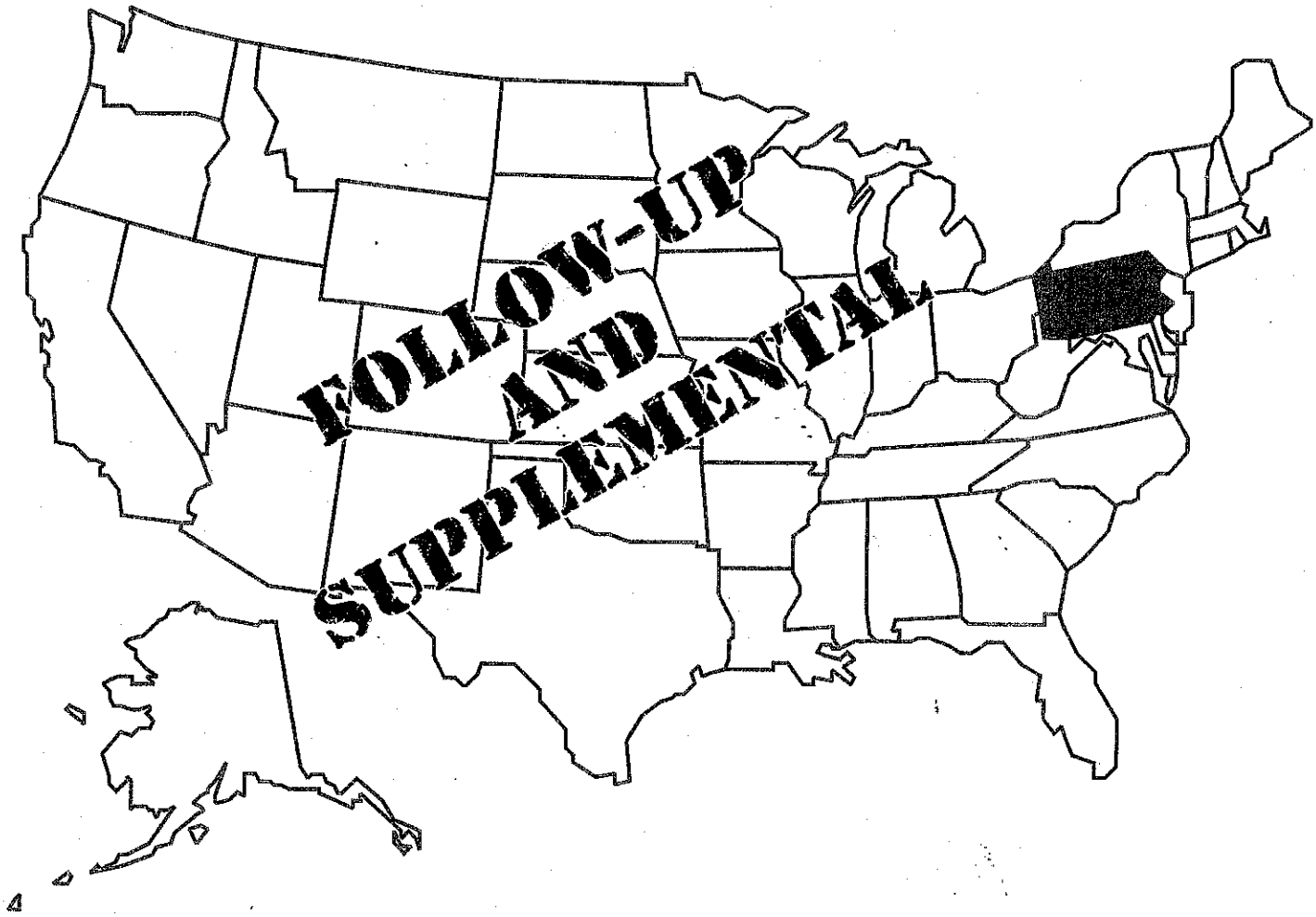
IOGCC/EPA STATE REVIEW OF
OIL & GAS EXPLORATION & PRODUCTION
WASTE MANAGEMENT REGULATORY PROGRAMS

# Pennsylvania Review




A PROJECT OF THE
Interstate Oil & Gas Compact Commission

# PENNSYLVANIA FOLLOW-UP AND SUPPLEMENTAL REVIEW

# IOGCC/EPA STATE REVIEW OF OIL & GAS EXPLORATION AND PRODUCTION WASTE MANAGEMENT REGULATORY PROGRAMS


**A PROJECT OF THE**
**Interstate Oil and Gas Compact Commission**

**APRIL 1997**

# INTRODUCTION

This Pennsylvania Follow-up and Supplemental Review is a report of the progress made by Pennsylvania since the original 1991 assessment of the regulatory program of the Commonwealth of Pennsylvania dealing with the management of wastes derived from the exploration and production (E&P) of crude oil and natural gas. That assessment, known as the Pennsylvania State Review, was published in March 1992.

In the fall of 1996, a four-person team appointed by the Interstate Oil and Gas Compact Commission (IOGCC) participated in a follow-up review, which was coordinated by the IOGCC in cooperation with the United States Environmental Protection Agency (EPA) and other interest groups.

The goal of the follow-up review was to measure progress made in the Pennsylvania program since the initial review and evaluate the adequacy of the program compared to revised, expanded guidelines for the State Review process. These guidelines, "IOGCC Environmental Guidelines for State Oil and Gas Regulatory Programs," (commonly referenced as "IOGCC Guidelines") were published in May 1994. The team also wanted to draw the attention of other states to several Pennsylvania programs which go "above and beyond" the IOGCC Guidelines.

The four-person Pennsylvania Follow-up and Supplemental Review team consisted of three members and an observer from the original review team: Mr. Donald L. Mason, Esq., Ohio Department of Natural Resources, Division of Oil and Gas; Mr. Carroll D. Wascom, Louisiana Department of Natural Resources, Office of Conservation; Ms. Wilma Subra, environmental community/Subra Company; and Mr. Larry P. Kardos, Ph.D. Observer team members for the follow-up review included Ms. Nancy Johnson, U.S. Department of Energy, and Mr. Steve Souders, Office of Solid Waste, EPA.

The initial Pennsylvania State Review compared the state's programs to a report titled "EPA/IOGCC Study of State Regulations of Oil and Gas Exploration and Production Waste," dated December 1990. The ultimate purpose of the review was to identify strengths and recommend improvements for Pennsylvania's E&P waste management regulatory program. Since the review team's report was issued, Pennsylvania has been working to address the recommendations contained in the report.

The team performing the original Pennsylvania State Review consisted of Mr. Danny R. Rycroft, P.E., Phillips Petroleum Company/American Petroleum Institute; Ms. Wilma Subra; Mr. Donald L. Mason, Esq.; and Mr. Carroll Wascom. Observer members participating in the original Pennsylvania review were Ms. Nancy Johnson, Department of Energy, Office of Fossil Energy; Larry Kardos, Ph.D., consultant; and Ms. Paula Ford, environmental community.

The Follow-up and Supplemental Review of the Pennsylvania oil and gas regulatory program was conducted in Harrisburg, Pa., at the offices of the Bureau of Oil and Gas Management (BOGM) from September 30 through October 2, 1996. Mr. James E. Erb, director of the BOGM, responded to the questions presented by the review team. Following interviews with the director and having reviewed written materials prepared by the state, the review team compiled the follow-up and supplemental report.

This report includes the original 1992 review team findings and recommendations, along with the BOGM responses to the recommendations. Sections presented in italic type are the follow-up review team's evaluation of the BOGM responses. For a copy of the initial Pennsylvania State Review report, contact the IOGCC.

## FOLLOW-UP TO RECOMMENDATIONS CONTAINED IN THE FIRST PENNSYLVANIA STATE REVIEW

As an ongoing effort by the Interstate Oil and Gas Compact Commission (IOGCC), the United States Environmental Protection Agency (EPA), and the United States Department of Energy (DOE), to evaluate and improve state exploration and production (E&P) waste management programs, the Pennsylvania Department of Environmental Protection (DEP), Bureau of Oil and Gas Management (BOGM), prepared a finding-by-finding response to the recommendations made in the Pennsylvania State Review, which was published in March 1992. The 1992 report determined that the Pennsylvania BOGM program met or exceeded most of the 1990 IOGCC E&P waste management program guidelines. However, in areas where one or more of the review team members felt the BOGM waste management program needed improvement, a recommendation was made. The following discussion is an evaluation of the responses made by BOGM to the recommendations made in the original 1992 report.

### Finding and Recommendation I

**Finding I.**

The BOGM is conducting a project to characterize the waste in unclosed abandoned pits and to evaluate the cost benefit of remediation of the pits by various techniques.

**Recommendation I.**

Although it is beyond the scope of the IOGCC Guidelines to address past waste management practices, the review team encourages BOGM to continue research efforts to develop and implement a comprehensive program to address unclosed abandoned and orphaned pits.

**BOGM Response:**

The above-referenced project was completed and a report, ***Characterization and Disposal Options for Oilfield Wastes in Pennsylvania***, was published in June 1994. The report includes recommendations for pit closure along with specific procedures for on-site burial, on-site land application, off-site disposal, and bioremediation. Copies of the report have been distributed through the industry associations and the regional BOGM offices.

**Follow-Up Review Comments:**

*The follow-up review team was also informed that BOGM has established an Abandoned Well Plugging Fund to be used to plug abandoned wells which threaten the health and safety of persons or property or pollution of the waters of Pennsylvania. An Orphan Well Plugging Fund was established to plug orphan wells. The orphan and abandoned well programs will be discussed in Section IV, Abandoned Sites. In light of these facts, the follow-up review team has determined that prior and ongoing actions taken by BOGM are responsive to Recommendation I which was made in the earlier report.*

## Finding and Recommendation I.A.3

### Finding I.A.3.

Although BOGM regulations are generally strong and include detailed requirements for environmentally sound E&P waste management practices, when changes to the regulations are deemed necessary, it takes 18 months to two years to promulgate new regulations, assuming they are noncontroversial (IOGCC Guidelines 3.1.a-c).

### Recommendation I.A.3.

The procedures for promulgating regulations should be streamlined. Although the IOGCC Guidelines do not specifically require new E&P regulations to be promulgated within a certain amount of time, the review team felt strongly that 18 months to two years is an inordinate amount of time, taking into consideration the timeframe of other states.

### BOGM Response:

As stated in the recommendation, this issue is beyond the scope of the IOGCC Guidelines, so its appropriateness is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. The ability to streamline procedures for promulgation of regulations is beyond the control of the oil and gas program. Procedures for the development and promulgation of regulations, including consultation with the Oil and Gas Technical Advisory Board; subsequent proposal for consideration for rulemaking, publication for public comment, and final promulgation by the Environmental Quality Board; and reviews by standing House and Senate committees, the Independent Regulatory Review Commission, and the Attorney General, are established in statute. This process for the adoption of environmental regulations, although lengthy and sometimes frustrating to staff developing regulation proposals, has worked well. There are sufficient opportunities for public input as well as other checks and balances in the process to assure that regulations adopted are proper for their intended purpose.

### Follow-up Review Comments:

*During the follow-up review, team members were informed that emergency rules could be promulgated in instances that warrant such action. Again, BOGM has no control over the procedures to promulgate new or revised regulations and could not facilitate the recommendation made by the original review team. The review team realizes that the recommendation was largely beyond the control of the regulatory agency and that the emergency rule procedure authority is sufficient to address immediate needs.*

## Finding and Recommendation I.E.1

### Finding I.E.1.

There has been an overall negative impact on the level of surveillance and enforcement as a result of staff reductions. Budgetary concerns and limitations have resulted in too few oil and gas inspectors and water quality specialists to allow for a prioritization of more than a limited variety of inspections and enforcement services. As a result, the BOGM must prioritize and concentrate resources more narrowly than it believes to be sufficient (IOGCC Guidelines 4.3, 4.3.1.4 and 4.3.2).

**Recommendation I.E.1.**

The Commonwealth should allocate sufficient resources so as to broaden the number and kind of inspection and enforcement activities (also, see Finding and Recommendation I.F.1).

**BOGM Response:**

Unfortunately, BOGM, like any program in any agency in any state, is competing for limited resources. And, like other programs, BOGM must prioritize its work. Additional measures, including training, improved data systems, strategic planning, annual program planning and evaluation, and reassignment of program responsibilities, have been implemented to allow more efficient management of the resources available. Reduced levels of activity in the oil and gas industry, coupled with a general shift from the "command and control" mode of operation by government, have resulted in a changed dynamic in the oil and gas regulatory program. The results show that: 1.) inspection time has decreased while the number of inspections has been relatively constant; 2.) the number of violations recorded has been relatively constant; and 3.) the number of enforcement actions has increased while enforcement time has decreased. This reflects program changes which have resulted in increased efficiency.

**Follow-Up Review Comments:**

*BOGM also indicated to the review team that since constraints for filling vacancies were lifted in 1991, staffing levels have been increased. Drilling levels have decreased from an average of 1,700 permits per year to about 900 per year. In addition, since wells and well sites are not inspected on a periodic basis, inspections have been prioritized to primarily include drilling wells and sites, wells being plugged and abandoned, and responses to citizen or operator complaints. The follow-up review team has determined that actions taken by BOGM substantially comply with the earlier recommendation. However, periodic inspections are not being performed on oil and gas production sites. A data review process may trigger an inspection of an oil or gas site if a well status changes.*

**Finding and Recommendation I.E.2**

**Finding I.E.2.**

Although DER employees are well qualified and trained, there appears to be a lack of personnel and resources in all areas of E&P waste regulation, administration, permitting, surveillance and enforcement. Staffing levels that were to be provided through a three year program have not been authorized as requested and have not met the needs for inspection and enforcement actions for routine environmental and administrative violations. The BOGM does not have the authority to fill vacancies at present. Only 59 of 65 authorized positions are filled (IOGCC Guidelines 4.3, 4.3.1 and 4.3.2).

**Recommendation I.E.2.**

Steps should be taken to fill currently vacant positions and to add new positions in all areas of E&P waste regulatory management according to currently requested levels.

**BOGM Response:**

The temporary situation described in the finding changed in subsequent budget years. There are presently 63 funded positions assigned to the central and regional offices of the oil and gas program. The ability to fill future vacancies is dependent on the budget situation. In light of present levels of oil and gas activity and absent any new legislative initiatives, there are no requests for additional positions anticipated.

**Follow-Up Review Comments:**

*Since hiring constraints were lifted, BOGM has hired three new employees (total 62) and has lost two positions (total 63). The follow-up team believes that the increase in staffing has satisfied the recommendation to fill vacant positions. However, in light of the decline of drilling activity and increased program efficiency, the team believes that current staffing is sufficient.*

**Finding and Recommendation I.F.1**

**Finding I.F.1.**

Funding levels of the BOGM E&P waste management program are inadequate to fully carry out the program as it exists (IOGCC Guidelines 4.3.2).

**Recommendation I.F.1.**

In addition to general appropriations, other sources of funding should be developed to address current and future personnel and resource needs. The Commonwealth should consider the following options in order to increase revenues: 1) Raising fees; 2) Increasing permit surcharges; 3) Implementing a severance tax on production; 4) Implementing inspection fees; and/or 5) Implementing fees tied to volumes of E&P waste generated/disposed.

**BOGM Response:**

In 1992, after the initial IOGCC state review in Pennsylvania, the Oil and Gas Act was amended. Changes included an increase in permit surcharges to establish an Orphan Well Plugging Fund (discussed in Section IV of the questionnaire), and the allocation of fines, fees and penalties to BOGM for implementation of the Act. These fines, fees and penalties amount to $275,000-$300,000 per year. These revenues are in addition to the continuing General Fund appropriations. These revenues have been adequate for the levels of program activity recently experienced.

**Follow-Up Review Comments:**

*The funds collected from fines, fees and penalties are additional funds that are statutorily dedicated to BOGM programs. Two to three per cent yearly increases in general funds each year have kept pace with inflation. Therefore, the additional funds have been a needed asset to the program. The follow-up review team is satisfied that the BOGM response to the recommendation was sufficient.*

**Finding and Recommendation II.3**

**Finding II.3.**

The IOGCC criteria for commercial and centralized facilities states that the permits should be reviewed and revised if necessary, no less frequently than every five years. The commercial brine treatment facilities have NPDES permits which are renewed every five years. However, the disposal well facilities and residual waste disposal facilities are issued permits for the life of the operation (IOGCC Guidelines 4.1.1).

**Recommendation II.3.**

A process should be implemented that will require a review process to take place on all commercial/centralized facility permits every five years. The review process should include an on-site inspection, review of compliance history, status of outstanding compliance issues and review of adequacy of bonding. Provisions should be made to enable amendment of the permit to include outstanding issues needing attention. [Note: The review team recognizes that regulations were adopted as final by the EQB on January 21, 1992, and are currently undergoing final review by the Independent Regulatory Review Commission and Attorney General.]

**BOGM Response:**

As noted in the recommendation, regulations addressing this issue were adopted by the EQB on January 21, 1992. They became effective July 4, 1992. Permits for commercial and centralized facilities are issued for a maximum of ten years, with reviews at intervals not to exceed five years (see § 287.211(a) and (d)). The review includes all issues noted in the recommendation.

**Follow-Up Review Comments:**

*The follow-up review team noted that Section 287.211. (b) provided for a longer fixed term permit (> 10 years) if certain conditions are met. BOGM also pointed out that at present, no E&P waste is being transported to commercial residual waste treatment facilities for disposal because of the increased costs for testing, bonding, transportation, etc. The review team agreed that the recommendation for a 5-year review of residual waste permits was satisfied.*

**Finding and Recommendation II.4**

**Finding II.4.**

If E&P waste solids are to be disposed of off-site at a commercial disposal facility a "Module I" (Form ER-WM-14) must be submitted for each waste stream. The Module I must include the types of waste to be disposed, a complete analysis of the waste, and the facility at which the waste will be disposed. The timeframe required for a Module I review is not specified (but may take up to 300 days). This may not adequately coincide with the mandated closure period on a drilling pit (within 90 days of completion of drilling activities). The timeframe for a Module I may be far in excess of the 90 days required to complete pit closure (IOGCC Guidelines 4.1.1).

**Recommendation II.4.**

The timeframe for permitting a Module I should be reviewed to determine if the timeframe could be altered to correspond with the requirements for drilling pit closure requirements.

**BOGM Response:**

As a result of program improvements and revision of the regulations, a Form U (formerly Module I) is now processed within 15 days. This time frame corresponds very well with time requirements for pit closure.

**Follow-Up Review Comments:**

*Form U is part of the newly implemented DEP Money-Back Guarantee Permit Review Program which demonstrates DEP's commitment to providing timely permit decisions. In addition, an executive order from the Governor of the Commonwealth of Pennsylvania required all state agencies to improve the overall efficiency of state government. Therefore, the review team believes the recommendation has been satisfied.*

**Finding and Recommendation II.5**

**Finding II.5.**

The vast majority of E&P waste solids and sludge are disposed of on-site. The remaining waste is disposed of in municipal and industrial waste landfills. The landfills are constructed with liners and leachate collection systems. Each regional office of the state has recommendations of what is to be included in an application for a landfill which will accept solid and industrial waste as well as E&P waste (residual waste). These varying recommendations include such issues as monitoring, liner thickness, construction standards, Quality Assurance/Quality Control (QA/QC), etc. (IOGCC Guidelines 4.1.1).

**Recommendation II.5.**

The application requirements for landfills which will dispose of residual waste from E&P operations should be standardized. [Note: The review team recognizes that regulations were adopted as final by the EQB on January 21, 1992, and are currently undergoing final review by the Independent Regulatory Review Commission and Attorney General.]

**BOGM Response:**

As noted in the recommendation, regulations addressing standards for municipal and residual waste landfills were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. All of the concerns raised in the finding and recommendation were standardized in the regulations (see § 28.152, §§ 288.251-258, and §§ 289.261-268 for monitoring, §§ 28.431-440 and §§ 288.531-539 for liner requirements, and § 287.132(d) for QA/QC).

**Follow-Up Review Comments:**

*A uniform permitting process has been implemented by oil and gas regulatory agencies. Therefore, BOGM has satisfied the recommendation.*

**Finding and Recommendation III.2**

**Finding III.2.**

There is no requirement for additional or special notification to the adjacent landowners of record (in writing) for commercial or centralized disposal facilities or NPDES permits for treatment and discharge facilities (IOGCC Guidelines 4.2.2.1).

**Recommendation III.2.**

The DER should adopt regulations which require special notification of adjacent landowners of record when a commercial or centralized disposal facility is proposed. [Note: The review team recognizes that regulations were adopted as final by the EQB on January 21, 1992, and are currently undergoing final review by the Independent Regulatory Review Commission and Attorney General.]

**BOGM Response:**

As noted in the recommendation, regulations addressing this issue were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. Adjacent landowners and leaseholders are required to be identified and notified of the application for a permit by the applicant (see § 287.124(a)(2) and (3)).

**Follow-Up Review Comments:**

*The rules cited are for identification of landowners adjacent to roadspreading activities (§ 287.124(a)(2)) and for notification of landowners (§ 287.151(b)). Therefore, the recommendation is satisfied.*

**Finding and Recommendation III.3**

**Finding III.3.**

The BOGM has formal procedures for public access to BOGM files. The BOGM has also established procedures for maintaining files that are confidential in nature. Interested parties must make prior notice to BOGM in order to perform the review (IOGCC Guidelines 4.2.2.1).

**Recommendation III.3.**

Prior notice to BOGM in order to perform file reviews is beneficial to the agency to allocate limited resources to such file review. However, if an interested party is unaware of the requirement, the potential for a substantial loss of time and effort in travel to the BOGM office may result. Although BOGM has met the criteria of IOGCC Guidelines 4.2.2.1, they should ensure that an interested party unfamiliar with the process can obtain reasonable access to the files on a one time basis only.

**BOGM Response:**

As noted in the recommendation, BOGM procedures on public access to files meet the criteria of the IOGCC Guidelines, so the appropriateness of this recommendation is questionable. However, accommodations such as those suggested are made for reasonable requests which do not disrupt the functions of the office.

**Follow-Up Review Comments:**

*BOGM satisfies this recommendation by allowing public access to files when a request does not disrupt office functions.*

**Finding and Recommendation III.5**

**Finding III.5.**

Although IOGCC Guidelines is not specific in this area, BOGM sends out press releases on significant enforcement actions and provides summaries of enforcement activities at public meetings and in response to requests from legislators, industry associations, environmental groups and the public upon request. Major enforcement actions are published in the ***Pennsylvania Bulletin***. Affected parties are notified of permit actions, variances, etc. as part of the permitting process (IOGCC Guidelines 4.2.2.2).

All review team members agree with the above finding.

**Recommendation III.5.**

One review team member believed it was important to make Recommendation III.5. that BOGM should implement a process to provide notification of final actions and compliance orders resulting from major violations or subsequent due process proceedings to interested citizens of record. The BOGM should have available information regarding program implementation such as permits, variances, enforcement actions, fines levied, etc.

**BOGM Response:**

As stated in the finding, this recommendation by one team member is beyond the scope of the IOGCC Guidelines, so its appropriateness is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. As noted, information of various types is provided upon request. Additionally, various information is provided on a routine basis to Petroleum Information, IOGCC, and industry trade associations. Highlights of program and Department activities are provided in the ***UPDATE***, which is DEP's weekly activity report. The ***UPDATE*** is distributed in hard copy to a mailing list of interested parties and is also available via the DEP web site (http://www.dep.state.pa.us) to any interested party with Internet capabilities.

**Follow-Up Review Comments:**

*DEP makes every effort to disseminate information to interested parties. Two such mechanisms are, the opening of a public information office and plans to place rules and the operators manual on the Internet. Therefore, the recommendation is satisfied.*

**Finding and Recommendation III.6**

**Finding III.6.**

The BOGM requires the road owner (Township or Commonwealth) to sign the spreading application indicating concurrence with the application. The frequency of roadspreading is based on dust conditions and road conditions. However, notification of private landowners adjacent to these roadways is not required (IOGCC Guidelines 4.2.2.1).

**Recommendation III.6.**

The BOGM should require the brine-spreading operator, as part of the annual roadspreading plan, to provide public notification that would adequately notify the residents and/or landowners along roads to be spread with produced brine.

**BOGM Response:**

Since public notice of roadspreading is beyond the scope of IOGCC Guidelines 4.2.2.1 (which recommends public notice to residents or landowners adjacent to centralized and commercial disposal facilities), the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. Roadspreading is not viewed as a disposal activity, but the application of brine for roadbed stabilization and dust control. This activity is similar to the application of salt or antiskid materials in the winter, or pothole repair or road resurfacing at other times of the year. It is a road maintenance activity conducted by or contracted by the public road owner. Notification of adjacent residents and landowners is at the discretion of the government entity responsible for road maintenance. Because roadspreading has the potential for pollution of waters of the Commonwealth, a pollution prevention and control plan which conforms to BOGM guidelines must be submitted for approval. Similar plans are required for any entity that stores, produces, processes, transports, or uses pollutional materials if they are not otherwise regulated (see § 101.3).

**Follow-Up Review Comments:**

*As noted above, notification of private landowners adjacent to roads on which brine is spread is not required by IOGCC Guidelines 4.2.2.1. Although the response does not satisfy the recommendation, it is similar to other road maintenance activities where public notice is not required. A draft study has recently been completed which reports on the roadspreading of brine.*

*Roadspreading brine is considered a beneficial use of the brine, is considered to be an air quality improvement along the road, and controls erosion.*

**Finding and Recommendation III.8**

**Finding III.8.**

Section 216 of the Oil and Gas Act requires that the TAB members meet certain technical background requirements. Individuals to be considered for these positions are required to be geologists or petroleum engineers with at least three years experience in Pennsylvania. Their names are submitted to the Governor by the Citizens Advisory Council.

All review team members agree with the above finding.

**Recommendation III.8.**

One review team member believed it was important to make Recommendation III.8. that at least one Citizens Advisory Council member on the Technical Advisory Board should have an environmental or health related background. This would result in more meaningful public input into the rulemaking process.

**BOGM Response:**

This recommendation by one team member goes beyond the scope of IOGCC Guidelines 4.2.2.3, so the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. As noted in the finding, the Oil and Gas Technical Advisory Board (TAB) was created by statute. BOGM is required by the same statute to consult with TAB in the formulation, drafting and presentation stages of all regulations of a technical nature promulgated under the Oil and Gas Act. The Oil and Gas Act regulates oil and gas wells. It is not the E&P waste management statute. E&P waste is regulated under the Clean Streams Law, the Solid Waste Management Act, and the Administrative Code. There are other advisory committees (Air and Water Quality Technical Advisory Committee and Solid Waste Advisory Committee), whose members include health and environmental professionals, which provide consultation regarding program development under the environmental statutes. All regulations DEP implements are promulgated by the Environmental Quality Board and undergo extensive public input as pointed out in the response to Recommendation I.A.3. The Department of Environmental Protection and the Environmental Quality Board are the entities which assure the protection of health and the environment in Pennsylvania. Having a TAB member without an oil and gas background would serve no useful purpose in fulfilling the TAB function of providing consultation on technical oil and gas issues, and could add further delays to the rulemaking process, which the review team felt was too long (see Recommendation I.A.3).

**Follow-Up Review Comments:**

*Three out of four of the review team members felt that Recommendation III.8 was inappropriate. The remaining review team member feels that public involvement on the various advisory boards and committees provides a mechanism for public participation but fails to meet the recommendation.*

**Finding and Recommendation III.9**

**Finding III.9.**

One review team member believed it was important to make Finding III.9 that the guidance provides for the dissemination of program information to the regulated industry and the public through an ongoing process. One of the ways this could be accomplished is through the publication of an annual report (IOGCC Guidelines 4.2.2.2).

**Recommendation III.9.**

One review team member believed it was important to make Recommendation III.9. that in order to provide ongoing program information to the regulated industry and the public, the BOGM should publish an annual report of its activities.

**BOGM Response:**

This recommendation by one team member goes beyond the scope of IOGCC Guidelines 4.2.2.2 (an annual report is not mentioned), so the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. As noted in the response to Recommendation III.5, extensive efforts are made to assure the availability of program information to the public. In addition to activities included in that response, the Director has been providing a column to IOGA of Pennsylvania for their monthly newsletter since April, 1992. The Oil and Gas Operators Manual is in the process of being updated and will be republished shortly. Fact sheets have been developed for a number of issues and made available to industry and the public. The Bureau of Topographic and Geologic Survey in the Department of Conservation and Natural Resources publishes annual reports on oil and gas activities. Since BOGM resources are limited, publication of an additional annual report, while nice to do, is not viewed as an essential activity.

**Follow-Up Review Comments:**

*It is the opinion of three members of the committee that this recommendation to publish an annual report is beyond the scope of IOGCC Guidelines. Even though an annual report has not been implemented, other mechanisms for dissemination of information have been developed by the agency. Therefore, Recommendation III.9 has been satisfactorily addressed.*

**Finding and Recommendation IV.1**

**Finding IV.1.**

The bond requirements are set at $2,500 per well with a blanket of $25,000 for all wells per operator. With BOGM's average cost to plug being $17,000, the blanket bonding limits are generally insufficient. Bonds can be used to address environmental problems at the wellsite (wells, pits, etc.). If companies with many wells under a blanket bond default, it could leave the Commonwealth underfunded with a large number of wells to be plugged and abandoned, since blanket bond is only $25,000 (IOGCC Guidelines 4.2.3).

**Recommendation IV.1.**

The bonding requirements for single and blanket coverage should be increased to cover the average cost of plugging and site reclamation. Furthermore, alternative revenue sources should be adopted so that funds can be provided when bonds prove to be insufficient to cover the expense of plugging and remediation. [Note: Bond amounts can be adjusted by the EQB every two years by authority of the Oil and Gas Act.]

**BOGM Response:**

Increasing bond amounts has been considered on several occasions. It is recognized that the present bond amounts do not fully indemnify the Commonwealth for the costs of plugging and remediation should operators default on their responsibilities. However, Pennsylvania has many small, marginal operators who have difficulty providing bonds at the current amounts, even though numerous options have been provided to develop bond amounts. This fact, along with the view that bonds tie up limited working capital, have postponed any increase in bond amounts. The Abandoned Well Plugging Fund and Orphan Well Plugging Fund (discussed in Section VI of the questionnaire) were established in part to deal with this issue.

**Follow-Up Review Comments:**

*The review team determined that the BOGM has met the recommendation to adopt alternate sources of funding for plugging and abandonment of wells. However, the BOGM has not increased the bonding amounts for single and blanket coverage to cover the average cost of plugging and site reclamation. The BOGM has determined that if financial security is increased to cover the average cost of plugging and site restoration, it would severely reduce working capital and operators would be adversely affected.*

**Finding and Recommendation VI.D.1**

**Finding VI.D.1.**

With the exceptions noted below, the BOGM program meets or exceeds IOGCC Guidelines 5.3.4. Regulations requiring area or statewide regulations for fencing, netting, or flagging per IOGCC Guidelines 5.4.3.f. do not exist.

**Recommendation VI.D.1.**

The BOGM should incorporate fencing, netting and flagging requirements to satisfy IOGCC Guidelines 5.3.4.f. The program may consider specific area environmental concerns, type of waste contained in the pit, and site security. For example, pits containing tophole water or freshwater may be exempt if the area were otherwise secure.

**BOGM Response:**

In keeping with IOGCC Guidelines 3.3, state oil and gas programs can, and should vary from state to state to recognize differences in climate, hydrology, geology, economics and other factors. This recommendation addresses an issue where such differences exist. Unlike oil and gas producing regions of the mid-western United States, Pennsylvania oil and gas fields are not located in a major waterfowl flyway. Nor does Pennsylvania contain public lands used for the grazing of livestock. Pennsylvania is blessed with an abundance of fresh surface water for the use of its citizens and wildlife. The problem of birds or other animals falling into pits and drowning has not been experienced here. Consequently, there has not been a need to develop such a regulation. The questionable benefit of promulgating such a regulation for the sake of consistency with other states does not justify the costs to the industry of implementing such a regulation or to the state for enforcing unnecessary provisions.

**Follow-Up Review Comments:**

*BOGM has not complied with this recommendation because of the cost/benefit relationship. The review team, therefore, accepts the BOGM response.*

**Finding and Recommendation VI.D.3**

**Finding VI.D.3.**

One review team member believed it important to make Finding VI.D.3. that although BOGM has an informal policy it has not developed guidelines for when steel pits or tanks must be used (IOGCC Guidelines 5.3.4.e).

**Recommendation VI.D.3.**

One review team member found it important to make Recommendation VI.D.3. that BOGM should formalize its policy as written guidelines on the use of steel pits or tanks in environmentally sensitive areas.

**BOGM Response:**

This recommendation by one team member goes beyond the scope of IOGCC Guidelines 5.3.4.e (written guidelines on the use of steel pits or tanks is not mentioned), so the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. Section 205 of the Oil and Gas Act provides well location restrictions. If a well is proposed within 100 feet of a stream, spring, body of water or wetland, the operator must submit a waiver request which includes facilities or practices to be used during construction, drilling or operation which will provide the necessary protection. If the permit is issued and the waiver granted, BOGM is required to impose permit conditions as are necessary to provide protection. In instances where waivers have been approved, steel tanks are generally required; however, other comparable facilities or practices could also be approved.

**Follow-Up Review Comments:**

*Although beyond the scope of the IOGCC Guidelines, specific guidelines have not been formulated to provide for the use of steel tanks in lieu of earthen pits in environmentally sensitive areas. BOGM has pointed out that the Oil and Gas Act (205(b)) does provide for permit conditions for siting of tanks to protect waters and wetlands. Therefore, the rule addresses the recommendation.*

**Finding and Recommendation VI.G.3**

**Finding VI.G.3.**

The program does not mandate soil analysis after landspreading. This does not satisfy IOGCC Guidelines 5.4.3.g, h, i.

**Recommendation VI.G.3.**

The BOGM should incorporate in its program a requirement for post landspreading soil analysis.

**BOGM Response:**

In December 1994, § 78.63(a)(19) of the regulations was added to provide that the BOGM may require surveys, monitoring, or chemical analysis to determine compliance with land application requirements.

**Follow-Up Review Comments:**

*Although the state has not chosen to require post landspreading analyses, BOGM has the authority to require such tests (§ 78.63(a)(19)).*

**Finding and Recommendation VI.G.4**

**Finding VI.G.4.**

The program does not address remediation where post landspreading criteria are not satisfied per IOGCC Guidelines 5.4.3.h.

**Recommendation VI.G.4.**

The BOGM should incorporate in its program a requirement for remediation if the post closure landspreading criteria are not met.

**BOGM Response:**

In December 1994, § 78.63(a)(21) of the regulations was added which states that if a chemical analysis fails to show compliance with land application requirements, the owner or operator must remediate the land application area until compliance is demonstrated.

**Follow-Up Review Comments:**

*Promulgation of the December 1994 rule satisfies the recommendation.*

**Finding and Recommendation VI.J.2**

**Finding VI.J.2.**

The Commonwealth of Pennsylvania issues NPDES permits for five year time periods while the injection well and landfill permits are issued for the life of the facility. According to the IOGCC Guidelines, permits for commercial and centralized disposal facilities should be in force for a finite period (IOGCC Guidelines 5.7.2.1.a).

**Recommendation VI.J.2.**

The Commonwealth should establish a finite timeframe for all the permits for commercial and centralized facilities. [Note: the review team recognizes regulations for other facilities were adopted as final by the EQB on January 21, 1992, and are undergoing final review by the Independent Regulatory Review Council and Attorney General.]

**BOGM Response:**

As noted in the recommendation and in the response to Recommendation II.3, regulations addressing this issue were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. Permits for these facilities are issued for a maximum of ten years, with reviews at intervals not to exceed five years (see § 287.211(a) and (d)). Pennsylvania has not sought primacy for injection wells under the UIC program, so federal requirements apply in those instances.

**Follow-Up Review Comments:**

*The follow-up review team noted that Section 287.211. (b) provided for a longer fixed term permit (> 10 years) if certain conditions are met. BOGM also pointed out that at present, no E&P waste is being transported to commercial residual waste treatment facilities for disposal because of the increased costs for testing, bonding, transportation, etc. All waste currently qualifies for on-site treatment and disposal. The review team agreed that the recommendation for a 5-year review of residual waste permits was satisfied.*

**Finding and Recommendation VII.1**

**Finding VII.1.**

The Commonwealth of Pennsylvania does not have a waste hauler certification program to regulate the commercial transportation of E&P waste (IOGCC Guidelines 4.2.4).

**Recommendation VII.1.**

The Commonwealth should initiate a waste hauler certification program consistent with IOGCC Guidelines 4.2.4 and 5.7.2.3.e.

**BOGM Response:**

Residual waste regulations adopted January 21, 1992 which became effective July 4, 1992, regulate the commercial transportation of E&P waste (see § 287.6 and §§ 299.201-232). In addition, transporters must comply with §§ 285.211-218. These regulations require daily records, accident prevention and contingency plans, requirements for equipment, reporting of emergencies, and annual reports. Waste hauler identification is also required on well site restoration reports required under § 78.65(3). Although waste hauler certification "as such" is not required, all the elements of an effective waste hauler regulatory program are in place. A copy of the regulations is enclosed.

**Follow-Up Review Comments:**

*Although training is not specifically required in the rules, waste haulers effectively must be experienced in the regulatory requirements (299.216).*

**Finding and Recommendation VII.2**

**Finding VII.2.**

The Commonwealth of Pennsylvania does not have an oil and gas waste tracking program which documents the movement of wastes from the site of origin to their final disposition (IOGCC Guidelines 4.2.5).

**Recommendation VII.2.**

The Commonwealth of Pennsylvania should implement a waste tracking program and manifest system consistent with the IOGCC Guidelines 4.2.5 and 5.7.2.3.

**BOGM Response:**

Regulation changes promulgated in December 1994 include requirements for well site restoration reports (see § 78.65(3)) as well as annual reporting of information on the amount and type of waste produced and the method of waste disposal or reuse (see § 78.121). This reporting, coupled with reports required of waste transporters (see § 299.219(b)(1),(2), and(3)) provides an effective tracking program for both on-site and off-site disposal of E&P wastes.

**Follow-Up Review Comments:**

*Although BOGM does not have an E&P waste tracking program and manifest system (3-part form), the agency does have alternate methods of waste tracking in annual reports.*

**Finding and Recommendation VII.3**

**Finding VII.3.**

Data on the amounts (volume) of oil and gas E&P waste generated, treated and disposed of by various methods are not recorded by the Commonwealth of Pennsylvania (IOGCC Guidelines 4.2.5 and 5.7.2.3).

**Recommendation VII.3.**

The IOGCC Guidelines does not specifically require waste accountability by E&P waste management programs. A system is needed to quantify the E&P waste generated by category as well as the quantities of waste processed, treated and disposed of by various methods. The quantification of waste by category would allow the Commonwealth to more efficiently track and trace the disposition of E&P waste, insure regulatory compliance and to protect human health and the environment.

**BOGM Response:**

As noted in the response to Recommendation VII.2, above, regulation changes promulgated in December 1994 include requirements for well site restoration reports (see § 78.65(3)) as well as annual reporting of information on the amount and type of waste produced and the method of waste disposal or reuse (see § 78.121). This reporting, coupled with the reports required from residual waste transporters (see § 299.219(b)(1), (2), and (3)) provides an effective tracking program that includes quantification of waste by category for both on-site and off-site disposal of E&P wastes.

**Follow-Up Review Comments:**

*The BOGM response indicates the recommendation is satisfied.*

**Finding and Recommendation IX.1**

**Finding IX.1.**

Due to funding inadequacies for personnel, compliance inspections by oil and gas inspectors and water quality specialists often occur in response to citizen complaints instead of through routine periodic inspections. Therefore, Guidelines 4.1.2.1.(b)(1) and (b)(2) are not fully complied with by the Commonwealth.

**Recommendation IX.1.**

Funding should be increased to meet the required level of inspections. Such a change would allow for additional on-site inspections during drilling, reworking, plugging and more frequent routine status checks by water quality specialists.

With increased resources, unclosed abandoned and orphaned pits could be identified and responsible parties located for appropriate legal and remedial action.

**BOGM Response:**

This issue was addressed in the responses to Recommendations I.E.1. and I.E.2. As a result of these changes, routine periodic inspections are being conducted. These include inspections of drilling, reworking, and plugging activities as well as abandoned facilities.

**Follow-Up Review Comments:**

*As indicated in Follow-Up Review Comments to Finding and Recommendation I.E.1 and I.E.2, since constraints for filling vacancies were lifted in 1991, staffing levels have been increased. Drilling levels have decreased from an average of 1,700 permits per year to about 900 per year. In addition, since wells and well sites are not inspected on a periodic basis, inspections have been prioritized to primarily include drilling wells and sites, wells being plugged and abandoned, and responses to citizen or operator complaints. The follow-up review team has determined that actions taken by BOGM substantially complies with the earlier recommendation. However, periodic inspections are not being performed on oil and gas production sites. A data review process may trigger an inspection of an oil or gas site if a well status changes. Also, since hiring constraints were lifted, BOGM has hired three new employees (total 62) and have lost two positions (total 63). The follow-up team believes that the increase in staffing has satisfied the recommendation to fill vacant positions. However, in light of the decline of drilling activity and increased program efficiency, the team believes that current staffing is sufficient.*

**Finding and Recommendation X.1**

**Finding X.1.**

The BOGM has available and utilizes the enforcement mechanisms outlined in IOGCC Guidelines 4.1.3.1.a-h and 4.1.3.2. Additional strengths include the utilization of a duly adopted penalty cross-matrix (penalty schedule). This cross-matrix as promulgated is a deterrent to code and rule violations as it: 1.) encourages cooperation in respect to remediation; and 2.) increases penalties for willful violators in a progressive manner.

Furthermore, Notices of Violation (NOV) may be used as written notice to the operator/owner when delivered to an appropriate party. The NOV is a four-part carbon sheet that includes sufficient language to apprise the recipient of the possibility of administrative, civil or criminal actions and it lists the observations of BOGM personnel.

**Recommendation X.1.**

In addition to all enforcement actions outlined in Guidelines 4.1.3.1.a-h, the review team recommends that BOGM seeks legislative authority which empowers them to bar an operator from commercial production at the site of the violation.

**BOGM Response:**

This recommendation goes far beyond the IOGCC Guidelines and is therefore inappropriate. Section 4.1.3.1 states that the state agency should have the authority to take some or all of the enforcement actions listed in IOGCC Guidelines 4.1.3.1.a-h. BOGM has authority to take all of the recommended enforcement actions, and consequently meets or exceeds the IOGCC Guidelines.

**Follow-Up Review Comments:**

*Although BOGM does not suspend oil sales to achieve compliance, the agency does have the authority to impose the sanctions outlined in IOGCC Guidelines 4.3.1 a-h, 4.3.2 and more. Therefore, the review team recognizes that BOGM has adequate enforcement mechanisms.*

## SUPPLEMENTAL REVIEW

The following supplemental review was carried out under the revised and updated IOGCC 1994 guidelines contained in "IOGCC Environmental Guidelines for State Oil and Gas Regulatory Programs".

### I. General

Pennsylvania's E&P waste management program is effective. The program generally meets or exceeds the criteria of IOGCC Guidelines 3.1 (1994). The state has statutory authority which details the powers and duties of the agencies involved and provides for the promulgation of appropriate rules and regulations. The laws and rules also adequately define necessary terminology. Provisions to fund and staff the program are in place. The laws, rules and policies also include detailed technical criteria for permitting, construction, operating and closure of oil and gas E&P related sites. The program also has an excellent system for coordinating activities with the public, other government agencies and the regulated industry.

**Finding I.1.**

The Bureau of Oil and Gas Management has a plan in place to measure progress against the goals. In the draft 1996-1997 plan there were various items which warrant credit. The BOGM has a very workable program plan and detailed goal-setting process. It includes the increased use of technology for practical applications. Just a few examples of these are the annual program plan evaluation, final phase mapping of the gas storage fields in the Southwest region, money-back guarantee program, and the use of man-made wetlands to create a natural filtration of oil field waste (IOGCC Guidelines 3.2 and 5.3).

**Finding I.2.**

BOGM does coordinate E&P waste management activities with other governmental agencies including the possible transfer of inspection and enforcement responsibilities on federal lands presently within the jurisdiction of the Bureau of Land Management. The goal of the transfer would be to reduce duplication and increase efficiency (IOGCC Guidelines 4.4 and 3.1(e)).

**Finding I.3.**

BOGM has been flexible in working with an industry which is comprised almost entirely of stripper wells. Examples include phased-in deposits of collateral for operators, and operator flexibility to use alternative practices that must provide equivalent or superior environmental protection with prior BOGM approval.

The BOGM does an excellent job with both strategic and short-term planning. The planning process includes meetings with managers and chiefs at various levels of the Bureau. This leads to good program prioritization. Additionally, program work allocations are part of the performance factor for personnel evaluations (IOGCC Guidelines 4.2.3).

## II. Administrative Criteria

The administrative procedures implemented by the BOGM include traditional administrative functions such as program planning and evaluation, budgeting, and personnel. The Pennsylvania E&P waste management program is responsible for permitting, financial assurance and ownership transfer. Public involvement and data collection management are also good aspects of the program.

**Finding II.1.**

The Oil and Gas Operators Manual states in the introduction and throughout the text that compliance with the permit conditions, rules, regulations and statutes related to the BOGM does not reduce other responsibilities required by other state, federal and local governments. Other responsibilities include compliance with the Army Corps of Engineers, Pennsylvania Fish Commission, U.S. EPA (UIC and NPDES), Department of Transportation, U.S. Forest Service, etc. requirements.

According to the Bureau legal adviser, BOGM may not place conditions in permits which they do not have authority to enforce (IOGCC Guidelines 3.3).

## III. Technical Criteria

### A. General

The requirement of the IOGCC Guidelines 5.1.a for state program general performance or design standards applicable to E&P waste management practices is met by Section 78.54. This states that the operator must control and dispose of fluids, residual waste and drill cuttings, including tophole water, brines, drilling fluids, drilling muds, stimulation fluids, well servicing fluids, oil production fluids and drill cuttings in a manner that prevents pollution of the waters of the Commonwealth and in accordance with its laws and regulations.

Pennsylvania regulations achieve waste segregation as recommended by IOGCC Guidelines 2.9.d and 5.1.b through definitions contained in regulations and regulation of those defined substances. The Oil and Gas Act defines tophole water as fresh water encountered while drilling through fresh water formations or fresh water used in drilling. The act allows land spreading of uncontaminated tophole water. The Act also defines drill cuttings and allows uncontaminated drill cuttings from above the surface casing seat to be disposed of at the drill site in an unlined pit if distance limitations are met (§ 78.61(a) of Title 25). Drill cuttings from below the casing seat must be contained at the drill site by a lined pit or tank prior to disposal. If determined to be uncontaminated, they can then be disposed at the drill site by landspreading or burial(§ 78.61 (b),(c)).

Section 261.4 (a) (12) of the regulations under the Solid Waste Management Act exclude drilling fluids, produced waters, and other wastes associated with exploration, development or production of crude oil and natural gas from the hazardous waste definition. The Oil and Gas Act allows modes of on-site disposal for these residual wastes so long as toxicity limits are not exceeded (§ 78.63(a),(b)). Hazardous waste is defined by the Solid Waste Management Act and disposal is prescribed by that Act and regulations under the Act. Residual waste, by definition, cannot contain hazardous waste. Hazardous waste cannot be disposed in pits (§ 78.62(b)(2)) of the Oil and Gas Act) or by land application (§ 78.63(b)). State statutes do not differentiate between exempt and non-exempt E&P waste.

**Finding III.1.**

Pennsylvania regulations encourage waste segregation through definitions contained in regulations and the regulation of those defined substances (IOGCC Guidelines 2.9.d and 5.1.b).

Applicable air emission control requirements exist in Pennsylvania, which encompass E&P waste storage and disposal sites and facilities. These are sufficient to protect air quality, however, oil and gas E&P waste management sites and facilities are below the size/emissions level necessary to trigger regulatory requirements.

## B. Pits

Pennsylvania does not allow some of the types of pits which may be utilized in other parts of the nation. Skimming/settling pits, percolation pits, evaporation pits, blowdown, flare and basic sediment pits are not allowed. Reserve pits, production pits, produced water pits, special purpose pits, emergency pits and workover pits are allowed if designed, constructed, operated and closed in accordance with regulations. No other types of pits are allowed.

Prior notification is required before construction and operation of rule-authorized wells. The operator is required to provide notice of application for a well permit and a copy of the plat by certified mail to the surface landowner, all surface landowners and water purveyors whose water supplies are within 1,000 feet of the proposed well location, the owner and lessee of any underlying coal seams, and every coal operator required to be identified on the well permit application (§201 (b)). In addition, the operator must provide notice to BOGM, the surface landowner and the local political subdivision, in which the well is to be located, 24 hours prior to the date that drilling activity will commence (§ 201 (f)) (IOGCC Guidelines 5.5.2.d).

**Finding III.2.**

Section 78.56 of Title 25 of the Pennsylvania Code authorizes the issuance and use of emergency permits for pits by rule, and therefore does not have specific approval provisions. It meets the IOGCC criteria for this activity. Section 78.56 prescribes design, construction and operating standards for pits and tanks for temporary containment (IOGCC Guidelines 5.5.2.e).

**Finding III.3.**

Although § 78.54 of Title 25 of the Pennsylvania Code requires placement of the reserve pit to control fluids and residual waste in a manner that prevents pollution and in accordance with the control and disposal plan required by § 78.55, there is no specific regulation prescribing the placement of the reserve pit relative to drilling equipment (IOGCC Guidelines 5.5.3.g).

## C. Landspreading (Non-Commercial)

Statutory and regulatory definitions of, or prohibitions against, landspreading in Pennsylvania are contained in § 603.1(a) of the Oil and Gas Act and §§ 78.61(b) and § 78.63 of the regulations for on-site landspreading of drill cuttings and residual waste and §78.60 for landspreading of tophole water. Off-site landspreading, if it were to occur, would be regulated by the Solid Waste Management Act regulations (§§ 287 and 291) (IOGCC Guidelines 5.6.1.a).

**Finding III.4.**

Surveys of NORM in Pennsylvania demonstrate levels to be below the level of regulatory concern. There is therefore no need to prohibit landspreading of E&P wastes for NORM considerations (IOGCC Guidelines 5.6.1.c).

Free oil must be removed from E&P wastes before landspreading under § 78.63(a)(14), and the pH of solid waste/soil mixtures is regulated by § 78.63(a)(18) and Appendix D of ***Characterization and Disposal Options for Oilfield Wastes in Pennsylvania***. The pH of tophole water allowed to be discharged to land surface is regulated by § 78.60(b)(3). The waste must be spread and incorporated into the top layer of the soil to a depth of at least six inches, and the loading and application rate may not exceed a maximum waste to soil ratio of 1:1 (§ 78.63(a)(17) and (18)). Addition of nutrients to enhance biodegradation could be allowed as an alternate method (§ 78.63(c)),(IOGCC Guidelines 5.6.3.e).

Land application of liquids is restricted to tophole water or precipitation. The water must be characteristic of the natural background quality, may not contain additives, drilling muds, pollutional materials or drilling fluids, must have a pH between 6 and 9 and a specific conductance of less than 1,000 umhos/cm, may not have a sheen from oil and grease and must be spread over an undisturbed, vegetated area (§ 78.60),(IOGCC Guidelines 5.6.3b and d).

Section 78.63 (a)(18) and Section 78.63 (b) provides for maximum loading rates for cadmium, copper, chromium, lead, mercury, nickel, zinc, oil and grease, and soluble salts. It also limits the oil and grease content of landspread wastes to no more than 1% on a dry weight basis and limits the salt content to 4 mmhos/cm or less. Guidelines are contained in Appendix D of ***Characterization and Disposal Options for Oilfield Wastes in Pennsylvania*** (IOGCC Guidelines 5.6.3.b,d,f,g and h).

Section 78.63 (a)(21) provides for remediation of a landspreading site until it meets acceptable levels prescribed in § 78.63 (a)(18) and (b) and Appendix D of ***Characterization and Disposal Options for Oilfield Wastes in Pennsylvania*** (IOGCC Guidelines 5.6.3.i).

Section 78.63(b) of Title 25 of the Pennsylvania Code prescribes toxicity limits for landspread wastes. (IOGCC Guidelines 5.6.3.k).

**Finding III.5.**

Although the Pennsylvania DEP does not require prior soil analysis and post soil/waste mixture analysis, they have the authority to require such analyses. Analysis of the waste is required prior to landspreading (IOGCC Guidelines 5.6.3.i).

**D. Burial and Landfilling (Non-Commercial)**

The burial or landfilling of E&P waste is a controlled and regulated activity in Pennsylvania. E&P waste is classified as a residual waste, vs. municipal or hazardous, under the Solid Waste Management Act, and off-site disposal by landfilling is regulated by that Act; "residual waste" and "residual waste landfill" are defined in §287.1 of the Solid Waste Management Act regulations.

On-site disposal at permitted and bonded well locations through burial or landfilling is authorized by §§ 206 and 603.1(a) of the Oil and Gas Act. These processes are described and regulated in § 78, Subpart C of the regulations and eligible substances are defined in § 78.1 (IOGCC Guidelines 5.7.1 and 5.7.2).

Off-site disposal by landfilling is regulated under chapters 287 and 288 of the Solid Waste Management Act (IOGCC Guidelines 5.7.2).

**E. Roadspreading**

The Commonwealth of Pennsylvania allows the roadspreading of brine (produced water) on unpaved roads for dust control and road stabilization. DEP considers the roadspreading of brine a beneficial use rather than a disposal method. The DEP has developed guidelines for the roadspreading of brine which includes the submittal of a yearly plan, approval of the plan by DEP, operating requirements and reporting requirements. The guidelines were developed under the authority of Chapters 78.55 and 101.3 of the Rules and Regulations.

The roadspreading plan must be submitted to the DEP on an annual basis. The plan must demonstrate how the potential to pollute will be minimized during the roadspreading events. The plan must also include authority to spread from the road owner, a map of the roads to be spread, a description of how the brine is to be applied and the equipment to be used. The plan must further identify the geologic formation from which the brine will be produced and the rate

and frequency of application. A chemical analysis of the brine to be spread must be provided consisting of the parameters pH, iron, MBAS, calcium, manganese, sodium, chloride, sulfate, barium, magnesium, total dissolved solids, total solids, aluminum, and potassium.

A monthly report of brine roadspreading activities must be submitted to the DEP and must contain the quantity of road applied brine, the county, township and roads (miles) where spreading took place, and the dates of application. In order to evaluate the potential effects of roadspreading on surface water and ground water quality, the DEP in cooperation with other state and local agencies and industry companies, performed a four year study of brine roadspreading. The study entitled "Non-Point Source Report on Roadspreading of Brine for Dust Control and Road Stabilization," determined there was no noticeable impact on receiving streams but minor impacts occurred on roadside ditches. Impacts on ground water quality were detected at one of four sites. Lysimeters installed adjacent to the road beds detected migration of the brine. The heavy metal content of the road bed did not demonstrate an accumulation of heavy metals. The draft study indicated a potential for brine to migrate or run off the road and impact ground water or surface water quality. However, by controlling the frequency and application rate, and complying with the other provisions of the DEP Guidelines, the impact to ground water and surface water can be minimized while still meeting the road maintenance objective.

**Finding III.6.**

Brine to be roadspread is required to be analyzed for pH, iron, MBAS, calcium, manganese, sodium, chloride, sulfate, barium, magnesium, total dissolved solids, total solids, aluminum and potassium. The requirements are contained in a DEP guidance fact sheet (Roadspreading of Brine for Dust Control and Road Stabilization), not within regulations. The guidance was developed under the authority of Chapters 78.55 and 101.3 of the Rules and Regulations which requires the submittal of a control plan (IOGCC Guidelines 5.8.3.d).

The plan must be submitted and approved by DEP prior to roadspreading of the brine. Approval is based upon the DEP guidance fact sheet. The application of the brine must be according to the approved plan and the application rate shall not exceed one gallon of brine per square yard of road surface.

**Finding III.7.**

The maximum allowable application rate of brine is one gallon per square yard of road surface. The maximum requirement is contained in a guidance fact sheet rather than in a regulation (IOGCC Guidelines 5.8.3.b).

The frequency of brine spreading, and the application rate must be controlled to prevent the brine from flowing or running off into roadside ditches, streams, creeks, lakes and other bodies of water and infiltrating into ground water. The brine is not to be applied within 150 feet of a stream, creek, lake or other body of water.

**Finding III.8.**

In order to observe a buffer zone, brine is not allowed to be roadspread within 150 feet of a stream, creek, lake or other body of water. The set back requirements for the spreading of brine is contained in a guidance fact sheet and not in a regulation (IOGCC Guidelines 5.8.3.c).

## F. Tanks

Tanks are utilized for the temporary containment of drilling wastes and production fluids. The tanks are to be constructed to be structurally sound and reasonably protected from unauthorized acts of third parties. Tanks are to be maintained with at least two feet of free board or an overflow system to a standby tank or pit with sufficient volume to contain all excess fluid or waste.

**Finding III.9.**

The requirements for tanks lacks specific requirements for corrosion protection consistent with the intended use of the tanks. However, the general requirement for an operator to control and dispose of fluids in a manner that prevents pollution of the waters of the Commonwealth is considered by the state agency to be adequate to address corrosion issues (IOGCC Guidelines 5.9.3.a and i).

**Finding III.10.**

The state agency does not maintain a tank inventory or registration program to identify the location of tanks. Each operator is required to submit a control and disposal plan and as part of that plan, tanks are identified by the operator (IOGCC Guidelines 5.9.2.a).

Within nine months of completion of drilling or after plugging of a well, all tanks must be removed from the site and the site restored. Within 60 days of site restoration, a well site restoration report must be submitted to the Agency. The tank removal and closure procedures are consistent with the IOGCC Guidelines for tanks (IOGCC Guidelines 5.9.4).

## G. Commercial and Centralized Disposal Facilities

E & P waste streams in Pennsylvania are treated and disposed of at a variety of commercial and centralized locations. The commercial facilities consist of two industrial waste treatment facilities and four municipal sewage treatment plants that blend brine, drilling fluids and frac fluids with other waste streams prior to treatment and discharge to surface waters. Centralized facilities treat and discharge brine, drilling fluids and frac fluids only. Seven UIC facilities dispose of brine in Class II-D wells. Residual waste landfills can be, but currently are not, used for off-site disposal of E&P solids.

Commercial and centralized treatment facilities are regulated by DEP. Brine treatment and disposal facilities are regulated by BOGM. Within DEP, brine treatment and disposal facilities are regulated by BOGM. The municipal and industrial treatment facilities are regulated by the Bureau of Water Quality Management. The residual waste landfills are regulated by the Bureau of Land Recycling and Waste Management.

The permitting process for centralized and commercial facilities includes requirements for siting, construction and operational plans consistent with the IOGCC Guidelines 5.10.2.2.b.c. and d. Applicable regulations for compliance with Clean Air Act requirements are contained within state statute, but the commercial and centralized facility air emissions fall below the regulatory threshold that necessitates a permit.

Waste hauled to the commercial and centralized facilities is monitored through waste transporter reports and well operator annual production reports.

**Finding III.11.**

The waste tracking system utilized does not provide documentation by the hauler and the facility operator that no wastes were dumped illegally, or at a location or facility not designated by the generator or permittee to receive the waste, and that no prohibited or hazardous wastes were mixed with the waste during transport. The system also does not require reporting of discrepancies in waste description, volume, or place of origin (IOGCC Guidelines 5.10.2.3.c and d).

The Pennsylvania Department of Transportation has a program of licensing waste truck drivers and vehicles. Their program serves as the equivalent of a waste hauler certification program.

Although training is not specifically required in the rules, waste haulers effectively must be experienced in the regulatory requirements.

**Finding III.12.**

E&P waste haulers that are licensed by the Commonwealth are not required to demonstrate a showing of basic knowledge of the regulatory requirements of E&P waste issues (IOGCC Guidelines 5.10.2.3.e).

## IV. Abandoned Sites

The Commonwealth of Pennsylvania has developed a program to inventory, prioritize, and remediate abandoned sites. The program consists of Abandoned Well and Orphan Well Plugging Funds. Resources for the funds come from a $50 surcharge on all new wells to be placed in the Abandoned Well Plugging Fund and a $200 surcharge on new gas wells and a $100 surcharge on new oil wells which is deposited into the Orphan Well Plugging Fund. Monies from the two funds cannot be comingled.

The initial resources of the funds were used to start up the program, inventory wells, determine plugging costs and report recommended needed alternative funding mechanisms. The report is due to the Governor and the General Assembly in 1997.

Pennsylvania identifies well locations as being either abandoned or orphaned. The term "abandoned" has more than one use in the Pennsylvania regulatory program. In the Act an abandoned well is defined as, "Any well that has not been used to produce, extract or inject any gas, petroleum or other liquid within the preceding 12 months, or any well for which the equipment necessary for production, extraction or injection has been removed, or any well, considered dry, not equipped for production within 60 days after drilling, redrilling or deepening, except that it shall not include any well granted inactive status." This use of the term is silent concerning any environmental threat.

A second use of "abandoned" is in conjunction with the Abandoned Well Plugging Fund noted in § 601 (b) of the Act. This use of the term is connected to wells that would be a subset of the above category; these wells do ". . . threaten the health and safety of persons or property or pollution of waters of the Commonwealth." These wells are those which are prioritized by the Chief of the Subsurface Activities Division of the Bureau of Oil and Gas Management. Priority is based on degree of hazard posed to the public health, safety and the environment. There are approximately 649 wells in this category.

Orphan wells are those which are prioritized according to ownership (they lack a readily locatable owner or operator). There are 6,718 of these wells. Currently approximately 30 wells are plugged per year. The plugging process also includes site remediation consisting of pit closure, equipment removal, soil stabilization and revegetation.

**Finding IV.1.**

The Pennsylvania abandoned and orphan well fund program meets the established guidelines (IOGCC Guidelines 6.1).

**Finding IV.2.**

Under the current abandoned and orphan fund program, the wells posing the greatest threat to human health and the environment have already been plugged within the first four years of the program (IOGCC Guidelines 6.6).

## V. Naturally Occurring Radioactive Material

Since 1991, the Bureau of Oil & Gas Management and Bureau of Radiation Protection in DEP and the Bureau of Topographic and Geological Survey in the Department of Conservation and Natural Resources have been involved in a study of NORM in oil and gas activities. Staff have been conducting surveys and collecting samples of NORM at oil and gas well sites and related facilities in 26 counties in western Pennsylvania which comprise the oil and gas regions of the state. Facilities surveyed include over 400 oil and gas well sites, nine pipe yards, and about 500 miles of dirt roads that were sprayed with brine for roadbed stabilization and dust suppression.

About 60% of the well sites had readings at or below background levels. Of the remainder, 34% had readings within 10 microRoentgens/hour (microR/hr) of background, 3% were in the range of 11 - 20 microR/hr above background, and 2% were 21 - 54 microR/hr above background. One site was 195 microR/hr above background. Study results thus far have led to the conclusion that development of regulations for NORM at oil and gas E&P sites is a low priority for DEP.

Sludge and soil collected at well sites were generally at or below 5 picocuries/gram (pCi/g). Sludges must be disposed in a secured landfill.

No significant radiation levels were seen at pipe yards from pipe taken from Pennsylvania wells. One elevated reading was noted in pipe from another state. Several brine treatment facilities surveyed had radiation levels above background, but not sufficiently elevated to require controls for the protection of the workers or the general public. Road surveys for gamma radiation were generally at or below background levels. All areas with elevated readings were attributed to shale outcroppings.

Pennsylvania is continuing to evaluate brines and sludges to expand its data base and for future consideration. Because of the survey findings as summarized above, development of regulations for NORM at oil and gas E&P sites is a low priority for DEP.

**Finding V.1.**

The NORM Report was not widely circulated. Only members of industry and an interested law firm directly received the information (IOGCC Guidelines 3.1.e).

**Recommendation V.1.**

The Bureau of Radiation Protection in the DEP or other state agency should notify the public once the NORM report or results of the study are available (IOGCC Guidelines 3.1.e).

## STUDIES AND PROJECTS

There are several areas where the Commonwealth has gone above and beyond the IOGCC Guidelines in trying to develop new or innovative E&P waste management and disposal options which are worthy of mention. They can be summarized as follows:

### A. General NPDES Permit for Stripper Oil Well Facilities

The BOGM developed and issued a general National Pollutant Discharge Elimination System (NPDES) permit for treated discharges to certain classifications of streams from stripper oil well facilities where the method of production is primary recovery or gas drive. The permit was issued pursuant to 25 Pennsylvania Code Chapter 92 and is subject to certain specified effluent limitations and special conditions. Stripper oil wells produce 10 barrels or less of crude oil a day. Discharges from water floods or other secondary or tertiary recovery operations are not covered by this general permit. This permit was approved by the U.S. EPA.

### B. Surfactant Demonstration Projects

The BOGM recently participated in a joint project with industry in evaluating the biodegradation of surfactants in tophole water. The objective of the project was to eliminate the surfactant by adding acclimated bacteria and nitrogen fertilizer to the tophole water and aerating the pit. Five sites were evaluated. This project has been suspended due to current lack of interest by the industry.

### C. NORM Survey of Oil and Gas Wastes

In order to determine the levels of naturally occurring radioactive material (NORM) that may be contained in produced waters, measurements were taken from pipe and equipment, scales from the bottom of produced water storage tanks and pits were measured. The NORM survey was conducted in three phases. In Phase I, staff sampled the solids and liquids from brine pits and tanks at oil and gas wellsites across the Commonwealth. They also sampled wastes at disposal wells and brine treatment plants. There were 41 wellsites, two disposal wells, and seven brine treatment plants sampled.

The second phase of the survey involved the inspection of nine pipe yards in seven counties. The inspections were conducted jointly by staff from the Bureau of Oil and Gas Management and the Bureau of Radiation Protection using low level radiation detection meters to determine radioactivity measurements.

In Phase III of the survey, regional staff used low level radiation detection meters to survey oil and gas wellsites across the Commonwealth. In addition, Bureau of Radiation Protection personnel used low level radiation detection meters to survey brine treatment plants, municipal treatment plants which accept oil and gas wastes, disposal wells, and gas storage facilities. There were 309 wellsites, seven brine treatment plants, three municipal treatment plants which accept oil and gas wastes, five disposal wells, and two gas storage facilities surveyed.

## D. Solidification as an Alternate Waste Management Practice

The BOGM initiated an evaluation of solidification as an alternate waste management disposal practice at several demonstration sites. Under the oil and gas regulations, where wastes are to be disposed in pits, these pits must be lined with 30 mil. synthetic flexible liners for the protection of groundwater. Alternative waste disposal practices can be requested to be approved. Solidification was viewed by the gas industry as the option of choice for the closure of pits, since they believed the process could provide the same environmental protection as a synthetic liner, provide the stability required for a backfilled pit, and allow for the use of a thinner, more easily managed liner until pit closure took place. At the demonstration sites, monitoring wells were placed near the pit locations to observe any groundwater contamination. Solidifier materials, as well as pit contents, were analyzed to determine potential sources of pollutants. This study did not show solidification to offer the same level of environmental protection as the synthetic liner. The results were useful, however, in establishing the suitability of certain solidifiers for site stabilization.

## E. Characterization of Oil Production Pit and Tank Bottom Wastes

The BOGM is currently conducting a project involving the characterization of wastes that accumulated in the bottoms of storage tanks, pits, and separators (commonly referred to as basic sediments) used for oil production in order to identify low cost options available to industry to close the pits and dispose of the wastes in an environmentally sound manner. Prior to the development of regulations, pits used for the collection and storage of these wastes were rarely lines and had a potential to contaminate groundwater. This project will identify the disposal options available to the industry to close these pits and bring these sites into compliance with current requirements.

In June 1994, the BOGM completed its study on the characterization and disposal of oil production pit and tank bottom wastes. The results of this effort show that unlined pits which contain oily waste and produced fluids from oil production operations present a threat to ground and surface water if not properly managed and disposed. Disposal options determined to be viable by BOGM based on study results include disposal in a lined pit or by land operation of the well site, and off-site disposal at an approved landfill. Bioremediation offers a possibility for treatment on-site, but has not been field tested at sites in Pennsylvania. See Section III on Technical Criteria.

## F. Assessment of Roadspreading

Another project underway is a three-year assessment of impacts on ground or surface waters from the practice of spreading brines from gas and primary recovery oil wells on unpaved secondary road systems for dust control and road stabilization. This assessment involves the selection and monitoring of five roads which are spread with brines.

The assessment of this beneficial use of brines was recently completed. The results are characterized in an August 1996 draft report entitled, "Non Point Source Report on Roadspreading of Brine for Dust Control and Stabilization" and formed the basis for technical and administrative recommendations to modify existing guidelines for this practice. See Section III, Technical Criteria.

## G. Simplified Brine Treatment Units

Over the past several years the BOGM has been providing consultation on a research project being conducted by Pennsylvania State University to develop simplified brine treatment units for oil well brines. These home-built plywood, 2X4, plastic pipe, and limestone units are designed to remove metals and organics from brines prior to discharge. Treatment includes flow control, oil and grease removal, pH adjustment, aeration, settling, and filtration. A computer model sizes the units based on flows and brine constituents. The units are undergoing field demonstration at this time.

## H. Strategic Planning

The BOGM is currently involved in a strategic planning effort, to be completed by early 1997 to determine the direction of the program five years into the future. This effort involves identification and survey of customers, meeting with stakeholders, mapping of current practices, determination of needed changes, prioritization of improvements, and action plans for implementations. Each year the BOGM develops a program plan that sets forth goals and objectives for the upcoming year. The BOGM's Draft 1996-97 Program Plan includes the conduct of numerous projects and studies. Examples include: 1.) a customer needs assessment; 2.) assessing technology used in complying with environmental programs and educating the regulated community on innovative and cost-effective methods of achieving compliance; and 3.) performing program effectiveness evaluations for three program areas, one under the responsibility of each division. See Section I, General Criteria and Section II, Administrative Criteria.

# APPENDIX A

# LIST OF ACRONYMS

## ACRONYMS

| | |
|---|---|
| BLR&WM | Bureau of Land Recycling and Waste Management |
| BOGM | Bureau of Oil and Gas Management (Pennsylvania) |
| BRP | Bureau of Radiation Protection |
| BWQM | Bureau of Water Quality Management |
| DEP | Department of Environmental Protection |
| DER | Department of Environmental Resources |
| E&P | Exploration and Production |
| EQB | Environmental Quality Board |
| IOGCC | Interstate Oil and Gas Compact Commission |
| NORM | Naturally Occurring Radioactive Material |
| NOV | Notice of Violation |
| NPDES | National Pollutant Discharge Elimination System |
| RCRA | Resource Conservation and Recovery Act |
| TAB | Technical Advisory Board |

# APPENDIX B

# QUESTIONNAIRE

# APPENDIX B

# QUESTIONNAIRE FOR FOLLOW-UP AND SUPPLEMENTAL REVIEW OF STATE OIL AND GAS ENVIRONMENTAL REGULATORY PROGRAMS

State **PENNSYLVANIA**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INSTRUCTIONS: The primary basis for this review is the IOGCC Environmental Guidelines for State Oil and Gas Regulatory Programs (May 1994). Please answer the questions as completely as possible. However, avoid supplying background information, data, regulations or statutes which do not address issues in the IOGCC Guidelines or are not related to the state's oil and gas environmental programs. (For example, regulation of underground fuel storage tanks is not addressed in this review.) Terms used in this questionnaire have meanings consistent with those contained in the IOGCC Guidelines. Citations which appear in brackets (e.g., [5.3.]) following each question refer to the applicable section or sections of the IOGCC Guidelines.

Please prepare a separate document that 1) lists each finding that contained a recommendation from the previous review along with a summary of state program changes that address each recommendation, and 2) restates each question from this questionnaire and follows each question with the appropriate answer or answers. A computer disk containing the questionnaire (in Word Perfect 5.1) has been provided to facilitate your preparation of the document.

# REQUESTED BACKGROUND INFORMATION

I. Please provide a copy of the following:

A. All statutes, rules, regulations, orders, and other documentation reflecting changes made in response to recommendations contained in the report of the previous state review.

**Response:** Please refer to the enclosed:
Oil and Gas Act
Chapter 78
Characterization and Disposal Options for Oil field Waste in Pennsylvania
Graphs of Oil and Gas Field Activities
Residual Waste Management Regulations
Fact Sheet on Roadspreading

B. Organization chart(s) showing the structure of all agencies responsible for abandoned oil and gas sites, and oil-field NORM (naturally occurring radioactive materials).

**Response:** Please refer to the enclosed organization chart of the Department of Environmental Protection (DEP). The abandoned sites program is located in the Bureau of Oil and Gas Management (BOGM) and the oilfield NORM program is shared between BOGM and the Bureau of Radiation Protection (BRP).

For the purposes of program identification later in this questionnaire, the Bureau of Land Recycling and Waste Management (BLR&WM) has responsibility for off-site disposal of residual waste, including non-NPDES regulated E&P waste, and the Bureau of Water Quality Management (BWQM) has responsibility for NPDES permits for municipal and industrial treatment plants that blend E&P waste with other waste streams.

C. All statutes, rules, regulations and orders applicable to abandoned oil and gas sites, and NORM from oil and gas production.

**Response:** Please refer to the enclosed:
Oil and Gas Act
Fact Sheet on Orphan Well Identification

D. Any memoranda of understanding or similar agreements between state agencies or between the state and any other governmental entities (BLM, EPA, Indian Tribes, local jurisdictions) pertaining to abandoned sites, and NORM from oil and gas production.

**Response:** There are none specific to these issues since regulation of abandoned sites and NORM are both responsibilities of one agency, the DEP.

**Finding I.E.1.** There has been an overall negative impact on the level of surveillance and enforcement as a result of staff reductions. Budgetary concerns and limitations have resulted in too few oil and gas inspectors and water quality specialists to allow for a prioritization of more than a limited variety of inspections and enforcement services. As a result, the BOGM must prioritize and concentrate resources more narrowly than it believes to be sufficient (IOGCC Guidance 4.3, 4.3.1.4 and 4.3.2).

**Recommendation I.E.1.** The Commonwealth should allocate sufficient resources so as to broaden the number and kind of inspection and enforcement activities (also, see Finding and Recommendation I.F.1).

**Response:** Unfortunately, BOGM, like any program in any agency in any state, is competing for limited resources. And, like other programs, BOGM must prioritize its work. Addition measures, including training, improved data systems, strategic planning, annual program planning and evaluation, and reassignment of program responsibilities, have been implemented to allow more efficient management of the resources available. Reduced levels of activity in the oil and gas industry, coupled with a general shift from the "command and control" mode of operation by government, have resulted in a changed dynamic in the oil and gas regulatory program. The results, which are shown on the enclosed charts entitled "Oil and Gas Field Activities", show that: 1) inspection time has decreased while the number of inspections has been relatively constant, 2) the number of violations recorded has been relatively constant, and 3) the number of enforcement actions has increased while enforcement time has decreased. This reflects program changes which have resulted in increased efficiency.

**Finding I.E.2.** Although DER employees are well qualified and trained, there appears to be a lack of personnel and resources in all areas of E&P waste regulation, administration, permitting, surveillance and enforcement. Staffing levels that were to be provided through a three year program have not been authorized as requested and have not met the needs for inspection and enforcement actions for routine environmental and administrative violations. The BOGM does not have the authority to fill vacancies at present. Only 59 of 65 authorized positions are filled (IOGCC Guidance 4.3, 4.3.1 and 4.3.2).

**Recommendation I.E.2.** Steps should be taken to fill currently vacant positions and to add new positions in all areas of E&P waste regulatory management according to currently requested levels.

**Response:** The temporary situation described in the finding changed in subsequent budget years. There are presently 63 positions assigned to the central and regional offices of the oil and gas program. The ability to fill vacancies at any point in time is dependent on the budget situation. In light of present levels of oil and gas activity and absent any new legislative initiatives, there are no requests for additional positions anticipated.

**Finding I.F.1.** Funding levels of the BOGM E&P waste management program are inadequate to fully carry out the program as it exists (IOGCC Guidance 4.3.2).

**Recommendation I.F.1.** In addition to general appropriations, other sources of funding should be developed to address current and future personnel and resource needs. The Commonwealth should consider the following options in order to increase revenues:

1. Raising fees;
2. Increasing permit surcharges;
3. Implementing a severance tax on production;
4. Implementing inspection fees; and/or
5. Implementing fees tied to volumes of E&P waste generated/disposed.

**Response:** In 1992, after the initial IOGCC state review in Pennsylvania, the Oil and Gas Act was amended. Changes included an increase in permit surcharges to establish an Orphan Well Plugging Fund (discussed in Section IV of the questionnaire), and the allocation of fines, fees and penalties to BOGM for implementation of the Act. These fines, fees and penalties amount to $275,000-300,000 per year. These revenues are in addition to the continuing General Fund appropriations. These revenues have been adequate for the levels of program activity recently experienced.

**Finding II.3.** The IOGCC criteria for commercial and centralized facilities states that the permits should be reviewed and revised if necessary, no less frequently than every five years. The commercial brine treatment facilities have NPDES permits which are renewed every five years. However, the disposal well facilities and residual waste disposal facilities are issued permits for the life of the operation (IOGCC Guidance 4.1.1).

**Recommendation II.3.** A process should be implemented that will require a review process to take place on all commercial/centralized facility permits every five years. The review process should include an on-site inspection, review of compliance history, status of outstanding compliance issues and review of adequacy of bonding. Provisions should be made to enable amendment of the permit to include outstanding issues needing attention. [Note: The review team recognizes that regulations were adopted as final by the EQB on January 21, 1992, and are currently undergoing final review by the Independent Regulatory Review Commission and Attorney General.]

**Response:** As noted in the recommendation, regulations addressing this issue were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. Permits for commercial and centralized facilities are issued for a maximum of ten years, with reviews at intervals not to exceed five years (see § 287.211(a) and (d)). The review includes all issues noted in the recommendation.

**Finding II.4.** If E&P waste solids are to be disposed of off-site at a commercial disposal facility a "Module I" (Form ER-WM-14, Appendix D) must be submitted for each waste stream. The Module I must include the types of waste to be disposed, a complete analysis of the waste, and the facility at which the waste will be disposed. The timeframe required for a Module I review is not specified (but may take up to 300 days). This may not adequately coincide with the mandated closure period on a

drilling pit (within 90 days of completion of drilling activities). The timeframe for a Module I may be far in excess of the 90 days required to complete pit closure (IOGCC Guidance 4.1.1).

**Recommendation II.4.** The timeframe for permitting a Module I should be reviewed to determine if the timeframe could be altered to correspond with the requirements for drilling pit closure requirements.

**Response:** As a result of program improvements and revision of the regulations, a Form U (formerly Module I) is now processed within 15 days. This time frame corresponds very well with time requirements for pit closure.

**Finding II.5.** The vast majority of E&P waste solids and sludges are disposed of on-site. The remaining waste is disposed of in municipal and industrial waste landfills. The landfills are constructed with liners and leachate collection systems. Each regional office of the state has recommendations of what is to be included in an application for a landfill which will accept solid and industrial waste as well as E&P waste (residual waste). These varying recommendations include such issues as monitoring, liner thickness, construction standards, Quality Assurance/Quality Control (QA/QC), etc. (IOGCC Guidance 4.1.1).

**Recommendation II.5.** The application requirements for landfills which will dispose of residual waste from E&P operations should be standardized. [Note: The review team recognizes that regulations were adopted as final by the EQB on January 21, 1992, and are currently undergoing final review by the Independent Regulatory Review Commission and Attorney General.]

**Response:** As noted in the recommendation, regulations addressing standards for municipal and residual waste landfills were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. All of the concerns raised in the finding and recommendation were standardized in the regulations (see § 287.152, §§ 288.251-258, and §§ 289.261-268 for monitoring, §§ 287.431-440 and §§ 288.531-539 for liner requirements, and § 287.132(d) for QA/QC).

**Finding III.2.** There is no requirement for additional or special notification to the adjacent landowners of record (in writing) for commercial or centralized disposal facilities or NPDES permits for treatment and discharge facilities (IOGCC Guidance 4.2.2.1).

**Recommendation III.2.** The DER should adopt regulations which require special notification of adjacent landowners of record when a commercial or centralized disposal facility is proposed. [Note: The review team recognizes that regulations were adopted as final by the EQB on January 21, 1992, and are currently undergoing final review by the Independent Regulatory Review Commission and Attorney General.]

**Response:** As noted in the recommendation, regulations addressing this issue were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. Adjacent landowners and leaseholders are required to be identified and notified of the application for a permit by the

applicant (see § 287.124(a)(2) and (3)).

**Finding III.3.** The BOGM has formal procedures for public access to BOGM files. The BOGM has also established procedures for maintaining files that are confidential in nature. Interested parties must make prior notice to BOGM in order to perform the review (IOGCC Guidance 4.2.2.1).

**Recommendation III.3.** Prior notice to BOGM in order to perform file reviews is beneficial to the agency to allocate limited resources to such file review. However, if an interested party is unaware of the requirement, the potential for a substantial loss of time and effort in travel to the BOGM office may result. Although BOGM has met the criteria of IOGCC Guidance 4.2.2.1, they should ensure that an interested party unfamiliar with the process can obtain reasonable access to the files on a one time basis only.

**Response:** As noted in the recommendation, BOGM procedures on public access to files meet the criteria of the IOGCC Guidance, so the appropriateness of this recommendation is questionable. However, accommodations such as those suggested are made for reasonable requests which do not disrupt the functions of the office.

**Finding III.5.** Although IOGCC Guidance is not specific in this area, BOGM sends out press releases on significant enforcement actions and provides summaries of enforcement activities at public meetings and in response to requests from legislators, industry associations, environmental groups and the public upon request. Major enforcement actions are published in the *Pennsylvania Bulletin*. Affected parties are notified of permit actions, variances, etc. as part of the permitting process (IOGCC Guidance 4.2.2.2).

All review team members agree with the above finding.

**Recommendation III.5.** One review team member believed it was important to make the recommendation III.5. that BOGM should implement a process to provide notification of final actions and compliance orders resulting from major violations or subsequent due process proceedings to interested citizens of record. The BOGM should have available information regarding program implementation such as permits, variances, enforcement actions, fines levied, etc.

**Response:** As stated in the finding, this recommendation by one team member is beyond the scope of the IOGCC Guidance, so its appropriateness is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. As noted, information of various types is provided upon request. Additionally, various information is provided on a routine basis to Petroleum Information, IOGCC, and industry trade associations. Highlights of program and Department activities are provided in the *UPDATE*, which is DEP's weekly activity report. The *UPDATE* is distributed in hard copy to a mailing list of interested parties and is also available via the DEP web site (hhtp://www.dep.state.pa.us) to any interest party with Internet

capabilities.

**Finding III.6.** The BOGM requires the road owner (Township or Commonwealth) to sign the spreading application indicating concurrence with the application. The frequency of roadspreading is based on dust conditions and road conditions. However, notification of private landowners adjacent to these roadways is not requires (IOGCC Guidance 4.2.2.1).

**Recommendation III.6.** The BOGM should require the brine spreading operator as part of the annual roadspreading plan to provide public notification that would adequately notify the residents and/or landowners along roads to be spread with produced brine.

**Response:** Since public notice of roadspreading is beyond the scope of IOGCC Guidance 4.2.2.1 (which recommends public notice to residents or landowners adjacent to centralized and commercial disposal facilities), the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. Roadspreading is not viewed as a disposal activity, but the application of brine for roadbed stabilization and dust control. This activity is similar to the application of salt or antiskid materials in the winter, or pothole repair or road resurfacing at other times of the year. It is a road maintenance activity conducted by or contracted by the public road owner. Notification of adjacent residents and landowners is at the discretion of the government entity responsible for road maintenance. Because roadspreading has the potential for pollution of waters of the Commonwealth, a pollution prevention and control plan which conforms to BOGM guidelines must be submitted for approval. Similar plans are required for any entity that stores, produces, processes, transports, or uses pollutional materials if they are not otherwise regulated (see § 101.3).

**Finding III.8.** Section 216 of the Oil and Gas Act requires TAB members meet certain technical background requirements. Individuals to be considered for these positions are required to be geologists or petroleum engineers with at least three years experience in Pennsylvania. Their names are submitted to the Governor by the Citizens Advisory Council.

All review team members agree with the above finding.

**Recommendation III.8.** One review team member believed it was important to make recommendation III.8. that at least one Citizens Advisory Council member on the Technical Advisory Board should have an environmental or health related background. This would result in more meaningful public input into the rule making process.

**Response:** This recommendation by one team member goes beyond the scope of IOGCC Guidance 4.2.2.3, so the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the

recommendation, the following explanation is offered. As noted in the finding, the Oil and Gas Technical Advisory Board (TAB) was created by statute. BOGM is required by the same statute to consult with TAB in the formulation, drafting and presentation stages of all regulations of a technical nature promulgated under the Oil and Gas Act. The Oil and Gas Act regulates oil and gas wells. It is not the E&P waste management statute. E&P waste is regulated under the Clean Streams Law, the Solid Waste Management Act, and the Administrative Code. There are other advisory committees (Air and Water Quality Technical Advisory Committee and Solid Waste Advisory Committee), whose members include health and environmental professionals, which provide consultation regarding program development under the environmental statutes. All regulations DEP implements are promulgated by the Environmental Quality Board and undergo extensive public input as pointed out in the response to Recommendation I.A.3. The Department of Environmental Protection and the Environmental Quality Board are the entities which assure the protection of the health and environment in Pennsylvania. Having a TAB member without an oil and gas background would serve no useful purpose in fulfilling the TAB function of providing consultation on technical oil and gas issues, and could add further delays to the rule making process, which the review team felt was too long (see Recommendation I.A.3).

**Finding III.9.** One review team member believed it was important to make finding III.9. that the guidance provides for the dissemination of program information to the regulated industry and the public through an ongoing process. One of the ways this could be accomplished is through the publication of an annual report (IOGCC Guidance 4.2.2.2).

**Recommendation III.9.** One review team member believed it was important to make recommendation III.9. that in order to provide ongoing program information to the regulated industry and the public, the BOGM should publish an annual report of its activities.

**Response:** This recommendation by one team member goes beyond the scope of IOGCC Guidance 4.2.2.2 (an annual report is not mentioned), so the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. As noted in the response to Recommendation III.5, extensive efforts are made to assure the availability of program information to the public. In addition to activities included in that response, the Director has been providing a column to IOGA of PA for their monthly newsletter since April, 1992. The Oil and Gas Operators Manual is in the process of being updated and will be republished shortly (draft enclosed). Fact sheets have been developed for a number of issues and made available to industry and the public (examples are enclosed). The Bureau of Topographic and Geologic Survey in the Department of Conservation and Natural Resources publishes annual reports on oil and gas activities. Since BOGM resources are limited, publication of an additional annual report, while nice to do, is not viewed as an essential activity.

**Finding IV.1.** The bond requirements are set at $2,500 per well with a blanket of $25,000 for all wells per operator. With BOGM's average cost to plug being $17,000, the blanket bonding limits are generally insufficient. Bonds can be used to address environmental problems at the well-site (wells, pits, etc.). If companies with many wells under a blanket bond default, it could leave the Commonwealth underfunded with a large number of wells to P&A, since blanket bond is only $25,000 (IOGCC Guidance 4.2.3).

**Recommendation IV.1.** The bonding requirements for single and blanket coverage should be increased to cover the average cost of plugging and site reclamation. Furthermore, alternative revenue sources should be adopted so that funds can be provided when bonds prove to be insufficient to cover the expense of plugging and remediation. [Note: Bond amounts can be adjusted by the EQB every two years by authority of the Oil and Gas Act.]

**Response:** Increasing bond amounts has been considered on several occasions. It is recognized that the present bond amounts do not fully indemnify the Commonwealth for the costs of plugging and remediation should operators default on their responsibilities. However, Pennsylvania has many small, marginal operators who have difficulty providing bonds at the current amounts, even though numerous options have been provided to develop bond amounts. This fact, along with the view that bonds tie up limited working capital, have postponed any increase in bond amounts. The Abandoned Well Plugging Fund and Orphan Well Plugging Fund (discussed in Section VI of the questionnaire) were established in part to deal with this issue.

**Finding VI.D.1.** With the exceptions noted below, the BOGM program meets or exceeds IOGCC Guidance 5.3.4. Regulations requiring area or statewide regulations for fencing, netting, or flagging per IOGCC Guidance 5.4.3.f do not exist.

**Recommendation VI.D.1.** The BOGM should incorporate fencing, netting and flagging requirements to satisfy IOGCC Guidance 5.3.4.f. The program may consider specific area environmental concerns, type of waste contained in the pit, and site security. For example, pits containing tophole water or freshwater may be exempt if the area were otherwise secure.

**Response:** In keeping with IOGCC Guidelines 3.3, state oil and gas programs can, and should vary from state to state to recognize differences in climate, hydrology, geology, economics and other factors. This recommendation addresses an issue where such differences exist. Unlike oil and gas producing regions of the mid-western United States, Pennsylvania oil and gas fields are not located in a major waterfowl flyway. Nor does Pennsylvania contain public lands used for the grazing of livestock. Pennsylvania is blessed with an abundance of fresh surface water for the use of its citizens and wildlife. The problem of birds or other animals falling into pits and drowning has not been experienced here. Consequently, there has not been a need to develop such a regulation. The questionable benefit of promulgating such a regulation for the sake of consistency with other states does not justify the costs to the industry of implementing such a regulation or to the state for enforcing unnecessary provisions.

**Finding VI.D.3.** One review team member believed it important to make finding VI.D.3. that although BOGM has an informal policy it has not developed guidelines for when steel pits or tanks must be used (IOGCC Guidance 5.3.4.e).

**Recommendation VI.D.3.** One review team member found it important to make recommendation VI.D.3. that BOGM should formalize its policy as written guidelines on the use of steel pits or tanks in environmentally sensitive areas.

**Response:** This recommendation by one team member goes beyond the scope of IOGCC Guidance 5.3.4.e (written guidelines on the use of steel pits or tanks is not mentioned), so the appropriateness of this recommendation is questionable. However, in an attempt to be responsive to the recommendation, the following explanation is offered. Section 205 of the Oil and Gas Act provides well location restrictions. If a well is proposed within 100 feet of a stream, spring, body of water or wetland, the operator must submit a waiver request which includes facilities or practices to be used during construction, drilling or operation which will provide the necessary protection. If the permit is issued and the waiver granted, BOGM is required to impose permit conditions as are necessary to provide protection. In instances where waivers have been approved, steel tanks are generally required; however, other comparable facilities or practices could also be approved.

**Finding VI.G.3.** The program does not mandate soil analysis after landspreading. This does not

satisfy IOGCC Guidance 5.4.3.g, h, I.

**Recommendation VI.G.3.** The BOGM should incorporate in its program a requirement for post landspreading soil analysis.

**Response:** In December 1994, § 78.63(a)(19) of the regulations was added to provide that BOGM may require surveys, monitoring, or chemical analysis to determine compliance with land application requirements.

**Finding VI.G.4.** The program does not address remediation where post landspreading criteria are not satisfied per IOGCC Guidance 5.4.3.h.

**Recommendation VI.G.4.** The BOGM should incorporate in its program a requirement for remediation if the post closure landspreading criteria are not met.

**Response:** In December 1994, § 78.63(a)(21) of the regulations was added which states that if a chemical analysis fails to show compliance with land application requirements, the owner or operator must remediate the land application area until compliance is demonstrated.

**Finding VI.J.2.** The Commonwealth of Pennsylvania issues NPDES permits for five year time periods while the injection well and landfill permits are issued for the life of the facility. According to the IOGCC Guidelines, permits for commercial and centralized disposal facilities should be in force for a finite period (IOGCC Guidance 5.7.2.1.a).

**Recommendation VI.J.2.** The Commonwealth should establish a finite timeframe for all the permits for commercial and centralized facilities. [Note: the review team recognizes regulations for other facilities were adopted as final by the EQB on January 21, 1992, and are undergoing final review by the Independent Regulatory Review Council and Attorney General.]

**Response:** As noted in the recommendation and in the response to Recommendation II.3, regulations addressing this issue were adopted by the Environmental Quality Board on January 21, 1992. They became effective July 4, 1992. Permits for these facilities are issued for a maximum of ten years, with reviews at intervals not to exceed five years (see § 287.211(a) and (d)). A copy of the regulations is enclosed. Pennsylvania has not sought primacy for injection wells under the UIC program, so federal requirements apply in those instances.

**Finding VII.1.** The Commonwealth of Pennsylvania does not have a waste hauler certification program to regulate the commercial transportation of E&P waste (IOGCC Guidance 4.2.4).

**Recommendation VII.1.** The Commonwealth should initiate a waste hauler certification program consistent with IOGCC Guidance 4.2.4 and 5.7.2.3.e.

**Response:** Residual waste regulations adopted January 21, 1992 which became effective July 4, 1992, regulate the commercial transportation of E&P waste (see § 287.6 and §§ 299.201-232). In addition, they must comply with §§ 285.211-218. These regulations require daily records, accident prevention and contingency plans, requirements for equipment, reporting of emergencies, and annual reports. Waste hauler identification is also required on well site restoration reports required under § 78.65(3). Although waste hauler certification per se is not required, all the elements of an effective waste hauler regulatory program are in place. A copy of the regulations is enclosed.

**Finding VII.2.** The Commonwealth of Pennsylvania does not have an oil and gas waste tracking program which documents the movement of wastes from the site of origin to their final disposition (IOGCC Guidance 4.2.5).

**Recommendation VII.2.** The Commonwealth of Pennsylvania should implement a waste tracking program and manifest system consistent with the IOGCC Guidance 4.2.5 and 5.7.2.3.

**Response:** Regulation changes promulgated in December 1994 include requirements for well site restoration reports (see § 78.65(3)) as well as annual reporting of information on the amount and type of waste produced and the method of waste disposal or reuse (see § 78.121). This reporting, coupled with reports required of waste transporters (see § 299.219(b)(1), (2), (and(3)) provides an effective tracking program for both on-site and off-site disposal of E&P wastes.

**Finding VII.3.** Data on the amounts (volume) of oil and gas E&P waste generated, treated and disposed of by various methods are not recorded by the Commonwealth of Pennsylvania (IOGCC Guidance 4.2.5 and 5.7.2.3).

**Recommendation VII.3.** The IOGCC Guidance does not specifically require waste accountability by E&P waste management programs. A system is needed to quantify the E&P waste generated by category as well as the quantities of waste processed, treated and disposed of by various methods. The quantification of waste by category would allow the Commonwealth to more efficiently track and trace the disposition of E&P waste, insure regulatory compliance and to protect human health and the environment.

**Response:** As noted in the response to Recommendation VII.2, above, regulation changes promulgated in December 1994 include requirements for well site restoration reports (see § 78.65(3)) as well as annual reporting of information on the amount and type of waste produced and the method of waste disposal or reuse (see § 78.121). This reporting, coupled with the reports required from residual waste transporters (see § 299.219(b)(1), (2), and (3)) provides an effective tracking program that includes quantification of waste by category for both on-site and off-site disposal of E&P wastes.

**Finding IX.1.** Due to funding inadequacies for personnel, compliance inspections by oil and gas inspectors and water quality specialists often occur in response to citizen complaints instead of through routine periodic inspections. Therefore, 4.1.2.1.(b)(1) and (b)(2) are not fully complied with by the Commonwealth.

**Recommendation IX.1.** Funding should be increased to meet the required level of inspections. Such a change would allow for additional on-site inspections during drilling, reworking, plugging and more frequent routine status checks by water quality specialists.

With increased resources, unclosed abandoned and orphaned pits could be identified and responsible parties located for appropriate legal and remedial action.

**Response:** This issue was addressed in the responses to Recommendations I.E.1. and I.E.2. As a result of these changes, routine periodic inspections are being conducted. These include inspections of drilling, reworking, and plugging activities as well as abandoned facilities.

**Finding X.1.** The BOGM has available and utilizes the enforcement mechanisms outlined in IOGCC Guidance 4.1.3.1.a-h and 4.1.3.2. Additional strengths include the utilization of a duly adopted cross-matrix of penalization (penalty schedule). This cross-matrix as promulgated is a deterrent to code and rule violations as it: 1) encourages cooperation in respect to remediation; and 2) increases penalties for willful violators in a progressive manner.

Furthermore, Notices of Violation (NOV) may be used as written notice to the operator/owner when delivered to an appropriate party. The NOV is a four-part carbon sheet that includes sufficient language to apprise the recipient of the possibility of administrative, civil or criminal actions and it lists the observations of BOGM personnel.

**Recommendation X.1.** In addition to all enforcement actions outlined in 4.1.3.1.a-h, the review team recommends that BOGM seeks legislative authority which empowers them to bar an operator from commercial production at the site of the violation.

**Response:** This recommendation goes far beyond the IOGCC Guidance and is therefore inappropriate. Section 4.1.3.1 states that the state agency should have the authority to take some or all of the enforcement actions listed in 4.1.3.1.a-h. BOGM has authority to take all of the recommended enforcement actions, and consequently meets or exceeds the IOGCC Guidance.

# E&P Waste Management Matrix

| Waste Management Practices | Number of Facilities | Volume Managed Annually | Basis for Volume Determination |
|---|---|---|---|
| Pits: | | | |
| Drilling | 962 | 1,378,800 gal. | Number of wells drilled and volumes reported by operators. |
| Production | 8 | 270,720 gal. | Reported by operators. |
| Special Use | 563 | 459,840 gal. | Reported by operators. |
| Landspreading | 6 | 19,680 gal. | Reported by operators. |
| Roadspreading | 31 | 3,615,905 gal. | Summation of monthly reports submitted by approved spreaders. |
| Tanks | Unknown | Unknown | Found at most gas wells and some oil separation facilities. |
| Commercial Facilities: | | | |
| Multipractice | 6 | 34,542,429 gal. | Summation of reports submitted by permitted facilities. |
| Landfarms | 0 | 0 | None permitted or known to exist. |
| Tank Bottom Reclaimers | 0 | 0 | None permitted or known to exist. |
| UIC Surface Facilities | 0 | 0 | None permitted or known to exist. |
| Oil-Field NORM | 0 | 0 | None permitted or known to exist. |
| Centralized Facilities (non-NORM) | 10 | 59,567,833 gal. | Summation of reports submitted by permitted facilities. |
| Oil-Field NORM | 0 | 0 | None permitted or known to exist. |
| Municipal Landfills Accepting E&P Waste | 0 | 0 | Survey of regional oil & gas staff and waste management staff. |
| Underground Injection Surface Facilities | 7 | 8,223,578 gal. | Summation of reports submitted by permitted facilities. |
| Abandoned Sites | 7,215 | 0 | Inventory of orphan and abandoned well sites. |
| Other | | | |

# E&P Waste Management Matrix (cont.)

| Waste Management Practice | Principal Agency | Primary Statute | Primary Rules, Regulations, or Orders | Applicable Guidelines |
|---|---|---|---|---|
| Pits: | | | | |
| Drilling | DEP - BOGM | Clean Streams Law | Chapter 78 | Operators Manual |
| Production | DEP - BOGM | Clean Streams Law | Chapter 78 | Operators Manual |
| Special Use | DEP - BOGM | Clean Streams Law | Chapter 78 | Operators Manual |
| Landspreading | DEP - BOGM | Oil & Gas Act | Chapter 78 | Operators Manual |
| Roadspreading | DEP - BOGM | Clean Streams Law | Chapter 78 | Operators Manual |
| Tanks | DEP - BOGM | Clean Streams Law | Chapter 78 | Operators Manual |
| Commercial Facilities: | | | | |
| Multipractice | DEP - BLR & WM | Solid Waste Management Act | Chapters 287, 288, 289, 291, 293, 297 & 299 | None |
| Landfarms | DEP - BLR & WM | Solid Waste Management Act | Chapters 287 & 291 | None |
| Tank Bottom Reclaimers | DEP - BLR & WM | Solid Waste Management Act | Chapter 281 | None |
| UIC Surface Facilities | DEP - BOGM | Clean Streams Law | Chapters 91 & 97 | None |
| Oil-Field NORM | DEP - BOGM & BRP | Radiation Protection Act | Chapter 219 | None |
| Centralized Facilities (non-NORM) | DEP - BOGM | Clean Streams Law | Chapters 91, 92 & 97 | Operators Manual |
| Oil-Field NORM | DEP - BOGM & BRP | Radiation Protection Act | Chapter 219 | None |
| Municipal Landfills Accepting E&P Waste | DEP - BLR&WM | Solid Waste Management Act | Chapters 271 & 273 | None |
| Underground Injection Surface Facilities | DEP - BOGM | Clean Streams Law | Chapters 91 & 97 | Operators Manual |
| Abandoned Sites | DEP - BOGM | Oil & Gas Act | Chapter 78 | Fact Sheet on reporting orphans |
| Other | | | | |

# I. GENERAL CRITERIA

1. Are **technical criteria** contained in a formal document? If so, please provide the appropriate reference. [3.1.f]

**Response:** Yes. Technical criteria for management and disposal of E&P waste are found in Title 25, Chapter 78, Subchapter C, of the Rules and Regulations (see §§ 78.54-65).

2. What is the **mission** of the state's E&P waste management program? What are the **goals or objectives** of the program? Please provide reference to the appropriate document(s). [3.2]

**Response:** The mission of the oil and gas program, including E&P waste management activities, is guided by statute. Section 102 of the Oil and Gas Act sets forth the declaration of purpose to, among other things, permit the optimal development of the oil and gas resources consistent with the protection of the health, safety, environment and property of state citizens, and to protect the natural resources, environmental rights and values secured by the Pennsylvania Constitution. This has been translated, in a June 25, 1987 document describing BOGM, into a mission/purpose statement which reads,

The Bureau of Oil and Gas Management is the primary Department regulatory unit for matters involving the drilling, development, production, transportation and storage of oil and natural gas and the safety, conservation and environmental impacts associated with those activities."

This mission/purpose statement has been further developed into a statement of policy, dated June 30, 1987, which is included in the BOGM Compliance and Monitoring Policy and Procedure manual which is used by staff in the performance of their duties. This policy statement reads,

"The Department's policy in implementing the laws of the Commonwealth governing oil and gas development is to promote a healthy oil and gas industry while at the same time assuring that safety, conservation, and environmental objectives of the laws and regulations are met. Consistent with this policy, this document establishes the compliance and monitoring procedures for the Oil and Gas Program."

The goals and objectives of the program fall within the umbrella of the statement of mission and purpose. Both the strategic and annual program planning processes are discussed further in Section II, Question 4 of this questionnaire. Annual objectives are included in each year's Program Plan. Examples of annual objectives are shown in the Draft 1996-97 Program Plan, which is enclosed.

3. Briefly describe your **goals**, means of measuring progress, and coordination of activities between agencies relating to these programs. [3.2, 5.3]

**Response:** The goals and objectives for the upcoming year are shown in the draft 1996-97 Program Plan.

They include:

1) To develop and implement a customer needs program. This is a multi-year strategic planning activity.

2) To implement recommendations from the Regulatory Basics Initiative. The Regulatory Basics Initiative is a comprehensive review of existing regulations.

3) To participate in the development of a new compliance policy which defines when a fine or penalty will be assessed to achieve compliance and encourage the use of payments or projects in-lieu of penalties.

4) To assess technology used in monitoring and complying with environmental programs and educate the regulated community on innovative and cost-effective methods of achieving compliance. To participate in the brine treatment and evaluation projects.

5) To implement the Money Back Guarantee Program. This activity reduces permit delays by establishing permit decision deadlines.

6) To upgrade information in mining files and mylars used to review well permit applications.

7) To complete investigations into well ownership, determine surface ownership, prepare well location map, flag wells and prepare bid advertisement documents for 30 abandoned and orphan wells. To administer plugging contracts and conduct inspections for the actual plugging of 30 wells.

8) To bring a defined list of cases to resolution in lieu of conducting a pre-established number of inspections in each region. This will be accomplished using creative methods of compliance including education, negotiation of compliance dates, informal agreements and possibly in-lieuities.

9) To conduct gas storage map and database and field review conferences for 5 of the 33 gas storage fields in the Southwest Region.

10) To perform program effectiveness evaluations for three program areas, one under the

responsibility of each division.

11) To continue to correct/update computerized violation and enforcement files to accurately reflect current compliance status and to make field re-inspections, as necessary, to determine compliance status of outstanding NOV's.

The status of each objective is measured and reported at the end of each quarter and at the end of the program planning year. All BOGM activities are assigned numerical codes which are used to track outputs and time. Outputs and time are entered into a computerized database which generates time and activity reports for any desired time frames.

There is no need for inter-agency coordination of E&P waste management activities since such activities all are regulated by DEP. All E&P waste management and disposal activities except for off-site landfilling and landfarming, which are allowed but are not practiced, are regulated by BOGM.

4. Does your program provide for **flexibility** in determining the criteria applicable to E&P waste (e.g., variation in criteria dependent on region of the state or other factors; authorization of site-specific waivers for good cause shown and consistent with program goals and objectives)? If so, please provide reference to the appropriate document(s). [3.3]

**Response:** An operator may request to use a practice which does not conform to the standards for pits and tanks for temporary containment if the proposed practice provides equivalent or superior protection (see § 78.56(b)). The operator may request the use of solidifiers or other alternate practices for the disposal of residual waste in pits provided the practice is demonstrated to provide equivalent or superior protection (see § 78.62(c)). The operator may request to dispose of residual waste by land application in a manner which does not conform to the standards if the practice is demonstrated to provide equivalent or superior protection (see § 78.63(c)).

# II. ADMINISTRATIVE CRITERIA

1. Do E&P waste permits provide **notice of the permittee's obligation** to comply with other federal, state or local requirements? If so, please provide a copy of the form(s). [4.1.1]

**Response:** On-site disposal of E&P solid waste and tophole water is permitted by rule (see § 78.60-63). It is not appropriate for regulations to contain such notices as they are not enforceable requirements. Other E&P waste disposal permits contain conditions relating to compliance with other environmental statutes administered by DEP, but do not contain notices relative to federal or local government requirements. Under the Pennsylvania Municipal Authorities Acts the state has no jurisdiction to enforce local ordinances. Section 602 of the Oil and Gas Act preempts and supersedes local ordinances and enactments purporting to regulate oil and gas well operations. Similarly, the state has no authority to enforce federal requirements unless adopted as state program measures. Although the notice recommendations of IOGCC Guidance 4.1.1 are not included in all E&P waste permits, it is because of a difference in state administrative procedures of law as recognized in IOGCC Guidance 3.3.

2. Has the state adopted a **state contingency plan** for response to spills and releases? If so, briefly describe, including volumes that trigger a response, time in which notification and clean-up is to occur, and criteria (i.e., cleanup standards) used to assure that remediation was accomplished. Please provide reference to applicable portions of the state plan. [4.2.1.1.a]

**Response:** There is a Pennsylvania Emergency Operations Plan adopted by the state and coordinated through the Pennsylvania Emergency Management Agency. Responses to oil spill and E&P waste releases are addressed in the Basic Plan (pages 45-48) and in Annex F (pages F14-17). Under the state plan, the DEP Emergency Operations Plan provides DEP-specific responses to these incidents (Basic Plan, pages 9-20 and Annex F, pages F5-6). In addition, the DEP Incident Response Plan specifically addresses oil and gas well incidents (Section 5.1.10).

There is a DEP Emergency Response Manager in the central office who oversees the activities of the six Regional Emergency Response Teams. The Regional Emergency Response Teams, which are multi-discipline teams of trained volunteers representing the various DEP programs, are headed by full-time Regional Emergency Response Coordinators and Assistant Regional Emergency Response Coordinators. All team members receive at least the 40-hour EPA emergency response training as well as other state-provided training. All team members have baseline and periodic physicals. The teams are supported by two mobile laboratories.

All of the above-referenced plans require the immediate clean-up and notification of spills of any quantity which threaten waters of the

Commonwealth. If waters of the Commonwealth are not threatened, spills of greater than five gallons must be immediately cleaned up and must be reported within 24 hours. Clean-up criteria include all of a polluting substance, with clean-up ending only upon approval of the Regional Emergency Response Coordinator.

3. Describe any **funding** provisions to enable the state to respond to spills and releases in the event a responsible operator cannot be located or is unwilling or unable to respond, and any provisions for reimbursement of the state for moneys so expended. [4.2.1.1.b]

**Response:** Pennsylvania has several state sources of funds which the state uses in the event a responsible party cannot be located or is unwilling or unable to respond. These include the Clean Water Fund under the Clean Streams Law, the Abandoned Well Plugging Fund and the Orphan Well Plugging fund under the Oil and Gas Act, the Solid Waste Abatement Fund under the Solid Waste Management Act, and the Hazardous Site Clean-up Fund under the Hazardous Site Clean-up Act. All of these funds are to be reimbursed by responsible parties, if known. DEP attorneys initiate civil actions to recover costs.

DEP has also accessed the federal OPA 90, both directly and through reimbursement, for oil well plugging and related site clean-up. These actions have been coordinated with the EPA On-Scene Coordinator who attempts to identify the responsible party, with the U.S. Coast Guard attempting to recover costs through federal court action.

4. Describe the **program planning** process, including the following: [4.2.3]

a. Strategic or short-term planning.

**Response:** BOGM is currently involved in a strategic planning effort to determine the direction of the program five years into the future. This effort involves identification and survey customers, meetings with stakeholders, mapping of current practices, determination of needed changes, prioritization of improvements, and action plans for implementation. This planning effort should be completed by December, 1996.

Each year BOGM develops a program plan. This plan includes yearly objectives, quantifies resources available, and allocates program resources across the activities. A copy of the 1996-97 program plan is enclosed.

b. How your mission, goals and objectives are factored into the process.

**Response:** The allocation of resources is consistent with the program objectives. All objectives must support the goals, and all goals must support the mission.

c. How program priorities are established.

**Response:** All activities are prioritized according to the following categories:
1 - the Administration's agenda
2 - protection of public health, safety and environment
3 - mandated by legislation
4 - improves efficiency of program
5 - grant or contractual obligations

d. How E&P waste management activities are weighted against other program activities competing for time and resources.

**Response:** In general, E&P waste management activities receive priority over other program activities because they fit into the higher priorities.

e. How program plan expectations are communicated to staff at all levels who are responsible for program implementation.

**Response:** Copies of the program plan are sent to each Division Chief, Regional Program Manager, and Section Chief. They, in turn, provide their staff with information applicable to their unit. Program plan work allocations are a performance factor for personnel evaluations, which are communicated to and discussed with each employee at the beginning of the year. Program planning years correspond with performance evaluation time frames.

5. Describe any **waste hauler training and certification** requirements for commercial transportation of E&P wastes in your state. Give reference to any statutory or regulatory provisions relating to this activity. [4.2.5]

**Response:** As noted in the Response to Finding and Recommendation VII.1 from the initial state review, residual waste regulations adopted January 21, 1992 which became effective July 4, 1992, regulate the commercial transportation of E&P waste (see § 287.6 and §§ 299.201-232). In addition, they must comply with §§ 285.211-218. These regulations require daily records, accident prevention and contingency plans, requirements for equipment, reporting of emergencies, and annual reports. Waste hauler identification is also required on well site restoration reports required under § 78.65(3). Although waste hauler certification is not required, all the elements of an effective waste hauler regulatory program are in place.

# III. TECHNICAL CRITERIA

## A - GENERAL

1. Describe any **general performance or design standards** applicable to E&P waste management practices used in your state. Describe how these standards prevent contamination of ground water, surface water, soil or air; protect public health, safety and the environment; and prevent property damage. [5.1.a]

**Response:** The operator must control and dispose of fluids, residual waste and drill cuttings, including tophole water, brines, drilling fluids, drilling muds, stimulation fluids, well servicing fluids, oil production fluids and drill cuttings in a manner that prevents pollution of the waters of the Commonwealth and in accordance with the laws and regulations (see § 78.54).

2. Describe any **waste segregation** requirements or other measures applicable to E&P waste management practices and facilities that ensure that hazardous waste is not disposed with exempt E&P waste. Give the regulatory citation. Does the state require or encourage segregation of exempt from non-exempt E&P waste? [2.9.d and 5.1.b]

**Response:** Regulations under the Solid Waste Management Act exclude drilling fluids, produced waters and other wastes associated with the exploration, development or production of crude oil, natural gas or geothermal energy from the hazardous waste definition (see § 261.4(a)(12)). The Oil and Gas Act provides for the on-site disposal of residual waste if certain conditions are met (see Oil and Gas Act, Section 603.1(a)). Residual waste cannot, by definition, include hazardous waste. Regulations for the disposal of residual wastes in pits prohibit the disposal of hazardous wastes (see § 78.62(b)(1)). Regulations for the disposal of residual waste by land application also prohibit the disposal of hazardous waste (see § 78.63(b)). State statutes and regulations do not differentiate between exempt and non-exempt E&P waste as is done under RCRA. [Note: The referenced IOGCC Guidance 2.9.d and 5.1.b do not suggest that a state program should recognize, much less require or encourage, segregation of exempt from non-exempt E&P waste. IOGCC Guidance 2.9.d describes provisions under RCRA while 5.1.b indicates that E&P waste should not be mixed with hazardous waste except as provided by state or federal law.]

3. Are there any **air emission control** requirements applicable to E&P waste management facilities? If so, please describe and provide appropriate references. [5.1.a and 5.10.2.2.c]

**Response:** No. Although air quality requirements apply to other aspects of the oil and gas industry, none apply to E&P waste management facilities because of facility sizes and locations.

**B - PITS**

4. Do you have specific technical criteria in place in your state for the following **types of pits**? If so, please cite the reference for such criteria. [5.5.1]

**Response:**

| | Type | Reference |
|---|---|---|
| Yes | Reserve pits | § 78.56 |
| Yes | Production pits | §§ 78.56-58 |
| No | Skimming/settling pits | Not Applicable |
| Yes | Produced water pits | §§ 78.56-59 |
| No | Percolation pits | Not Applicable |
| No | Evaporation pits | Not Applicable |
| Yes | Special purpose pits | § 78.59 |
| No | Blowdown pits | Not Applicable |
| No | Flare pits | Not Applicable |
| Yes | Emergency pits | §§ 78.56-59 |
| No | Basic sediment pits | Not Applicable |
| Yes | Workover pits | § 78.59 |
| No | Other | Not Applicable |

5. What **notification** is required prior to construction and operation of rule-authorized pits? [5.5.2.d]

**Response:** The operator is required to provide notice of application for a well permit and a copy of the plat by certified mail to the surface landowner, all surface landowners and water purveyors whose water supplies are within 1,000 feet of the proposed well location, the owner and lessee of any coal seams, and every coal operator of all known underlying coal seams (see Oil and Gas Act, Section 201(b)). In addition, the operator must provide notice to BOGM, the surface landowner and the local political subdivision in which the well is to be located, 24 hours' notice prior to the date that drilling activity will commence (see Oil and Gas Act, Section 201(f)).

6. Briefly describe any provisions concerning the issuance and use of **emergency permits** for pits. Give reference to the applicable statutory or regulatory sections. [5.5.2.e]

**Response:** Emergency pits must meet the same requirements as pits and tanks for temporary containment (see § 78.56).

7. What are the requirements for the **placement of reserve pits** relative to drilling equipment? [5.5.3.g]

**Response:** All waste must be controlled and disposed of in a manner that prevents pollution and conforms to the standards of the regulations (see § 78.54).

**C - LANDSPREADING** (Non-Commercial)

8. Give reference for any statutory or regulatory **definitions of or prohibitions against landspreading** that are applicable in your state. [5.6.1.a]

**Response:** On-site landspreading, or land application, is authorized by statute (see Oil and Gas Act, Section 603.1(a)) and controlled by regulation (see § 78.61(b) and § 78.63). Off-site landspreading, if it were to occur, is regulated by the Solid Waste Management Act and Chapters 287 and 291 of the regulations. [Note: The referenced IOGCC Guidance 5.6.1.a does not suggest that a state program should define or prohibit landspreading of E&P waste. The definitions in 5.6.1.a are provided to clarify to the reader what that portion of the guidance addresses.]

9. Is on-site **landspreading of waste containing NORM** above action levels prohibited? [5.6.1.c]

**Response:** NORM is not an issue in Pennsylvania. See the discussion in response to Question VI.1 of this questionnaire.

10. Briefly discuss each of the following **operational requirements** as they apply to landspreading (give reference to any statutory or regulatory requirements): [5.6.3]

    a. Removal of free oil

**Response:** The free liquid faction must be removed (see § 78.63(a)(14)).

    b. Allowable pH range of waste being disposed

**Response:** The pH of the waste-soil mixture must be 6.5 or higher to be consistent with BOGM guidelines (see § 78.63(a)(18)). A copy of the guidelines are in Appendix D of Characterization and Disposal Options for Oilfield Wastes in Pennsylvania, which is enclosed.

    c. Spreading of solids and incorporation into the soil

**Response:** Waste is to be spread and incorporated into the top layer of soil to a depth of at least 6 inches (see § 78.63(a)(17)). Loading and application rate must be consistent with BOGM guidelines and may not exceed a maximum waste to soil ratio of 1:1 (see § 78.63(a)(18)). A copy of the guidelines are in Appendix D of Characterization and Disposal Options for Oilfield Wastes in Pennsylvania.

d. Application rates, methods and practices for liquids

**Response:** Land application of liquids is restricted to tophole water or precipitation. The water must be characteristic of the natural background quality, may not contain additives, drilling muds, pollutional materials or drilling fluids, must have a pH of not less than 6 nor greater than 9, must have a specific conductance of less than 1,000 *u*mos/cm, may not have a sheen from oil and grease, and must be spread over an undisturbed, vegetated area (see § 78.60).

e. Addition of nutrients for biodegradation

**Response:** Not required. An operator may request to dispose by an alternate land application method by demonstrating that the alternate practice provides equivalent or superior environmental protection (see § 78.63(c)).

f. Waste limitations (e.g., EC, ESP, SAR)

**Response:** Maximum loading rates for cadmium, copper, chromium, lead, mercury, nickel, zinc, oil and grease, and soluble salts which apply are established in the guidelines (see § 78.63(a)(18) and Appendix D of Characterization and Disposal Options for Oilfield Wastes in Pennsylvania.

g. Limitations on waste-soil ratio by oil and grease content

**Response:** Not to exceed 1% on a dry weight basis (see § 78.63(a)(18) and Appendix D of Characterization and Disposal Options for Oilfield Wastes in Pennsylvania.

h. Limits on salt and hydrocarbon content in final waste-soil mixture

**Response:** Not to exceed 4 mmhos/cm as determined by the saturated paste extraction method (see § 78.63(a)(18) and Appendix D of Characterization and Disposal Options for Oilfield Wastes in Pennsylvania.

i. Enhanced techniques available to meet final criteria for salt and hydrocarbons

**Response:** If chemical analysis fails to show compliance with § 78.63(a)(18) and Appendix D of Characterization and Disposal Options for Oilfield Wastes in Pennsylvania, the owner or operator must remediate the land application area until compliance is demonstrated (see § 78.63(a)(21)).

j. Soil analysis required prior to landspreading and/or after site closure

**Response:** Application area must meet certain characteristics prior to waste application (see § 78.63(a)(6)-(13)). Surveys, monitoring and chemical analysis may be required to determine compliance (see § 78.63(a)(19)).

k. Any additional criteria for landspreading special wastes

**Response:** Criteria limiting the characteristics of E&P waste that may be disposed by land application are controlled by toxicity (see § 78.63(b)).

**D - BURIAL AND LANDFILLING** (Non-Commercial)

11. Give reference for any statutory or regulatory **definitions of or prohibitions against burial or landfilling** which are applicable in your state. [5.7.1]

**Response:** The burial or landfilling of E&P waste is a controlled and regulated activity. E&P waste is a residual waste under the Solid Waste Management Act. Off-site disposal by landfilling is controlled by regulations promulgated under the Solid Waste Management Act (see definitions of "residual waste" and "residual waste landfill" in § 287.1). On-site disposal at permitted and bonded well locations is authorized under Sections 206 and 603.1(a) of the Oil and Gas Act and Chapter 78, Subpart C or the regulations promulgated thereunder (see definition of "drill cuttings" in § 78.1). [Note: The referenced IOGCC Guidance 5.7.1 does not suggest that a state program should define or prohibit burial or landfilling of E&P waste. The definitions in 5.7.1 are provided to clarify to the reader what that portion of the guidance addresses.]

12. Do you have specific **regulatory requirements** for burial or landfilling of E&P wastes? If so, give reference to the applicable statutory or regulatory sections. [5.7.2]

**Response:** Off-site disposal by landfilling us regulated under Chapters 287 and 288 of the regulations. On-site disposal of uncontaminated drill cuttings by burial in unlined pits is regulated by § 78.61. On-site disposal of other solids by burial in lined pits is regulated by § 78.62.

## E - ROADSPREADING

13. Give reference for any statutory or regulatory **definitions of or prohibitions against roadspreading** which are applicable in your state. [5.8.1]

**Response:** Roadspreading of brine is considered to be an activity with potential pollution under the Clean Streams Law. The roadspreading activity is authorized by approval of control and disposal plan (see § 78.55) only if it is consistent with BOGM guidelines. No other E&P wastes are approved for roadspreading. Other E&P wastes may only be disposed either on-site by burial in pits or by land application or off-site by practices regulated by UIC, NPDES, or residual waste requirements. [Note: The referenced IOGCC Guidance 5.8.1 does not suggest that a state program should define or prohibit roadspreading of waste. The definitions in 5.8.1 are provided to clarify to the reader what that portion of the guidance addresses.]

14. Briefly discuss each of the following **operational requirements** as they apply to roadspreading (give reference to any statutory or regulatory requirements): [5.8.3]

    a. testing criteria that are applicable for wastes proposed for roadspreading (e.g., ignitability, density, metal content, consistency with approved road oils)

**Response:** Required chemical analyses include pH, iron, MBAS, calcium, manganese, sodium, chloride, sulfate, barium, magnesium, total dissolved solids, total solids, aluminum and potassium (see § 78.55 and Fact Sheet for "Roadspreading of Brine for Dust Control and Road Stabilization").

    b. application rates

**Response:** The maximum application rate is one gallon of brine per square yard of road surface (see § 78.55 and Fact Sheet for "Roadspreading of Brine for Dust Control and Road Stabilization").

    c. buffer zones

**Response:** Brine may not be spread within 150 feet of a stream, creek, lake or other body of water (see § 78.55 and Fact Sheet for "Roadspreading of Brine for Dust Control and Road Stabilization").

    d. produced water testing (for similarity to approved commercial products)

**Response:** Required chemical analyses include pH, iron, MBAS, calcium, manganese, sodium, chloride, sulfate, barium, magnesium, total dissolved solids, total solids, aluminum and potassium (see § 78.55 and Fact Sheet for "Roadspreading of Brine for Dust Control and Road Stabilization").

## F - TANKS

15. Give references for any statutory or **regulatory definitions** of E&P waste tanks used in your state. How are the tanks that treat, store or dispose of E&P waste regulated differently, if any, from tanks used exclusively for processing or storage of petroleum products? [5.9]

**Response:** E&P waste tanks are regulated due to the potential for pollution under the general requirements, control and disposal plan requirements, and specific standards applicable to pits and tanks used for temporary containment of drilling wastes or production fluids of the regulations (see the Clean Streams Law and § 101.3 and §§ 78.54-57 of the regulations). Tanks used for the storage of oil are regulated due to the potential for pollution in a manner consistent with the SPCC requirements of 40 CFR 112 (see the Clean Streams Law and § 101.3 and § 78.64 of the regulations). [Note: The referenced IOGCC Guidance 5.9 does not suggest that a state program should define tanks used for E&P waste. The definitions in 5.9 are provided to clarify to the reader what that portion of the guidance addresses.]

16. Describe any requirements pertaining to the **location, use, capacity, age and construction of E&P waste tanks**, including registration, inventories, etc. [5.9.2.a]

**Response:** E&P waste tanks meet the contingency planning, capacity, freeboard, structural stability, protection, impermeability and reporting standards of the statute and regulations (see the Clean Streams Law and § 101.3, §§ 78.54-57, and § 78.64 of the regulations).

Tanks must be identified in the operator's control and disposal plan. There is no registration requirement for tanks, nor is there an inventory of tanks in use for E&P waste management.

17. Describe any state program pertaining to **pollution prevention requirements relating to tanks.** [5.9.2.c]

**Response:** As noted in the response to Questions 15 and 16, above, operators of E&P waste tanks are required to develop and implement a control and disposal plan (see § 78.55). Tanks used for the storage of oil are regulated due to the potential for pollution in a manner consistent with the SPCC requirements (see § 78.64). Tanks must meet the contingency planning, capacity, freeboard, structural stability, protection, impermeability and reporting standards of the regulations. Tanks must be identified in the operator's control and disposal plan.

18. Briefly discuss each of the following **operational requirements** as they apply to E&P waste tanks (give reference to any statutory or regulatory requirements): [5.9.3]

a. corrosion protection

**Response:** None specifically stated, although the general requirements relating to control and disposal (see § 78.54) and the requirements of a control and disposal plan (see § 78.55) apply.

b. structural integrity

**Response:** Must be designed, constructed and maintained to be structurally sound (see § 78.56(a)(3)).

c. protection against overtopping

**Response:** Must be maintained so that at least 2 feet of freeboard remain at all times unless the tank is provided with an overflow system to a standby tank or pit with sufficient volume to contain all excess fluid or waste (see § 78.56(a)(2)).

d. secondary containment/leak detection

**Response:** If an open standby tank is used, it shall be maintained with 2 feet of freeboard (see § 78.56(a)(2)). Oil tanks must have a dike or other method of secondary containment which satisfies the requirements of 40 CFR 112 (see § 78.64(a)).

e. covers or measures to prevent entry of wildlife

**Response:** None. As noted in the Response to Recommendation VI.D.1. from the initial review, this is considered an area where differences recognized in IOGCC Guidance 3.3 apply.

f. hydrogen sulfide emission control

**Response:** An operator who operates a well in which hydrogen sulfide is discovered in concentrations of 20 ppm or greater must operate the well in a way that presents no danger to human health or to the environment (see § 78.77(c)).

19. Describe any tank **removal and closure** requirements and provide reference to statutory or regulatory requirements. [5.9.4]

**Response:** Within nine months after completion of drilling, all drilling supplies and equipment not needed for production must be removed and the site restored (see Oil and Gas Act, Section 206(c)). Within nine months after plugging a well, all production or storage facilities, supplies and equipment must be removed and the site restored (see Oil and Gas Act, Section 206(d)). Within 60 days of site restoration, a well site restoration report must be submitted (see § 78.65(3)).

## G - COMMERCIAL AND CENTRALIZED DISPOSAL FACILITIES

20. What agency (agencies) in your state has (have) regulatory **jurisdiction** over these facilities? [5.10.1]

**Response:** These facilities are all regulated by program areas within a single agency, DEP. Brine treatment and disposal facilities are regulated by BOGM. Municipal and industrial treatment facilities that blend brine with other waste are regulated by BWQM. Residual waste landfills, which can be but are not used for off-site disposal of E&P solids, are regulated by BLR&WM.

21. Give reference for any **statutory or regulatory definitions** for commercial and for centralized disposal facilities. [5.10.1]

**Response:** The Pennsylvania statutes and regulations do not differentiate between commercial, centralized, of other types of facilities. The same environmental protection requirements apply to all facilities regardless of their ownership of profit potential. [Note: The referenced IOGCC Guidance 5.10.1 does not suggest that a state program should have statutory or regulatory definitions for commercial and centralized disposal facilities. The definitions in 5.10.1 are provided to clarify to the reader what that portion of the guidance addresses.]

22. Do you have any centralized or commercial E&P waste disposal facilities? **How many, and of what type**? Does this include any surface facilities at UIC sites? If so, how many are associated with UIC sites? [5.10.1]

**Response:** There are 10 centralized and six commercial treatment and discharge facilities in Pennsylvania. In addition, there are seven centralized UIC (Class II-D) disposal wells which all have surface treatment facilities.

23. **What wastes are acceptable** for disposal? Do any of these facilities accept RCRA nonexempt wastes or wastes from other than oil and gas exploration and production activities? [5.10.2]

**Response:** The 10 centralized treatment facilities dispose of brine, drilling fluids and frac fluids. The commercial facilities are two industrial waste treatment facilities and two municipal sewage treatment plants that blend brine, drilling fluids and frac fluids with other waste streams prior to treatment. The seven UIC facilities dispose of brine.

24. What are the **disposal and treatment methods** employed at these facilities? [5.10.2]

**Response:** The centralized treatment facilities utilize, at a minimum, flow equalization, aeration, pH adjustment, flocculation, settling, and filtration prior to discharge to surface waters. Some also add polymer to aid in treatment efficiency. Two of the six commercial treatment facilities blend E&P waste with other waste

streams and provide at least the treatment processes as the centralized facilities prior to discharge to surface waters. The other four commercial treatment facilities are municipal activated sludge sewage treatment plants which blend E&P waste into the plant influent. These facilities also discharge to surface waters. The UIC surface treatment facilities provide filtration prior to injection.

25. What elements are required as part of the **permit** application (e.g., siting plan, construction plan, operating plan, closure plan, etc.)? [5.10.2.2.a]

**Response:** An applicant for a residual waste landfill is required to submit a Phase I application and a Phase II application. The Phase I application contains the facility plan, siting information, description of geology, soils and hydrology, surface water information, and mineral deposits information. The Phase II application contains a cover and compaction plan, revegetation plan, soil erosion and sedimentation plan, water quality monitoring plan, gas monitoring and control plan, contingency plan, postclosure land use plan, and closure plan. These requirements are above and beyond the general requirements for waste analysis, fees, public notice and comments, bonding, and public liability insurance.

26. If permit applications are required for **siting**, do they include: [5.10.2.2.b]

**Response:**

Yes Names, addresses and phone numbers of the owners or operators of the facility?

Yes Names, addresses and phone numbers of owners or occupants of properties in close proximity of the site, or any other persons who may reasonably be adversely affected by releases from the site?

Yes Topographic map that shows all highways, water courses, water wells, and dwellings within one mile of the site?

Yes Geologic, hydrologic, engineering, chemical and any other data or information that demonstrate disposal of wastes and operation of the facility will not contaminate fresh water, the surrounding soils or air, endanger public health, safety or the environment, or cause property damage?

Yes Average annual precipitation and evaporation rate at the disposal site?

Yes Proximity of disposal facilities to surface water courses?

Yes Nature and permeability of vadose zone; description of the extent of underlying aquifer(s),and depth to ground water; direction of groundwater movement; data on water quality of nearby surface waters and underlying aquifer(s) prior to commencement of operations; and points of past or current use of surface or groundwater?

Yes Proof that all public notice requirements have been met?

Yes Certification by an authorized representative of the applicant that information submitted in the application is true, accurate and complete to the best of the applicant's knowledge?

Yes Construction plan that includes detailed engineering drawings and diagrams of engineered disposal facilities?

27. Describe any **construction** requirements that will minimize or prevent releases to surface water, ground water, soil and air. In the case of reclamation facilities, describe any such requirements that apply to waste before and after reclamation. [5.10.2.2.c]

**Response:** All earth moving activities must be conducted in a manner that will minimize erosion and sedimentation and prevent surface water or ground water pollution (see Clean Streams Law and Chapter 102). Any releases to the land are regulated under the Solid Waste Management Act and regulations promulgated thereunder. Releases to the air are regulated by the Clean Air Act and its regulations.

28. If permit applications are required for **operating**, do they include: [5.10.2.2.d]

**Response:**

Yes An operating plan?

Yes Volume, rate and type of material to be disposed?

Yes Identification of the specific facilities that will be used to dispose of each waste stream (e.g., unlined or lined pits, tanks, etc.)?

Yes Contingency plan for reporting, responding to and cleaning up spills, leaks and releases of wastes or waste byproducts, including provisions for notifying emergency response authorities and for taking operator-initiated emergency response actions?

Yes Ground water monitoring where wastes are managed on the land?

Yes Plan for routine inspection, maintenance, and monitoring to ensure and demonstrate compliance with permit requirements, and in the case of landfarming, ensure that organic wastes are effectively treated?

N/A Specific engineering plans for preventing or minimizing the generation or emission of hydrogen sulfide gas?

Yes A plan for the on-site sampling and/or testing to assure that RCRA Subtitle C or

other wastes prohibited by the regulatory agency for disposal are not disposed at such a facility?

Yes Characterization of wastes accepted at the facility?

Yes Plan for periodic removal and subsequent handling of free oil?

Yes Security plan for the facility?

29. Describe the **closure and post-closure monitoring** and maintenance requirements applicable to commercial facilities, including duration of post-closure care and financial assurance release schedules. [5.10.2.2.e]

**Response:** Operators must submit a closure plan for a disposal site or processing facility. The plan must protect public health and safety and the environment. Plan requirements include erosion control, revegetation, water quality monitoring, bonding, insurance, final cover and grading, and gas venting.

30. For wastes not moved by pipeline, is there a requirement for **waste tracking?** If so, does it require: [5.10.2.3]

**Response:**

Yes, but not 3-part form A three-part form that contains the names, addresses and phone numbers of the waste generator (producer), hauler, and disposal facility operator?

Yes Description and volume of the waste?

Yes Time and date it was collected, hauled and deposited at the disposal facility?

Yes Time requirement for maintenance of the form?

No Attesting that no illegal dumping occurred?

No Certification by the hauler and disposal facility operator that no wastes were dumped illegally or at a location or facility not designated by the generator or permitted to receive the waste, and that no prohibited or hazardous wastes were mixed with the waste during transport?

No Reporting of any discrepancies in waste descriptions, volumes or place of origin based on personal observations or information contained in the three-part form?

31. Are **waste haulers** permitted or licensed based on a showing of basic knowledge of regulatory requirements? [5.10.2.3]

**Response:** No. See discussion in response to Recommendation VII.1, from the initial state review.

# IV. ABANDONED SITES

1. Does your state have a program to **inventory, prioritize and remediate** (as necessary) abandoned oil and gas sites? [6.1]

**Response:** Yes. There is an orphan and abandoned well plugging program where plugging is done by contract. Part of the contract includes site restoration. In addition, operators can "adopt" orphan wells and put them back into production.

2. Please provide reference to any **definitions** pertaining to abandoned sites or your abandoned well site program, including the types of facilities included in the definitions. [6.2]

**Response:** Section 103 of the Oil and Gas Act contains definitions of abandoned wells and orphan wells. The definitions pertain only to the wells. Section 206 of the Act specifies requirements for well site restoration when wells are plugged. Section 210(e) provides BOGM with authority to plug orphan and abandoned wells. Section 601(b) establishes the Abandoned Well Plugging Fund to be used by BOGM in plugging abandoned wells which threaten the health and safety of persons or property or pollution of the waters of the Commonwealth. Section 601(c)(1) establishes the Orphan Well Plugging Fund to be used by BOGM in plugging orphan wells. BOGM remediates abandoned E&P facilities at the well sites under the provisions of the plugging contracts.

3. Briefly describe your program for **identification, inventory and ranking** of abandoned sites. [6.3]

**Response:** Abandoned wells are generally reported to the regional Oil and Gas Inspectors through complaints from surface landowners or other interested parties. The Inspector investigates the situation and assigns a tracking number to the well. Reports of the investigation are completed and forwarded to the central office where they are reviewed and prioritized according to the threat to health, safety, or the environment.

Orphan wells are identified to BOGM by oil and gas operators, surface landowners, or other interested parties. Procedures for orphan well identification are included in the orphan well fact sheet. Regional staff review the information to assure the well meets the eligibility requirements prior to granting orphan well status. The orphan well identification reports are forwarded to the central office where they are prioritized according to location.

4. Briefly describe **funding** mechanisms available to the state for abandoned site remediation. [6.4]

**Response:** Funds for plugging abandoned wells come from a $50 surcharge on well permit applications for new wells. Funds for plugging orphan wells come from a $200 surcharge on permit applications for drilling new gas wells and $100 surcharge on permit applications for drilling new oil wells.

5. Briefly describe the criteria used in your **abandoned site prioritizing** system. [6.5]

**Response:** Abandoned wells are prioritized by the Chief of the Subsurface Activities Division. Priority is based on the degree of hazard posed to health, safety, and the environment. Points are assigned for affect to a public water supply (0-20), affect to a private water supply (0-15), threat to public safety (0-30), threat to other water uses (0-10), affect to ground water (0-10), threat to well integrity (0-10), and other factors (0-10). The total of the points assigned to each factor determines the numerical priority of the well (see enclosed Abandoned Well Priority Committee Action form).

Orphan wells are prioritized according to location criteria. These criteria include location with respect to types of public lands (10-25), private land use (5-20), distance from public water supplies or public buildings (0-15), distance from private water supplies or private buildings (0-10), distance from streams, springs, or bodies of water (0-6), proximity to High Quality or Exceptional Value watersheds (0-10), proximity to a wetland (0-8), and other factors (0-6). The total of the points assigned to each factor determines the numerical priority of the well (see enclosed Orphan Well Prioritization form).

6. What are the state's abandoned site remediation **goals**? How is progress measured? [6.5.1]

**Response:** The remediation goal at abandoned well sites is elimination of a known or threatening health, safety, or environmental hazard. These hazards are eliminated on a priority basis. Progress is measured by reductions in the number of abandoned well sites and total priority points assigned to remaining abandoned well sites.

The remediation goal at orphan well sites is elimination of a potential health, safety, or environmental hazard. Progress is measured in number of wells plugged.

7. Briefly describe the state's program relating to establishing **liability** for the remediation of abandoned sites. Provide references to any statutory or regulatory allocation of responsibility. [6.5.2]

**Response:** An attempt is made to find a responsible party for abandoned wells prior to plugging by BOGM. This involves review of well records, discussions with other operators in the area and people living in the vicinity of the well, and court house record searches to attempt to identify the owner of oil and gas rights. If a responsible party is found, actions are taken to have them assume plugging responsibility under Section 210 and well site restoration responsibility under Section 206 of the Oil and Gas Act.

Orphan well applications are reviewed against BOGM records to determine qualification prior to granting orphan well status. If a responsible party is found, orphan well status is not approved, and actions are taken to have the responsible

party assume plugging responsibility under Section 210 and well site restoration responsibility under Section 206 of the Oil and Gas Act.

8. Please provide reference to any **standards for abandoned site remediation**. [6.6]

**Response:** Standards for abandoned site remediation are the same as for any other site (see Oil and Gas Act, Section 206, and § 78.61(6)-(8) and § 78.62(14)-(18) of the regulations).

9. Briefly describe the state's **abandoned well remediation** program, including any flexibility allowed in plugging procedures. [6.6.1]

**Response:** As stated in response to question 9, above, abandoned wells are plugged to the same standards as any other wells. Available records concerning the well are researched prior to putting the bid package together for contracting. These plugging standards are spelled out in detail in the regulations (see §§ 78.91-98). Provisions for alternate methods of plugging are available for any well (see Oil and Gas Act, Section 211, and § 78.75 of the regulations).

10. Briefly describe the state's program for **surface remediation** of abandoned sites, including any requirements regarding present or future land use and consultation with surface owners. [6.6.2]

**Response:** Remediation activities at sites under state contract meet the same standards as any other site. Surface remediation consists of closure of any pits, removal of equipment and stabilization and revegetation of the area (see Oil and Gas Act, Section 206, and § 78.61(6)-(8), and § 78.62(14)-(18) of the regulations).

11. What is the program for **maintenance of records** of remediated sites? How is public access assured? [6.6.3]

**Response:** Records are maintained by BOGM and are available for public access. Wells are assigned API well identification numbers, entered into the computerized database, are located on topographic maps, and are filed by county and township. Copies of any well records available from BOGM files or the Bureau of Topographic and Geological Survey are included in the file. Well sites are inspected and evaluated prior to remedial action, and records of the findings are included in the file. All well plugging and site remediation is done by contract. As contract documents are prepared for one or more wells, a contract number is assigned and well files are moved to the contract file. Copies of all contract documents, well records, and related correspondence are maintained indefinitely. It is DEP policy that all files are available for public review unless required by statute to be kept confidential. Records of remediated sites are available for public review.

12. Describe any **public participation** activities associated with the abandoned sites program, including

public access to information, public participation in rule making associated with the program, and participation regarding the priority of sites on the inventory and level of remediation. [6.7]

**Response:** As noted in the response to Question 11, above, the public has access to all records associated with the well plugging and site remediation program.

If any rule making regarding the program were to occur, it would be subject to public participation. As noted in the response to Recommendation I.A.3 of the initial review, procedures for the development and promulgation of regulations include consultation with the Oil and Gas Technical Advisory Board, publication of proposed rule making for public comment and publication of final promulgation by the Environmental Quality Board, and reviews by standing House and Senate committees, the Independent Regulatory Review Commission, and the Attorney General. There are numerous opportunities for public input as well as other checks and balances in the process to assure that regulations adopted are proper for their intended purpose.

Affected parties often bring abandoned sites to our attention through complaints. They can and do request that sites on their properties be moved up on the plugging list. These requests are generally accommodated.

Well plugging and site restoration activities take place only after the surface owner has given written consent to enter the property. Surface owners are invited to attend on-site pre-bid conferences where contract activities and provisions are discussed. If the surface owner has special requests pertaining to restoration activities, access to the well site, protection of property, or any other matter, they are asked to share their concerns prior at the pre-bid conference. Site restoration is to regulatory standards and usually to the surface land owner's satisfaction. Contractors are bonded and insured, and disputes are resolved through conference procedures prior to release of the performance bond.

# V. NATURALLY OCCURRING RADIOACTIVE MATERIAL

1. Discuss any activities the state has undertaken to determine the **occurrence and need for regulation** of NORM. [7.2]

**Response:** Since 1991, the Bureau of Oil & Gas Management and Bureau of Radiation Protection in DEP and the Bureau of Topographic and Geological Survey in the Department of Conservation and Natural Resources have been involved in a study of NORM in oil and gas activities. Staff have been conducting surveys and collecting samples of NORM at oil and gas well sites and related facilities in 26 counties in western Pennsylvania which comprise the oil and gas regions of the state. Facilities surveyed include over 400 oil and gas well sites, nine pipe yards, and about 500 miles of dirt roads that were sprayed with brine for roadbed stabilization and dust suppression.

About 60% of the well sites had readings at or below background levels. Of the remainder, 34% had readings within 10 microRoentgens/hour (microR/hr) of background, 3% were in the range of 11 - 20 microR/hr above background, and 2% were 21 - 54 microR/hr above background. One site was 195 microR/hr above background. To put this in perspective, several states have adopted regulations which include action levels for NORM contamination. Louisiana is in the process of changing their level from 25 microR/hr to 50 microR/hr, which is the same level adopted by Texas, Arkansas and Michigan. Mississippi set its levels at 25 microR/hr. We found two samples, at 54 and 195 microR/hr, that would be of concern in states with regulations.

Sludge and soil collected at well sites were generally at or below 5 picocuries/gram (pCi/g). Sludges must be disposed in a secured landfill. Louisiana, Texas and Mississippi have adopted action levels of 30 pCi/g and Arkansas adopted a level of 5 pCi/g.

No significant radiation levels were seen at pipe yards from pipe taken from Pennsylvania wells. One elevated reading was noted in pipe from another state.

Several brine treatment facilities surveyed had radiation levels above background, but not sufficiently elevated to require controls for the protection of the workers or the general public.

Road surveys for gamma radiation were generally at or below background levels. All areas with elevated readings were attributed to shale outcroppings.

We are continuing to evaluate brines and sludges to expand our data base and for future consideration. Because of the survey findings as summarized above, development of regulations for NORM at oil and gas E&P sites is a low priority for DEP.

2. Briefly discuss each of the following **program elements** as they apply to the NORM regulatory program (give reference to any statutory or regulatory requirements): [7.3]

**Response:**

a. definitions

b. action levels

c. surveys

d. worker protection

e. licensing/permitting

f. removal/remediation

g. storage

h. transfer of land and equipment for continued use

i. release of sites, materials, and equipment

j. disposal

k. interagency coordination - See the response to Question V.1, above, regarding inter-agency and inter-bureau cooperation on the investigation of NORM and the need for a NORM regulatory program.

l. public participation - Results of our study have been shared, upon request, with the Independent Oil and Gas Association of Pennsylvania (IOGA), the Pennsylvania Oil and Gas Association (POGAM) and a Philadelphia law firm.

As noted in the response to Question V.1, above, there is no NORM regulatory program in Pennsylvania because such a program is not felt to be necessary. Consequently, the program elements suggested above have not been developed. Although the program elements recommended in IOGCC Guidance 7.3 are not in place, it is because of a difference in state geology as recognized in IOGCC Guidance 3.3.