DEPARTMENT OF THE INTERIOR

Bureau of Land Management

43 CFR Part 3160

[WO–300–L13100000.FJ0000]

RIN 1004–AE26

Oil and Gas; Hydraulic Fracturing on Federal and Indian Lands

AGENCY: Bureau of Land Management, Interior.

ACTION: Supplemental notice of proposed rulemaking and request for comment.

SUMMARY: On May 11, 2012, the Bureau of Land Management (BLM) published in the **Federal Register** a proposed rule entitled Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands. The BLM has used the comments on that draft to make improvements and is now seeking additional comment on a revised proposed rule. Key issues in this updated draft include: the use of an expanded set of cement evaluation tools to help ensure that usable water zones have been isolated and protected from contamination; and more detailed guidance on how trade secrets claims will be handled, modeled on the procedures promulgated by the State of Colorado. The revised proposed rule would also provide opportunities for the BLM to coordinate standards and processes with individual States and tribes to reduce administrative costs and to improve efficiency.

DATES: Send your comments on this supplemental notice of proposed rulemaking (SNPR) to the BLM on or before June 24, 2013. The BLM need not consider, or include in the administrative record for the final rule, comments that the BLM receives after the close of the comment period or comments delivered to an address other than those listed below (see **ADDRESSES**). If you wish to comment on the information collection requirements in this SNPR, please note that the Office of Management and Budget (OMB) is required to make a decision concerning the collection of information contained in this SNPR between 30 to 60 days after publication of this document in the **Federal Register**. Therefore, a comment to OMB is best assured of being considered if OMB receives it by June 24, 2013.

ADDRESSES: *Mail:* U.S. Department of the Interior, Director (630), Bureau of Land Management, Mail Stop 2134 LM, 1849 C St. NW., Washington, DC 20240, Attention: 1004–AE26. *Personal or messenger delivery:* Bureau of Land Management, 20 M Street SE., Room 2134 LM, Attention: Regulatory Affairs, Washington, DC 20003. *Federal eRulemaking Portal: http://www.regulations.gov*. Follow the instructions at this Web site.

Comments on the information collection requirement: *Fax:* Office of Management and Budget (OMB), Office of Information and Regulatory Affairs, Desk Officer for the Department of the Interior, fax 202–395–5806. *Electronic mail: oira_submission@omb.eop.gov*. Please indicate ''Attention: OMB Control Number 1004–0203,'' regardless of the method used to submit comments on the information collection burdens. If you submit comments on the information collection burdens, please provide the BLM with a copy of your comments, at one of the addresses shown above.

FOR FURTHER INFORMATION CONTACT: Steven Wells, Division Chief, Fluid Minerals Division, 202–912–7143 for information regarding the substance of the rule or information about the BLM's Fluid Minerals Program. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339 to contact the above individual during normal business hours. FIRS is available 24 hours a day, 7 days a week to leave a message or question with the above individual. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION:

Executive Summary

''Hydraulic fracturing,'' a process used to stimulate production from oil and gas wells, has been a growing practice in recent years. Public awareness of hydraulic fracturing has grown as new horizontal drilling technology has allowed increased access to shale oil and gas resources across the country, sometimes in areas that have not previously or recently experienced significant oil and gas development. The rapid expansion of this practice has caused public concern about whether fracturing can lead to or cause the contamination of underground water sources, whether the chemicals used in fracturing should be disclosed to the public, and whether there is adequate management of well integrity and the ''flowback'' fluids that return to the surface during and after fracturing operations.

The Bureau of Land Management (BLM) oversees approximately 700 million subsurface acres of Federal mineral estate and 56 million subsurface acres of Indian mineral estate across the United States. This revised proposed rule and the initial proposed rule would modernize BLM's management of hydraulic fracturing operations by ensuring that hydraulic fracturing operations conducted on the public mineral estate (including split estate where the Federal Government owns the subsurface mineral estate) follow certain best practices, including: (1) The public disclosure of chemicals used in hydraulic fracturing operations on Federal and Indian lands; (2) Confirmation that wells used in fracturing operations meet appropriate construction standards; and (3) A requirement that operators put appropriate plans in place for managing flowback waters from fracturing operations.

Like the initial proposed rule, this revised proposed rule would apply to Indian lands so that these lands and communities receive the same level of protection provided on public lands. In most cases, the requirements in this rule can be satisfied by submitting additional information during the existing process that the BLM currently applies to operators when reviewing and approving an operator's Application for Permit to Drill (APD) on public or Indian lands. The rule would require that disclosure of the chemicals used in the fracturing process be provided to the BLM after the fracturing operation is completed. This information may be submitted to the BLM through an existing Web site known as FracFocus.org, already used by some states for reporting mandatory chemical disclosure of hydraulic fracturing chemicals. Submission of this information through this Web site allows an operator to provide the public and many State and tribal regulators with prompt access. This approach also has the benefit of reducing reporting burdens for oil and gas operators by avoiding duplicative reporting requirements and administrative duties for the BLM in many instances.

The BLM developed this revised proposed rule and the initial proposed rule with the intention of improving public awareness and strengthening oversight of hydraulic fracturing operations without introducing unnecessary new procedures or delays in the process of developing oil and gas resources on public and Indian lands. Some states, like Colorado, Wyoming, Arkansas, and Texas, have issued their own regulations addressing disclosures and oversight for oil and gas drilling operations. Operators with leases on Federal lands must comply with both BLM's regulations and with State

operating requirements, including State permitting and notice requirements to the extent they do not conflict with BLM regulations. State regulations pertaining to hydraulic fracturing operations are not uniform. The States that have regulated hydraulic fracturing typically require some notification to a state agency and some require reporting on FracFocus. Other States have not taken action in this area. This revised proposed rule seeks to create a consistent oversight and disclosure model that will apply across all public and Indian lands that are available for oil and gas development, and aims to streamline and minimize the efforts required to comply with any new requirements, while also protecting Federal and tribal interests and resources. Currently nearly 36 million acres of Federal land are under lease for potential oil and gas development. These leases can be found on public land and for public minerals in 24 states The BLM has revised the proposed rule to reduce some of the information requirements to avoid duplication with the requirements of States (on Federal land) and tribes (on tribal land). The BLM has considered various options to encourage streamlining, flexibility, and more efficient operation on both BLM and tribal leases.

The BLM has for many years had a number of agreements with certain States and tribes concerning implementation of the various regulatory programs in logical and effective ways. The BLM will work with States and tribes to establish formal agreements that will leverage the strengths of partnerships, and reduce duplication of efforts for agencies and operators, particularly in implementing the revised proposed rule as consistently as possible with State or tribal regulations.

Similarly, the BLM has been looking to State regulations governing hydraulic fracturing for elements that should be incorporated into the revised proposed rule. Examples include allowing disclosure of chemical constituents of fracturing fluids through FracFocus, as required by several states, and adoption of the Colorado system of having operators submit an affidavit that undisclosed information about chemicals is entitled to protection as trade secrets.

Regarding Indian lands, the BLM fully embraces the statutes, Executive Orders, and other statements of governmental or departmental policy in favor of promoting tribal self-determination and control of resources. The Indian Mineral Leasing Act (IMLA), however, subjects all oil and gas operations on trust or restricted Indian lands to the Secretary's regulations and does not authorize the Secretary to allow tribes to opt out of these regulations. Nonetheless, the BLM is actively addressing ways to use tribal rules in the implementation of the revised proposed rule. For example, the proposed rule recognizes the authority that may be delegated to the States and the tribes to implement various environmental programs under the Safe Drinking Water Act to protect underground sources of drinking water and has been revised to defer to State (on Federal land) or tribal (on tribal land) designations of aquifers as either requiring protection from oil and gas operations, or as exempt from any requirement to isolate water-bearing zones in section 3162.3–3(b).

The revised proposed rule also adds a provision allowing the BLM to approve a variance that would apply to all lands within the boundaries of a State, a tribe, or described as field-wide or basin-wide, that is commensurate with the state or tribal regulatory scheme. The BLM must determine that the variance would meet or exceed the effectiveness of the revised proposed rule. State and tribes would be invited to work with the BLM to craft variances that would allow technologies, processes or standards required or allowed by the State or tribe to be accepted as compliance with the rule. Such variances would allow the BLM and the States and tribes to improve efficiency and reduce costs for operators and for the agencies.

The proposed changes to existing hydraulic fracturing oversight are partly in response to recommendations put forward by the Shale Gas Production Subcommittee of the Secretary of Energy's Advisory Board in 2011. Also, current BLM regulations governing hydraulic fracturing operations on public lands are more than 30 years old and were not written to address modern hydraulic fracturing technologies and practices. In preparing this revised proposed rule, the BLM received input from members of the public and stakeholders, and consulted with tribal representatives.

The changes from the original proposed well stimulation rule are discussed in greater detail below, but some of the notable changes include the following. This revised proposed rule would require use of cement evaluation logs (CELs) in the place of the originally proposed cement bond logs (CBL). The use of the broader term of CEL is intended to allow a variety of logging methods to be used to show the adequacy of cementing, including technologies such as ultrasonic logs, variable density logs, micro-seismograms, standard CBLs, CBLs with directional receiver array, ultrasonic pulse echo technique, and isolation scanners. CBLs would be accepted because they are one of the technologies included in CELs. However, if a State (on Federal land) or tribe (on Indian land) designates some other technology to meet its requirements for hydraulic fracturing wells that is at least as effective in assuring adequate cementing, the BLM may allow use of that technology as a variance from the CEL requirement.

The revised proposed rule would also change the operation of the trade secrets provision. The revised proposed rule allows operators to submit to the BLM an affidavit asserting exemption from disclosure of certain information having to do with the hydraulic fracturing fluid. The rule also gives the BLM the ability to demand the specific chemical details of any materials being proposed for trade secret exemption.

Further, although the BLM is not proposing a material change in the provision that allows hydraulic fracturing flowback fluids to be stored either in tanks or in lined pits, the BLM seeks comments on the costs and benefits of requiring flowback fluids to be stored only in closed tanks. Other provisions of the initial proposed rule have been modified for clarity or in response to comments. Accordingly, the entire revised proposed rule is available for public comment.

The BLM has analyzed the costs and the benefits of this proposed action in an accompanying Regulatory Impact Analysis available in the rulemaking docket. The estimated costs range from $12 million to $20 million per year. The range reflects uncertainty about the generalization of costs across all hydraulic fracturing operations. The potential benefits of the rule are more challenging to monetize than the costs, but that does not mean that the rule is without benefits. The rule creates a consistent, predictable regulatory framework, in accordance with the BLM's stewardship responsibilities under the *Federal Land Policy and Management Act* and other statutes, for hydraulic fracturing involving BLM-administered lands. The rule is designed to reduce the environmental and health risk that can be posed by hydraulic fracturing operations, particularly in the way the rule addresses flowback fluids, well construction, and hydraulic fracture design. The rule would ensure that operators demonstrate wellbore integrity with pressure tests on 100 percent of the hydraulically fractured wells and with

CELs on the casing strings that protect usable water on each type well. A type well is an oil and gas well that can be used as a model for well completion in a field where geologic characteristics are substantially similar. The authorized officer would evaluate whether substantially similar geologic conditions exist during review of the APD or sundry notice requesting approval of a group of wells for a field. CELs would be required only of type wells, ''wildcat'' wells that are not approved as part of a field development proposal, and whenever there is evidence of a problem with the cement job. The BLM is asking for comments on the effectiveness of this proposal.

I. Public Comment Procedures
II. Background
III. Discussion of the Revised Proposed Rule and Comments on the Proposed Rule
IV. Procedural Matters

I. Public Comment Procedures

If you wish to comment, you may submit your comments by any one of several methods: *Mail:* You may mail comments to U.S. Department of the Interior, Director (630), Bureau of Land Management, Mail Stop 2134LM, 1849 C Street NW., Washington, DC 20240, Attention: 1004–AE26. *Personal or messenger delivery:* Bureau of Land Management, 20 M Street SE., Room 2134LM, Attention: Regulatory Affairs, Washington, DC 20003. *Federal eRulemaking Portal: http://www.regulations.gov*. Follow the instructions at this Web site.

You may submit comments on the information collection burdens directly to the Office of Management and Budget, Office of Information and Regulatory Affairs, Desk Officer for the Department of the Interior, fax 202–395–5806, or *oira_submission@omb.eop.gov*. Please include ''Attention: OMB Control Number 1004–0203'' in your comments. If you submit comments on the information collection burdens, please provide the BLM with a copy of your comments, at one of the addresses shown above.

Please make your comments as specific as possible by confining them to issues directly related to the content of this revised proposed rule, and explain the basis for your comments. The comments and recommendations that will be most useful and likely to influence agency decisions are:

1. Those supported by quantitative information or studies; and

2. Those that include citations to, and analyses of, the applicable laws and regulations.

The BLM is not obligated to consider or include the comments received after the close of the comment period (see **DATES**) or comments delivered to an address other than those listed above (see **ADDRESSES**) in the Administrative Record for the rule.

Comments, including names and street addresses of respondents, will be available for public review at the address listed under **ADDRESSES** during regular hours (7:45 a.m. to 4:15 p.m.), Monday through Friday, except holidays. Before including your address, telephone number, email address, or other personal identifying information in your comment, be advised that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

II. Background

Well stimulation techniques, such as hydraulic fracturing, are commonly used by oil and natural gas producers to increase the volumes of oil and natural gas that can be extracted from wells. Hydraulic fracturing techniques are particularly effective in enhancing oil and gas production from shale gas or oil formations. Until quite recently, shale formations rarely produced oil or gas in commercial quantities because shale does not generally allow flow of hydrocarbons to wellbores unless mechanical changes to the properties of the rock can be induced. The development of horizontal drilling, combined with hydraulic fracturing, has made the production of oil and gas from shale feasible. Hydraulic fracturing involves the injection of fluid under high pressure to create or enlarge fractures in the reservoir rocks. The fluid that is used in hydraulic fracturing is usually accompanied by proppants, such as particles of sand, which are carried into the newly fractured rock and help keep the fractures open once the fracturing operation is completed. The proppant-filled fractures become conduits for fluid migration from the reservoir rock to the wellbore and the fluid is subsequently brought to the surface. In addition to the water and sand (which together typically make up 98 to 99 percent of the materials pumped into a well during a fracturing operation), chemical additives are also frequently used. These chemicals can serve many functions in hydraulic fracturing, including limiting the growth of bacteria and preventing corrosion of the well casing. The exact formulation of the chemicals used varies depending on the rock formations, the well, and the requirements of the operator.

Hydraulic fracturing is a common and accepted practice, and has been, in oil and gas production for decades. The BLM estimates that about 90 percent (approximately 3,400 wells per year) of wells drilled on Federal and Indian lands are stimulated using hydraulic fracturing techniques. Although many of these are conventional wells, much of the new activity occurs on wells designed to produce shale oil and gas or to employ horizontal drilling techniques. Over the past 10 years, there have been significant technological advances in horizontal drilling, which is frequently combined with hydraulic fracturing. This combination, together with the discovery that these techniques can release significant quantities of oil and gas from large shale deposits, has led to production from geologic formations in parts of the country that previously did not produce significant amounts of oil or gas. The resulting expansion of oil and gas drilling into new parts of the country because of the availability of new horizontal drilling technologies has significantly increased public awareness of hydraulic fracturing and the potential impacts that it may have on water quality and water consumption, unless adequately regulated and safely implemented.

The BLM's existing hydraulic fracturing regulations are found at 43 CFR 3162.3–2. These regulations were established in 1982 and last revised in 1988, long before the latest hydraulic fracturing technologies became widely used. In response to public interest in hydraulic fracturing and in the BLM's regulation of hydraulic fracturing, in particular, the Department of the Interior (Department) held a forum on hydraulic fracturing on November 30, 2010, in Washington, DC, attended by the Secretary of the Interior and more than 130 interested parties. The BLM later hosted public forums (in Bismarck, North Dakota on April 20, 2011; Little Rock, Arkansas on April 22, 2011; and Golden, Colorado on April 25, 2011) to collect broad input on the issues surrounding hydraulic fracturing. More than 600 members of the public attended the April 2011 forums. Some of the comments frequently heard during these forums included concerns about water quality, water consumption, and a desire for improved environmental safeguards for surface operations. Commenters also strongly encouraged the agency to require public disclosure of the chemicals used in hydraulic fracturing operations on Federal and Indian lands. Commenters from the oil and gas industry suggested

changes that would make the implementation of the rule more practicable, from their perspective, and some opposed adoption of any such rules affecting hydraulic fracturing on the Federal mineral estate. Further, the BLM distributed copies of the then-draft rule to affected federally recognized tribes in January 2012 and invited comments from affected tribes.

Around the time of the BLM's forums, at the direction of President Barack Obama, the Secretary of Energy convened a Shale Gas Production Subcommittee (Subcommittee) of the Secretary of Energy Advisory Board to evaluate hydraulic fracturing issues. The Subcommittee met with industry, service providers, state and Federal regulators, academics, environmental groups, and many other stakeholders. On August 18, 2011, the Subcommittee issued initial recommendations in its ''90-day Interim Report.'' The Subcommittee issued its final report, entitled ''Shale Gas Production Subcommittee Second Ninety Day Report'' on November 18, 2011. The Subcommittee recommended, among other things, that more information be provided to the public about hydraulic fracturing operations whether or not they occur on the Federal mineral estate, including disclosure of the chemicals used in fracturing fluids. The Subcommittee also recommended the adoption of stricter standards for wellbore construction and testing. The final report also recommended that operators engaging in hydraulic fracturing undertake pressure testing to ensure the integrity of all casings. These reports are available to the public from the Department of Energy's Web site at *http://www.shalegas.energy.gov*.

On May 11, 2012, the BLM published in the **Federal Register** the initial proposed rule entitled ''Oil and Gas; Well Stimulation, Including Hydraulic Fracturing, on Federal and Indian Lands'' (77 FR 27691). The comment period on the initial proposed rule closed on July 10, 2012. At the request of public commenters, on June 26, 2012, the BLM published in the **Federal Register** a notice extending the comment period for 60 days (77 FR 38024). The extended comment period closed on September 10, 2012. The BLM received over 177,000 comments on the initial proposed rule from individuals, Federal and state governments and agencies, interest groups, and industry representatives. After reviewing the comments on the proposed rule, the BLM now proposes to revise the initial proposed rule. As did the initial proposed rule, this revised proposed rule would apply to all wells administered by the BLM, including those of Federal, tribal, and individual Indian trust lands. Substantive comments on the initial proposed rule that informed the BLM's decisions on the revised proposed rule are discussed in the section-by-section discussion of this preamble. In the final rule, the BLM will provide a complete discussion of the comments submitted on the initial proposed rule (although some are discussed in this preamble) and those received as a result of this revised proposed rule.

The BLM's revised proposed rule is generally consistent with the American Petroleum Institute's (API) guidelines for well construction and well integrity. See API Guidance Document HF 1, Hydraulic Fracturing Operations—Well Construction and Integrity Guidelines, First Edition, October 2009. HF1 discusses the importance of maintaining wellbore integrity with casing and a cementing program. It recommends pressure tests after cementing casing strings, and describes some circumstances where CBLs are used to verify adequate cementing. The API also has published guidelines for water management that support the use of lined pits for water management. See API Guidance Document HF 2—Water Management Associated with Hydraulic Fracturing, First Edition, 2010.

Based on the input provided from a broad array of sources, including the individuals who spoke at the BLM's public forums and the recommendations of the Subcommittee, BLM proposed critical improvements to its regulations for hydraulic fracturing on May 11, 2012. Careful consideration of the comments received on the proposed rule, however, showed that further improvements and clarifications were appropriate. As did the initial proposed rule, this revised proposed rule would apply to all wells administered by the BLM, including those on Federal, tribal, and individual Indian trust lands.

Tribal consultation is a critical part of this rulemaking effort, and the Department is committed to making sure tribal leaders play a significant role as BLM and the tribes work together to develop resources on public and Indian lands in a safe and responsible way. During the proposed rule stage, the BLM initiated government-to-government consultation with tribes on the proposed rule and offered to hold follow-up consultation meetings with any tribe that desires to have an individual meeting. In January 2012, the BLM held four regional tribal consultation meetings, to which over 175 tribal entities were invited. To build upon established local relationships, the individual follow-up consultation meetings involved the local BLM authorized officers and management, including State Directors. After the issuance of the proposed rule, tribal governments, tribal members, and individual Native Americans were also invited to comment directly on the proposed rule.

In June 2012, the BLM held additional regional consultation meetings in Salt Lake City, Utah; Farmington, New Mexico; Tulsa, Oklahoma; and Billings, Montana. Eighty-one tribal members representing 27 tribes attended the meetings. In these sessions, the BLM and tribal representatives engaged in substantive discussions of the proposed hydraulic fracturing rule. A variety of issues were discussed, including but not limited to the applicability of tribal laws, validating water sources, inspection and enforcement, wellbore integrity, and water management, among others. Additional individual consultations with tribal representatives have taken place since that time. Also consultation meetings were held at the National Congress of American Indian Conference in Lincoln, Nebraska, on June 18, 2012, and at New Town, North Dakota on July 13, 2012.

Responses from tribal representatives informed the agency's actions in defining the scope of acceptable hydraulic fracturing operations. One of the outcomes of these meetings is the requirement in this rule that operators certify that operations on Indian lands comply with tribal laws.

The revised proposed rule also seeks to create less of an administrative burden than the initial proposed rule while providing the same benefits. This change was made in response to both tribal and industry comments.

The BLM has been and will continue to be proactive about tribal consultation under the Department's newly formalized Tribal Consultation Policy, which emphasizes trust, respect and shared responsibility in providing tribal governments an expanded role in informing Federal policy that impacts Indian lands. Consultation will continue during the comment period of this revised proposed rule. Tribal governments, tribal members, and individual Native Americans were also invited to comment directly on the proposed rule, as they are invited to comment on the revised proposed rule.

Several tribal representatives and tribal organizations have commented that the hydraulic fracturing rule should not apply on Indian land, or that tribes should be allowed to decide not to have the rule apply on their land (that is, ''opt out'' of the rule). The BLM fully

embraces the statutes, Executive Orders, and other statements of governmental or departmental policy in favor of promoting tribal self-determination and control of resources. In addition, the Department remains bound by specific statutes in which Congress has delegated specific authority and duties to the Department regarding the management and regulation of resources. The IMLA provides in pertinent part as follows: ''All operations under any oil, gas, or other mineral lease issued pursuant to the terms … of this title or any other Act affecting restricted Indian lands shall be subject to the rules and regulations promulgated by the Secretary of the Interior.'' 25 U.S.C. 396d. The Department has consistently interpreted this statutory directive as allowing uniform regulations governing mineral resource development on Indian and Federal lands. Thus, an opt-out provision would not be consistent with the Department's procedures under IMLA, and the revised proposed rule does not provide such an option.

There has also been a suggestion that the Secretary should delegate her regulatory authority to the tribes if the tribe has regulations that meet or exceed the standards in the BLM regulation. The IMLA does not authorize the Secretary to delegate her regulatory responsibilities to the tribes, and therefore the revised proposed rule does not include a delegation provision. Nonetheless, there are opportunities for tribes to assert more control over oil and gas operations on tribal land by entering into Tribal Energy Resource Agreements under the Indian Energy Development and Self-Determination Act (part of the Energy Policy Act of 2005), and to pursue contracts under the Indian Self-Determination and Education Assistance Act of 1975.

Also, the proposed rule has been revised to defer to State (on Federal land) or tribal (on Indian land) designations of aquifers as either requiring protection from oil and gas operations, or as exempt from the requirement to isolate water-bearing zones in section 3162.3–3(b). Revised section 3162.3(k) provides that for lands within the jurisdiction of a State or a tribe that State or tribe could work with the BLM to craft a variance that would allow compliance with State or tribal requirements to be accepted as compliance with the rule, if the variance meets or exceeds this rule's standards. The BLM is also seeking comments on whether compliance with State or tribal requirements to disclose chemical constituents of hydraulic fracturing fluids should be deemed as compliance with the proposed rule if the State or tribal requirements meet or exceed the standard in the rule at section 3162.3–3(i).

As explained elsewhere in this preamble, the BLM intends to reach out to States and to tribes to review existing agreements, to strengthen those that could provide a greater role for States and tribes, and to reach new agreements where there have been none. The BLM will seek new and improved agreements to reduce regulatory burdens and to increase efficiency, while fulfilling the Secretary's responsibilities mandated by statutes as steward for the public lands and trustee for Indian lands.

The BLM invites the public's comments on whether there are other opportunities in the revised proposed rule to incorporate or to defer to State or tribal standards or requirements.

Although greater use of State or tribal standards or procedures could reduce compliance costs for operators and increase consistency, enforcement issues could arise. On Federal lands, the BLM enforces the Federal regulations and lease conditions, and the States enforce their regulations. On Indian lands, the BLM enforces the Federal regulations and the terms of the leases, and the tribes have the power to enforce their own law. Comments are requested on practical enforcement challenges that might arise if the BLM incorporates or defers to State or tribal laws or procedures, and on any proposed solutions.

Over the past few years, in response to strong public interest, several States—including Colorado, Wyoming, Arkansas, and Texas—have substantially revised their State regulations related to hydraulic fracturing. One of the BLM's key goals in updating its regulations on hydraulic fracturing is to complement State efforts by providing a consistent standard across all public and Indian lands nationwide. The BLM has revised the initial proposed rule to make reported information consistent and easily accessible to the public. For instance, the BLM is working closely with the Groundwater Protection Council and the Interstate Oil and Gas Compact Commission so that operators may report chemicals used in hydraulic fracturing operations to BLM through the existing FracFocus.org Web site, which is already well established and used by many States. This online database includes information from oil and gas wells in approximately 12 States and includes information from over 500 companies. The BLM understands that the database is in the process of being improved and will in the near future have enhanced search capabilities and allow for easier reporting of information. If operators are unable to use FracFocus or elect not to, they may elect to report chemicals used on Federal or Indian lands directly to the BLM. The BLM intends to report that information to the public through FracFocus.

The BLM recognizes the efforts of some States to regulate hydraulic fracturing and seeks to avoid duplicative regulatory requirements. However, it is important to recognize that a major impetus for a separate BLM rule is that States are not legally required to meet the stewardship standards applying to public lands and do not have trust responsibilities for Indian lands under Federal laws. Thus, the rule may expand on or set different standards from those of States that regulate hydraulic fracturing operations, but do not need to adhere to the same resource management and public involvement standards appropriate on Federal lands under Federal law. This revised proposed rule encourages efficiency in the collection of data and the reporting of information by proposing to allow operators in States that require disclosure on FracFocus to meet both the State and the BLM requirements through a single submission to FracFocus.

III. Discussion of the Revised Proposed Rule and Comments on the Proposed Rule

As was discussed in the proposed rule, the BLM is revising its hydraulic fracturing regulations, found at 43 CFR 3162.3–2, and adding a new section 3162.3–3. Existing section 3162.3–3 would be retained and renumbered.

The *Federal Land Policy and Management Act* (FLPMA) directs the BLM to manage the public lands so as to prevent unnecessary or undue degradation, and to manage those lands using the principles of multiple use and sustained yield. FLPMA defines multiple use to mean, among other things, a combination of balanced and diverse resource uses that takes into account long-term needs of future generations for renewable and non-renewable resources. FLPMA also requires that the public lands be managed in a manner that will protect the quality of their resources, including ecological, environmental, and water resources. The *Mineral Leasing Act* and the *Mineral Leasing Act for Acquired Lands* authorize the Secretary to lease Federal oil and gas resources, and to regulate oil and gas operations on those leases, including surface-disturbing activities. The *Act of March 3, 1909,* the

Indian Mineral Leasing Act and the *Indian Mineral Development Act* assigns regulatory authority to the Secretary over Indian oil and gas leases on trust lands (except those excluded by statute, i.e., the Crow Reservation in Montana, the ceded lands of the Shoshone Reservation in Wyoming, the Osage Reservation in Oklahoma, and the coal and asphalt lands of the Choctaw and Chickasaw Tribes in Oklahoma). As stewards of the public lands and minerals and as the Secretary's regulator for operations on oil and gas leases on Indian lands, the BLM has evaluated the increased use of hydraulic fracturing practices over the last decade and determined that the existing rules for hydraulic fracturing require updating. The Secretary delegated to the BLM his authority to oversee operations on Indian mineral leases through the Departmental Manual (235 DM 1.K) under the Indian Allotted Lands Leasing Act and the Tribal Lands Leasing Act. The Secretary also approved the authorities section of the regulations which give the BLM authority under additional Indian related statutes.

As discussed in the background section of this preamble, the increased use of well stimulation activities over the last decade has also generated concerns among the public about hydraulic fracturing and about the chemicals used in hydraulic fracturing. The proposed rule and this revised proposed rule are intended to increase transparency for the public regarding the fluids used in the hydraulic fracturing process, in addition to providing assurances that wellbore integrity is maintained throughout the fracturing process and that the fluids that flow back to the surface from hydraulic fracturing operations are properly stored, disposed of, or treated. The following chart explains the major changes between the proposed regulations and the regulations in this revised proposed rule.

Initial proposed regulation	Revised proposed pegulation	Substantive changes
43 CFR 3160.0–5 Definitions	43 CFR 3160.0–5 Definitions	This revised proposed rule would revise the proposed term ''stimulation fluid'' to ''hydraulic fracturing fluid'' to be consistent with other changes to the rule. It also would delete the definition of ''well stimulation'' and add a definition of ''hydraulic fracturing,'' which excludes acidizing, enhanced secondary recovery and tertiary recovery. The terms used in other sections of this rule were also revised to make those sections consistent with the changes here. The rule would also include definitions of the terms ''refracturing'' and ''type well.'' ''Refracturing'' is defined as a hydraulic fracturing operation subsequent to an initial completion of an oil and gas well which used hydraulic fracturing previously. ''Type well'' is defined in this section to mean an oil and gas well that can be used as a model for other wells drilled by the same operator across the field. The revised proposed rule also clarifies the definition of ''usable water'' by specifying types of geologic zones that would be deemed to contain usable water, and other types that would be deemed not to contain usable water.
43 CFR 3162.3–2(a) Subsequent Well Operations.	43 CFR 3162.3–2(a) Subsequent Well Operations.	The revised proposed rule would replace the term ''commingling'' with the term ''combining'' to avoid confusion with the term ''commingling'' that is used in calculating royalties on production.
43 CFR 3162.3–3(a) Subsequent Well Operations; Well Stimulation.	43 CFR 3162.3–3(a) Subsequent Well Operations; Hydraulic Fracturing.	The revised proposed rule would change the scope of the regulation to apply only to hydraulic fracturing operations, and not to other ''well stimulation'' activities. It would clarify that the regulation also applies to refracturing operations.
(None)	43 CFR 3162.3–3(b) Isolation of Usable Water to Prevent Contamination.	This new paragraph would require that all fracturing and refracturing operations meet the performance standard in section 3162.5–2(d), which requires that operators must isolate all usable water and other mineral-bearing formations and protect them from contamination.
43 CFR 3162.3–3(c) What the Notice of Intent Sundry Must Include.	43 CFR 3162.3–3(d) What the Notice of Intent Sundry Must Include.	The revised proposed rule would add a new provision that allows the Notice of Intent (NOI) Sundry to be submitted for a single well or a group of wells with the same geological characteristics. If it is for a group of wells, the information should be for a ''type well.''
43 CFR 3162.3–3(c)(2)	43 CFR 3162.3–3(d)(2)	The revised proposed rule would delete the requirement to submit a CBL for approval prior to commencing fracturing operations. Section 3162.3–3(i)(8), would require that a CEL be submitted after fracturing operations, unless there are problems with the cement job. The revised proposed rule would also add a requirement that the depths of usable water aquifers be based on a drill log of the subject well or of another well in the field.
43 CFR 3162.3–3(c)(4)	Deleted	The revised proposed rule would delete the requirement that the operator submit a pre-hydraulic fracturing certification that it will comply with all applicable permitting and notice requirements.
43 CFR 3162.3–3(c)(3)	43 CFR 3162.3–3(d)(3)	The revised proposed rule would add to the list of the source and location of water supply ''reused or recycled water.''
43 CFR 3162.3–3(c)(5)	43 CFR 3162.3–3(d)(4)	The revised proposed rule would add to the requirements for a hydraulic fracturing design that the operator must include the estimated fracture direction and propagation plotted on the well schematics and on a topographical map of the same scale as the map used in the APD. It would also add a requirement to supply the estimated vertical distance to the nearest usable water aquifer above the fracture zone.

Initial proposed regulation	Revised proposed pegulation	Substantive changes
43 CFR 3162.3–3(c)(6)	43 CFR 3162.3–3(d)(5)	The revised proposed rule would remove ''chemical composition'' from the information that is required to be submitted regarding the handling of recovered fluids.
43 CFR 3162.3(d) Mechanical Integrity Testing Prior to Well Stimulation.	43 CFR 3162.3–3(f) Mechanical Integrity Testing Prior to Hydraulic Fracturing.	The revised proposed rule would add clarification that a mechanical integrity test (MIT) would be required for a re-fracturing operation.
(None)	43 CFR 3162.3–3(e)(1) Monitoring of Cementing Operations and Cement Evaluation Log Prior to Hydraulic Fracturing.	The revised proposed rule would add a new paragraph requiring that during cementing operations the operator must monitor and record the flow rate, density, and treating pressure, and then submit the monitoring report to the BLM within 30 days of completion of the hydraulic fracturing.
43 CFR 3162.3–3(c)(2)	43 CFR 3162.3–3(e)(2)	The revised proposed rule would add a new paragraph stating a general rule that an operator must run a CEL on each casing that protects usable water. A CEL may be ultrasonic logs, variable density logs, micro-seismograms, standard CBLs, CBLs with directional receiver array, ultrasonic pulse echo technique, an isolation scanner or other tool of equal effectiveness.
(None)	43 CFR 3162.3–3(e)(3)	The revised proposed rule would add a new paragraph that provides an exception to the CEL requirement where an operator's ''type well'' has been shown to have successful cement bonding and subsequent wells have the same specifications and geologic parameters as the ''type well,'' and the cementing operations monitoring data parallels those of the type well.
(None)	43 CFR 3162.3–3(e)(4)	The revised proposed rule would add a new paragraph that if there is any indication of inadequate cementing, the operator must report it to the BLM within 24 hours, with written confirmation within 48 hours. The operator would be required to run a CEL showing that it has corrected the cementing job, and that usable water has been isolated to protect it from contamination. At least 72 hours prior to starting fracturing operations, the operator must submit to the BLM a certification indicating that it corrected the inadequate cement job and documentation showing that there is adequate cement bonding.
(None)	43 CFR 3162.3–3(e)(5)	The revised proposed rule would add a new provision stating that the operator must submit the information required by (e)(1) and (2) to the BLM in a Subsequent Report Sundry Notice.
43 CFR 3162.3–3(e)(1)	43 CFR 3162.3–3(g)(1)	This paragraph would be revised to apply to refracturing operations as well as fracturing operations. It also would be revised to make it clear that that the pressure in the annulus between any intermediate casings and the production casing must be continuously monitored and recorded.
43 CFR 3162.3–3(e)(2) Monitoring and Recording During Well Stimulation.	43 CFR 3162.3–3(g)(2) Monitoring and Recording During Hydraulic Fracturing.	This paragraph would be revised to apply to refracturing operations as well as fracturing operations. For any incident of the annulus pressure increasing by more than 500 psi, the revised proposed rule would change the due date for a Subsequent Report Sundry Notice from 15 days after the occurrence to 30 days after completion of fracturing operations.
43 CFR 3162.3–3(g) Information that Must be Provided to the Authorized Officer After Completed Operations.	43 CFR 3162.3–3(i) Information that Must be Provided to the Authorized Officer After Completed Operations.	Changes to this section would add a clarification that the information is required for each well fractured or refractured, even if the BLM approved a Notice of Intent Sundry for a group of wells. The new provision would allow reporting of chemical information to the BLM either directly or through FracFocus or other database that the BLM specifies. The revised proposed rule would add a new provision that the operator submitting chemical information through FracFocus must specify that the information is for a Federal or Indian well, certify that the information is correct, and certify that the operator complied with applicable laws governing notice and permits. The revised proposed rule would also add a new provision clarifying that the operator is responsible for information submitted by its hydraulic fracturing contractor.
43 CFR 3162.3–3(g)(1)	43 CFR 3162.3–3(i)(2)	This revised section would delete the requirement that the operator report the actual access route and transportation method for all water used in stimulating the well, since this information is provided before the operation is approved.

Initial proposed regulation	Revised proposed pegulation	Substantive changes
43 CFR 3162.3–3(g)(2), (4) and (5)	43 CFR 3162.3–3(i)(1)	The proposed regulation required two separate reports or tables (one for all additives of the actual stimulation fluid by trade name and purpose, and another for the complete chemical makeup (including the Chemical Abstracts Service Registry Number [CAS number]) of all materials used in the actual stimulation fluid). The revised proposed rule would require the information required in the FracFocus form: True vertical depth of the well, total water volume used, and for each chemical used (including the base fluid) the trade name, supplier, purpose, ingredients, CAS number, maximum ingredient concentration in the additive, and maximum ingredient concentration in the fracturing fluid.
43 CFR 3162.3–3(g)(6)	43 CFR 3162.3–3(i)(4)	A new requirement would be added by this rule to report the actual, estimated, or calculated direction of the fractures.
43 CFR 3162.3–3(g)(7)	Deleted	This revised proposed rule would delete the provision that would have expressly allowed the Subsequent Report Sundry Notice to be completed in part by attaching the hydraulic fracturing contractor's job log so long as the required information was included and readily apparent.
43 CFR 3162.3–3(g)(8) and (9)	43 CFR 3162.3–3(i)(7)	The revised proposed rule would revise the requirement for certification of wellbore integrity to include the monitoring of cementing operations and the CEL. It would also clarify that the certification of compliance with applicable law is different for Indian lands than for Federal lands.
(None)	43 CFR 3162.3–3(i)(8)	This rule would add a new paragraph requiring operators to submit the actual cement operations monitoring report, any CEL, and the MIT results.
(None)	43 CFR 3162.3–3(i)(9)	This rule would add a new paragraph allowing the BLM to require the operator to provide further information about any representation submitted under paragraph (i).
43 CFR 3162.3–3(h) and (i)	43 CFR 3162.3–3(j)(1) through (4)	In this revised proposed rule these sections have been significantly revised. The regulations would no longer require operators to submit all information about chemicals to the BLM, to segregate trade secrets, and to justify the assertion of trade secret protection. Instead, the regulations would instruct operators not to disclose trade secret information to the BLM or on FracFocus. Operators would submit an affidavit stating that the withheld information is entitled to withholding from the public under Federal statute or regulation. The BLM would retain authority to require operators to submit the claimed trade secret information.
(None)	43 CFR 3162.3–3(j)(4)	This rule would add a new paragraph requiring operators to keep the information claimed to be trade secrets for 6 years, by reference to existing 43 CFR 3162.4–1, which applies to all lease operations.
* * *	43 CFR 3162.3–3(k)	This rule would add a new provision allowing States and tribes to work with the BLM to create variances applicable to all lands within a field, a basin, a State, or Indian lands. Such a variance would have to meet or exceed the effectiveness of the rule provision it replaces.

Section-by-Section Discussion of the Revised Proposed Rule and Discussion of Comments

Comments Addressed in This Revised Proposed Rule

In this revised proposed rule, the BLM discusses many of the comments received on the proposed rule. The BLM will fully discuss comments on the initial proposed and revised proposed rules in the eventual announcement of the final rule. Commenters provided detailed and helpful information. The BLM desires to demonstrate how public comment assisted in framing the issues and to ultimately produce this revised proposed rule. The Department does not address every comment in this revised rule, because the changes in this revised proposed rule have mooted some comments on the initial proposed rule. Other comments were not central to the re-evaluation the BLM has undertaken, and thus discussion of those few comments would not contribute to the public's understanding of the reasons the BLM is publishing the revised proposed rule.

Additionally, not every change in the revised proposed rule responds to a specific comment. Some revisions clarify the proposed rule, and still other revisions allow this revised rule to be more effective with reduced costs and delays to operators and to the BLM.

This revised proposed rule identifies some issues on which the BLM specifically seeks comments. The public, however, may submit comments on any provision of the revised proposed rule. All comments received in response to the initial proposed rule will be in the record of any final rule; accordingly, the public does not need to resubmit comments to the initial proposed rule in response to this revised proposed rule.

General Comments on the Initial Proposed Rule

The BLM received comments both supporting and questioning the need for a rule regulating hydraulic fracturing. Supporters stated, among other things, that the rule protects groundwater and ensures that operators properly handle flowback water. In general, the opposition stated that BLM regulation of hydraulic fracturing is unnecessary and

argued that no scientific basis exists that hydraulic fracturing causes groundwater contamination and that it is a low-risk operation. The opposition further argued that States should regulate hydraulic fracturing and that many States already have current rules. The BLM acknowledges that many States do have regulations in place; however, not all of the States that contain Federal lands under the BLM's jurisdiction have hydraulic fracturing regulations. Further, FLPMA and other Federal law provide for public involvement that is not always required in State law. In addition, the BLM has responsibilities for Indian resources and State regulations do not apply to Indian lands. Furthermore, States do not uniformly require measures that would uphold the BLM's responsibilities for federally managed public resources, to protect the environment and human health and safety on Federal and Indian lands, and to prevent unnecessary or undue degradation of the public lands. By taking additional steps to ensure wellbore integrity and to control the handling of flowback water, potential impacts of hydraulic fracturing can be mitigated.

Some commenters questioned whether the BLM's proposed regulations are premature, because the Environmental Protection Agency (EPA) is currently conducting a multi-year study on the potential impact of hydraulic fracturing on drinking water resources, with a final report due in 2014. The BLM is aware of the ongoing EPA study relating to the impacts of hydraulic fracturing. While the EPA study may offer additional information regarding the potential impacts of hydraulic fracturing, nothing in the revised proposed regulations would contradict or conflict with the EPA study, which does not focus on the management of public lands and resources subject to Federal public lands law. Notwithstanding the findings that will be included in the EPA's anticipated study, this revised regulation prevents undue or unnecessary degradation of public lands and furthers the Secretary's trust responsibilities on Indian lands.

Some commenters disputed the authority of the BLM to regulate well construction and regulate water supplies used for, or potentially impacted by, hydraulic fracturing. Other commenters asserted that the proposed rule infringes upon State and tribal water rights authority. FLPMA directs the BLM to manage the public lands so as to prevent unnecessary or undue degradation. FLPMA also requires that the public lands be managed in a manner that will protect the quality of resources, *i.e.* ecological, environmental, and water resources. Regulating wellbore construction meets these mandates. The Indian lands leasing statutes direct the Secretary to regulate oil and gas operations on Indian lands. The Secretary has delegated his authority for regulating downhole activities on Indian mineral leases to the BLM. The BLM has historically regulated the construction of wellbores through approvals of APDs (applying the Onshore Oil and Gas Order Numbers 1 and 2). This rule would supplement existing regulations regarding wellbore construction (Onshore Oil and Gas Order Number 2, Drilling (53 FR 46790)).

The revised proposed regulations at sections 3162.3–3(d)(3) and 3162.3–3(i)(2) would require submission of information on water sources to assist the BLM in assessing the environmental effects of individual drilling operations. The National Environmental Policy Act and the implementing regulations by the Council on Environmental Quality require that Federal agencies assess the environmental impacts of their proposed actions and inform their decision-making. The information on water sources will be part of an environmental assessment regarding how water is being supplied for the hydraulic fracturing operation. The BLM does not intend to regulate water use, but instead to acquire information on the water used incidental to oil and gas operations on Federal and Indian lands. Acquisition of this information is similar to requirements in Onshore Oil and Gas Order No. 1, Approval of Operations (72 FR 10308) for drilling a well. Onshore Order No. 1 requires the operator to identify the source, access route, and transportation method for all water anticipated for use in drilling the proposed well. Based on information received at this time, the requirement in Onshore Order No. 1 has not caused conflicts with State or tribal water rights authorities. Likewise, based on BLM's previous experience with the information requirements of its existing onshore orders, BLM does not anticipate that the requirements proposed here will cause any conflicts. The revised proposed regulation does not regulate Indian, State, and private water rights. Accordingly, the Department made no revisions to the initial proposed rule as a result of these comments.

The BLM received some comments stating that the rule should clarify the jurisdiction or scope of this rule. The revised proposed rule falls under 43 CFR part 3160. The jurisdiction (scope) of all sections under part 3160, which would include this revised proposed rule, is defined in existing regulations at 43 CFR 3161(a), which states: ''[a]ll operations conducted on a Federal or Indian oil and gas lease by the operator are subject to the regulations in this part.'' Therefore, this revised proposed rule would not apply to hydraulic fracturing operations on private or State leases, even leases included in a Federal or Indian agreement. The BLM's only jurisdiction on private and State leases is for site security, measurement, and reporting of production when the private or State lease is committed to a Federal or Indian agreement. Existing regulations already define the jurisdiction or scope of the revised proposed rule, so the Department made no revisions to the initial proposed rule as a result of these comments.

Some commenters requested that the BLM coordinate permitting and reporting with States to avoid duplication. Some commenters faulted the BLM for undermining the efforts of State oil and gas commissions to regulate hydraulic fracturing. The BLM has revised the initial proposed rule to avoid duplication with State requirements. Nonetheless, the BLM needs to have accurate information about the construction and completion of oil and gas wells on Federal and Indian land. The BLM acknowledges the efforts necessary to comply with State or tribal and BLM regulations, but modern information technology significantly reduces the time and expense of reporting the same information to both a State or tribal agency and to the BLM. Federal law is clear that the Federal Government has extensive authority over Federal lands and Indian lands, and that State governments may exercise certain powers on non-Indian lands, except in instances where Federal law preempts State law. The notice, approval, testing, operational, and reporting requirements of the revised proposed regulation would in no way undermine the efforts of State agencies to regulate hydraulic fracturing. The BLM recognizes the advantages to building upon existing relationships established with the different States and tribes as a prudent approach to maintaining efficiency and flexibility while reducing duplication. It makes sense for both the BLM and the States or tribes with oil and gas activity to explore ways to coordinate implementation of this revised proposed rule. For States or tribes that maintain hydraulic fracturing rules that meet or exceed the standards that would be imposed by this revised proposed rule, the BLM will pursue amending or

updating the existing agreement with each State or tribe to reflect the expectation and responsibilities for each agency. An example of an existing agreement is the State of Colorado which has a Memorandum of Agreement with the BLM (and the United States Forest Service) for Permitting and Oil and Gas Operations on BLM and National Forest Service Lands in Colorado.

The BLM is committed to working with tribes to coordinate implementation of this revised proposed rule with the tribes' laws, rules, and permitting and inspection programs. The contents of such agreements or understandings might be different for each tribe, but such agreements actively seeking opportunities to share standards, information, and processes should yield more consistency for operators and better efficiency for the BLM and tribal agencies.

Some commenters said that the proposed rule is inconsistent with existing laws or regulations such as the *Energy Policy Act of 2005* and EPA's New Source Performance Standards. For instance, some commenters believed that the proposed permitting requirements would cause delays in permitting that would violate the timeframes mandated by the Energy Policy Act. The BLM disagrees with these comments. Changes from the initial proposal in this revised proposed rule would reduce possible permitting delays and BLM projected workload. The BLM would meet the requirements of the Energy Policy Act by informing the operator what steps remain to be completed and the schedule for completion of these requirements for processing of their drilling permits. Often delays occur from submittal of incomplete information or surveys as part of the drilling permit proposal, or due to turnover in industry permitting specialists. The BLM has increased the number of drilling permits approved over the past 3 years, and does not believe such productivity gains will be negatively impacted by this revised proposed rule. The BLM received some comments that certain definitions and requirements in the proposed rule were vague. The commenters stated that without clarification, this purported vagueness could lead to misinterpretation by operators and inconsistent application by BLM engineers and inspectors. Because the revised proposed rule uses different approaches to regulation than the initial proposed rule, some definitions have been revised. The BLM worked to ensure the revisions also increased clarity. The BLM believes that the definitions are sufficiently clear to the industry, the BLM, and the public. To the extent that some definitions might be construed as open-ended, it is because the rule must allow for some degree of flexibility to accommodate the wide range of geologic and environmental conditions encountered on Federal and Indian leases.

Some commenters stated that the BLM does not have the staffing, budget, or the number of experts needed to implement the rule, which will cause delays in approvals. The BLM does not agree with the assertion regarding the lack of BLM staff expertise. Also the revisions proposed in this revised proposed rule would reduce the amount of staff time required to implement the rule and limit any permitting delays. The changes include the option of including multiple wells with substantially similar geology in the permit application (type wells), narrowing the scope of the rule to include only hydraulic fracturing, and the elimination of the proposed requirement for the BLM to review and approve CBLs prior to hydraulic fracturing. These changes are discussed further in other sections of this rule.

Some BLM offices, especially those that process a large volume of drilling applications, may experience delays in implementing the revised proposed rule. The BLM is mindful of this issue and already provides remote assistance from other offices. As with the implementation of any new rule, some delays may be inevitable. This rule, however, will help prevent unnecessary or undue degradation of public lands and to provide protection to Indian trust resources.

Some commenters recommended that the BLM, State, or tribes should inspect all hydraulic fracturing operations on Federal and Indian land. The BLM did not revise the rule as a result of these comments. As part of the BLM's annual inspection strategy, the BLM inspects all workover operations, including hydraulic fracturing, on Federal and Indian lands that are rated as a high priority. This rating depends on measuring many factors, including the type of operation, the location, and the potential impacts of the operation.

The BLM received some comments objecting to the application of the rule to ''well stimulation'' operations which, as defined in the May 2012, proposed rule, includes any operation designed to increase the permeability of the reservoir rock. The definition specifically included acidization, but could also be interpreted to mean other operations such as thermal stimulation and maintenance fracturing, designed to open up fractures near the wellbore. Some of the commenters stated that the requirements in the proposed rule were too onerous for what they considered to be routine maintenance operations. The commenters requested that the rule apply only to hydraulic fracturing operations.

The BLM agrees with these comments and made several revisions to the revised proposed rule as a result. Section 3162.3–3(a) has been revised to apply only to hydraulic fracturing and refracturing, rather than to well stimulation as stated in the proposed rule.

In addition, definitions of ''hydraulic fracturing'' and ''refracturing'' have been added to the revised proposed rule (section 3160.0–5) instead of the previous definition of well stimulation. In this revised proposed rule, the term ''hydraulic fracturing'' specifically excludes enhanced secondary recovery, such as water flooding, tertiary recovery, recovery through steam injection, and other types of well stimulation such as acidizing.

Some commenters requested clarification of the requirements for operators who conduct hydraulic fracturing operations on or near land managed by other Federal agencies such as the National Park Service (NPS) and the United States Forest Service (USFS). One commenter wanted to ensure that a comprehensive NEPA document was prepared and that the BLM include the NPS as a cooperating agency when hydraulic fracturing operations are near National Parks. Another commenter wanted the rule to specify that it applied to USFS managed land. When warranted, the BLM invites other agencies, including the USFS and the NPS, to participate in the preparation of the NEPA analysis.

The involvement of other agencies reflects the site-specific issues and potential impacts to resources. On USFS lands, the USFS typically has the lead responsibility for compliance with NEPA as part of its review of the surface use plan of operation, and the BLM serves as a cooperating or joint lead agency. The revised proposed rule, as with all of the other regulations in 43 CFR part 3160 (see 43 CFR 3161.1—Jurisdiction), would apply to USFS lands. No revisions were made to the rule as a result of these comments.

The BLM received some comments requesting that the rule include a ban on the use of diesel fuel in hydraulic fracturing operations. Jurisdiction over the use of diesel fuel in hydraulic fracturing operations lies with the EPA through its administration of the Underground Injection Control (UIC)

program. (SDWA, Section 1421(d)(1)(B), 42 U.S.C. 300h(d)(1)(B)(ii,40 CFR 144.11). Owners or operators who inject diesel fuels during hydraulic fracturing related to oil and gas operations must obtain a UIC permit before injection begins. The EPA published draft permitting guidance for oil and gas hydraulic fracturing operations using diesel fuels in May 2012. Thus the BLM did not revise the rule as a result of these comments.

The BLM received some comments that certain provisions of the proposed rule were open ended, which would give BLM too much discretion and would result in uncertainty, delays, and increased costs for operators. For example, some comments suggested that the ability of the BLM to request additional information in the Sundry Notice requesting approval for hydraulic fracturing (section 3162.3–3(d)(7)) was open ended. The BLM believes that the provisions in the revised proposed rule are necessary to provide the flexibility essential to regulating operations over a broad range of geologic and environmental conditions. Requests for information from the Authorized Officer are administratively appealable if an operator believes the directive lacks a proper basis. The BLM did not revise the rule as a result of these comments.

The BLM received some comments suggesting that all wells permitted prior to the effective date of the rule should be exempt from the provisions of the rule, that the rule be phased in over a period of 180 days, and that older wells should be reviewed for information only. The BLM understands the commenters' concerns. Nonetheless, the primary goal of this rule is to ensure that hydraulic fracturing does not cause negative impacts to Federal or Indian resources, including groundwater and surface water. This is achieved by ensuring wellbore integrity is maintained throughout the hydraulic fracturing process and placing restrictions on the handling of flowback water. Achieving these goals is critical regardless of when the BLM approved the APD or if the proposed operation will take place immediately after the effective date of the rule or 180 days after the effective date of this rule. The BLM did not revise the rule as a result of these comments.

Section Discussion

As an administrative matter, this rule would amend the authorities section for the BLM's oil and gas operations regulations at 43 CFR 3160.0–3 to include FLPMA. Section 310 of FLPMA authorizes the Secretary of the Interior to promulgate regulations to carry out the purposes of FLPMA and other laws applicable to the public lands. See 43 U.S.C. 1740. This amendment would not be a major change and would have no effect on lessees, operators, or the public.

This rule would remove the terms ''nonroutine fracturing jobs,'' and ''routine fracturing jobs,'' from 43 CFR 3162.3–2(a) and 43 CFR 3162.3–2(b). It would add a new section, 43 CFR 3162.3–3, for hydraulic fracturing operations. In this rule, there would be no distinction drawn between ''nonroutine'' or ''routine'' hydraulic fracturing operations. Prior approval would be required for hydraulic fracturing operations, but would be available concurrently with the prior approval process that is already in place for general well drilling activities through the APD process. The running of CELs on surface or intermediate casing strings, which is currently an optional practice, would be required for new wells where the casing protects usable water, except for wells substantially similar to an operator's ''type well'' for which the operator has demonstrated the efficacy of the cement bonding of casing under similar geological conditions within the same field. All wells would require mechanical integrity testing prior to hydraulic fracturing.

The revised proposed rule includes eight new definitions for technical terms used in the rule. These definitions will improve readability and clarity of the regulations.

Published in this rule are the following definitions:

- *Annulus* means the space around a pipe in a wellbore, the outer wall of which may be the wall of either the borehole or the casing; sometimes also called the *annular space.*
- *Bradenhead* means a heavy, flanged steel fitting connected to the first string of casing that allows suspension of intermediate and production strings of casing, and supplies the means for the annulus to be sealed off.
- *Hydraulic fracturing* means those operations conducted in an individual wellbore designed to increase the flow of hydrocarbons from the rock formation to the wellbore through modifying the permeability of reservoir rock by breaking it. Hydraulic fracturing does not include enhanced secondary recovery such as water flooding, tertiary recovery, recovery through steam injection, or other types of well stimulation operations such as acidizing. The BLM changed the proposed rule's term ''stimulation fluid'' to ''hydraulic fracturing fluid'' throughout these regulations.
- *Hydraulic fracturing fluid* means the liquid or gas, and any associated solids used in hydraulic fracturing, including constituents such as water, chemicals, and proppants.
- *Proppant* means a granular substance (most commonly sand, sintered bauxite, or ceramic) that is carried in suspension by the fracturing fluid and that serves to keep the cracks open when fracturing fluid is withdrawn after a hydraulic fracture treatment.
- *Refracturing* means a hydraulic fracturing operation subsequent to the completion of a prior hydraulic fracturing operation in the same well. For purposes of this definition, a hydraulic fracturing operation is completed when a well begins producing oil or gas, or when equipment necessary to inject the hydraulic fracturing fluid at sufficient pressure to fracture the stratum is removed from the well pad, whichever occurs earlier.
- *Type well* means an oil and gas well that can be used as a model for well completion in a field where geologic characteristics are substantially similar within the same field, and where operations such as drilling, cementing, and completions using hydraulic fracturing are likely to be successfully replicated using the same design.

Usable water means generally those waters containing up to 10,000 ppm of total dissolved solids.

The proposed rule used the term ''well stimulation'' to describe the activities being regulated by this rule. In this revised proposed rule, that term is replaced with the term ''hydraulic fracturing.'' The reason for the change is because, after reviewing all of the comments and considering the available information, the BLM has determined that only hydraulic fracturing operations require the additional measures in this rulemaking. This definition also has language that explains the types of secondary recovery activities to which this rule does not apply.

This rule also includes the following three terms that were not in the proposal: Hydraulic fracturing fluid; refracturing; and type well. These terms are defined so that there is a common understanding of the regulatory provisions that follow.

This rule would delete the definition of ''fresh water,'' and is consistent with how the BLM has been protecting all usable waters in its onshore orders. Usable water includes fresh water (often defined as water containing less than 5,000 parts per million (ppm) of total dissolved solids (TDS)) and water that is

of lower quality than fresh water. The BLM has been more protective when it seeks to protect all usable water during drilling operations, not just fresh water. This policy was established upon the effective date of Onshore Order No. 2, December 19, 1988. Water with up to 10,000 ppm TDS may be used for some agricultural or industrial purposes, often with some treatment, and thus would continue to be protected under this revised proposed rule. Not all waters of up to 10,000 ppm TDS need to be isolated or protected from hydraulic fracturing operations; clarifying edits have been added to help the public understand how the rule will affect operations.

The rule would revise section 3162.3–2(a) by removing the phrase ''perform nonroutine fracturing jobs'' from the current 43 CFR 3162.3–2(a). The phrase ''routine fracturing jobs, or'' would also be removed from existing section 3162.3–2(b). This rule does not affect requirements for acidizing jobs, and this rule would not remove the reference to acidizing jobs from section 3162.3–2(b). Hydraulic fracturing operations are addressed under section 3162.3–3.

In paragraph (a) of this section, the term ''commingling'' in the initial proposed rule would be replaced with the term ''combining'' to clarify the intent of this requirement and to avoid confusion with the meaning of ''commingling'' as that term is used in a production accounting context and in sections 3162.7–2 and 3162.7–3 of this title. The term ''commingling'' in a production accounting context refers only to the combining of production from different leases, communitized areas (CA), participating areas (PA), or State or private mineral estates prior to royalty measurement. Commingling, whether it is downhole commingling or surface commingling, requires BLM approval to ensure that the allocation method is consistent with Onshore Oil and Gas Order Number 3, Site Security (54 FR 8056), Onshore Oil and Gas Order Number 4, Measurement of Oil (54 FR 8086), and Onshore Oil and Gas Order Number 5, Measurement of Gas (54 FR 8100), for royalty measurement purposes. The combining of production from different intervals or zones within a wellbore also requires BLM approval to ensure that the zones proposed for combining are compatible from a reservoir standpoint, regardless of the royalty implications. The intent of the requirement in this section would be to address reservoir concerns from combining zones or intervals; therefore, the word ''commingling'' was changed to ''combining.'' The royalty implications of commingling production from different leases, CAs, PAs, or State and private properties are handled under a separate approval process in 43 CFR 3162.7–2 and 3162.7–3.

Refracturing operations within 5 years from the approval of a Notice of Intent Sundry would be considered a ''recompletion'' under section 3162.3–2(b). The subsequent report on those operations would require the information and certifications prescribed in section 3162.3–3(i) of this rule. Under section 3162.3–3(c)(3)(i), a refracturing operation more than 5 years after the approval of the Notice of Intent Sundry would require BLM's approval of a new Notice of Intent Sundry.

The revised proposed rule would change the scope of the regulation to apply only to hydraulic fracturing operations and not to other well stimulation activities. Section 3162.3–3(a) would make it clear that this section applies only to hydraulic fracturing operations and that all other injection activities must comply with section 3162.3–2. This language is necessary to make the distinction between hydraulic fracturing and other well injection activities, such as secondary and tertiary recovery operations. Secondary and tertiary recovery operations do not involve the injection of chemicals at pressures high enough to fracture strata, and thus do not raise the same concerns of breaching the well bore and migrating into usable water.

New paragraph 3162.3–3(b) would require that all fracturing and refracturing operations meet the performance standard in section 3162.5–2(d) of this title. Among other things, that section requires operators to isolate all usable water and other mineral-bearing formations and protect them from contamination.

Some commenters requested more clarity on how the definition of usable water would apply to the requirement to isolate and protect usable water from contamination from hydraulic fracturing operations. The BLM has revised the definition of usable water to specify that, for purposes of the hydraulic fracturing regulations, usable water includes underground sources of drinking water, zones actually used for water supply for industrial or agricultural purposes (unless the operator shows that the industrial or agricultural user would not be harmed by failure to protect or isolate), and zones designated by the State or the tribe as requiring isolation or protection from oil and gas operations. The BLM has also revised the section to specify that, for the purposes of the hydraulic fracturing regulations, usable water does not include the zone authorized for hydraulic fracturing, zones designated as ''exempted aquifers'' under the Safe Drinking Water Act (SDWA), and zones that the State or tribe have explicitly designated as exempt from any requirement for oil and gas operators to isolate or protect. Any other zones containing water that does not exceed 10,000 ppm TDS would be considered usable water. The BLM recognizes that including aquifers not otherwise exempted would be consistent with its Oil and Gas Onshore Orders, but may make the rule more stringent than other Federal, State, and tribal laws. The BLM invites comments specifically on the incremental costs associated with protecting zones that contain up to 10,000 ppm of total dissolved solids, that are not already protected under SDWA or equivalent State or tribal law, and not excluded in the proposed definition (i.e., those aquifers protected by part (4) in the proposed definition of usable water). BLM may consider excluding such zones in the final rule.

The BLM believes that the revised language makes explicit the appropriate deference to the expertise and professional judgment of the State or tribal agencies entrusted to manage the groundwater resources under their respective jurisdictions.

Section 3162.3–3(c) would require the BLM's approval of all proposals for hydraulic fracturing or refracturing activity. The operator has the option of applying for the BLM's approval in its APD, including the information required by paragraph (d) of this section.

The operator may submit a Sundry Notice and Report on Wells (Form 3160–5) as a Notice of Intent Sundry for the hydraulic fracturing proposal for the BLM's approval before the operator begins the fracturing activity. This section would supersede and replace existing section 3162.3–2(b) that states that no prior approval is required for routine fracturing. That reference in the existing section would be deleted. Also, an operator must submit a new Sundry Notice prior to hydraulic fracturing activity:

- If the BLM's previous approval for hydraulic fracturing is more than 5 years old,
- If the operator becomes aware of significant new information about the relevant geology, the fracturing operation or technology, or the anticipated impacts to any resource, or
- If the operator proposes refracturing of the well.

The 5-year period is consistent with practices in some States, including Montana, Wyoming, and Colorado,

which require that operators reconfirm well integrity for fracturing operations through a pressure test every 5 years. The requirement to submit a new NOI for refracturing is new to this revised proposed rule and is added to clarify that approval of a single hydraulic fracturing operation in a well does not allow for multiple refracturing procedures without compliance with the notice, monitoring, and reporting requirements.

The BLM understands the time-sensitive nature of oil and gas drilling and well completion activities and does not anticipate that the submittal of additional hydraulic fracturing-related information with APD applications will significantly impact the timing of the approval of drilling permits. The BLM believes that the additional information that would be required by this rule would be reviewed in conjunction with the APD and within the normal APD processing time frame. Also, the BLM anticipates that requests to conduct hydraulic fracturing operations on existing wells that have been in service more than 5 years will be reviewed promptly. The BLM understands that delays in approvals of operations can be costly to operators and the BLM intends to avoid delays whenever possible. Furthermore, if an operator believes that approval of hydraulic fracturing would be swifter if it is not part of the APD, the operator has the option of submitting the Notice of Intent Sundry at a later date. However, the operator does not obtain an exemption from any requirement of this regulation by submitting a Notice of Intent Sundry after drilling and cementing operations have commenced.

Section 3162.3–3(d) has been revised from what was originally proposed to allow the Sundry Notice required by this section to be submitted for a single well or a group of wells. If the submission is for a group of wells that share substantially similar geological characteristics, the information should describe the ''type well.'' ''Type well'' is a term commonly used in the oil and gas industry and the BLM added it as a new definition in section 3160.0–5 of this rule. By constructing and monitoring a type well, including running a CEL on casing that encounters usable water, the operator demonstrates that its engineering design and execution effectively isolate aquifers with usable water in the field. The same operator may then replicate the type well for each of the wells in the approved group for the same field. The operator would not need to run a CEL on those wells unless the monitoring data indicated a problem with the cementing.

Section 3162.3–3(d)(1) would require a report that includes the geological names, a geological description, and the proposed measured depth of the top and the bottom of the formation into which hydraulic fracturing fluids would be injected. The report is needed so that the BLM may determine the properties of the rock layers and the thickness of the producing formation and identify the confining rocks above and below the zone that would be stimulated.

Under this revised proposed rule, section 3162.3–3(d)(2) would be revised by removing the reference to the CBL, because under this rule prior approval of a CBL or other CEL would no longer be routinely required. The change in this section is as a result of changes to paragraph (e) and is necessary to make this section consistent with those changes. Section 3162.3–3(d)(2) would be revised to require the operator to submit the measured or estimated depths of all occurrences of usable water using a drill log from the subject well or any other well sharing the same geological characteristics within the same geologic formation, which will help the BLM in its efforts to make sure that water resources are protected. As it pertains to the depths of all occurrences of usable water, the word ''estimated'' has been added because at the planning stages of the operation, the actual measured depths would not generally be available.

Although prior approval of a CEL would no longer be routinely required, operators would be required to submit to the BLM the results of a CEL with the post-completion sundry notice. The BLM will be reviewing the well drilling and completion records and logs including the CEL, to help verify that operators have complied with their duty to assure that the casings are properly cemented.

Section 3162.3–3(d)(3) would require reporting of the measured depth to the perforations in the casing and uncased hole intervals (open hole). This section would also require the operator to disclose specific information about the water source to be used in the fracturing operation, including the location of the water that would be used as the base fluid. The BLM needs this information to determine the impacts associated with operations. This rule would add ''reused or recycled water'' to the example list of sources and location of the water supply to be used for fracturing operations. The rule makes it clear that reused or recycled water is a recognized source of water supply for these types of operations. The information required by this paragraph does not interfere with State or tribal regulation of water allocation. The operators would need to comply with all State or tribal water laws, but need not disclose to the BLM the documents evidencing their rights to use the water. This regulation would in no way discourage operators from reusing or recycling water for new hydraulic fracturing operations.

Initial proposed section 3162.3–3(c)(4) would have required operators to certify in writing that they have complied with all applicable Federal, tribal, State, and local laws, rules, and regulations pertaining to fracturing fluids before a fracture is attempted. This section has been deleted from the revised proposed rule because the BLM believes that requiring this certification after the operator has completed hydraulic fracturing operations (see section 3162.3–3 (i)(7)) adequately protects Federal and Indian lands and resources and, therefore, the burden on industry of providing and on the BLM of reviewing that information ahead of operations is not justified.

Section 3162.3–3(c)(5) has been renumbered in this revised proposed rule as section 3162.3(d)(4) and has been revised. Section 3162.3–3(d)(4) would require the operator to submit a plan for the hydraulic fracturing design. This information is needed in order for the BLM to be able to verify that the proposed hydraulic fracturing design is adequate for safely conducting the proposed well stimulation.

Section 3162.3–3(d)(4)(i) would require the operator to submit the estimated total volume of fluids that will be used in the hydraulic fracturing operations.

Section 3162.3–3(d)(4)(ii) would require submission of the anticipated surface treating pressure range. This information is needed by the BLM to verify that the maximum wellbore design burst pressure will not be exceeded at any stage of the hydraulic fracturing operation.

Section 3162.3–3(d)(4)(iii) would require the maximum injection treating pressure information to be submitted. This information is needed by the BLM to verify that the maximum allowable injection pressure will not be exceeded at any stage of the hydraulic fracturing operation.

Section 3162.3–3(d)(4)(iv) would require the operator to submit the estimated fracture direction, length, and height, including the fracture propagation plotted on a map so that the BLM can ensure that the fracturing operations do not threaten aquifers, other resources, or other operations. The rule would also require that the information include the estimated

fracture propagation plotted on the well schematics and on a map. The rule would require that the map must be of a scale no smaller than 1:24,000, which is the scale required for the map included in an APD.

The rule also would add a new paragraph 3162.3–3(d)(4)(v) that requires submission of the estimated vertical distance to the base of the nearest usable water aquifer above the fracture zone. The rule would require this information to assure that usable water is isolated from propagated fissures. Fracturing operations that are expected to propagate fissures vertically to depths near those of usable water may require closer scrutiny by the BLM than those with thousands of feet between the fissures and aquifers.

Section 3162.3–3(d)(5) would require the operator to provide for BLM's approval information about the handling of recovered fluids. This information is being requested so that the BLM has all necessary information regarding chemicals being used in the event that the information is needed to help protect health and safety or to prevent unnecessary or undue degradation of the public lands. The BLM has deleted the requirement for operators to provide the estimated chemical composition of flowback fluids because it would in effect require operators to reveal the total chemical constituents of their hydraulic fracturing fluids prior to operations. It would also require speculation as to the chemistry of fluids in the target zone, and their reactions, if any, with the hydraulic fracturing fluids. The BLM has determined that operators may justifiably change the chemical composition of hydraulic fracturing fluids after approval of fracturing operations, and even during those operations in response to such factors as availability of chemicals and unexpected geologic conditions. Thus, the reliability of the pre-operational estimated composition of flowback fluids could be imperfect. The composition of actual flowback fluids could be appropriately determined from the post-operational disclosure of the chemicals used in the fracturing operations. It is most important at the approval stage, however, for the operator to show that it has an adequate plan to manage and contain the recovered fluids that would prevent them from contaminating surface water or groundwater without regard to their specific chemical composition.

Section 3162.3–3(d)(5)(i) would require the operator to submit to the BLM an estimate of the volume of fluid to be recovered during flowback, swabbing, and recovery from production facility vessels. This information is required to ensure that the facilities needed to process or contain the estimated volume of fluid will be available on location.

Section 3162.3–3(d)(5)(ii) would require the operator to submit to the BLM the proposed methods of managing the recovered fluids. This information is needed to ensure that the handling methods will adequately protect public health and safety.

Section 3162.3–3(d)(5)(iii) would require the operator to submit to the BLM a description of the proposed disposal method of the recovered fluids. This is consistent with existing BLM regulations for produced waters (i.e., Onshore Oil and Gas Order Number 7, Disposal of Produced Water, (58 FR 47354)). This information is requested so that the BLM has all necessary information regarding disposal of chemicals used in the event it is needed to protect the environment and human health and safety on Federal and Indian lands and to prevent unnecessary or undue degradation of the public lands.

Section 3162.3–3(d)(6) would require the operator to provide, at the request of the BLM, additional information pertaining to any facet of the hydraulic fracturing proposal. For example, the BLM may require new or different tests or logs in cases where the original information submitted was inadequate, out of date, or incomplete. Any new information that the BLM may request will be limited to information necessary for the BLM to ensure that operations are consistent with applicable laws and regulation, or that the operator is taking into account site-specific circumstances. Such information may include, but is not limited to, tabular or graphical results of an MIT, the results of logs run, the results of tests showing the total dissolved solids in water proposed to be used as the base fluid, and the name of the contractor performing the hydraulic fracturing operation.

Comments on What the Notice of Intent Sundry Must Include

Some commenters requested baseline water testing prior to hydraulic fracturing operations; however, the BLM cannot authorize operators to enter non-Federal land to conduct baseline water testing, so the BLM did not change the revised proposed rule as a result. Whether to require baseline water testing on Federal land will be addressed, as is the current practice, as part of the analysis under the National Environmental Policy Act (NEPA) review, and the ''downhole review'' by the BLM authorized officer pursuant to Onshore Oil and Gas Orders Nos. 1 and 2. For example, if local drilling or geologic conditions, such as downhole stratigraphy involving faults, fissures, natural fractures, karst/limestone or other similar conditions require extra vigilance for any leaks of wellbore fluids to the usable water, then additional testing for baseline water could be required by the BLM as a condition of approval (COA) of a drilling permit. Similarly, the site-specific NEPA analysis of a drilling permit might reveal local environmental conditions that indicate a need to require baseline testing as a COA.

The BLM received some comments requesting that the BLM require up-front disclosure of the chemicals proposed for use in the hydraulic fracturing fluid. Commenters indicated that only through full up-front disclosure could the BLM and the public assess impacts to water, land, air quality, and human health and safety. The proposed rule was not revised based on these comments. Analysis of the impacts from hydraulic fracturing is done as part of the NEPA analysis conducted prior to the issuance of permits. For the purposes of NEPA compliance, the exact composition of the fluid proposed for use is not required because chemicals used in the hydraulic fracturing process are generally considered potentially hazardous for the purpose of impact analysis and mitigation. Operators will be aware that the rule requires disclosure of hydraulic fracturing chemicals after operations are complete and operators will also be required to certify that the hydraulic fracturing fluid used complied with all applicable permitting and notice requirements and all applicable Federal, State, and local laws, rules, and regulations (a separate but similar certification is required for Indian lands). The operator would also be required to certify that wellbore integrity was maintained prior to and throughout hydraulic fracturing operations. The BLM believes that the post-fracturing disclosures and certifications would provide adequate assurances that the hydraulic fracturing operations protect public health and safety and protect Federal and Indian resources.

The BLM also received comments in opposition to pre-disclosure of chemical constituents because of trade secret concerns and positing that the actual chemicals used will change from the pre-drilling stage based on the results encountered during drilling. While the BLM agrees with these comments, no revisions to the revised proposed rule were made because neither the initial proposed rule nor the revised proposed

rule would require pre-disclosure of chemicals.

The BLM received some comments expressing concern about additional delays that would be caused by the permitting process in the proposed rule. According to the comments, unnecessary delays would be caused by having to submit voluminous amounts of information for each well proposed for hydraulic fracturing or acidization, the review and approval of CBLs prior to hydraulic fracturing, and the lack of BLM staff to perform these additional reviews. Based on consideration of these comments, the initial proposed rule has been revised. The changes include the option of including multiple wells with similar geology in the permit application (''type wells''), narrowing the scope of the rule to include only hydraulic fracturing, and the elimination of the requirement for the BLM to review and approve CBLs prior to hydraulic fracturing. These changes are discussed further in other sections of this preamble.

The BLM received some comments regarding the amount of information required in section 3162.3–3(c) of the proposed rule in order for the BLM to grant approval of hydraulic fracturing operations. The commenters stated that much of this information, such as flowback time and flowback volume, is speculative. Commenters indicated that data such as treatment volumes, chemical composition, and other specific design parameters can only be determined after the well has been drilled. Commenters also suggested that instead of providing site-specific design details which could change, the BLM should allow operators to submit a generic master design plan or type well proposal.

The BLM agrees with these comments. The revised proposed rule (section 3162.3–3(d)) would provide for a more streamlined permitting process by allowing a Notice of Intent Sundry Notice to cover a group of wells with similar geologic characteristics, rather than just a single well. If the Sundry Notice is for a group of wells, the information required in section 3162.3–3(d) would be submitted for a type well that represents a typical completion and hydraulic fracturing procedure for the group of wells included in the Sundry Notice. The requirement to submit a CBL prior to the BLM granting approval for hydraulic fracturing is also being removed in the revised proposed rule.

The BLM received some comments that suggested that more information should be required prior to approving a plan or application for a permit to hydraulically fracture a well. Some of the additional information suggested to be obtained included the total amounts of waste, recycling methods, produced fluid disposal plans, fluid transportation plans, on-site storage and chemical composition of flowback water, more geologic data, an emergency spill response plan, and information about confining zones. All of the suggestions are already parts of required APD components and other BLM regulations including Onshore Orders Nos. 1, 2, and 7. The BLM did not revise the rule as a result of these comments.

Some comments suggested that the BLM require more information both pre- and post-hydraulic fracturing, including common chemical names, composition of recovered fluids, sources of water used and storage/containment methods. Existing regulations require advance approval of plans for handling waste and hazardous materials and sources of water used in drilling and completing wells on Federal and Indian lands. The BLM did not revise the rule as a result of these comments.

The BLM received some comments stating that the proposed rule should provide for ''estimates'' rather than actual information in the permit application. The reason given for providing estimates is that the hydraulic fracturing plan could change from the time it is approved based on conditions encountered during drilling and for other reasons. The BLM partially agrees with this comment and has revised the rule so that it would allow the operator to submit information for a type well drilled in an area of similar geology in lieu of submitting information specific to every well proposed for hydraulic fracturing. The BLM understands that some of the information such as formation depths, will be estimations of various parameters; for example, well-specific geological strata, formation depth/zone of perforation and fracture, expected amount of fracturing fluid injection volumes and flowback from the wellbore, expected pressure and temperature during drilling and completions, etc. However, the BLM also requires that the operator submit a Sundry Notice if major changes from the approved permit are requested.

The BLM received some comments that the proposed rule requires documentation that is duplicative of other regulatory requirements and documents already submitted to the BLM, particularly the APD and Well Completion reports. The BLM agrees that some of the data that would be required in this rule is similar to that found or contained in other reports, forms and approved plans. However, the BLM believes that the requested information is unique to the hydraulic fracturing operation and is necessary for the BLM to ensure that operations are conducted in a manner that will protect groundwater, surface water, and other resources. The BLM did not revise the rule as a result of this comment. The BLM received some comments regarding the timeframes for hydraulic fracturing permit approvals. The commenters suggested that the rule should specify a set amount of time in which the BLM must complete its review of hydraulic fracturing proposals, and if that time was exceeded, the proposal would be automatically approved. The BLM did not revise the rule as a result of these comments because the imposition of a timeframe or ''automatic'' approvals could limit the BLM's ability to ensure protection of usable water and other resources. The BLM cannot abdicate its statutorily mandated responsibilities to prevent unnecessary or undue degradation of public lands and to protect Federal and Indian resources by establishing an artificial deadline. As discussed in other sections, however, the revised proposed rule would make several changes to the permitting process that would reduce the possibility of unreasonable delays.

The BLM received some comments questioning the rationale or need for the information requested in both the permit and the subsequent report. The BLM has determined that the requested information is important to assess the environmental impacts of the proposed operation as well as to ensure that hydraulic fracturing operations will be conducted in a manner that prevents waste of valuable minerals, protects other resources, and ensures public health and safety. No revisions to the rule were made as a result of this comment.

The BLM received some comments objecting to the requirement to estimate or calculate fracture lengths both in the application for hydraulic fracturing (section 3162.3–3(d)) and in the subsequent report (section 3162.3–3(i)). The primary objection expressed by the commenters is the difficulty, expense, and high degree of uncertainty in estimating, calculating, or measuring fracture lengths. According to the commenters, calculating fracture lengths requires elaborate computer models, which are often proprietary, and measuring fracture lengths requires seismic monitoring which adds time and expense. Some commenters questioned the need for this information, especially given that the target zone is usually thousands of feet below any known usable water zones. Other commenters stated that there is a

significant economic incentive to contain fractures to the target zone in order to minimize the volume of fluid required in the fracturing process.

In order to evaluate the potential impacts of the proposed hydraulic fracturing application, the BLM must have information showing the estimated fracture lengths. This information is used to help ensure that fractures will not intersect known fault zones, communicate with older unplugged wells with questionable wellbore integrity, or communicate with usable water zones. The BLM is aware that the fracture lengths provided in the application and subsequent report are estimates. For the subsequent report, the reporting of actual fracture lengths can be used to identify potential problems. The BLM did revise section 3162.3–3(i) as a result of these comments; moreover, section 3162.3–3(d) was revised to clarify how the estimated fracture lengths are to be provided to the BLM in the application.

Section Discussion

Section 3162.3–3(e) is new to the rule. This section would require monitoring of cementing operations and would require a CEL prior to hydraulic fracturing operations for each casing that protects usable water. The requirements are necessary to ensure that the usable water aquifers intersected during well drilling have been isolated to protect them from contamination. Because aquifers are permeable, operators routinely isolate them from hydraulic fracturing operations by lining the wellbore with a tubular casing (typically metal casing). ''Surface casings'' are typically run for the top 1,000 to 1,500 feet of a well. ''Intermediate casings'' are used where necessary at greater depths. Operators pump cement to the outside of the casing to assure that the casing will transmit the pressures of hydraulic fracturing to the surrounding rock without failure, and to assure that neither fracturing fluids nor produced oil and gas leak through or around the casing and are lost. Cementing operations, however, do not always yield a perfect result. There may be gaps, voids, or channels between a casing and the rock wall of the wellbore that lack adequate cement, and thus may be vulnerable to failure or leaks. A CEL is a class of tools that can be run down a casing to assess whether there are any significant gaps or voids in the cement behind a casing. Operators typically run a CEL on intermediate casings, but not on surface casings when the cement flows back to the surface. For surface casing an operator generally observes the cement in the annulus, and uses additional cement as needed. The initial proposed regulations at section 3162.3–3(c)(2) would have required a CBL prior to all hydraulic fracturing operations. However, a CBL is only one of a suite of technologies that are described as CELs. Under this revised proposed rule, other cement evaluation technologies, either existing or developed in the future, that are equally effective may be used. An ''equally effective'' technology in this context would be any methodology or tool that is at least as reliable as a CBL in detecting gaps or voids in the cement behind a casing and meets the performance objective of validating the wellbore integrity and isolating zones of usable water.

Operators may choose from several well logging techniques to evaluate the quality of the cement behind casing. Various types of logs provide different types of information. For example, a CBL presents the reflected amplitude of an acoustic signal transmitted by a logging tool inside the casing. Another acoustic log presents the waveforms of the reflected signals detected by the logging tool receiver and provides qualitative insights concerning the casing, the cement sheath and the formation. Ultrasonic logging tools measure the resonant echoes.

Under this rule, operators would have the flexibility of using suitable logs to confirm a good cement bond behind the casing to protect and isolate usable water. The BLM will review those logs after post-completion submission by the operator.

New section 3162.3–3(e)(1) would require the operator to monitor and record the flowrate, density, and treating pressure, and to submit a cement operation monitoring report to the BLM within 30 days after completion of hydraulic fracturing operations. The required monitoring data would provide important indications of problems with the cementing of casings. That monitoring data would help to verify the results of a CEL and for wells where no CEL is required will provide the primary assurance that cementing operations conformed to those of a proven type well.

New section 3162.3–3(e)(2) would require the operator to run a CEL for each casing that protects usable water, unless it is exempt from doing so under (e)(3) of this section, and to submit these logs to the BLM within 30 days after completion of the hydraulic fracturing operations. A CEL includes, but is not limited to, a CBL, ultrasonic imager, variable density logs, micro-seismograms, CBLs with directional receiver array, ultrasonic pulse echo technique, or isolation scanner.

Comments on Cement Bond Logs

The BLM received some comments in response to proposed sections 3162.3–3(b)(i), 3162.3–3(b)(ii), 3162.3–3(c)(2), that would have required operators to run CBLs and obtain approval from the BLM prior to commencing hydraulic fracturing operations. The commenters focused on seven main issues: (1) Allowing the use of other technology besides CBLs; (2) The use of other metrics to demonstrate zonal isolation; (3) Delays and costs associated with running and obtaining approval of CBLs prior to commencing hydraulic fracturing operations; (4) Reliability and interpretation of CBLs; (5) The incorporation of API Standard 65–2; (6) The ability for operators to challenge or appeal findings from the BLM regarding CBL results; and (7) The possibility of requiring CBLs on all casing strings, not just the surface casing. These comments are discussed in further detail below.

Some commenters suggested that the BLM should allow the use of other technologies in lieu of a CBL. The other technologies that were suggested include ultrasonic logs, variable density logs, micro-seismograms, standard CBLs, CBLs with directional receiver array, ultrasonic pulse echo technique, and isolation scanners. The BLM agrees with this comment and believes that these technologies could be effective at demonstrating zonal isolation. Therefore, section 3162.3–3(e)(2) would replace the term CBL with a more generic term, ''cement evaluation log,'' (CEL) which would include the technologies suggested by the commenters. It would also permit operators to use logging tools which are the most appropriate in any given situation.

Some commenters stated that a CBL provides only one indication of the quality of a cement job. The comments said that there are other, perhaps more reliable, methods of determining the quality of the cement job such as:

- Monitoring cement returns to the surface during the cement job. If good cement returns are achieved, it is a positive indication that there were no unexpected or untreated voids or fractures in the wellbore, which helps ensure that cement was properly placed between the wellbore and the casing;
- Placing centralizers on the lower joints of casing to ensure the casing is concentric to the wellbore, allowing a uniform cement sheath to form between the casing and the wellbore;

• Witnessing the amount of ''fall back'' of cement in the annulus; while it is normal for the top of the cement to retreat down the annulus as the cement sets, excessive fall-back can indicate that problems were encountered during the cement job;

• Monitoring the pressures, flow rates, volumes, and densities of cement during the cement job. If these parameters are consistent with the values anticipated during the design of the cement job, it is a good indication that no unexpected conditions were encountered during the cementing and that a cement seal has been established;

• Ensuring that there were no equipment failures during the cement job, such as line breaks or pump failures; and

• Applying other analytic techniques such as temperature logs and formation integrity tests.

Some commenters stated that the BLM should require the operator to run a CBL only if one or more of these methods indicated a problem with the cement job. The BLM agrees with these comments and proposes several revisions in the revised proposed rule as a result. The revised proposed rule includes a new section 3162.3–3(e)(1) that would establish requirements for monitoring cementing operations, including the need to monitor and record flow rate, density, and pumping pressure of the cement. In addition, section 3162.3–3(e)(4) would require the operator to run a CEL if there are indications of an inadequate cement job such as lost returns, cement channeling, gas cut mud, or equipment failure. If the monitoring information provides indications of an inadequate cement job, the operator would also be required to notify the BLM within 24 hours, submit a written report within 48 hours, and to certify that the inadequate cement job had been corrected and document that zonal isolation had been achieved prior to starting hydraulic fracturing operations. The BLM also agrees with the importance of centralizers in obtaining zonal isolation; however, because Onshore Order No. 2 (Section III.B.1.f) already requires centralizers on the bottom 3 joints of surface casing, an additional requirement to run centralizers is not needed in this rule.

Some commenters objected to the cost of running a CBL on every well and, perhaps more importantly, the delay associated with the BLM review of CBLs prior to allowing operators to start hydraulic fracturing operations. Some comments referenced the current delays in permitting due to lack of staff and stated that this additional approval step would only serve to exacerbate these delays. Several revisions are included in the revised proposed rule as a result of these comments. For wells where there are no indications of an inadequate cement job, section 3162.3–3(e)(3) would provide an option to run a CEL only on a type well that is representative of local geology and typical drilling and completion techniques. If the CEL run on the type well demonstrated zonal isolation, CELs would not be required on subsequent wells where there were no indications of an inadequate cement job. However, Section 3162.3–3(e)(4) would require an operator to run a CEL on all wells where there are indications of an inadequate cement job, such as, but not limited to, lost returns, cement channeling, gas cut mud, or failure of equipment, that show that remedial action and evaluation are necessary. In addition, the revised proposed rule would eliminate the need for the BLM to review and approve the CEL prior to commencing hydraulic fracturing operations. Instead, operators would submit CELs run under section 3162.3–3(e)(2) within 30 days of completing hydraulic fracturing operations. CELs for type wells would have to be submitted prior to exempting subsequent wells under 3162.3–3(e)(3) from the requirement to run a CEL. Operators would submit CELs run under 3162.3–3(e)(4) at least 72 hours prior to commencing hydraulic fracturing operations; however no approval from the BLM would be necessary. The BLM considered a requirement for operators to receive BLM approval prior to commencing hydraulic fracturing operations in these cases. The BLM believes that the combination of the proposed notice and certification requirements would provide adequate assurance of wellbore integrity prior to hydraulic fracturing without incurring additional delay or workload. The proposed 24-hour notice would also allow the BLM time to prioritize inspections of the hydraulic fracturing operation to verify compliance with these proposed regulations, Onshore Order Number 2, and the approved APD.

The BLM received some comments expressing concern about the reliability of CBLs and the difficulties of interpreting CBLs. Some commenters stated that CBLs are not effective until the cement has reached a certain compressive strength because CBLs work on the principal of acoustic attenuation. At low compressive strengths, commenters stated that the acoustic properties of cement and water are very similar and it is difficult to delineate between the two when interpreting logs. The commenters went on to state that the problem is more pronounced in surface casing because the lower formation temperature near the surface prolongs the setting process, requiring more time to achieve levels of compressive strength that are required for reliable log interpretation. Comments about the additional waiting times varied. One commenter suggested that a CBL on the surface casing and intermediate casing would delay drilling operations 24 hours for each test. Other commenters suggested that the CBL requirement would delay drilling operations by up to 72 hours for the surface casing alone. The commenters suggested that during this time, operators would be required to maintain idle drilling equipment on site, at a significant cost to the operators.

After researching these concerns, the BLM acknowledges the potential difficulties of running and interpreting CBLs. As a result, the BLM has determined that requiring CBLs on every well may be unnecessarily expensive, may induce unnecessary delay, and will not provide increased protection beyond what will be available by requiring a CEL on type wells. Therefore, the revised proposed rule would give operators the option of running a CEL on a type well as discussed previously. A CEL would still be required on all wells where there are indications that there is an inadequate cement job. The BLM also believes that allowing the use of other technology such as ultrasonic logs could make the log interpretation less subjective.

The BLM also received some comments expressing concerns about the ability of BLM staff to properly interpret CBLs. According to the commenters, without adequate training and experience, the BLM could misinterpret a CBL run in a wellbore with an adequate cement job and conclude that there was an inadequate cement job. This misinterpretation would result in additional time and expense for the operator to either challenge the BLM's finding or to conduct expensive and unnecessary remedial work. The BLM does not agree with the assertion regarding the lack of staff training and experience. However, the BLM believes that the previously discussed changes, including providing a type well option, and eliminating the need for a requirement to obtain BLM approval of CELs prior to starting hydraulic fracturing operations, address the commenters' concerns.

The BLM received some comments which requested that the rule include an appeal process for operators if the BLM

were to deny hydraulic fracturing on a well because the CBL could not demonstrate zonal isolation. The BLM did not revise this rule as a result of this comment because a BLM decision to deny authorization to hydraulically fracture a well would be subject to the administrative reviews already established in 43 CFR 3165.3 and 3165.4. In addition, as discussed earlier, the revised proposed rule would eliminate the requirement for operators to obtain BLM approval of CELs prior to starting hydraulic fracturing operations.

Some commenters recommended that the BLM require operators to run CELs on all casing strings, not just the surface casing because the isolation of usable water, as required in Onshore Order No. 2, may be accomplished by other casing strings. The proposed rule published in May 2012 required CBLs on all casing strings protecting usable water. The BLM clarified this requirement in 3162.3–3(e)(2), with exceptions for type wells, in this revised proposed rule.

Section Discussion

New section 3162.3–3(e)(3) would explain that an operator is not required to run a cement evaluation log on the casings if the operator:

(1) Had submitted a CEL for a type well that showed successful cement bonding to protect against downhole fluid cross-migration; and

(2) Completes a subsequent well or wells with the same specifications and geologic characteristics as the type well, and approved in the same group sundry notice for a single field, and the cementing operations monitoring data parallels those of the type well.

The BLM believes that where an operator has designed a type well to be replicated across a field (and often from the same well pad), and the cement monitoring data for each well and the CEL for the type well show no indications of cement problems, the operator should be allowed to construct the other wells in an approved group within the same field without the expense and potential delays of running a CEL for each well. The same well design and construction repeated within the same field with the same monitoring data should yield the same result: adequate cementing. After considering the comments, the BLM believes that requiring each well to have a CEL for the surface casing as originally proposed would impose costs and possibly delays on operators without providing significant additional assurance of adequate cementing to protect usable water aquifers. In view of the comments that insist that a CBL on surface casing is unnecessary when the cement returns to the surface, the BLM is also seeking comments on whether the requirements to run a CEL on wells where there is no indication of an inadequate cement job, as proposed in paragraphs 3162.3–3(e)(2) and (e)(3), is appropriate, including specific information about the costs and benefits of requiring CELs in such cases. Under new section 3162.3–3(e)(4), for any well, if there is any indication of an inadequate cement sheathing behind the casing such as, but not limited to, lost returns, cement channeling, gas cut mud, or failure of equipment, the operator would be required to notify the BLM within 24 hours of the occurrence, followed by a written report within 48 hours. Furthermore, the operator would be required to remedy the situation first following the standard industry practice. When logging operations indicate that the cement job is defective, either in the form of poor cement bonding or communication between zones, a remedial cementing technique known as squeeze cementing may be performed to establish zonal isolation. The commonly used steps to remedy such problems include perforating the casing at the defective interval and forcing, or ''squeezing,'' cement slurry through the perforations and into the annulus to fill the voids. In addition, squeeze cementing may be an effective technique for repairing casing leaks caused by a corroded or split casing. The objective is to restore the barrier integrity of the formations that were disrupted by drilling. To confirm a good cement sheathing behind the casing, the operator must run a CEL showing that usable water has been isolated to protect it from contamination. If deemed necessary, the BLM could require the operator to submit the CEL for BLM approval prior to continued operations. At least 72 hours prior to commencing hydraulic fracturing operations, the operator would be required to submit to the BLM a signed certification indicating that the operator corrected the inadequate cement job and documentation showing that there is adequate cement bonding. These requirements were added because the revised proposed rule has eliminated the requirement to submit a CBL for each well for approval by the BLM prior to continuing operations. Accordingly, where there are indications of a problem with cementing, the BLM needs to have timely and complete information showing correction of the problem. If an operator failed to report a cementing problem, the BLM would utilize one or more of its existing enforcement options. This could include: shutting down operations on the well until the operator takes the appropriate corrective actions; issuing an order of the authorized officer requiring remedial action; or monetary assessments for failure to comply. The BLM would enforce the appropriate action regardless of whether the original requirements for the well included the running of a CEL. Also, the BLM would put a high priority on witnessing that operator's operations on this and future wells to ensure compliance with these proposed regulations, Onshore Order Number 2, and the approved APD.

New section 3162.3–3(e)(5) would require operators to include in the Subsequent Report Sundry Notice under section 3162.3–3(i) the records and logs produced under sections 3162.3–3(e)(1) and (e)(2).

Section 3162.3–3(f) would require the operator to perform a successful MIT before beginning hydraulic fracturing or refracturing operations. This requirement is necessary to help ensure the integrity of the wellbore under anticipated maximum pressures during hydraulic fracturing operations. Wellbore integrity may be degraded over time, and thus it is necessary to perform a MIT prior to each refracturing operation.

Section 3162.3–3(f)(1) would require the MIT to emulate the pressure conditions that would be seen in the proposed hydraulic fracturing. This test would show that the casing is strong enough to protect usable water and other subsurface resources during hydraulic fracturing operations.

Section 3162.3–3(f)(2) would establish the minimum engineering criteria for using a fracturing string as a technique during hydraulic fracturing. The requirement to be 100 feet below the cement top would be imposed to ensure that the production or intermediate casing is surrounded by a competent cement sheath as required by Onshore Order No. 2. The 100 foot requirement is required by some State statutes (e.g., Montana Board of Oil and Gas Conservation, section 36.22.1106, Hydraulic Fracturing) and is a generally accepted standard in the industry. Testing would emulate the pressure conditions that would be seen in the proposed hydraulic fracturing in order to ensure that the casing used in the well would be robust enough to handle the pressures.

Section 3162.3–3(f)(3) would require the well to hold the pressure for 30 minutes with no more than 10 percent pressure loss. This requirement is the same standard applied in Onshore Order No. 2, Section III.B.h., to confirm the mechanical integrity of the casing.

This language does not set a new standard in the BLM's regulations. This test, together with the other requirements, would demonstrate if the casing is strong enough to protect water and other subsurface resources during hydraulic fracturing operations. The BLM believes that all of these tests are important to show that reasonable precautions have been taken to ensure the protection of other resources during hydraulic fracturing operations.

Comments on Mechanical Integrity Testing

Some commenters objected to the cost of the requirement for an MIT prior to hydraulic fracturing due primarily to the delay and the cost of rig time. The BLM disagrees with this comment. A casing pressure test is already required by Onshore Order No. 2. Section III.B.1.h. of Onshore Order No. 2 requires that operators test all casing strings below the conductor to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. While the test pressure for the MIT may differ from what is required by Onshore Order No. 2, there is no significant increase in rig time required to run the MIT as proposed.

Mechanical integrity testing is a common hydraulic testing method; operators typically conduct such tests after every surface- or intermediate-casing cement job. Operators first perform a casing pressure test to verify the mechanical integrity of the tubular string and then drill out the casing shoe. Next, they perform a pressure integrity test by increasing the internal casing pressure until it exceeds the pressure that will be applied during the next drilling phase. If no leakage is detected, the cement seal is deemed successful.

The BLM believes that performing a successful MIT prior to starting hydraulic fracturing is essential to ensuring the casing and fracture string (if used) are capable of withstanding the pressure used and serves as an early indicator whether the applied pressures can be successfully supported. No revisions to the initial proposed rule were made as a result of this comment.

The BLM received some comments stating that an MIT is not needed on every well and should only be required on wells that are more than 5 years old or if pressure exceeds 80% of casing yield. The BLM believes that the requirements in section 3162.3–3(f)(1) of the revised proposed rule are standard industry practice and are required to ensure the casing is capable of withstanding the pressures applied during hydraulic fracturing operations. No revisions to the revised proposed rule were made as a result of this comment.

Some comments suggested that the BLM require the operator to perform an MIT before and after hydraulic fracturing to ensure that there were no casing failures during the hydraulic fracturing process. No revisions to the revised proposed rule were made as a result of this comment. Sections 3162.3–3(f)(1) and (f)(2) of this rule would require the operator to test the casing and fracture string (if used) to the maximum anticipated treating pressure. If the MIT is successful prior to hydraulic fracturing and the treatment pressure does not exceed the MIT test pressure, there is no reason to run another MIT after treatment. The BLM believes that the tests required under this rule are sufficient to show that the casing is strong enough to protect water and other subsurface resources during hydraulic fracturing operations.

Some comments suggested changing the term ''MIT'' to ''pressure testing.'' No revisions to the initial proposed rule were made as a result of this comment. The BLM believes that the term ''Mechanical Integrity Test'' is widely understood by industry, is used by many State regulatory agencies, and accurately describes the intent of the test. Nonetheless, we invite comments as to whether there are other tests that would be equally effective as an MIT for confirming that well casings will withstand the pressures of hydraulic fracturing operations.

One comment recommended that the BLM should require reporting the results of the MIT with the subsequent report rather than prior to hydraulic fracturing. The BLM did not revise the rule as a result of this comment because there is no specific provision in the revised proposed rule that would require the operator to submit the MIT results to the BLM prior to fracturing. A related comment suggested that the BLM should be notified of any failures or anomalies in the MIT prior to hydraulic fracturing. The BLM does not believe that a requirement to notify the BLM of a failed MIT is necessary to ensure wellbore integrity prior to fracturing. The revised proposed rule (section 3162.3–3(f)) would require a successful MIT prior to hydraulic fracturing; therefore, if the MIT failed and the operator proceeded with hydraulic fracturing operations, the operator would be in violation of the rule and would be subject to enforcement actions. No revisions to the initial proposed rule were made as a result of this comment.

The BLM received some comments suggesting that the proposed 10 percent allowable loss in pressure during the MIT is excessive. No revisions to the revised proposed rule were made as a result of this comment. The proposed 10 percent allowable pressure drop for the MIT is the same as the allowable pressure drop during the testing of casing and blowout prevention equipment in Onshore Order No. 2. The allowable pressure drop is included to set objective and enforceable standards of what the BLM considers to be a successful test.

Section Discussion

Section 3162.3–3(g)(1) would require the operator to continuously monitor and record the annulus pressure at the bradenhead and has been revised to apply to refracturing as well as fracturing operations. The pressure in the annulus between any intermediate casing and the production casing must also be continuously monitored and recorded. The pressure during the fracturing should be contained in the string through which the fracturing fluid is being pumped. Unexpected changes in the monitored and recorded pressure(s) provide an early indication of the possibility that well integrity has been compromised and that immediate action should be taken to prevent well failure. This information is needed by the BLM to ensure that hydraulic fracturing operations are conducted as designed. This information also shows that fracturing fluids are going to the intended formation and not into other geologic horizons such as aquifers. This section is different from the proposal in that it would require monitoring and recording of pressure between the annulus and any intermediate casing. This revised proposed rule makes this distinction because monitoring and recording of pressure in the annuli between all intermediate casings and the production casing more accurately shows downhole conditions, whereas the initial proposed rule required only monitoring and recording pressure in the annulus between the production casing and the intermediate string adjacent to the production string. Failure in other casing strings would not have been identified. The revision is proposed in order to detect potential failures of any casing string that may contribute to cross zonal flow.

Section 3162.3–3(g)(2) has been revised to apply to fracturing and refracturing operations and would require the operator to orally notify the BLM as soon as possible, but no later than 24 hours following the incident, if during the fracturing operation the

annulus pressure increases by more than 500 pounds per square inch over the annulus pressure immediately preceding the fracturing. Within 30 days after the occurrence, the operator must submit a Subsequent Report Sundry Notice (Form 3160–5, Sundry Notices and Report on Wells) to the BLM containing all details pertaining to the incident, including corrective actions taken. This information is needed by the BLM to ensure that fracturing fluids are going into the formation for which they were designed. The BLM also needs to obtain reasonable assurance that other resources are adequately protected. An increase of pressure in the annulus of this amount could indicate that the casing had been breached during hydraulic fracturing. Consistent with the BLM's Onshore Order No. 2, the operator must repair the casing should a breach occur. This section is different from the initial proposed rule. The initial proposed rule required the submission of the Subsequent Report Sundry Notice within 15 days after the occurrence. The revised proposed rule would require submission within 30 days after the occurrence. This revision was made to this rule to reduce the number of reports required from operators. The report can be part of the same Subsequent Report Sundry Notice required in revised proposed section 3162.3–3(i).

Section 3162.3–3(h) would require the operator to store recovered fluids in tanks or lined pits. This provision grants flexibility for the operator to choose using either a lined pit or a storage tank. This provision is necessary because flowback fluids could contain hydrocarbons from the formation and could also contain additives and other components that might degrade surface and groundwater if they were to be released without treatment. This section is consistent with existing industry practice and American Petroleum Institute (API) recommendations for handling completion fluids, including hydraulic fracturing fluids (see Section 6.1.6 of API Recommended Practice 51R, Environmental Protection for Onshore Oil and Gas Production Operations and Leases, First Edition, July 2009). Because the use of lined pits or tanks for the storage of recovered fluids reasonably protects land and water from spills or leaks of recovered fluids, the BLM believes that this provision is consistent with FLPMA's mandate to prevent unnecessary or undue degradation of the public lands and the BLM's obligations to protect environmental quality and Indian trust resources.

Typically, most of the hydraulic fracturing fluid that will be recovered from a well is recovered before the well begins producing significant quantities of oil or gas. Traces of the fracturing fluids, however, may be produced for long periods of time thereafter, usually with water from the formation. It is not the BLM's intent for the proposed rule to displace Onshore Order No. 7 for disposal of produced water. The BLM invites comments on the potential benefits of distinguishing flowback fluid from produced water and suggested ways to distinguish the two.

Commenters should consider that Onshore Order No. 7 allows for temporary storage in reserve pits for up to 90 days, with the possibility of an extension. Onshore Order No. 1 requires all pits to be reclaimed within six months of well completion or well plugging, with the possibility of a variance.

Additional conditions of approval for the handling of flowback water may be placed on the operation by the BLM if needed to ensure protection of the environment and other resources. The BLM recognizes the ongoing efforts of States to regulate hydraulic fracturing operations. This regulation would not preempt any State or tribal law that might require use of such technologies as double-lined pits or tanks as part of a reuse or recycling requirement.

Comments on the Handling of Recovered Fluids

Commenters expressed a variety of views on proposed section 3162.3–3(f). That section would require storage of flowback fluids in lined pits or tanks. Some commenters were critical of allowing storage of flowback fluids in lined pits, stating that pits increase the likelihood of accidental discharges, that pit liners may react with flowback fluids and cause failures and seepage, that pits must be fenced to exclude wildlife, and that the fluids stored in pits would cause air pollution. Those commenters recommended that pits be double-lined, that they be equipped with leak detection systems, or that storage in pits be prohibited and that the rule should require flowback fluid to be stored in tanks, or in a closed-loop containment and reuse system. Some commenters were in favor of BLM's proposal to require a plan for handling flowback fluids, as in proposed section 3162.3–3(c)(6), but sought additional encouragement in the rule for injection and recycling of those fluids.

Other commenters believed that requiring lined pits or tanks for flowback fluids was appropriate. Some, though, argued that those requirements were duplicative of the requirements of some State regulations. Some commenters recommended that the rule simply adopt the requirements of Onshore Order No. 7 for flowback pits.

The BLM shares commenters' concerns about contributions of pits to air quality problems, and the possibility of failures, leaks, and overflow events. The BLM is also concerned about excluding wildlife, including migratory birds, from pits on well sites, but a separate Instruction Memorandum has been issued and describes appropriate fencing, netting, and other actions to help prevent wildlife and livestock injury or mortality from various aspects of oil and gas operations, including open pits. See the BLM's Instruction Memorandum WO–IM–2013–033 of December 13, 2012. The BLM is also interested in evaluating the costs of requiring flowback fluids to be stored in closed tanks.

In a sampling of State regulations, it was found that most States require flowback fluids to be stored in lined pits or tanks. One State, California, requires storage in tanks, and another, New Mexico, allows lined pits to be approved as a variance from requiring storage in tanks. It also appears that some States, such as Texas and Oklahoma, are encouraging the use of mobile recycling systems.

Onshore Order No. 7 allows disposal of produced water in unlined pits in certain circumstances. The BLM does not believe that storage of hydraulic fracturing flowback fluids in unlined pits is appropriate because of the far greater volume of flowback fluids compared with typical volumes of produced water, and because of the chemical constituents of flowback fluids may pose different or increased risks if they come into contact with surface water or groundwater.

The revised proposed rule at 3162.3–3(h) has not been materially changed in response to the comments on the proposed rule. The revised proposed rule would not preempt State laws that require the use of tanks, or efforts to expand use of mobile recycling systems.

Some comments were also received requesting that the final rule state that all flowback water be captured in tanks and removed from the site without the use of pits. This would require that the BLM distinguish flowback water from produced water and also require additional tankage since flowback water is generally returned to the surface mixed with water produced from the formation. The BLM seeks comments on whether the following is an appropriate distinction: fluids recovered from a hydraulically fractured well before it

begins production of oil or gas will be considered flowback and subject to revised proposed rule section 3162.3–3(h); fluids recovered from a hydraulically fractured well after it begins production of oil or gas will be considered produced water and subject to Onshore Order No. 7. The BLM is also interested in the public's views on whether such a distinction should be in the regulation, or be issued as non-binding guidance.

In view of comments raising concerns that flowback fluids present hazards to the environment beyond those that can be controlled in lined pits, the BLM is specifically requesting comments on whether the rule should require flowback fluids to be stored only in closed tanks, and not allow them to be stored in lined pits. Is the exclusive use of tanks preferable for the handling of flow-flowback water from either an environmental or economic perspective? Are there additional environmental or economic concerns that should be considered as the BLM considers a requirement for the use of tanks for the disposal of flow-flowback waters? Another alternative would be for the rule to specify that a lined pit must be equipped with a leak detection system, as is required for lined pits for produced water under Onshore Order No. 7. Some commenters advocated for requiring double-lined pits. The BLM asks for comments on the costs and benefits of the foregoing alternatives for storage of flowback fluids. Specific information about the environmental and economic costs and benefits of those alternatives would be most useful. Information on the prevalence of tank use versus lined pits would also be helpful.

A number of comments were received on the proposed rule that raised issues that are already addressed in other places in the BLM's Oil and Gas operations regulations and the Onshore Orders. The Onshore Orders may be viewed at: *http://www.blm.gov/mt/st/en/prog/energy/oil_and_gas/operations/orders.print.html*.

Section Discussion

Section 3162.3–3(i) has been reorganized from what was in the proposed rule and would require the operator to submit to the BLM certain information within 30 days after fracturing or refracturing operations are complete. The information required by paragraph (i)(1) of this section on the depth of the well, water volume used, and information about the chemicals used in the fracturing fluid may be submitted through FracFocus or another BLM-designated database, or in the Subsequent Report Sundry Notice. If the information is submitted through FracFocus, or another BLM-designated database, the operator must specify whether the information is for a Federal or Indian well, certify that the information is correct, and certify compliance with applicable law. All other information required under paragraph (i) would be submitted in the Subsequent Report Sundry Notice. If, for some reason, the operator is unable to submit the information about the chemicals through FracFocus or another BLM-designated database, the operator must timely submit the required information directly to the BLM. The BLM would determine if the hydraulic fracturing operation was conducted as approved and would retain this information as part of the individual well record and it would be available for use when the well has been depleted and the plugging of the well is being designed. This section would also make it clear that any information submitted by a contractor or agent of the operator is considered to have been submitted directly from the operator to the BLM. In other words, the operator is responsible for information submitted by contractors or agents. This section also would require the operator to submit information to the BLM within 30 days after the hydraulic fracturing operations are completed for each well, even if the BLM approved hydraulic fracturing of a group of wells (see section 3162.3–3(c)).

Section 3162.3–3(i)(1) is new to the rule and would require that the operator submit to the BLM the true vertical depth of the well, total water volume used, and for each chemical used (including base fluid) the trade name, supplier, purpose, ingredients, Chemical Abstract Service Number (CAS #), maximum ingredient concentration in additive (% by mass), and maximum ingredient concentration in hydraulic fracturing fluid (% by mass). Total water volume includes ''new'' water and any produced water or water reused or recycled from prior hydraulic fracturing operations. The percent mass value is the mass value for each component (Mc) divided by the value of the entire fluid mass (Mt) times 100. (Mc/Mt)*100 = percent value. The information should be based on the maximum potential for concentration, and thus the total may exceed 100 percent by a reasonable, but minimal, amount. The percent mass values should be for the entire stimulation operation, not for the individual stages. Table 1 presents an example of the kind of information that may be submitted.

TABLE 1—SAMPLE HYDRAULIC FRACTURING FLUID PRODUCT COMPONENT INFORMATION DISCLOSURE

Well Identification/Location and Other Fracturing Information

	Value	Remarks
Fracture Date	Start mm/dd/yyyy	Finish mm/dd/yyyy
State	Wyoming.	
County	Sublette.	
API Number	XX–XXX–XXXX.	
Operator Name:	XYZ COMPANY.	
Well Name and Number	Name and Number.	
Longitude	−109.123456.	
Latitude	42.54321.	
Production Type	Gas, wet gas, oil.	
True Vertical Depth (TVD) in feet	14,193.	
Total Fluid Volume Injected (gal)	X,XXX,XXX.	

HYDRAULIC FRACTURING FLUID COMPOSITION

Trade name	Supplier	Purpose	Ingredients	Chemical abstract service number (CAS #)	Max. ingredient concentration in additive (% by mass)	Max. ingredient concentration in HF Fluid (% by mass)**	Comments
SAND	XYZ Corp. ...	Proppant	Crystalline silica, quartz.	14808–60–7	100.00	7.48357	
LGC–39 UC	XYZ Corp. ...	Liquid Gel Concentrate.	Polysaccharide	Confidential Business Information.	60.00	0.16265	

** A long list of other materials may follow

The information required in paragraph 3162.3–3(i)(1) may be submitted directly to the BLM or through FracFocus or another BLM-designated database service. Substantially similar information required to be submitted by this section was proposed in sections 3162.3–3(g)(4) and (g)(5). The required information has been restated to conform to the fields for disclosure provided by FracFocus. Disclosure through FracFocus, though voluntary, would save operators from submitting data both to FracFocus and to the BLM in the States that require posting to FracFocus. It would also provide to the public timely information from a single Web site on fracturing operations on Federal, Indian (under these regulations), and non-Federal/non-Indian wells (through State law or voluntary submission). If the operator experiences any problem with submitting required information through FracFocus, it should notify the BLM promptly. The operator would be required to submit the information to the BLM within 30 days after completing the hydraulic fracturing operation, whether or not it is able to submit it through FracFocus.

Some commenters on the proposed rule were critical of FracFocus because of limitations in its ability to search and aggregate data across individual wells. The BLM has been in discussions with persons responsible for FracFocus and expects that recent and foreseeable improvements to the system will address many of these concerns.

Section 3162.3–3(i)(2) would require the operator to submit information on the actual measured depth of perforations or the open-hole interval (i.e., non-cased wellbore), the source and location(s) of the water used in the hydraulic fracturing fluid, and actual pump pressures. This information identifies the producing interval of the well and would be available for use when the well has been depleted and plugging of the well is being designed. The level of detail of the required information about the sources of the water used has been reduced from that in initial proposed section 3162.3–3(g)(1), because the deleted information (access route and transportation method) would not be useful to the BLM after the conclusion of operations. Requiring a subsequent report on the actual sources of water used, however, would allow the BLM to check the accuracy of the pre-fracturing notice and to remain informed of important trends in sourcing of water for hydraulic fracturing operations.

Section 3162.3–3(i)(3) would require submission of information on the actual surface pressure and rate at the end of each fluid stage, and the actual flush volume, rate, and final pump pressure. This information is needed by the BLM for it to ensure that the maximum allowable pressure was not exceeded at any stage of the hydraulic fracturing operation.

Section 3162.3–3(i)(4) would require submission of information pertaining to the actual, estimated, or calculated fracture length, height, and direction. This information is required so that the BLM can verify that the intended effects of the hydraulic fracturing operations remain confined to the petroleum-bearing rock layers and will not have unintended consequences on other rock layers or aquifers. The revised rule requires an operator to indicate the direction of hydraulic fracture. This was not in the initial proposed rule, and is necessary for the BLM to have accurate information pertaining to the extent and direction of the fracturing operations.

Section 3162.3–3(i)(5) would require submission of the following information concerning the handling of recovered fluids:

(1) The volume of fluid recovered during flowback, swabbing, or recovery from production facility vessels;

(2) The methods of handling the recovered fluids, including, but not limited to, transfer pipes and tankers, holding pond use, re-use for other stimulation activities, or injection; and

(3) The disposal method of the recovered fluids, including, but not limited to, injection, hauling by truck, or transporting by pipeline. The disposal of fluids produced during the flowback from the hydraulic fracturing process must follow the requirements set out in Onshore Order No. 7, Disposal of Produced Water, Section III. B.

The information is necessary to assure that the lands and waters have not been contaminated by flowback fluids. The proposed regulation at 3162.3–3(g)(10) included a requirement for information on pipeline requirements. Pipeline systems are not ordinarily used for transfer of flowback fluids. This revised proposed rule at section 3162.3–3(h)(5)(ii), instead would require information on transfer pipes and tankers.

Section 3162.3–3(i)(6) would state that if the actual operations deviate from the approved plan, the deviation(s) must be documented and explained. Understanding the complexities of hydraulic fracturing, the BLM expects there often to be slight differences between the proposed plan and the actual operation. The explanation would provide the BLM with a better understanding not only of the particular well, but also of the technologies used in various geologic areas.

Section 3162.3–3(i)(7) is a renumbered section that would require the operator to submit to the BLM a certification signed by the operator that:

(1) Wellbore integrity was maintained prior to and throughout the hydraulic fracturing operation, as required by paragraph (b) of this section. This requirement was originally proposed in section 3162.3–3(h)(9). It would also require the operator to certify that it complied with the requirements of paragraphs (e), (f), (g) and (h) of this section; and

(2) For Federal lands, the hydraulic fracturing fluid used complied with all applicable permitting and notice requirements as well as all applicable Federal, State, and local laws, rules, and regulations; or

(3) For Indian lands, the hydraulic fracturing fluid used complied with all applicable permitting and notice requirements as well as all applicable

Federal and tribal laws, rules, and regulations.

Operators must certify that they have complied with the requirements for monitoring cementing operations, mechanical integrity testing, and monitoring during fracturing operations; the accuracy of these certifications will be checked through the submission of the monitoring and testing data as required in section 3162.3–3(i)(8). Assurances of wellbore integrity are critical for knowing whether further inquiries are needed to assess any environmental contamination. The certification of compliance with applicable permitting and notice requirements was in the proposed regulation both for the notice of intent and for the subsequent operations. This rule would require only that the certification be included with the Subsequent Operations Sundry Notice.

In response to comments provided in meetings with tribal representatives, in this revised proposed rule, the certification required for Indian lands is detailed separately from the certification required for Federal lands. Consistent with the overall approach of this rule, the revision is to clarify that this part does not apply State or local law to Indian lands. This section does not specify which laws apply on Indian or on Federal lands, but only the necessary certification.

Section 3162.3–3(i)(8) is also new to the revised proposed rule and it would require the operator to submit evidence supporting the information required in paragraphs (e)(1), (e)(2), and (f) of this section, including the cement operations monitoring report, any CEL, and the result of any MIT. The initial proposed rule would have required submission to the BLM of cement bond logs prior to completing operations, but that requirement has been revised in response to comments that the costs of delays for CBLs would be excessive. As mentioned above, requiring the monitoring and testing data, including any CELs after operations, will be sufficient to check the accuracy of operators' certification that the operations were in compliance with the rule.

New section 3162.3–3(i)(9) would provide that the BLM may require submission of data substantiating the information required in paragraph (i) of this section. The required information would provide a more complete record of the well. If there is an indication that a closer examination is necessary, the operator would provide the authorized officer with the data relevant to the information reported with the Subsequent Operations Sundry Notice.

Comments on Information That Must Be Provided to the BLM After Completed Operations

The BLM received some comments regarding the disclosure through the FracFocus Web site of chemical constituents used by operators during hydraulic fracturing operations. This online database includes information from oil and gas wells in roughly 12 States and includes information from over 500 companies. The commenters were divided between those supporting disclosure using FracFocus and those opposed to its use. Supporters of FracFocus indicated it was a common database which many State agencies already use, that the BLM does not have the necessary manpower to process and post information on their own, and that FracFocus allows for transparency of data to the public.

The BLM agrees with these comments and has proposed revisions to the proposed rule at section 3162.3–3(i) that would recognize FracFocus as an approved method of disclosing chemicals. However, the BLM would also accept other methods of disclosure, including the submittal of a Sundry Notice, or the posting of the information in another BLM-designated database. The revised proposed rule makes it clear that an operator should not disclose any information on the Subsequent Report Sundry Notice or on FracFocus that it believes to be exempt from disclosure under the Trade Secrets Act or other Federal law. However, under the revised proposed rule, the BLM would have the authority to require the submittal Trade Secret information on a case-by-case basis. A more detailed discussion of the Trade Secrets Act is provided under that section of the preamble.

Commenters objecting to the use of FracFocus were concerned that the database lacks search capability or filtering and sorting of information, provides incomplete disclosure, and that copyright protection prohibits data from being copied. Commenters also expressed concerns that FracFocus is not updated in a timely manner, needs a dedicated funding source independent from the oil and gas industry, and that FracFocus is not a government run Web site and not subject to Federal laws or oversight. Some comments proposed that the BLM develop an independent government-run database for chemical disclosure.

While the BLM did not revise this rule in response to these comments, it understands that FracFocus is in the process of improving the database with enhanced search capabilities to allow for easier reporting of information. In addition, information submitted to the BLM through FracFocus will still be required to comply with this rule. The BLM believes that working with the Groundwater Protection Council and the Interstate Oil and Gas Compact Commission to improve FracFocus will be more cost-effective and beneficial than creating a separate database for Federal and Indian wells.

The BLM received some comments that suggested that the rule should require the reporting of the maximum concentration of each constituent in the hydraulic fracturing fluid instead of the actual concentration, as was stated in the proposed rule. Commenters also suggested that the concentration in percent of total fluids should be reported. The BLM agrees with these suggestions because by using maximum concentration, the information is consistent with the data fields in FracFocus and the requirements of this rule. Most hydraulic fracturing operations are conducted on one section or segment at a time along the length of the horizontal well bore within the target zone. Operators may adjust or vary the actual concentrations of chemicals in later fracturing segments based on results in the earlier segments. In such a situation, there may be no one concentration of certain chemicals, but the maximum concentration could be readily reported. In addition, the maximum concentration expressed in percent of total fluid would be helpful in determining the toxicity of the fluid in case of accidental spill or exposure. For these reasons, the revised proposed rule (section 3162.3–3(i)(1)) would require the maximum concentration of each chemical used in both the additive and in the hydraulic fracturing fluid.

The BLM received some comments objecting to the amount of information required in the subsequent report required in section 3162.3–3(g). Some commenters suggested that the reporting of chemical constituents should include only those constituents that were added and not chemicals that could be native to the target zone. One comment objected to the requirement that the subsequent report must be submitted to the BLM and suggested that the operator maintain the information and submit it only upon request. Some comments stated that not all chemicals have a Chemical Abstracts Service Registry Number (CAS#) assigned to them and, therefore, should not be required. The BLM did not change the revised proposed rule as a result of these comments because the information required is important to its overall goal of ensuring public safety and environmental protection.

The BLM received some comments that more information should be required in the subsequent report, including the volume of the base fluid and each chemical used and proppants. The BLM did not revise the revised proposed rule as a result of these comments because the information already required is sufficient to ensure public safety and environmental protection.

The BLM also requests comments on whether, if the State (for Federal lands) or the tribe (for Indian lands) requires submission of the same or more information about the chemical constituents of hydraulic fracturing fluids, and provides that the information would be publicly available (except for trade secrets protected under State or tribal law), the BLM should deem compliance with those disclosure requirements within 30 days from completion of hydraulic fracturing operations to be compliance with proposed section 3162.3–3(i)(1). Such an amendment would reduce the compliance burden on operators in some areas, compared with the revised proposed section 3162.3–3(i)(1). However, if the State or the tribe does not require posting of the data on FracFocus, it could be less convenient for the public or the BLM to obtain the data, or to compare data across jurisdictions.

The BLM received some comments that stated an operator cannot certify actions of a third party or a contractor. The BLM disagrees with this comment. Existing regulations (43 CFR 3162.3(b)) specify that an operator is responsible for the conduct of every contract service provider on the operator's well site and lease, including the on-site activities and regulatory compliance of any hydraulic fracturing contractor. This requirement in the revised proposed rule is consistent with existing Federal regulations; therefore the BLM did not revise this rule as a result of this comment.

Some comments stated that the rule needs clarification on how to certify that wellbore integrity has been maintained throughout the hydraulic fracturing process. Certification of wellbore integrity would include certification of the monitoring requirements proposed in section 3162.3–3(f)(2). No revisions to the initial proposed rule were made as a result of this comment.

The BLM received some comments that said the rule should require operators to certify that they have complied with all Federal, State, and local laws. The BLM did not revise the rule as a result of these comments. The BLM believes, since all lease exploration, development, construction, production, operations, and reclamation activity is required to be conducted in a manner which conforms to all applicable Federal, State, and local laws and regulations, that requiring additional certifications, as suggested, would be redundant and cause unnecessary delays in approval and processing of APDs and sundry notices. All lease operations are already subject to the terms of the lease and its stipulations, the regulations of 43 CFR part 3100, Onshore Oil and Gas Orders, NTLs, the approved APD, and any written instructions or orders of the BLM authorized officer. In addition, the initial proposed rule and the revised proposed rule at section 3162.3–3(i)(7) would require the operator to certify that the hydraulic fracturing fluid used complied with all applicable permitting and notice requirements as well as all applicable tribal or Federal, State, and local laws, rules, and regulations. The BLM did not revise the rule as a result of this comment. However, we note that BLM would not normally take enforcement action based on an operator's innocent use of chemicals inadvertently mis-labeled by the manufacturer. BLM does not want to create an incentive in the rule that would make mis-labeled chemicals more valuable than properly labeled chemicals.

Section 3162.3–3(j) is substantially different from the proposed rule. This section would notify the operator of procedures it needs to follow to identify information otherwise required to be submitted under this section that the operator believes to be exempt, by law, from public disclosure. The operator should not disclose any particular information on the Subsequent Report Sundry Notice or through FracFocus that it believes to be exempted from public disclosure by the Trade Secrets Act or other Federal law. Instead, the operator should identify that particular information as a trade secret. For any information submitted under section 3162.3–3(j)(1), the operator would be deemed to have waived any right to protect that information from public disclosure. For the claimed exemption of any information required under paragraph (i)(1) of this section, the operator would be required to submit to the BLM an affidavit that:

(1) Identifies the Federal statute or regulation that prohibits the public disclosure;

(2) Affirms that the information is not publicly available;

(3) Affirms that the information is not required to be publicly available under any applicable law;

(4) Affirms that the release of the information would likely harm the operator's competitive position; and

(5) Affirms that the information is not readily apparent through reverse engineering.

For information which the operator does not believe to be exempt from public disclosure, this regulation is similar to the proposed regulations. Under section 3162.3–3(j)(2), any information provided in a Subsequent Report Sundry Notice or through FracFocus or other designated database would not be protected by the Trade Secrets Act or other Federal law.

For information claimed to be exempt from public disclosure, this rule is different from the proposed rule's exemption requirements. The proposed regulation would have required operators to submit the identities of all the chemicals used in the fracturing operations, to segregate the information the operator considered to be exempt from disclosure, and to justify the exemption. This rule does not require submission to the BLM information exempt by law from public disclosure. Instead, under section 3162.3–3(j)(1), the operator would submit an affidavit similar to the one required by regulations in the State of Colorado. If the affidavit is complete, it is possible that the operator may not be asked to submit any additional information regarding the claimed trade secrets. The BLM would have the discretion to require the operator to submit the undisclosed information for the BLM's review. Also, the BLM retains the discretion to adjudicate whether the undisclosed chemicals are exempt from public disclosure. If the BLM requested the information and determined that the information is exempt from disclosure, it would be kept confidential to the extent allowed by law.

Comments On Information Claimed To Be Exempt From Public Disclosure

Some commenters addressed the BLM's management of information about chemicals used in hydraulic fracturing operations. The proposed regulation would have required operators to provide information identifying all of the chemicals used in hydraulic fracturing fluids. For information that operators believed to be exempt from public disclosure under Federal law (referred to here as ''trade secrets''), the proposed regulation would have required operators to submit that information to the BLM, mark that information as a trade secret and provide a justification for not releasing that information to the public. A commenter noted that not all States

with oil and gas operations require public disclosure of the chemicals used in hydraulic fracturing fluids and that those that do require public disclosure are not uniform in their requirements. Some commenters wanted the BLM to provide for disclosure of trade secrets to the public, either upon demand of health officials or first responders or at the request of any member of the public. Other commenters wanted additional assurances that trade secrets would be kept confidential, or objected to providing trade secret information to the BLM, and some stated that uncertainty in protection of trade secrets could stifle innovation.

The *Federal Trade Secrets Act* makes it a crime for any Federal employee to make an unauthorized disclosure of a trade secret. See 18 U.S.C. 1905. The BLM lacks statutory authority to exclude hydraulic fracturing chemicals by regulation from the scope of the Trade Secrets Act. A commenter argued that the general rulemaking authority of the Secretary found in FLPMA, the *Mineral Leasing Act,* and the Indian mineral leasing statutes is sufficient for the BLM to require public disclosure of all chemicals without regard to the *Federal Trade Secrets Act.* The judicial opinions cited by that commenter, though, are distinguishable because the statutes at issue in those cases clearly contemplated public disclosure, and thus provided the necessary legal authorization for disclosure. The commenter's assertion that more information provided to the public would assist the BLM in its statutory duties does not render disclosure of operators' trade secrets ''authorized by law.''

Some States that require submission of trade secret information about hydraulic fracturing chemicals have laws which allow disclosure under certain circumstances to medical providers, public health officials, land owners, or first responders. The *Federal Trade Secrets Act,* however, does not provide for such exceptions.

The BLM believes that the initial proposed rule requiring operators to disclose trade secret information with justification for protecting each piece of information and requiring the BLM to maintain the confidentiality of all trade secret chemicals would not be the best solution. It would increase paperwork burdens on operators, and custodial requirements for the BLM. Because the BLM could not reveal trade secret information, the benefits of requiring operators to submit all such information would be limited. Revised section 3162.3–3(j) would instead instruct operators not to submit trade secret information with their disclosure of non-trade secret chemical information. Rather, operators claiming that some chemical information is a trade secret would withhold the information and submit an affidavit, modeled on the one used by the State of Colorado, to affirm that the undisclosed information is entitled to protection from public disclosure. The original affidavit may be submitted to the BLM with the subsequent report sundry notice within 30 days of completion of hydraulic fracturing operations, or an electronic version acceptable to the BLM field office may be submitted within that time. The electronic version would have the same legal effect as an original affidavit.

The operators would keep the undisclosed information for 6 years, under existing 43 CFR 3162.4–1(d). The BLM would have the discretion to require any operator to provide the withheld information. The BLM might demand withheld chemical information for reasons that could include the need to assist in tracing the origin of chemicals in a possible contamination event or to assure that operators are not claiming trade secret protection without justification.

Some commenters asserted that various engineering and construction features of oil and gas wells may be deserving of trade secret protection. For information, other than that required in revised proposed section 3162.3–3(i)(1), believed to be protected from public disclosure, the submitter must comply with the existing regulations at 43 CFR 3100.4. The procedure in revised proposed section 3162.3–3(j) applies only to the information required in revised proposed section 3162.3–3(i)(1).

Some commenters directed the BLM's attention to statutes such as the *Occupational Safety and Health Act* and the *Emergency Response and Community Right to Know Act,* and to regulations promulgated by other Federal agencies under the authority of such Acts. Those statutes, though, do not authorize the BLM to regulate the information required under those programs or to authorize disclosure of trade secrets. The revised proposed rule, however, would not interfere with other Federal agencies administering their programs, and would not preempt applicable State, local, or tribal laws that might require operators or other agencies to make chemical information available.

Other commenters asserted that operators should not be responsible for asserting and justifying trade secret protection for chemicals selected by service contractors. On the contrary, operators are responsible for all operations on their well sites and for compliance with all of the BLM's operating and reporting regulations. Some commenters believed that 10 days notice of a decision by the BLM before information would be released to the public was not sufficient to obtain temporary relief from a court. However, ten days is the notice for such decisions under the Department's FOIA regulations at 43 CFR 4.23(g). Some commenters suggested that trade secret issues should be centrally coordinated within the agency rather than be subject to field office case-by-case determinations. Trade secret issues are inherently specific to technologies, well locations, fracture zones, and times. The BLM will address trade secret issues at the most appropriate level of its organization, but that does not need to be specified in regulation.

Section Discussion

Under new section 3162.3–3(j)(4), information that the operator claimed to be exempt from disclosure would be required to be maintained in the operator's records for 6 years after the completion of the hydraulic fracturing operations, by referring to existing regulations at 43 CFR 3162.4–1(d). That time period will assure that records are available, but should not be unduly burdensome for operators. Section 3162.3–3(j)(4) has been added because the revised proposed rule has eliminated the requirement that operators routinely report information on trade secret chemicals to the BLM. In order for the BLM to have access to the withheld information, the rule needs a mandatory retention requirement. Existing section 3162.4–1(a) requires retention of ''accurate and complete records with respect to all lease operations,'' and subsection (d) of that section requires those records be retained for 6 years from the date they were generated. The reference to section 3162.4–1(d) is to provide consistency for operators. The BLM, however, is interested in comments with environmental and economic information that would show that another time period would be more appropriate.

Section 3162.3–3(k) would provide the operator with a process for requesting a variance from the minimum standards of this regulation. Variances apply only to operational activities, including monitoring and testing technologies, and do not apply to the actual approval process. The revised proposed rule adds a provision allowing the BLM to designate a variance applicable to all wells in a field, a basin,

a State, or within Indian lands. Such a variance would be based on the BLM's determination that the variance will meet or exceed the effectiveness of the regulation and would allow the BLM to adapt the regulatory requirements to the unique geology of an area. It would also be another way that the BLM could defer to a standard, technology, or process required or allowed by State or tribal law that meets or exceeds the effectiveness of the revised proposed rule. Under section 3162.3–3(k)(1) a request for a variance would be required to specifically identify the regulatory provision of this section for which the variance is being requested, explain the reason the variance is needed, and demonstrate how the operator will satisfy the objectives of the regulation for which the variance is being requested.

Section 3162.3–3(k)(2) states that the BLM must make a determination that the variance request meets or exceeds the objectives of the regulation. For example, an operator could request a variance from the requirement to monitor pressure in the annulus between any intermediate casing string and the production string because the last intermediate string was run as a liner and did not extend to the surface. The BLM could grant a variance in this situation because monitoring the annulus between the production casing and an intermediate string that did extend to the surface meets the objective of ensuring mechanical integrity is maintained during the hydraulic fracturing operation. This variance provision is consistent with existing BLM regulations such as Onshore Order Number 1 (see Section X. of Onshore Order No. 1).

Section 3162.3–3(k)(3) would state that a variance under this section does not constitute a variance to provisions of other regulations, laws, or orders.

Section 3162.3–3(k)(4) makes clear that the BLM has the right to rescind a variance or modify any condition of approval due to changes in Federal law, technology, regulation, field operations, noncompliance, or other reasons. The BLM would intend for an operator to rely on a variance, and thus would not expect to rescind it. When BLM finds that rescinding a variance is necessary, ordinarily, the BLM's rescission of a variance would be effective only prospectively. Conceivably, an operator might obtain a variance through such misrepresentations that it must not continue to benefit from the variance, or a variance is issued in violation of a statute or causes such significant harm that it must be rescinded retroactively, but such situations should rarely occur.

Section 3162.5–2(d) would remove the references to fresh water and removes the phrase ''containing 5,000 ppm or less of dissolved solids.'' This rule would require the operator to isolate all usable water and other mineral bearing formations and protect them from contamination. This language does not set a new standard in the BLM's regulations and does not create new compliance requirements for those operating on public and Indian lands. Since 1988, Onshore Order No. 2, Section II.Y., has defined usable water and at Section III.B. has required the operator to ''protect and/or isolate all usable water zones.'' Revised proposed section 3162.5–2(d) brings these regulations into conformity with Onshore Order No. 2, and provides the appropriate standard for control of wells, including hydraulic fracturing operations. Properly constructed and cemented production casing, and where appropriate, intermediate casing, will in most cases provide effective isolation of usable water and other mineral-bearing formations below the surface casing.

IV. Procedural Matters

Federal and Indian Oil and Gas Leasing Activity

To understand the context of the costs and benefits of this rule, BLM includes background information concerning the BLM's leasing of Federal oil and gas, and management of Federal and Indian leases. This analysis explains the basis for the conclusions related to the procedural matters sections that follow. The BLM Oil and Gas Management program is one of the largest mineral leasing programs in the Federal Government. At the end of fiscal year (FY) 2012, there were 48,699 Federal oil and gas leases covering 37,792,212 acres. For FY 2012, there were 92,583 producible and service drill holes and 99,015 producible and service completions on Federal leases. In FY 2012, onshore Federal oil and gas leases produced about 118 million barrels (Bbl) of oil, 2.81 billion Mcf (thousand cubic feet) of natural gas, and 2.84 billion gallons (Gal) of natural gas liquids, with a production value of almost $23 billion and generating royalties of almost $2.6 billion. Oil and gas production from Indian leases was almost 29 million barrels of oil, 256 million Mcf of natural gas, and 155 million gallons of natural gas liquids, with a production value of $3.4 billion and generating royalties of $561 million.

TABLE 2—FEDERAL AND INDIAN OIL AND GAS PRODUCTION AND ROYALTIES, FISCAL YEAR 2012

	Sales volume	Sales value ($ million)	Royalty ($ million)
Federal Leases:			
Oil (Bbl)	118,142,826	$10,442	$1,275
Gas (Mcf)	2,806,572,692	9,258	976
NGL (Gal)	2,839,924,280	2,947	298
Subtotal	.....	22,648	2,550
Indian Leases:			
Oil (Bbl)	28,989,309	2,441	424
Gas (Mcf)	256,176,345	762	116
NGL (Gal)	155,313,421	183	21
Subtotal	.....	3,386	561

Source: Office of Natural Resource Revenue, Federal Onshore Reported Royalty Revenue, Fiscal Year 2012 and American Indian Reported Royalty Revenue, Fiscal Year 2012.

Estimating Benefits and Costs

This analysis estimates the potential costs and benefits that would occur as a result of the rule. Therefore, this analysis measures the impacts in relation to the current operating environment (or the baseline).

In analyzing the costs and benefits of the rule, it is important to differentiate between the activities that operators currently conduct and those additional activities that the rule would compel. This change in behavior provides the basis of the cost and benefit estimates.

OMB Circular A–4 recognizes that not all benefits and costs can be described in monetary or even in quantitative terms. In such cases, the circular directs agencies to present any relevant quantitative information along with a description of the unquantifiable effects.

Measuring the Incremental Change

Many of the provisions in the rule are conducted voluntarily by operators as a matter of company practice or standard industry practice. Operators have a vested interest in ensuring that wells are constructed properly to avoid problems that might jeopardize their investment. As a matter of industry practice, operators typically perform the following tasks:

- Develop a plan for the hydraulic fracturing operation;
- Monitor the cementing processes;
- Cement the casing to protect water zones;
- Conduct pressure tests on casing strings during the drilling process or before hydraulic fracturing operations;
- Maintain drill logs identifying usable water zones;
- Run CBLs and/or other evaluation logs on the production casing and sometimes on the intermediate casing, if formations of interest that are above the producing zone or to maintain compliance with State regulations, State permit requirements, or Federal permit requirements;
- Monitor annulus pressures during the hydraulic fracturing operation; and
- Manage the flowback of fluids.

Some practices required in the rule are already conducted by operators in order to comply with existing applicable State regulations or requirements. Such State regulations often dictate how an operator cements a well, what tests or logs it conducts, how it handles flowback, or whether it must disclose the chemical contents of the hydraulic fracturing fluid. In addition to regulations, states may place requirements in the drilling permits as conditions of approval.

Some of the provisions in the rule repeat existing Federal requirements. Operators on Federal and Indian lands are already in compliance with those provisions, and therefore the rule does not pose an additional burden. For example, the BLM has casing and cementing requirements to protect and/or isolate usable water zones, found in Onshore Order No. 2, that are consistent with the final rule. Operators on Federal and Indian leases who are drilling in compliance with Onshore Order No. 2 would also be in compliance with this rule; accordingly the rule poses no additional burden for drilling and cementing operations, but does require testing and reporting to assure that usable water zones are isolated. Like State regulatory authorities, the BLM or a tribe may also place requirements on operators as a condition of approval for the drilling permit. Where appropriate and possible, the analysis does not consider impacts in areas where operators already adhere to the rule's provisions as a matter of voluntary practice or regulatory compliance with existing Federal, tribal or State regulations or requirements in conditions of approval.

Costs Framework

To examine the costs of the rule, the analysis considers the number of hydraulic fracturing operations that would be subject to the various requirements and the costs of the various requirements. While the rule would apply to all hydraulic fracturing operations on Federal and Indian lands, specific provisions in the rule may apply only to a subset of those operations. For example, the rule requires Subsequent Report (SR) Sundry submissions for all hydraulic fracturing operations. However, the number of required NOI Sundry requests and the CELs conducted would be fewer.

The three key components to the cost formulation are the estimated number of hydraulic fracturing operations, the applicability of provisions to those operations, and the compliance costs to satisfy the provisions. Lower estimates in either of these areas would lead to lower estimates of the total costs of the rule. Likewise, higher estimates would lead to higher estimated total costs.

Protecting usable water: The BLM already requires casing and cementing to protect usable water zones that are consistent with the final rule. Therefore, the rule does not pose an additional burden to operators.

Pressure Testing Requirement: The pressure testing requirement is consistent with standard industry practice, State regulations, and BLM regulations. The requirement does not pose an additional burden to operators.

Pit liner or storage tank requirement: The requirement to manage flowback in lined pits or storage tanks is consistent with almost all existing State regulations in States where new oil and gas activity is occurring on BLM-managed lands. The requirement would pose an additional burden to operators only on Federal and Indian leaseholds in States or on Indian lands without existing requirements and for those operators that do not voluntarily comply.

Disposal of flowback: The revised proposed rule would require that operators comply with applicable laws and is consistent with Onshore Order No. 7 disposal requirements for produced water. We do not expect that these provisions will pose additional burdens to operators.

Cement evaluation logs on casing strings that protect usable water: The rule has a provision to conduct CELs on the casing strings that protect usable water. The applicable casing strings include the surface casing and sometimes the intermediate casing. Operators do not typically run CELs to evaluate the cement behind the surface casing, so the rule would require an additional step and cost in the drilling process. Not all wells require intermediate casing, and wells that require intermediate casing may do so for reasons other than to protect usable water. In addition to requiring a CEL on the surface casing of type wells and wells not associated with a type-well development proposal, the rule would compel CELs on intermediate casing that protects usable water, and further, is deemed to compel CELs only on those intermediate casings where the operator would not otherwise conduct a CEL in compliance with State regulations or conditions of approval or do so voluntarily.

Subsequent wells under a type well approval: Under the revised proposed rule, not all wells would be subject to the CEL requirement. The subject activity should reflect the number of CELs on single wells and on type wells, but not for the subsequently drilled wells under a type well approval.

Requiring a CEL when there is an indication of inadequate cementing: Under the rule, operators on all wells (single wells, type wells, and subsequent wells to a type well) are required to run a CEL when there is an indication of inadequate cementing of a casing string that protects usable water. The BLM and many State regulations and requirements have established protocols for remedial actions in the event of inadequate cementing. Those protocols require operators to remediate

to the authorized officer's satisfaction and where the regulatory authority may request results from a CEL. For example, Onshore Order 2 requires that operators perform remedial cementing if cement is not circulated back to the surface for the surface casing (Section III.B.1.c). Onshore Order 2 also requires an additional pressure test or remedial action as specified by the authorized officer if a pressure test indicates that casing strings do not meet minimum standards (Section III.B.1.h). Onshore Order 2 lists other minimum standards and corrective actions, including some that require logging or testing, remedial cementing, and actions specified by the authorized officer.

Measuring the costs of a CEL: The rule introduces a new step (or steps) to the drilling process, depending on the well. This new step potentially poses an additional cost burden to operators for the costs of the CEL and the costs to maintain idle drilling equipment if the drilling process is delayed.

After cementing the casing, operators must wait for a period of time for the cement to harden before conducting any well tests and drilling the plug. The BLM requires operators to wait until the cement at the casing shoe reaches a compressive strength of 500 psi. States generally have compressive strength standards similar to the BLM's. For example, the State of Montana requires operators to wait 8 hours and New Mexico requires operators to wait anywhere from 8 to 18 hours.

While waiting for the cement behind the surface casing to set, operators will install other required equipment on the well, including blowout preventers. After the cement has hardened sufficiently and the operator has satisfied Federal or State requirements, operators would normally conduct a pressure test on the surface casing, drill through the plug, drill for an additional interval into the formation, and then test the shoe. After a successful shoe test, operators then drill the intermediate hole. The process is generally the same for the intermediate casing; however, operators may also run a log on the intermediate casing depending on the circumstances described before.

We received some comments on the proposed rule suggesting that, by requiring CBLs, the rule would force all operators to maintain idle drilling equipment while the cement reached additional compressive strength sufficient for a CBL to show meaningful results. At issue is the idea that an operator would need to wait an additional amount of time before pressure testing the casing or drilling through the plug.

An operator does not have to stand idle at this point in time. For example, an operator may pressure test the surface casing, drill out the plug, test the shoe, and then drill the intermediate hole. An operator may then perform a CEL at any point in time before setting the intermediate casing, *i.e.,* while replacing a drill bit. In any of these scenarios, however, ancillary delays associated with the availability of the logging company and the time required to run the log could still result.

Operators drilling multiple wells on a pad should also be able to run a CEL and avoid potential drilling delays. When drilling multiple wells on a pad, an operator may use a smaller drilling rig (known throughout the industry as a ''double'' rig) to sequentially drill a casing hole, set casing, and cement casing of each well, one by one. After the surface holes have all been sequentially drilled, cased, and cemented, the operator will remove the small drilling rig from the pad, and bring in a large drilling rig to drill the subsequent sections of each well. If an operator is drilling multiple wells in this fashion, then it may continue the drilling process while the cement sets on the first well, and log that well at the operator's convenience. In these situations, the operator would incur no additional costs associated with maintaining idle drilling equipment.

Benefits Framework

While the potential benefits of the rule are more challenging to monetize than the costs, they are significant. The rule is designed to reduce the environmental and health risk posed by hydraulic fracturing operations, particularly in its treatment of flowback fluids, well construction, and hydraulic fracture design. Stronger field operations with sound resource protections provide improved efficiency for the BLM to administer the program management for oil and gas with fewer protests, fewer compliance problems, fewer FOIAs, and other activities that divert limited available staff.

The primary challenge in monetizing benefits lies in the quantification of a risk that is largely unknown. Risk is the product of the likelihood of an incident occurring and the impact that would result. In this context, risk is the probability of an incident occurring from hydraulic fracturing times the cost of the damage. The monetized benefit of this rule would be the reduction in risk attributed to the rule, which also represents the avoided costs of remediating damage.

Though operators are required to remediate damage when it occurs, there may be uncertainty about the true cost or extent of the damage or limitations in connecting an incident with an operation. Even if the damage is internalized, the overall benefit to society would be less than if the incident was avoided (if the compliance costs are less than the damage costs), since resources would have been unnecessarily dedicated to the remediation.

Operators are required to notify the BLM when undesirable events occur. Undesirable events may include accidents, or accidental spills or releases of hydrocarbon fluids, produced water, hydraulic fracturing flowback fluids, or other substances. These events have the potential to adversely affect public lands and other important resources; reduce the value of the minerals and lands; plus add expensive costs to the BLM inspection and enforcement by diverting limited staff.

There are limitations in using the BLM data on undesirable events for this analysis. First, the data do not specify whether the undesirable events occurred as a result of any of the drilling or completion activities associated with the hydraulic fracturing operations. In addition, the available data cannot be readily matched with particular provisions in the rule. The data provides figures for the incidence of spills, accidents, injuries, and other impacts on a well, but the pit liner information is generally not specified in the incident reports for spills or leaks. As such, there is difficulty in quantifying the level of risk reduction that would be attributed to the regulations, even though the regulations would most certainly reduce risk.

Damage, in general, is unknown, particularly when attempting to generalize damage costs which may vary by expected magnitude and reversibility of effects. Also, the valuation of the damage may also take many and highly variable forms. For example, an undesirable incident occurring during hydraulic fracturing might require the remediation of surface or subsurface areas. The incident might also require that the operator shut-in temporarily or plug the well before it may produce all of the mineral resources. In this case, the operator would lose revenue and society would not benefit from the produced resources. Such would be the same for spills.

Discounted Present Value

There is a time dimension to estimates of potential costs and benefits. The potential events described, if they occur at all, may be in the distant future.

The further in the future the benefits and costs are expected to occur, the smaller the present value associated with the stream of costs and benefits. As such, future costs and benefits must be discounted.[1] The discount factor is then used to convert the stream of costs and benefits into ''present discounted values.'' When the estimated benefits and costs have been discounted, they can be added to determine the overall value of net benefits.

The OMB's basic guidance on the appropriate discount rate to use is provided in OMB Circular A–94. The OMB's Circular A–94 states that a real discount rate of 7 percent should be used as a base-case for regulatory analysis. The OMB considers the 7 percent rate as an estimate of the average before-tax rate of return to private capital in the U.S. economy. It is a broad measure that reflects the returns to real estate and small business capital as well as corporate capital. It approximates the opportunity cost of capital, and it is the appropriate discount rate whenever the main effect of a regulation is to displace or alter the use of capital in the private sector.

OMB Circular A–4 also states that a 3 percent discount rate should be used for regulatory analyses and provides an explanation of the use of the discount rate as follows: ''The effects of regulation do not always fall exclusively or primarily on the allocation of capital. When regulation primarily and directly affects private consumption (e.g., through higher consumer prices for goods and services), a lower discount rate is appropriate. The alternative most often used is sometimes called the 'social rate of time preference.' This simply means the rate at which 'society' discounts future consumption flows to their present value.''

The analysis also examines potential costs and benefits using 10 and 12 percent discount rates. The consideration of higher discount rates are appropriate for this analysis, since the rule imposes costs on the oil and gas industry and the opportunity cost of not having that available capital is generally higher than 3 and 7 percent. The higher rates also serve as a sensitivity test.

Uncertainty

The costs and benefits provided in this analysis are estimates and come with uncertainty. We describe the primary sources of uncertainty below:

- Type well applicability: The estimates for the rule rely largely on the concept of the type well. In terms of cost calculations, the uncertainty lies in an average number of wells that would be covered under a type well approval. While the BLM is confident that the average number of wells that an operator completes in a field is a good measure with which to base the estimate, the measure is positively skewed by a fewer number of firms with a high number of wells. This does not suggest a problem with the data, but rather that the experiences of operators will vary, and that the likely scenario is that the typical operator completes fewer wells than the average. In terms of benefit calculations, there is uncertainty about the effectiveness of the type well concept, and how reliably the CEL results on casing strings of a type well assure adequate cementing for subsequent wells in the same geologic area.
- Length of delay time to run a CEL: A large source of uncertainty is the amount of time that the CEL requirement might delay drilling operations. The BLM received comments suggesting that the CEL would delay drilling operations for up to 72 hours. The CEL on the surface casing, in particular, poses a new step in the drilling process for operators. A large source of uncertainty is the extent to which operators would be subject to delays, and if so, how they will be able to incorporate this new requirement and minimize or eliminate potential delays through operating efficiencies.
- Percent of wells encountering problems during the cementing process: Cementing problems and downhole conditions, in general, are not widely reported metrics. This analysis uses 3 percent as the basis for calculating the potential costs and benefits.
- Benefits of specific provisions for well integrity and NOI Sundry submission: Further uncertainty lies in the estimation of benefits and the cumulative effect of the rule's provisions on mitigating the potential risks of hydraulic fracturing operations. This rule has specific provisions that would help operators and the BLM better identify potential issues in wellbore integrity and fracturing design, before operations begin. However, it is difficult to attribute benefits to one single test (for instance the CEL) when that is only one part of the overall evaluation of wellbore integrity.

Results

Where appropriate, this analysis monetizes costs and benefits expected to occur over the next 10 years, from 2013 to 2022. This period of analysis was chosen because 10 years is the length of the primary lease term on BLM-managed lands. The analysis presents a range of expected outcomes due to uncertainty about the generalization of costs and benefits across all hydraulic fracturing operations. In developing the rule, the BLM considered several alternatives. The alternatives primarily focused on two topic areas: Verification of proper cementing behind casing strings through CELs and the management of flowback fluids from operations. One alternative would require CELs on casing strings protecting usable water for all wells and the use of storage tanks to manage flowback. A second alternative would require CELs on casing strings protecting usable water for all wells but does not establish requirements for storage tanks or lined pits. Table 3 and Table 4 show a summary of incremental costs and benefits, respectively, for the rule and the alternatives examined. To annualize the incremental costs and benefits, the analysis calculates the annualized value (AV). Where monetized, the results are presented in 2012 dollars.

The entire results are available in the full Economic Analysis and Regulatory Flexibility Analysis available at the address listed in the **ADDRESSES** section of this rule.

TABLE 3—SUMMARY OF COSTS

[$Million]

Annualized value	Revised proposed rule	Alternative 1	Alternative 2
Undiscounted	12–20	119–213	119–213
Discounted at 3%	12–19	118–213	118–213

[1] Discount factor = $1/(1+ r)^t$ where r is the discount rate and t is time measured in years during which benefits and costs are expected to occur.

TABLE 3—SUMMARY OF COSTS—Continued

[$Million]

Annualized value	Revised proposed rule	Alternative 1	Alternative 2
Discounted at 7%	12–19	118–212	118–212
Discounted at 10%	12–19	117–211	117–211
Discounted at 12%	12–19	117–211	117–211

The annualized values of the costs do not vary significantly across different discount rates. This is expected for several reasons. When the original cost schedule is relatively constant over time (neither front-loaded nor back-loaded) the AV will be relatively similar to the average cost. This is expected with compliance costs related to this rule, since the total compliance costs for the rule are expected to be relatively similar over future years, owing to similar activity data (i.e., the number of hydraulic fracturing operations) and that the compliance costs for a single operation are contained within a short timeframe.

TABLE 4—SUMMARY OF NON-MONETIZED BENEFITS

Non-monetized benefits	Rule (percent)	Alternative 1 (percent)	Alternative 2 (percent)
Percent of individual hydraulic fracturing plans reviewed by the BLM	11	100	100
Percent of hydraulic fracturing operations using unlined pits	0	0	0.15
Percent of individual wells where wellbore integrity is demonstrated with CELs on casing strings that protect usable water	8	96	96
Percent of wells where wellbore integrity is demonstrated with pressure tests	100	100	100
Percent of hydraulic fracturing operations where chemical content of fluids are disclosed	100	100	100

Non-monetized benefits	Estimated baseline (percent)	Rule	Alternative 1	Alternative 2
Likelihood of Minor Incident	2.70	N/A	N/A	N/A
Likelihood of Major Incident	0.03	N/A	N/A	N/A

Estimated Costs of Revised Proposed Rule

Annualized costs to the industry are estimated to be between about $12 and $20 million when undiscounted and when using discount rates of 3, 7, 10, and 12 percent. The net present value of total costs over the 10-year period are estimated to be between $102 to $166 million when discounted at 3 percent, between $84 and $136 million when discounted at 7 percent, between $73 and $119 million when discounted at 10 percent, and between $67 and $109 million when discounted at 12 percent.

The largest cost burden lies with the CEL requirement, which is also the source of the greatest amount of uncertainty when developing estimates. Drilling methods, procedures, and requirements vary across operations, locations, and States, so it is challenging to place an exact dollar figure on the appropriate cost.

The estimated costs for the CEL requirement are driven to a large extent by the amount of time operators might have to maintain idle drilling equipment on-site. The lower bound of the estimated CEL requirement includes the annual costs of conducting CELs on the surface casing, assuming that operators using a small rig to drill the surface holes of wells would likely avoid the costs of maintaining idle drilling equipment. The estimate possibly represents the lowest possible cost; however, there is a chance it could be even lower depending on the ability of the operators on other wells to maximize efficiencies and reduce delays. The upper bound of the estimated CEL requirement does not account for the potential of operators to reduce delays below 24 hours per CEL on the surface casing and 48 hours on the intermediate casing. While the estimate possibly represents the maximum total cost, it may underestimate the total costs if CELs result in delays assumed.

The BLM has assumed delay times to account for additional compressive requirements and ancillary delays that could occur. However, there are several ways for operators to reduce the amount of idle time. The Economic Analysis prepared for this rule analyzed the sensitivity of the upper bound total estimates to assumed idle times. If operators are able to reduce the assumed delays by 25 percent, then the upper bound costs estimates would be reduced by 19 percent. On the other hand, if the assumptions underestimate the delay times by 25 percent, then the upper bound estimate would be increased by 19 percent.

The administrative compliance costs are non-trivial and are based on a per submission cost of $478. It is likely that operators, over time, will be able to gain efficiencies and reduce costs below the estimates provided.

The costs provided are estimates of the direct costs and not the overall costs to society. There is uncertainty about the effect that the rule would have across all potential hydraulic fracturing operations. The rule has a provision for type well approval of the NOI Sundry and log requirements (unless the operator encounters problems with improper cementing) and affords operators drilling many wells in a geologic area greater efficiency than it does for operators drilling a single well or few wells. If one assumes that operators cannot derive efficiencies to avoid the costs of idle rig time, it could favor activity in development fields over exploratory areas.

There is also flexibility in how the various BLM authorized officers might treat applications for variances, and to what extent that will allow operators to potentially reduce costs. There are well

construction methods, such as the use of a ''frac string,'' that reduce the pressures placed on the intermediate casing and surface casing strings during hydraulic fracturing operations. This is one potential area where an operator might receive a variance.

Average Compliance Costs for Operators

The provisions of the rule would result in compliance costs ranging from $3,138 to $5,110 for all hydraulic fracturing operations differentially, for example, if the operation is for a type well versus a subsequent well. Averaging the total compliance costs for the industry in the first year of regulation by the number of hydraulic fracturing operations, the BLM expects the compliance costs to range from $3,138 to $5,110 per operation. The CEL requirements represent the bulk of that portion, $2,591 to $4,564. Average compliance costs per operation for each of the policy options are shown in Table 5.

TABLE 5—AVERAGE COMPLIANCE COSTS IN 2013 ACROSS ALL OPERATIONS FOR THE RULE, ALTERNATIVE 1, AND ALTERNATIVE 2

Requirement	Average across all operations					
	Revised proposed rule		Alternative 1		Alternative 2	
	Low	High	Low	High	Low	High
Count of Hydraulic Fracturing Operations (in 2013)	3,566		3,566		3,566	
CEL on Surface Casing	$1,980	$3,953	$24,894	$49,692	$24,894	$49,692
CEL on Intermediate Casing	409	409	5,140	5,140	5,140	5,140
CEL if Inadequate Cementing	202	202	0	0	0	0
Lining Pits	9	9	9	9	0	0
NOI Sundry	54	54	478	478	478	478
SR Sundry	478	478	478	478	478	478
Variance Requests	5	5	48	48	48	48
Total	3,138	5,110	31,047	55,845	31,038	55,836

BLM Administrative Burden

The processing of NOI Sundry, SR Sundry, and variance requests associated with the rule would pose additional burden to the BLM; however, it is unclear the extent to which the BLM can meet the additional burden with existing capacity. An additional 8.44 FTE of workload is estimated to be required to meet the administrative burden of the rule in the first year of implementation.

Benefits of the Revised Proposed Rule

The rule provisions, as described in the revised proposed rule, would require an operator to conduct tests on a well before it conducts hydraulic fracturing operations on that well. For all operators on Federal and Indian land the revised proposed rule would compel operators to conduct an average of 293 CELs per year on surface casings, 14 CELs per year on intermediate casings, and 110 CELs per year on casing strings where there is an initial indication of inadequate cementing.

Relative to the initial proposed rule, the revised proposed rule would not compel as many CELs. Therefore, there is a chance that the rule would not reduce as much risk as the alternatives. The rule would ensure that operators demonstrate wellbore integrity with pressure tests on 100 percent of the wells and with CELs on the casing strings that protect usable water on 8 percent of wells. The level of risk reduction across subsequent wells relies on the replication of adequate cementing across multiple wells in a geographic area with the same geologic characteristics.

The rule would compel 110 CELs to demonstrate that inadequate cementing was corrected by operators. As such, it requires a verification of proper remedial cementing on the very wells that pose greater risk.

Under the rule, operators would submit an average of 432 NOI Sundry applications per year covering about 3,816 hydraulic fracturing operations (average over the 10-year period, 2013–2022). The BLM would receive individual hydraulic fracturing plans for an estimated 11 percent of the expected operations, and the remaining 89 percent of operations would be for subsequent wells to a type well. The type well provision, relative to the alternatives, reduces burden on the industry and the BLM. The submission of NOI Sundry applications would provide the BLM with the necessary information to make informed decisions about the public's resources and thus improve the public welfare, and have the same benefits for Indian resources and Indian welfare.

The rule is estimated to compel only six additional lined pits per year, simply because most of the States where the BLM manages oil and gas resources already require lined pits. For those six pits, the requirement would immediately remove sources of harm to the environment and the public from the contamination of the surface environment with fracturing fluids.

The rule would compel 3,816 Sundry reports and public disclosures of the chemical content of the hydraulic fracturing fluids. The increase in information about additives could aid water users when they consider the potential effects of hydraulic fracturing operations and constituent chemicals.

Overall, the rule would potentially reduce the risks associated with hydraulic fracturing operations. The BLM estimated the likelihood of an incident resulting from a hydraulic fracturing operation could be between 0.03 and 2.70 percent. Damage from an incident could cost between $15,000 and $1 million for remediation plus any lost revenue from unrecoverable resources, including spilled or stranded resources.

Economic Impact Analysis and Distributional Assessments Energy System Impact Analysis

Executive Order 13211 requires that agencies prepare and submit to the Administrator of the Office of Information and Regulatory Affairs (OIRA), OMB, a Statement of Energy Effects for certain actions identified as significant energy actions. Section 4(b) of Executive Order 13211 defines a ''significant energy action'' as ''any action by an agency (normally

published in the **Federal Register**) that promulgates or is expected to lead to the promulgation of a final rule or regulation, including notices of inquiry, advance notices of proposed rulemaking, and notices of proposed rulemaking: (1)(i) That is a significant regulatory action under Executive Order 12866 or any successor order, and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (2) that is designated by the Administrator of OIRA as a significant energy action.''

The additional burden posed by this rule would vary by the type of well proposed for hydraulic fracture. A key consideration is the extent to which the costs of the requirements might impact investment, production, employment, and a number of other factors. That is, to what extent, if any, would an operator choose to invest in other areas, non-Federal and non-Indian lands, when faced with the cost requirements of the rule. Since the bulk of the costs would apply to hydraulic fracturing operations on wells that are yet to be drilled (and not on existing wells and to refracturing operations), operators will be able to account for any cost increases up front when making investment decisions. The BLM believes that the additional cost per hydraulic fracturing operation is insignificant when compared with the drilling costs in recent years, the production gains from hydraulically fractured wells operations, and the net incomes of entities within the oil and natural gas industries.

Table 6 shows the average compliance costs, by well type or operation, as a percent of the total costs of drilling a well. For a single well or a type well, the compliance costs represent about 0.4 to 1.4 percent of the costs of drilling a well. For a subsequent well to a type well, the costs represent between 0.01 and 0.02 percent of the total drilling costs. For existing wells and refracture operations, the percentages are even lower, at about 0.01 to 0.03 percent. When averaging the compliance costs across all operations, the costs represent between 0.04 and 0.13 percent of the costs of drilling a well.

Since the estimated compliance costs are not a substantial when compared with the total costs of drilling a well, the BLM believes that the rule is unlikely to have an effect on the investment decisions of firms, and the rule is unlikely to affect the supply, distribution, or use of energy.

TABLE 6—THE AVERAGE COMPLIANCE COSTS OF THE REVISED PROPOSED RULE AS A PERCENT OF TOTAL DRILLING COSTS

Activity	Well type fracturing operation					Average across all operations (percent)	
	Type well or single well		Subsequent well under type well approval (percent)	Existing well (percent)	Refracture operation (percent)	Low (percent)	High (percent)
	Low (percent)	High (percent)					
Percent of Drilling Costs for a Crude Oil, Natural Gas, and Dry Well (2007$) [1] ...	0.7128	1.3301	0.0167	0.0243	0.0241	0.0752	0.1225
Percent of Drilling Costs for a Crude Oil Well (2007$) [1]	0.7434	1.3871	0.0174	0.0253	0.0251	0.0784	0.1277
Percent of Drilling Costs for a Natural Gas Well (2007$) [1]	0.7611	1.4202	0.0178	0.0259	0.0257	0.0803	0.1308
Percent of Drilling Costs for a horizontal well in the Bakken Three Forks (reported in 2010) [2]	0.5507	1.0275	0.0129	0.0188	0.0186	0.0581	0.0946
Percent of Drilling Costs for a horizontal well in the Marcellus Shale (reported in 2011) [3]	0.3913	0.7301	0.0092	0.0133	0.0132	0.0413	0.0672

NOTES:

[1] Average drilling costs in 2007 range from $3.9 million to about $4.2 million. U.S. Energy Information Administration (January 31, 2012). *Costs of Crude Oil and Natural Gas Wells Drilled.*

[2] Costs of $5.4 million cited by Investopedia from Continental Resources. Investopedia (March 12, 2010). *Oil Service Costs to Move Higher.*

[3] Costs of $7.6 million cited by Marcellus Drilling News from a University of Pittsburgh Study (Marcellus Drilling News (September 2011) *How much does it cost to drill a single Marcellus well? $7.6M.*

Employment Impact Analysis

Executive Order 13563 reaffirms the principles established in Executive Order 12866, but calls for additional consideration of the regulatory impact on employment. It states, ''Our regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation.'' An analysis of employment impacts is a standalone analysis and the impacts should not be included in the estimation of benefits and costs.

This proposed rule would require operators, who have not already done so, to conduct one-time tests on a well or make a one-time installation of a mitigation control feature. In addition, operators would be required to perform administrative tasks related to a one-time event.

Compliance with the operational requirements is expected to shift resources from firms in the crude oil and natural gas extraction industries (NAICS codes:: 211111—Crude Petroleum and Natural Gas Extraction, 211112—Natural Gas Liquid Extraction) to firms providing support services for drilling oil and gas wells (NAICS code: 213111—Drilling Oil and Gas Wells). For example, the requirement for a CEL on the surface casing represents a burden to the operator, but a benefit to the company running the log.

Of principal interest is the extent to which the financial burden is expected to change operators' investment decisions. If the financial burden is not significant and all other factors are equal, then one would expect operators to maintain existing levels of investment and employment. The BLM believes that the proposed rule would result in an additional cost per well stimulation that is small and will not alter the investment or employment decisions of firms.

Firms in the support services for oil and gas drilling industry are likely to benefit from the rule, since they would likely carry out the operational requirements of the rule. Though we do not know the incremental revenue gains from performing these services, the operational requirements themselves are likely to require additional capacity.

Executive Order 12866, Regulatory Planning and Review

In accordance with the criteria in Executive Order 12866, the Office of Management and Budget has determined that this rule is a significant regulatory action.

The rule will not have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities. However, the rule may raise novel policy issues because of the requirement that operators provide to the BLM information regarding hydraulic fracturing operations that they are not currently providing to the BLM.

This rule would not create inconsistencies or otherwise interfere with an action taken or planned by another agency. This rule would not change the relationships of the oil and gas operations with other agencies. These relationships are included in agreements and memoranda of understanding that would not change with this rule. In addition, this rule would not materially affect the budgetary impact of entitlements, grants, loan programs, or the rights and obligations of their recipients. Please see the discussion of the impacts of the rule as described earlier in this section of the preamble.

Regulatory Flexibility Act

Congress enacted the Regulatory Flexibility Act of 1980 (RFA), as amended, 5 U.S.C. 601–612, to ensure that Government regulations do not unnecessarily or disproportionately burden small entities. The RFA requires a regulatory flexibility analysis if a rule would have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. For the purposes of this analysis, the BLM assumes that all entities (all lessees and operators) that may be affected by this rule are small entities, even though that is not actually the case.

The rule deals with hydraulic fracturing on all Federal and Indian lands (except those excluded by statute). There would be some increased costs associated with the enhanced recordkeeping requirements and some new operational requirements. However, the BLM expects that these costs would be minor in comparison to overall operations costs. Therefore, the BLM has determined under the RFA that the rule would not have a significant economic impact on a substantial number of small entities. Please see the discussion earlier in this section of the preamble for a discussion of the impacts of the rule.

Small Business Regulatory Enforcement Fairness Act

The Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small governmental jurisdictions, or small not-for-profit enterprises.

The BLM reviewed the Small Business Administration (SBA) size standards for small businesses and the number of entities fitting those size standards as reported by the U.S. Census Bureau in the 2007 Economic Census. Using the Economic Census data, the BLM concludes that about 99 percent of the entities operating in the relevant sectors are small businesses in that they employ fewer than 500 employees.

The BLM also examined potential impacts on small businesses that are most likely to be impacted by the rule and, more specifically, the requirements that would pose a burden to operators. Using Automated Fluid Mineral Support System data for well completions, the BLM compiled a list of firms that completed wells within the past 5 years. The BLM expects that these firms are most likely to be financially impacted by the CEL requirements. From that list the BLM researched company annual report filings with the SEC to determine annual company net incomes and employment figures. From the original list, the BLM found 55 company filings. Of those, 33 firms were classified as small businesses.

Using the net income data for the small businesses that filed SEC Form 10–K, the BLM used the estimated compliance costs per well type or fracturing operation, and the average costs across all operations to calculate the percent of compliance costs as a portion of annual company net incomes for 2011. Averaging results for the small businesses that the BLM examined, the average costs of the rule are expected to represent between 0.041 and 0.066 percent of the company net incomes.

Therefore, after considering the economic impact of the rule on these small entities, the screening analysis indicates that this rule will not have a significant economic impact on a substantial number of small entities.

Unfunded Mandates Reform Act

Under the Unfunded Mandates Act, agencies must prepare a written statement about benefits and costs prior to issuing a proposed or final rule that may result in aggregate expenditure by State, local, and tribal governments, or by the private sector, of $100 million or more in any one year.

This rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or to the private sector in any one year. Thus, the rule is also not subject to the requirements of Sections 202 or 205 of the *Unfunded Mandates Reform Act* (UMRA).

This rule is also not subject to the requirements of Section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments; it contains no requirements that apply to such governments nor does it impose obligations upon them.

Executive Order 12630, Governmental Actions and Interference With Constitutionally Protected Property Rights (Takings)

Under Executive Order 12630, the rule would not have significant takings implications. A takings implication assessment is not required. This rule would establish recordkeeping requirements for hydraulic fracturing operations and some additional operational requirements on Federal and Indian lands. All such operations are subject to lease terms which expressly require that subsequent lease activities be conducted in compliance with subsequently adopted Federal laws and regulations. The rule conforms to the terms of those Federal leases and applicable statutes, and as such the rule is not a governmental action capable of interfering with constitutionally protected property rights. Therefore, the rule would not cause a taking of private property or require further discussion of takings implications under this Executive Order.

Executive Order 13352, Facilitation of Cooperative Conservation

Under Executive Order 13352, the BLM has determined that this rule would not impede facilitating cooperative conservation and would take appropriate account of and consider the interests of persons with ownership or other legally recognized interests in land or other natural resources. This rulemaking process involved Federal, State, local and tribal governments, private for-profit and nonprofit institutions, other nongovernmental entities and individuals in the decision-making. The process provides that the programs, projects, and activities are consistent with protecting public health and safety.

Executive Order 13132, Federalism

Under Executive Order 13132, this rule would not have significant Federalism effects. A Federalism assessment is not required because the rule would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. The rule would not have any effect on any of the items listed. The rule would affect the relationship between operators, lessees, and the BLM, but would not impact States. Therefore, under Executive Order 13132, the BLM has determined that this rule would not have sufficient Federalism implications to warrant preparation of a Federalism Assessment.

Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13175, the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), The Department of the Interior Policy on Consultation with Indian Tribes (Dec. 1, 2011), and 512 Departmental Manual 2, the BLM evaluated possible effects of the rule on federally recognized Indian tribes. The BLM approves proposed operations on all Indian onshore oil and gas leases (except those excluded by statute). Therefore, the rule has the potential to affect Indian tribes. In conformance with the Department's policy on tribal consultation, the Bureau of Land Management held four tribal consultation meetings to which over 175 tribal entities were invited. The consultations were held in:

- Tulsa, Oklahoma on January 10, 2012;
- Billings, Montana on January 12, 2012;
- Salt Lake City, Utah on January 17, 2012; and
- Farmington, New Mexico on January 19, 2012.

The purpose of these meetings was to solicit initial feedback and preliminary comments from the tribes. To date, the tribes have expressed concerns about the BLM's Inspection and Enforcement program's ability to enforce the terms of this rule; previously plugged and abandoned wells being potential conduits for contamination of groundwater; and the operator having to provide documentation that the water used for the fracturing operation was legally acquired. The BLM considered these concerns during the drafting of the proposed rule.

After publication of the proposed rule, the BLM held another series of meetings to obtain comments and recommendations from tribes and tribal organizations. Those meetings were held in June 2012 in Salt Lake City, Utah; Farmington, New Mexico; Tulsa, Oklahoma; and Billings, Montana. The BLM also engaged in one-on-one consultations as requested by several tribes. Some tribal representatives were concerned about risks to the quality of their vital water supplies. Others, though, were more concerned with the risk that increased compliance costs would drive the industry off of Indian lands, and deprive the tribes of much-needed revenues and economic development.

The BLM has considered and responded to the concerns expressed by the tribal representatives both orally and in written comments, as described above. In particular, it has made changes that will reduce economic burdens of compliance for many operators. Several tribes provided written and oral comments critical of the proposed rule. Other tribes argued that the proposed rules violated tribal sovereignty. The proposed rule, however, is not unique. Regulations promulgated by the Bureau of Indian Affairs render the BLM's operating regulations in 43 CFR part 3160 applicable to oil and gas leases of trust and restricted Indian lands, both tribal and individually-owned. See 25 CFR 211.4, 212.4, and 225.4.

Some tribes insist that those BIA regulations are in violation of FLPMA, which they argue restricts the BLM's authority to Federal lands. Section 301 of FLPMA, however, charges the Director of the BLM to carry out functions and duties as the Secretary may prescribe with respect to the lands and the resources under the Secretary's jurisdiction according to the applicable provisions of FLPMA and any other applicable law. 43 U.S.C. 1731(a). See also 43 U.S.C. 1731(b). The Act of March 3,1909 (1909 Act) (at 25 U.S.C. 396), the Indian Minerals Leasing Act (IMLA) (at 25 U.S.C. 396d) and the Indian Mineral Development Act (IMDA) (at 25 U.S.C. 2107) provide the Secretary of the Interior with authority to promulgate regulations governing oil and gas operations and mineral agreements on certain Indian lands. As previously cited, the Secretary, through the regulations promulgated by the BIA, has assigned to the BLM part of the Secretary's trust responsibilities to regulate oil and gas operations on those Indian lands. This rule concerning Indian lands is promulgated pursuant to the 1909 Act, the IMLA, and the IMDA, and will be implemented by the BLM under those authorities, consistent with Section 301 of FLPMA.

Some tribes have asked that the proposed rule exempt Indian lands from its scope. Such an exemption would require the Secretary of the Interior to conclude, among other things, that usable waters in Indian lands, and the persons who use such waters, are less deserving of protection than waters and water users on Federal land. The Department of the Interior declines to reach that conclusion.

Some tribes have advocated that the proposed rule should allow Indian tribes to decide individually whether the hydraulic fracturing regulations would apply on their lands. The BIA's regulations, however, apply all of the BLM's oil and gas operating regulations to Indian lands, and do not allow the tribes to pick and select which of the BLM's regulations apply on their lands.

The tribes, however, report that industry representatives have threatened not to bid on Indian leases if the initial proposed rule were promulgated. The tribes are concerned that a major source of revenue and of economic development might leave Indian lands because of the costs of compliance with the proposed rule. The BLM has carefully considered the tribes' comments, along with those of the oil and gas industry and of concerned citizens and governments. The revised proposed rule includes several changes from the initial proposed rule to reduce the costs and other burdens of compliance. Examples include allowing operators to use any one of a class of CELs to verify the adequacy of cement casings, not requiring the CEL to be submitted or approved before fracturing operations if there is no indication of problems with the cementing, and the ''type well'' approach allowing an operator's approved group of wells that conform to the operator's proven type

well in the same field to be hydraulically fractured without additional CELs, unless there is a problem with the cementing. The revised proposed rule also explicitly states that BLM will require isolation of zones that the tribes designate for protection from oil and gas operations, and will not require isolation of zones that tribes have exempted from protection. (Note, though, that the revised proposed rule would not exempt an operator from the provisions of the SDWA.) Furthermore, the BLM could approve a variance applicable to all or parts of Indian lands, provided the variance meets or exceeds the effectiveness of the revised proposed rule. Such a variance could allow an operator's compliance with a tribe's standard or procedure to be accepted as compliance with the revised proposed rule, thus reducing the compliance burdens for operators. Such changes should significantly reduce compliance costs for operators while still assuring protection of usable water resources.

The BLM is aware that the revised proposed rule would nonetheless result in some higher costs for operators on Federal and Indian lands, compared with compliance costs for hydraulic fracturing on non-Federal, non-Indian lands in several States. Regulatory compliance costs, however, are only one set in a long list of costs that operators compare to anticipated revenues when deciding whether and how much to bid on a Federal or Indian lease. It has not been the BLM's experience that regulatory compliance costs have caused the industry as a whole to avoid valuable oil and gas resources on Federal and Indian lands.

Executive Order 12988, Civil Justice Reform

Under Executive Order 12988, the Office of the Solicitor has determined that this rule would not unduly burden the judicial system and meets the requirements of Sections 3(a) and 3(b)(2) of the Order. The Office of the Solicitor has reviewed the rule to eliminate drafting errors and ambiguity. It has been written to minimize litigation, provide clear legal standards for affected conduct rather than general standards, and promote simplification and avoid unnecessary burdens.

Paperwork Reduction Act

The Paperwork Reduction Act (PRA) (44 U.S.C. 3501–3521) provides that 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 control number. Collections of information include requests and requirements that an individual, partnership, or corporation obtain information, and report it to a Federal agency (44 U.S.C. 3502(3); 5 CFR 1320.3(c) and (k)).

The BLM included its information collection request in the proposed rule and invited public comment. OMB did not approve or disapprove the request at that time. The BLM has revised the information collection that was in the proposed rule and has re-submitted its information collection request. In accordance with the PRA, the BLM is inviting public comment on its request that OMB approve new uses of Form 3160–5 (Sundry Notices and Reports on Wells). The BLM is proposing that these new uses would replace certain existing uses of Form 3160–5 for hydraulic fracturing operations.

OMB has approved the use of Form 3160–5 under control number 1004–0137, Onshore Oil and Gas Operations (43 CFR part 3160), to collect information on a number of operations, including some hydraulic fracturing operations. Once the BLM is authorized to collect hydraulic fracturing information in accordance with finalized new section 3162.3–3 and new control number 1004–0203, the BLM will request revision of control number 1004–0137 to:

- Add the new hydraulic fracturing uses and burdens of Form 3160–5 to control number 1004–0137;
- Remove the existing hydraulic fracturing uses and burdens from the existing approval of Form 3160–5; and
- Discontinue new control number 1004–0203.

The new collection of information would be required to obtain or retain a benefit for the operators of Federal and Indian (except on the Osage Reservation, the Crow Reservation, and certain other areas) onshore oil and gas leases, units, or communitization agreements that include Federal leases. The BLM has requested a 3-year term of approval for the new control number.

The information collection request for this revised proposed rule has been submitted to OMB for review under 44 U.S.C. 3504(h) of the Paperwork Reduction Act. A copy of the request can be obtained from the BLM by electronic mail request to Candice Money at *cmoney@blm.gov* or by telephone request to 202–912–7144. You may also review the information collection request online at *http://www.reginfo.gov/public/do/PRAMain.*

The BLM requests comments to:

- Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
- Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- Enhance the quality, utility, and clarity of the information to be collected; and
- Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

Comments on the information collection requirements should be sent to both OMB and the BLM as directed in the **ADDRESSES** section of this preamble. OMB is required to make a decision concerning the collection of information contained in this revised proposed rule between 30 to 60 days after publication of this document in the **Federal Register**. Therefore, a comment to OMB is best assured of having its full effect if OMB receives it by June 24, 2013.

Summary of Information Collection Requirements

The revised proposed rule is intended to increase transparency for the public regarding the fluids and additives used in hydraulic fracturing, and to protect Federal and Indian resources. The proposed provisions that include information collection requirements are amendments to 43 CFR 3162.3–2 and new 43 CFR 3162.3–3.

OMB has approved the use of Form 3160–5 under control number 1004–0137 for the operations listed in existing section 3162.3–2. As revised in the proposed rule, section 3162.3–2 would no longer include hydraulic fracturing jobs (i.e., nonroutine fracturing, routine fracturing, and acidizing) on the list of operations for which prior approval and subsequent reports would be required. Other categories of operations would remain subject to the information collection requirements in section 3162.3–2. Once the BLM is authorized to collect hydraulic fracturing information under new section 3162.3–3 and a new control number, the BLM will request revision of control number 1004–0137 by removing the hydraulic fracturing burdens from the existing approval of Form 3160–5. New section 3162.3–3 would require operators to use Form 3160–5 both to seek prior BLM approval of hydraulic fracturing operations, and to submit a report on

subsequent actual hydraulic fracturing operations. It would also encourage operators to use Form 3160–5 if they want to request a variance from the requirements of new section 3162.3–3.

In accordance with the PRA, the BLM invited public comments on the information collection in the initial proposed rule. One commenter submitted comments specifically in response to this opportunity. In addition, some commenters addressed the necessity, practical utility, and/or estimated burdens of the proposed collections.

1. Necessity/Avoidance of Unnecessary Duplication

The PRA requires each Federal agency to certify that its collections of information are necessary for the proper performance of agency functions, and are not unnecessarily duplicative of information otherwise reasonably accessible to the agency. 43 U.S.C. 3506(c)(3)(A) and (B).

One commenter stated that the proposed collections are unnecessary, given the existing Eight-Point Drilling Program associated with APDs and the subsequent well completion reports. In addition, the commenter stated that operators on Indian lands already comply with Colorado State rules that make Federal disclosure a redundant and unnecessary burden on operators.

Other commenters also questioned whether the proposed collections are necessary and avoid unnecessary duplication. For example:

- One commenter stated that the proposed collection of both pre- and post-fracturing information is a requirement to submit basically the same information twice, and recommended that the BLM consider requiring submission of pre-completion information and then requiring operators to advise the BLM of any post-completion changes or deviations;
- Another commenter recommended that operators be allowed to submit a generic or Master Plan for similar operations on a plan of development, at the field or unit level;
- One commenter stated that the proposed collection of information about the water source to be used in hydraulic fracturing duplicates protections afforded by the Environmental Protection Agency and States under the Clean Water Act and the Safe Drinking Water Act;
- One commenter stated that the proposed collections duplicate State-required collections in Colorado, New Mexico, Alabama, and Texas;
- One commenter stated that the proposal to collect an estimate of the volume of fluid to be recovered during flowback, swabbing, and recovery from production facility vessels (43 CFR 3162.3–3(c)(6)(i)) duplicates a requirement in Wyoming for post-fracturing reporting as to the amounts, handling, and disposal or reuse of hydraulic fracturing fluid; and
- One commenter stated that the information in the NOI Sundry and the Subsequent Report Sundry Notice duplicates information required and approved by individual States, and suggested that the BLM provide for exemptions for operators in States that have adopted hydraulic fracturing regulations, or accept information filed under State laws or regulations in lieu of requiring operators to submit duplicative information to the BLM for approval.

Some commenters specifically questioned the necessity of proposed section 3162.3–3(c)(2), which would have required the Notice of Intent Sundry to include the ''proposed measured depths (both top and bottom) of all occurrences of usable water and the CBLs (or another log acceptable to the authorized officer) proving that the occurrences of usable water have been isolated to protect them from contamination.''

Some comments included statements of support. One commenter stated that full disclosure of chemicals involved in the hydraulic fracturing process results in a transparent process that benefits industry, regulatory agencies, and the public.

Some other commenters generally supported transparency and full disclosure of pollution data. For example, one commenter stated that the post-fracturing collection of information on the volume of water used in the fracturing process will aid water resource managers in planning water resources on and near Federal lands, and suggested that the same type of information be collected on the Notice of Intent Sundry.

Some commenters were supportive of disclosure of information through FracFocus.org to avoid duplicating or creating another platform for disclosure.

Response: Because hydraulic fracturing has been a growing practice in recent years, the BLM has determined that the collections of information in the revised proposed rule are necessary to enable the BLM to meet its statutory obligations to regulate operations associated with Federal and some Indian oil and gas leases; prevent unnecessary or undue degradation; and manage public lands using the principles of multiple use and sustained yield. The collections of information will assist in the modernization of the BLM's management of hydraulic fracturing operations in ways not anticipated when the existing collection requirements approved under control number 1004–0137 were developed, and will enable the BLM to ensure that operators are using best practices in fracturing operations. Moreover, the information that States, tribes, or other Federal agencies collect is not necessarily reasonably accessible to the BLM. For these reasons, the BLM has determined that the collections in the revised proposed rule are necessary, and are not unnecessarily duplicative of existing Federal, tribal, or State collection requirements. Accordingly, the BLM is not adopting the suggestion that it provide for exemptions for operators on Indian lands or in States that have promulgated hydraulic fracturing regulations; or that the BLM accept information filed under State or tribal laws or regulations in lieu of information that meets BLM standards. However, if information submitted in accordance with State laws or regulations meets the standards prescribed by the BLM, such information may be submitted to the BLM in accordance with the revised proposed rule.

In response to comments that requiring both pre- and post-fracturing information amounts to a requirement to submit basically the same information twice, the BLM has deleted the following pre-fracturing collections:

- Submission of a CBL for approval before commencing fracturing operations, which was part of proposed 43 CFR 3162.3–3(c)(2); and
- Submission of a pre-fracturing certification of compliance with all applicable permitting and notice requirements, which was proposed as 43 CFR 3162.3–3(c)(4).

The revised proposed rule (at 43 CFR 3162.3–3(d)) also allows an NOI Sundry to be submitted for a single well or a type well covering a group of wells sharing substantially similar geological characteristics within the same geologic formation. If the submission is for a group of wells, the information should describe a ''type well,'' defined in the revised proposed rule to mean an oil and gas well that can be used as a model for well completion in a field where geologic characteristics are substantially similar across the field, and operations such as drilling, cementing, and hydraulic fracturing are likely to be successfully replicated using the same design. This provision will give operators an opportunity to streamline the submission of pre-fracturing information in appropriate

circumstances. However, the revised proposed rule provides (at 43 CFR 3162.3–3(e)(4)) that where there are indications of problems with the cementing of casings, the operator must submit information showing that the problem has been corrected before commencing hydraulic fracturing operations, and (at 43 CFR 3162.3–3(i)) that post-fracturing data for each well is required.

The BLM has taken these actions in recognition that:

- The BLM can meet its statutory responsibilities without collecting a full complement of pre-fracturing data; but
- The BLM needs more complete post-fracturing information in order to meet its statutory responsibilities.

The BLM has not adopted the suggestions to:

- Allow operators to meet their pre-fracturing information-submission obligations by submitting a generic or master plan for similar operations on a plan of development, at the field or unit level;
- Allow operators to meet their post-fracturing obligations solely by advising the BLM of any post-completion changes or deviations; or
- Require data about water volume in pre-fracturing as well as post-fracturing information collections.

Both the proposed rule and the revised proposed rule include provisions that require more detailed data after fracturing than before fracturing. For example, the information about water volume that is required before fracturing is limited to a plan that includes the estimated total volume of fluid to be used. See section 3162.3–3(d)(4) of the revised proposed rule (proposed as 43 CFR 3162.3–3(c)(5)).

Regarding post-fracturing information, the BLM has revised proposed section 3162.3–3(g)(1) (designated as section 3162.3–3(i)(1) of the proposed rule) to require the total water volume used and in other paragraphs within subsection (i) of the revised proposed rule, operators are required to provide:

- The actual surface pressure and rate at the end of each stage of the hydraulic fracturing operation, and the actual flush volume, rate, and final proposed pump pressure (section 3162.3–3(i)(3)); and
- The volume of fluid recovered during flowback, swabbing, or recovery from production facility vessels (section 3162.3–3 (i)(5)(i)).

In both the initial proposed and revised proposed rule, the BLM has identified water volume to be a necessary element of both pre- and post-fracturing information collections. The BLM is requiring all hydraulic fracturing and refracturing operations to isolate all usable water and other mineral-bearing formations and protect them from contamination. 43 CFR 3162.3–3(b) and 3162.5–2. Operators are thus on notice that they must meet this performance standard during all operations covered by this rule. The commenter's suggestion seems to be to collect pre-fracturing information about water volume that is as detailed, or similarly detailed, as that which will be collected after fracturing. However, upon consideration of this comment, the BLM has determined that the same amount of detail both before and after fracturing is not necessary in order to enable the BLM to verify that the proposed engineering design is adequate for safely conducting the proposed hydraulic fracturing. In addition, the BLM understands that such detail is unlikely to be available before commencing hydraulic fracturing. The BLM, therefore, has not adopted the commenter's suggestion. Regarding the comments about FracFocus, section 3162.3–3(i) of the revised proposed rule allows the following required post-fracturing information to be submitted to the BLM through FracFocus, another data base specified by the BLM, or in a Subsequent Report Sundry Notice:

- True vertical depth of the well;
- Total water volume used; and
- For each chemical used (including base fluid) the trade name, supplier, purpose, ingredients, Chemical Abstract Service Number (CAS #), maximum ingredient concentration in additive (% by mass), and maximum ingredient concentration in hydraulic fracturing fluid (% by mass).

The initial proposed rule, at 43 CFR 3162.3–3(g), would have required that this information, as well as additional information, be included in SR Sundry Notices, and provided no other options for submission. However, the preamble to the initial proposed rule indicated that this information is intended to be posted on a public Web site, and that the BLM was working with the Groundwater Protection Council to determine whether the disclosure can be integrated into FracFocus. Some commenters expressed concerns that this statement in the preamble could result in duplicative submissions of information. By clarifying the regulatory text, the BLM is preventing such unnecessary duplication.

2. Practical Utility

The PRA requires each Federal agency to certify that its collections of information have ''practical utility.'' 43 U.S.C. 3506(c)(3)(A). A collection has practical utility if the agency can use the information that is collected.

Some commenters questioned whether the BLM has sufficient expertise and staffing to use the information that is collected. One commenter specifically stated that it has seen no indication that the BLM intends to provide the training and education to enable its staff to use the information.

One commenter also stated that the proposed collections could result in submissions of inaccurate information to the BLM because the details of a hydraulic fracturing design are typically not available to operators until after a well has been drilled and specific details regarding the target formation have been obtained. The commenter suggested that a more appropriate approach would be to collect appropriate information as it is obtained and for information purposes only.

Response: The BLM employs many petroleum engineers and technicians, and they are well qualified to use the information required by the revised proposed rule, and thus disagrees with commenters that question the BLM's ability to use the information that is required in the revised proposed rule. The BLM also disagrees with statements to the effect that pre-fracturing data will be inaccurate. The industry has many years of experience collecting and enhancing the accuracy of pre-fracturing engineering and data collection.

3. Reduction of Burdens on the Public

The PRA requires each Federal agency to certify that its collections of information:

- Reduce respondents' burdens to the extent practicable and appropriate;
- Are written using plain, coherent, and unambiguous terminology that is understandable to those who are to respond;
- Will be implemented in ways consistent and compatible, to the maximum extent practicable, with respondents' existing reporting and recordkeeping practices; and
- To the maximum extent practicable, use information technology to reduce burden and improve data quality, agency efficiency, and responsiveness to the public.

43 U.S.C. 3506(c)(3)(C) through (E) and (J).

One commenter stated that the BLM underestimated the annual costs associated with the proposed rule. Some commenters commented generally that the BLM has underestimated burdens under the Paperwork Reduction Act, other statutes, and various executive orders.

Other comments included the following:

• One commenter stated that the BLM should consider ways to minimize the submission of information by allowing operators to conduct fracturing operations within acceptable operating ranges and allowing operators to use standard completion reports; and

• One commenter suggested that, to reduce the burdens on operators, the BLM should allow operators to submit generic hydraulic fracturing plans for a targeted zone in resource play areas that can be referenced when an APD is submitted. Similarly, another commenter requested that the rule provide for acceptance of a general Operator's Master Fluid Management Plan that may be used consistently across a plan of development.

Response: The BLM has revised its estimates of the burdens to respondents, in part because of responses to comments that are described above. Specifically, the BLM has deleted some aspects of the pre-fracturing collection from the revised proposed rule, and has provided in the revised proposed rule for submission of pre-fracturing data either for each well or for a type well covering a group of wells sharing substantially similar geological characteristics within the same geologic formation. These revisions of the proposed rule result in a reduction of the estimated annual number of NOI Sundries from 1,700 to 415. They also result in a reduction of the estimated number of Variance Requests, from 170 to 41, because such requests apply to NOI Sundries. These estimates are the average of the expected responses over the first 3 years of implementation.

The estimated number of annual SR Sundry Notices has increased because the revised proposed rule (at 43 CFR 3162.3–3) now requires post-fracturing data on both fracturing and re-fracturing operations. This revision results in an increase in the estimated annual responses, from 1,700 to 3,657.

The following table shows the itemized estimated burdens associated with the revised proposed rule:

A. Type of response	B. Number of responses/ revised proposed rule	C. Hours per response (same for proposed and revised proposed rule)	D. Total hours/revised proposed rule (column B × column C)
Sundry Notices and Reports on Wells/Well Stimulation/Notice of Intent Sundry (43 CFR 3162.3–3) Form 3160–5	415	8	3,320
Sundry Notices and Reports on Wells/Well Stimulation/Subsequent Report Sundry Notice (43 CFR 3162.3–3) Form 3160–5	3,657	8	29,256
Sundry Notices and Reports on Wells/Well Stimulation/Variance Request (43 CFR 3162.3–3) Form 3160–5	41	8	328
Totals	4,113		32,904

The general comments about the BLM's analysis under the Paperwork Reduction Act, other statutes, and various executive orders did not address the specific information collection associated with the proposed rule. Therefore, the BLM has not changed the collection in response to these comments. However, the BLM invites further comments on the revised collection in this revised proposed rule.

The BLM has not adopted the suggestions to allow operators to conduct fracturing operations within acceptable operating ranges, to allow operators to use standard completion reports, or to allow operators to submit Fluid Management Plans or generic hydraulic fracturing plans for a targeted zone in resource play areas that can be referenced when an APD is submitted. Such provisions would not enable the BLM to meet its statutory responsibilities.

National Environmental Policy Act

The BLM has prepared an environmental assessment (EA) that concludes that this rule would not constitute a major Federal action that may result in a significant adverse effect on the human environment under section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. 4332(2)(C). The EA and the draft Finding of No Significant Impact are available for review and on file in the BLM Administrative Record at the address specified in the **ADDRESSES** section.

Data Quality Act

In developing this rule, we did not conduct or use a study, experiment, or survey requiring peer review under the Data Quality Act (Pub. L. 106–554).

Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

Under Executive Order 13211, agencies are required to prepare and submit to OMB a Statement of Energy Effects for significant energy actions. This Statement is to include a detailed statement of ''any adverse effects of energy supply, distribution, or use (including a shortfall in supply, price increases, and increase use of foreign supplies)'' for the action and reasonable alternatives and their effects.

Section 4(b) of Executive Order 13211 defines a ''significant energy action'' as ''any action by an agency (normally published in the **Federal Register**) that promulgates or is expected to lead to the promulgation of a final rule or regulation, including notices of inquiry, advance notices of proposed rulemaking, and notices of proposed rulemaking: (1)(i) That is a significant regulatory action under Executive Order 12866 or any successor order, and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (2) that is designated by the Administrator of OIRA as a significant energy action.

The BLM believes that the additional cost per hydraulic fracturing operation is insignificant when compared with the drilling costs in recent years, the production gains from hydraulically fractured wells operations, and the net incomes of entities within the oil and natural gas industries. For a single well or a type well, the compliance costs represent about 0.4 to 1.5 percent of the costs of drilling a well. For a well subsequent to a type well, the costs represent between 0.04 and 0.08 percent of the total drilling costs. For existing wells and refracture operations, the percentages are even lower, at about 0.01 to 0.03 percent. When averaging the compliance costs across all operations, the costs represent between

0.04 and 0.13 percent of the costs of drilling a well.

Since the estimated compliance costs are not a substantial when compared with the total costs of drilling a well, the BLM believes that the rule is unlikely to have an effect on the investment decisions of firms, and the rule is unlikely to affect the supply, distribution, or use of energy. As such, the rule is not a ''significant energy action'' as defined in Executive Order 13211.

Clarity of the Regulations

Executive Order 12866 requires each agency to write regulations that are simple and easy to understand. We invite your comments on how to make these proposed regulations easier to understand, including answers to questions such as the following:

1. Are the requirements in the proposed regulations clearly stated?

2. Do the proposed regulations contain technical language or jargon that interferes with their clarity?

3. Does the format of the proposed regulations (grouping and order of sections, use of headings, paragraphing, etc.) aid or reduce their clarity?

4. Would the regulations be easier to understand if they were divided into more (but shorter) sections?

5. Is the description of the proposed regulations in the **SUPPLEMENTARY INFORMATION** section of this preamble helpful in understanding the proposed regulations? How could this description be more helpful in making the proposed regulations easier to understand?

Please send any comments you have on the clarity of the regulations to the address specified in the **ADDRESSES** section.

Authors

The principal authors of this rule are: Subijoy Dutta of the BLM Washington Office; Donato Judice of the BLM Great Falls, Montana Oil and Gas Field Office, assisted by the BLM's Division of Regulatory Affairs and the Department of the Interior's Office of the Solicitor.

List of Subjects 43 CFR Part 3160

Administrative practice and procedure; Government contracts; Indians—lands; Mineral royalties; Oil and gas exploration; Penalties; Public lands—mineral resources; Reporting and recordkeeping requirements.

43 CFR Chapter II

For the reasons stated in the preamble, and under the authorities stated below, the Bureau of Land Management amends 43 CFR part 3160 as follows:

PART 3160—ONSHORE OIL AND GAS OPERATIONS

■ 1. The authorities citation for part 3160 is revised to read as follows:

Authority: 25 U.S.C. 396d and 2107; 30 U.S.C. 189, 306, 359, and 1751; and 43 U.S.C. 1732(b), 1733, and 1740.

Subpart 3160—Onshore Oil and Gas Operations: General

§ 3160.0–3 [Amended]

■ 2. In § 3160.0–3 add ''the Federal Land Policy and Management Act (43 U.S.C. 1701 *et seq.*),'' after ''the Mineral Leasing Act for Acquired lands, as amended (30 U.S.C. 351–359),''.

■ 3. Amend § 3160.0–5 by adding definitions of ''annulus,'' ''bradenhead,'' ''hydraulic fracturing,'' ''hydraulic fracturing fluid,'' ''proppant,'' ''refracturing,'' ''type well,'' and ''usable water,'' in alphabetical order and by removing the definition of ''fresh water''.

The additions read as follows:

§ 3160.0–5 Definitions.

* * * * *

Annulus means the space around a pipe in a wellbore, the outer wall of which may be the wall of either the borehole or the casing; sometimes also called annular space.

* * * * *

Bradenhead means a heavy, flanged steel fitting connected to the first string of casing that allows the suspension of intermediate and production strings of casing and supplies the means for the annulus to be sealed.

* * * * *

Hydraulic fracturing means those operations conducted in an individual wellbore designed to increase the flow of hydrocarbons from the rock formation to the wellbore through modifying the permeability of reservoir rock by fracturing it. Hydraulic fracturing does not include enhanced secondary recovery such as water flooding, tertiary recovery, recovery through steam injection, or other types of well stimulation operations such as acidizing.

* * * * *

Hydraulic fracturing fluid means the liquid or gas, and any associated solids used in hydraulic fracturing, including constituents such as water, chemicals, and proppants.

* * * * *

Proppant means a granular substance (most commonly sand, sintered bauxite, or ceramic) that is carried in suspension by the fracturing fluid that serves to keep the cracks open when fracturing fluid is withdrawn after a hydraulic fracture operation.

* * * * *

Refracturing means a hydraulic fracturing operation subsequent to the completion of a prior hydraulic fracturing operation in the same well. For purposes of this definition, a hydraulic fracturing operation is completed when a well begins producing oil or gas, or when equipment necessary to inject the hydraulic fracturing fluid at sufficient pressure to fracture the stratum is removed from the well pad, whichever occurs earlier.

* * * * *

Type well means an oil and gas well that can be used as a model for well completion in a field where geologic characteristics are substantially similar within the same field, and where operations such as drilling, cementing, and hydraulic fracturing are likely to be successfully replicated using the same design.

* * * * *

Usable water means generally those waters containing up to 10,000 parts per million (ppm) of total dissolved solids. The following geologic zones are deemed to contain usable water:

(1) Underground sources of drinking water as defined by the U.S. Environmental Protection Agency or by State law (for Federal lands) or tribal law (for Indian lands);

(2) Zones in use for supplying water for agricultural or industrial purposes, regardless of the concentration of total dissolved solids, unless the operator demonstrates that the existing agricultural or industrial user would not be adversely affected;

(3) Zones designated by a State (for Federal lands) or a tribe (for Indian lands) as requiring isolation or protection from oil and gas operations; and

(4) Zones containing up to 10,000 ppm of total dissolved solids that are not excluded by paragraphs (A), (B), or (C) of this definition. The following geologic zones are deemed not to contain usable water:

(A) Zones from which an operator is authorized to produce hydrocarbons;

(B) Zones designated as exempted aquifers pursuant to the Safe Drinking Water Act; and

(C) Zones which the State (for Federal lands) or the tribe (for Indian lands) has designated as exempt from any requirement to be isolated or protected from oil and gas operations.

* * * * *

Subpart 3162—Requirements for Operating Rights Owners and Operators

■ 4. Amend § 3162.3–2 by revising the first sentence of paragraph (a) and revising paragraph (b) to read as follows:

§ 3162.3–2 Subsequent well operations.

(a) A proposal for further well operations must be submitted by the operator on Form 3160–5 for approval by the authorized officer prior to the operator's commencing operations to redrill, deepen, perform casing repairs, plug-back, alter casing, recomplete in a different interval, perform water shut off, combine production between zones, and/or convert to injection. * * *

(b) Unless additional surface disturbance is involved and if the operations conform to the standard of prudent operating practice, prior approval is not required for acidizing jobs or recompletion in the same interval; however, a subsequent report on these operations must be filed on Form 3160–5.

* * * * *

■ 5. Revise § 3162.3–3 to read as follows:

§ 3162.3–3 Subsequent well operations; Hydraulic fracturing.

(a) *Activities To Which This Section Applies.*

This section applies to all hydraulic fracturing operations, and refracturing operations. All other injection activities must comply with section 3162.3–2.

(b) *Isolation of Usable Water to Prevent Contamination.* All hydraulic fracturing and refracturing operations must meet the performance standard in section 3162.5–2(d) of this title.

(c) *When an Operator Must Submit Notification for Approval of Hydraulic Fracturing.* A proposal for hydraulic fracturing or refracturing must be submitted by the operator and approved by the BLM before commencement of operations. The proposal may be submitted in one of the following ways:

(1) The operator may submit with its application for permit to drill the information required in paragraph (d) of this section;

(2) The operator may submit a proposal for hydraulic fracturing operations on Form 3160–5 (Sundry Notices and Reports on Wells) as a Notice of Intent Sundry for approval by the authorized officer prior to hydraulic fracturing. If the hydraulic fracturing operation would cause additional surface disturbance, the proposal must include a surface use plan of operations; or

(3) If an operator has received BLM approval for hydraulic fracturing operations, it must submit a new Notice of Intent Sundry if:

(i) Hydraulic fracturing or refracturing operations have not commenced within 5 years after the effective date of approval of the fracturing operation;

(ii) The operator has significant new information about the geology of the area, the stimulation operation or technology to be used, or the anticipated impacts of the fracturing operation to any resource; or

(iii) The operator proposes refracturing of the well. For refracturing operations, the operator must submit any information in this section that is required by the authorized officer, including a mechanical integrity test.

(d) *What the Notice of Intent Sundry Must Include.* The authorized officer may prescribe that each proposal contain all or a portion of the information set forth in section 3162.3–1 of this title. The Sundry Notice may be submitted for a single well or a group of wells within the same geologic formation. If the submission is for a group of wells, the information should describe a type well. If the type well has not been completed, the cement evaluation log described in paragraph (e)(2) of this section must be provided to BLM before drilling operations may begin on the other wells in the group. If information submitted in accordance with State (on Federal lands) or tribal (on Indian lands) laws or regulations meets the standards prescribed by the BLM, such information may be submitted to the BLM as part of the Sundry Notice.

The Notice of Intent Sundry must include the following:

(1) The geological names, a geological description, and the proposed measured depth of the top and the bottom of the formation into which hydraulic fracturing fluids are to be injected;

(2) The measured or estimated depths (both top and bottom) of all occurrences of usable water by use of a drill log from the subject well or another well in the vicinity and within the same field;

(3) The proposed measured depth of perforations or the open-hole interval, estimated pump pressures, and information concerning the source and location of water supply, such as reused or recycled water, or rivers, creeks, springs, lakes, ponds, and wells, which may be shown by quarter-quarter section on a map or plat, or which may be described in writing. It must also identify the anticipated access route and transportation method for all water planned for use in fracturing the well;

(4) A plan for the proposed hydraulic fracturing design that includes, but is not limited to, the following:

(i) The estimated total volume of fluid to be used;

(ii) The anticipated surface treating pressure range;

(iii) The maximum injection treating pressure;

(iv) The estimated or calculated fracture direction, length, and height, including the estimated fracture propagation plotted on the well schematics and on a map. The map must be of a scale no smaller than 1:24,000; and

(v) The estimated vertical distance to the nearest usable water aquifer above the fracture zone;

(5) The following information concerning the handling of recovered fluids:

(i) The estimated volume of fluid to be recovered during flowback, swabbing, and recovery from production facility vessels;

(ii) The proposed methods of handling the recovered fluids, including, but not limited to, pit requirements, pipeline requirements, holding pond use, re-use for other stimulation activities, or injection; and

(iii) The proposed disposal method of the recovered fluids, including, but not limited to, injection, hauling by truck, or transporting by pipeline; and

(6) The authorized officer may request additional information prior to the approval of the Notice of Intent Sundry.

(e) *Monitoring of Cementing Operations and Cement Evaluation Log Prior to Hydraulic Fracturing.*

(1) During cementing operations the operator must monitor and record the flow rate, density, and treating pressure and submit a cement operation monitoring report to the authorized officer within 30 days after completion of the hydraulic fracturing operations.

(2) The operator must run a cement evaluation log or logs on each casing that protects usable water and the operator must submit those logs to the authorized officer within 30 days after completion of the hydraulic fracturing operations, except as provided under (e)(3) of this section. A cement evaluation log, is any one of a class of tools that verify the integrity of annular cement bonding, such as, but not limited to, a cement bond log, ultrasonic imager, variable density logs, micro-seismograms, CBLs with directional receiver array, ultrasonic pulse echo technique, or isolation scanner. An operator may select the tool used to prepare the CEL, as long as it is at least as effective in verifying the integrity of annular cement bonding as is a cement bond log.

(3) An operator is not required to run a cement evaluation log on the casings of a subsequent well where an operator:

(i) Submitted a cement evaluation log for a type well (see paragraph (d) of this section) that shows successful cement bonding to protect against downhole fluid cross-migration into water zones; and

(ii) Completes a subsequent well or wells with the same specifications and geologic characteristics as the type well, and approved in the same group sundry notice for the same field (see paragraph (d) of this section), and the cementing operations monitoring data parallels those of the type well.

(4) For any well, if there is an indication of an inadequate cement job (such as, but not limited to, lost returns, cement channeling, gas cut mud, or failure of equipment), then the operator must report that information to the authorized officer within 24 hours, followed by a written report within 48 hours. Prior to commencing hydraulic fracturing operations, the operator must run a cement evaluation log showing that the inadequate cement job has been corrected and the occurrences of usable water have been isolated to protect them from contamination. At least 72 hours before commencing the hydraulic fracturing operation, the operator must submit:

(i) A signed certification indicating that the operator corrected the inadequate cement job; and

(ii) Documentation that shows that there is adequate cement bonding.

(5) The operator must submit the information required by paragraph (e)(1), and (e)(2) of this section with the Subsequent Report Sundry Notice required in paragraph (i) of this section.

(f) *Mechanical Integrity Testing Prior to Hydraulic Fracturing.* Prior to hydraulic fracturing, or refracturing, the operator must perform a successful mechanical integrity test (MIT) of the vertical sections of the casing.

(1) If hydraulic fracturing through the casing is proposed, the casing must be tested to not less than the maximum anticipated treating pressure.

(2) If hydraulic fracturing through a fracturing string is proposed, the fracturing string must be inserted into a liner or run on a packer-set not less than 100 feet below the cement top of the production or intermediate casing. The fracturing string must be tested to not less than the maximum anticipated treating pressure minus the annulus pressure applied between the fracturing string and the production or intermediate casing.

(3) The MIT will be considered successful if the pressure applied holds for 30 minutes with no more than a 10 percent pressure loss.

(g) *Monitoring and Recording During Hydraulic Fracturing.*

(1) During any hydraulic fracturing or refracturing operation, the operator must continuously monitor and record the annulus pressure at the bradenhead. The pressure in the annulus between any intermediate casings and the production casing must also be continuously monitored and recorded. A continuous record of the annulus pressure during the fracturing operation must be submitted with the required Subsequent Report Sundry Notice (Form 3160–5, Sundry Notices and Reports on Wells) identified in paragraph (i) of this section.

(2) If during any hydraulic fracturing or refracturing operation the annulus pressure increases by more than 500 pounds per square inch as compared to the pressure immediately preceding the stimulation, the operator must take immediate corrective action and must orally notify the authorized officer as soon as practicable, but no later than 24 hours following the incident. Within 30 days after the hydraulic fracturing operations are completed, the operator must submit a report containing all details pertaining to the incident, including corrective actions taken, as part of a Subsequent Report Sundry Notice (Form 3160–5, Sundry Notices and Reports on Wells).

(h) Storage of all recovered fluids must be in either tanks or lined pits. The authorized officer may require any other BLM approved method to protect the mineral resources, other natural resources, and environmental quality from the release of recovered fluids.

(i) *Information that Must be Provided to the Authorized Officer After Completed Operations.* The information required in paragraphs (i)(1) through (i)(8) of this section must be submitted to the authorized officer within 30 days after the hydraulic fracturing or refracturing operations are completed. The information is required for each well, even if the BLM approved fracturing of a group of wells (see § 3162.3–3(d)). The information required in paragraph (i)(1) of this section must be submitted to the authorized officer through FracFocus, another BLM-designated database, or in a Subsequent Report Sundry Notice (Form 3160–5, Sundry Notices and Reports on Wells). If information is submitted through FracFocus or another designated database, the operator must specify that the information is for a Federal or an Indian well, certify that the information is correct, and certify compliance with applicable law as required by paragraph (i)(7)(ii) or (i)(7)(iii) of this section using FracFocus or the designated database. The information required in paragraphs (i)(2) though (i)(8) of this section must be submitted to the authorized officer in a Subsequent Report Sundry Notice. The operator is responsible for the information submitted by a contractor or agent, and the information is considered to have been submitted directly from the operator to the BLM. The operator must submit the following information:

(1) The true vertical depth of the well, total water volume used, and for each chemical used (including base fluid) the trade name, supplier, purpose, ingredients, Chemical Abstract Service Number (CAS #), maximum ingredient concentration in additive (% by mass), and maximum ingredient concentration in hydraulic fracturing fluid (% by mass).

(2) The actual measured depth of perforations or the open-hole interval, and actual pump pressures and the source(s) and location(s) of the water used in the hydraulic fracturing fluid.

(3) The actual surface pressure and rate at the end of each stage of the hydraulic fracturing operation, and the actual flush volume, rate, and final pump pressure.

(4) The actual, estimated, or calculated fracture length, height and direction;

(5) The following information concerning the handling of recovered fluids:

(i) The volume of fluid recovered during flowback, swabbing, or recovery from production facility vessels;

(ii) The methods of handling the recovered fluids, including, but not limited to, transfer pipes and tankers, holding pond use, re-use for other stimulation activities, or injection; and

(iii) The disposal method of the recovered fluids, including, but not limited to, injection, hauling by truck, or transporting by pipeline. The disposal of fluids produced during the flowback from the hydraulic fracturing process must follow the requirements set out in Onshore Order Number 7, Disposal of Produced Water, Section III.B. (October 8, 1993, 58 FR 58506).

(6) If the actual operations deviate from the approved plan, the deviation(s) must be documented and explained.

(7) A certification signed by the operator that:

(i) Wellbore integrity was maintained prior to and throughout the hydraulic fracturing operation, as required by paragraph (b) of this section. The operator must also certify that it complied with the requirements in

paragraphs (e), (f), (g), and (h) of this section;

(ii) For Federal lands, the hydraulic fracturing fluid used complied with all applicable permitting and notice requirements as well as all applicable Federal, State, and local laws, rules, and regulations; and

(iii) For Indian lands, the hydraulic fracturing fluid used complied with all applicable permitting and notice requirements as well as all applicable Federal and tribal laws, rules, and regulations.

(8) The operator must submit well logs and records of adequate cement bonds including the cementing operations monitoring report, any cement evaluation log, and the result of the mechanical integrity test as required by paragraphs (e)(1), (e)(2), and (f) of this section.

(9) The authorized officer may require the operator to provide documentation substantiating any information submitted under paragraph (i) of this section.

(j) *Identifying Information Claimed to be Exempt from Public Disclosure.*

(1) For the information required in paragraph (i)(1) of this section, the operator will be deemed to have waived any right to protect from public disclosure information submitted with a Subsequent Report Sundry Notice or through FracFocus or another designated database. For information required in paragraph (i)(1) of this section that the operator claims to be exempt from public disclosure, the operator must submit to the BLM an affidavit that:

(i) Identifies the Federal statute or regulation that allows withholding of the information from the BLM or prohibits the BLM from disclosing the information if it were in the BLM's possession;

(ii) Affirms that the information is not publicly available;

(iii) Affirms that the information is not required to be publicly available under any applicable law;

(iv) Affirms that the release of the information would likely harm the operator's competitive position; and

(v) Affirms that the information is not readily apparent through reverse engineering.

(2) The BLM may require any operator to disclose to the BLM any information claimed to be exempt from public disclosure, along with any other relevant information.

(3) If the BLM determines that the information is not exempt from disclosure, the BLM will make the information available to the public after providing the operator with no fewer than 10 business days' notice of the BLM's determination.

(4) The operator must maintain records of the information claimed to be exempt from disclosure for the period of time as required by section 3162.4–1(d) of this title.

(k) *Requesting a Variance from the Requirements of this Section.* The operator may make a written request to the authorized officer for a variance from the requirements under this section. The BLM encourages submission using a Sundry Notice (Form 3160–5, Sundry Notices and Reports on Wells). In cooperation with a State (for Federal lands) or a tribe (for Indian lands), the BLM may issue a variance that would apply to all wells within a State or within Indian lands, or to specific fields or basins within the State or the Indian lands, if the BLM finds that the variance meets the criteria in paragraph (k)(2) of this section.

(1) A request for a variance must specifically identify the regulatory provision of this section for which the variance is being requested, explain the reason the variance is needed, and demonstrate how the operator will satisfy the objectives of the regulation for which the variance is being requested.

(2) The authorized officer, after considering all relevant factors, may approve the variance, or approve it with one or more conditions of approval, only if the BLM determines that the proposed alternative meets or exceeds the objectives of the regulation for which the variance is being requested. The decision whether to grant or deny the variance request is entirely within the BLM's discretion.

(3) A variance under this section does not constitute a variance to provisions of other regulations, laws, or orders.

(4) Due to changes in Federal law, technology, regulation, BLM policy, field operations, noncompliance, or other reasons, the BLM reserves the right to rescind a variance or modify any conditions of approval. The authorized officer must provide a written justification if a variance is rescinded or a condition of approval is modified.

■ 6. Amend § 3162.5–2 by revising the first sentence of paragraph (d) to read as follows:

§ 3162.5–2 Control of wells.

* * * * *

(d) *Protection of usable water and other minerals.* The operator must isolate all usable water and other mineral-bearing formations and protect them from contamination.

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Tommy P. Beaudreau,

Acting Assistant Secretary, Land and Minerals Management.

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