

IDLE AND ORPHAN OIL AND GAS WELLS: STATE AND PROVINCIAL REGULATORY STRATEGIES



IDLE AND ORPHAN OIL AND GAS WELLS: **State and Provincial Regulatory Strategies**



2019



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ABOUT IOGCC

The Interstate Oil and Gas Compact Commission (IOGCC) is a multi-state government agency that promotes the conservation and efficient recovery of domestic oil and natural gas resources while protecting health, safety, and the environment. The IOGCC provides member states and international affiliates with a clear and unified voice and serves as a primary authority on issues surrounding these vital resources.

ACKNOWLEDGMENTS

The production of this report, like so many undertakings of the IOGCC, required a team effort of member states, international affiliates, committees, contractors, and staff. IOGCC extends sincere thanks to those who contributed their time and expertise to make this report an authoritative and useful compilation of information on a topic of paramount importance to the organization and its constituents.

The leadership and members of IOGCC's Legal and Regulatory Affairs Committee provided overall direction and support for the project. Harold "Hal" Fitch of H.R. Fitch Consulting served as the principal author. He was assisted by IOGCC staff members, especially Project Manager Amy Childers and Legal Intern Jade Pebworth. The State of Michigan supplied the photo used in the cover graphics, and Daren Shepherd of Shepherd Graphics designed the cover and prepared the report for publication.

Most importantly, IOGCC thanks the states and provinces for responding to repeated requests for data and other information for this report. We trust that the report both honors and supports their continued leadership in establishing effective regulatory programs for idle and orphan wells.

DISCLAIMER

The states and provinces have provided a wealth of data and other information for this report. The authors and editors have attempted to summarize this information in an accurate and meaningful way.

Should you have a question about the contents of this report, please feel free to contact IOGCC for assistance. Please note, however, that a question regarding information from a specific state or province may be referred to sources within the state or province, who are the most knowledgeable about requirements of their own jurisdiction. Note, too, that readers should consult with the state or province before relying on any summary, statement, or interpretation of the requirements or procedures of that state or province.

EXECUTIVE SUMMARY

The Interstate Oil and Gas Compact Commission (IOGCC) has studied idle and orphan oil and gas wells for many years and published reports on the issue in 1992, 1996, 2000, and 2008. This report is an update, covering the number of idle and orphan wells, the plugging and restoration costs, and the regulatory tools and funding sources for plugging and restoration. It is based on survey responses from 30 IOGCC member states and, for the first time, five Canadian provinces.

Idle wells are wells that have not been plugged and are not being used for production or injection. Many idle wells have potential for oil or gas production or associated uses; however, they may pose a risk to the environment, public health, and safety if not properly maintained. They may also pose a risk of becoming orphan wells.

Most states and provinces have requirements that must be met for wells to remain idle, whether set by statute, rule, or specific written approval. Twenty-eight states and provinces have wells approved to remain in idle status, with most having between 100 and 10,000. The total number of approved idle wells is 294,743, which is 15.6 percent of the total number of documented wells that have been drilled and not plugged.

Orphan wells are idle wells for which the operator is unknown or insolvent. Most states and provinces have inventories of documented orphan wells and prioritize orphan wells for plugging according to risk. States and provinces reported from zero to 13,266 documented orphan wells, with about half having fewer than 100. Canadian provinces reported a total of 3,818 documented orphan wells.

The survey collected estimates from some states of the number of undocumented orphan wells, (i.e., orphan wells for which no permits or other records exist.) Most of these wells were drilled before there was any regulatory oversight. Ten states and all five provinces reported they have no undocumented orphan wells. Nine other states did not provide an estimate. Eleven states provided an estimate ranging from fewer than 10 to 100,000 or more. The estimated number of undocumented wells, while imprecise, is a serious concern; however, not all pre-regulatory wells pose a significant risk to the environment or public health and safety. IOGCC has identified this category of wells as a potential area for further work.

Most of the surveyed states and provinces have established funds dedicated to plugging orphan wells. Money for these funds comes primarily from taxes, fees, or other assessments on the oil and gas industry. Sixteen of the states and provinces have an annual authorized expenditure target for their plugging fund. Twenty-one have access to funds for emergency remedial actions.

States and provinces plugged a total of 3,356 orphan wells in 2018, with Texas plugging the most at 1,440. In the states, the average cost per well ranged from \$3,700 to \$97,626. The overall average for the states is \$18,940 and for the provinces is \$61,477 (Canadian dollars). Most states and provinces conduct basic site restoration as part of an orphan well plugging operation.

Most states and provinces require financial assurance (or “bonding”) to provide money for plugging and restoration if the operator fails to take appropriate actions. Bonding mechanisms include cash, certificates of deposit, financial statements, irrevocable letters of credit, security interests, and surety or performance bonds. The amounts and criteria for bonding vary considerably among the states and provinces. Single-well bond amounts range from \$1,500 to \$500,000 per well; blanket bonds (covering multiple wells) vary from \$7,500 to \$30,000,000. In some states and provinces, bond amounts are based on well depth; in others, bond amounts are based on case-by-case evaluations; and in several, bond amounts may be increased if warranted by special conditions.

Six states provide incentives for other parties to plug orphan wells, consisting of cost reimbursement, grants, exemption from bonding, and/or liability relief. Eight states provide incentives for operators to

reactivate idle wells, including reductions in taxes, assessments, or bonding and/or exemptions to allow for testing.

Fifteen states and provinces reported innovations and advancements in their idle and orphan well programs. They include process improvements in communication, collaboration, contracting, third-party plugging, compliance assurance, data systems, and bonding; implementation of program efficiencies; increases in staffing and funding; and application of Geographic Information System (GIS) and drone technologies.

Through the decades, the states and provinces have made considerable progress in plugging orphan wells and reducing the likelihood of additional wells becoming orphaned. They have also continued to evaluate and adjust their financial assurance requirements and their plugging funds to ensure there will be funds available for well plugging and site restoration. They remain concerned, however, over the potential for escalating numbers of idle and orphan wells. The risk of wells becoming orphans is heightened when oil and gas prices decline or are unstable, as in recent years, or when operators transfer aging wells to other companies.

This report is intended to help states and provinces evaluate their idle- and orphan-well programs and identify useful regulatory tools and funding sources from other jurisdictions. IOGCC will continue to periodically update the data and information in this report and coordinate other projects to support the states in developing effective regulatory strategies for managing idle and orphan wells.

INTRODUCTION

This report is an update on the status of idle and orphan oil and gas wells and approaches used by states and provinces to address them. It is an initiative of IOGCC's Legal and Regulatory Affairs Committee. In addition to documenting the number of idle and orphan wells in the United States and Canada and associated well plugging and site restoration costs, the report outlines the regulatory tools and funding sources used to ensure idle wells are properly maintained and funds are available to plug orphan wells.

IOGCC has been researching and analyzing the issue of idle and orphan oil and gas wells for many years. IOGCC compiled reports on the subject in 1992,¹ 1996,² 2000,³ and 2008⁴. The Legal and Regulatory Affairs Committee also recently produced three related reports addressing financial assurance requirements,⁵ tools to address idle wells⁶, and infrastructure transfer.⁷

Data in those reports and the current report come from surveys of IOGCC member states and, in the current report, Canadian provinces that are IOGCC international affiliates. The latest survey covers calendar year 2018. This report compiles and summarizes data from the latest survey, compares it to data from previous surveys, and analyzes trends.

This report addresses wells used in oil and gas production and related injection, disposal, or monitoring. It focuses on documented wells that have been drilled and not plugged. It does not cover wells that have previously been plugged.

Terminology varies somewhat between individual states and provinces. For the purposes of this report, wells are broadly characterized as "idle" and "orphan." "Idle wells" are defined as wells that are not producing, injecting, or otherwise being used for their intended purpose. "Orphan wells" are defined as idle wells for which the operator is unknown or insolvent. Where a state or province defines one of these terms in a substantially different manner, the state or provincial definition is noted in the "State and Provincial Summaries" section of the report.

Idle and orphan wells present unique but related challenges. Many idle wells are capable of producing oil or gas, but the cost to maintain and operate them may exceed revenue at prevailing oil and gas prices. Others may have potential future value for enhanced recovery projects, gas storage, saltwater disposal, or other uses. Idle wells, however, may become a risk to the environment or public health and safety if they are not properly monitored and maintained. The wellbore may deteriorate and become a conduit for oil, gas, or saltwater to migrate into aquifers or to the surface. Idle wells, as compared to active wells, also present a greater risk of becoming orphan wells and imposing a liability on the state or province for plugging and restoration.

Most regulatory agencies have a process to determine whether a well may remain idle for a given period and require financial assurance to provide money for plugging and restoration if the operator fails to take appropriate action. Some states provide incentives to put idle wells back into use.

When it is determined that a well has no future value, the well must be plugged, and the well site restored. Proper plugging is essential to prevent migration of oil, gas, or saltwater that can damage fresh water sources, soils, and other underground and surface resources. Improperly plugged wells may also begin to leak many years after abandonment due to repressurization of the reservoir from natural processes or from the injection of fluids for enhanced oil recovery (EOR). Unplugged or improperly plugged wellbores can collapse and create a hazard to humans and animals, and unrestored sites can interfere with other beneficial uses of the land.

Well operators are responsible for plugging wells, and most plugging operations are conducted by operators or their contractors. This plugging may occur when a well is initially drilled and determined to be nonproductive, (i.e., a "dry hole," or after the well has produced for some time and has become uneconomic.

If the well operator ceases to exist or goes out of business before a well is plugged, the well becomes an orphan.)

The responsibility for monitoring and plugging orphan wells generally falls on individual states and provinces. Most oil and gas producing states and provinces have established funds dedicated to orphan-well plugging. Money for the funds comes primarily from production taxes, fees, or other assessments on the oil and gas industry. Some states have authority to spend money from operating funds or other sources to plug orphan wells. Most states and provinces have inventories of documented orphan wells and prioritize the wells for plugging according to environmental and safety risk.

Oil and gas drilling in North America began in the middle 1800s. Regulatory requirements were established in most oil- and gas-producing states and provinces in the early to middle 1900s. Many wells that are now orphaned were drilled before there was any regulatory oversight. Many of these pre-regulatory wells were abandoned without being plugged or were plugged inadequately. There may be no record of the construction details for these wells, and some may be completely undocumented.

Undocumented wells pose special challenges. They often go undetected for years or decades, to be discovered only when new land development takes place in the vicinity of the well. This report contains estimates from some states of the number of undocumented orphan wells. While estimated numbers are large, they do not convey a reliable picture of the actual number or the potential associated risk. The estimates are by their nature imprecise, and many undocumented wells may not be a significant risk to the environment or public health and safety. IOGCC has identified this category of wells as a potential area for further work.

The states and provinces are confronting significant challenges surrounding idle and orphan wells. This report is intended to help states and provinces evaluate their idle- and orphan-well programs and identify useful regulatory tools and funding sources from other jurisdictions.

STUDY METHODOLOGY

DATA COLLECTION

Data for this study was collected by surveying state and provincial regulatory agencies. The study questionnaire requested information on a range of topics to provide insights into state and provincial programs addressing idle and orphan wells.

The IOGCC Legal and Regulatory Affairs Committee conducted a 2016 survey of member states on financial assurance requirements,⁵ a 2017 survey on idle well classifications and requirements,⁶ and a 2018 survey in cooperation with the International Committee on transfer of wells and liabilities.⁷ Results of those surveys were incorporated in this report.

Some of the states and provinces canvassed did not provide data for one or more survey questions. The report notes the number of responding states and provinces where that is pertinent.

The information obtained from the states and provinces on idle and orphan wells falls within the following categories:

State or provincial regulatory agency: The agency with regulatory authority over idle and orphan wells.

Definitions: The state or provincial definition of “orphan well” and “site restoration,” if significantly different from the definition identified in the report.

Idle wells: Classification, requirements, exemptions, number of idle wells with approval in 2018, and regulatory or statutory citations.

Plugging funds: Year established, funding source(s), prioritization process, emergency actions, annual target amount, and funding for site restoration.

Orphan wells: Number plugged in 2018 and since inception of program, money expended for plugging, site restoration numbers and expenditures, number of wells on plugging and site restoration inventories, estimated number of undocumented or unidentified orphan wells, and actions to address undocumented or unidentified orphan wells. Expenditures by the Canadian provinces are reported in Canadian dollars.

Salvage value of wells: How determined.

Financial assurance to cover potential plugging and restoration costs: Types allowed, single well and blanket financial assurance requirements, and any inflation factor applied.

Incentives: Benefits offered by the state or province to induce landowners or operators to plug orphan wells and to reactivate idle wells.

Innovations and successes: Success stories, lessons learned, and innovative or unique approaches.

In the five surveys conducted in the last three decades, the number of states responding has varied from 28 to 32. In the current survey, 30 states and five provinces responded. In general, the states that did not respond to a survey did not have a significant impact on total numbers. Canadian provinces were not queried for data such as well numbers and costs in surveys prior to the current one. **Table 5** shows states and provinces reporting by survey publication date.

STUDY LIMITATIONS

The information reported here for the current survey period is quite complete. It is considered reliable, although IOGCC cannot independently confirm the data in most cases, and this report relies on the data as reported by the states and provinces.

ACRONYMS AND ABBREVIATIONS USED IN THE REPORT

AFE: Authorization for Expenditure

BLM: Bureau of Land Management

EOR: Enhanced Oil Recovery, (i.e., Secondary or Tertiary Recovery)

GIS: Geographic Information System

IOGCC: Interstate Oil and Gas Compact Commission

MIT: Mechanical Integrity Test

N/A: Not Applicable or Not Available

OPA: Oil Pollution Act of 1990

P&A: Plug and Abandon

SWD: Saltwater Disposal

TD: Total Depth

TMD: Total Measured Depth

TVD: True Vertical Depth

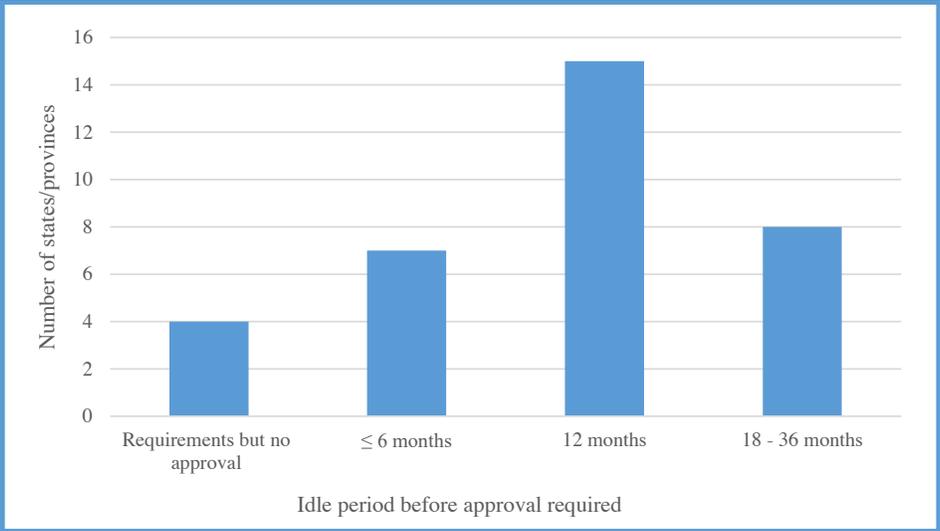
STUDY RESULTS

This section of the report provides a summary and analysis of information compiled. More detail on each state or province is provided in the Data Tables and State and Provincial Summaries sections of the report, as well as in the [Summary of State Statutes and Regulations](#) on the IOGCC website.

IDLE WELLS

Most states and provinces have requirements that must be met for wells to remain idle and specify how long a well may remain idle before approval is required. Approval may involve meeting specified criteria in statutes or rules, or it may require applying for and receiving specific written approval by the regulatory agency. **Figure 1**, below, summarizes the time period a well may remain idle before approval is required in the states and provinces.

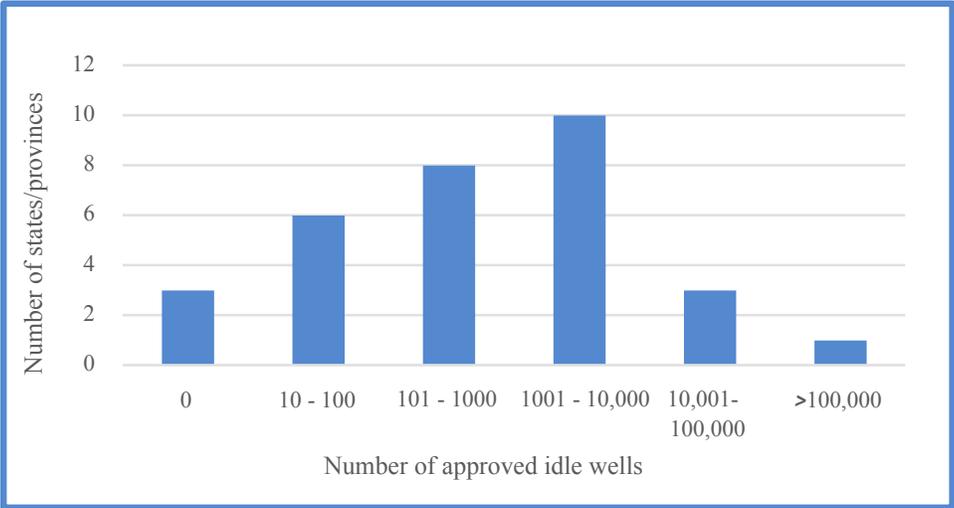
Figure 1. Period a Well May Remain Idle Before Approval is Required



Of the 35 states and provinces reporting, 32 provided the number of wells that are approved to remain idle, with numbers ranging from zero to 121,500. The total number of approved idle wells was 294,743.

Figure 2, below, summarizes the numbers of approved idle wells in the states and provinces. See **Table 1** for a detailed breakdown.

Figure 2. Number of Approved Idle Wells



The ratio of approved idle wells to total wells that have been drilled but not plugged varies widely. Of the 28 states and provinces that reported approved idle wells, the ratio ranges from 0.15 to 62.5 percent, with an overall average of 15.6 percent. Fifteen states and provinces reported 0.15 to 10 percent; six reported 11 to 30 percent; and seven reported over 30 percent.

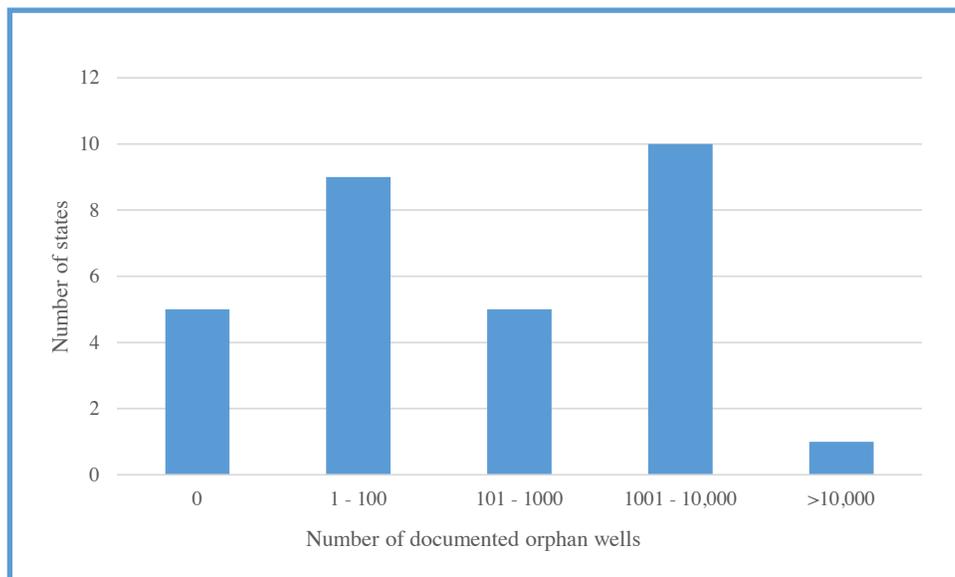
DOCUMENTED ORPHAN WELLS

The 30 states responding reported a total of 56,600 documented orphan wells. The number for each state ranges from zero to 13,266. The ratio of documented orphan wells to total wells that have been drilled and not plugged for individual states ranges from zero to 21 percent, with an overall average of 3.2 percent.

The numbers include some but not all orphan wells on federal and Indian lands. For federal lands, the Bureau of Land Management (BLM) has jurisdiction over oil and gas operations. There is some variation among the states as to the application of state regulations to federal lands, and there is some variation between the 12 BLM state offices as to collaboration with the states. As a result, states may or may not include wells on federal lands in their tally of orphan wells. The oversight situation is similarly complicated for Indian lands. Some tribes defer to the states for regulation; others maintain exclusive authority but may or may not share information with the state regulatory agency. **Table 1** indicates which states include wells on federal and Indian lands in their well counts.

Figure 3, below, summarizes the numbers of documented orphan wells in the states. See **Table 1** for a detailed breakdown.

Figure 3. Documented Orphan Wells in States



The five provinces responding reported a total of 3,818 documented orphan wells, with a range of zero to 3,127. The ratio of orphan wells to total wells that have been drilled and not plugged for individual provinces ranges from zero to two percent. In Canada, the provinces have jurisdiction over all oil and gas wells.

Figure 4, below, summarizes the numbers of documented orphan wells in the provinces. See **Table 1** for a detailed breakdown.

Figure 4. Documented Orphan Wells in Provinces

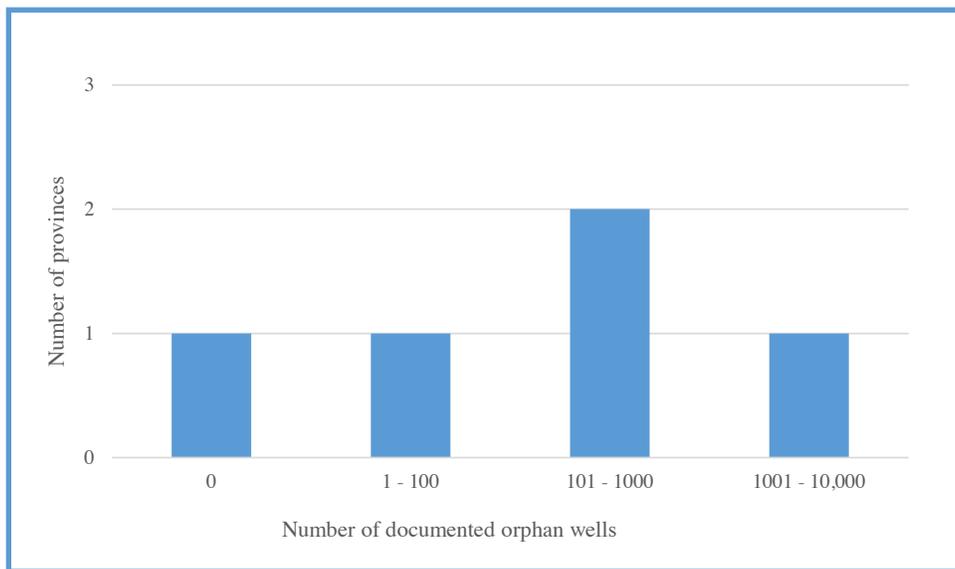
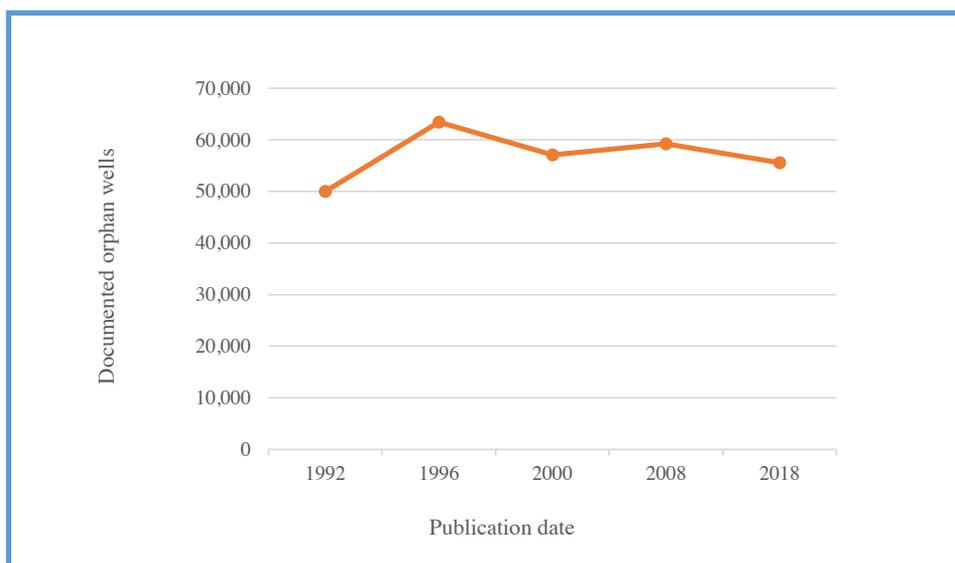


Figure 5, below, shows that the number of documented orphan wells has remained fairly constant through the last three decades. This figure does not include data from the Canadian provinces, which were not asked for this data in earlier surveys.

Figure 5. Trend in Documented Orphan Well Numbers, All Surveyed States



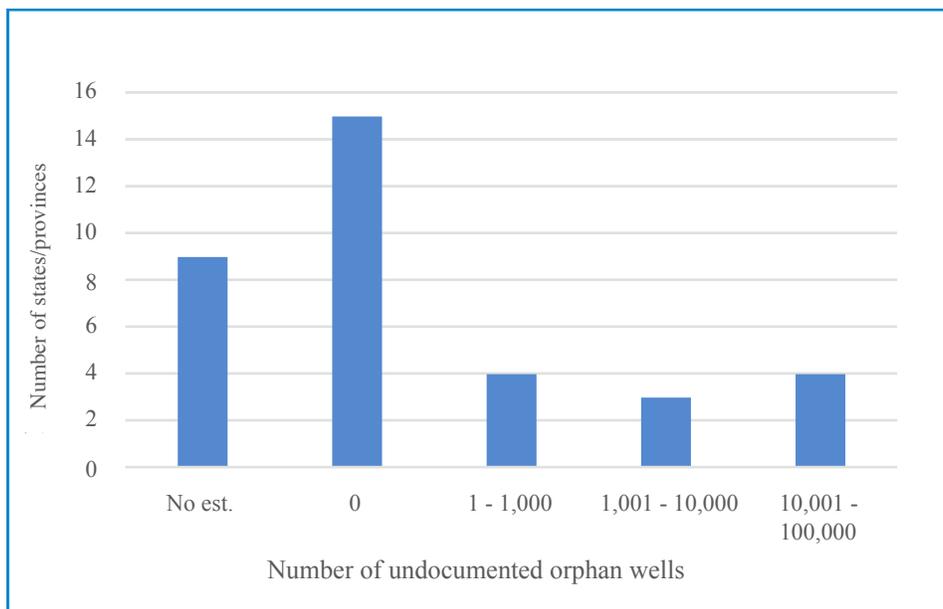
Changes in the numbers of documented orphan wells are due to several factors. Wells are being added to inventories as some operators go out of business and as states discover additional orphan wells that were previously unidentified. The addition of more wells has been counteracted as states and provinces plugged wells and removed them from their inventories.

UNDOCUMENTED WELLS

The total estimated number of undocumented orphan wells reported by the states is between 210,000 and 746,000. Nine states did not provide an estimate. Ten other states and all five provinces reported they have no undocumented orphan wells. The remaining 11 states reported an estimate of one to 100,000 or more undocumented orphan wells.

Figure 6 shows the estimated numbers of undocumented wells reported by states and provinces. This figure reflects only the lower-end estimates for the states that provided a range. The detailed breakdown appears in **Table 1**.

Figure 6. Estimated Undocumented Orphan Wells, All Surveyed States and Provinces



These estimates provide an imprecise picture of the actual numbers of undocumented orphan wells and the potential risk associated with them. Some states reported a wide range in the estimated number, while nine states did not provide an estimate. Some undocumented wells undoubtedly pose a threat of leakage or other hazards. Others, however, may not pose a significant risk to the environment or public health and safety. Most pre-regulatory wells were drilled to relatively shallow depths—often several hundred feet or less—and may not constitute conduits for oil, gas, or saltwater migration. They also tended to be drilled in areas where there were already natural seeps of oil or natural gas. IOGCC has identified this category of wells as a potential area for further work.

Nine of the 11 states that provided estimated numbers of undocumented orphan wells gave a basis for their estimates. **Figure 7** summarizes that information.

Figure 7. Basis for Estimate of Number of Undocumented Orphan Wells

| Basis for estimate | Number of states/provinces |
|--|----------------------------|
| Information from historical records. | 4 |
| Extrapolation from known occurrences. | 2 |
| Studies of orphan wells in the state. | 2 |
| Review of pre-regulatory wells over the past 20 years. | 1 |

PLUGGING FUNDS AND ACTIVITY

Of the 35 states and provinces reporting, 25 have funds directed specifically to orphan well plugging, and several others have authority to spend money from operating funds or other sources to plug orphan wells. Illinois was the first state to establish a fund, in 1939. As shown in **Table 1**, most plugging funds originated in the 1970s through the 1990s, with the most recent established in 2014. Money for state plugging funds comes primarily from taxes, fees, and other assessments on the oil and gas industry. Sixteen states and provinces have an annual authorized expenditure target for their plugging fund. Twenty-one have access to funds for emergency remedial actions.

Most states and provinces use funds from more than one of the sources listed in **Figure 8**.

Figure 8. Sources of Plugging Funds, All Surveyed States and Provinces

| Fund source | Number of states/provinces |
|-----------------------|----------------------------|
| Annual fee | 7 |
| Idle well fee | 5 |
| Permit fee | 11 |
| Civil penalties | 8 |
| Settlements | 5 |
| Appropriations | 8 |
| Forfeited bonds | 20 |
| Salvage | 11 |
| Excise tax | 4 |
| Production assessment | 11 |
| Other | 6 |

The sources listed in **Figure 8** are described as follows:

Annual fee: A routine fee charged to operators of oil and gas wells.

Idle well fee: A fee an operator pays for an inactive, unplugged well.

Permit fee: A fee an operator pays when applying for a permit to drill or produce.

Civil penalties: Penalties imposed by regulating authorities for noncompliance.

Settlements: A binding agreement for payment in lieu of court proceedings in an enforcement matter.

Appropriations: Legislative action authorizing the expenditure of funds for some designated purpose.

Forfeited bonds: Monies collected on surety bonds or other forms of financial assurance provided by operators.

Salvage: Proceeds from the sale of any equipment or other items of value at a plugging site.

Excise tax: Tax imposed on the sale of specific goods or services.

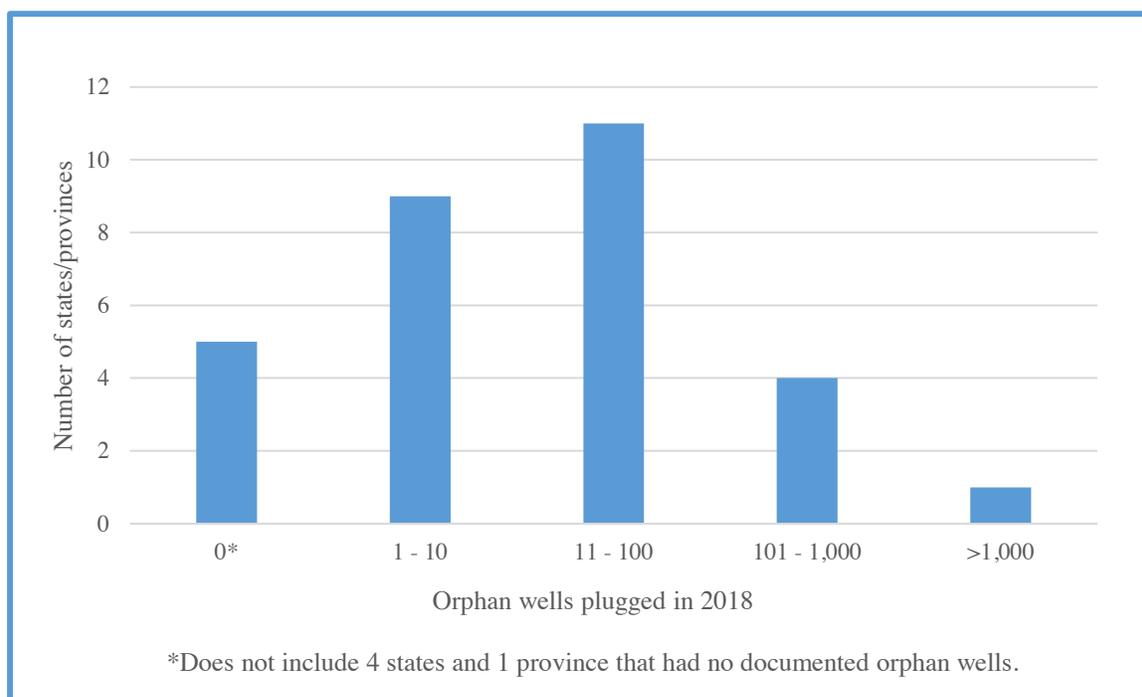
Production assessment: A state or provincial tax or fee on oil and gas products levied at the wellhead.

While 11 states and provinces report salvage value as a funding source for their plugging fund, an additional six recover salvage value directly as part of orphan well plugging operations, generally as a deduction on the plugging contractor invoice. Twelve require that salvage value be included in the bid process. States and provinces generally indicate there is usually minimal, if any, salvage value associated with orphan wells.

The 35 states and provinces that responded to the survey reported plugging a total of 3,356 orphan wells in 2018, with Texas plugging the most at 1,440. In the 28 states reporting, a total of 16,153 wells were plugged by operators or states, including 2,372 orphan wells. **Table 2** provides detailed information on orphan-well plugging activity in the states and provinces in 2018. **Table 6** provides additional information on all wells plugged in the states in 2018.

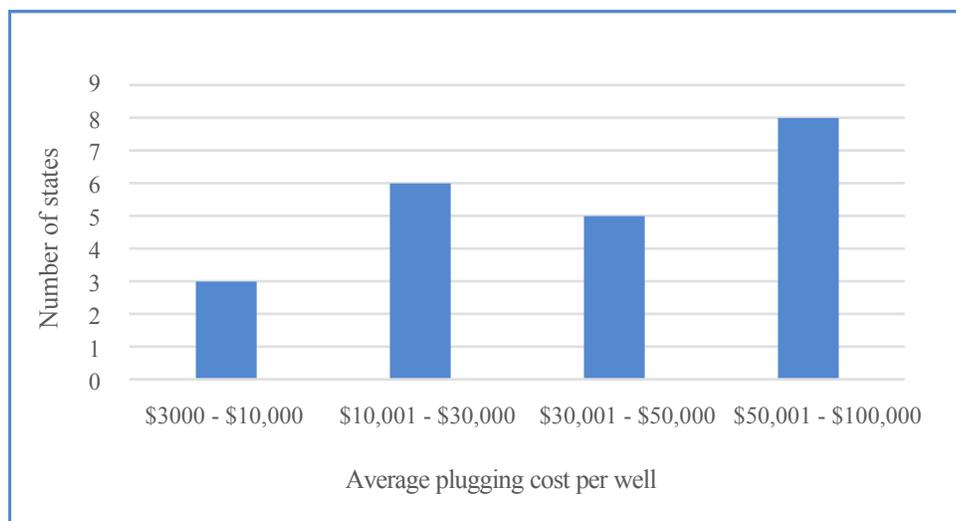
Of the 30 states and provinces that had documented orphan wells, five reported they had not plugged any orphan wells in 2018. Of the other 25 states and provinces, the number of wells plugged ranged from one to 1,440, with most states and provinces plugging between five and 100 wells. **Figure 9** summarizes the number of orphan wells plugged by states and provinces in 2018.

Figure 9. Orphan Wells Plugged in 2018, All Surveyed States and Provinces



The average cost to plug an orphan well varies widely depending on well depth and condition, accessibility, and other factors. For the 22 states that plugged orphan wells in 2018, the average cost per well ranged from \$3,667 to \$97,626. The overall average is \$18,940 for the states and \$61,477 (Canadian dollars) for the provinces.

Figure 10. Average Orphan Well Plugging Costs in 2018, All Surveyed States



Most states and provinces conduct at least the basic site restoration necessary as part of an orphan well plugging operation. Site restoration is defined as removal of equipment, trash, and debris; repair of erosion; removal of hydrocarbons and closure of pits; and associated activities. Of the 35 states and provinces reporting, 12 include site restoration in plugging costs. For the states that account for site restoration costs separately, eight states expended money for site restoration costs, with an average of \$5,078 per site. In general, those costs may be for wells that were plugged months or years earlier, whether by the responsible party or the regulatory authority; they are not counted as part of well plugging costs in **Figure 10**.

Of the 35 reporting states and provinces, 16 have an annual authorized expenditure target for their plugging fund. Twenty-one have access to funds—either as part of their plugging fund or a separate source—for emergency remedial actions at wells to address imminent threats to health, safety, or the environment.

FINANCIAL ASSURANCE

The primary purpose of financial assurance (typically referred to as “bonding” or “security”) is to ensure that the regulatory authority has adequate resources to plug an oil and gas well and restore the site if the owner or operator is unwilling or unable to do so. States and provinces typically have requirements for single-well or blanket financial assurance.

States and provinces accept a variety of types of financial assurance. Thirty-five states and provinces reported the types of financial assurance accepted in their jurisdictions. Most states and provinces accept more than one type. **Figure 11** summarizes this information. The details are shown in **Table 3**.

Figure 11. Types of Financial Assurance Accepted

| Type of financial assurance | Percent of states and provinces accepting |
|------------------------------------|--|
| Cash Deposit | 77% |
| Certificate of Deposit | 66% |
| Financial Statements | 11% |
| Letter of Credit, Irrevocable | 66% |
| Security Interest | 6% |
| Surety or Performance Bonds | 86% |
| Other | 6% |

The types of financial assurance are described as follows:

Cash Deposit: A payment given as a guarantee that an obligation will be met.

Certificate of Deposit: A financial instrument certifying that the face amount is on deposit with the issuing bank to be redeemed for cash by the state if required.

Financial Statements: A report of basic accounting data that depicts a firm’s financial history and activities.

Letter of Credit, Irrevocable: A letter of credit where payment is guaranteed if stipulated conditions are met.

Security Interest: The right to take property or a portion of property offered as security.

Surety or Performance Bonds: A contract by which one party agrees to make payment on the default or debt of another party.

Other: Other forms of financial assurance such as certificates of insurance, consolidated financial funds, escrow accounts, and liens.

The amounts and criteria for financial assurance vary considerably among the states and provinces. Most states and provinces provide for single-well bonding (a specified amount for each well) as well as blanket bonding (a specified amount that covers multiple wells, often capped at a maximum number). Bonding requirements for states and provinces are shown in **Table 4**. They are summarized as follows:

Single-well Bonds

- Five states have one set amount per well, ranging from \$2,500 to \$400,000.
- Three states require an amount based on well depth, ranging from \$2 to \$12 per foot.
- Two states have a base amount plus \$2 per foot.
- Twenty states and one province have multi-tier bond amounts, usually based on well depth or type, ranging from a minimum of \$1,500 to a maximum of \$500,000.
- Two provinces do not provide for single-well bonds, and two uses a case-by-case evaluation to determine bond amounts.

Blanket Bonds

- Nine states have one set blanket bond amount, ranging from \$15,000 to \$100,000.
- Twenty-one states and one province have multi-tier blanket bond amounts, ranging from a minimum of \$7,500 to a maximum of \$30,000,000.
- Two provinces do not provide for blanket bonds, and two others use a case-by-case evaluation to determine bond amounts.

Over the years, plugging and restoration costs have risen due to inflation and in some cases due to improved and more stringent regulatory requirements for materials and methods. States and provinces typically revise their financial assurance requirements periodically to account for increases in the cost of plugging and/or restoration. One state provided financial assurance amounts that take inflation into account.

INCENTIVES

Incentives to Plug Orphan Wells

Six states have current or pending incentives to plug orphan wells:

Colorado: An operator reimbursement process is pending. It will provide direct reimbursement or a levy credit.

Illinois: The state has the Landowner Grant Program, under which an eligible landowner may receive up to five grants per year to pay for orphan well plugging.

Louisiana: An operator may agree to plug an orphan well and receive an exemption from financial security requirements for a well of similar depth in the same field.

Ohio: When a landowner plugs a well, the orphan well plugging statute requires the state to pay the plugging contractor directly rather than reimburse the landowner, resulting in state income tax savings to the landowner.

Pennsylvania: If an individual or contractor plugs a well for which they are not the responsible party, they receive liability relief for plugging the well.

Texas: The state may reimburse surface owners up to 50 percent of the cost for plugging.

Incentives to Reactivate Idle Wells

Eight states provide incentives to reactivate idle wells:

Arkansas: The state provides severance tax reductions in certain circumstances.

California: If an operator returns to production a well that has been inactive for the preceding five consecutive years or has been determined to be deserted, then the annual oil and gas assessments will be reduced to zero for 10 subsequent years.

Colorado: State rules require additional financial assurance for an operator with “excess” inactive wells. An operator may request a release of a portion of the additional financial assurance if the well is reactivated.

Illinois: Wells may be transferred to a new permittee that intends to place the wells back into production. Plugging costs become the liability of the new permittee.

Kentucky: An operator may apply for a permit, with a \$25 fee, to test an orphan well for 60 days without commitment or penalty. After 60 days, the operator must either bond the well and assume ownership or return well to its prior status.

Louisiana: The Inactive Well Incentive Program established by statute in 2017 allows for the reduction of severance taxes due on all well production for a period of 10 years for a qualifying inactive well.

Michigan: The state allows a new owner to acquire idle wells to be put into production if they meet certain criteria.

West Virginia: The state provides a severance tax exemption for idle wells that have been reactivated.

INNOVATIONS AND SUCCESSES

Twelve states and three provinces reported on innovations and successes:

Alaska: The Alaska Oil and Gas Commission held an Idle Well Workshop with industry in 2018 to brainstorm ways to address the growing number of idle wells. As a result of the workshop, the agency has developed a proactive and collaborative approach to the issue. The agency meets annually with operators to review their idle well inventory and get commitments to plug wells with no future utility. This cooperative approach has been successful so far.

Alberta: Alberta implemented an area-based closure program that has resulted in savings of 10 to 40 percent for closure activities. The program will address an estimated \$3 billion in liability over the first five years.

Arkansas: Arkansas notes that it may be beneficial to use an alternative process to select plugging contractors (Request for Qualifications) in order to plug wells on a larger, multi-well project scale. Arkansas requires new operators to post single-well financial assurances for permit transfers for marginal wells and has increased single-well financial assurance requirements for approval of temporary abandonment.

British Columbia: The Oil and Gas Commission developed a Comprehensive Liability Management Plan to address plugging and abandonment issues. It also replaced the former orphan tax on production with an orphan levy that is assessed on all operators and is based on the amount calculated to build the orphan fund to a necessary balance. The agency notes it is too early to determine whether the programs will be successful.

California: In 2017, with support from industry and the public, California developed a centralized Idle Well Program with provisions for well classifications, testing, idle well fees, plugging and restoration funding, and incentives to plug and abandon idle wells. In 2018, the program collected \$4.3 million in idle well fees and facilitated the plugging and abandonment of 1,346 idle wells. The agency used a detailed work process analysis to implement the program, communicated extensively with industry, hosted public workshops, made information available on its webpage, and created an idle-well inbox for questions. The regulations require an engineering analysis and demonstration of mechanical integrity and viability for temporary abandonment.

Colorado: The Oil and Gas Conservation Commission has been developing an integrated site prioritization and financial tracking system over the last three years. With the new system, added staff, and increased spending, the agency has made rapid progress in addressing idle wells.

Illinois: The Landowner Grant Program awards up to five grants per year to an eligible landowner to pay for orphan-well plugging. Grants are awarded on a first-come, first-served basis and are selected considering well condition (i.e., whether leaking), cost, and the proposed plugging contractor.

Kansas: The Kansas Corporation Commission is decentralizing staff responsible for abandoned wells and has designated a program manager to oversee the efforts in each of its four district offices. The agency now has an account manager whose main function is to be the liaison between staff and contractors for plugging abandoned wells. The agency has also made changes to its plugging contract process to make it more flexible and address concerns of contractors. It is also working on statutory changes to standards and incentives for plugging abandoned wells.

New Mexico: If an operator has more wells out of compliance than allowed by rule, they can enter into a compliance order that gives them six months to bring a specific number of wells back into compliance. New Mexico also has the Marginal Well Shut-In Program, whereby operators may apply to the Oil Conservation Division to shut in wells for up to 51 months during times of low commodity prices. Operators must sign a compliance order, provide economic justification, and conduct periodic MITs for the shut-in wells.

New York: New York has leveraged use of GIS and continues to collaborate with other agencies and organizations to develop in-house capabilities for conducting drone surveillance.

North Dakota: Every well drilled in North Dakota since statehood has been located and has been assigned a type and status. If an idle well is not approved for temporarily abandoned status or plugged and reclaimed within six months, the Industrial Commission may require the well to be placed immediately on a single-well bond in an amount equal to the cost of plugging the well and reclaiming the well site. After a well has been in abandoned-well status for one year, the bond, equipment, and salable oil are subject to forfeiture. A surface owner may request a review of the temporarily abandoned status after seven years and every two years thereafter.

Northwest Territories: The Office of the Regulator of Oil and Gas Operations initiated Well Suspension and Abandonment Guidelines in February 2017, which established timelines for the suspension of idle wells and the abandonment of suspended wells. The agency expects that all of the wells that were suspended prior to the effective date of the Guidelines will be abandoned or brought back into production by April 2023.

Ohio: The Division of Oil and Gas Resources Management has conducted successful pilot studies using drones equipped with magnetometers to locate orphan wells. The Ohio orphan well plugging statute allows the landowner to have an orphan well plugged. Recent revisions require the state to pay to the plugging contractor directly the reasonable cost for plugging the well, rather than reimburse the landowner for costs incurred. The change may result in state income tax savings to the landowner.

Pennsylvania: The state has a Good Samaritan Act, under which an individual or contractor may plug a well for which they are not responsible by paying costs or providing supplies and/or equipment. If an individual or contractor meets criteria, they receive liability relief for plugging the well, and grant programs are available. Developing streamlined procedures for third-party liability relief, donations to the program, and innovative partnerships have extended plugging resources in recent years, but not significantly.

Texas: A program was established in 2005 which authorized the Railroad Commission to reimburse surface estate owners up to 50 percent of the documented cost or the average Commission cost for plugging a similar well in the same general area within the preceding 24 months.

AREAS FOR FURTHER WORK

This report documents the considerable progress the states and provinces have made in plugging orphan wells and setting criteria for idle wells to reduce the likelihood of them becoming orphaned. The states and provinces have also continued to evaluate and adjust their financial assurance requirements and their plugging funds to ensure there will be funds available for well plugging and site restoration. They continue to express concern, however, over the potential for escalating numbers of idle and orphan wells.

The number of idle wells in a state or province is a cause for concern because of the potential for such wells to deteriorate over time or become orphans. States with a high ratio of idle wells to active wells may want to pay special attention to this issue; however, the more critical factor is that ratio for individual operators, because it may indicate vulnerability for operators to become insolvent and leave orphan wells for the state or province to address.

The risk of wells becoming orphans is heightened when oil and gas prices decline or are unstable, as in recent years, or when operators transfer aging wells to other companies. States and provinces may wish to evaluate regulatory safeguards to reduce the potential for this type of problem. This report describes safeguards that some states have adopted. More detailed information on addressing transfers of ownership can be found in the Legal and Regulatory Affairs Committee report on infrastructure transfer.⁷

As an organization, IOGCC is committed to continuing to support the states and provinces in their efforts to assess the effectiveness of their idle and orphan well programs and identify tools and strategies from other jurisdictions that may be useful. Following are three upcoming projects IOGCC will pursue in support of this objective.

FEDERAL FUNDING UNDER THE OIL POLLUTION ACT

IOGCC will continue to discuss with federal officials and agencies the availability and use of federal funds to plug orphan wells. Currently, pursuant to **IOGCC Resolution 19.054**, IOGCC is seeking an amendment of the language and application of the Oil Pollution Act (OPA) to support use of OPA funding to plug orphan wells that pose a risk to surface waters.

As currently applied, language in OPA exposes surface owners and royalty interest owners who have never produced or participated in ownership of a well to liability when an orphan well is plugged with OPA funds. This application of the OPA liability provisions has discouraged states from working in partnership with federal agencies to make use of OPA funding for plugging of orphan wells that pose a threat to surface waters. If the language of the Act, or the implementing procedures, are adjusted consistent with IOGCC Resolution 19.054, states and federal agencies will be able to make greater use of available federal funds.

REVIEW OF CONTRACTING PROCEDURES

Some states have access to plugging funds but have expressed frustration over the difficulties of retaining and managing contractors to plug orphan wells. IOGCC intends to gather the states and provinces in an appropriate forum, such as a workshop or webinar, to review effective practices for procuring plugging services and managing plugging contracts.

ASSESSING POPULATIONS AND RISKS OF UNDOCUMENTED WELLS

This report provides some preliminary information on the topic of undocumented wells, a matter of special concern in some states with a long history of oil and gas drilling and production. Previous IOGCC publications have discussed related issues such as legacy wells and pre-regulatory wells. Due to the historical and poorly documented nature of these categories of wells, the estimates of the populations and risks can be very broad in range and difficult to assess and compare.

IOGCC will provide support on this topic as requested by member states. A national or regional study or workshop is a possible avenue for this assistance.

DATA TABLES

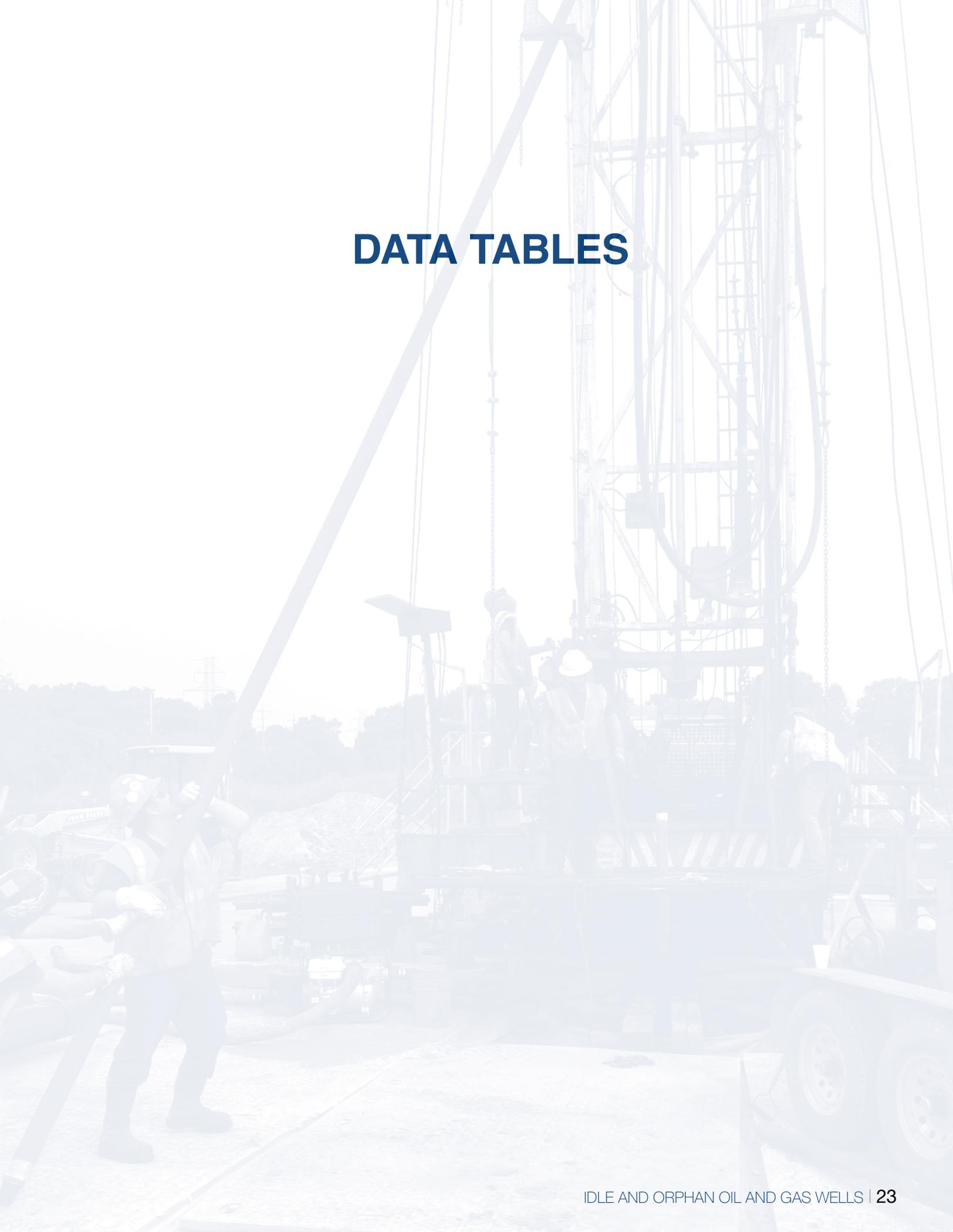


Table 1. Total Idle and Orphan Wells: All Surveyed States and Provinces (2018)

| | <i>Blank fields indicate that no data was reported or available. An * indicates no plugging fund.</i> | | | | | | |
|---------------------------|---|---------------------|-------------------------|---|-------------------------------------|----------------------------|---|
| State or Province | Documented wells drilled and not plugged | Approved idle wells | Documented orphan wells | Numbers include wells on Federal/Indian Lands | Estimated undocumented orphan wells | Year plugging fund started | Orphan Wells plugged since start of program |
| Alabama | 7,334 | 743 | 3 | | 0 | 1984 ¹ | 0 |
| Alaska | 5,189 | 800 | 15 | | 0 | * | |
| Arizona | 40 | 0 | 0 | Yes/No | 0 | * | |
| Arkansas | 18,764 | 469 | 484 | Yes/No | 0 | 2005 | 749 |
| California | 65,243 | 29,292 | 16 | | 2,500 | 1990 | 88 |
| Colorado | 52,917 | 3,409 | 275 | | 200 | 1990 | |
| Idaho | 18 | 0 | 0 | Yes/No | 0 ² | * | |
| Illinois | 44,350 | 4,072 | 4,253 | | | 1939 | |
| Indiana | 8,367 | 287 | 1,028 | | <100 | 1947 | |
| Kansas | 112,594 | 7,251 | 5,709 | No/No | | 1996 | 10,284 |
| Kentucky | 62,810 | 3,039 | 13,266 | | 5,000 | 1990 | 3,657 |
| Louisiana | 38,200 | 10,249 | 3,966 | Yes/Yes | | 1993 | 3,219 |
| Maryland | | 0 | 0 | | | * | 0 |
| Michigan | 20,842 | 1,288 | 98 | Yes/ | 0 | 1994 | 379 |
| Mississippi | 4,121 | 2,577 | 18 | | 6 | 1948 | 445 |
| Montana | 13,006 | N/A | 231 | No/No | 0 | 1989 | 437 |
| Nebraska | 1,908 | 724 | 75 | Yes/Yes | | 2014 | |
| Nevada | 118 | 45 | 6 | Yes/Yes | 0 | * | 0 |
| New Mexico | 69,373 | 514 | 115 | Yes/Yes | | 1977 | |
| New York | 14,855 | 96 | 2,000 | No/Yes | 34,000 | 1982 | 318 |
| North Dakota | 17,577 | 2,226 | 0 | Yes/Yes | 0 | 1983 | 24 |
| Ohio | 62,533 | 31 | 910 | Yes/Yes | 35,133 | 1967 | 2,105 |
| Oklahoma | 262,598 | 2,026 | 1,372 | Yes/Yes | 25,000 -100,000 | 1990 | |
| Pennsylvania | 145,326 | 976 | 8,703 | Yes/Yes | 100,000 - 560,000 | 1985 | 3,156 |
| South Dakota | 242 | 19 | 0 | Yes/Yes | 0 | * | |
| Texas | 471,665 | 121,530 | 6,285 | Yes/ | | 1984 | 35,000 |
| Utah | 16,571 | 2,074 | 33 | Yes/Yes | | 1990 | 114 |
| Virginia | 8,750 | 566 | 10 | No/No | <10 | 1991 | 14 |
| West Virginia | 64,967 | 100 | 4,646 | | 9,000 | 1977 | |
| Wyoming | 56,932 | | 3,083 | Yes/Yes | | * ³ | 3,143 |
| Totals - States | 1,647,210 | 194,403 | 56,600 | | | | 63,132 |
| Alberta | 163,809 | 93,094 | 3,127 | | 0 | | |
| British Columbia | 17,864 | 7,235 | 326 | Yes/Yes | 0 | 2006 | 228 |
| Northwest Territories | 90 | | 0 | | 0 | * | |
| Saskatchewan | 54,864 | NA | 364 | | 0 | 2007 | 441 |
| Yukon | 12 | 11 | 1 | | 0 | * | |
| Totals - Provinces | 236,639 | 100,340 | 3,818 | | 0 | | 669 |

¹ Only for coalbed methane wells.

² From 150 to 170 wells drilled prior to 2007 have not been assessed for potential remedial plugging.

³ Does not have a fund specifically for orphan well plugging but has access to other funding sources for that purpose.

Table 2. Orphan Well Plugging and Expenditures: All Surveyed States and Provinces (2018)

| <i>Blank fields indicate that no data was reported or available. Canadian expenditures are reported in Canadian dollars. *Included in plugging expenditures.</i> | | | | | | |
|--|----------------------|-----------------------|--------------------------------|-----------------------------------|---------------------------------------|--|
| State or Province | Wells plugged | Sites restored | Plugging funds expended | Restoration funds expended | Average plugging cost per well | Average restoration cost per well |
| Alabama | 0 | 0 | \$0 | \$0 | | |
| Alaska | 0 | 0 | \$0 | \$0 | | |
| Arizona | 0 | 0 | \$0 | \$0 | | |
| Arkansas | 1 | 1 | \$56,528 | * | \$56,528 | * |
| California | 18 | 18 | \$959,915 | * | \$53,329 | * |
| Colorado | 15 | 9 | \$644,880 | \$189,895 | \$42,992 | \$21,099 |
| Idaho | 0 | 0 | \$0 | \$0 | | |
| Illinois | 9 | 9 | \$477,000 | * | \$53,000 | * |
| Indiana | 5 | 5 | \$45,399 | | \$9,080 | |
| Kansas | 168 | 37 | \$773,762 | \$26,730 | \$4,606 | \$722 |
| Kentucky | 9 | 9 | \$33,000 | * | \$3,667 | * |
| Louisiana | 219 | 219 | \$6,400,000 | * | \$29,224 | * |
| Maryland | 0 | 0 | \$0 | \$0 | | |
| Michigan | 6 | 6 | \$ 585,756 | \$ 83,697 | \$ 97,626 | \$ 13,950 |
| Mississippi | 5 | 5 | \$168,000 | * | \$33,600 | * |
| Montana | 11 | 11 | \$387,000 | * | \$35,182 | * |
| Nebraska | 16 | 7 | \$170,000 | \$98,000 | \$10,625 | \$14,000 |
| Nevada | 0 | 0 | \$0 | \$0 | | |
| New Mexico | 60 | 60 | \$1,356,099 | * | \$22,602 | * |
| New York | 45 | 44 | \$1,600,000 | * | \$35,556 | * |
| North Dakota | 3 | 0 | \$224,334 | \$0 | \$74,778 | * |
| Ohio | 51 | 51 | \$3,000,000 | * | \$58,824 | * |
| Oklahoma | 58 | 608 | \$1,293,466 | \$4,300,000 | \$22,301 | \$7,072 |
| Pennsylvania | 6 | 6 | \$474,111 | * | \$79,019 | * |
| South Dakota | 0 | 0 | \$0 | \$0 | | |
| Texas | 1,440 | 228 | \$23,400,000 | \$3,100,000 | \$16,250 | \$13,596 |
| Utah | 1 | 1 | \$88,244 | \$13,452 | \$88,244 | \$13,452 |
| Virginia | 14 | 0 | \$583,083 | \$0 | \$41,649 | |
| West Virginia | 0 | 3 | \$0 | \$79,606 | | \$26,535 |
| Wyoming | 217 | 217 | \$2,300,000 | * | \$10,599 | * |
| Total | 2,377 | 1,554 | \$ 45,020,577 | \$ 7,891,380 | | |
| State Average | | | | | \$18,940 | \$5,078 |
| Alberta | 799 | | \$48,800,000 | \$22,900,000 | \$61,076 | |
| British Columbia | 84 | 15 | \$8,500,000 | \$500,000 | \$101,190 | \$33,333 |
| Northwest Territories | 0 | 0 | \$0 | \$0 | | |
| Saskatchewan | 96 | 40 | \$2,885,696 | \$2,579,560 | \$30,059 | \$64,489 |
| Yukon | 0 | 0 | \$0 | \$0 | | |
| Total | 979 | 55 | \$60,185,696 | \$25,979,560 | | |
| Provincial Average | | | | | \$61,477 | |

Table 3. Financial Assurance Accepted by Surveyed States and Provinces

| State or Province | Cash Deposit | Certificate of Deposit | Financial Statement | Letter of Credit, Irrevocable | Security Interest | Surety and/or Performance Bond | Other |
|-----------------------|--------------|------------------------|---------------------|-------------------------------|-------------------|--------------------------------|-------|
| Alabama | | | | • | | • | |
| Alaska | • | • | | • | | • | |
| Arizona | • | • | | | | • | |
| Arkansas | • | • | | • | | • | |
| California | • | • | | | | • | |
| Colorado | • | • | • | • | • | • | • |
| Idaho | | | | | | • | |
| Illinois | | • | | • | | • | |
| Indiana | • | • | | | | • | |
| Kansas | • | | | • | | • | • |
| Kentucky | • | • | | • | | • | |
| Louisiana | | • | | • | | • | |
| Maryland | • | • | | • | | • | |
| Michigan | • | • | • | • | | • | |
| Mississippi | • | | | • | | • | |
| Montana | | • | | | | • | |
| Nebraska | | • | | | | • | |
| Nevada | • | • | | | | • | |
| New Mexico | • | | | • | • | • | |
| New York | • | • | | • | | • | |
| North Dakota | • | | | | | • | |
| Ohio | • | • | • | • | | • | |
| Oklahoma | • | • | | • | | • | |
| Pennsylvania | • | • | | | | • | |
| South Dakota | | • | | | | • | |
| Texas | • | | | • | | • | |
| Utah | • | • | | • | | • | |
| Virginia | • | • | | | | • | |
| West Virginia | • | • | | • | | • | |
| Wyoming | • | • | | • | | • | |
| Alberta | • | | | • | | | |
| British Columbia | • | | | • | | | |
| Northwest Territories | | | • | | | | |
| Saskatchewan | • | | | • | | | |
| Yukon | • | | | • | | | |

Table 4. Financial Assurance Amounts in Surveyed States and Provinces

| State or Province | Single Well | | Blanket | |
|-----------------------|-------------------------------|-------------------------------|-------------------------|---------------------------|
| | Min | Max | Min | Max |
| Alabama | \$5,000 ⁴ | \$500,000 ⁵ | \$100,000 ⁴ | \$1,000,000 ⁵ |
| Alaska | \$400,000 ⁶ | | \$400,000 ⁶ | \$30,000,000 ⁶ |
| Arizona | \$10,000 | \$20,000 | \$25,000 | \$250,000 |
| Arkansas | \$3,000 | None | \$25,000 | None |
| California | \$25,000 | \$40,000 | \$200,000 | \$3,000,000 |
| Colorado | \$10,000 | \$20,000 | \$60,000 | \$100,000 |
| Idaho | \$10,000+\$1/ft. ⁷ | \$10,000+\$8/ft. ⁸ | \$50,000 | \$150,000 |
| Illinois | \$1,500 | \$3,000 | \$25,000 | \$100,000 |
| Indiana | \$2,500 | | \$45,000 | |
| Kansas | \$7,500 | \$15,000 ⁹ | \$7,500 | \$45,000 |
| Kentucky | \$2/ft. | | \$20,000 | \$300,000 |
| Louisiana | \$2.00/ft. ¹⁰ | \$12.00/ft. ¹¹ | \$50,000 | \$5,000,000 |
| Maryland | \$100,000 | | \$100,000 | |
| Michigan | \$20,000 | \$60,000 | \$100,000 | \$250,000 |
| Mississippi | \$20,000 | \$60,000 | \$100,000 | |
| Montana | \$1,500 | \$10,000 | \$50,000 | |
| Nebraska | \$10,000 | | \$100,000 | |
| Nevada | \$10,000 | No max. ¹² | \$50,000 | No max. ¹² |
| New Mexico | \$25,000 + \$2/ft. | | \$50,000 | \$250,000 |
| New York | \$2,500 | Based on AFE | \$25,000 | \$2,000,000 |
| North Dakota | \$20,000 | \$100,000 | \$100,000 ¹³ | |
| Ohio | \$5,000 | | \$15,000 | |
| Oklahoma | \$25,000 ¹⁴ | \$100,000 | \$25,000 | \$50,000 |
| Pennsylvania | \$2,500 ¹⁵ | \$10,000 ¹⁵ | \$25,000 ¹⁵ | |
| South Dakota | \$10,000 | \$50,000 | \$30,000 | \$100,000 |
| Texas | \$2/ft | | \$25,000 | \$250,000 |
| Utah | \$1,500 | \$60,000 | \$15,000 | \$60,000 |
| Virginia | \$10,000 + \$2/ft. | | \$25,000 | \$200,000 |
| West Virginia | \$5,000 ¹⁶ | \$50,000 ¹⁷ | \$50,000 ¹⁶ | \$250,000 ¹⁷ |
| Wyoming | \$10/ft | | \$100,000 ¹⁸ | |
| Alberta | None | | Case-by-case | |
| British Columbia | Case-by-case | | Case-by-case | |
| Northwest Territories | None | | \$10,000,000 | \$25,000,000 |
| Saskatchewan | \$10,200 | \$76,100 | None | |
| Yukon | Case-by-case | | None | |

⁴ Onshore

⁵ Offshore

⁶ Can be increased or decreased on operator's request or by agency action

⁷ Active wells

⁸ Inactive wells

⁹ Or \$.75/ft x aggregate depth for all wells

¹⁰ Land

¹¹ Offshore

¹² Agency can assess higher bond if needed

¹³ Covers ≤ 6 wells

¹⁴ May substitute cost to P&A

¹⁵ No bonds for wells drilled before 1985

¹⁶ Vertical well

¹⁷ Horizontal well

¹⁸ Amount may be increased for idle well

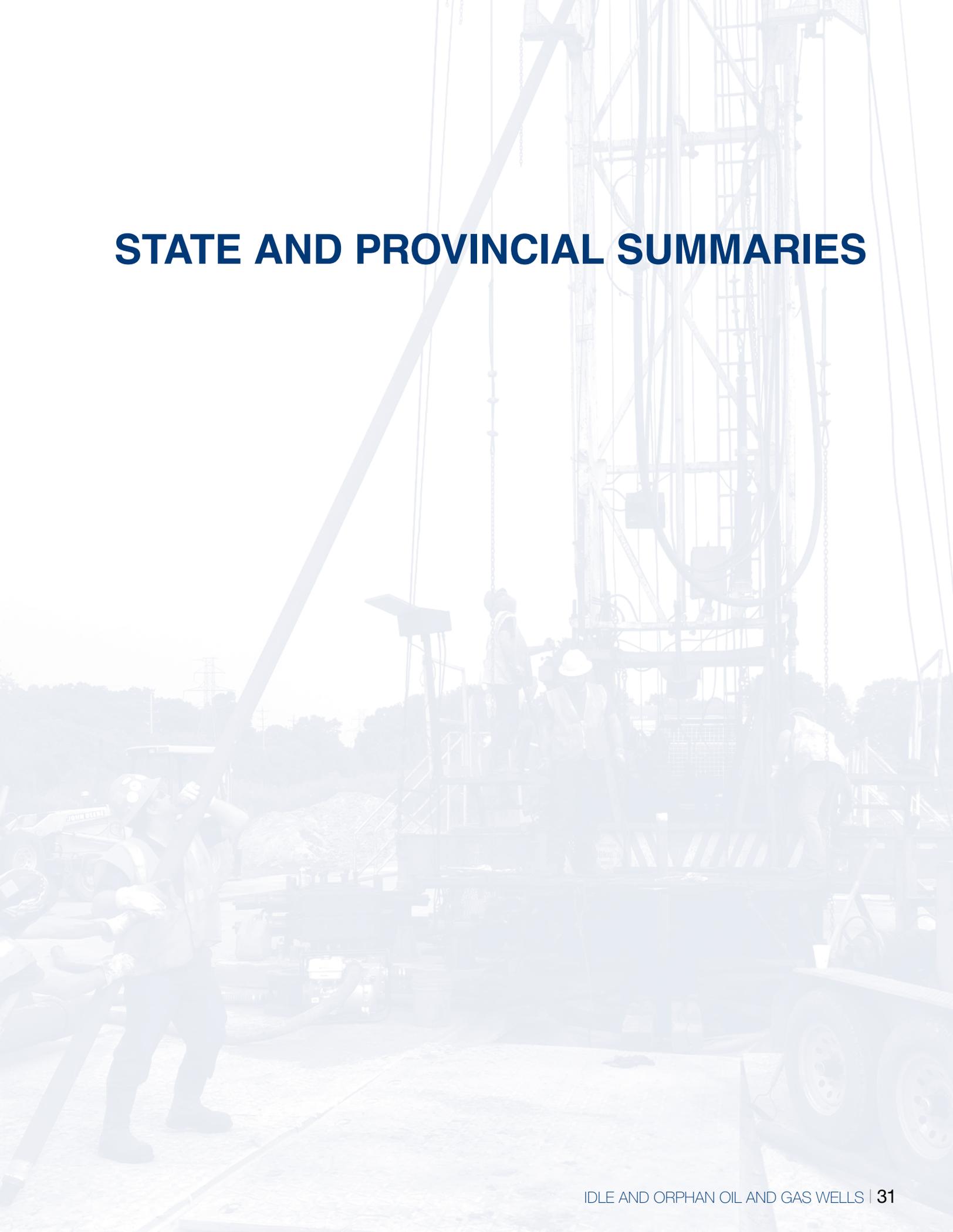
Table 5. States and Provinces Responding by Publication Date

| State or Province | Publication Date | | | | |
|-----------------------|------------------|------|------|------|------|
| | 1992 | 1996 | 2000 | 2008 | 2019 |
| Alabama | • | • | • | • | • |
| Alaska | • | • | • | • | • |
| Arizona | • | • | • | | • |
| Arkansas | • | • | • | • | • |
| California | • | • | • | • | • |
| Colorado | • | • | • | • | • |
| Florida | • | • | • | • | |
| Idaho | | | | | • |
| Illinois | • | • | • | • | • |
| Indiana | • | • | • | • | • |
| Kansas | • | • | • | • | • |
| Kentucky | • | • | • | • | • |
| Louisiana | • | • | • | • | • |
| Maryland | | • | • | | • |
| Michigan | • | • | • | • | • |
| Mississippi | • | • | • | • | • |
| Missouri | • | • | • | • | |
| Montana | • | • | • | • | • |
| Nebraska | • | • | • | • | • |
| Nevada | • | • | • | | • |
| New Mexico | • | • | • | • | • |
| New York | • | • | • | • | • |
| North Dakota | • | • | • | • | • |
| Ohio | • | • | • | • | • |
| Oklahoma | • | • | • | • | • |
| Oregon | | • | | | |
| Pennsylvania | • | • | • | • | • |
| South Dakota | • | • | • | • | • |
| Tennessee | • | | | | |
| Texas | • | • | • | • | • |
| Utah | • | • | • | • | • |
| Virginia | • | • | • | • | • |
| West Virginia | • | • | • | • | • |
| Wyoming | • | • | • | • | • |
| Alberta | | | | | • |
| British Columbia | | | | | • |
| Northwest Territories | | | | | • |
| Saskatchewan | | | | | • |
| Yukon | | | | | • |

Table 6. Wells Plugged: All Surveyed States (2018)

| State or Province | Oil wells plugged | Natural gas wells plugged | EOR injection wells plugged | SWD injector wells plugged | Total wells plugged | Orphan Wells plugged |
|-------------------|-------------------|---------------------------|-----------------------------|----------------------------|---------------------|----------------------|
| Alabama | 11 | 120 | 2 | 0 | 133 | 0 |
| Alaska | 43 | 6 | 6 | 0 | 55 | 0 |
| Arizona | - | - | 0 | 0 | 0 | 0 |
| Arkansas | 74 | 110 | 4 | 9 | 197 | 1 |
| California | 694 | 25 | 206 | 16 | 941 | 18 |
| Colorado | | | | | | 15 |
| Idaho | 0 | 0 | 0 | 0 | 0 | 0 |
| Illinois | 423 | 5 | 45 | 9 | 482 | 9 |
| Indiana | 53 | 4 | 9 | 2 | 68 | 5 |
| Kansas | 1,335 | 401 | 208 | 57 | 2,001 | 168 |
| Kentucky | 166 | 30 | 12 | 6 | 214 | 9 |
| Louisiana | 622 | 424 | 9 | 67 | 1122 | 219 |
| Maryland | | | | | | 0 |
| Michigan | 70 | 145 | 10 | 8 | 233 | 6 |
| Mississippi | 41 | 15 | 2 | 2 | 60 | 5 |
| Montana | 24 | 42 | 4 | 3 | 73 | 11 |
| Nebraska | 48 | 0 | 9 | 2 | 59 | 16 |
| Nevada | 1 | 0 | - | 0 | 1 | 0 |
| New Mexico | 480 | 160 | 33 | 26 | 699 | 60 |
| New York | 89 | 22 | 8 | 0 | 119 | 45 |
| North Dakota | 130 | 7 | 8 | 11 | 156 | 3 |
| Ohio | 105 | 211 | 0 | 1 | 317 | 51 |
| Oklahoma | 710 | 470 | 8 | 16 | 1204 | 58 |
| Pennsylvania | 116 | 367 | 8 | 0 | 491 | 6 |
| South Dakota | 6 | 2 | 0 | 0 | 8 | 0 |
| Texas | 5249 | 1935 | 680 | 281 | 8145 | 1,440 |
| Utah | 46 | 74 | 18 | 5 | 143 | 1 |
| Virginia | 0 | 85 | 0 | 0 | 85 | 14 |
| West Virginia | - | 155 | 3 | 0 | 158 | 0 |
| Wyoming | 138 | 881 | 26 | 5 | 1050 | 217 |
| Total | 9,221 | 5,280 | 1,108 | 467 | 16,153 | 2,372 |

STATE AND PROVINCIAL SUMMARIES



ALABAMA

Regulatory Agency

State Oil and Gas Board of Alabama

PO Box 869999

Tuscaloosa, AL 35486-6999

ogb.state.al.us

Statutory or Regulatory Authority

Onshore conventional and injection/disposal wells:

Rule 400-1-4-.14 and 400-1-4-.17

Offshore wells: Rule 400-2-4-.11 and 400-2-4-.14

Coalbed methane: Rule 400-3-4-.14 and 400-3-4-.17

Definitions

Abandoned Well: A well that has not been used for six consecutive months and cannot be operated, whether because it was drilled as a dry hole or has ceased to produce, or operations have not been conducted thereon, or for some other reason.

Orphan Well: Alabama does not statutorily define an orphan well, per se, but addresses abandoned wells.

Temporarily Abandoned Well: A well currently not producing oil and/or gas that has been approved for future utility by the state supervisor or Board.

Site restoration: Plugging and abandonment of oil and gas well, removal of all material, debris, equipment, wastes and other material including contaminated soil, and disposal in accordance with permit(s) or regulation(s); stabilization of the site; and plugging and abandonment of water supply wells unless utilized by the landowner.

Idle Wells

Classification: Alabama classifies idle wells as Shut-In Status (capable of producing but shut in until connected to a gathering system, pipeline or processing facility, or for some other reason) and Temporary Abandoned Status (not producing but has future utility).

Idle period without approval: Six months for oil, gas, or injection wells, and 30 days after drilling has ceased for nonproductive wells.

Idle period with approval: One year.

Requirements for approval: Demonstration of future utility and mechanical integrity.

Provisions for exceptions: Exceptions may be granted by the Board after notice and hearing. A bond is required.

Orphan wells

Documented orphan wells: 3

Estimated undocumented orphan wells: 0

Actions to identify and address orphan wells:

Alabama takes a proactive approach—the agency conducts regular ongoing field inspections and office reviews to identify inactive wells and communicate with operators to get such wells plugged. If an operator is not compliant, enforcement action can be taken to order a well plugged and the site restored.

Plugging Funds

Alabama has a plugging fund only for coalbed methane wells.

Sources of funding:

- Permit fees
- Forfeited bonds

Annual authorized expenditure target: None.

Funds for emergency remedial actions: No.

Funds for site restoration: No.

Process for prioritizing orphan wells for plugging: None.

Financial Assurance

Types of Financial Assurance Allowed:

- Letter of Credit (in exceptional cases)
- Surety and/or Performance Bonds

Single Well Securities:*

| | Amount | Criteria |
|----------|-----------|-----------------|
| Minimum: | \$5,000 | Onshore, depth |
| | \$100,000 | Offshore, depth |
| Maximum: | \$50,000 | Onshore, depth |
| | \$500,000 | Offshore, depth |

Blanket Securities:*

| | Amount | Criteria |
|----------|-------------|----------------|
| Minimum: | \$100,000 | Onshore, depth |
| Maximum: | \$1,000,000 | Offshore |

*Board may determine greater amounts.

ALASKA

Regulatory Agency

Alaska Oil and Gas Conservation Commission
333 West Seventh Avenue, Suite 100
Anchorage, AK 99501-3935
commerce.alaska.gov

Statutory or Regulatory Authority

Regulation 20 AAC 25.110 and 20 AAC 25.115

Definitions

Orphan Well: Alaska does not have a formal definition of “orphan well.” The AOGCC uses the informal definition for “orphan well” as a well that has not been properly plugged and abandoned and an operator responsible for the well cannot be determined/found.

Site restoration: The AOGCC uses the term “location clearance,” which has much the same definition as “site restoration.” “Location clearance” requirements can be found in 20 AAC 25.170 and 172 for onshore and offshore locations respectively.

Idle Wells

Classification: AOGCC refers to shut-in wells as wells that have had no production/injection activity during the full previous calendar year; they are subject to reporting requirements of 20 AAC 25.115 (i.e., wells with no production injection at any time during 2018 would be subject to this regulation). The AOGCC requires approval to suspend a well (set a downhole plug that makes the well incapable of flowing). Suspended wells are subject to inspection requirements every five years and must be reauthorized every 10 years to keep a well in suspension status; they are subject to 20 AAC 25.110.

Idle period allowed: No state approval required to keep a well idle; however, operators must report on the mechanical condition of the well and its potential future utility each year if there has been no production/injection during the prior calendar year. The AOGCC meets with operators to prioritize the plugging of wells they no longer need.

Orphan wells

Documented orphan wells: 15

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: Alaska conducts ongoing research to identify undocumented orphan wells.

Plugging Funds

Alaska has no plugging fund, only bonding requirements. 20 AAC 25.025.

Process for prioritizing orphan wells for plugging: The AOGCC does not have a process for prioritizing orphaned wells for plugging.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|-----------|---|
| Minimum: | \$400,000 | Can be increased or decreased on operator’s request or by AOGCC action if conditions warrant. |
| Maximum: | \$400,000 | |

Blanket Securities:

| | Amount | Criteria |
|----------|--------------|---|
| Minimum: | \$400,000 | Determined by the number of permitted wellheads. See 20 AAC 25.025. Can be increased or decreased on operator’s request or by AOGCC action if conditions warrant. |
| Maximum: | \$30,000,000 | |

ARIZONA

Regulatory Agency

Arizona Oil and Gas Conservation Commission
c/o Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007
azogcc.az.gov

Statutory or Regulatory Authority

Definitions

Orphan Well: Not defined.

Site restoration: Not defined.

Idle Wells

Classification: Arizona classifies idle wells as temporarily abandoned or shut in.

Idle period without approval: 60 days.

Idle period with approval: Up to five years.

Requirements for approval: Demonstration of a future beneficial use, casing integrity, complete data on any well tests, cement jobs, and a plan for returning to beneficial use.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 75

Estimated undocumented orphan wells: 0

Plugging Funds

Arizona does not have a plugging fund.

Funds for site restoration: No.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|----------|
| Minimum: | \$10,000 | >10,000 |
| Maximum: | \$20,000 | <10,000 |

Blanket Securities:

| | Amount | Criteria |
|----------|-----------|----------|
| Minimum: | \$25,000 | 10 |
| Maximum: | \$250,000 | >50 |

ARKANSAS

Regulatory Agency

Oil and Gas Commission

301 Natural Resources Drive, Suite 102
Little Rock, AR 72205
aogc.state.ar.us

Statutory or Regulatory Authority

AOGC General Rules B-7, H-2 and H-3

Definitions

Orphan Well: A well where operator is unknown; a well for which permittee cannot be located, has no bond, and no fees have ever been paid.

Site restoration: Remediation of a well site, including clean-up of spills and remediation of conditions endangering public health or safety, causing contamination of water or the surface, or creating a fire hazard.

Idle Wells

Classification: Arkansas utilizes term “temporarily abandoned” for wells that require approval to remain idle.

Idle period without approval: 24 months; 12 months for commercial injection/disposal well.

Idle period with approval: Three years.

Requirements for approval: No outstanding Notices of Violations; financial assurance of \$35,000 per well for gas well or \$15,000 per well for oil well; well is secured with no leakage, maintained and identified; has bridge plug or packer to protect groundwater; has casing log or annual fluid level test.

Provisions for exceptions: Exemptions for wells in active EOR unit. Requests for idle well status may be referred to Commission.

Orphan wells

Documented orphan wells: 484

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: Review of AOGC (and pre-AOGC) historical well records. Review indicated a very limited potential for wells to exist in this category.

Plugging Funds

Sources of funding:

- Annual fee
- Forfeited bonds
- Salvage
- Production Assessment

Annual authorized expenditure target: Yes.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Leaking wells and those where the well site creates an imminent danger to the health or safety of the public have first priority.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|---------|--|
| Minimum: | \$3,000 | History and compliance of permittee; environmental conditions and factors affecting plugging and restoration cost. |
| Maximum: | No max. | |

Blanket Securities:

| | Amount | Criteria |
|----------|----------|---|
| Minimum: | \$25,000 | Number of wells; history and compliance of permittee; environmental conditions and factors affecting plugging and restoration cost. |
| Maximum: | No max. | |

CALIFORNIA

Regulatory Agency

Division of Oil, Gas, and Geothermal Resources
801 K St., MS 18-05
Sacramento, CA 95814
conservation.ca.gov/dog

Statutory or Regulatory Authority

Public Resources Code sections 3206 and 3206.1.
California Code of Regulations, title 14, sections
1760, 1772-1772.4, and 1772.6-1772.7.

Definitions

Orphan Well: A well that has no party responsible for it, leaving the state to plug and abandon it. California differentiates between idle-deserted and hazardous wells.

Idle Wells

Classification: California defines “idle well” as a well that for a period of 24 consecutive months has not produced oil or gas or water for EOR, or been used for EOR, pressure management, or injection.

Idle period allowed: Approval is not required; however, if a well is idle for three years, annual idle well fees are assessed in an amount that increases with time. Idle wells must be tested; if a test fails, the well must be plugged.

Provisions for exceptions: Operators may file a plan for the management and elimination of long-term idle wells in lieu of filing annual fees.

Orphan wells

Documented orphan wells: 16

Estimated undocumented orphan wells: 2,500

Actions to identify and address undocumented orphan wells: The State uses monitoring of idle well fee filings, field observations, and failure to respond to orders to plug and abandon, followed by determinations of solvency.

Plugging Funds

California has a fund for plugging and abandonment of hazardous or idle-deserted wells.

Sources of funding:

- Annual fee
- Idle well fee
- Civil penalties

Annual authorized expenditure target: Yes.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Based on prioritization factor in California Code of Regulations, title 14, section 1772.4, which includes economic efficiencies associated with grouping wells by location.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|----------|
| Minimum: | \$25,000 | <10,000 |
| Maximum: | \$40,000 | ≥10,000 |

Blanket Securities:

| | Amount | Criteria |
|----------|-------------|----------|
| Minimum: | \$200,000 | <50 |
| Maximum: | \$3,000,000 | >10,000 |

COLORADO

Regulatory Agency

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801
Denver, CO 80203-2136
(303) 894-2100
cogcc.state.co.us

Statutory or Regulatory Authority

Oil and Gas Conservation Act, C.R.S. Title 34-Article 60; 100-Series and 300-Series Rules updated as of February 14, 2019, and 700-Series Rules updated as of May 1, 2018.

Definitions

Orphan Well: A well for which no owner or operator can be found, or where such owner or operator is unwilling or unable to plug and abandon such well.

Site restoration: Reclamation means returning the land surface as nearly as practicable to its original condition. Remediation means reducing the concentration of a contaminant or contaminants in water or soil to compliance levels.

Idle Wells

Classification: Colorado classifies wells as “shut-in,” “inactive” (shut-in for 12 months), “suspended operations” (shut down before completion of drilling), “temporarily abandoned”, or “waiting on completion.”

Idle period allowed: None specified; however, mechanical integrity tests must be run, and increased financial assurance may be required.

Provisions for exceptions: An operator may submit an alternative plan for additional financial assurance.

Orphan wells

Documented orphan wells: 275

Estimated undocumented orphan wells: 200

Actions to identify and address undocumented orphan wells: Routine field inspections and complaint response.

Plugging Funds

COGCC has a separate budget appropriation for plugging, remediating, and reclaiming orphaned wells and sites.

Sources of funding:

- Civil penalties
- Settlements
- Appropriations
- Forfeited bonds
- Salvage
- Excise tax
- Production Assessment

Annual authorized expenditure target: Yes - varies with annual authorization.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Sites are prioritized based on risk factors including population density and urbanization; environmental factors; years in service; active spills; stormwater issues; noxious weeds; wildlife, livestock, or vegetation impacts; surface equipment; bradenhead pressure; mechanical integrity test data; and history of venting or leaking.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Certificate of Insurance
- Escrow Account
- Financial Statements
- Letter of Credit
- Liens
- Security Interest
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|---------------|
| Minimum: | \$10,000 | < 3,000' TMD. |
| Maximum: | \$20,000 | ≥ 3,000' TMD |

Blanket Securities:

| | Amount | Criteria |
|----------|-----------|-------------------|
| Minimum: | \$60,000 | <100 wells |
| Maximum: | \$100,000 | 100 or more wells |

IDAHO

Regulatory Agency

Idaho Department of Lands

300 N. 6th St., Suite 103

Boise, ID 83702

idl.idaho.gov

Statutory or Regulatory Authority

IDAPA 20.07.02.220, IDAPA 20.07.02.501

Definitions

Orphan Well: None.

Site restoration: None.

Idle Wells

Classification: Idaho utilizes the term “inactive well” for wells that are idle.

Idle period without approval: 24 months.

Idle period with approval: Three years; may be renewed.

Requirements for approval: Individual bond only; mechanical integrity testing.

Provisions for exceptions: Operator may request extension.

Orphan wells

Documented orphan wells: 0.

Estimated undocumented orphan wells: 0; however, 150 to 170 wells drilled prior to 2007 have not been assessed for potential remedial plugging.

Actions to identify and address undocumented orphan wells: Priority would be given to wells in the vicinity of populated areas and current oil and gas activity. No timetable nor enhanced funding are currently in place.

Plugging Funds

Idaho does not have a separate plugging fund for orphan wells.

Sources of funding:

- Permit fee
- Civil penalties
- Settlements
- Forfeited bonds

Annual authorized expenditure target: None.

Funds for emergency remedial actions: None.

Funds for site restoration: No.

Prioritization system for plugging: Priority would be given to wells in the vicinity of populated areas and current oil and gas activity.

Financial Assurance

Types of Financial Assurance Allowed:

- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|--------------------|------------------------------------|
| \$10,000 + \$1/ft. | Active wells - planned well length |
| \$10,000 + \$8/ft. | Inactive wells – well length |

Department may impose additional bonding if well poses high potential risk or liability.

Blanket Securities:

| Amount | Criteria |
|-------------------|---------------|
| Active wells only | |
| \$50,000 | < 10 wells |
| \$100,000 | 11 - 30 wells |
| \$150,000 | > 30 wells |

ILLINOIS

Regulatory Agency

Illinois Department of Natural Resources
Office of Oil and Gas Resource Management
One Natural Resources Way
Springfield, IL 62702-1271
illinois.gov

Statutory or Regulatory Authority

Production Wells – 62 Ill. Adm. Code Sec. 240.1130
(Amended at 42 Ill. Reg. 5811, eff. March 14, 2018)

Class II UIC– 62 Ill. Adm. Code Sec. 240.1132
(Amended at 42 Ill. Reg. 5811, eff. March 14, 2018)

Definitions

Orphan Well: A well has not produced and for which no fee has been paid or no bond coverage provided for two consecutive years; and no permittee or owner can be identified or located.

Site restoration: Removal and disposal of fluids; filling of pits and excavations; removal of drilling and production equipment.

Idle Wells

Classification: Idle wells must meet criteria for “temporary abandonment” in the Illinois Administrative Code.

Idle period without approval: 24 months.

Idle period with approval: Two years, with provisions for renewal; Five years for wells with specified bridge plugs and that are pressure-tested.

Requirements for approval: Must meet statutory requirements and be bonded.

Provisions for exceptions: Gas wells with no pipeline access are considered active if they are providing yearly shut-in payments.

Orphan wells

Documented orphan wells: 4,253

Estimated undocumented orphan wells: No estimate

Actions to identify and address undocumented orphan wells: Routine inspections and landowner reports.

Plugging Funds

Sources of funding:

- Annual fee
- Annual authorized expenditure target: Yes.
- Funds for emergency remedial actions: Yes.
- Funds for site restoration: Yes.
- Prioritization system for plugging: Wells are prioritized according to leaking fluids, proximity to water and hazard to the public and/or wildlife.

Financial Assurance

Types of Financial Assurance Allowed:

- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|---------|-------------|
| Minimum: | \$1,500 | <2,000 feet |
| Maximum: | \$3,000 | >2,000 feet |

Blanket Securities:

| | Amount | Criteria |
|----------|-----------|-----------|
| Minimum: | \$25,000 | <25 wells |
| Maximum: | \$100,000 | >50 wells |

INDIANA

Regulatory Agency

Department of Natural Resources
402 West Washington Street Room 293
Indianapolis, IN 46204
in.gov/dnr

Statutory or Regulatory Authority

312 IAC 29-33-4

Definitions

Orphan Well: Indiana defines orphan wells as units that are not producing and for which no financially responsible party exists.

Site restoration: Not specifically defined; however, site restoration requirements are described in the plugging rule.

Idle Wells

Classification: Indiana uses the term Temporarily Abandoned (TA) for wells that have received approval to remain in an idle status.

Idle period without approval: 60 days.

Idle period with approval: Up to five years; Extensions may be granted.

Requirements for approval: Written application that includes information on well owner, location, well construction, purpose for the request, and demonstration that the well will not pose a threat to USDW's.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 1,028

Estimated undocumented orphan wells: <100

Actions to identify and address undocumented orphan wells: Routine inspections and landowner reports.

Plugging Funds

Sources of funding:

- Annual fee
- Civil penalties
- Forfeited bonds

Annual authorized expenditure target: Yes.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Wells are prioritized according to leaking fluids, proximity to water and hazard to the public and/or wildlife.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash Deposit
- CD
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|----------|--|
| \$2,500 | Bond may be released if operator has two years of acceptable history and no outstanding violations. Blanket Securities: |
| Amount | Criteria |
| \$45,000 | Covers any number of wells. Bond may be released if operator has two years of acceptable history and no outstanding violations. |

KANSAS

Regulatory Agency

Kansas Corporation Commission

266 N. Main St., Ste. 220

Wichita, KS 67202-1513

kcc.ks.gov

Statutory or Regulatory Authority

K.A.R. 82- 3-111

Definitions

Orphan Well: Kansas uses the term “abandoned well:” any well that the commission has authority to plug, replug, or repair under the statute.

Site restoration: No state definition.

Idle Wells

Classification: Kansas uses the term “temporarily abandoned” for idle wells requiring regulatory approval.

Idle period without approval: 90 days.

Idle period with approval: One year; may be extended annually for up to 10 years.

Requirements for approval: Filing of application for TA status that includes data on well and operator, including shut-in date, casing fluid level, and verification of lease.

Provisions for exceptions: Commission may allow a well to be held idle more than 10 years if operator files application, which must be published and noticed; hearing may be held.

Orphan wells

Documented orphan wells: 5,709

Estimated undocumented orphan wells: N/A

Actions to identify and address undocumented orphan wells: Kansas actively inspects leases and properties for unknown abandoned wells and responds to complaints filed by the public.

Plugging Funds

Kansas has two funds to plug abandoned wells. The particular fund used depends on the spud date of the well.

Sources of funding:

- Permit fee
- Appropriations
- Forfeited bonds
- Salvage
- Production Assessment
- Other: Federal mineral royalties

Annual authorized expenditure target: Yes - varies based on the Federal Royalty Mineral Trust money received.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Wells are prioritized by the threat they pose to usable surface or ground water and public safety; they are grouped into four categories.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit
- Surety and/or Performance Bonds
- Other Commission Approved Financial Assurance

Single Well Securities:

| Amount | Criteria |
|--------------------------------------|--|
| \$0.75/foot, or \$7,500, or \$15,000 | Multiplied by aggregate depth for all wells or a set amount based on well depth. |

Blanket Securities:

| | Amount | Criteria |
|----------|----------|----------|
| Minimum: | \$7,500 | Varies. |
| Maximum: | \$45,000 | Varies. |

KENTUCKY

Regulatory Agency

Department of Natural Resources

Division of Oil and Gas

300 Sower Blvd.

Frankfort, KY 40601

ky.gov

Statutory or Regulatory Authority

KRS 353.560, KRS 353.590, 805 KAR 1:060

Definitions

Orphan Well: An oil or gas well determined to be improperly abandoned or improperly closed, and that (a) predates 1960 permitting requirements or has no known history of permitting or bonding; and (b) for which the owner or operator is unknown or insolvent.

Site restoration: None.

Idle Wells

Classification: Kentucky uses the term “temporarily abandoned” for a well that are not in use. The operator must apply for a TA permit or the well could be classified as improperly abandoned.

Idle period without approval: No set time period; a well to be plugged “after the well is no longer used for the purpose for which it was drilled or converted.”

Idle period with approval: A temporary abandonment permit may be issued for up to two years and may be renewed.

Requirements for approval: Submit TA application, field inspection to confirm well is maintained and properly capped to prevent waste or leakage, and then receive approval.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 13,266

Estimated undocumented orphan wells: 5,000

Actions to identify and address undocumented orphan wells: Field inspectors identify orphan wells in daily well inspections and in response to public reports.

Plugging Funds

Sources of funding:

- Forfeited bonds

Annual authorized expenditure target: None.

Funds for emergency remedial actions: Kentucky has a separate fund that may be used to address imminent threats to human health, safety, or the environment.

Funds for site restoration: Yes.

Prioritization system for plugging: Rating system considers active leaks, safety risks, environmental damage, wellhead pressure, etc.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|-------------------|----------|
| \$2/ drilled foot | |

Blanket Securities:

| Amount | Criteria |
|-----------|-------------------|
| \$20,000 | 1 to 25 wells |
| \$50,000 | 26 to 100 wells |
| \$200,000 | 101 to 500 wells |
| \$300,000 | 501 to 1000 wells |

LOUISIANA

Regulatory Agency

Department of Natural Resources
PO Box 94275
Baton Rouge, LA 70804-9275
dnr.louisiana.gov

Statutory or Regulatory Authority

R.S. 43:XIX:101 and 137

Definitions

Orphan Well: Orphaned site means a site which has no continued useful purpose for oil or gas exploration, production, or development and has been declared to be an orphaned site by the assistant secretary.

Idle Wells

Classification: Louisiana classifies wells as “shut-in” (status designated by operator to describe well condition), “inactive” (no reported production, or use for more than 6 months), or “temporarily abandoned” (all cement plugs set except for the top plug).

Idle period allowed: Inactive wells with future production utility must be plugged within five years of becoming inactive. No state program for idle injection or disposal wells.

Requirements for approval: Provisions for exceptions: Inactivity may be extended if operator pays annual assessment of \$250 and provides financial security or the well is on an approved production program.

Orphan wells

Documented orphan wells: 3,966

Estimated undocumented orphan wells: No estimate, but undocumented wellbores are occasionally discovered during inspections.

Actions to identify and address undocumented orphan wells: Undocumented wells are discovered during inspections.

Plugging Funds

Sources of funding:

Other: Production fee on each barrel of oil and condensate and MCF of gas.

Annual authorized expenditure target: Yes - goal is set on fiscal year basis.

Funds for emergency remedial actions: Monies can be expended where immediate action is required to prevent damage to the environment or a serious threat to life or safety, after 24 hours notification the operator.

Funds for site restoration: Yes.

Prioritization system for plugging: Prioritization is based on points assigned for wellhead damage, leakage, hazard to navigation, and other factors. Wells are categorized as urgent, high, moderate, or low priority.

Financial Assurance

Types of Financial Assurance Allowed:

- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|------|-----------|---------------------------|
| Min. | \$2/foot | <3000 ft., land location. |
| Max. | \$12/foot | Offshore |

Blanket Securities:

| | Amount | Criteria |
|------|-------------|---------------------------|
| Min. | \$50,000 | <10 wells, land location. |
| Max. | \$5,000,000 | >100 wells, offshore |

Louisiana has three categories for wells—land, inland water, and offshore—each with its own security requirements.

MARYLAND

Regulatory Agency

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230
mde.maryland.gov

Statutory or Regulatory Authority

None.

Definitions

Orphan Well: No state definition.

Site restoration: No state definition.

Idle Wells

Classification: Maryland does not have any provisions for idle wells.

Orphan wells

Documented orphan wells: 0

Estimated undocumented orphan wells: No estimate.

Actions to identify and address undocumented orphan wells: None.

Plugging Funds

Maryland does not have any identified orphan wells and does not have a plugging fund.

Funds for emergency remedial actions: None.

Funds for site restoration: None.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|-----------|----------|
| \$100,000 | |

Blanket Securities:

| Amount | Criteria |
|-----------|----------|
| \$100,000 | |

MICHIGAN

Regulatory Agency

Oil, Gas, and Minerals Division

Environment, Great Lakes, and Energy Department
PO Box 30256
Lansing, MI 48909-7756
michigan.gov/egle

Statutory or Regulatory Authority

Parts 615 and 616 of Natural Resources and Environmental Protection Act No. 451 of the Public Acts of 1994, as amended

Definitions

Orphan Well: An abandoned or improperly closed well for which no owner or operator is known, or for which all owners or operators are insolvent.

Site restoration: Includes remediation of contaminated soils and ground water.

Idle Wells

Classification: Michigan classifies idle wells as “Shut-in” (an action by a permittee to close down a well), “Temporary Abandoned” (approved idle status), or “suspension of oil and gas operations” (action by the agency ordering the permittee to cease operations).

Idle period without approval: 12 months.

Idle period with approval: Initial term is one year except for a market connection which is five years. Additional time may be granted on a yearly basis.

Requirements for approval: Permittee must provide justification and demonstrate that TA will not risk the environment or public health and safety or cause waste. No more than 10 percent of permittee’s wells may be TA.

Provisions for exceptions: TA status can be extended with supplemental bonding, MITs, down-hole plugs, additional pressure monitoring, etc.

Orphan wells

Documented orphan wells: 98

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: Response to reports of leaking wells.

Plugging Funds

Sources of funding:

- Civil penalties
- Forfeited bonds
- Production Assessment
- Appropriations

Annual authorized expenditure target:

~\$1,000,000.

Funds for emergency remedial actions: Michigan can use Orphan Well funds to correct conditions that are an imminent threat to public safety even if the well is not an orphan.

Funds for site restoration: Yes.

Prioritization system for plugging: Prioritization is based on risk to public health and safety and the environment. Factors are fluid(s) leaking, H₂S level, population and institutional sites, environmental impact, age and construction of well, extent of contamination, etc.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Financial Statement
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|----------|
| Minimum: | \$20,000 | Depth |
| Maximum: | \$60,000 | |

Blanket Securities:

| | Amount | Criteria |
|----------|-----------|----------|
| Minimum: | \$100,000 | |
| Maximum: | \$250,000 | |

MISSISSIPPI

Regulatory Agency

Mississippi Oil and Gas Board
500 Greymont Avenue, Suite E
Jackson, MS 39202
ogb.state.ms.us

Statutory or Regulatory Authority

Statewide rules 28 and 53.

Definitions

Orphan Well: Any oil or gas well, including Class II wells, which has not been properly plugged according to requirements and for which a responsible party cannot be located.

Idle Wells

Classification: Producing wells: Closed in. SWD and EOR wells: standby.

Idle period without approval: Production well: one year. Injection/disposal well: indefinite.

Idle period with approval: Indefinite.

Requirements for approval: Must comply with rules; financial assurance must be maintained; injection/disposal wells must pass MIT once a year.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 18

Estimated undocumented orphan wells: 6

Actions to identify and address undocumented orphan wells: None.

Plugging Funds

Sources of funding:

- Idle well fee
- Civil penalties
- Appropriations
- Forfeited bonds

Annual authorized expenditure target: None.

Funds for emergency remedial actions: No.

Funds for site restoration: Yes.

Prioritization system for plugging: Wells are prioritized, when necessary, based on danger to human health and the environment.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|----------|
| Minimum: | \$20,000 | <10,000 |
| Maximum: | \$60,000 | >16,001 |

Blanket Securities:

| Amount | Criteria |
|-----------|----------|
| \$100,000 | |

MONTANA

Regulatory Agency

Board of Oil and Gas Conservation

2535 St. John's Avenue
Billings, MT 59102
dnrc.mt.gov

Statutory or Regulatory Authority

ARM 36.22.1303 Well Plugging Requirement
ARM 36.22.1240 Report of Well Status Change
ARM 36.22.1242 Reports by Producers

Definitions

Orphan Well: No state definition.

Site restoration: Statute refers to original grade and productive capability.

Idle Wells

Classification: No specific classification for idle wells. Monthly injection or production reports are utilized for idle well analysis.

Idle period without approval: One year after a well is no longer useful for its intended purpose.

Idle period with approval: Not specified.

Requirements for approval: Addressed case-by-case based on whether well is pre-regulatory, within boundaries of an active EOR unit, and legal right to utilize the well.

Provisions for exceptions: May remain idle if authorized by the agency.

Orphan wells

Documented orphan wells: 231

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: File reviews, field inspections.

Plugging Funds

Sources of funding:

- Forfeited bonds
- Production Assessment

Annual authorized expenditure target: None.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Ranking based on well status, location, and environmental risk.

Financial Assurance

Types of Financial Assurance Allowed:

- CD
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|----------|
| Minimum: | \$1,500 | <2,000 |
| Maximum: | \$10,000 | >3,500 |

Blanket Securities:

| Amount | Criteria |
|----------|----------|
| \$50,000 | |

NEBRASKA

Regulatory Agency

Nebraska Oil and Gas Conservation
PO Box 399
Sidney, NE 69162
nogcc.ne.gov

Statutory or Regulatory Authority

Rules, Chapter 3-040

Definitions

Orphan Well: No state definition.

Site restoration: No state definition.

Idle Wells

Classification: Nebraska uses the term “inactive well,” which can be classified as “shut-in” (perforations open to the wellbore) or “temporarily abandoned” (perforations beneath a mechanical device which are not in communication with the wellbore).

Idle period without approval: One year.

Idle period with approval: One year, with one-year extensions, until well has no further use.

Requirements for approval: After one year, the operator may submit static fluid levels, wellhead pressures, general statement of future use; after two years, fee of \$200/well/year is required; wells must remain bonded.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 75

Estimated undocumented orphan wells: Not reported.

Actions to identify and address undocumented orphan wells: No apparent need.

Plugging Funds

Sources of funding:

- Idle well fee
- Forfeited bonds
- Salvage

Annual authorized expenditure target: None.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Based on endangerment to water, land or air.

Financial Assurance

Types of Financial Assurance Allowed:

- CD
- Surety and/or Performance Bonds

Single Well Securities:

| | |
|----------|----------|
| Amount | Criteria |
| \$10,000 | |

Blanket Securities:

| | |
|-----------|----------|
| Amount | Criteria |
| \$100,000 | |

NEVADA

Regulatory Agency

Nevada Division of Minerals
Commission on Mineral Resources
400 West King Street, Suite 106
Carson City, NV 89703-4212
minerals.nv.gov

Statutory or Regulatory Authority

NAC 522.430

Definitions

Orphan Well: No state definition.

Site restoration: No state definition.

Idle Wells

Classification: Nevada classifies idle wells as “shut-in.”

Idle period without approval: One year.

Idle period with approval: One year.

Requirements for approval: Well must be in compliance, with application fee paid and bond maintained.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 6 – all BLM wells.

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: Field observations and air photo reviews.

Plugging Funds

Nevada does not have a plugging fund.

Funds for emergency remedial actions: No.

Funds for site restoration: None.

Prioritization system for plugging: Any orphan well will be addressed with the operator and landowners the case arises.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|----------|---|
| Minimum: | \$10,000 | Can assess bonding over \$10,000 if needed. |
| Maximum: | No max. | |

Blanket Securities:

| | Amount | Criteria |
|----------|----------|---|
| Minimum: | \$50,000 | Can assess bonding over \$50,000 if needed. |
| Maximum: | No max. | |

NEW MEXICO

Regulatory Agency

New Mexico Oil Conservation
1220 South St. Francis Drive
Santa Fe, NM 87505
emnrd.state.nm.us

Statutory or Regulatory Authority

19.15.25 NMAC

Definitions

Orphan Well: Not statutorily defined. Orphan well is recognized as a well without a financially responsible operator.

Idle Wells

Classification: New Mexico classifies idle wells as “temporary abandonment” (well is inactive), “approved temporary abandonment” (well is inactive but operator has demonstrated it is mechanically and physically sound), and “inactive” (well is not being used for beneficial purpose).

Idle period without approval: Production wells: one year plus 90 days. Disposal wells: one year. Injection wells: associated EOR project inactive for one year.

Idle period with approval: Production wells: Up to five years; may be extended for additional five-year periods.

Requirements for approval: Production wells: Successful MIT for TA extensions. Operators are not allowed to have more than a specified portion of their wells inactive unless they enter into a compliance order. Additional bonding may be required.

Provisions for exceptions: If an operator has more wells out of compliance than allowed by rule they can enter into a compliance order that gives them six months to bring a specific number of wells back into compliance.

Orphan wells

Documented orphan wells: 115

Estimated undocumented orphan wells: N/A

Actions to identify and address undocumented orphan wells: None.

Plugging Funds

Sources of funding:

- Forfeited bonds
- Salvage
- Production Assessment
- Other: Federal Grant to plug federal orphan wells.

Annual authorized expenditure target: None.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Violation letter issued to operator whose wells have been inactive for more than one year plus 90 days. If operator does not bring wells into compliance, they are deemed to be orphaned and OCD is authorized to plug the wells.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit
- Security Interest
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|---------------------|----------|
| \$25,000 + \$2/foot | |

Blanket Securities:

| Amount | Criteria |
|-----------|----------------|
| \$50,000 | 1 - 10 wells |
| \$75,000 | 11 - 50 wells |
| \$125,000 | 51 - 100 wells |
| \$250,000 | > 100 wells. |

NEW YORK

Regulatory Agency

Department of Environmental Conservation

Division of Mineral Resources

625 Broadway, 3rd Floor

Albany, NY 12233-6500

dec.ny.gov

Statutory or Regulatory Authority

Environmental Conservation Law, Article 23 and Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR 550-559)

Definitions

Idle Well: Not defined in statute or regulation; see “Idle Wells” below for working definition.

Orphan Well: Working definition (not in statute or regulation): unplugged, abandoned wells that have not been operated and maintained in accordance with prevailing statute and regulation, and for which no existing owner can be determined.

Site restoration: Filling of pits and excavations, recontouring the surface to a condition similar to the adjacent terrain and without undue elevation.

Idle Wells

Classification: New York classifies idle wells as “shut in” (understood as closing in of a well that was previously produced or is capable of production without plugging and abandonment), “temporarily abandoned” (shutting down or closing in of a well not previously produced without plugging and abandonment), and “orphaned” (an unplugged well that has been abandoned by its original owners).

Idle period without approval: One year.

Idle period with approval: One year for shut-in, with provision for extensions. Ninety days for temporary abandonment.

Requirements for approval: Demonstration of sufficient good cause from the operator.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 2,000

Estimated undocumented orphan wells: 34,000

Actions to identify and address undocumented orphan wells: Systematic inspections of known and suspected locations; research, and collaboration on the use of drones with magnetometers; and interaction with other state regulators.

Plugging Funds

Sources of funding:

- Permit fees
- Settlements
- Appropriations

Annual authorized expenditure target: None.

Funds for emergency remedial actions: No.

Funds for site restoration: Yes.

Prioritization system for plugging: Systematic inspections where orphaned wells are known or suspected to exist; wells are scored using the IOGCC scoring methodology and scores are used to guide prioritization.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letters of Credit
- Well Plugging and Surface Restoration Bonds

Single Well Securities:

| | Amount | Criteria |
|-------|--------------|------------------|
| Min.: | \$2,500/well | TMD* < 2,500 ft. |
| Max.: | Based on AFE | TMD > 6,000 ft. |

Blanket Securities:

| Amount | Criteria |
|--------------------|--|
| \$25,000-\$100,000 | TMD < 2,500 ft., based on number of wells |
| \$40,000-\$100,000 | TMD 2,500 – 6000 ft., based on number of wells |
| \$2,000,000 | TMD >6000 ft. |

NORTH DAKOTA

Regulatory Agency

Industrial Commission

600 East Boulevard Avenue, Department
Bismarck, ND 58505-0840
dmr.nd.gov

Statutory or Regulatory Authority

North Dakota Century Code 38-08-04, North
Dakota Administrative Code 43-02-03-55

Definitions

Orphan Well: No state definition.

Site restoration: No state definition.

Idle Wells

Classification: North Dakota classifies idle wells as “inactive” (reported no production or injection for three months), “abandoned” (reported no production or injection for 12 consecutive months), “not completed” (drilled to TD but not completed for 12 months), and “temporary abandoned” (wellbore isolated from target formation, with MIT).

Idle period without approval: 12 months.

Idle period with approval: One-year, unlimited number of extensions.

Requirements for approval: MIT every five years. Pressure test, bond log, pressure gauges for “not completed.” Increased bond for “abandoned.”

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 0

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: None.

Plugging Funds

Sources of funding:

- Permit fee
- Civil penalties
- Settlements
- Appropriations
- Forfeited bonds
- Salvage
- Production Assessment

Annual authorized expenditure target: Yes.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: North Dakota prioritizes wells according to leakage of H₂S, natural gas or oil; hazard to navigation, environment, or public health; well condition; presence of hazardous materials; and proximity to other sensitive features.

Financial Assurance

Types of Financial Assurance Allowed:

- CD
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|-----------|--|
| Minimum: | \$20,000 | Smaller bond may be approved for wells |
| Maximum: | \$100,000 | < 2,000 feet TD |

Blanket Securities:

| Amount | Criteria |
|-----------|---|
| \$100,000 | Covers only ≤ 6 unplugged dry holes, plugged wells with site not reclaimed, and/or abandoned wells. |

OHIO

Regulatory Agency

Ohio Department of Natural Resources
Division of Oil and Gas Resources Management
2045 Morse Road, Buildings F
Columbus, OH 43229-6693
ohiodnr.gov

Statutory or Regulatory Authority

Ohio Revised Code 1509.062 (idle well)
Ohio Revised Code 1509.071 (orphan well)

Definitions

Orphan Well: Ohio uses the term “Idle and orphaned well”: a well for which a bond has been forfeited or an abandoned well for which no money is available to plug the well.

Site restoration: No state definition.

Idle Wells

Classification: Referred to as nonproducing or idle. Temporary inactive status is Ohio’s idle well regulatory program.

Idle period without approval: Two years.

Idle period with approval: One year; may be renewed.

Requirements for approval: Demonstration of future utility; plan to utilize well within a reasonable period of time; demonstration that the well poses no threat to health or safety, property, or the environment.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 910

Estimated undocumented orphan wells: 35,133

Actions to identify and address undocumented orphan wells: The Division purchased a magnetometer to attach to a drone for surveying property to locate orphan wells.

Plugging Funds

Sources of funding:

- Annual fee
- Idle well fee
- Permit fee
- Civil penalties
- Settlements
- Appropriations
- Operating budget
- Forfeited bonds
- Salvage
- Production Assessment

Annual authorized expenditure target: Yes.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Wells are classified as high, medium, and low priority and given an individual score based on human health, safety, and environmental risk factors on a weighted basis

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Financial Statements
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | |
|---------|----------|
| Amount | Criteria |
| \$5,000 | |

Blanket Securities:

| | |
|----------|----------|
| Amount | Criteria |
| \$15,000 | |

OKLAHOMA

Regulatory Agency

Oklahoma Corporation Commission

PO Box 52000

Oklahoma City, OK 73152-2000

occeweb.com

Statutory or Regulatory Authority

Oklahoma Administrative Code Title 165:
Corporation Commission, Chapter 10: Oil and Gas
Conservation

Definitions

No substantial difference.

Idle Wells

Classification: Shut in, temporarily abandoned, or inactive.

Idle period without approval: Gas: indefinite.
Oil: one year. Injection/disposal: one year for commercial, up to five years for non-commercial.

Idle period with approval: Gas: indefinite. Oil: one to five years. Injection/disposal: indefinite.

Requirements for approval: Compliance with regulations. Minimum surety of \$25,000.00, which can be increased.

Provisions for exceptions: Operator may petition the Commission.

Orphan wells

Documented orphan wells: 1,372.

Estimated undocumented orphan wells: 25,000 to 100,000.

Actions to identify and address undocumented orphan wells: Ongoing record search and site inspections. Oklahoma is developing drone program and preparing to perform magnetometer surveys of areas where there have been numerous unknown wells located in the past.

Plugging Funds

Sources of funding:

- Excise tax
- Production Assessment

Annual authorized expenditure target: To be maintained at \$5,000,000 balance.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes. Oklahoma Energy Resources Board uses voluntary contributions from the industry.

Prioritization system for plugging: Based on current conditions at well and proximity to homes and businesses. Categorized one (emergency) to five (no threat to public or environment).

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| | Amount | Criteria |
|----------|-----------|--|
| Minimum: | \$0 | Rate established by |
| Maximum: | \$100,000 | licensed plugger if operator seeks <\$25,000 |

Blanket Securities:

| | Amount | Criteria |
|----------|----------|---------------------|
| Minimum: | \$25,000 | Net worth for |
| Maximum: | \$50,000 | financial statement |

PENNSYLVANIA

Regulatory Agency

Department of Environmental Protection

PO Box 8765

Harrisburg, PA 17105-8765

(717) 772-2199

dep.pa.gov

Statutory or Regulatory Authority

58 Pa. C.S. § 3214

Definitions

Orphan Well: Any well abandoned prior to effective date of the Oil and Gas Act (4/18/1985) that the current landowner or lessee never operated or affected and has not yielded the current owner, operator, or lessee any economic benefit except as a landowner or recipient of royalty interest.

Site restoration: No state definition; but regulations address expectations for site restoration.

Idle Wells

Classification: Pennsylvania classifies idle wells as “abandoned” (well has not produced gas or oil for more than one year) and “inactive” (status that may be granted if well is mechanically sound and intended to be put back into production).

Idle period without approval: One year.

Idle period with approval: Five years; can be renewed indefinitely thereafter on annual basis.

Requirements for approval: Demonstration that the condition of the well will prevent damage to the producing zone; protect fresh water, other natural resources, health and safety, property, and the environment; and stop vertical fluid migration in wellbore. Well must have future utility and a bond.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 8,703

Estimated undocumented orphan wells: 100,000 to 560,000

Actions to identify and address undocumented orphan wells: Statutes require abandoned/orphan wells to be reported; they are investigated as reports are filed by third parties.

Plugging Funds

Sources of funding:

- Permit fee

Annual authorized expenditure target: None.

Funds for emergency remedial actions: None.

Funds for site restoration: Yes.

Prioritization system for plugging: Based on scoring system that ranks the environmental and safety concerns.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|----------|--------------------------------------|
| \$2,500 | Conventional well drilled after 1985 |
| \$10,000 | Unconventional well |
| None | Well drilled before 1985 |

Blanket Securities:

| Amount | Criteria |
|----------|--|
| \$25,000 | Covers drilling, plugging, water supply, restoration |

SOUTH DAKOTA

Regulatory Agency

Department of Environment and Natural Resources

2050 West Main, Suite One
Rapid City, SD 57702
denr.sd.gov

Statutory or Regulatory Authority

ARSD 74:12:03:03

Definitions

Orphan Well: No state definition.

Site restoration: No substantial difference.

Idle Wells

Classification: South Dakota uses the terms “temporarily abandoned” (wells that have not produced or injected for six or more months) and “shut-in” (wells idle for a period of six months or less).

Idle period without approval: Six months.

Idle period with approval: Five years, with extensions allowed.

Requirements for approval: Successful MIT; must have production casing.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 0

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: None.

Plugging Funds

South Dakota does not have a plugging fund

Funds for emergency remedial actions: No.

Funds for site restoration: No.

Prioritization system for plugging: None.

Financial Assurance

Types of Financial Assurance Allowed:

- CD
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|----------|---------------|
| \$10,000 | <5,500 ft. TD |
| \$50,000 | >5,500 ft. TD |

Blanket Securities:

| Amount | Criteria |
|-----------|---------------|
| \$30,000 | <5,500 ft. TD |
| \$100,000 | >5,500 ft. TD |

TEXAS

Regulatory Agency

Railroad Commission of Texas

PO Box 12967
Austin, TX 78711
rrc.state.tx.us

Statutory or Regulatory Authority

Texas Natural Resources Code
16 Texas Administrative Code

Definitions

Orphan Well: No substantial difference.

Site restoration: No substantial difference.

Idle Wells

Classification: Texas uses the term “Inactive Well”: an unplugged well that has been spudded or has been equipped with cemented casing and that has no reported production, disposal, injection, or other permitted activity for a period of greater than 12 months.

Idle period without approval: 12 months.

Idle period with approval: Indefinite: approval must be renewed annually.

Requirements for approval: Operator must comply with rules and regulations and have a good faith claim to continue to operate the well. Additional testing or financial assurance is required.

Provisions for exceptions: None.

Orphan wells

Documented Orphan wells: 6,285

Estimated undocumented orphan wells: No estimate

Actions to identify and address undocumented orphan wells: Undocumented orphan wells are located through inspection of leases with identified orphan wells and through complaints filed by the public.

Plugging Funds

Sources of funding:

- Idle well fee
- Permit fee
- Forfeited bonds
- Salvage
- Production Assessment

Annual authorized expenditure target: None.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Prioritization system considers well completion, wellbore conditions, well location with respect to sensitive areas, and various environment, safety, or economic concerns. Wells posing greatest threat to public safety and the environment are plugged first.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|------------|----------|
| \$2/ft. TD | |

Blanket Securities:

| | Amount | Criteria |
|----------|-----------|------------|
| Minimum: | \$25,000 | 1-10 wells |
| Maximum: | \$250,000 | >100 wells |

UTAH

Regulatory Agency

Utah Department of Natural Resources
PO Box 145801
Salt Lake City, UT 84114-5801
naturalresources.utah.gov

Statutory or Regulatory Authority

Utah Administrative Code R649-3-36

Definitions

Orphan Well: Utah uses the term “abandoned” to describe a well for which there is no reclamation surety or the forfeited surety is insufficient for plugging and reclamation.

Site restoration: See Utah Administrative Code Rule R649-3-34.

Idle Wells

Classification: Utah uses the terms “Shut-in” (well that is completed, capable of production in paying quantities, and is not being operated) and “temporarily abandoned” (well that is completed, not capable of production in paying quantities, and not being operated).

Idle period without approval: 12 months.

Idle period with approval: 12 months; may be extended up to total of five years, with additional extension upon showing of good cause.

Requirements for approval: Operator must provide reasons for shut-in or TA, length of time, data showing the well has integrity, and bond in amount of actual plugging and restoration costs.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 33

Estimated undocumented orphan wells: No estimate

Actions to identify and address undocumented orphan wells: Utah inspects and investigates areas of historic oil and gas activity and look at old reports and will also be using drone technology.

Plugging Funds

Sources of funding:

- Excise tax

Annual authorized expenditure target: Yes.

Funds for emergency remedial actions: No.

Funds for site restoration: Yes.

Prioritization system for plugging: Yes.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|----------|-------------------|
| \$1,500 | <1,000, |
| \$15,000 | 1,001’ to 3,000’ |
| \$30,000 | 3,001’ to 10,000’ |
| \$60,000 | >10,000 |

Blanket Securities:

| Amount | Criteria |
|----------|----------|
| \$15,000 | <1,000’ |
| \$60,000 | >1,000’ |

VIRGINIA

Regulatory Agency

Department of Mines, Minerals and Energy
Division of Gas and Oil
PO Drawer 159
Lebanon, VA 24266
dmme.virginia.gov

Statutory or Regulatory Authority

Virginia Gas and Oil Regulations 4VAC25-150-390.

Definitions

Orphan Well: A well abandoned prior to July 1, 1950, or a well for which no records exist concerning drilling, plugging, or abandonment.

Site restoration: All activity required to return a permitted site to other use after gas, oil, or geophysical operations have ended, as approved in the operations plan for the permitted site.

Idle Wells

Classification: Only classification Virginia has for nonproducing wells is “shut-in.”

Idle period without approval: Three years.

Idle period with approval: Indefinite.

Requirements for approval: Unspecified.

Provisions for exceptions: None.

Orphan wells

Documented Orphan wells: 10

Estimated undocumented orphan wells: <10

Actions to identify and address undocumented orphan wells: See website.

Plugging Funds

Sources of funding:

Permit fee - \$200 per new well permit.

Annual authorized expenditure target: None.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Prioritization is based on an assessment of risk to public safety and environmental impact.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|-----------------------|----------|
| \$10,000 + \$2/ft. TD | |

Blanket Securities:

| | Amount | Criteria |
|----------|-----------|------------|
| Minimum: | \$25,000 | 1-10 wells |
| Maximum: | \$200,000 | >200 wells |

WEST VIRGINIA

Regulatory Agency

WV Department of Environmental Protection
Office of Oil and Gas
601 57th Street, Southeast
Charleston, WV 25304
dep.wv.gov

Statutory or Regulatory Authority

W. Va. Code Section 22-6-19, 35CSR5

Definitions

Orphan Well: No state definition.

Site restoration: West Virginia uses the term “reclamation,” which includes recontouring and revegetating the site.

Idle Wells

Classification: West Virginia uses the term “abandoned” (a well completed as a dry hole or is not in use for twelve consecutive months) and “inactive”.

Idle period without approval: 12 months.

Idle period with approval: Up to five years: may be extended.

Requirements for approval: Operator must furnish satisfactory proof that there is a bona fide future use for the well. Condition of the well must prevent waste and pollution of waters of the state.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 4,646

Estimated undocumented orphan wells: 9,000

Actions to identify and address undocumented orphan wells: Inspectors document them as they are discovered. Operators may identify and plug wells in the Area of Review for horizontal wells.

Plugging Funds

Sources of funding:

- Permit fee
- Forfeited bonds

Annual authorized expenditure target: \$500,000.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Wells are classified by actual or potential threats to human health and safety or the environment.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|----------|------------------|
| \$5,000 | Vertical well |
| \$50,000 | Horizontal wells |

Blanket Securities:

| Amount | Criteria |
|-----------|------------------|
| \$50,000 | Vertical well |
| \$250,000 | Horizontal wells |

WYOMING

Regulatory Agency

Oil and Gas Conservation Commission

PO Box 2640
Casper, WY 82602
wogcc.wyo.gov

Statutory or Regulatory Authority

Chapter 3, Sections 4 and 22

Definitions

Orphan Well: No substantial difference.

Site restoration: No substantial difference.

Idle Wells

Classification: Wyoming uses the terms “shut-in” (wellbore not isolated from target formation and that can be restored by opening valves or energizing equipment) and “temporarily abandoned” (wellbore isolated from target formation and the surface).

Idle period without approval: Two years.

Idle period with approval: Indefinite.

Requirements for approval: MIT required initially and every five years. Financial Assurance of \$10/ft True Vertical Depth (TVD).

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 3,083

Estimated undocumented orphan wells: N/A

Actions to identify and address undocumented orphan wells: N/A

Plugging Funds

Wyoming does not have a separate plugging fund.

Sources of funding:

- Excise tax

Funds for emergency remedial actions: N/A.

Funds for site restoration: N/A.

Prioritization system for plugging: Evaluated for risk to human health and the environment, then done by geographic area.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- CD
- Letter of Credit
- Surety and/or Performance Bonds

Single Well Securities:

| Amount | Criteria |
|----------|----------|
| \$10/ft. | TVD |

Blanket Securities:

| Amount | Criteria |
|-----------|---|
| \$100,000 | Additional amount may be required for dormant wells or pits |

ALBERTA

Regulatory Agency

Alberta Energy Regulator

Suite 1000, 250 – 5th Street SW
Calgary, Alberta T2P 0R4
aer.ca

AER assigns care and custody of orphan wells to the Alberta Orphan Well Association (OWA) which is responsible to conduct closure work.

Statutory or Regulatory Authority

Directive 013: Suspension Requirements for Wells

Definitions

Orphan Well: A well, facility, or pipeline where the licensee becomes insolvent or defunct.

Site restoration: Alberta uses the term “reclamation,” which means: removal or decontamination of equipment or structures; decontamination of land or water; stabilization and contouring of the surface; and any other requirement specified in regulations.

Idle Wells

Classification: Alberta classifies idle wells as “inactive” (no longer active and has not been properly plugged and abandoned) and “suspended” (meeting requirements to leave inactive in perpetuity).

Idle period without approval: 18 months for high risk wells and 24 months for low and medium and low risk wells, based on primary purpose or production fluid type.

Idle period with approval: In perpetuity when it meets suspension requirements

Requirements for approval: No requirements specific to idle wells.

Provisions for exceptions: Observation wells, geothermal wells, training wells, and farm wells.

Orphan wells

Documented orphan wells: 3,127

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: None.

Plugging Funds

Alberta has a plugging fund, established in 2002, and a separate funding source for actions at wells that are not orphans.

Sources of funding:

- Annual fee

Annual authorized expenditure target: Yes.

Prioritization system for plugging: The OWA takes a risk informed approach to assessing its inventory and determining the priority actions to ensure public safety and environmental protection while efficiently closing the orphan inventory.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: The OWA takes a risk informed approach to ensure public safety and environmental protection.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit

Single Well Securities:

None.

Blanket Securities:

Blanket financial assurance may be required from an operator based on corporate financial health. The amount is specific to the company and situation.

BRITISH COLUMBIA

Regulatory Agency

Oil and Gas Commission

PO Box 9331 Stn Prov, Govt.,
Victoria, B.C., V8W 9N3
bcogc.ca

Statutory or Regulatory Authority

Drilling and Production: B.C. Reg 282/2010

Dormancy and Shutdown B.C. Reg. 112/2019

Definitions

Idle Well: No regulatory definition in BC.

Orphan Well: A well and associated operating area where the operator is insolvent or cannot be identified or located.

Idle Wells

Classification: Inactive Well: a well that has had no activity for 12 consecutive months.

Suspended Well: An inactive well that has been suspended to ensure long-term integrity.

Dormant Well: A well that does not meet a threshold of activity in the last five years.

Idle period without approval: One year.

Idle period with approval: Eight to 17 years, depending on when the well becomes dormant.

Requirements for approval: Operator must ensure ongoing well integrity and maintain records. Depending on well type, may require installation of temporary or permanent plugs and pressure testing.

Provisions for exceptions: Case-by-case review if well can be demonstrated to be economic.

Orphan wells

Documented orphan wells: 326

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: A study was conducted in 2011 and 2014 for identification of wells drilled prior to legislative frameworks. Aerial photo analysis and field visits were conducted to identify wells documented in historical records. Two wells were identified and designated as orphans.

Plugging Funds

Sources of funding:

- OGC production levy
- Collections from responsible parties
- Forfeited security deposits
- Salvage
- Orphan Liability Levy: Annual levy on permittees based on share of total liability in the province.

Annual authorized expenditure target: \$15 million

Funds for emergency remedial actions:

Commission can expend money to address immediate environmental concerns and then charge costs to the responsible parties.

Funds for site restoration: Yes.

Prioritization system for plugging: Wells are prioritized based on risk ranking, H₂S content, and well integrity.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit

Single Well Securities:

None.

Blanket Securities:

The Commission calculates financial assurance required for each operator based on types/depths/locations of all its wells, and security is held for the entire portfolio.

NORTHWEST TERRITORIES

Regulatory Agency

Office of the Regulator of Oil and Gas Operations (OROGO)

orogo.gov.nt.ca

Statutory or Regulatory Authority

Oil and Gas Operations Act S.N.W.T. 2014, c.14

Definitions

Orphan Well: No provincial definition.

Site restoration: Land and Water Boards.

Idle Wells

Classification: Well Suspension and Abandonment Guidelines and Interpretation Notes refer to a status of “no production / injection / disposal” or “no use of the well for its original intended purpose.”

Idle period without approval: Exploratory wells must be suspended immediately after completion.

Production wells must be suspended after two years of inactivity.

Idle period with approval: Six years.

Requirements for approval: A plan for the suspension must be provided to OROGO within one year of the anniversary, (i.e., one year prior to the deadline for suspension. “Suspension” requires two independent and tested well barriers. Financial assurance is required.)

Provisions for exceptions: If flow testing other than through a dual barrier configuration is proposed by the operator, then the operator must propose a time frame for suspension when applying to drill the well.

Orphan wells

Documented orphan wells: 0

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: Northwest Territories has no undocumented orphan wells.

Plugging Funds

Northwest Territories does not have a plugging fund.

Funds for emergency remedial actions: No.

Funds for site restoration: No.

Financial Assurance

Types of Financial Assurance Allowed:

- Proof of Financial Responsibility associated with each Operations Authorization. Covers only petroleum spills, surface damages, or cleanup costs. Securities to cover plugging or site restoration are held by the Land and Water Boards (regional bodies in the Northwest Territories) under the Mackenzie Valley Resource Management Act.

Single Well Securities:

None.

Blanket Securities:

| | Amount | Criteria |
|----------|--------------|-----------------------------------|
| Maximum: | \$10,000,000 | Onshore wells |
| | \$25,000,000 | < 200 meters of inland water body |

SASKATCHEWAN

Regulatory Agency

Saskatchewan Ministry of Energy and Resources
saskatchewan.ca

Statutory or Regulatory Authority

Oil and Gas Conservation Regulations

Definitions

Orphan Well: A well, facility, or associated flowline or site, if the responsible person does not exist, cannot be located or does not have the financial capability to comply with requirements.

Site restoration: ‘Reclamation’ means removing, isolating, or treating soil or water contaminants so they are not a risk to health, public safety, property, or the environment; and re-contouring, restoring and re-vegetating the surface so it is compatible with its surroundings.

Idle Wells

Classification: Saskatchewan has a classification of “suspended,” which is determined by the operator and has no requirements or stipulation as to when it is or can be set. No reporting is required on a suspended well.

Idle period without approval: No well shall “remain unplugged or uncased” after it is no longer used for its intended purpose; however, the minister may extend the time for abandonment of a well with applicable conditions.

Idle period with approval: None specified.

Requirements for approval: None specified.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 364

Estimated undocumented orphan wells: 0

Actions to identify and address undocumented orphan wells: Not needed—no undocumented wells in province.

Plugging Funds

Sources of funding:

- Annual fee
- Permit fee
- Forfeited bonds
- Salvage
- Other: Interest earned.

Annual authorized expenditure target: Annual levy based on the planned abandonment program for the year.

Funds for emergency remedial actions: Yes.

Funds for site restoration: Yes.

Prioritization system for plugging: Established each year through consultations with the Orphan Fund Advisory Committee, which is appointed by the Minister and includes representatives of several industry associations.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit

Single Well Securities:

| | Amount |
|----------|----------|
| Minimum: | \$10,200 |
| Maximum: | \$76,100 |

Criteria: Depth, well configuration, number of perforated zones, geographic location. Security is due only if company’s total liabilities exceed total assets under the Licensee Liability Rating Program.

Blanket Securities:

None.

YUKON

Regulatory Agency

Yukon Government – Oil and Gas Resources

Suite 400, 211 Main Street,
4th Floor Shopper’s Plaza
Whitehorse, YT Y1A 2B2.
Phone: (867) 667-3011.
Fax: (867) 393-6262
emr.gov.yk.ca

Statutory or Regulatory Authority

Yukon Oil and Gas Act
Yukon Oil and Gas Drilling and Production
Regulations

Definitions

Idle Well: Yukon definition of “suspended well” aligns with the definition of “idle well.”

Orphan Well: No provincial definition. Yukon Oil and Gas Act provides for Chief Operations Officer to order that the well be abandoned at Government expense if the licensee of the well fails meet its obligations, which may result from the licensee being insolvent.

Site restoration: No provincial definition; however, regulations define “clean –up” as removal of all solid and petroleum waste, cleanup of surface, plugging of rat and mouse holes, removal of equipment and materials, and filling of excavations.

Idle Wells

Classification: Yukon classifies idle wells as “suspended wells.”

Idle period without approval: 12 months.

Idle period with approval: 3 years; may be extended.

Requirements for approval: Must be inspected once every twelve months; updated Corporate Profile every year.

Provisions for exceptions: None.

Orphan wells

Documented orphan wells: 1

Estimated undocumented orphan wells: 0

Plugging Funds

Yukon does not have a separate plugging fund.

Sources of funding:

- Appropriations
- Forfeited bonds

Funds for emergency remedial actions: No.

Funds for site restoration: No.

Prioritization system for plugging: None.

Financial Assurance

Types of Financial Assurance Allowed:

- Cash
- Letter of Credit

Single Well Securities:

| | |
|----------------|---|
| Amount | Criteria |
| Not prescribed | Based on activity and to the satisfaction of the Minister |

Blanket Securities:

None.

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<http://iogcc.ok.gov>