, and recompletions in 2008 ($000)? If not incurred, indicate 0. If any of these activities is considered routine O&M and was included in Question B.3.50, indicate NA: Workovers	$_____,_____,000	$_____,_____,000	$_____,_____,000
Stimulations	$_____,_____,000	$_____,_____,000	$_____,_____,000
Recompletions	$,_____,_____,000	$,_____,_____,000	$,_____,_____,000

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Question	Project _____	Project _____	Project _____
CBI? ☐ Yes Est.? ☐ Yes B.3.53. Were any one-time outlays on *unusual expenditures* for amortized items incurred on this project in 2008 that were not included in development or drilling costs (Questions B.3.47 or B.3.49) or in Question B.3.52 under stimulations or recompletions? (See definition *of unusual expenditures* in instructions to Table B -5.) Exclude any costs for produced water management that are included in Part C.	☐ Yes. Continue with Question B.3.54. ☐ No. **Skip to Question B.3.56.**	☐ Yes. Continue with Question B.3.54. ☐ No. **Skip to Question B.3.56.**	☐ Yes. Continue with Question B.3.54. ☐ No. **Skip to Question B.3.56.**
CBI? ☐ Yes Est.? ☐ Yes B.3.54. If you incurred *unusual expenditures* for amortized items, what were they for? If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____
CBI? ☐ Yes Est.? ☐ Yes B.3.55. What was the total one-time outlay on these *unusual expenditure* amortized items? ($000) If more space is needed, please use the comments page at the end of this section.	$_____,_____,000 $_____,_____,000 $,_____,_____,000	$_____,_____,000 $_____,_____,000 $,_____,_____,000	$_____,_____,000 $_____,_____,000 $,_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes B.3.56. Were any other *unusual expenditures* for O&M incurred on this project as of year end 2008 on this project that you excluded in Question B.3.50 (O&M costs) but did not include in Question B.3.52 (workovers, stimulations, recompletions)? Do not include produced water costs reported in Part C. See definition of *unusual expenditures* in instructions to Table B -5.	☐ Yes. Continue with Question B.3.57. ☐ No. **Skip to Question B.3.59.**	☐ Yes. Continue with Question B.3.57. ☐ No. **Skip to Question B.3.59.**	☐ Yes. Continue with Question B.3.57. ☐ No. **Skip to Question B.3.59.**
CBI? ☐ Yes Est.? ☐ Yes B.3.57. If you incurred *unusual expenditures* for O&M, what were they for? If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____
CBI? ☐ Yes Est.? ☐ Yes B.3.58. How much did these *unusual expenditures* for O&M cost? ($000) If more space is needed, please use the comments page at the end of this section.	$_____,_____,000 $_____,_____,000 $,_____,_____,000	$_____,_____,000 $_____,_____,000 $,_____,_____,000	$_____,_____,000 $_____,_____,000 $,_____,_____,000

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Question	Project _____	Project _____	Project _____
2008 Production, Royalties, and Taxes			
CBI? ☐ Yes Est.? ☐ Yes B.3.59. What was the total gas production from this project in 2008? (MMBtu)	_____ MMBtu	_____ MMBtu	_____ MMBtu
CBI? ☐ Yes Est.? ☐ Yes B.3.60. What was the total gas sold from this project in 2008? (MMBtu)	_____ MMBtu	_____ MMBtu	_____ MMBtu
CBI? ☐ Yes Est.? ☐ Yes B.3.61. What was the total gas used by this project in 2008? (MMBtu)	_____ MMBtu	_____ MMBtu	_____ MMBtu
CBI? ☐ Yes Est.? ☐ Yes B.3.62. What was the minimum, average, and maximum wellhead price received for sold gas for this project in 2008? ($.$$/MMBtu)	$_____ min $_____ average $_____ max	$_____ min $_____ average $_____ max	$_____ min $_____ average $_____ max
CBI? ☐ Yes Est.? ☐ Yes B.3.63. What was this project's total water production in 2008? (Provide estimate if this was not measured.) (bbls)	_____ bbls	_____ bbls	_____ bbls
CBI? ☐ Yes Est.? ☐ Yes B.3.64. What was your average working interest share for this project in 2008? (%)	_____ %	_____ %	_____ %
CBI? ☐ Yes Est.? ☐ Yes B.3.65. What was the average gas royalty rate for this project in 2008 (among all parties over all leases, including surface owner if relevant)? (%)	_____ %	_____ %	_____ %
CBI? ☐ Yes Est.? ☐ Yes B.3.66. What were the total severance taxes from this project in 2008? (% or $000)	_____ % $_____,_____,000	_____ % $_____,_____,000	_____ % $_____,_____,000
CBI? ☐ Yes Est.? ☐ Yes B.3.67. Were there any other taxes such as ad valorem or production shares associated with this project? Provide dollar amount and/or percent and describe: _____	_____ % $_____,_____,000	_____ % $_____,_____,000	_____ % $_____,_____,000

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Question	Project _____	Project _____	Project _____
Reserves Information			
CBI? ☐ Yes Est.? ☐ Yes B.3.68. Do you report reserves information to SEC or to DOE using the EIA Form 23 survey?	☐ Yes. Continue with Question B.3.69. ☐ No. **Skip to Question B.3.71.**	☐ Yes. Continue with Question B.3.69. ☐ No. **Skip to Question B.3.71.**	☐ Yes. Continue with Question B.3.69. ☐ No. **Skip to Question B.3.71.**
CBI? ☐ Yes Est.? ☐ Yes B.3.69. What is the estimated remaining proved reserves associated with this project as of December 31, 2008? (Prorate field estimates to project, where necessary, and specify units used and estimation method.) Specify units (e.g., MMcf): _____ Estimation Method: ☐ SEC Definition of Proved Reserves ☐ Other: _____			
CBI? ☐ Yes Est.? ☐ Yes B.3.70. What discount rate and wellhead price was used for this proved reserve estimate?	$_____ at _____ %	$_____ at _____ %	$_____ at _____ %
CBI? ☐ Yes Est.? ☐ Yes B.3.71. **If available**, what is the estimated remaining technically recoverable reserves (year end 2008)? (Prorate field estimates to project, where necessary, and specify units used, e.g. MMcf.) Indicate NA if you do not compute technically recoverable reserves. Specify units (e.g., MMcf): _____			
CBI? ☐ Yes Est.? ☐ Yes B.3.72. **If available**, what is the projected remaining productive life of this project in the technically recoverable reserves estimate? (years)	_____ years	_____ years	_____ years
CBI? ☐ Yes Est.? ☐ Yes B.3.73. What was the cumulative gas production at 2008 year end for this project? Specify units (e.g., MMBtu): _____			
CBI? ☐ Yes Est.? ☐ Yes B.3.74. What was the cumulative water production at 2008 year end for this project (estimate if not measured)? Specify units (e.g., thousand bbls): _____			

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Questions for Project_____

[One copy will be provided for each project in Part A.]

FUTURE COSTS AND REVENUES

Instructions: EPA will need to project costs and revenues of this project over the next 10 years. EPA acknowledges that projections beyond 5 years are very uncertain and will project information beyond the 5 year horizon, unless respondents prefer to provide those estimates themselves. You have several options for providing projection information:

1) Provide your own estimate of costs and revenues at the project over the next 5 years or through the end of your planning horizon (at least 3 years, including 2009, 2010, and 2011) in Table B -6;

2) Accept certain assumptions EPA would plan to make in lieu of using your projections;

3) Provide your 5-year projection in Table B -6 plus an additional 5-year projection beyond the fifth year, which you can attach to the questionnaire separately;

4) Use a combination of any of these.

For respondents choosing not to do their own projections or choosing only to project certain information, EPA will rely on state information on production for the wells in your project to determine a production profile, where possible, information provided by other respondents to this questionnaire, and/or best professional judgment. For any item you feel that EPA's assumptions will not work for your project, you can fill out those items in the 5-year projection table (or provide a 10-year projection, if you choose) for any of Questions B.3.87 to B.3.102 in Table B -6. Please check which overall option you have chosen and follow the instructions associated with the options you have selected.

CBI? ☐ Yes

B.3.75. Please indicate how you would like to handle projections of project data requested in the remainder of this questionnaire. Check any that apply.

☐ We request EPA make some or all of these projections based on the information provided below in Questions B.3.76 through B.3.86 for any items for which we have not provided a projection for in Table B -6. **Instructions:** Please complete Questions B.3.76 through B.3.86 for this project. You do not have to complete Table B -6, which asks for up to 5 years of year-by-year projections, unless you have opted out of certain assumptions and have chosen to provide a projection for one or more line items.

☐ We will be skipping Questions B.3.76 through B.3.86 and will provide year-by-year projection data for three to five years in Table B -6. **Instructions:** Please fill out Table B -6 for as many years as you have in your planning horizon. EPA is requesting your best judgment on these projections; the Agency is aware that projections are not certain. If the number of years requested exceeds your planning horizon, please indicate with NA in any remaining years. You may provide projections that include an assumption for inflation but provide that assumption in Question B.3.102.

☐ We have attached additional projections out to 10 years for some or all of the information shown in Table B -6 to this questionnaire. If your projections include an assumption for inflation, make sure to show that assumption explicitly in your attachments.

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Instructions: EPA will make projections from 2008 or beyond your planning horizon (as shown in your responses to Table B -6) based on your answers to the following questions, your reported 2008 data, and any information provided in Table B -6. Please provide information to the extent possible without considering the effects of inflation. If this is not possible, please note the inflation rate inherent in your answers in the Comments Section in Question B.3.102. If you have provided some projections in Table B -6, EPA will assume further projections based on your answers to the following questions and/or either your last year's reported values in Table B -6 or the patterns seen in the projections provided (assuming at least 3 years' projections have been provided). For any of the Questions B.3.76 through B.3.86 that have not been answered and for which alternative information has not been provided in Table B -6 or attached to this questionnaire, EPA will assume you have agreed to EPA's approach.

For the few projects where conventional oil is also produced, EPA will make the oil production projections and price projections, unless you provide oil production curves and/or other information with your questionnaire.

CBI? ☐ Yes

B.3.76. Please provide the numbers of wells you plan to drill in this project over the next 5 years by year. If any years are beyond your planning horizon, please indicate with "NA."

2008 _____ 2011 _____

2009 _____ 2012 _____

2010 _____

CBI? ☐ Yes

B.3.77. In what year do you estimate drilling will be completed for this project, based on your current plans (and barring any changes in regulations, changes in your assumptions about future gas prices, etc.)

_____

CBI? ☐ Yes

B.3.78. EPA will use estimated costs of drilling based on data collected in this questionnaire of the CBM industry, publicly available information, and best engineering judgments as specific to your basin as possible to project drilling costs over 10 years. EPA will also assume drilling costs per well will not change by more than ordinary inflation (estimated as a function of the recent historic Producer Price Index for the oil and gas extraction industry) over the 10-year period (check any that apply):

☐ We agree to this approach.

☐ We would like EPA to use the following average cost per well for drilling:

$_____ per well ($2008)

☐ We would prefer EPA to consider the following factor **incremental to inflation** to represent drilling cost increases greater than inflation over time at our project:

$_____ % per year

CBI? ☐ Yes

B.3.79. At this point in time, using your current assumptions about wellhead prices, how much longer would you expect this project to produce economically?

☐ We are planning to shut in this year.
☐ From one to 3 years.
☐ More than 3 years but less than or equal to 5 years.
☐ More than 5 years but less than or equal to 8 years.
☐ More than 8 years but less than or equal to 10 years.
☐ More than 10 years.
☐ Unknown.

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CBI? ☐ Yes

B.3.80. EPA will use gas production data found in state reported production data to create gas production profiles for this project. Note that EPA has little to no historic gas production information from Indiana and Illinois and very dated information from Pennsylvania, so production curves from operators in these states would be especially appreciated. If historic gas production data for this project are not publicly available, or if your project is too new to provide much information to create a production profile, EPA will use information that might be generated by this questionnaire considered likely to be most representative of your project, general information on gas production profiles from the state or other published sources, and, if necessary, professional judgment or information from other, similar basins (if relevant) to create the gas production profile from this project.

- ☐ We agree to this approach.
- ☐ We have attached a gas production curve for this project.
- ☐ We have attached a gas production curve for a typical well in this project.
- ☐ We have projected our gas volumes for this project in Table B -6.
- ☐ Other approach (provide information in comments section).

CBI? ☐ Yes

B.3.81. EPA will use water production data found in state reported production data to create produced water production profiles for this project. Note that EPA does not have any well-specific or lease-specific produced water production information from state agencies in the following states: Arkansas, Kansas, Illinois, Indiana, Ohio, Oklahoma, and West Virginia. Also, if water reporting is voluntary and you do not report water to your state agency, EPA will not have this information. Production curves, or any other production data, from operators in states where production data might be missing would be especially appreciated If historic water production data for this project are not publicly available, or if your project is too new to provide much information to create a production profile, EPA will use information that might be generated by this questionnaire considered likely to be most representative of your project, general information on water production profiles from the state or other published sources, and, if necessary, professional judgment or information from other states in the same or similar basins (if relevant) to create the water production profile from this project.

- ☐ We agree to this approach.
- ☐ We have attached a water production curve for this project.
- ☐ We have attached a water production curve for a typical well in this project.
- ☐ We have projected our water volumes for this project in Table B -6.
- ☐ Other approach (provide information in comments section)

CBI? ☐ Yes

B.3.82. EPA will use frequency of workovers, stimulations, and recompletions based on data collected in this questionnaire of the CBM industry, publicly available information, and best engineering judgments as specific to your basin as possible to project such activities in EPA's 10-year projection:

- ☐ We agree to this approach.

- ☐ We prefer to provide EPA with workover frequencies specific to our project. On average, a well in this project is worked over:

  _____ time(s) per 10-year period (note that fractions are acceptable).

- ☐ We prefer to provide EPA with stimulation frequencies specific to our project. On average, a well in this project is stimulated:

  _____ time(s) per 10-year period (note that fractions are acceptable).

- ☐ We prefer to provide EPA with recompletion frequencies specific to our project. On average, a well is recompleted:

  _____ time(s) per 10-year period (note that fractions are acceptable).

CBI? ☐ Yes

B.3.83. EPA will use estimated costs of workovers, stimulations, and recompletions based on data collected in this questionnaire of the CBM industry, publicly available information, and best engineering judgments as specific to your basin as possible to project costs of such activities in EPA's 10-year projection:

☐ We agree to this approach.

☐ We prefer to provide EPA with workover costs specific to our project.

Average workover cost per well ($2008): $_____

☐ We prefer to provide EPA with stimulation costs specific to our project.

Average stimulation cost per well ($2008): $_____

☐ We prefer to provide EPA with recompletion costs specific to our project.

Average recompletion cost per well ($2008): $_____

CBI? ☐ Yes

B.3.84. EPA will use the range and average well head prices reported for your project, along with similar information from other projects in the vicinity of your project, DOE projections of wellhead prices from the current EIA's Annual Energy Outlook, historic gas prices at Henry Hub, and other publicly available information to project wellhead gas price over the next 10 years at your project. EPA will take into account basin-specific infrastructure projections, well drilling projections, and other information to identify trends in future basin differentials. Sensitivity analyses will also be run using low and high wellhead prices based on DOE's low and high wellhead price projections.

☐ We agree to this approach.
☐ We have provided a projection of wellhead price in Table B -6.
☐ We have provided additional information in comments that we think should be used in computing this project's projected wellhead price.

CBI? ☐ Yes

B.3.85. Using the percentage provided in Question B.3.51 to split 2008 O&M costs (excluding produced water management costs) between fixed and variable costs, EPA will assume your existing variable O&M costs for this project (estimated on a per MMBtu basis) and your existing fixed costs (estimated on a per-year basis) will not vary over the 10-year projection, assuming no inflation.

☐ We agree to this approach.
☐ We have provided a projection of O&M costs for this project (excluding produced water management) in Table B -6.
☐ We have provided additional information in comments that we think should be used in computing this project's projected O&M costs for this project.

CBI? ☐ Yes

B.3.86. Please use the space below to add any additional comments you think might be useful to EPA in understanding what issues might affect costs in the next few years, particularly changes to state regulations that may be pending, competition for drilling rigs, changes in infrastructure availability, changes to royalty rates or severance, etc.

_____

_____

_____

_____

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If you will not be continuing with Table B -6, please proceed to Part C. of this questionnaire. Note: you do not need to indicate whether the items in Table B -6 are estimates; EPA will assume all entries are estimates and acknowledges that such estimates are speculative.

Report large dollar amounts in nearest thousands of dollars where indicated (i.e., if additional capital expenditures are expected to be $1,253,779, please report as $1,254,000; zeroes have been provided already). If you are providing information on a project that also produces conventional oil, and wish to provide projections of oil production and oil prices, please do so in an attachment or in the comments section in Question B.3.103.

Remember to exclude all produced water management costs covered in Part C from Table B -5.

One term that EPA uses in this table is *unusual expenditures*. There might be two types of unusual expenditures—those that are amortized (i.e., capitalized) and those that are expensed (i.e., generally considered a part of O&M but the expenditure *does not occur in every year* and is a relatively large percentage of O&M). For the purposes of this survey, an unusual expenditure is defined as:

1) An expenditure that does not occur every year and that is more than 10 percent of O&M (e.g., major storm damage causes large outlay for repairs); or

2) A capitalized one-time or capital cost not considered a lease acquisition or development cost (e.g. construction of a septic system or a building not directly associated with production) and is not a cost covered in Part C.

If you are uncertain of which cost category any of your expenditures belong, you can provide the expenditure(s) with a description in the comments section, or you can contact the EPA help line.

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Table B-6. Projections of Costs and Production over 5 Years

CBI?	Question	2009	20010	2011	2012	2013
☐ Yes	B.3.87. What do you estimate your total operating and maintenance costs of gas production will be in 2009-2013? Include any regularly recurring costs, such as labor and energy costs, lease rental costs, annual payments to surface owners, or recurring costs associated with permits (e.g., monitoring, recordkeeping and reporting or other such payments) that are not related to produced water management. Exclude all costs of produced water management covered in Part C. Also exclude any costs of workovers, stimulations, recompletions, or other activities if these are considered *unusual expenditures* and reported in Questions B.3.91 or B.3.96 (see definition of *unusual expenditures* in the instructions to Table B -6 or in the Part D, Definition of Key Terms). ($000).	$____,____,000	$____,____,000	$____,____,000	$____,____,000	$____,____,000
	Drilling Expenditure Schedule					
☐ Yes	B.3.88. Estimated number of wells drilled annually (excluding recompletions).	_____	_____	_____	_____	_____
☐ Yes	B.3.89. Estimated total drilling costs incurred, excluding recompletions, by year. (See definition of drilling costs in Appendix D.) ($).	$____,____,000	$____,____,000	$____,____,000	$____,____,000	$____,____,000

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Question	2009	20010	2011	2012	2013
Additional Expenditures					
CBI? ☐ Yes B.3.90. Estimated number of the following activities: (if not expected to occur indicate 0. If any of these activities is considered routine O&M and was included in Question B.3.87 indicate "NA"): Workovers Stimulations Recompletions					
CBI? ☐ Yes B.3.91. Estimated total cost ($000) of the following activities in each year (if not expected to occur indicate 0. If any of these activities is considered routine O&M and was included in Question B.3.87 indicate "NA"): Workovers Stimulations Recompletions	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000
CBI? ☐ Yes B.3.92. Estimated additional project development expenditures incurred (excluding well drilling costs, costs reported in Question B.3.91, and produced water gathering and management costs), by year ($000).	$___,___,000	$___,___,000	$___,___,000	$___,___,000	$___,___,000
CBI? ☐ Yes B.3.93. Estimated new permit or permit renewal costs (excluding produced water management related permits, such as NPDES and UIC permits).	$___,___,000	$___,___,000	$___,___,000	$___,___,000	$___,___,000

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Question	2009	20010	2011	2012	2013
☐ CBI? Yes B.3.94. Total one-time outlays on *unusual expenditures* for amortized items in each year that are not included as development or drilling costs in Questions B.3.89 or B.3.92 or included as stimulation or recompletion costs in Question B.3.91. (See definition of *unusual expenditures* above in instructions to Table B -6). Exclude those costs that are associated with produced water management as covered in Part C. If more space is needed, please use the comments page at the end of this section.	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000
☐ CBI? Yes B.3.95. Description of *unusual expenditures* on amortized items included in B.3.94 above. If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____
☐ CBI? Yes B.3.96. *Other unusual expenditures* for O&M not included in Question B.3.87 (O&M costs) or in Question B.3.91 (workovers, stimulations, recompletions) (See definition *of unusual expenditures* above in instructions to Table B -6). Exclude those costs that are associated with produced water management as covered in Part C. If more space is needed, please use the comments page at the end of this section.	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000	$___,___,000 $___,___,000 $___,___,000

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Question	2009	20010	2011	2012	2013
CBI? ☐ Yes B.3.97. Description of *unusual expenditures* included in B.3.96 above. If more space is needed, please use the comments page at the end of this section.	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____
Production Schedule					
CBI? ☐ Yes B.3.98. What is your projection of gas production at this project? (MMBtu/yr)	$_____ MMBtu	$_____ MMBtu	$_____ MMBtu	$_____ MMBtu	$_____ MMBtu
CBI? ☐ Yes B.3.99. What is your projection of water production at this project? (bbls/yr)	$_____ bbls	$_____ bbls	$_____ bbls	$_____ bbls	$_____ bbls
CBI? ☐ Yes B.3.100. What wellhead price of gas have you used to project gas production? ($.$$/MMBtu)	$_____ MMBtu	$_____ MMBtu	$_____ MMBtu	$_____ MMBtu	$_____ MMBtu
CBI? ☐ Yes B.3.101. What is your projection of severance and other production taxes? ($000)	$_____,_____,000	$_____,_____,000	$_____,_____,000	$_____,_____,000	$_____,_____,000
CBI? ☐ Yes B.3.102. What inflation rate are you using in these projections (including expenditure projections)? If using more than one inflator for different cost items, use the comments section to specify (%).					

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B.3.103. **Comments on Part B.** Please cross-reference your comments by question number. **If you need additional space, please photocopy this page before writing on it**, and number each copy in the space provided.

	Question Number	Comment
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		
CBI? ☐ Yes		

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PART C. PRODUCED WATER MANAGEMENT INFORMATION

INSTRUCTIONS FOR PART C (Technical Portion of Questionnaire)

Read all question-specific instructions and definitions of key terms (Part D).

Data may be submitted as clearly marked electronic attachments to this questionnaire.

Complete this part of the questionnaire for only the projects listed in Part A.

You may need to make copies of some PAGES before responding. Some pages in Part C of the questionnaire will need to be photocopied before you respond. Indicate how many copies of the PAGE you are submitting by completing the entry "Copy ___ of ___" in the top right corner.

Not all questions will be applicable to every operator. EPA prepared Part C of the questionnaire to be applicable to a variety of operators; therefore, not all of the questions will apply to every operator. Complete each relevant item in the questionnaire.

Mark responses for each question. Fill in the appropriate response(s) to each question. Please use **black ink** or **type** in the spaces provided. Answer the questions in sequence unless you are directed to SKIP. Do not leave any entry blank. If the answer is zero, write "0" or "zero". If a question is not applicable to your operations, write "NA." EPA intends that responses to all questions be based upon available data and information. Please provide best estimates when exact data are not available. If you provide an estimate, note the methods that were used to make the estimate, along with the section and question number that the estimate refers, on the Comments page at the end of Part C.

You are not required to provide a block flow diagram for each Produced Water Management System in Section 2. A narrative description of the Produced Water Management System is sufficient. Examples of acceptable block flow diagrams and narrative descriptions are provided in Section 2.

You are not required to perform new or non-routine tests or measurements solely for the purpose of responding to this questionnaire. EPA intends that responses to all questions be based upon available data and information. In the event that exact data are not available, please provide best engineering estimates and note the methods that were used to make the estimates on the Comments page located at the end of each section.

Include any clarifying attachments. If additional attachments are required to clarify a response, please place the associated question number and your operator identification number in the top right corner of each page of the attachments. The following list contains examples of items that may be included as attachments to this questionnaire:

– Operations brochure, pamphlet, general description;
– Produced water treatment flow diagrams;
– Hard copy or electronic water quality data collected from water monitoring locations;
– Produced water treatment operation and maintenance logs; and
– Pollution prevention or management practices policies or data.

Pay close attention to the measurement units requested (e.g., barrels per day, milligrams per liter). Report answers in the units that are specified, unless the question requires you to specify the units.

Indicate information that should be treated as confidential. You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Note that you may be required to justify any claim of confidentiality at a later time. See the CONFIDENTIAL BUSINESS INFORMATION section on page 3.

Questions? If you have any questions regarding the completion of this questionnaire, see the QUESTIONNAIRE ASSISTANCE section on page 2.

Operator ID: _____

SECTION 1: GENERAL OPERATOR INFORMATION

GENERAL INSTRUCTIONS FOR SECTION 1

This section of the questionnaire collects operator and company address and contact information.

Indicate information that should be treated as confidential by checking the Confidential Business Information (CBI) box next to each question number with responses containing CBI. Any response where "CBI" is not checked will be considered non-confidential unless you have claimed all CBI-eligible data as CBI at the beginning of the questionnaire. Refer to the instructions given in the CONFIDENTIAL BUSINESS INFORMATION section on page 3 for additional information regarding EPA's confidentiality procedures set forth in 40 CFR Part 2, Subpart B.

CBI? ☐ Yes

C.1.1. Provide the name, title, telephone and facsimile numbers, and e-mail address of the primary contact at your operation for information supplied in Part C. of this questionnaire.

_____ ( ) _____
Primary Contact Name Telephone Number

_____ ( ) _____
Primary Contact Title Facsimile Number

_____ Convenient time to call between:
Email Address _____ ☐ am / ☐ pm and
_____ ☐ am / ☐ pm (Eastern Time)

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

SECTION 2: PRODUCED WATER MANAGEMENT SYSTEM GENERAL QUESTIONS

GENERAL INSTRUCTIONS FOR PART C SECTION 2

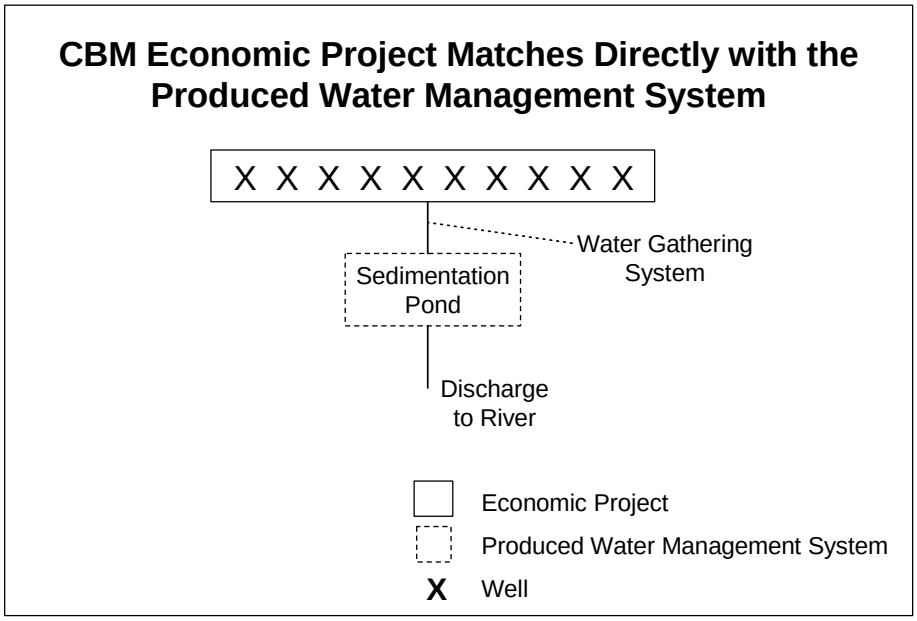
The following questions request general information on the components and costs of the produced water gathering system(s) and the Produced Water Management System(s) used for the project(s) listed in Part A. These data will be used to evaluate the costs and benefits of various CBM water management arrangements.

> **Produced Water Management System (PWMS)** - For the purposes of this questionnaire, Produced Water Management System is defined as a system that is managed by the operator as a single unit for produced water management. Produced water management may include different treatment, transfer to disposal locations, and/or reuse practices. The Produced Water Management System may treat water from a lease, field, project, or plan of development (POD). Water discharge permits, land application permits, and applications for permits to drill (APD) typically use one of these terms to define the well grouping. Note that the Produced Water Management System can have multiple disposal options but it is managed as a single unit. For example, an operator may use a combination of stock tanks, irrigation, and storage ponds on a single Produced Water Management System. Also note that the Produced Water Management System may serve the same or different wells from the CBM project defined in Part A. Finally, for the purposes of this questionnaire, the PWMS does not include the produced water gathering system (e.g., piping or trucking) that is used to transport the produced water between the CBM wellhead and a centralized location (e.g., treatment unit, land application site). For example, produced water gathering pipes are typically installed underground at the same time as the gas gathering pipes.

The following diagrams are designed to help you determine the Produced Water Management Systems that should be addressed in this section of the questionnaire. Please complete a copy of this section for each Produced Water Management System used for the projects listed in Part A. Note that you are not required to provide a block flow diagram for each Produced Water Management System in response to Question C.2.1. A narrative description of the Produced Water Management System is sufficient. Examples of acceptable block flow diagrams and narrative descriptions are provided on pages 7 and 8.

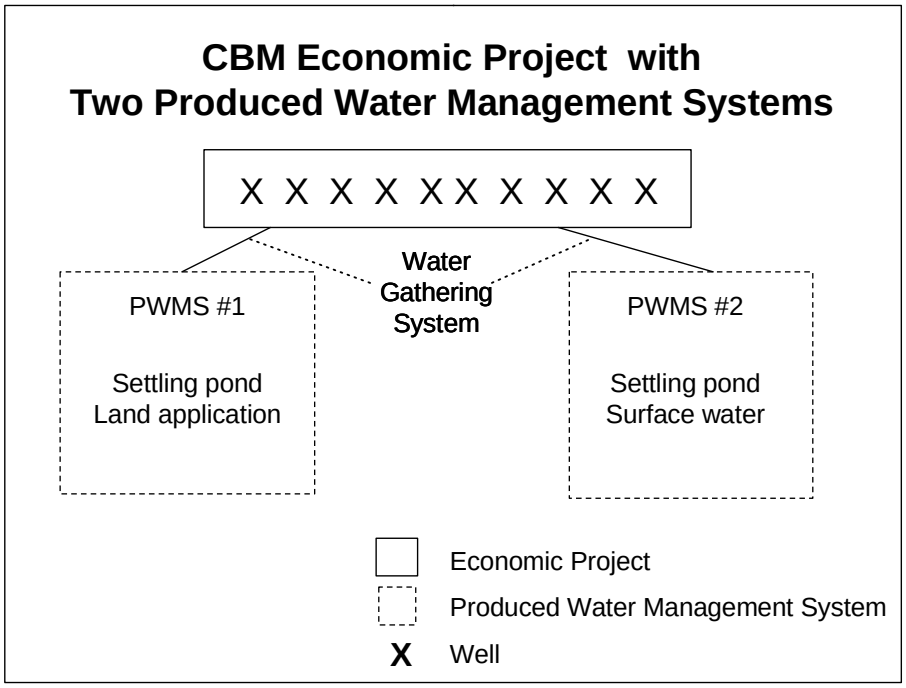
In **Example 1**, the operator is using the same produced water management system for all wells in the CBM project listed in Part A. Therefore, there is a one-to-one match between the CBM economic project and Produced Water Management System. The operator should complete one copy of Part C. Sections 2 and 3 for the Produced Water Management System.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____



Example 1.

In **Example 2**, the operator is using the two Produced Water Management Systems for the wells included in the CBM economic project listed in Part A. The operator should complete two copies of Part C. Section 2 and Part C. Section 3, one for each produced water management scenario used as part of this economic project.

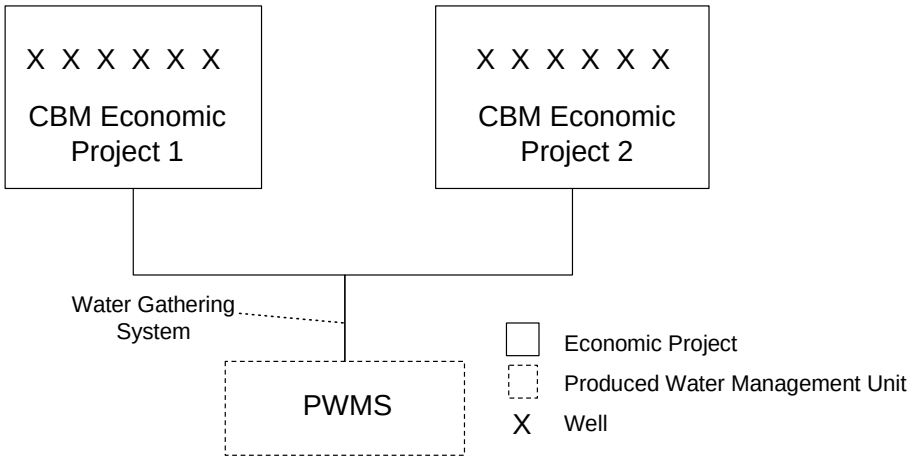


Example 2.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

In **Example 3**, the operator has two economic projects that share the same produced water management system. One of the economic projects, CBM Economic Project 1, was listed in Part A. The operator should have completed Part B., Section 3 for Economic Project 1. The operator did not need to provide information for Economic Project 2 because it was not listed in Part A. The operator should complete one copy of Part C. for the combined produced water management system. In Example 3, the operator will identify the CBM wells and different produced water volumes managed by the PWMS from Project 1 and Project 2.

Multiple Economic Projects Sharing the Same Produced Water Management Systems



Example 3.

For EACH Produced Water Management System you operated in 2008 to manage produced water from the wells listed in Part A, complete a copy of the entire Part C. Section 2 and Section 3. You may need to make multiple copies of these sections. Please enter a Produced Water Management System number or name in the upper right-hand corner of this section. The number you choose could be one you use internally to refer to the project, but can be just a number such as 1, 2, 3, etc., if you use no formal identifier. This information will be used to check that the detailed information provided in this section is linked to the correct Produced Water Management System.

Question C.2.1 requests a block flow diagram or narrative description for each Produced Water Management System. EPA has provided examples to guide you in completing this question.

Questions C.2.2 through C.2.14 request general information on the Produced Water Management System such as how the management system was selected and capital and operating costs.

Questions Error: Reference source not found through C.3.13 request discharge and treatment information for the Produced Water Management System.

Question C.4.3 requests water quality and whole effluent toxicity data.

A comment page is included at the end of this section to clarify responses.

Note that this section was designed to be applicable to a variety of operators. Many of the detailed questions are only applicable to discharge of produced water to surface waters, a POTW, or third party. Please follow the skip patterns noted throughout the section.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

EPA may contact you for additional detailed cost data for the information you provide in this section of the questionnaire.

If you are unsure of how to complete any parts of this section, please refer to the QUESTIONNAIRE ASSISTANCE information on page 2.

CBI? ☐ Yes

C.2.1. For each Produced Water Management System (PWMS), please provide a block diagram (as in the following examples) that shows, or a narrative description that explains, how the produced water was managed from the CBM well field to the PWMS in 2008. Refer to this diagram or narrative as you answer questions throughout this section. Hand drawings are sufficient for this question. Please provide a Produced Water Management System identification number and name for each diagram.

☐ Attached a block diagram.
☐ Attached a narrative description.

The following items should be included on your diagram or discussed in your narrative for each Produced Water Management System:

☐ Name of the CBM Project in Part A that are connected to this PWMS.

☐ Identify the water gathering system (e.g., underground pipes, trucking) that moves produced water from the CBM wellhead to the PWMS.

☐ Name or identification number for this Produced Water Management System. This name or number should be noted in the upper right-hand corner of all pages in this section.

☐ Discharge, disposal, and reuse practices for this Produced Water Management System including the final destination of the produced water.

☐ Individual treatment units prior to discharge, disposal, or reuse. Please show each individual unit on the diagram. For example, if you have two sedimentation ponds, please show each one on the diagram.

☐ Points of chemical addition, along with the chemical name.

☐ Descriptions of any waste streams resulting from CBM produced water treatment (e.g., concentrated brine, ion exchange regeneration wastewater, settled solids).

☐ Destinations for all produced water. Please remember to include evaporation or infiltration.

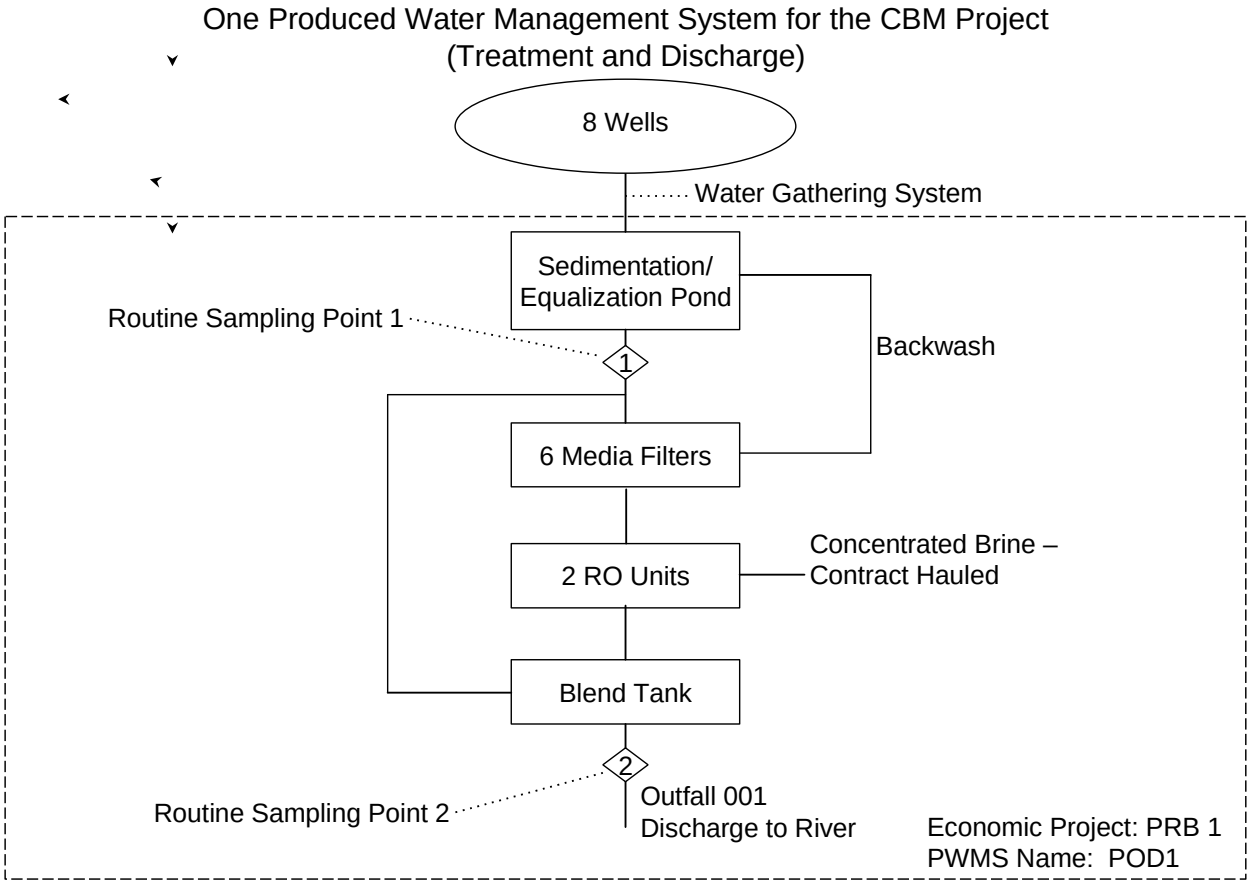
☐ The locations where routine water quality data are collected (you will be asked to provide some of this data in Part C. Section 4).

☐ Please note whether any produced water from conventional oil and gas extraction is commingled with produced water from this CBM project. Please indicate on the diagram or in your narrative description, the volumes or flow rates of the conventional oil and gas extraction produced water as well as the point at which these waters are commingled.

☐ Please note whether any produced water from another CBM project (either yours or another operators) is commingled with produced water from this CBM project. If produced water from another project operated by your company enters this management system, provide the name of the project as provided in your screener survey. Please indicate on the diagram or in your narrative description, the volumes or flow rates of the CBM produced waters that are not from this CBM project as well as the point at which these waters are commingled.

Operator ID: 9999
Project ID from Part A: PRB1
Operator's Name or ID for this Produced Water Management System: POD1

Example 4 illustrates a Produced Water Management System with only one management practice. In this example, you would complete one copy of this section for this Produced Water Management System.



Example 4.

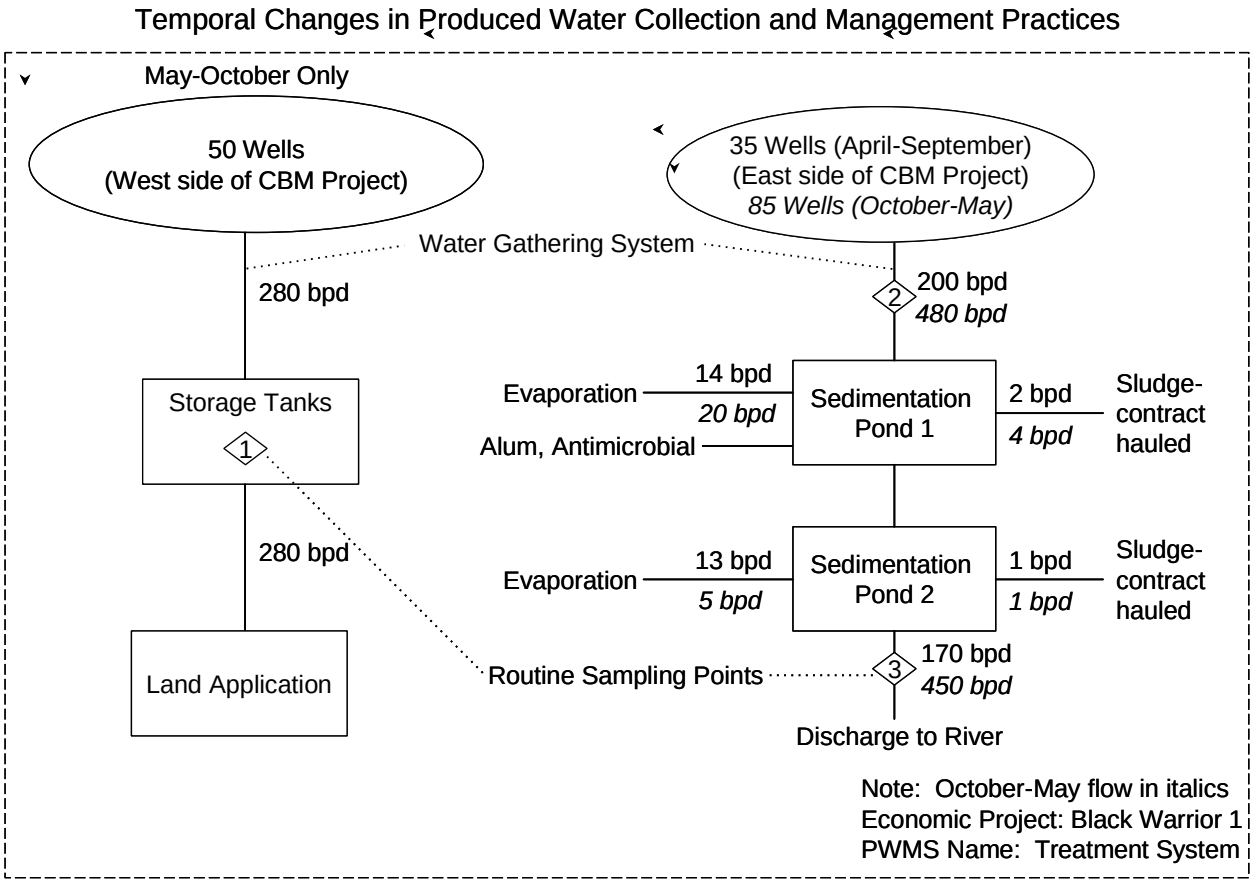
Example 5 is an example of a narrative description for a CBM project with only one PWMS. In this example, you would complete one copy of this section for this Produced Water Management System.

> Produced water from the eight CBM wells in the San Juan POD is piped underground to six storage tanks. Only water from the eight wells enters the storage tanks. The water is trucked from the storage tanks to one of two injection wells. The water is filtered and a biocide is added prior to re-injection. A sample of the water is tested prior to re-injection.

Example 5.

Operator ID: 9900
Project ID from Part A: Black Warrior 1
Operator's Name or ID for this Produced Water Management System: Treatment System 1

Example 6 illustrates a Produced Water Management System with multiple produced water management practices that vary throughout the year. The dates during which each water management practice is in use are shown above that branch of the flow diagram. You should complete two copies of Part C Sections 2 and 3 for this scenario, one for the west side and one for the east side.



Example 6.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

CBI? ☐ Yes

C.2.2. In what year did this Produced Water Management System (PWMS) begin operating? _____

Number of days in operation in 2008:

☐ 365 days; or
☐ _____ days

CBI? ☐ Yes

C.2.3. What was the average daily flowrate or <u>total</u> volume of water treated by this Produced Water Management System in 2008? Please check whether you are providing average daily flowrate or total volume and provide the flowrate or volume and units.

a. Generated by the wells identified in Part A in 2008

☐ Average Daily Flowrate
☐ Total Volume
_____ Please specify the volume units: _____

b. Managed by this PWMS in 2008

☐ Average Daily Flowrate
☐ Total Volume
_____ Please specify the volume units: _____

CBI? ☐ Yes

C.2.4. What percentage of water treated by this Produced Water Management System is from the project from Part A listed at the top of the page:

_____%

CBI? ☐ Yes

C.2.5. **Selection of Management Option**

a. How was the Produced Water Management System designed? (Check ☒ all that apply.)

☐ Input from the surface owner during development of the surface use plan
☐ Work with outside contractor
☐ Other: Please describe _____

b. Who manages the day-to-day operations for the produced water management?

☐ Operator (**Skip to Question C.2.6**)
☐ Landowner (**Skip to Question C.2.6**)
☐ Contractor/third party; please provide company name _____

c. Cost of hiring the contractor/third party for produced water management in 2008. Exclude the costs associated with the water gathering system from the CBM wells to the PWMS.

2008 annual operating and maintenance cost $_____

Minimum quantity of CBM produced water required for contract: _____ bbl
Skip to Question C.2.9.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

CBI? ☐ Yes

C.2.6. **Produced Water Management System Capital Costs –** Please provide the following capital cost information for this Produced Water Management System (e.g., treatment system, land application site). Exclude any costs associated with excavating surface impoundments if the impoundment was converted from other uses, such as drill pits, but do include the costs of conversion. Also exclude the costs associated with installing the water gathering system from the CBM wells to the PWMS. For example, you should exclude the costs of any trucking or installation of any pumps or pipes used to transport produced water from the CBM wells to the PWMS.

a. Capital cost in dollars: $_____
☐ Check this box if your company purchased this PWMS from another company and you do not have this capital cost information. **Skip to Question C.2.6.**

b. Year cost incurred: _____

CBI? ☐ Yes

C.2.7. **Produced Water Management System Operating and Maintenance Costs** – Please provide the costs for this Produced Water Management System (e.g., treatment system, land application site) for 2008. Exclude the costs associated with maintaining the water gathering system from the CBM wells to the PWMS. For example, you should exclude the costs of any trucking or pump or pipe maintenance used for the transport of produced water from the CBM wells to the PWMS. You should include non-produced water transportation costs associated with the PWMS (e.g., contract hauling residuals from the PWMS).

a. 2008 operating and maintenance cost in dollars: $_____

b. Please provide any annual revenue received from operating this Produced Water Management System (e.g., payments from water recipients, payment for treating produced water from another operator) $_____

CBI? ☐ Yes

C.2.8. **Produced Water Gathering and Transportation Questions.** Please provide cost and design information for transporting the produced water from the CBM wells identified in Part A to this PWMS. The produced water gathering system (e.g. piping or trucking) is used to transport the produced water between the CBM wellhead and a centralized location (e.g., treatment unit, land application site).

a. What is the total 2008 volume of water generated from the CBM wells identified in Part A that is piped to this PWMS?

_____ Please specify the volume units: _____

NOTE: You should **skip to Question C.2.8.d** if **all** of the produced water generated from the CBM wells identified in Part A is stored at the CBM wells and subsequently trucked off-site for final disposition (e.g., underground injection, treatment and disposal, land application).

b. What is the capital cost in dollars of the piped water gathering system between the CBM wells identified in Part A and this PWMS?

$_____ Year cost incurred: _____
☐ Check this box if your company purchased this piped produced water gathering system from another company and you do not have this capital cost information. **Skip to Question C.2.8.d.**

c. What is the 2008 operating and maintenance cost in dollars of the piped water gathering system between the CBM wells identified in Part A and this PWMS?

$_____

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

d. Please answer the following questions if you truck produced water from the wells identified in Part A to this PWMS. Otherwise, **skip to Question C.2.9**.

i. Total volume of produced water trucked to this PWMS in 2008:

_____

ii. Total vehicle miles traveled for the truck transport of produced water to this PWMS in 2008:

_____

iii. Total number of days used to truck produced water to this PWMS in 2008:

_____

iv. Average volume capacity of the tanker truck used in 2008 (e.g., 2,000 gal./truck):

_____

v. Total 2008 costs incurred to truck produced water to this PWMS: $

_____

CBI? ☐ Yes

C.2.9. Please indicate the land area occupied by your operations.

	Location	Area	Units
a.	Total Project Area (Part A Project)		
b.	Total PWMS Area		
c.	Total Undeveloped Area		

d. Is the undeveloped area suitable for construction of new or additional wastewater treatment systems?

☐ Yes
☐ No: Provide explanation: _____

_____

_____

CBI? ☐ Yes

C.2.10. Have you ever operated or considered operating a produced water management system other than what is described in this section for the project?

☐ Yes
☐ No (**Skip to Question C.2.12**)

CBI? ☐ Yes

C.2.11. What type of management system did you consider?

_____

_____

_____

_____

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

CBI? ☐ Yes

C.2.12. What were the reasons for not implementing or for stopping the operation of the management system?

_____

_____

_____

_____

CBI? ☐ Yes

C.2.13. Have any monitoring or other studies been conducted to assess the potential impacts of produced water for this Produced Water Management System, such as impacts related to irrigation, impoundment, or surface water discharges? Produced water related impacts may include but are not limited to: changes in soil characteristics, changes in stream flows, changes in aquatic toxicity, and changes in aquatic and riparian species composition.

☐ Yes
☐ No (**Skip** to Part C Section 3)

CBI? ☐ Yes

C.2.14. Indicate the following information about the studies, if known. If there are additional studies, please provide the information in the Comments Section (Question C.4.3).

Title: _____

Date: _____/_____/_____

Title: _____

Date: _____/_____/_____

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

SECTION 3: DETAILED PRODUCED WATER MANAGEMENT AND TREATMENT QUESTIONS

GENERAL INSTRUCTIONS FOR SECTION 3

Questions Error: Reference source not found through C.3.13 request detailed information for the Produced Water Management System. Please see the following tables to identify the questions you should complete.

CBI? ☐ Yes

C.3.1. **Produced Water Destination -** This table provides information on the final destination of the produced water for this Produced Water Management System. Note that EPA will request information on any treatment technologies used prior to discharge in later questions. Check (☒) all that apply.

Table C-7. Final Destination of CBM Produced Water

	Check (☒) All that Apply	Destination
Discharge to Surface Water, POTWs, and Third Parties		
a.	☐	Discharge to surface water (requiring NPDES permit)
b.	☐	Discharge to POTW or third party (e.g., discharge to another operator's treatment system)
Zero Discharge		
c.	☐	Land Application (no crop production)
d.	☐	Land Application (for crop production)
e.	☐	Underground Injection
f.	☐	Evaporation or infiltration pond (with no intended discharge to surface water)
g.	☐	Livestock or Wildlife Watering
h.	☐	Hauled off site
i.	☐	Other (Specify):_____

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Copy _____ of _____

CBI? ☐ Yes

C.3.2. **Cost Information for Each Destination –** Complete a copy of the following table for each produced water destination selected in Question Error: Reference source not found. You should have one copy of this table for each box checked in Table C -7.

Destination Option Selected in Question Error: Reference source not found (Use this row to indicate which destination you are providing information on. You will make multiple copies of this table if you checked more than one destination in Question Error: Reference source not found.)	☐ Discharge to Surface Water ☐ Discharge to POTW or Third Party ☐ Land Application (no crop production) ☐ Land Application (for crop production) ☐ Underground Injection ☐ Evaporation or infiltration pond ☐ Livestock or wildlife watering ☐ Hauled off site ☐ Other: _____
2008 Volume of Produced Water From this PWMS to this Destination	_____ Unit: _____
Maximum Daily Capacity of Produced Water from this PWMS Capable of Going to this Destination:	_____ Unit: _____
Capital Costs % of Total Capital Cost Provided in Response to Question C.2.6 for this destination: _____% (If only one box is checked in Table C -7 then enter 100% above.)	Check (☒) the Components Below that are Included in the Capital Costs: ☐ Tanks ☐ Pumps ☐ Piping/hoses ☐ Outfall structure ☐ Injection well ☐ Pond ☐ Treatment unit ☐ Liner ☐ Land acquisition ☐ Monitoring equipment ☐ Aeration equipment ☐ Land application equipment ☐ Other: _____ ☐ Other: _____
Operation and Maintenance Costs % of Total Operation and Maintenance Cost provided in Response to Question C.2.7: _____%	Check (☒)the Components Below that are Included in the Operation and Maintenance Costs: ☐ Chemicals ☐ Energy: electric ☐ Energy: gas ☐ Energy: oil ☐ Materials ☐ Labor ☐ Other: _____

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Copy _____ of _____

C.3.3. **Residuals Management Information –** Complete a copy of the following table for each type of residual generated by this PWMS. Make sure you indicate in your narrative description or block diagram (see Question C2-1) each type of residual waste generated by this PWMS and the ultimate disposal of the residual.

Residuals Management and Costs **List Type(s) of Residuals Generated (e.g., brine waste from ion exchange unit):** (***Note: If more than one residual is generated by this PWMS, please make one copy of this question for each type of residual generated.)***	Description of Residual Generated and its Source (e.g., brine waste from ion exchange treatment system): _____ Volume (and units) of Residual Generated in 2008: _____ Frequency of Residuals Removal from this PWMS in 2008 (e.g., brine waste tank emptied once per week). _____ Name of Final Destination for this Residual (e.g., ABC Underground Injection Well, Permit No. XYZ): _____ Distance from this PWMS to the Final Destination for this Residual: _____miles Annual 2008 Cost of Disposal for this Residual: $_____ Components of Residual Disposal Cost: ☐ Transportation: Piped ☐ Transportation: Trucked ☐ Disposal Fees ☐ Other (Specify): _____

If you check "Discharge to Surface Water" in Table C -7, please also complete Question C.3.4 and then **skip to Question C.3.7**.

If you check "Discharge to a POTW or Third Party" in Table C -7, please also complete Question C.3.5 and then **skip to Question C.3.7**.

If you check "Land Application (No Crop Production)" or "Land Application (For Crop Production)" in Table C -7, please also complete Question C.3.6 and then **skip to Question C.3.7**.

For all other destinations selected in Table C -7, **skip to Question C.3.7**.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Surface Water Discharge Question Copy _____ of _____

CBI? ☐ Yes

C.3.4. **Surface Water Discharge.** Complete Question C.3.4 if you checked that this Produced Water Management System discharges to surface water in Table C -7. If this Produced Water Management System does not discharge to surface water, **skip to Question C.3.5**. Complete one copy of this question for each surface water discharge permit used in this Produced Water Management System.

a. **General Information on Surface Water Discharge Permit** – Please complete the following table of general information about the surface water discharge permit.

NPDES Permit Number	
Permit Type	☐ General ☐ Individual
Expiration Date (MM-DD-YYYY)	
Stream Monitoring Required?	☐ Yes (Specify frequency: _____) ☐ No
Effluent Monitoring Required?	☐ Yes (Specify frequency: _____) ☐ No
Permit currently being reviewed or modified?	☐ Yes ☐ No

b. **General Information on Outfalls Included in Permit –** Please complete the following table of general information about the outfalls included in the permit listed in part (a) of this question. Make multiple copies if the permit covers more than three outfalls.

i. Outfall Number – List each outfall included in the NPDES permit.

ii. Aeration Equipment– Check (☒) any aeration equipment or other treatment equipment used at the outfall.

iii. Flowrate or Volume Discharged Through Outfall – Please provide the total volume discharged through each outfall in 2008.

iv. Frequency of Discharge – Indicate the frequency of discharge including number of days discharged in 2008.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

Surface Water Discharge Question Copy _____ of _____

Outfall Number	Treatment at Outfall(s)	Flowrate or Volume Discharged Through Outfall (Specify units)	Frequency of discharge
	☐ None ☐ Rip Rap ☐ Atomizer ☐ Sprinkler head ☐ Diffuser ☐ Other Specify: _______________ _______________________	_____________________ Units: ________________	☐ Continuous ☐ Intermittent Number of days of intermittent discharge in 2008 __________________ ☐ Emergency discharge only Number of days of emergency discharge in 2008 __________________
	☐ None ☐ Rip Rap ☐ Atomizer ☐ Sprinkler head ☐ Diffuser ☐ Other Specify: _______________ _______________________	_____________________ Units: ________________	☐ Continuous ☐ Intermittent Number of days of intermittent discharge in 2008 __________________ ☐ Emergency discharge only Number of days of emergency discharge in 2008 __________________
	☐ None ☐ Rip Rap ☐ Atomizer ☐ Sprinkler head ☐ Diffuser ☐ Other Specify: _______________ _______________________	_____________________ Units: ________________	☐ Continuous ☐ Intermittent Number of days of intermittent discharge in 2008 __________________ ☐ Emergency discharge only Number of days of emergency discharge in 2008 __________________

c. **Discharge Permit and Discharge Monitoring Reports.** Please attach a copy of the current surface water discharge NPDES permit. If available, EPA prefers the NPDES permit be submitted in an electronic format (e.g., PDF format). Please report any discharge monitoring report (DMR) data for 2006 through 2008 in Part C Section 4. If available, EPA prefers this DMR data be submitted in an electronic format (e.g., PDF format).

☐ Permit Attached.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
POTW/Third Party Discharge Question Copy _____ of _____

CBI? ☐ Yes

C.3.5. **Discharge to POTW or third party.** Complete Question C.3.5 if you checked that this Produced Water Management System discharges to a POTW or third party in Question Error: Reference source not found. If this Produced Water Management System does not discharge to a POTW or third party, **skip to Question C.3.6**. Complete one copy of this question for each POTW or third party used in this Produced Water Management System.

☐ POTW.
☐ PrOTW.
☐ Other facility.

a. Provide the POTW, PrOTW, or facility name, address, primary contact, and phone number (if applicable).

_____
POTW/PrOTW/Facility Name

_____
Address

_____ _____ _____
City State Zip Code

_____ (____)_____
Primary Contact Name Telephone Number

b. Please attach a copy of the current permit or discharge agreement. Please report any monitoring data in Part C Section 4. If available, EPA prefers data be submitted in an electronic format.

☐ Permit/Discharge Agreement Attached

Continue to Question C.3.6.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

Discharge to Land Application (with or without crop production) Question Copy _____ of _____

CBI? ☐ Yes

C.3.6. **Discharge to Land Application (with or without crop production) –** Complete Question C.3.6 if you checked that this Produced Water Management System discharges to land application in Question Error: Reference source not found. If this Produced Water Management System does not discharge to a land application system, **skip to Question C.3.7**. Complete one copy of this question for each land application system used at this Produced Water Management System.

Land Application (Complete for Irrigation and Non-Irrigation Land Application)		
a.	Area of Land Used for Land Application (acres)	
b.	Describe any criteria on the Produced Water for this Land Application	
c.	Type of Land Application/Irrigation	☐ Above-ground irrigation (e.g., center-pivot) ☐ Sub-surface drip irrigation (SDI) ☐ Other (Specify): _____
d.	Frequency of Application	☐ Continuous ☐ Intermittent: Number of days applied in 2008 _____ Months that the land application occurred in 2008 (e.g., February, March, May) _____

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

Produced Water Treatment

CBI? ☐ Yes

C.3.7. Do you treat produced water to remove pollutants prior to discharge to surface water or POTW/third party?

☐ Yes
☐ No (**Skip to Part C Section 4**)

CBI? ☐ Yes

C.3.8. This table provides direction on how to provide information on the treatment of the produced water for this Produced Water Management System. Check (☒) all that apply. EPA will request more detailed information about treatment of the produced water in later questions.

Table C-8. Treatment of CBM Produced Water

	Check (☐) All that Apply	Type of Treatment Unit	Do you have water quality data for the produced water entering and/or leaving this treatment unit? If so, please provide in Section 4 (water quality section).	Additional Information
a.	☐	Sedimentation Pond (for equalization or suspended solids removal)	☐ Yes ☐ No	Complete Question C.3.9 for each pond.
b.	☐	Ion exchange	☐ Yes ☐ No	Complete Question C.3.10 for each ion exchange unit.
c.	☐	Low-Pressure Filtration (e.g., Hydro-cyclone, Multi-media filtration)	☐ Yes ☐ No	Complete Question C.3.11 for each low-pressure filtration unit.
d.	☐	High-Pressure Filtration (e.g., Reverse Osmosis, Nanofiltration)	☐ Yes ☐ No	Complete Question C.3.12 for each high-pressure filtration unit.
e.	☐	Other (Specify): _____ _____	☐ Yes ☐ No	Complete Question C.3.13 for any additional treatment units not listed elsewhere.

Copy pages as needed to include information on all treatment units checked (☒) in the table above.
Please be sure to enter the Produced Water Management System identification number or name so that EPA can link the information in this section to the correct Produced Water Management System.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Sedimentation Ponds Question Copy _____ of _____

CBI? ☐ Yes

C.3.9. **Sedimentation Ponds –** Complete Question C.3.9 if you checked that this Produced Water Management System uses sedimentation ponds in Table C -8. Also, please indicate the water quality parameters that are removed by this treatment unit and the estimated removal efficiency. If this Produced Water Management System does not use sedimentation ponds, **skip to Question C.3.10**.

Design Capacity (acre-feet)	_____ acre-feet
Volume of Produced Water into Sedimentation Pond in 2008	_____ bbl
Surface Area	_____ acres
Type of Liner and Thickness (if applicable)	☐ Yes – Liner used Specify type and thickness: _____ ☐ No liner
Chemicals added (e.g., coagulants, biocides)	
Capital Cost of Sedimentation Pond and Year of these Costs	$_____ Year:
Initial Bonding Costs and Year of Costs	$_____ Year:
2008 Operating and Maintenance Cost of Sedimentation Pond	$_____

Targeted Water Quality Parameter		
Parameter Name	**Estimated Removal Efficiency**	**Basis/Comments**

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Ion Exchange Question Copy _____ of _____

CBI?
☐ Yes

C.3.10. **Ion Exchange -** Complete Question C.3.10 if you checked that this Produced Water Management System uses ion exchange in Table C -8. Also, please indicate the water quality parameters that are removed by this treatment unit and the estimated removal efficiency. If this Produced Water Management System does not use ion exchange, **skip to Question C.3.11**. Remember to complete one copy of this question for each ion exchange unit used in this Produced Water Management System. Also make sure to complete Question C.3.3 for any brine waste generated.

Design Capacity of Ion Exchange System (bbl/d)	_____ bbl/d
Volume of produced water into Ion Exchange in 2008 (bbl)	_____ bbl
Vendor/Unit Name	
Resin Name/Type	
Average Regeneration Frequency Specify units (e.g., once/hour, once/4 hours, once/day): _____	
Average Resin Life (yrs)	_____ years
Chemicals added (e.g., coagulants, biocides)	
Capital Cost of Ion Exchange Unit	$_____
2008 Operating and Maintenance Cost of Ion Exchange Unit	$_____
Pilot Project	☐ Yes ☐ No

Targeted Water Quality Parameter		
Parameter Name	**Estimated Removal Efficiency**	**Basis/Comments**

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Low-Pressure Filtration Question Copy _____ of _____

CBI? ☐ Yes

C.3.11. **Low-Pressure Filtration –** Complete Question C.3.11 if you checked that this Produced Water Management System uses low-pressure filtration in Table C -8. Also, please indicate the water quality parameters that are removed by this treatment unit and the estimated removal efficiency. If this Produced Water Management System does not use low-pressure filtration, **skip to Question C.3.12**. Remember to complete one copy of this question for each low-pressure filtration unit used in this Produced Water Management System. Also make sure to complete Question C.3.3 for any residuals generated.

Design Capacity of Filtration System (bbl/d)	_____ bbl/d
Volume of Produced Water Entering Low-Pressure Filtration Unit in 2008 (bbl)	_____ bbl
Type	☐ Multimedia ☐ Sand ☐ Other: _____
Vendor/Unit Name	
Average Cleaning Frequency Specify units (e.g., once/hour, once/4 hours, once/day): _____	
Chemicals added (e.g., coagulants, biocides)	
Capital Cost of Filtration System	$_____
2008 Operating and Maintenance Cost of Filtration System	$_____
Pilot Project	☐ Yes ☐ No

Targeted Water Quality Parameter		
Parameter Name	**Estimated Removal Efficiency**	**Basis/Comments**

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
High-Pressure Filtration Question Copy _____ of _____

CBI? ☐ Yes

C.3.12. **High-Pressure Filtration –** Complete Question C.3.12 if you checked that this Produced Water Management System uses high-pressure filtration in Table C -8. Also, please indicate the water quality parameters that are removed by this treatment unit and the estimated removal efficiency. If this Produced Water Management System does not use high-pressure filtration, **skip to Question C.3.13**. Remember to complete one copy of this question for each high-pressure filtration unit used in this Produced Water Management System. Also make sure to complete Question C.3.3 for any residuals generated.

Design Capacity of Filtration System (bbl/d)	_____ bbl/d
Volume of Produced Water Entering High-Pressure Filtration Unit in 2008 (bbl)	_____ bbl
Type	☐ Reverse Osmosis ☐ Ultrafiltration ☐ Nanofiltration ☐ Other (Specify type): _____
Vendor/Unit Name	
Average Cleaning Frequency Specify units (e.g., once/hour, once/4 hours, once/day): _____	
Membrane Life (years)	_____ years
Chemicals added (e.g. coagulants, biocides)	
Capital Cost of Filtration System	$_____
2008 Operating and Maintenance Cost of Filtration System	$_____
Pilot Project	☐ Yes ☐ No

Targeted Water Quality Parameter		
Parameter Name	**Estimated Removal Efficiency**	**Basis/Comments**

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Treatment Not Specified Elsewhere Question Copy _____ of _____

CBI? ☐ Yes

C.3.13. **Treatment Not Specified Elsewhere –** Complete Question C.3.13 if you checked that this Produced Water Management System uses land application or treatment not specified elsewhere in Table C - 8. Remember to complete one copy of this question for any additional treatment units used at this Produced Water Management System. Also make sure to complete Question C.3.3 for any residuals generated.

a. General Information - Please complete the following table of general information. Also, please indicate the water quality parameters that are removed by any treatment unit and the estimate removal efficiency.

Design Capacity of This Treatment System (bbl/d)	_____ bbl/d
Volume of Produce Water Entering Treatment Unit in 2008 (bbl)	_____ bbl
Description of Treatment System	
Vendor/Unit Name	
Type and Amounts of Chemicals Used With This System in 2008 (e.g., coagulants, biocides, soil amendments)	
Average Regeneration/Cleaning Frequency Specify units (e.g., once/hour, once/4 hours, once/day): _____	
Capital Cost of System	$_____
2008 Operating and Maintenance Cost of System	$_____
Pilot Project	☐ Yes ☐ No

Targeted Water Quality Parameter (Complete for Treatment Technology Not Specified Elsewhere)

Name	Estimated Removal Efficiency	Basis/Comments

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

SECTION 4: PRODUCED WATER QUALITY DATA

To enable EPA to evaluate the ability of produced water management systems to remove potential pollutants of concern, water quality data is required. EPA will evaluate the performance of produced water management systems via analysis of effluent data, and as available, analysis of data that represents the influent to the produced water management system. EPA also requests information related to the measured values (e.g., analytical method information) to allow for examination of the quality of data provided. This section requests this water quality data for each Produced Water Management System.

CBI?
☐ Yes

C.4.1. Complete Table C -9 for locations related to treatment unit processes for which you have water quality data. All information collected will aid EPA in determining CBM produced water characteristics by basin; identifying pollutants; calculating baseline loadings; and estimating the effectiveness of treatment technologies. **Note that if you already have water quality data in electronic or hardcopy format, you may submit these data using your own reporting method.** If you need more space, make a copy of Table C -9. Locations may include: wellhead, influent to treatment; effluent from treatment; and discharge outfalls. Please include all paired influent and effluent data for any treatment units operated by your site. Provide all relevant data for 2008. If 2008 data is unavailable, please provide the most recent data.

- The ***pollutant*** analyzed;
- The measured value including units (if not detected, list the detection limit value preceded by a less than (<) symbol);
- The analytical method used;
- The detection limit for the specific method used;
- The date samples were collected;
- Where the samples were collected (this should be a number from a label on your block flow diagram);
- Whether the samples were collected as grabs or as composites; and
- Provide flow rate only if flow rate data were recorded at the sampling point during the sampling period.

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____

CBI? ☐ Yes

C.4.2. Whole Effluent Toxicity Information

a. Have you performed any whole effluent toxicity (WET) testing for this Produced Water Management System?

☐ Yes
☐ No (**Skip to Question C.4.3**)

b. Please provide the information on the WET testing conducted, including the including the test organism, test type (e.g., acute or chronic), and the results.

c. Has toxicity ever exceeded permit limits?

☐ Yes
☐ No (**Skip to Question C.4.3**)

d. Was a toxicity identification evaluation (TIE), toxicity reduction evaluation (TRE), or other study performed to determine the cause, treatability, or effective management of toxicity?

☐ Yes
☐ No (**Skip to Question C.4.3**)

e. Please describe the cause of the toxicity and the final resolution of the toxicity issue.

_____

☐ Attached

Operator ID: _____
Project ID from Part A: _____
Operator's Name or ID for this Produced Water Management System: _____
Analytical Data Question Copy _____ of _____

Table C-9. Analytical Data

Note: If you already have water quality data in electronic or hardcopy format, you may submit these data using your own reporting method. EPA prefers water quality data be submitted in an electronic format (e.g., Microsoft© Access, Microsoft© Excel, non-scanned PDF).

☐ Submitted own data as attachment to this questionnaire.

Pollutant	Measured Value (mg/L)	Analytical Method	Permit Limit (mg/L)	Detection Limit (mg/L)	Sampling Date	Location	Sample Type (grab/ composite)	Flow Rate (gpm)
Total Dissolved Solids	1124	EPA Method 160.1		10	7/1/06	SP-1	Grab	130

Operator ID: _____
Copy _____ of _____

C.4.3. **Comments on Part C.** Please cross-reference your comments by question number. **If you need additional space, please photocopy this page before writing on it**, and number each copy in the space provided.

CBI?	Question Number	Comment
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		
☐ Yes		

PART D. SUPPORTING INFORMATION

SECTION 1: LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent
bbl	Barrel (42 gallons)
bcf	Billion cubic feet
BPJ	Best Professional Judgment
BTU	British thermal unit
CBM	Coal bed methane
CFR	Code of Federal Regulations
CFS	Cubic feet per second
Cl-	Chloride
CWA	Clean Water Act
dpy	Days per year
EA	Environmental Assessment
EC	Electrical Conductivity
EDR	Electrodialysis Reversal
ELG	Effluent limitations guideline
EPA	U.S. Environmental Protection Agency
ft	Foot
ft2	Square foot
ft3	Cubic foot
gal	Gallon
gpd	Gallons per day
gpm	Gallons per minute
hrs/day	Hours per day
in	Inch
kWh	Kilowatt-hour
lb	Pound
lb/hr	Pounds per hour
mcf	Thousand cubic feet
MCL	Maximum contaminant level
mg/L	Milligrams per liter
MGD	Million gallons per day
MMBTU/hr	Million BTUs per hour
mmcf	Million cubic feet
MW	Megawatt
NA	Not applicable
POTW	Publicly Owned Treatment Works
ppm	Parts per million
PrOTW	Privately Owned Treatment Works
psi	pounds per square inch
RO	Reverse osmosis
s	Second
SAR	Sodium Adsorption Ratio
SIC	Standard Industrial Classification
tcf	Trillion cubic feet
TDS	Total dissolved solids
ton	English ton, wet weight
TMDL	Total maximum daily load
tpy	Ton per year
TSS	Total suspended solids
yr	Year

SECTION 2: DEFINITION OF KEY TERMS

Ad Valorem Taxes—A type of property taxes, usually levied as a percentage of production or value of production by local authorities, such as a county, a school district, city, or township.

Aeration—Process that mixes air and water, normally by injecting air into water, spraying water into the air, or allowing water to pass over an irregular surface, to release compounds from the water through oxidation, precipitation, or evaporation.

Arroyo—An intermittently dry creek.

Balance Sheet—A quantitative summary of a company's financial condition at a specific point in time, including assets, liabilities and net worth. The first part of a balance sheet shows all the productive assets a company owns, and the second part shows all the financing methods (such as liabilities and shareholders' equity); also called statement of condition.

Batch (Intermittent) Discharge or Application—A discreet volume or mass of liquid or solid that is collected and discharged periodically.

Beneficial Use—The produced water is of good enough quality to be used for wildlife propagation or livestock watering or other agricultural uses and the produced water is actually put to such use during periods of discharge.

Best Management Practices (BMP)—Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources. Activities, maintenance procedures, and other management practices to prevent or reduce the pollution. BMPs may include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

C Corporation—A business that is a completely separate entity from its owners, unlike a partnership.

Capital Cost—The costs associated with the purchase, development or construction of fixed assets such as land, stations, buildings, and water treatment equipment.

Capital Cost of Project Development—As defined for Question B3-13. this includes all capital and one-time costs of project development beyond the immediate tophole equipment (e.g., Christmas tree), including any exploratory costs, planning costs, geological and geophysical costs, site development costs, such as pads and roads or other land preparation activities, production pumps, gas/water separation equipment, other onsite gas gathering or treatment equipment, and gas pipelines to offsite location and/or point of sale. It does not include any capital costs of water management (see definition).

Clarification—Separation and concentration of solids from liquid/solid mixtures that are mostly liquid.

Clean Water Act—Federal legislation enacted by Congress to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (Federal Water Pollution Control Act of 1972, as amended, 33 U.S.C. 1251 et seq.).

Coalbed Methane (CBM)—Natural gas found in coal seam reservoirs.

Coalbed Methane (CBM) Project— A CBM project comprises a well, group of wells, lease, group of leases, or recognized unit which you operate as an economic unit when making production decisions. The well or wells may be associated with one or more water management practices (that is, the project should be defined on the basis of gas production economics, not necessarily on the basis of a water management system). If a project operates as a unit in which you are not the sole operator, please include information only for that portion of a unit for which you actively operate. EPA understands that the concept of a project is variable over time, so the well or wells included as a part of a project should be those that best defined the project as it existed in 2008.

Coalbed Methane (CBM) Unit—A unit is a group of leases that are managed together with the intention of maximizing production (and/or minimizing costs), where operating these leases independently might result in more wells drilled, less production realized, or both. Units can be formal, legal entities that are written into lease agreements, pooling agreements, and/or state permits; or informal, particularly where minerals rights on several leases are owned by the same entity.

Continuous Flow—A flow regime characterized by persistent flow, as opposed to intermittent flow or ***batch*** processes.

Contract Haul—The removal of any waste stream (including produced water) from a facility by a company authorized to transport and dispose of the waste, excluding discharges to sewers or surface waters.

Cost-Depletion Method—Recovery of the tax basis in a mineral deposit by deducting it proportionately over the productive life of the deposit. This is in contrast to the percentage depletion method, which permits a taxpayer with an economic interest in a mineral deposit to deduct a specified percentage of the gross income from the deposit instead of using the cost depletion method. Percentage depletion is generally restricted to independent producers, royalty owners, and some other narrow categories of oil and gas owners.

Cost of Capital—The opportunity cost of an investment; that is, the rate of return that a company would otherwise be able to earn at the same risk level as the investment that has been selected. For example, when an investor purchases stock in a company, he/she expects to see a return on that investment. Since the individual expects to get back more than his/her initial investment, the cost of capital is equal to this return that the investor receives, or the money that the company misses out on by selling its stock.

Creek—A small, natural stream that is often a shallow or intermittent tributary to a river.

Cumulative Depreciation—The total charges against the fixed assets of a company for wear and tear, obsolescence, or the depletion of a natural resource—oil in the ground, for instance—as it is used up.

Current Assets—Any asset that can reasonably be expected to be used up or converted to cash or sold within a year or less, e.g., cash, accounts receivable, prepaid expenses.

Current Liabilities—Debts that are payable within 1 year, including accounts payable, notes payable within one year, accrued expenses and taxes, and the portion of long-term debt that are paid this year.

Depreciation, Depletion, and Amortization—The allocation of the cost of an asset over a period of time for accounting and tax purposes. Depletion, which reflects the declining value of a natural resource asset as it is produced, may be calculated either using the cost-depletion or percentage depletion method, depending on type of firm (see cost-depletion method).

Design Capacity Flow Rate—Maximum flow rate a treatment unit is designed to handle.

Direct Discharge—The discernible, confined, and discrete conveyance of pollutants to United States surface waters such as rivers, lakes, and oceans. See 40 CFR 122.2.

Discharge—The discernible, confined, and discrete conveyance of pollutants to: (1) United States surface waters such as rivers, lakes, and oceans (“direct discharge”), or (2) a publicly owned, privately owned, federally owned, combined, or other treatment works (“indirect discharge”). See 40 CFR 122.2.

Disposal—Intentional placement of waste (including produced water) into or on any land where the material will remain after closure. Waste placed into water is defined as discharge, not disposal.

Division—A business unit of a firm, often treated as a profit center (see profit center).

Drilling Cost—Includes tangible and intangible costs of drilling and completing a well (if completed), as defined in API's Joint Association Survey of Drilling Costs, which includes "expenditures for drilling dry holes and productive wells and equipping new productive wells through the Christmas tree" installation…these cost elements are the costs of labor, materials, supplies, water, fuels, power, and direct overhead (i.e., field, district, and regional), for such operations as site preparation, road building, erecting and dismantling derricks and drilling rigs, drilling hole, running and cementing casing, hauling materials, etc. Include the total cost of water, if purchased, or cost of water well, if drilled and chargeable to oil or gas well drilling operations. Well costs also include machinery and tool charges and rentals, and depreciation charges, where appropriate, for rigs and other equipment and facilities which will be used in drilling more than one well. Deduct the condition value of materials salvaged after use where appropriate. Do not report the cost of lease equipment such as artificial lift equipment and downhole lift equipment, flow lines, flow tans, separators, etc. that are required for production. Do not reduce the costs by test well, bottom hole, or dry hole contributions.

Earnings Before Interest and Taxes (EBIT)—A measure of a company's earning power from ongoing operations, equal to earnings before deduction of interest payments and income taxes; also called operating profit or operating income.

Emergency Discharge—A volume or mass of liquid or solid residuals are discharged only during extenuating circumstances (i.e., a treatment process malfunction).

Equalization—The process of storing produced water for later treatment or discharge. This process can also provide some removal of some suspended solids.

Evaporation—The process by which water or other liquid becomes a gas. Water from land areas, bodies of water, and all other moist surfaces is absorbed into the atmosphere as a vapor.

Filtration—This treatment technology relies on the difference in size between the pore and the particle to be removed. Low-Pressure Filtration typical involves using can include direct media filtration using one or more layers of granular media such as sand and/or anthracite with coagulation. High-Pressure Filtration typically uses a driving force to transport wastewater through a membrane, which separates the wastewater into two flows: permeate and retentate (e.g., microfiltration, ultrafiltration, and reverse osmosis).

Fiscal Year—A 12-month period over which a company budgets its spending. A fiscal year does not always begin in January and end in December; it may run over any period of 12 months.

Groundwater—Water in a saturated zone or stratum beneath the surface of land or water.

Hurdle Rate—The required rate of return in a discounted cash flow analysis, above which an investment makes sense and below which it does not. Often, this is based on the firm's cost of capital or weighted average cost of capital, plus or minus a risk premium to reflect the project's specific risk characteristics; also called required rate of return.

Income Statement—An accounting report showing various categories of revenues, expenses, interest payments, taxes, and net income.

Indirect Discharge—The discernible, confined, and discrete conveyance of pollutants to a publicly owned, privately owned, federally owned, combined, or other treatment works.

Infiltration—The process by which water penetrates into soil from the ground surface

Injection Well (Deep or Shallow Well Injection) —Any bored, drilled, or driven shaft or a dug hole, improved sinkhole, or a subsurface fluid distribution system where the depth is greater than the largest surface dimension that is used to dispose of fluids underground. See underground injection.

Interest Expense—An expense for interest on a loan.

Intermittent Flow—A flow regime characterized by flows that occur sporadically, seasonally, or for only a portion of time during normal operations.

Ion Exchange (IX) —Treatment process using a resin formulated to adsorb cationic or anionic species to remove pollutants from an influent stream.

Lake—A body of freshwater or saltwater surrounded by land.

Landfill—A natural or man-made formation in the earth into which solid waste, sludges, or other process residuals are placed for permanent disposal.

Lease Bid—Amount (generally a lump sum at time of lease acquisition) paid to the mineral rights owner to hold the property for a period of time, whether or not the lease is developed. This does not include rental payments, which may be charged over time, nor does it include royalties, which are paid only once production begins.

Limited Liability Corporation or Company—A type of company, authorized only in certain states, whose owners and managers receive the limited liability and (usually) tax benefits of an S Corporation without having to conform to the S corporation restrictions.

Limited Liability Partnership—See limited liability corporation.

Long-term Debt—Liabilities that are paid off over periods greater than 1 year, including mortgages, notes, bonds, debentures, long-term leases, bank debt, and deferred income taxes.

Maximum Daily Flow—The maximum flow in a 24-hour period.

Membrane Filtration—Separation processes that use a membrane as the filter mechanism.

Mineral Rights Owner—Party owning the rights to minerals beneath land that has been or will be used for the purposes of producing minerals or hydrocarbons. Party may or may not own the rights to the land surface. See surface owner.

NAICS—NAICS is an economic classification system. Economic units that use like processes to produce goods or services are grouped together. These units are assigned a code for identification purposes. US Census Bureau (http://www.census.gov/epcd/www/naics.html). Common 6-digit NAICS in the CBM extraction industry include 211111, Crude Petroleum & Natural Gas Extraction; 213111, Drilling Oil and Gas Wells; 213112, Support Activities for Oil and Gas; 212111, Bituminous Coal & Lignite Surface Mining; 212112, Bituminous Coal Underground Mining; 221210, Natural Gas Distribution; 221112, Fossil Fuel Electric Power Generation; and 324110 Petroleum Refineries.

Nanofiltration—A method of water treatment that utilizes membranes to remove hardness, bacteria, viruses, and organic-related color.

Net Income—Gross sales minus taxes, interest, depreciation, and other expenses.

Net Sales—Gross sales minus returns, discounts, and allowances (investorwords.com).

NPDES Permit Program—The National Pollutant Discharge Elimination System (NPDES) program authorized by Sections 307, 318, 402, and 405 of the Clean Water Act that applies to facilities that discharge wastewater directly to United States surface waters. For the CBM industry, operators are required to obtain NPDES permits for their direct discharges to surface waters.

Operating and Maintenance Cost—The ongoing, repetitive costs of operating a water system; for example, employee wages and **costs** for treatment chemicals and periodic equipment maintenance.

Operating Costs (income statement)—These are the recurring expenses which are related to the operation of a business.

Operator—The person responsible for the management and day-to-day operation of one or more CBM wells. The operator is generally a working interest owner or a company under contract to the working interest owner(s).

Other Assets (net of depreciation)—Any non-current assets (assets that cannot be easily converted to cash) other than property, plant and equipment.

Owner Firm—The next level up in the corporate hierarchy from the owner/operator. This firm owns the owner/operator firm or division, regardless of whether the owner/operator is a contract operator or a working interest operator.

Owner/Operator—The entity (firm or division, if a profit center) responsible for the management and day-to-day operation of a well. The owner/operator is generally a working interest owner or a company under contract to the working interest owner(s). Management decisions might include whether well(s) should be shut-in, worked over or abandoned, whether additional or replacement wells should be drilled, whether additional or different production equipment should be installed, and any other decision factor used by DOE in the General Instructions to Form EIA-23.

Payback Period—The amount of time taken to break even on an investment. Since this method ignores the time value of money and cash flows after the payback period, it can provide only a partial picture of whether the investment is worthwhile.

Payments to Principal—Payments made on the principal portion of a loan or other borrowing mechanism classified as long-term debt (excludes the interest payments on these loans).

Pollutant—Under the Clean Water Act, a dredged spoil, solid waste, incinerator residue, filter backwash, sewage sludge, munitions, chemical waste, biological material, certain radioactive material, heat, wrecked or discarded equipment, rock sand, cellar dirt, and industrial, municipal, and agricultural waste (40 CFR 122.2).

Pollution Prevention—The use of materials, processes, or practices that reduce or eliminate the creation of pollutants or wastes. It includes practices that reduce the use of hazardous and non-hazardous materials, energy, water, or other resources, as well as those practices that protect natural resources through conservation or more efficient use. Pollution prevention includes but is not limited to source reduction, in-process recycle and reuse, and water conservation practices.

Primary Collection Point—The first point in the Produced Water Management System where produced water from all wells flowing to one final destination are combined. In example 4, the sedimentation/equalization pond would be the primary collection point.

Privately Owned or Held—A company whose shares are not traded on the open market.

Privately Owned Treatment Works (PrOTW)—Any device or system owned and operated by a private entity and used for storage, treatment, recycling, or reclamation of liquid industrial wastes.

Produced Water—Water drawn from any hydrologic unit for the purpose of producing hydrocarbons.

Produced Water Management System— For the purposes of this questionnaire, Produced Water Management System is defined as a system that is managed by the operator as a single unit for produced water management. Produced water management may include different treatment, transfer to disposal locations, and/or reuse practices. The Produced Water Management System may treat water from a lease, field, project, or plan of development (POD). Water discharge permits, land application permits, and applications for permits to drill (APD) typically use one of these terms to define the well grouping. Note that the Produced Water Management System can have multiple disposal options but it is managed as a single unit. For example, an operator may use a combination of stock tanks, irrigation, and storage ponds on a single Produced Water Management System. Also note that the Produced Water Management System may serve the same or different wells from the CBM project defined in Part A. Finally, for the purposes of this questionnaire, the PWMS does not include the produced water gathering system (e.g., piping or trucking) that is used to transport the produced water between the CBM wellhead and a centralized location (e.g., treatment unit, land application site). For example, produced water gathering pipes are typically installed underground at the same time as the gas gathering pipes.

Produced Water Treatment or Treatment—The treatment of water with physical, chemical, biological, or other processes to remove specific pollutants from the water stream or to alter the physical or chemical state of specific pollutants in the water stream. Produced water treatment is performed to allow for discharge, disposal or beneficial use of the water.

Profit Center—A business unit or department which is treated as a distinct entity enabling revenues and expenses to be determined so that profitability can be measured. For the purposes of this questionnaire a profit center is defined as an entity that tracks finances at least through earnings before interest and taxes.

Property, Plant and Equipment—A type of asset a company owns that is vital to business operations but cannot be easily liquidated. The value of property, plant and equipment is typically depreciated over the estimated life of the assets, because even the longest-term assets become obsolete or useless after a period of time.

Publicly Owned or Held—A company which has issued securities through an offering, and which are now traded on the open market.

Publicly Owned Treatment Works (POTW)—Any device or system owned by a state or municipality that is used to recycle, reclaim, or treat liquid municipal sewage and/or liquid industrial wastes.

Receiving Waters—A stream, river, or other surface water body to which wastewater or other pollutants are discharged.

Retained Earnings—Earnings not paid out as dividends but instead reinvested in the core business or used to pay off debt; also called earned surplus or accumulated earnings or unappropriated profit.

Reverse Osmosis (RO)—A method of water treatment that involves the application of pressure to a concentrated solution which causes the passage of a liquid from the concentrated solution to a weaker solution across a semi-permeable membrane. The membrane allows the passage of the solvent (water) but not the dissolved solids (solutes). This water treatment method is typically used for desalinization and the removal of ions, radionuclides, bacteria, and viruses.

River—Water which flows in a channel from high ground to low ground and ultimately to a lake or sea.

Royalty Payments—Payments made to the mineral rights owner. These payments may be based on a percentage of the gas produced or as a percentage of the revenues received. A royalty is not a working interest share (see working interest).

S Corporation—A form of corporation, allowed by the IRS for most companies with 75 or fewer shareholders, which enables the company to enjoy the benefits of incorporation but be taxed as if it were a partnership. Also called Subchapter S Corporation.

SEC Proved Reserves—Proved oil and gas reserves are the estimated quantities of crude oil, natural gas, and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions, i.e., prices and costs as of the date the estimate is made. Prices include consideration of changes in existing prices provided only by contractual arrangements, but not on escalations based upon future conditions. See SEC SX Reg. 210.4-10 (November 18, 1981).

Sedimentation Pond—An impoundment constructed at the produced water treatment site to remove suspended solids from the produced water. These impoundments can also provide equalization of the produced water prior to treatment or discharge.

Selling, General and Administrative Costs—Income statement item which combines salaries, commissions, and travel expenses for executives and salespeople, advertising costs, and payroll expenses.

Severance Tax Payments—Payments made to a state for the right to remove a natural resource, usually applied to gas for use in another state.

Sludge—The accumulated solids and solid residues separated from liquids by settling or treatment.

Sodium Adsorption Ratio (SAR) —Irrigation water containing large amounts of sodium is of special concern due to sodium's effects on the soil and poses a sodium hazard. Sodium hazard is usually expressed in terms of sodium adsorption ratio (SAR). SAR is calculated from the following equation with sodium to calcium and magnesium concentrations expressed in units of millimoles per liter (mmol/L).

$$SAR = \frac{\left[Na^{+}\right]}{\sqrt{\frac{1}{2}\left(\left[Ca^{2+}\right] + \left[Mg^{2+}\right]\right)}}$$

Storage Pond—An impound for liquid wastes.

Sum of Liabilities and Owner Equity—Current Liabilities + Long-Term Debt + Retained Earnings + Other Owner Equity.

Surface Owner—Party owning land that has been or will be used for the purposes of producing minerals or hydrocarbons. Party may or may not own mineral rights beneath that land.

Surface Use Plan—Agreement between a landowner and a coalbed methane producer describing the conditions of land use for coalbed methane production including existing and proposed facilities (e.g. wells, roads, pipelines, and treatment systems), compensation for property damages, and considerations for land reclamation.

Surface Waters—Waters of the United States including, but not limited to, oceans and all interstate and intrastate lakes, rivers, streams, creeks, arroyos, mudflats, sand flats, wetlands, sloughs, wet meadows, playa lakes, and natural ponds (40 CFR 122.2).

Technically Recoverable Reserves—Reserves recoverable given current technologies and industry practices and assuming no limitations on production due to market conditions.

Total Assets—Total Current Assets + Total Non-current Assets (including Property, Plant, and Equipment and Other Assets Net of Depreciation).

Treatment Unit—A unit operation used to remove pollutants from produced water. Treatment units include, but are not limited to sedimentation ponds, ion exchange systems, and filters.

Ultimate Parent—The firm at the highest level of the corporate hierarchy. If the owner firm is not owned by another firm, the owner firm is the ultimate parent. If the owner/operator is not owned by any other firm, there is no ultimate parent.

Ultrafiltration (UF) —A method of water treatment that utilizes membranes in a pressure-driven process for concentrating solutions containing colloids and higher molecular weight materials. This water treatment method typically removes viruses, colloids, clays, bacteria, humic acids, and fulvic acids, but not ions or radionuclides.

Underground Injection—The technology of placing fluids underground, in porous formations of rocks, through wells or other similar conveyance systems. See injection well.

Unusual Expenditure—An expenditure that does not occur every year and that is more than 10 percent of O&M (e.g., major storm damage causes large outlay for repairs); or a capitalized one-time or capital cost not considered a lease acquisition or development cost (e.g., construction of a septic system or a building not directly associated with production) and is not a cost covered in Part C.

Water Reuse—Beneficial use of coalbed methane produced water (e.g., livestock watering, irrigation, or dust control) in lieu of discharge/disposal.

Wellhead Price of Gas—The price of gas at the wellhead, which is different from the price at natural gas hubs, reflecting the implicit cost to transport the gas to buyer, including the cost of gathering, compression, dehydration, etc.

Working Interest—Percentage of ownership in an oil and gas lease granting its owner the right to explore, drill and produce oil and gas from a tract of property. Working interest owners are obligated to pay a corresponding percentage of the cost of leasing, drilling, producing and operating a well or unit. After royalties are paid, the working interest also entitles its owner to share in production revenues with other working interest owners, based on the percentage of working interest owned. Working interest is not royalty; mineral rights owners who do not have working interests do not contribute to the costs of production.

Workover, Stimulation, or Recompletion—Major, intermittent tasks. Workovers are major maintenance or remedial treatments on a well. Well stimulation includes fracturing, for example, either performed initially or later in the productive life of the well. Recompletion is a process undertaken to restore the productivity of a well, including to complete a well in a new stratum or strata.

Zero Discharge—Disposal of produced water other than by direct discharge to surface water or by indirect discharge to a POTW. Zero discharge does not allow for periodic or infrequent discharges attributed to activities such as maintenance, blowdown, or system purges. Examples include evaporation, underground injection, contract hauling, and/or water reuse.

SECTION 3: SMALL BUSINESS DEFINITIONS AND NAICS IDENTIFICATION

SBA allows small businesses to self-certify (subject to challenges, if they arise), which means that if you classify yourself as a small business, EPA will assume you have made this designation in good faith and will accept this designation.

The Small Business Administration (SBA) defines small businesses in the following way:

> "The Small Business Act states that a small business concern is "one that is independently owned and operated and which is not dominant in its field of operation." The law also states that in determining what constitutes a small business, the definition will vary from industry to industry to reflect industry differences accurately. SBA's Small Business Size Regulations implement the Small Business Act's mandate to SBA. SBA has also established a table of size standards, matched to North American Industry Classification System (NAICS) industries."

The following table lists NAICS codes that are likely to be common among CBM operators. It also lists the current SBA definitions of small business for each of these likely NAICS codes. If, for any reason, you are not certain of your NAICS, the following website can be accessed using a key word search: http://www.census.gov/naics/2007/index.html; alternatively, you can use http://www.census.gov/naics/2007/NAICOD07.HTM, if you prefer to scroll through the definitions by type of industry. Note that clicking on the NAICS codes provides a definition of the industry in question.

If you do not see an applicable NAICS in this table, you can refer to SBA's Table of Size Standards, accessible at http://www.sba.gov/idc/groups/public/documents/sba_homepage/serv_sstd_tablepdf.pdf. Alternatively, if you prefer, you can contact the EPA help line for assistance.

NAICS	Name of Industry	SBA Small Business Size Standard
211xxx	Oil and Gas Extraction	≤500 employees
21211x	Coal Mining	≤500 employees
213111	Drilling Oil and Gas Wells	≤500 employees
213112	Support Activities for Oil and Gas Operations	≤$6.5 million annual revenues
213113	Support Activities for Coal Mining	≤$6.5 million annual revenues
22111x	Electric Power Generation	<4 million mW-hrs/year
221112	Fossil Fuels Electric Power Generation	<4 million mW-hrs/year
22112x	Electric Power, Transmission, Control and Distribution	<4 million mW-hrs/year
22121x	Natural Gas Distribution	≤500 employees
32411x	Petroleum Refineries	≤1,500 employees
486110	Pipeline Transportation of Crude Oil	≤1,500 employees
486210	Pipeline Transportation of Natural Gas	≤$6.5 million annual revenues

The size standards are not the only standards that apply, however. SBA further defines small business in such a way that any business concern that is affiliated with a large business or, in many cases, a foreign firm cannot be considered a small business. SBA defines affiliation as:

a. General Principles of Affiliation.

   i. Concerns and entities are affiliates of each other when one controls or has the power to control the other, or a third party or parties controls or has the power to control both. It does not matter whether control is exercised, so long as the power to control exists.

ii. SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists.

iii. Control may be affirmative or negative. Negative control includes, but is not limited to, instances where a minority shareholder has the ability, under the concern's charter, by-laws, or shareholder's agreement, to prevent a quorum or otherwise block action by the board of directors or shareholders.

iv. Affiliation may be found where an individual, concern, or entity exercises control indirectly through a third party.

v. In determining whether affiliation exists, SBA will consider the totality of the circumstances, and may find affiliation even though no single factor is sufficient to constitute affiliation.

Examples of affiliation would include a subsidiary of a large firm, a firm owned 50 percent or more by a large firm, and a joint venture by a small firm and a large firm. Even if the joint venture itself meets size standards, this affiliation would render the joint venture a large firm. However, if two small firms, each of which meets SBA size standards, join in a joint venture, the joint venture is also considered a small firm if it meets size standards. Another example of affiliation is a business concern that has as a corporate officer a person who is a corporate officer of a large firm. Small firms associated with large venture capital firms or investment firms through their investments in the small firm, however, are not considered affiliated.