DRAFT
Final Project Report

Colorado Department
of Public Health
and Environment

Environmental Management System Permit Pilot Project

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I. Executive Summary

For over 30 years regulatory agencies have worked diligently to protect and improve public health and the environment. While tremendous progress has been made, there remain a number of environmental challenges that may be better addressed through innovation and new approaches. Permitting sources of air, water and waste pollution, for example, is conducted much the same way today as over three decades ago, i.e., through individual or general permits. The Colorado Department of Public Health and Environment challenged the conventional approach to permitting by testing the ability of a proven business tool, the environmental management system, to double as a regulated facility's environmental permit. The department's intent was to allow a company to use its internal resources more effectively and efficiently to reduce a facility's environmental impact, and utilize a business based system to meet and exceed environmental requirements. This report summarizes the results of Colorado's Environmental Management System Permit Pilot Project.

Colorado's EMS Permit Project was completed under a cooperative agreement between the Department of Public Health and Environment and the U.S. Environmental Protection Agency during the period of July 1, 2004 to February 28, 2007. Presented in the document is information on the department's development, implementation and recommendations of an EMS permit program. To this end, the report should be viewed as an informational tool that contains background and policy information related to use of an EMS permit approach.

For years organizations of all kinds have used environmental management systems to achieve and demonstrate sound environmental performance. An EMS, however, does not guarantee continual compliance with environmental requirements or with the terms and conditions of environmental permits. The integration of permits into an EMS allows companies to 1) look across all plant discharges to address pollution on a cross-media basis versus medium by medium at the "end-of-the-pipe", 2) use the environmental management system as a comprehensive environmental permit, and individual permits for air, water and hazardous waste, would be dissolved[1], 3) make changes within the fence line of the facility without making permit modifications and incurring other administrative burdens, 4) provide a greater focus on pollution prevention practices and make commitments to continual environmental improvement, and 5) improve the transparency, interaction and communication with the community and interested stakeholders on permitting and environmental management system processes.

The success and support of Colorado's project resulted in two legislative bills, one implementing regulation, an active stakeholders group, three EMS permits and a set of recommendations from two state agencies.

Recommendations from the Colorado Department of Regulatory Affairs:

1. Based on the review of the EMS Permit Program regulation by the Colorado Department of Regulatory Affairs (DORA), the agency recommended extending the EMS permit program until July 1, 2018 because it was determined that the program has the potential to provide increased environmental benefits throughout Colorado.
2. The entrance criteria of the EMS permit program should be tied to the Colorado Department of Public Health and Environment's Environmental Leadership Program. This will ensure that EMS permits are reserved for Colorado's best environmental actors and not an option for all entities.

[1] The original project proposed piloting a single EMS permit while individual permits were dissolved or placed on hold. The project did not attain this goal. All existing permits, in addition to the EMS permit, remained in affect throughout the project period.

Recommendations from the Colorado Department of Public Health and Environment:

1. In order to conduct the work of an agency tasked with protecting, preserving and improving the quality of life, environment and ecosystems in the State of Colorado, regulatory programs should use a variety of strategies to achieve results. Testing innovations while maintaining traditional approaches to regulation and compliance is key to realizing continued results and environmental improvements. The EMS permit program is just such an alternative strategy.
2. Modify the EMS Permit Program Regulation (5 CCR 1004-1) to be consistent with legislative changes mandated by the Colorado General Assembly, including making an EMS permit a permanent program within the department.
3. Submit a letter to the Administrator of the U.S. Environmental Protection Agency requesting all approved, delegated and/or mandatory programs implemented by the department be re-approved by U.S. EPA to include the EMS permit program approach. Success of the EMS permit approach is contingent on this recommendation.
4. In support of the permitting option, create outreach materials and training for internal and external customers.
5. The EMS permit program should supplement rather than replace the current regulatory system. This approach is not appropriate for all companies. For instance, regulated entities that are not recognized as environmental leaders may not be ready for this approach. Critical aspects of a permanent program should include the following elements:
    a. Demonstrated superior environmental performance through an EMS.
    b. Continual improvement goals.
    c. Enhanced stakeholder involvement.
    d. Required pollution prevention and continuous improvement.
    e. Measurements demonstrating continual improvement.
6. Elements that should be part of a permanent EMS Permit Program include the following recommendations:
    a. Develop and present to U.S. U.S. EPA a request to adopt the EMS Permit Program into every U.S. U.S. EPA approved and mandated program as implemented by the State of Colorado.
    b. Provide flexibility for small businesses, municipalities and agricultural operations in what is required within an EMS.
    c. The department should develop EMS permit templates for certain business sectors, such as agriculture, oil and gas, wastewater treatment plants, et. al.
    d. A clear mandate from senior management that all permitting programs within the department work together to develop and implement the EMS permit program.

II. Overview

When environmental laws were first developed, technology-based environmental standards were vital in addressing and correcting widespread and uncontrolled pollution. The long-standing pollution that demanded remedies across the United States included rivers that burned, smokestacks that bellowed thick dark smoke, and hazardous wastes that were buried in unlined pits or dumped in waters across this nation. Some 30 years later, these same technology-based standards that once proved to be so valuable

and so important hinder the ability of the regulated community to achieve greater environmental and public health results.

One reason is because no incentives exist for companies to achieve compliance beyond what state and federal environmental laws currently mandate. Fortunately, a growing number of companies are realizing that greater environmental, social and economic gains can be made by focusing on overall facility performance and on the impacts all regulated and non-regulated pollutants produce at a facility.

With companies keenly aware that time is money, innovative and proactive decisions should not impose a regulatory burden on facilities due to permit processing delays or be rejected because a business practice or technology is not "approved" under existing environmental laws. In short, the current regulatory process inhibits greater environmental and public health results from being realized in today's world. Like businesses, finding more efficient and effective ways to administer programs is a growing concern of governmental agencies.

Colorado's Environmental Management System Permit Pilot Program was designed to address the limitations of conventional regulatory programs while simultaneously imposing less regulatory burden on the regulated community. By stepping outside of the box and thinking differently about the way environmental agencies regulate, inspect and enforce environmental laws, regulated entities can achieve a higher level of protection for the general public and for the environment. The tool driving this change is a comprehensive, performance-based environmental management system.

III. Background

Beginning in 2003, the Colorado Department of Public Health and Environment engaged in an internal review of its environmental programs[2]. One of the goals of the exercise was to identify and implement innovative approaches to existing regulatory programs, and to achieve more effective environmental protection. The result was a series of innovative initiatives including the creation of an environmental management system permit program. The department elected to pilot the program over a three-year period (2004-2007) with the support from an Environmental Policy and Innovation Grant awarded by U.S. EPA's Office of Policy Economics and Innovations (OPEI) for $150,000, and a Pollution Prevention Grant issued by U.S. EPA Region 8 for $25,000.

The department anticipated that this project would result in reduced oversight for participating facilities, and, if successful, would allow the regulators to consider cross-media impacts and benefits in its decisions. The project anticipated greater involvement of the community and greater quality and quantity of information to the public and to the department through the annual external audits. Better information should result in better decision-making. Through reliance on external audits, the state can focus its limited inspection and enforcement resources on those entities that fail to understand the importance of protecting the environment and those environmental problems that need to be solved. Finally, by letting the market work to determine the best approach to meeting environmental goals, the department anticipated an ultimate result would be increased innovation and integration of pollution prevention concepts.

At the start of the pilot project, five regulated entities participated in the project. The partners represented the following sectors: agriculture (concentrated animal feeding operations), aerospace and semiconductor. Each of the project partners had an EMS in place or was in the process of developing their management system at the start of the project.

[2] Environmental programs include the Air Pollution Control Division, Consumer Protection Division, Hazardous Materials and Waste Management Division, Sustainability Division, and Water Quality Control Division.

Prior to starting the project, the department submitted a work plan to U.S. EPA. The work plan described how each pilot project would be conducted and completed, and included a description of roles and responsibilities, schedules, research objectives, stakeholder involvement, data management procedures and data assessment/analysis techniques. The department completed the specified work plan in accordance with the innovation grant criteria. As a result, the department collected and analyzed data on changes in environmental performance, regulatory compliance, pollution prevention and stakeholder involvement. In addition, the department made various determinations and conclusions on how, and if, the use of an EMS increases public health and environmental protection and provides better public information than existing regulatory requirements. The department's EMS Permit Pilot Work Plan, provided in Appendix B, provides greater detail about the project, including the project schedule.

During the 2004 Colorado legislative session, the EMS permit concept was embraced by the Colorado legislature through passage of House Bill 04-1147. Colorado's governor, Bill Owens, signed House Bill 04-1147, entitled Environmental Management System Permit Pilot Project (Article 6.6 of Title 25, Colorado Revised Statutes (C.R.S.) on April 19, 2004. The legislation was well supported during the legislative session and provided the department with the authority to develop and implement the pilot project. The duration of the pilot project was from April 19, 2004 through June 30, 2007[3]. During the legislative proceedings, the department developed a white paper that provides background on the goals of this project and an editorial document (see Appendix C).

Prior to the sunset of sections 25-6.6-101- 106, C.R.S., set for July 1, 2007, the Colorado legislature reviewed the EMS Permit Program during the 2007 legislative session and continued the program until July 2018 (Senate Bill 07-218)[4]. This action, in affect, provides authority to the department to make the EMS permit approach a permanent program. Revising the EMS Permit Program regulation is slated for 2007/2008.

IV. Project Goals

The department developed the EMS Permit Pilot as a system that allows an EMS to act as an enforceable cross-media permit for certain regulated entities. The project provides an opportunity for government to be more efficient and better leverage resources; a critical aim given today's state budgetary challenges. The department began with the premise that strategic use of EMSs can provide the next generation of tools for synthesizing economic development activities and environmental protection. In addition, the department assumed an EMS permit could also benefit the regulated community by rewarding those entities that participate in the project with flexibility to meet environmental goals and market demands without incurring unnecessary administrative burdens.

The EMS Permit Pilot Project was developed and implemented by a cross media team within the department. The team was comprised of employees from the Air Pollution Control Division, Hazardous Materials and Waste Management Division, Water Quality Control Division, the Radiation Unit and the Sustainability Program. In addition, the team included members of the regulated community, environmental and community organizations, and local and federal government. The team helped draft several elements of the project including the EMS Permit Pilot Program Regulation (5-CCR 1004-1), program measurements, community involvement and communications plans, and other necessary policies and procedures.

Initial implementation of the EMS Permit Pilot Project involved developing and issuing whole-facility permits to five facilities across various sectors and trades in Colorado. Only four facilities completed the

[3] The EMS Permit Pilot Project legislation was established as a permanent EMS permit program within the department (Senate Bill 07-218). The program has a sunset date of 2011.
[4] Colorado Governor Bill Ritter signed senate Bill 07-218 into law on May 31, 2007.

project. The facilities committed to compliance, continued environmental improvement, enhanced community involvement and communication through the development and implementation of an EMS. Each EMS includes a continual cycle of planning, implementing, reviewing and improving the actions that an organization takes to meet its environmental obligations (similar to the ISO 14001 standard) and must meet the EMS criteria built into the Gold level of the department's Environmental Leadership Program.

The department focused on the EMS approach because EMSs offer an approach to overcoming some of the limitations of the regulatory structure. Whereas the current regulatory structure relies on "coercive" pressure through government imposition of environmental control requirements, an EMS consists of a broader, non-regulatory environmental structure that arises from within a regulated entity.

Building a permit off of a system designed to collect business management-prescribed environmental policies, planning procedures and implementation activities into one tool, can produce benefits for both the organization and the community in which the entity is located. The continual cycle of planning, implementing, reviewing and taking action to improve processes is well suited incorporating regulatory requirements and environmental permits into the existing structure of the EMS. In addition, each EMS is tailored to the unique needs of a company or organization and provides an integrated environmental protection approach that can identify cross-media and other environmental problems that are not observed or addressed under the current regulatory structure – providing greater environmental results.

The EMS Permit Pilot project included the following goals:

- Find effective and innovative ways to achieve superior environmental protection.
- Test a systematic, multi-media outcome-based permit system using an approved "permit enhanced" EMS as the vehicle.
- Utilize an EMS to deliver compliance-equivalent performance through enforceable performance standards.
- Base the EMS on criteria that drives compliance and performance into the future.
- Continuation the department's selective policy that offers rewards to good performers who have used or want to add an EMS to their environmental management approach.
- Provide provisions for an appropriate allowance for stakeholder involvement in a participant's environmental footprint, compliance history and community relations situation.
- Consider cross-media impacts when making environmental decisions.
- Find ways to have the regulated organizations' EMS replace and/or augment some of government's environmental regulatory functions, including inspections through external third-party audits, minor permit modifications through the EMS tracking system, and reporting through the EMS data collection, problem identification, root cause analysis, system modification, etc.
- Provide an opportunity for states and the U.S. EPA to examine the benefits an innovative EMS approach in protecting and enhancing public health and the environment.
- Provide operational flexibility to participating facilities to encourage innovation.
- Consolidate all environmental permits into a single permit that allows for the consideration of cross-media impacts.
- Enhance public participation and communication earlier in the permitting process.
- Reduce overall administrative burdens through a single point of contact at the department.

- Develop a cooperative commitment to participate in the project through a letter of intent.

V. Development of the EMS Permit Program Regulation

A. Background

Many around the country considered this project ambitious and doubted the ability of the project to prove successful. The department, however, believed that the goals were achievable in today's business and regulatory environment so long as the right partners and stakeholders were involved.

The department began the EMS permit program by inviting nongovernmental organizations, community groups, industry, local, state and federal governmental agencies to help develop the program. In order to allow the environmental non-governmental organizations to participate in the process, the department allocated a portion of the grant funds to these organizations to hire an attorney and technical expert to be involved in the process.

One of the first steps for the stakeholder group was to develop the EMS Permit Program regulation. This step was necessary to first, implement the legislation passed by the Colorado General Assembly (§§25-6.6-101–106, C.R.S.), and second to establish the program criteria in regulation. In order to accomplish these goals while remaining true to the project, it meant companies needed to trust the regulators and regulators trust the companies by ensuring that the decisions made resulted in the greatest benefit to the environment and public health. Another key element was that the nongovernmental organizations and local governments were willing and motivated to develop a successful program. Implicit in this proposal was the assumption that good stewardship of the environment is in a company's best interest and is everyone's responsibility and that the environment could not be harmed as a result of operational flexibility offered to a participant.

During numerous stakeholder meetings, the group reached agreement on the entrance criteria, continual improvement requirements, public participation elements, operational flexibility, and other programmatic requirements. The one exception to the agreements made between the department and stakeholders was that the EMS permit include specific administrative requirements, such as when an EMS permit modification would be required and the timing and allowance of public comment. A significant portion of the negotiations for this program occurred during the regulatory development. Included in the following sections are some of the discussions, issues and resolutions that occurred during the rulemaking process.

At the public rulemaking hearing on the EMS Permit Program Regulation before the department's executive director, all parties to the process were in unanimous agreement on the regulation. The parties did state their disappointment that the U.S. EPA was not able to grant approval on a pilot basis for the state to provide regulatory flexibility (i.e., the need to keep existing permits active simultaneously with the EMS permit).

B. Applicability

The applicability statement includes the requirement that the department's executive director must approve all project participants. It also states that this program is sufficient for a pilot but not a permanent program – the inclusion of this statement was required by the U.S. EPA as part of the pilot program. The reason given for this distinction was because the U.S. EPA did not agree that the pilot could occur without having the state modify all delegated and approved programs to include the EMS Permit Pilot Project. To that end, the following paragraph was included in the applicability section of the regulation (1.1):

> The facilities that have been approved by the Department to participate in this Program are subject to conventional environmental permits issued by the Department, local agencies, and/or the federal government or will be obtaining such permits. For the duration of this pilot Program, the facilities are

> required to comply with this regulation and the EMS Permit issued pursuant to this regulation. All existing conventional environmental permits issued by the Department and local agency and held by that facility shall remain in effect and are incorporated into the EMS Permit. All conventional environmental permits will be enforceable unless no conventional environmental permit exists, then the EMS Permit is enforceable. The Department and local agency shall ensure that the EMS Permit is at least as protective to the environment and public health as the facility's conventional environmental permit and any applicable environmental requirements. The Department shall modify both the conventional environment permit and the EMS Permit to ensure both remain consistent throughout the Program. Any operational flexibility approved into the EMS Permit and conventional environmental permit(s) during the Program, shall be eliminated from the conventional environmental permits upon revocation of the EMS Permit unless the facility requests and the Department and local agency approve maintaining the operational flexibility in the conventional environmental permit(s). If operational flexibility remains in a conventional environmental permit after the EMS Permit is revoked, the Department and local agency shall ensure that applicable environmental requirements associated with the operational flexibility that are required to be federally enforceable within an EMS Permit are submitted to the Administrator for review and approvals are obtained as required by federal law.

This matter is of significance not only to the potential success of the program as the department converts the pilot program to a permanent program, but also to other states attempting to implement innovative programs. The department recommends U.S. EPA develop some guidance or a regulation that allows innovative programs to be piloted without such significant restrictions.

A related concern related to applicability is to clarify for local regulatory authorities that the state is not attempting to modify or increase the existing authority of U.S. EPA or the department through an EMS permit and for industry to understand that the EMS permit program is a voluntary program that does not expand the existing authority of the local, state or federal agencies.

C. Definitions

In general, the regulation includes generally accepted definitions from either federal or state law or International Organization for Standardization (ISO) 14001 definitions for EMS related terms. The following were topics of discussion and the resultant outcomes:

1. Environmental Compliance Auditor

The definition of "environmental compliance auditor" was discussed since there are different expectations as to what it means for the auditor to be independent. The definition adopted in the EMS Permit Program Regulation was:

> "Environmental compliance auditor" means an independent person that does not have direct involvement with compliance or management issues at the facility being audited and is qualified, as determined by the Department, to audit the facility for compliance with applicable environmental requirements.

This means the auditor cannot be someone directly responsible for ensuring compliance at the facility, but it can be someone from the company that works at another facility or from corporate offices. Industry made a persuasive argument that sometimes a company's internal experts will be the most qualified to audit a facility. For example, a refinery is so complex that bringing in individuals from outside the company may not result in as comprehensive or qualified of an audit.

2. Environmental Leader

The definition of an environmental leader was important for the pilot to allow agricultural sources deemed to be industry leaders into the program. Currently there are no such sources in the gold level of the department's Environmental Leadership Program (it is anticipated that project partner Murphy Brown of Yuma will apply to the gold level during the summer of 2007). For a permanent program, the

new legislation (Senate Bill 07-218) requires that participants must be in the Platinum, Gold or Silver level of the department's Environmental Leadership Program.

> "Environmental leader," for purposes of this Program, means any entity that the Department determines to be adequately committed to environmental improvement, ongoing compliance, and the community.

3. Environmental Management System Auditor or EMS Auditor

The EMS auditor is responsible for auditing the actual EMS and not for compliance. Again, the auditor can be from the company but not responsible for development or implementation of the EMS at the facility.

> "Environmental management system auditor" or "EMS auditor" means an independent person that did not have a substantive role in developing the EMS at the facility being audited and is qualified, as determined by the Department, to conduct an EMS conformance audit at the facility.

4. Serious Environmental Civil Noncompliance

"Serious environmental civil noncompliance" means a violation that may cause significant impact to human health, to the environment, or to treatment plants such as publicly owned treatment works, that are designed to protect the environment; violations that are unresolved or not addressed at the facility; or on-going U.S. EPA-, state-, or local agency-initiated litigation at the facility.

5. Stakeholders

"Stakeholders" means citizens in the communities near the facility, facility workers, the regulated entity, government representatives, business groups, educational groups, environmental groups, or other Colorado citizens or public interest groups

D. Eligibility and General Requirements for EMS Permits

The entrance criteria generally follow the Gold Level of the state's Environmental Leadership Program. In order to have the agricultural community participate in the pilot, membership in the program was not required. The regulations require a facility to select and implement continual improvement projects. This element of the regulations required some negotiations as to how continual improvement was defined and measured.

In addition, this section includes a list of required elements in any EMS permit issued by the department. One of the carefully negotiated sections of this regulation is Section 2.3, which clarifies the provisions in Section 2.2 that are:

- Enforceable permit conditions;
- Conditions that are not enforceable but can be considered by the department in issuance, modification, or revocation of the EMS permit; and
- Conditions that are not enforceable but can be considered by the department in issuance, modification, or revocation of the EMS permit, unless the facility opts to conduct environmental compliance audits in exchange for reduced compliance inspections then the provisions are enforceable.

This final provision was the result of a discussion about whether a participating facility is required to conduct and report on compliance audits, and if this is an enforceable requirement. The companies involved in developing the regulation were not interested in reduced inspections as an incentive. They perceive the state and local inspections as a "check on their system", a valuable connection to the regulators, and of value to the facility when promoting environmental needs to management. Thus, the facilities did not want the requirement for an external compliance audit and reporting to be enforceable conditions since a state or local inspection may occur and replace the need for a compliance audit. The

stakeholders agreed that if a facility opts for reduced inspections, then section 2.2.3 and section 2.2.4 become enforceable permit conditions, otherwise it is considered as part of EMS Permit issuance, modification and renewal.

Another provision discussed was section 2.6 on transfer or assignment of ownership. The majority of the stakeholders felt it is important that if ownership of a facility with and EMS permit was transferred, the prospective owner needs to re-apply to the department for the EMS permit. This concern is premised upon the importance of "top-down" or corporate support of a company operating at a leadership level. The exception to this provision was the agricultural project partners and public advisory group members. This subgroup felt strongly that an EMS permit could be a valuable incentive for agricultural producers in considering participation in the EMS permit program. An EMS permit would demonstrate a facilities environmental ethic and ensure compliance was on going at the facility. Transferring the EMS permit would reduce the paperwork burden of the new facility owner and engage the new owner in environmentally preferable practices.

E. EMS Permit Application Requirements

The EMS permit application requirements are standard for most environmental permits, with a few exceptions. First, the facility is asked to identify requirements from existing conventional permits and other applicable environmental requirements that the applicant is requesting to be included in the EMS permit. This means a facility can request requirements, such as RCRA, that are not currently in any environmental permit can be included in the EMS permit. Ball Aerospace opted to include RCRA requirements in the permit in order to simplify the regulatory compliance process. Murphy Brown of Yuma and Magnum Feedyard included state groundwater regulations and universal waste requirements in their EMSs and permits.

The facility is also requested to identify any operational flexibility being requested and relevant data for the department and local agency to review in order to make an equivalency determination. The department or local agency may request additional information. Finally, the facility is required to submit continual improvement projects, the Community Involvement and Communications Plan (CICP) and a compliance certification form.

F. Processing of EMS Permit Applications

The permit application processing is similar to other permit processes, with the exception of the equivalency determination and earlier participation by the public. The equivalency determination means an analysis and decision made by the department or local agency that any operational flexibility as set forth in the regulation meets, at a minimum, the same degree of protection as existing environmental requirements. For example, the department and local agency shall evaluate the EMS permit application and shall determine:

- whether compliance with the EMS permit will ensure that the facility will not exceed any applicable water standards or ambient air standards;
- the EMS permit requirements are consistent with federal laws and regulations; and
- resulting environmental requirement is measurable, accountable, enforceable, and based upon replicable procedures.

Prior to making the equivalency determination, the department is required to identify all terms and conditions of conventional environmental permits applicable to the participating facility which are utilizing operational flexibility in the proposed EMS permit, and describe how compliance with water standards and ambient air standards and applicable federal laws and regulations will be achieved in light of such operational flexibility. The department's analysis must be made available to the public and be provided to the EMS Pilot Project Advisory Group, as soon as practicable.

The requirement that the department conduct an adequate equivalency evaluation was very important to stakeholders. Specifically, that the evaluation be available to the public and that a demonstration of compliance be established.

G. EMS Permit Issuance, Modification, Revocation, and Reopening for Cause

As mentioned previously, there was a disagreement between the department and the U.S. EPA regarding whether the conventional permits remain in effect during the period of time a facility holds an EMS permit. The department was under the impression that the conventional permits could be "put in abeyance" during the pilot period in order to test out the actual EMS permit.

One week prior to the rulemaking on the EMS Permit Program, the U.S. EPA informed the state that all existing conventional environmental permits issued by the department and local agency (Boulder County) and held by that facility must remain in effect and be incorporated into the EMS permit. In addition, the department and local agency must ensure that both the conventional environmental permit(s) and EMS permit are modified to incorporate any operational flexibility and remain consistent throughout the program. Any operational flexibility approved into the EMS permit and conventional environmental permit(s) during the project period must be eliminated from the conventional environmental permits upon revocation of the EMS permit unless the facility requests and the department and local agency approves maintaining the operational flexibility in the conventional environmental permit(s).

Any environmental requirements incorporated in the EMS permit shall be enforceable as part of the EMS permit. During the period of time a facility holds an EMS permit, the facility must remain responsible for maintaining its underlying conventional environmental permits by applying for renewals, including any necessary modifications or amendments, and paying applicable fees. The department and local agency must provide the facility a single application form that will allow the facility to request a modification or amendment to the conventional environmental permit and EMS permit. Once the facility ceases to hold an EMS permit for any reason, the conventional environmental permits shall continue to remain in effect.

The fact that conventional permits had to remain in effect was a significant issue to the program participants, stakeholders, and to the success of the pilot project. After several months of program and regulation development, the intent of the stakeholders was for the department to test the actual EMS permits without the hindrance of the conventional permits. As a result of U.S. EPA's decision, the project partners and the department found it too cumbersome to manage and track all permits simultaneously. The greatest emphasis remained on the conventional environmental permits, as these were the state and federally enforceable permits. Further complications to maintaining existing permits was the number of different permit writers that needed to be coordinated with and division priorities that existed for the permitting units. These challenges lead to greater staff resistance, engagement and understanding of the goals of the project. The EMS permit was viewed more as something experimental (or that the Sustainability Program was doing) and not a viable way of approaching permits within the environmental divisions. Thus, the project was only partially implemented as initially designed.

This section also includes the revocation requirements. An EMS permit can be revoked if the department or local agency, as appropriate, determine that the facility is in serious environmental civil noncompliance, the facility is not able or has shown a lack of willingness to comply with continual environmental improvement goals, public health or the environment is endangered, ownership is transferred to an unqualified company, or the facility fails to comply with designated provisions of the EMS Permit Program Regulation.

H. Public Participation Requirements

An important discussion revolved around the public participation requirements. Because the non-governmental organizations were most interested in this aspect of the regulation, the participants agreed to allow them to draft the public participation requirements. The starting point for this section was that at a minimum, the permit process has to comply with the most stringent state and federal public review and comment processes.

The regulation requires each facility is required to develop a Community Involvement and Communications Plan (CICP) to be submitted with the permit application. The CICP is intended to outline the facility's plan on how to best communicate with the affected public. The CICP process is similar to a requirement under CERCLA and RCRA. To assist with this aspect of the project, the department utilized its community involvement experts from the department's Hazardous Materials and Waste Management Division. For all of the project partners, the CICP requirement seemed onerous and of somewhat limited value due to a low response from the community or the rural nature of their businesses (especially the agricultural partners).

The regulation also requires the primary vehicle for public participation and stakeholder involvement to be provided through the EMS Permit Program Advisory Groups (PAGs) composed of interested parties, EMS permit applicant(s), and representatives of the department. Participation in PAGs does not waive any public participation and appeals rights that exist under other applicable environmental laws and regulations. The stakeholders thought this an effective mechanism to gather interested stakeholders, educate them on the process and facility, and engage the stakeholders in a meaningful dialogue on the facility and permit.

I. Operational Flexibility, Measurable Environmental Benefits, and Continual Environmental Improvements Projects

1. Operational Flexibility

The purpose of operational flexibility is to allow a facility to implement alternative pollution prevention, source reduction and pollution reduction strategies and environmental monitoring, record keeping and reporting methods or procedures for the facility. The EMS permit allows facilities to meet existing environmental standards of a law, rule, order, or conventional permit related to the control or abatement of pollution through the use of alternative methods and procedures while ensuring compliance with an established ambient air or water standard. Nothing in the regulation should be construed to authorize a facility to exceed an established ambient air or water standard. The operational flexibility that is provided for under this section is not intended to limit the flexibility provided under other environmental programs.

To be granted operational flexibility the facility must demonstrate the following criteria:

- The operational flexibility does not result in an exceedance of an established applicable water or ambient air standard.
- The operational flexibility is at least as protective as applicable environmental requirements.
- The EMS permit contains an equivalency determination as required by Section 4.2 of the regulation.
- The department and local agency will submit any permit condition that includes operational flexibility to U.S. EPA for review and approval as required by federal law (nothing herein expands U.S. EPA's authority over permit conditions beyond what is currently required by federal law).

The department, local agency, and facility will conduct a cross media assessment of any operational flexibility requested by the facility. Based upon that assessment the department and local agency shall incorporate the most environmentally beneficial compliance alternative into the EMS permit, so long as the facility agrees. If the facility does not agree, the environmental requirement in the conventional permit shall apply to the facility. This was an important element of the pilot program, but since conventional permits remained in place and the program was only three years, there were few requests for operational flexibility.

The department and local agency are required to develop and make available to the public information concerning any permit condition that incorporates or allows operational flexibility as set forth in Section 7.1.1 of the regulation and any other incentive provided to the applicant within the EMS permit, pursuant to Sections 6.2.4, 6.3 and 6.4 of the regulation.

2. Continual Environmental Improvement

Each participant was required to commit to continual environmental improvement or continual improvement projects. Continual environmental improvement or continual improvement means any prevention or reduction of an environmental impact. The facility commits to conducting continual improvement projects by:

- Identifying and committing to continual improvement projects in the EMS permit application;
- Conducting annual reviews of the facility's aspects and impacts assessment for feasible continual improvement projects; and
- Committing to propose and implement additional continual improvement projects.

Continual environmental improvement can include regulatory, non-regulatory, external and internal projects to benefit the environment. The regulation is written very broadly to allow the maximum flexibility for the participants.

As the department developed the program, it answered the following questions:

- Should the facility's specific continual improvement projects be enforceable? *Not with penalties.*
- Should a failure to complete the continual improvement projects result in the facility leaving the EMS permit program? *Failure to complete the projects could result in the facility being asked to leave the program. This decision will be made on a case-by-case basis and consideration would be given to their status in the leadership program.*
- What type of review or approval of the continual improvement projects by the department and/or other stakeholders should occur? *The department and local government will review and approve of the projects, but the facility will also present them to the EMS Permit Public Advisory Group members for review and consideration.*

The facility also agrees to measure the outcomes and outputs of the continual improvement projects by benchmarking and selecting key performance indicators or other verifiable, quantitative and qualitative measures or methods that document all performance goals, including resource conservation and pollution prevention goals.

J. Auditing, Compliance Assurance Monitoring, Reporting, Record Keeping and Testing

There are two different types of audits that a participant is required to have conducted at the facility; an EMS conformance audit and compliance audit. The conformance audit is to ensure an EMS is in place at the facility. The summary of the conformance audit is required to be maintained on site and available to the department and local agency for review. The audit shall describe conformance, minor nonconformance, and major nonconformance discovered during the review. These documents are not to

be made available to the general public. There was discussion around this decision, but the facilities did not want to open the entire EMS auditing process and findings to the public. The stakeholders ultimately agreed to the department and local governments having access, making the determination that the audit results did or did not jeopardize the facility's ability to participate in the EMS permit program and take any necessary action. Nonconformance will not result in any enforcement action or penalty assessment.

The compliance audit is to be conducted every two years by an environmental compliance auditor that reviews the facility's compliance with environmental requirements in the EMS permit. Again, the audit results shall be kept on site and available for state and local agency review. The regulation specifically allows facilities to use the State Self-Audit Law (sections 25-1-114.5 and 114.6, C.R.S.) if the facility submits the required documentation to the department. This provision is necessary since the Colorado Self Audit law cannot be utilized if the facility is required to conduct a self-audit pursuant to permit.

K. Appeal of an EMS Permit, Severability Clause and Confidential Information or Data Contained in Permit Applications or Reports Submitted Pursuant to this Regulation

The appeal, severability, and confidential information or data provisions are relatively standard and comply with the more stringent of state and federal requirements.

L Statements of Basis, Specific Statutory Authority and Purpose

This section provides an overview of the intent and purpose of the regulation. It provides additional history and context to the stakeholder regulation development process.

VI. Participant Selection

The first participants in this project were carefully screened to ensure that each participant was considered environmental leaders in their industry. The department accepted five participants:

- Aeroflex Colorado Springs (semi-conductor facility)
- Badger Creek Farms (dairy)[5]
- Ball Aerospace & Technologies Corp. (aerospace operation)
- Magnum Feedyard, LLC (feedlot)
- Murphy Brown of Yuma (housed commercial swine operation)

The department then worked with each facility to assist in completing the EMS, audit the EMS, conduct baseline environmental and compliance assessments, complete the permit applications, identify and negotiating operational flexibility, develop the permit, and hold public participation meetings. The issued permits, community involvement plans, measurement assessments, and other information can be found at http://www.cdphe.state.co.us/el/EMS/emspermit/index.html.

The department and Ball Aerospace & Technologies Corp. (Ball) decided to attempt to include the requirements from the City and County of Boulder's pretreatment permit for their Boulder facility. This required the department to work closely with the City and County of Boulder to ensure any concerns and questions were addressed. The latter local authority was greatly cooperative and fully participated in the pilot project.

A third party conducted a baseline assessment at each participating facility. The assessments included both baseline environmental conditions at the facility and an audit of the EMS at each facility. The latter assessments were conducted at all five facilities, even though the dairy and feedlot had yet to complete an EMS. The assessments included numerous environmental measurements and are attached.

[5] Badger Creek Farms decided to drop out of the project because they felt the length of the project was too long and that some of the requirements such as development of an EMS and associated recordkeeping/documentation were not necessary for their business.

VII. EMS Permit Development and Program Implementation

A. Initial EMS Development

During the initial EMS development and implementation phase of the project the project focused on the following activities:

- Development of written environmental policies with commitments from top management to superior environmental performance.
- Development of methods and procedures that take into account environmental aspects and impacts, compliance with legal requirements, objectives and targets and corporate-wide environmental programs.
- Implementation focused on structure and responsibility, training and communication for employees, EMS documentation and control, operational control and emergency preparedness and responses, checking and corrective action which include monitoring and measurement, corrective and preventive action, regular EMS audits and a continual improvement (including pollution prevention[6]) plan as the central theme.

During the EMS development process, the dairy operation Badger Creek opted to leave the program. The reasons stated included the requirements of an EMS were overly burdensome for the size operation.

B. EMS Permit Application and Community Involvement and Communications Plan Development

The department developed the permit application form, which incorporated requirements from air, water, and waste programs, and for Ball, the City and County of Boulder's pretreatment requirements. Following the development or enhancement of the conventional EMS for each facility, the department and facility began to complete the permit application and community involvement and communication plan.

The department worked with each facility to develop a Community Involvement and Communications Plan (CICP). Ball had a CICP developed and the other participants used this as a template. As a part of developing or enhancing the CICP, each facility was requested to conduct interviews of community members to gather information on how the facility can best communicate with the community.

In completing the permit applications and developing CICPs, the department and partners made the following observations:

- It was challenging for the facilities to identify potential operational flexibility opportunities, since they had operated for so long within a command and control scheme.
- The time frame of the pilot project was too short for some facilities to commit to continual improvement or operational flexibility projects that involved capital expenditures or true regulatory flexibility.
- The fact that the underlying permits had to stay in existence during the pilot negated the department's ability to provide true flexibility.
- There are definite opportunities to combine regulatory requirements that overlapped between media.

[6] Pollution prevention is defined by Colorado statute, and does not include treatment of wastes after they are created.

- The process of developing the CICP was questionable for the facilities, as there was a certain amount of discomfort with meeting with members of the community and the real value of the plan was not clearly apparent.
- The permit process may not be streamlined the first time a facility opts to use an EMS permit.

C. EMS Permit Development

After the project partners completed the applications and CICPs, the department began to draft the EMS permits with assistance from the facilities. The permit development process included:

- Project partners identifying and proposing continual environmental improvement projects.
- The department developing specific environmental standards and work practice requirements, but not necessarily dictate technology requirements.
- Project partners proposing the methods and technologies to be used to comply with regulatory requirements, in order to provide incentives for participants to implement pollution prevention alternatives wherever possible.
- Project partners and the department reviewing and considering the cross-media impacts of the technology and/or work practice selected.
- Project partners developing and convening an EMS Permit Program Advisory Group (PAG) to obtain feedback on the application and draft permit.
- The department soliciting comments and input from the appropriate and necessary stakeholders prior to the permit being finalized.
- The department conducting a public comment process to follow issuance of the draft or final permit, as required by state law.
- The department ensuring that the EMS permit is considered equivalent to any existing environmental permits, as it will contain the necessary requirements and elements of any environmental permit.

D. Continual Environmental Improvement

The EMS permit required the facilities to select, agree to, and implement continual improvement projects. The continual environmental improvements goals varied from partner to partner based on the aspects and impacts analysis, regulatory compliance needs and community input. The selection of continual improvement goals was the responsibility of the project partners. The department encouraged project partners to select goals that address significant environmental impacts and compliance related needs. Overall, the projects were strong, but the industrial sources had already implemented many of the projects with greater environmental outcomes before the project. Ball, for example, has been in the department's Environmental Leadership Program since 1997 and every year has committed to such projects. The swine partner, Murphy Brown of Yuma, is an ISO 14001 certified company and also maintains continual improvement goals as part of their certification program. The feedlot partner, Magnum Feedyard, realized the greatest progress with continual improvement goals, as an EMS was new to the owner of the facility and resulted in a new opportunity to analyze and begin to address environmental impacts from the activities, processes and services associated with the facility.

The department's recommendations in this area include:

- Allowing great flexibility for each facility to select unique and meaningful projects;

- Taking into consideration the previous projects and reductions the participants have already accomplished when reviewing the projects;
- Do not make the actual projects enforceable but keep it as a criteria for maintaining eligibility;
- Maintaining a measurement component, but do not be overly restrictive on the method or form of measurement; and
- Ensuring flexibility in the system such that continual environmental improvement projects can be modified or change over time.

E. Community Involvement

The department did require the partner facilities to enhance the overall communication and involvement with the community including developing a CICP. The stakeholders decided that effective communication means that project partners must find ways to communicate the environmental impact, objectives and targets of their facilities and address the community's perceptions and reactions to this information. The goal was to develop a level of trust that results in changes to operations, processes, continuous environmental improvement and implementation of pollution prevention plans that are meaningful to the community. It did not mean involvement by the community in business decisions, fiscal matters, proprietary information, etc.

Development of the CICP was time consuming, yet educational, process for the partners. Most interviewed community members about the best mechanisms and approaches to communicate issues and ideas to the community. There was an initial resistance and concern that in asking the community members their opinion on the best mode of communication, it would open the company to adverse scrutiny and raise expectations that the company would address any issues or concerns raised. In actuality, the process allowed the facilities to understand more about their community and the concern about raising expectations were not realized. For the agricultural partners, the community also gained a better understanding of what the feedlot and swine operations were trying to achieve in terms of improved environmental protection and continual improvement goals.

The EMS Permit Public Advisory Group (PAG) process was also useful. There were three EMS Permit PAGs established: one for Ball, one for Aeroflex, and a combined PAG for the agricultural facilities. These groups met at least once in person and then communicated via email to provide comments and thoughts. It was a useful and educational process for the PAG members, facilities, and department.

The department's comments and lessons from the PAG sessions include:

- Re-evaluating the value of the CICP and PAG requirements with resource efficiencies and outcomes in mind.
- Do not overly manage or restrict the process at the department level and allow the facility and its stakeholders to develop a process that works for them.
- Allow meetings that provide the greatest flexibility for participants, including teleconference calls and email communication.
- Allow sector or regional PAGs in order to leverage these efforts.

F. EMS and Compliance Audits

Audits of the EMS and facility compliance are both important elements of Colorado's project. The department developed the elements of the required compliance audit with assistance from the contractor EnviroGroup, Ltd, department inspectors, partner facilities, the environmental community, local agencies and U.S. EPA. The goal was to create a compliance audit through the EMS permit that can

stand in the stead of a traditional state inspection. The state did not relinquish any enforcement authority such as the ability to respond to complaints or the ability to conduct inspections. Instead, the state considered on a case-by-case basis whether conducting an inspection at the partner facility is the best use of its limited compliance assurance resources. Or, could those resources be better utilized towards targeting more problematic environmental concerns or facilities.

The EMS permit regulation and each EMS permit contain a statement concerning the facility's ability to use Colorado's Self Audit Law. With the regulatory provision, participating facilities would be required to conduct audits by the permit and not be eligible to use the protection of the law.

During the pilot, the department inspected each of the project partner facilities. Overall, the auditing components went well, in part because the department provided the consultant to conduct the audits. The concept of self-audits is well established and proven, so this was not a key element of the pilot program. The department recommends that this component of the program remain in place as written, i.e., the self-audit requirement is an enforceable term of the permit if the company requests a reduction in inspections as operational flexibility otherwise it is an element considered in qualifying for the permit or permit renewal.

G. Operational Flexibility

In return for the voluntary participation of the partners in the EMS permit project, the department worked toward providing operational flexibility, as requested by the project partners. Incentives that were requested and provided during the project were:

- Aeroflex
  - Reduction in the required radiation insurance bond due to high environmental and compliance performance was not completed since the Radiation Program felt as though federal restrictions prevented them from providing such flexibility.
- Ball
  - Streamlining an air quality and a RCRA requirement concerning covering tanks such that a single requirement applies to the facility was offered successfully to the facility.
  - Allowing an alternative method to measuring lead emissions within the facility that is based on human exposure monitors versus air pollution control division lead requirements.
- Magnum Feedyard
  - Magnum Feedyard asked the department to work with them to find alternative or options in addressing compliance issues identified as part of the facility's EMS permit application and development process[7].
- Murphy Brown of Yuma
  - Water Quality Control Commission Regulation No. 61 allows a farm (e.g., Sunrise) to conduct land application only on those fields listed under that specific farm (e.g., Field 1, Field 14 and Field 15), regardless if land application actually occurs on the permitted fields. Murphy Brown of Yuma is planning to remove sludge from process wastewater impoundments and would like to be granted flexibility in regard to land applying sludge (at agronomic rate) on any field listed in this permit, not just the fields listed by farm.

[7] The Water Quality Control Division requires compliance with all aspects of a CAFO application before a permit is issued. In addition, the general permit drafted for the EMS permit program would require completion of a public notice process prior to issuance. The EMS Permit was not public noticed due to the complexity of CAFO rules, staff and project timeline constraints.

- Murphy Brown of Yuma is in the planning stage of expanding the Roth Farm to increase the farrowing space at the farm. Air quality regulations prohibit the start of any construction until the department approves the construction permit. Because Murphy Brown of Yuma already holds a valid permit for Roth Farm, it is requesting flexibility in beginning the construction while the permit modification is being processed.
- Murphy Brown of Yuma submits quarterly water and semi-annual air reports to the department. Murphy Brown of Yuma is requesting that the appropriate records be maintained as part of the EMS and submitted annually to the department versus on the quarterly and semi-annual basis as required by water and air regulations.

The department provided several of the incentives listed above because they did not require modifications to state regulations and/or approval by U.S. EPA. Those incentives not approved would have required federal or state approval, but the time was not built into the pilot process to request and receive such approval.

The department observations and recommendations concerning operational flexibility:

- In order to offer and approve true flexibility, the department must get the EMS permit program incorporated into each of the state programs that are federally delegated or mandated;
- There needs to be motivation and creativity within the local, state and federal programs to want to find authority to approve such flexibility;
- There can be great environmental, natural resource, and social benefits from operational flexibility if it can be truly offered to participants; and
- The pilot project period of time was too short to allow this element of the project to be adequately assessed, as projects with greater environmental benefit will require a longer implementation period.

H. Stakeholder Involvement

To initiate the stakeholder involvement process, the department first convened meetings with each stakeholder group including nongovernmental organizations, local government representatives, state agency staff, and industry members. After meeting with each group individually, the stakeholder groups each selected members that would participate in the ongoing negotiations. For the nongovernmental organizations, the department set aside $25,000 of the grant funds for this group to hire two individuals to represent them through the process. The nongovernmental organizations hired an attorney and technical expert to participate in the process.

The department then convened the workgroup to develop the EMS Permit Program Regulation. The workgroup focused on the basic elements of the program based upon the state statutory authority for the pilot and requested the department provide a draft of the regulation. After providing the draft regulation, the workgroup worked through the entire regulation and ultimately agreed upon each provision. The issues discussed during this project are described in the above section of this report related to the regulation development process.

The department coordinated with U.S. EPA, Region 8 and Headquarters throughout the workgroup process. One challenge was receiving comments from Region 8 before the entire regulation was developed. The department received the most detailed concerns the week before the rulemaking hearing. The department did not want to extend the rulemaking process due the U.S. EPA grant deadlines. As the

permits were drafted, the draft and final versions of the permits were provided to the EMS Permit Public Advisory Groups and made available to the public pursuant to the regulatory provisions[8].

The department has the following comments and recommendations concerning the stakeholder involvement efforts:

- The involvement of the diverse set of stakeholders made the program stronger.
- The convening of each group separately before bringing the workgroup together allowed each group, with some privacy and freedom, to openly discuss the program and initial concerns.
- Involvement of this workgroup would be useful if the program is modified in the future.
- It is a challenge to measure stakeholder involvement other than number of meetings and attendance.
- The end of project review and report allowed the department to follow-up with most of the stakeholders.

I. Reporting

The department tried to, but was not always successful in preparing quarterly reports for U.S. EPA for the period beginning the date the funds are received by the department through January 2007. The reports included updates on the progress and activities of the department's EMS Pilot Project. The conclusions of the studies are presented in this final report.

VIII. Project Management, Project Outcomes, and Data Collection

A. Project Management

Throughout the duration of the pilot project, the department (Sustainability Program) served as the administrator and manager of the project. The responsibilities of the department included:

- Providing data collection protocols
- Coordinating the collection of data
- Providing technical assistance to project partners
- Assisting in data collection and analysis
- Facilitating communication with stakeholders
- Providing training on Environmental Management Systems
- Communicating with the governor's office, other state agencies, the public and stakeholders on the progress and conclusions of the project

Phyllis I. Woodford, Program Manager, Sustainability Program, Colorado Department of Public Health and Environment, served as the EMS Permit Project manager.

Jill E. Cooper, Director, Sustainability Program, Colorado Department of Public Health and Environment served as the project director and primary contact.

[8] The two agriculture permits did not go to public notice because of compliance issues identified at one facility and the complexity of melding 16 air and 2 water permits into one EMS permit.

B. Project Outcomes

Work on the EMS permit pilot project began in 2004 and the project period covered over a three-year period, ending May 15, 2007. The following information provides greater detail on how the goals and objectives of the project were met by the department.

1. Completed compliance screening, selected partners and obtained confirmation from partners that they were committed to the project.
2. With the partners developed or modified the EMS for each facility, although two of three agricultural operations did not complete the EMSs within the expected timeframe for the following reasons: a) limited resources; and b) the decision by one partner to exit the program.
3. Developed performance measures and project criteria for EMS permit project with stakeholders (including environmental organizations, industry partners and associations, local governments and U.S. EPA).
4. Conducted or contracted with EnviroGroup and Enviro-Ag Engineering to conduct initial baseline assessments of the environmental impacts and the compliance status of each facility.
5. Completed negotiations with the company on the terms and conditions for each individual EMS permit, including the first continual improvement elements and enforceable permit language.
6. Held stakeholder meetings as appropriate and necessary to develop and implement the program.
7. Conducted the appropriate public notice for EMS permits, as required by regulation and statute.
8. Drafted, issued and implemented the EMS permits, tracked compliance rates, measured environmental improvements, and assessed administrative efficiencies during this project.
9. Worked with EnviroGroup to conduct the follow up assessment of the environmental impacts and the compliance status of each facility.
10. Analyzed data, evaluated the program with stakeholders, developed the final report and will begin to institutionalize the program based on passage of Senate Bill 07-218.

C. Data Collection

The department used this pilot project to determine if and how the use of an EMS permit achieves the following goals: (a) increasing public health and environmental protection compared to traditional regulatory programs; and (b) providing improved public information compared to existing regulatory requirements. Performance measures were developed and used throughout the project period (February 2004–February 2007) with assistance from EnviroGroup, Ltd and Enviro Ag Engineering.

Each facility received a baseline environmental and compliance assessment prior to approval of the EMS permit or development of the EMS. Most of the data collected through the project is available to interested parties and summarized in this final report to the public. All of the data is available to U.S. EPA pursuant to the contract.

The pilot project contributed data in the following categories:

- Environmental performance, for example:
    - Solid waste reduction in tons per year
    - Hazardous pollutants (air, water, or waste) in pounds per year
    - Water use reduction in gallons per year
    - Energy use reduction in kWh per year

    - Air pollutant reductions (CO2, PM, and VOCs)
- Environmental condition indicators (measures of environmental quality in relation to the facility and its discharges, e.g., substantiate the well-being of the air, land, water, and living things as part of a larger eco-system)
- Environmental compliance indicators (specify and describe deficiencies in terms of unauthorized releases and government requirements)
- Pollution prevention indicators (include pollution prevention performance information and what stakeholders believe are the priority pollution prevention actions)
- Community involvement measures (identify ways the facility has played a leadership role in involving the public in defining goals and objectives and how it has incorporated public insights and recommendations)
- Continual improvement
- Involvement of interested parties
- Quality and quantity of environmental information produced

The department assessed data quality by looking at the following data quality aspects:

- Completeness (is all the data included)
- Appropriateness (scope and detail appropriate to support research objectives)
- Accuracy (level of accuracy appropriate to questions being asked)
- Precision (description of desired measurement)
- Relevance (adds information that supports research objectives)
- Comparability (to other Colorado pilots and other studies on EMS performance)

EnviroGroup and the department conducted the appropriate data analysis to compare baseline data on EMS performance and regulatory compliance to the final assessments. The public had access to the data not considered confidential business information on the department's Internet site.

The data demonstrated that the participating facilities saw an improvement in performance over the baseline performance. This indicates an overall improved environmental outcomes and enhanced public information for three of the four participants.

IX. Stakeholder Feedback and Lessons Learned

A. Stakeholder Feedback

In asking stakeholders to evaluate the program in the last six months of the project, all stakeholders stated it was a valuable and successful program. There were certain concerns that the pilot project timeframe was not long enough to truly evaluate the possibilities of providing operational flexibility.

B. Lessons Learned

In addition to the recommendations and statements made in the above sections of this report, the department learned the following lessons in implementing the EMS Permit Pilot Project.

Department Related Lessons

- Successful Project: Overall, the permit development was successful, but there are several issues to address before the program can be effectively implemented as a permanent program such as

better integration throughout all environmental divisions and resolution of the multiple permits issue.

- Internal Support: Internal, including upper management support, is critical for the success of this program. If the traditional regulatory programs are not willing or interested in participating, there can be very little offered in terms of operational flexibility and permit streamlining. Additional training in this area will be necessary as the program moves from a pilot to permanent program. If upper management is not supportive, the department will have a difficult time keeping this program as a priority. The department believes that so long as the EMS permit program demonstrates improvements in environmental and compliance outcomes, there will be internal support.
- Leadership Program Criteria: It is important that at this time only environmental leaders be eligible for this program – and this is consistent with the statutory mandate of the program. The stakeholders from industry, local government, U.S. EPA and nongovernmental organizations indicated that restricting eligibility to leaders at this time is a key reason they continue to support the program.
- Internal Expertise: The department's internal expertise, ideas, resources, interest, and knowledge are based upon a core (and limited) group of interested employees. It is important the department continue to culture, educate and support this core group for the continued success of the program.
- Broad Based Internal Support: The department is concerned that the program may not see the optimal environmental and compliance benefits unless there is serious support from middle management to assist in breaking through certain staff's sense of ownership in and loyalty to the current regulatory system and perceived or real benefits. This is a classic challenge for any innovation - entrenchment, fear of change, commitment to traditional processes, minimal outcomes measurements for traditional programs, and other concerns will limit this program unless management can break through those barriers.

U.S. EPA Related Lessons

- Traditional Permits: For an EMS permit program to be successful, the department will need to be able to eliminate or put in abeyance the traditional permits. In the pilot, the department was unable to eliminate these traditional permits. U.S. EPA indicated that the department would need to modify all of its delegated programs to include the EMS permit program in order to eliminate or put in abeyance the traditional permits.
- Authority for Cross Media Assessments: The department determined that there is some regulatory flexibility to allow cross media assessments (i.e., Ball), but that in general it is difficult for the department to approve facilities' proposals based upon cross media assessments.
- Authority for Regulatory Flexibility: U.S. EPA was unable to provide the department authority to approve regulatory flexibility beyond the department's current authority or state-only regulatory requirements. This limited the department's ability to truly test the environmental and public health benefits of the operational flexibility anticipated under the this pilot. This had the effect of limiting creativity from the facilities in what operational flexibility was requested. For U.S. EPA to approve the program, it requires the department to submit the program for review and approval into all of the department regulatory programs that are required or approved by U.S. EPA.
- Logic Table: The department tested out the logic table developed by U.S. EPA, OPEI. It was a useful and interesting effort, but considerably time consuming and an exercise that is still

incomplete. The department recommends U.S. EPA provide it as a tool for states, but not mandate the required use of the logic table.

Facility Related Lessons

- Facility Limitation in Requesting Flexibility: The facilities are not comfortable requesting more aggressive operational flexibility projects in part because of the length of time for and uncertainty of approval of the requests. The regulatory flexibility first requested was not always all encompassing of what the facility could or ultimately wanted. The facilities worked with the department to request additional flexibility throughout the pilot project.
- Agricultural Operations: For agricultural operations that are not owned or operated by large corporations, the department learned that a traditional EMS might not be the appropriate tool. Instead, a more simplified and tailored EMS could be required. One participant, Badger Creek Farms, opted out of the pilot program in late 2005 in part due to this reason.
- Sector Based EMS Permits: It may behoove the department to develop EMS permits for certain business sectors, such as agriculture, oil and gas, wastewater treatment plants, and others. This will simplify the administrative burden on the department.
- CAFO Regulations: Due to resource constraints in the department and changing federal regulatory requirements[9], it was a challenge to complete and issue the permits to the agricultural facilities. Because the federal permit requirements for concentrated animal feeding operations (CAFOs) changed significantly in 2005, the feedlot and dairy are required by the state to obtain water quality permits. In addition, the federal regulation is currently under revision to reflect the ruling of the Second Circuit Court of Appeals. As a result, the department drafted a mock permit for the feedlot and the dairy opted out of the program.

X. Recommendations

To realize these benefits, the U.S. EPA and state regulatory agencies should expand the current regulatory scheme of prescriptive, technology-based standards to include performance-based systems designed to achieve continual environmental improvement.

The following are the department's recommendations concerning the EMS Permit Pilot Project:

- Overall, the department firmly believes that to be successful in protecting, preserving and improving the quality of life, environment and ecosystems in the State of Colorado, the regulatory programs must use a variety of strategies to achieve results. Maintaining the traditional approaches to regulation and compliance, while allowing for alternative strategies is key to the department's success. The EMS permit program is just such an alternative strategy. Other alternatives are being developed by the department and will be modified over time as lessons are learned. With a few exceptions, the program achieved the desired outcomes of the department.
- The department supports the Colorado Department of Regulatory Affairs' recommendations in the Sunset Review Report (http://www.dora.state.co.us/opr/oprpublications.htm). As DORA stated, "Participating facilities within the EMS permit program demonstrated success in further mitigating pollution. Extending the EMS permit program until July 1, 2018, has the potential to provide increased environmental benefits throughout Colorado." In addition, as DORA recommended, implementing a three-tiered system to expand membership will provide enhanced benefits for both the facilities that choose to participate and the environment. Three tiers,

[9] The federal Second Circuit Court of Appeals on February 28, 2005 ruling that only a CAFO that discharges to waters of the U.S. is required to apply for a permit in essence struck the duty to apply for a permit.

consistent with the State's Environmental Leadership Program, will enable a variety of facilities to participate, while still maintaining strict guidelines for entrance into the program. Overall, allowing more facilities to participate in the program will mitigate pollution in Colorado and benefit the participating facilities from the operational flexibility provided by the EMS permit program.

- The department recommends submitting a letter to the administrator of the U.S. EPA requesting all approved, delegated and/or mandatory programs implemented by the department be re-approved by U.S. EPA to include the EMS permit program as an element.
- The department recommends creating outreach materials and modifying the EMS permit Regulation to be consistent with any legislative changes to the authority and to make it a permanent program.
- The department recommends that the EMS permit program supplement rather than replace the current regulatory system. This approach is not appropriate for all companies. For instance, regulated entities that have not made the "corporate" commitment to the environment may not be ready for this approach. The department recommends that the critical aspects of this program must be included in any permanent program, including:
    - Required superior environmental performance and an EMS;
    - Continual improvement goals;
    - Enhanced stakeholder involvement;
    - Required pollution prevention and continuous improvement; and
    - Measurements demonstrating continual improvement.
- In order to address several of the challenges detailed above in this report, the department recommends the following be a part of any permanent EMS Permit Program:
    - The department should develop and present to U.S. EPA a request to adopt the EMS Permit Program into every U.S. EPA approved and mandated program as implemented by the State of Colorado.
    - Small businesses, municipalities and agricultural operations are provided flexibility in what is required by an EMS.
    - The department develop EMS permit templates for certain business sectors, such as agriculture, oil and gas, wastewater treatment plants, and others.
    - A clear mandate that all permitting programs within the department work together to develop and implement the EMS permit program.

XI. Conclusion

Through the initial efforts of the pilot project, the Colorado Department of Public Health and Environment has forged a new permitting and regulatory approach that allows environmental polluters to use a performance-based environmental management system to double as a facility's environmental permit(s).

Businesses understand well that companies that ignore economic, environmental and social issues fall behind their competitors, and they know better than any one else that long permit processing delays and redundant administrative requirements can impact the ability of a company to be responsive to market needs. Such regulatory burdens can impact both short- and long-term economic performance.

Businesses that excel in the area of environmental excellence already value the cohesive nature of societal and financial considerations that are tied to environmental responsibility. Basically, most companies that implement a comprehensive environmental management system are "doing the right thing" and should be recognized and rewarded for this effort. In return, innovations like the EMS Permit Program allow EMS permit holders to self-police environmental compliance through annual third-party audits, documentation and record keeping requirements. Self-regulating companies reduce the need for routine, media-specific inspections and allow regulatory agencies to shift valuable resources to sources that need more frequent inspections or compliance assistance.

In addition to strengthening the bottom line, there are other benefits to businesses, such as enhancements to a company's reputation, increased consumer demand for more sustainable products and practices, and a top-level commitment for addressing environmental issues. Also, environmental responsibility and risk management no longer reside with one individual or manager within a facility. Instead, the systems approach pushes environmental responsibility down through the ranks of the entire organization. Everyone is responsible for regulatory compliance and for meeting continual environmental goals.

Colorado's Environmental Management System Permit Pilot Project could permanently change state regulatory processes. Based on the action taken by Colorado's General Assembly during the 2007 legislative session with passage of Senate Bill 07-218, the EMS Permit Program will move from a pilot program to a permanent way of doing business within the Department of Public Health and Environment. Confident that this approach will neither relax current enforcement programs nor dismantle the current regulatory structure, the department will continue to broaden the existing regulatory structure to allow for greater regulatory flexibility, less frequent inspections and increased permit flexibility (i.e., fewer permit modifications if performance-based standards are still being met) on a case specific basis that is contingent on source specific regulatory changes. In other words, fewer permit modifications would be required if performance-based standards are still being met.

Recognizing that there is great variability on how well regulated entities manage environmental responsibilities, the department will continue to work with the pilot project partners, the U.S. U.S. EPA and interested stakeholders to promote the use of an EMS permit. By working together, the EMS Permit Program can continue to drive regulatory change at both the federal and state level that is highly efficient, lasting and provides greater benefits to the environment and to public health. This pilot project was a first step in this direction.