FY 2005-2006 REPORT TO THE

WATER QUALITY CONTROL COMMISSION
and
WATER QUALITY CONTROL DIVISION
of
THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

by

THE COLORADO OIL AND GAS CONSERVATION COMMISSION

of

THE DEPARTMENT OF NATURAL RESOURCES

IN ACCORDANCE
WITH

THE AUGUST 28, 1990 MEMORANDUM OF AGREEMENT
and
THE IMPLEMENTING PROVISIONS OF SENATE BILL 181

NOVEMBER 2006

TABLE OF CONTENTS

LIST OF APPENDICES

1. INTRODUCTION

The Colorado Oil and Gas Conservation Commission (COGCC) is an implementing agency for water quality standards and classifications adopted by the Water Quality Control Commission (WQCC) for ground water protection. This authority was provided by SB89-181, and is restated and clarified by a Memorandum of Agreement (MOA) between the agencies.

Section 5.1 of the MOA specifies that the COGCC must report annually to the WQCC as to how its programs assure compliance with WQCC water quality standards and classifications for the activities, which are subject to the jurisdiction of the COGCC.

This fifteenth annual report includes a summary of COGCC activity and changes in ground water protection programs that were made during the preceding year. Major issues concerning the implementation of water quality standards and classifications are also reported. Use of technical language and industry jargon is avoided where possible, as well as recitation of the COGCC statute and rules.

2. COGCC ORGANIZATION AND FUNCTIONS

Public Outreach and Communication

The COGCC employs the following strategies for effective communication with the public and the regulated industry:

- Ten staff reports are prepared for submittal to the COGCC Commissioners. Ongoing staff activities such as compliance and enforcement actions, environmental and landowner issues, and other topics relevant to the mission of the COGCC are summarized in these reports. They are distributed widely to interested parties and they are posted on the COGCC website www.oil-gas.state.co.us.

- A toll free telephone number (888-235-1101) to the Denver office has been established as a complaint hotline for citizen use.

- The Commission is committed to holding at least three of its 10 hearings outside Denver each year. We continue to be successful in securing funding for these trips as part of our annual budget. In FY 2005-2006 the COGCC held six (6) of its twelve (12) hearings outside of Denver: two (2) in Glenwood Springs, one (1) in Greeley, one (1) in Ignacio, one (1) in Rifle, and one (1) in Wray. Two additional hearings were held in Denver due to numerous rulemaking matters.

- The COGCC continues to solicit participation on all levels from stakeholders - those representing the oil and gas industry, local government, citizens, other agencies, agriculture, and the environmental community.

- The COGCC continues to expand our internet presence. In addition to being able to access oil and gas well data, users are able to access information regarding pits, spills/releases, complaints, and remediation projects on the web. The queries by which users access these data continue to be modified and refined to make them more “friendly”. Please visit our website at www.oil-gas.state.co.us.

COGCC Commissioners

The Colorado Oil and Gas Conservation Act requires a total of seven (7) Commissioners to represent the COGCC; two (2) Commissioners appointed from west of the continental divide and five (5) Commissioners appointed taking into account the need for representation for areas with high levels of oil and gas activity or employment. The current seven (7) Commissioners have a wide range of experience and expertise in petroleum geology, petroleum engineering, ranching, environmental sciences, and finance and operations. Biographical sketches of the COGCC Commissioners are included in Appendix 1.

COGCC Staff

The COGCC has forty nine (49) employees as shown on the organization chart included in Appendix 2. This number reflects eleven (11) new FTE positions that were approved by the Joint Budget Committee. COGCC staff now includes seven (7) engineers, nine (9) field inspectors, one (1) engineering/environmental technician, and nine (9) environmental protection specialists (EPS). Two (2) of the engineers and the nine (9) field inspectors are located in field offices in Battlement Mesa, Broomfield, Cheyenne Wells, De Beque, Durango, Greeley, Parachute, Rifle, Sterling, and Trinidad, which helps to maximize their available field inspection time. In addition, one (1) of the environmental protection specialists (EPS II) is located in Brighton, one (1) in Durango, one (1) in Rifle, and one (1) in Trinidad, which helps to maximize their complaint response time and ability to identify and address other potential environmental issues related to oil and gas development.

COGCC Environmental Staff

The Operations Unit has been divided into two work units. The Engineering Unit includes the engineers and field inspectors, and Environmental Unit includes the environmental protection specialists. This reorganization was made in response to the need to manage effectively the increased number of FTE and contractors. The two work units continue to work together closely to implement COGCC programs and to ensure that adequate cross training and communication occurs. David Dillon is the Engineering Manager and Debbie Baldwin is the Environmental Manager. The map included in Appendix 3 shows the geographical areas of responsibility assigned to the engineer/inspector and the environmental staff.

The COGCC environmental staff is comprised of six (6) EPS IIs, two (2) Environmental Supervisors, and one (1) Environmental Manager, all of whom have professional experience and expertise in environmental issues associated with oil and gas operations, hydrogeology, and geology. We continue to handle questions, concerns, problems, programs, and issues relating to the oil and gas industry's impact on the environment, and public health safety and welfare. In addition, the one (1) of the EPS II implements the COGCC's Onsite Inspection Policy, which is discussed in more detail below in part G. The environmental staff works closely with the COGCC engineering staff and in particular with the field inspectors. Incidents resulting in environmental impacts are typically referred to the environmental staff for investigation and enforcement. The primary responsibilities of the environmental staff are discussed below:

A. Spill/Release Response: Operators are obligated to report spills and releases that occur as a result of oil and gas operations, in accordance with COGCC Rule 906. Produced oil, gas, and water are the substances most commonly spilled or released. These substances fall under the exploration and production (E&P) waste exemption to regulation as hazardous wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA); therefore, they are subject to COGCC jurisdiction. Generally, impacts from these events are limited to soils and are relatively small in areal extent.

Spill response by the environmental staff includes onsite inspections, sample collection, remediation oversight, review of reports and remediation plans, as well as operating practices, to

ensure protection of surface and ground water, in accordance with COGCC rules and WQCC standards and classifications. Spills are tracked in COGCC's master relational database (MRDB) and can be accessed via the COGCC website. In FY 2005-2006 approximately 364 spills and releases were reported and approximately 328 spills and releases were remediated.

B. Complaint Response: The COGCC responds diligently to complaints, which are received from individuals and other agencies. Complaints are tracked in the COGCC's MRDB database and can be accessed via the COGCC website. In FY 2005-2006 approximately 277 complaints were filed and responded to, and approximately 152 complaints were resolved. Often the complaints are from landowners, alleging damage to their land or water wells. The environmental staff follows up where appropriate, taking samples when necessary. Operators often are required to perform additional investigation and remediation, as needed, to bring sites into compliance with soil and ground water standards.

C. Remediation Projects: Operators are required to remediate significant adverse environmental impacts that occur as a result of oil and gas activities. Situations requiring remediation often result from spills and releases of produced water and hydrocarbons discovered at the time of occurrence or during due diligence investigations, the plugging of wells, or pit closures. The environmental staff manages remediation projects by evaluating reports and plans, establishing cleanup standards, points of compliance, and other requirements for operators to meet. Remediation projects are tracked in the COGCC's MRDB database and can be accessed on the COGCC website. During FY 2005-2006, approximately 46 operators submitted approximately 162 new remediation plans for approval and approximately 65 remediation projects were closed. The environmental staff handled approximately 408 remediation projects during FY 2005-2006.

Where ground water has been impacted, operators are required to: mitigate any continued release; investigate the extent of contamination; remove the source of contamination (such as the impacted soils in contact with ground water or free hydrocarbon product); remediate, establish points of compliance, and monitor contaminant levels.

D. Pit Program: The pit program was a result of the May 1995 points of compliance rulemaking. During FY 2005-2006, COGCC staff approved permits for 376 new earthen pits and approved the closure of 14 pits, primarily in conjunction with plugging and abandonment of wells. Most of these new pits are located in Las Animas County and are associated with coalbed methane (CBM) wells. There are approximately 11,718 earthen pits shown as active in the MRDB. COGCC environmental staff intend to verify this number as time allows.

E. Permitted Centralized Waste Management Facilities: The 900-Series rule modifications that became effective December 31, 1997 included a change to the previous landfarm rule. The rule now applies to all non-commercial centralized exploration and production (E&P) waste management facilities and includes waste treatment methods such as large pits, thermal and centrifuge systems, or waste treatment for beneficial reuse, as well as landfarms. The Colorado Department of Public Health and Environment (CDPHE) Hazardous Materials and Waste Management Division (HMWMD) Solid Waste Unit (SWU) permits commercial E&P waste management facilities, while the COGCC permits non-commercial centralized E&P waste management facilities.

This change allows the operator greater flexibility in waste management methods, and creates a simple approach to regulation of these facilities. The rule requires operators to apply for an operating permit, and as part of the approval process, staff evaluates the proposed site, operation, financial assurance, and preliminary closure plans. Generally these facilities are

larger than a typical tank battery that might handle wastes from only one or a few wells. These larger facilities handle wastes from many wells and wastes that may be from more than one field or lease. These facilities are required to have financial assurance of $50,000. During FY 2005-2006 the COGCC permitted two (2) new centralized E&P waste management facilities. There are nineteen (19) active permitted centralized E&P waste management facilities in the state. There are two centralized landfarms located on federal lands and that are not necessarily under the jurisdiction of the COGCC.

F. Reuse of Produced Water: Approximately 85% of the water co-produced with oil and gas is disposed or used for enhanced recovery by underground injection, or reused for drilling and/or well completion activities (fracing). Most produced water that is not injected is disposed in evaporation and percolation pits. Some produced water is discharged under Colorado Discharge Permit System (CDPS) permit and a small amount of produced water is used for dust suppression on oil and gas lease roads. Three landowners in La Plata County have filed for and obtained the right from Water Court to use produced water for agricultural purposes.

Wellington Operating Company was granted permits to construct and operate two (2) infiltration basins (pits) that are designed to allow produced water from their Wellington Field in Larimer County to percolate into the alluvium of Boxelder Creek. This water, which is produced from the Muddy Sandstone Unit, has been determined to be nontributary by the Office of the State Engineer. The landowner intends to use this water to augment consumptive losses caused by a rural residential development he intends to build. Operation of the Wellington Water Works (W3) began in spring 2006; however, water treatment issues have limited operation capacity to below the 100 gallons per minute (800 barrels per day) capacity. W3 is continuing to evaluate treatment options for the project. COGCC staff kept WQCD staff informed and asked for input during our evaluation of this project, the Commission hearing, and our approval of the pit permits.

G. Onsite Inspections. In January 2005, COGCC adopted a policy to conduct onsite inspections where oil and gas wells are proposed on lands where the surface owner did not execute a lease or is not party to a surface use agreement. Under COGCC Rule 306, an operator is required to use its best efforts to consult in good faith with the affected surface owner with regard to locations of proposed wells and surface facilities, access roads, and final reclamation and abandonment. If the COGCC Rule 306. good faith consultation between the operator and the surface owner does not resolve operational issues related to the proposed well, the surface owner may request the COGCC to conduct an onsite inspection under the new policy.

During the onsite inspection, the surface owner, operator, and COGCC staff meet at the location and discuss issues related to the proposed well and associated surface facilities. The local government designee may also attend if requested by the surface owner. Following the inspection, the COGCC may apply appropriate site specific drilling permit conditions, if necessary, to avoid potential unreasonable crop loss or land damage, or to prevent or mitigate health, safety and welfare concerns, including potential significant adverse environmental impacts. Any such conditions of approval must be consistent with applicable Commission spacing orders and well location rules, and must take into account cost-effectiveness, technical feasibility, protection of correlative rights, and prevention of waste. The COGCC can not require an operator to use an exception location, to use directional drilling techniques, or otherwise compromise its reasonable geologic and petroleum engineering considerations.

As of June 30, 2006, the COGCC has received fifty (50) requests for onsite inspections. Twenty-six (26) requests have been withdrawn, fourteen (14) onsite inspections have been

conducted, and ten (10) onsite inspections are pending and will be scheduled, if necessary, after the APD is received, or after issues related to local governmental designee consultation, location change, or surface use agreements are resolved. Of the fifty (50) requests received, twenty nine (29) have been in Weld County, twelve (12) in Las Animas County, three (3) in Yuma County, two (2) each in Garfield and La Plata Counties, and one (1) each in Archuleta and Boulder Counties. Most surface owner concerns relate to impacts to irrigated land, aesthetic impacts, and effects on current and future land value. In August 2005, a surface owner in La Plata County expressed concern that shallow ground water would be impacted by hydraulic fracturing fluids and construction of a cathodic protection well. COGCC staff has investigated this matter, including establishing baseline quality of the shallow ground water by collecting samples from a spring on the property down gradient of the proposed well location.

Oil and Gas Conservation and Environmental Response Fund (Fund 170)

The Oil and Gas Conservation and Environmental Response Fund (Fund 170) is funded by a mil levy on oil and gas production. During FY 2005-2006 the legislature approved several changes to the COGCC appropriations from this fund that went into effect in FY 2006-2007. In response to the dramatic increase in oil and gas activities throughout the state, the appropriation used to fund the staff responses to and investigations of complaints alleging impacts was increased to $312,033. COGCC staff has often asked for additional appropriations to conduct special environmental projects, such as large scale baseline ground water sampling projects. The legislature recognizes the need and value for these kinds of studies and has supported our requests. For FY 2006-2007 and thereafter on an ongoing basis the COGCC has been appropriated $500,000 for Special Environmental Projects. Because of the COGCC's need to respond to emergency situations related to oil ad gas operations, for FY 2006-2007 and thereafter on an ongoing basis the COGCC has been appropriated $1,500,000 for emergency response activities. In addition, the COGCC continues to receive an appropriation of $220,000 for plugging and reclaiming abandoned wells.

Fund 170 Projects proposed for FY 2007-2008 include:

- Plugging, abandoning, and reclamation of abandoned oil and gas wells and associated facilities in various counties.
- Complaint and Spill Response.
- Phase V Piceance Basin study, additional sampling of analysis water and gas samples, and the compilation of all existing data for an area in Garfield County.
- Collecting gas samples for stable isotope analysis from wells producing from the Wasatch Formation in the Rulison, Grand Valley, and Parachute Gas Fields, Garfield County.
- Baseline ground water study of the Arapahoe Aquifer, Adams and Arapahoe Counties, including collecting both water and gas samples from water wells completed in the Arapahoe Aquifer.
- Support for ongoing DOW study of the potential impacts on wildlife from oil and gas development.
- Compilation and evaluation of the D-J Basin 2006-2007 ground water and produced gas study and other available data.
- Compilation and evaluation of all water and gas analytical data collected from the Raton Basin Studies, complaint response, and operators.
- Support for an as yet unspecified study of potential impacts to air from oil and gas development.

Data Management and Geographical Information Systems (GIS)

A major function of the COGCC is the management of records and data related to exploration and production of oil and gas resources, and potentially related impacts. Historically, the majority of these records and data were available to the public as paper records

filed in the COGCC Public Room, located in the Denver office. The number of records and volume of data available through the COGCC continues to grow each year. In 1999, a new data system (Colorado Oil and Gas Information System [COGIS]) was developed. COGIS allows staff and Internet users to access COGCC data through a relational database and imaging system. Almost all entries from COGCC permit/reporting forms are stored in the database. Data pertaining to wells, spills, complaints, remediations, and pits are managed in the COGIS database system. In addition, almost all of the paper documents that have been submitted to the COGCC have been scanned, including a relatively complete set of geophysical well logs. Users are currently able to search the COGCC databases on the web, research information on individual wells and other related facilities, call up related scanned documents, and view plotted locations on the COGCC Online map system.

To ensure that local governments are informed, an Internet application has been developed to allow the local government representatives to view new permits and other well information in their respective areas of concern.

Various specific studies in the San Juan Basin, Raton Basin, and Piceance Basin are available for review and download via the Internet. The raw data from the Raton Basin Baseline Study are also available for download. Information is also available for the D-J Basin.

Improvements to the COGCC GIS Internet Map continue to be made. The map contains over 120 map layers including oil/gas wells, facilities (e.g. pits), roads, cities, counties, and CDPHE Regulation 42 Specified Areas. The following new map layers were added in 2006:

1) Bureau of Land Management's (BLM) Lease Stipulation – These map layers were completed in conjunction with the BLM and the Access to Federal Lands project. Some of the layers available include Federal Oil and Gas Leases, Federal Surface Ownership, Federal Oil and Gas Subsurface authority, and Federal Lease Stipulations, among others. Colorado is one of the first states in the nation to have made this information available.

2) COGCC Water and Gas Sample Locations - This map layer shows the locations of water wells, gas wells, and other water features (springs, surface water, etc.) that have been sampled by the COGCC or other interested parties. During this year, these layers were made available to the public via the Internet.

3) Township, Section, and Quarter-Quarter Geographic Coordinate Data Base - The BLM Geographic Coordinate Data Base (GCDB) is a collection of geographic information representing the Public Land Survey System (PLSS) of the United States. The GCDB grid is computed from BLM survey records (official plats and field notes), local survey records, and geodetic control information. BLM collects the GCDB data on a township basis.

4) Color Aerial Photos 2005 - The color aerial photographs were obtained from the USDA-FSA Aerial Photography Field Office. The entire state is included in this set.

Several GIS projects are currently underway. One project is focused on displaying all directional well boreholes. The plotting of directional well bores will be accomplished through an automated process. This is an industry funded project, and the COGCC is grateful to Petroleum Development Corporation and EnCana for their support. The IT staff is working with other state agencies to develop a national standard for the submission of these data. Another project that is underway will allow for all of the COGCC spacing orders to be accessible through

the GIS Online map system.

During the past year all of the NAD27 data within our systems was converted to NAD83. Another project that is underway will update the online production queries to include production data from before 1999. Currently the only production data that are available are from 1999 forward. With the introduction of these additional data, the result sets will be available for downloading to the user's computer.

COGIS is currently available on laptop computers that allows the engineering and environmental staff to take the entire COGIS database and GIS Online Map System to the field for quick information queries while conducting investigations.

Industry Services

The COGCC continues to promote its mission to promote the responsible development of Colorado's oil and gas natural resources by providing information and assistance in complying with the COGCC rules and requirements, including our expanded website, GIS capabilities, and new computer system.

Industry Compliance/Violations/Penalties

In FY 2005-2006, the COGCC found 12 operators in violation of rules and orders and assessed penalties totaling approximately $264,300. A penalty of $176,800 was assessed for two (2) violations which resulted in impacts to ground water quality. The money from these fines is being combined with previous fine money and used to fund a public project in Garfield County, which is discussed in more detail in the Northwest Colorado Section. Other violations included:

- Failure to:
  - prevent unauthorized discharged,
  - obtain approval for shut-in wells,
  - obtain APD approval prior to drilling/recompletion,
  - plug and abandon wells lacking mechanical integrity.
  - complete reclamation,
  - ensure compressive strength of cement,
  - provide proper signage
  - consult with landowner
  - provide general liability insurance.

Underground Injection Control (UIC)

COGCC staff will continue to work with WQCD and EPA staff to ensure that operators of Class II injection wells in Colorado are in compliance with ground water standards and classifications and that points of compliance are established.

3. COGCC COORDINATION WITH WQCD/WQCC

The COGCC, WQCD, and WQCC continued our semi-annual meetings in FY 2005-2006, Martha Rudolph and Michael Klish are serving as the commissioner representatives of the WQCC and the COGCC, respectively. Mr. Klish has completed two terms as a COGCC Commissioner and has not asked to be reappointed; therefore, the COGCC Commission will need to ask for another volunteer to participate in these meetings.

4. RULEMAKING

Four (4) rulemaking hearings were held since the last report. The COGCC Commission expanded a special well location rule for additional portions of Yuma and Phillips Counties allowing additional wells to be drilled for production of gas from the Niobrara Formation. The COGCC Commission expanded a special well location rule for portions of Weld County for additional wells to be drilled for production from the J Sandstone and the Codell and Niobrara Formations. In addition, the COGCC Commission adopted rules addressing global positioning systems and various cleanup rules. Rules amending allowable noise levels and establishing best management practices (BMPs) for stormwater runoff were also adopted since the last report.

5. OIL & GAS EXPLORATION & PRODUCTION ACTIVITY IN COLORADO BY REGION/FIELD

By the end of CY 2006 there will be approximately 31,000 active oil and gas wells in Colorado. These wells produce approximately 3.2 billion cubic feet (bcf) of natural gas and 63,000 barrels (bbls) of oil per day, with a total value of approximately $9.5 billion dollars for CY 2006.

The activity of the oil and gas industry may be measured in part by the number of drilling and recompletion permits processed by the COGCC. It is estimated that by the end of CY 2006 the COGCC will have approved approximately 5,800 drilling permits, which is an increase of approximately 33% from CY 2005

This section describes oil and gas activity and highlights COGCC studies, issues and concerns relating specifically to ground water by region. In each region there are remediation projects of various size and type in which impacted soils and/or ground water are being investigated or cleaned up by operators. All the projects are not described individually in this report. The COGCC environmental staff directs and monitors these projects, as described in Section 1.

SOUTHWEST COLORADO

Oil and Gas E&P Activity

Most of the gas produced in the southwestern part of Colorado comes from coalbed methane (CBM) wells. Drilling activity has increased slightly in response to increased well density in certain parts of the county and in FY 2005-2006 approximately 176 permits for new wells and recompletions of existing wells were approved. However, recently the COGCC Commission has approved applications from several operators for drilling wells on 80 acre spacing in certain areas, so we anticipate that drilling activity will increase in the future. Currently there are approximately 2,723 active wells in La Plata County. These wells produce approximately 1.17 bcf of natural gas per day. Also there is a total of approximately 363 oil, gas, and carbon dioxide wells in four other southwestern Colorado counties, including San Miguel, Delores, Montezuma, and Archuleta. In July 2006 the USFS and US BLM issued the final Environmental Impact Statement (EIS) for the Northern San Juan Basin. Their Record of Decision will be issued some time in December 2006. These actions will allow for the drilling of additional CBM wells located on USFS land in Archuleta County.

Public Involvement

La Plata County Gas and Oil Regulatory Team (GORT)

The COGCC established the La Plata County Gas and Oil Regulatory Team (GORT) to provide a forum for meaningful dialogue between operators, La Plata County, the Southern Ute Indian Tribe, the Bureau of Land Management (BLM) and the COGCC. Members of this group continue to fund and provide technical support for the ongoing monitoring of methane seeps along the Fruitland Coal outcrop.

Ground Water and Other Environmental Issues

XTO (formerly J.M. Huber) Development Plan

In 1998, J.M. Huber Corp. (Huber) applied to the COGCC for an additional well per spacing unit within an area of existing Fruitland coalbed methane wells. A condition for COGCC approval of this request was that Huber create and implement a Development Plan to address concerns regarding potential impacts to public health, safety, and welfare. This was the first instance where COGCC had required such a plan. Subsequently XTO Energy, Inc. (XTO) purchased these wells from Huber. Monitoring, testing, and reporting requirements are being met. XTO (formerly Huber) has sampled 19 water wells as specified in the Development Plan. In addition, they have sampled 27 water wells in the Bellflower Subdivision as required by La Plata and they have sampled 26 other water wells in response to requests by landowners.

Conditions for Optional Additional Coalbed Methane Wells

At the July 2000 hearing the COGCC approved the request by a number of operators for an order to allow the drilling of additional wells on certain drilling and spacing units in lands both north and south of the Southern Ute Indian Tribe (SUIT) Reservation boundary. At the conclusion of the Public Issues Hearing, the COGCC found that additional conditions were necessary to protect the environment and public health, safety and welfare and approved the order by attaching a number of conditions to it, including extensive sampling of water wells. Selected water wells must be sampled prior to the drilling of an additional well and at least three more times, including within one (1) year, three (3) years, and six (6) years after completion..

As a result of COGCC Orders 112-156 and 112-157 and other subsequent orders, operators have collected approximately 1,670 water samples from 820 water wells. The analytical results have been submitted to the COGCC and to the land owners. To date impacts to water wells from CBM wells drilled under these orders have not been detected.

3M Project

Methane gas has been observed seeping from the outcrop of the Fruitland Formation in many areas along the northern margin of the San Juan Basin, in southwestern Colorado. Some of these seeps were identified prior to the initial development of any Fruitland Coal wells; however, in places the intensity and areal extent of these seeps appears to have increased subsequent to CBM production. In addition, what appear to be new seeps have been identified in some areas. Questions persist about whether gas seepage at the newly identified areas and expanding seeps could be to CBM production.

The COGCC and the US BLM funded the installation of a network of monitoring wells at four locations between the outcrop of the Fruitland Formation and down basin production. The wells are equipped with transducers and data loggers and will be used for the long term monitoring of pressure and water levels in the Fruitland Formation. A total of seven (7) wells, were completed and data are being collected. Pressure monitoring data from these wells are available on the COGCC website.

During FY 2005-2006, approximately $14,000 in ERF money was used for the operation and maintenance of these wells, and report preparation.

Fruitland Outcrop Study La Plata County and Archuleta County

Industry, La Plata County, BLM, and the COGCC continue to contribute money and/or staff for the ongoing evaluation, maintenance, and monitoring of the 140 permanent soil gas monitoring probes, six flux chambers, and one meteorological station. Aerial surveying with infrared imagery technology is also being used to detect areas of stressed and/or dead vegetation, which can be an indication of methane gas seepage. This detailed work has been expanded to cover the entire Fruitland Formation outcrop in La Plata County and Archuleta County on land north of the Southern Ute Indian Tribe Reservation boundary. The expanded survey includes the mapping of springs discharging from the Fruitland Formation. The report of the results of the 2006 field work along the La Plata County portion of the outcrop will be posted on the COGCC website when it is finalized. The 2003, 2004, and 2005 La Plata County reports are available on the COGCC website www.oil-gas.state.co.us Library, Area Reports, San Juan Basin, 3M Project Reports. The 2004, 2005, and 2006 Archuleta County reports are available on the COGCC website www.oil-gas.state.co.us Library, Area Reports, San Juan Basin, Archuleta County.

Pine River Ranches Subdivision Methane Seepage

Monitoring of ground water conditions using existing monitoring wells continues by BP America. In addition, permanent soil gas monitoring probes, a gas flux chamber, and meteorological station have been installed and the area is being mapped as part of the Fruitland Outcrop Seepage Study described above.

Bradenhead Testing Program

COGCC and BLM continue to co-fund and share staff responsibility for ensuring that bradenhead tests are routinely conducted on all wells in La Plata County. COGCC or BLM personnel witness the tests on gas wells located in areas known to have methane in shallow ground water. Test results are evaluated to determine whether well casings are leaking. Since annual testing requirements were instituted, leaking casing has been detected in approximately 125 wells on tribal, federal, state, and fee land. Remediation of these conditions has been accomplished.

Citizen Complaints Regarding Ground Water

COGCC received eight (8) complaints alleging impacts to water wells and other environmental damage from oil and gas activities. COGCC staff investigated all of these complaints. COGCC staff determined that five (5) of the complaints were not related to oil and gas activities and two (2) are still under investigation. COGCC staff investigation of one (1) complaint showed that shallow ground water and a water well had impacted by calcium chloride fluid that leaked from an unlined drilling pit. An Administrative Order by Consent (AOC) has been signed and approved, the operator has been assessed a fine, and he is continuing to monitor the impacted water well and other nearby water wells. Since the impact occurred attenuation has returned the calcium and chloride concentrations in this water well back to natural concentrations. Approximately $19,200 of Fund 170 money was used to investigate these eight (8) complaints.

An ongoing complaint investigation is associated with a 1930's orphan oil and gas well (Bryce 1-X) that was acting as a conduit for gas migration into the shallow subsurface and ground water. COGCC has shown this well and a previously plugged and abandoned orphan well (Nick Spatter Bryce Farm #1) were the sources of the elevated levels of methane in the subsurface soils and in six (6) nearby water wells. Fund 170 money has been used to respond to this emergency situation, install methane monitors and alarms in three (homes), a fire station, and a

water well house, continue to monitor the aerial extent of the gas seepage, and investigate and identify the source of the gas. In July and August 2006 COGCC staff and our third party contractors successfully plugged and abandoned the Bryce 1-X. This resulted in a dramatic decrease in concentration of methane in the soil; however, very high concentrations of methane persist in the ground water and water wells. The COGCC is procuring services to investigate techniques that could be used to remediate the residual methane in the ground water and soil. We anticipate that this work will begin in early 2007.

Stream Depletion Study

In September 2005, the COGCC, in conjunction with the Colorado Geological Survey (CGS) and the State Engineer's Office Division of Water Resources (DWR), awarded a contract to S.S. Papadopulos and Associates of Boulder, Colorado to conduct a stream depletion study in the San Juan Basin. The purpose of this joint study was to develop a quantitative assessment of the levels of stream depletion or reduction in formation outflows (spring flows or flowing stream systems gaining from contact with formations), if any, that may be occurring as a result of the removal of water by CBM wells, in addition to defining areas where the ground water in the Fruitland Formation is tributary or non-tributary to the surface water flow system. A public meeting was held in Durango on October 24, 2005 to present an overview of the project and to answer questions from the public.

The study was completed in February 2006 and a second public meeting was held in June 2006 to present the results of the study and to answer questions and respond to comments. The study used data from approximately 1,650 Fruitland Formation CBM wells, which produce approximately 3,000 acre-feet per year (ac-ft/yr) of CBM water. Using parameter estimation techniques and the Glover-Balmer analytical solution for calculating stream impacts from pumping, the study estimated approximately 155 ac-ft/yr of depletion as of August 2005. This estimate does not differ greatly from depletions calculated in the 2001 3M modeling efforts (95-100 ac-ft/yr). During FY 2005-2006 $37,000 of COGCC Fund 170 money was used to help pay for this study.

NORTHWEST COLORADO

Oil and Gas E&P Activity

Northwest Colorado continues to experience a high level of oil and gas activity, especially in Garfield and Rio Blanco Counties. Northwest Colorado drilling permits are accounting for over 40 percent of the state total with Garfield County now exceeding Weld County as the county with the most new drilling permits. The driving force behind this active development continues to be the extensive natural gas reserves in the Piceance Basin, the gas sales market and overall higher natural gas prices, and an expanding pipeline infrastructure that enables improved marketing of natural gas from the area.

Public Involvement

The Northwest Colorado Oil and Gas Forum

The Northwest Colorado Oil and Gas Forum (NWCOGF) continues to meet quarterly meetings in Rifle. The NWCOGF is an important forum for the discussion of oil and gas issues and concerns at the local level. The participants include of the COGCC, other federal, state, and local government agencies, the oil and gas industry, and concerned landowners and citizens. Meetings are well attended.

Colorado Oil and Gas Conservation Commission Hearing

As part of the Commission's commitment to hold a portion of their hearings outside Denver each year, the July 2005 hearing was held in Rifle, and the October/November 2005 and March 2006 hearings were held in Glenwood Springs.

Ground Water Issues

Water Well Impact Complaints

COGCC staff and contractors sampled 19 water wells during FY 2005-2006 in response to requests from 16 well owners in Garfield County and three (3) well owners in Jackson County. Impacts to ground water quality from oil and gas activities were not detected in any of the water wells.

During FY 2005-2006 COGCC staff spent approximately $11,003 of ERF money on these investigations.

Hydrogeologic Characterization Study - Garfield County

During the August 16-17, 2004 Commission hearing in Glenwood Springs, Colorado, EnCana stipulated to an amended Order Finding Violation finding EnCana responsible for numerous violations of the COGCC rules and regulations that resulted in the release of natural gas and other related compounds from the Williams Fork Formation to West Divide Creek from the Schwartz 2-15B Well. The subsequent fine levied by the Commission and agreed to by EnCana was $371,200 and was earmarked for funding three projects.

The largest of these is a hydrogeologic study of the ground water and surface water resources of an area within Garfield County, specifically, in four townships south of Silt and Rifle, Colorado (T6SR92W, T6SR93W, T7SR92W, and T7SR93W). The study is focusing on the hydrogeology of the Wasatch Formation, in which most water wells are completed, and the surface water resources of West and East Divide, West, Middle and East Mamm, and Dry Creeks, and the ground water in the alluvium adjacent to these creeks.

URS Corporation ("URS") conducted this study using the COGCC's extensive water quality database, which contains data from approximately 464 water resources within the study area, and the oil and gas well information contained in the MRDB. The study, "Hydrogeologic Characterization of the Mamm Creek Field Area in Garfield County, Phase I Final Report **"** was completed in early 2006 and the report is available on the COGCC webpage (www.oil-gas.state.co.us) Library, Area Reports, Piceance Basin. Based on recommendations made in the Phase 1 report, Garfield County developed a request-for-proposal (RFP) for a follow-up Phase II study. The RFP has been announced, bids have been received, and proposals are being evaluated. Garfield County expects to select a contractor by the end of CY 2006 and they hope that the work will begin early in CY 2007.

Piceance Basin Phase IV Baseline Water Quality Study

As part of the FY 2005-2006 budget request, the COGCC received funding to conduct the Piceance Basin Phase IV Baseline Water Quality Study in Garfield County. This is the fourth in a series of baseline water quality sampling projects the COGCC staff has conducted in the Piceance Basin of Colorado. Samples were collected from water wells in a portion of Garfield County between the towns of New Castle and Rifle, north of the Colorado River. This is an area that historically has had little previous drilling activity and no producing oil and gas wells, although future oil and gas activity is anticipated in this portion of Garfield County.

S.S. Papadopulos & Associates, the selected contractor, started the field data collection portion of this project on July 30, 2006, and completed all sampling activities on August 16, 2006. Seventy domestic water wells were sampled in portions of Township 6 South, Ranges 91 through 93 West, and Township 5 South, Ranges 91 and 92 West, for general water quality, methane, and benzene,

toluene, ethylbenzene, and xylenes (BTEX) compounds. A draft version of the report on the Phase IV water quality was submitted to the COGCC in early November, 2006. Review of the report in underway and a final report will be completed in December 2006. A copy of the final report will be available on the COGCC website Library.

Approximately $100,000 of the Fund 170 has been has been expended on this investigation.

Drilling Near Project Rulison Test Site

In 1969, the Atomic Energy Commission, a predecessor to the U.S. Department of Energy (DOE) conducted several experiments on the use of nuclear devices to enhance natural gas production from wells. The project conducted in Garfield County is known as Project Rulison and the well in which the nuclear device was detonated is located on Battlement Mesa. Presco Corporation (PRESCO) has submitted APDs for and begun drilling a number of wells in Garfield County in the vicinity of Project Rulison, but outside the 0.5 mile buffer zone established by the COGCC. To address concerns regarding the potential for new gas wells to intercept materials impacted by the nuclear test, Presco has agreed to conduct a monitoring program to test for a number of radionuclides. This monitoring program includes background monitoring of un-impacted gas and water from the Williams Fork and overlying formations, of surface and ground water in the vicinity, and ongoing monitoring of drilling mud, cuttings and gas brought to the surface during drilling, completion, and production at selected locations. A report summarizing the results of the 2004 Baseline and 2005 Annual Water Sampling activities conducted by Presco were submitted to the COGCC in March 2006. A report summarizing the results of Gas Well Drilling Monitoring activities was submitted by Presco to the COGCC on July 16, 2006. These reports are available on the COGCC website, www.oil-gas.state.co.us Library.

On August 29, 2005, COGCC staff inspected two (2) Presco drilling locations in the vicinity of Project Rulison, Battlement Mesa 26-42 Well and Battlement Mesa 36-13 Well. COGCC reviewed and provided comment on monitoring, testing, and data-recording procedures for drill cuttings and onsite personnel, in addition to interviewing site personnel responsible for implementing these procedures. Comments provided by the COGCC and a consultant hired by Presco were incorporated into the monitoring procedures described in the Workplan.

In January, 2006, COGCC staff met with the DOE Legacy Management (DOE-OLM), which assumed oversight of both Project Rulison and Project Rio Blanco sites on October 1, 2006. During the meeting COGCC staff updated DOE-OLM staff and contractors on current and anticipated oil and gas drilling activities in the vicinity of the two test sites. DOE-OLM staff provided COGCC with an overview and tentative schedule for their natural gas flow and transport modeling effort for Williams Fork Formation in the vicinity of the Project Rulison test site. DOE anticipates that this work will be completed in 2008.

Lone Pine Field Surface Water Release – Jackson County

A crude oil release impacting surface water was reported to the COGCC on March 13, 2006 at the Lone Pine Field, Township 9 North, Range 81 West, and Section 28 in Jackson County. Crude oil was released into Hell Creek from a flowline leak, which was located approximately 250 feet southeast of the wellsite where the flowline passes under the creek. The Spaulding No. 1 wellsite was shut-in upon discovery of the release and the volume of oil released was initially reported by the operator as a minor amount (5 barrels or less); however, due to heavy snow cover the release volume was underreported and it was later determined that although the volume released was unknown, it was greater than 5 barrels. This determination was based on the fact that oily vegetation and free oil on the creek banks extended approximately 2 miles downstream on Hell Creek. The flowline continued to release minor amounts (1 to 2 gallons per

day based on Staff observations) of crude oil until the week of April 2, 2006 when the operator successfully excavated and repaired the damaged flowline. The COGCC staff worked closely with the operator, WQCD staff, and impacted landowners on this release investigation and successful clean-up. The COGCC is currently pursuing additional enforcement against the operator and is coordinating this effort with WQCD staff.

Orphaned Well Plugging – Delta County

Through a funding agreement between the COGCC and the BLM, the COGCC, with the assistance of the BLM Uncompahgre Field Office, US Army Corps of Engineers, and the Bureau of Reclamation, plugged and abandoned (P&A) the Billstrom Brothers No. 2 Well, which was located along the Gunnison River in Delta County. The Billstrom Brothers No.2 well, was drilled in the 1930's as a carbon dioxide well and has consistently leaked both carbon dioxide and salt water into the Gunnison River for over 70 years resulting in both land impact and salt loading in the river. The work was accomplished in late February 2006 and required reduction in the flow of the North Fork of the Gunnison River by the Bureau of Reclamation for access to the orphaned well site. Funding for this P&A was provided by both the COGCC and the BLM. $64,634 of the COGCC Fund 170 and $21,271 of BLM funding was expended on this plugging this orphaned well.

NORTHEAST COLORADO

Oil and Gas E&P Activity

COGCC Rule 318.A., adopted in 1998, allowed operators to drill certain additional wells without a hearing for down spacing. This resulted in an increase of drilling permits in the Greater Wattenberg Area (GWA) of the D-J Basin. Amended Rule 318A was approved at the December 2005 COGCC Commission hearing and went into effect on March 1, 2006. The purposes of the amendments are to increase the number of potential bottom hole locations in portions of the GWA. The amendments limit the location of surface wellsite, reduce well-twinning distances, and provide for directional drilling from existing surface drilling windows consistent with the intent of the General Assembly to "foster, encourage and promote" the development of oil and gas "in a manner consistent with protection of public health, safety, and welfare." C.R.S. § 34-60-102(1).

Weld County, where the major part of the D-J Basin is located, accounted for approximately 22.4% of the total drilling permits in 2005. Weld County had approximately 16.4% of the 2005 total gas production and 49.8% of the 2005 total oil production in Colorado. Yuma County accounted for approximately 17.2% of the total drilling permits in 2005.

Smaller oil fields are located in other counties in northeast Colorado. The production from some of these fields is primarily from "stripper" wells, where oil production is usually less than ten (10) barrels per day.

Public Involvement

COGCC staff continues to receive and follow-up on complaints from the Weld County Department of Public Health & Environment, Tri-County Health Department, Larimer County Environmental Advisory Board, Morgan County Office of Emergency Management, Northeast Colorado Health Department, other municipalities, and the public throughout northeastern Colorado.

In an effort to cooperate with other regulatory agencies, COGCC environmental staff and the Weld County Department of Public Health & Environment conducted a joint inspection of several centralized E&P waste management facilities on June 30, 2006. Those facilities operated by Kerr McGee Rocky Mountain Corporation, Noble Energy Production Inc. and Petro-Canada Resources (USA) were inspected. Several issues were identified and the operators are taking appropriate action to bring all of the facilities into compliance with COGCC permit conditions.

Environmental Issues

Approximately $26,700 of ERF money was spent investigating citizen complaints and the findings of COGCC field inspections in northeastern Colorado.

Ground Water

In all cases where ground water was impacted, operators are required to conduct a site investigation and perform appropriate remediation to comply with COGCC requirements. In addition, the COGCC continues to oversee the investigation and remediation of contaminated soil and ground water associated with gas plants and compressor stations throughout northeast Colorado.

There were fifteen (15) complaints alleging impacts to water wells in the northeastern portion of Colorado. As a result, a total of twenty-five (25) water wells were sampled. Upon investigation, COGCC staff determined that two (2) of these water wells had been impacted by thermogenic gas. COGCC staff was able to identify the source of the gas in one of the water wells and has enforced upon the responsible operator. Our attempt to identify the source of the gas in the other well continues.

Surface Water

There were five (5) spill/release events in which released fluids flowed into surface water. These were reported to the WQCD in accordance with our MOA. In all cases where surface water was impacted, the operators responded with appropriate emergency procedures and other measures to comply with COGCC and WQCD requirements.

Greater Wattenberg Area Baseline Study

As part of a FY 2006 budget request, the COGCC received funding to conduct a gas and water quality investigation in the Greater Wattenberg Area (GWA) of the D-J Basin. Approximately seventy-eight (78) gas wells and eleven (11) Laramie/Fox Hills water wells in selected townships within the GWA will be sampled. This project will significantly expand the current COGCC database of analytical results from gas and ground water samples. Analytical data are one of the primary tools used by the COGCC staff in responding to landowners who allege impacts to water wells from oil and gas activities in the GWA. These and other available data and will be used by staff to determine whether impacts to ground water resources from oil/gas operations have occurred.

Orphaned Wells and Sites

Approximately $93,184 of ERF money was used to restore and reclaim orphaned sites in northeastern Colorado. Projects included:

Ten (10) sites in Logan County work included: pit closure, site investigation, site characterization for produced water impacts, remediation of soil impacts, and site reclamation.

One (1) site in Washington County work included: re-plugging/abandonment of an orphan well.

Seven (7) sites in Weld County work included: site restoration, remediation of impacted soil/groundwater.

In addition, approximately $96,555 has been spent on the remediation and reclamation of the Keota Field. The Keota Field, located approximately six miles south of Grover, Colorado in Weld County, was discovered in 1951. In the past various operators allowed produced water to discharge directly onto the ground. This resulted in approximately 10 acres of pasture land being impacted by high sodium concentrations, denuded of vegetation, and extensive erosion. Reclamation of the field by the COGCC began in 2000. Remediation activities began in 2001. Re-seeding was accomplished in the fall of 2005. The impacted areas have shown encouraging signs of re-vegetation and the landowner is reportedly very satisfied with the results.

SOUTHEAST COLORADO

Oil and Gas E&P Activities

Southeastern Colorado produces conventional gas, CBM, and crude oil from two main basins, the Ration and the Hugoton Embayment and several smaller fields. Approximately 1.08 bcf of gas is produced in this region with 95% of the gas produced is CBM from the Raton Basin located in Huerfano and Las Animas Counties. A total of 2,202,765 barrels (bbls) of crude oil were produced in FY 2005-2006 with Cheyenne County accounting for 80% of the production.

There are a total of 2,829 active wells within the region; 2,016 in Las Animas County, 899 in Cheyenne County, 177 in Baca County, 92 in Kiowa County and 87 in Huerfano County with additional wells spread out though the remaining counties. The most active area continues to be the Raton Basin with 426 applications for permit to drill (APDS) submitted in FY 2005-2006. In the remaining counties a total of 29 APDS were submitted.

Approximately $24,067 of ERF money was spent investigating citizen complaints and the findings of COGCC field inspections in southeastern Colorado. In FY 2005-2006 $20,018 was spent on water well and spring sampling. These costs included a resistivity study conducted to investigate potential fracture flow, $1,434 was spent analyzing soil samples to investigate spills, leaks and complaints, and $2,046.91 for surface water sample analysis. An additional $570 was spent monitoring a local high school to evaluate whether it had been impacted by methane gas seepage.

<u>Produced Water Management</u>

A total of 168,361,329 barrels of produced water were generated in Southeast Colorado during the FY. Ninety one (91) per cent of the produced water was generated from Raton Basin CBM wells. Produced water is managed by underground injection, surface water

discharge and through evaporation/percolation pits. There are eighty three (83) active injection wells in this region; 39 in Cheyenne County, 15 in Baca County, 14 in Las Animas County, nine (9) in Kiowa County, and six (6) additional wells in various counties. In the Raton Basin it is fairly common for operators to manage produced water through combined use of pits, injection wells, and CDPS discharge permits.

Public Involvement

COGCC Staff facilitated meetings between various Las Animas County agencies and the most active gas operator in Las Animas County. The parties continue to hold quarterly meetings to discuss issues and work together to solve problems that may occur.

Environmental Issues

Ground Water

Nineteen (19) water wells and two (2) springs were sampled during FY 2005-2006. Two (2) wells were sampled in response to landowners allegations of impacts; thirteen (13) wells were sampled to establish baseline conditions prior to drilling activities, and four (4) wells were sampled as follow-up after baseline sampling and subsequent drilling of CBM wells.

- Alleged Impacts

One water well in Las Animas County continues to show atypical water chemistry. Investigations dating back to 2004 show that the water quality was degraded, but COGCC staff has not yet been able to determine whether this is related to oil and gas activities. Produced water from nearby CBM wells and water from an upgradient surface water discharge have been sampled and analyzed and compared to the water well data. Water chemistry in the well is not similar to the chemistry of any of the other water samples collected or any known naturally occurring ground water or surface water within the Raton Basin.

Another landowner in Las Animas County alleged that their water well had been impacted by CBM development. However, analytical data indicated that the water was of good quality and there were no indications of impact from CBM development. Testing for iron related (IRB), sulfur reducing (SRB) and slime producing bacteria identified fairly aggressive populations of IRB and SRB bacteria, which could have caused the problems about which the water well owner complained. The landowner was provided copies of the data and a pamphlet developed by the CDPHE on managing iron and sulfur bacteria in water wells and household distribution systems.

- Baseline Sampling

Fourteen (14) wells were sampled at the request of landowners to establish baseline conditions prior to drilling. Overall the water quality is good. Manganese concentrations in some wells exceed the WQCC standard, but concentrations exceeding the human health standard have not been detected.

- Follow-up Sampling

Four (4) samples were collected in wells previously sampled by the COGCC to establish baseline water quality. Significant changes in water quality were not observed. Two (2) wells in particular have been sampled repeatedly over the last three years and water quality has

remained consistent even after construction of several nearby CBM wells.

- Springs

Two (2) springs were sampled at the request of landowners. One (1) spring is used as a domestic water supply and one (1) for livestock watering. The domestic use spring is located in the central portion of the Raton Basin and overall the water quality is very good. Analytical data indicate that the water meets the WQCC Basic Standards for Ground Water. Another spring located in Del Agua Canyon near Ludlow, Colorado exhibited high levels of sodium and bicarbonate indicative of discharge from a coal bed. Extensive coal mine workings are located within one and half (1.5) to two (2) miles west of the spring. However, other than the high concentrations of sodium and bicarbonate the water quality was good and meets the domestic use and secondary standards.

- North Fork Ranch Water Well Impacts

COGCC Staff and a gas operator continue to investigate and respond to complaints resulting from impacts to two (2) domestic water wells in the North Fork Ranch (NFR) subdivision in western Las Animas County. The water well impacts were initially investigated on July 20, 2006 and appear to be related to an upset that occurred while drilling the surface casing borehole of a CBM well. The CBM well is located 1,300 and 1,500 feet from the domestic water wells. During the investigation COGCC staff observed water being blown out and over the well casing of one of the domestic wells and the water in both wells was discolored, exhibited a noticeable odor, and contained fine grained sediment. Subsequent sampling and analysis indicate that the water quality of the wells had been impacted, including an increase in dissolved methane concentrations. The analytical data indicated that the water quality had been degraded from baseline water quality and fluoride, manganese, and pH were detected at levels that exceed the ground water standards. Subsequent sampling by the operator indicates that water quality is returning to baseline conditions. Manganese continues to persist at levels above the secondary water quality standard of 0.5 mg/l in one of the domestic wells. Water well owners also indicate that the water in both wells continues to have an odor that was not present prior to upset on CBM well.

Based on the results of the complaint investigation two Notices of Alleged Violation (NOAV) were issued to operator. In response to the NOAVs, the operator submitted a Site Investigation and Remediation Plan, Form 27 (Plan) and other documents as required. The Plan has been initiated and the operator continues to work cooperatively with the COGCC to resolve the issues and continues to sample the impacted water wells and to provide city drinking water to both households.

The operator has also attempted to contact all of the other landowners in the NFR subdivision and has offered to test their water wells to determine the quality of the water in their wells and to ensure that the extent of the impacts has been defined. Approximately six landowners have responded to the offer.

The operator is developing a monitoring network that will include approximately sixteen (16) monitoring wells. Eight to ten of the wells will be located within the North Fork Ranch. The monitoring wells will be placed between domestic water wells and CBM wells. Pressure transducers and data loggers will be installed in the wells to provide real time analysis of hydrologic parameters while nearby CBM wells are drilled and completed. Baseline water

quality samples will be collected prior to CBM wells being drilled.

Surface Water

- Spills of E&P Waste to State Waters

There were two (2) spills/release events in which exploration and production waste entered waters of the state. E&P waste included produced water, drilling fluids and drill cuttings. Notices of Alleged Violations (NOAVs) were issued in both cases and investigative and remedial actions conducted. Both incidents occurred within the Raton Basin.

One incident involved a pit leaking through a bedrock fracture and one release occurred because a contractor did not remove the pit contents prior to closing pit. The COGCC had required the operator to close the pit because it was partially built in fill material and therefore had a potential to leak exploration and production waste to the ground surface. Produced water and drill cuttings overflowed the downgradient pit wall and ran down an arroyo, across a stream terrace to San Pablo Creek. The total estimate of drilling fluids released to surface water is less than 1 bbl for each incident. Surface water samples were collected and analyzed and no impacts to water quality standards were noted. WQCD staff were notified as required under the MOA between WQCD-COGCC.

- Surface Water Complaints

The COGCC received four complaints related to the discharge of CBM water under the CDPS permits. The complaints ranged from allegations of water quality impacts to a domestic water well, erosion and flooding, aesthetic issues, impacts to irrigation water quality, and a complaint about the location of a surface water discharge.

A landowner in Las Animas County has complained about aesthetic issues associated with a nearby CPDS outfall; CBM produced water at outfalls frequently has a strong odor, contains iron which, when in contact with air, precipitates out as red iron hydroxide, and causes the growth of algae. Together these create negative visual and olfactory impacts. This complainant also alleged that the outfall was impacting the water quality of their water well. Degradation of water quality associated with the well was noted in 2004; however, analytical data do not provide a correlation between the surface water discharge and impacts to the water quality in the well. Subsequent sampling shows that water quality is consistently improving and aesthetic issues have been discussed with WQCD staff.

Two complaints were received alleging that the surface water discharges in the Apishipa River drainage have a negative impact on water quality for irrigation purposes. The complaints were specifically related to potential damage to alfalfa crops and soils due to the salinity, sodium, sodium absorption (SAR) and bicarbonate levels of CBM produced water. To respond to the complaints the COGCC collected surface water quality samples on two occasions.

In June 2006 COGCC staff collected a sample from the Apishipa River and the Gonzales Irrigation Ditch near Aguilar, Colorado. Total Dissolved Solids levels were 460 and 520 mg/l, sodium concentrations 68 mg/l and 89 mg/l, and the SAR levels were 1.9 and 2.3, respectively. The analytical data does not appear to support the contention that the water is highly saline or sodic-saline and that it would be damaging to crops or soils.

In September 2006 the COGCC collected four samples upstream from the June 2006 samples sites, in the Frio Canyon Spring and Apishipa River near Gulnare, Colorado. The samples were collected at a CPDS Outfall, from a spring (downstream of the outfall) and the two from the Apishipa River. These samples were taken in response to a complaint initially received in February 2006. Sodium, bicarbonate, total dissolved solids (TDS), and sodium adsorption ratio (SAR) levels appear to drop past the discharge point when the water from the Frio Canyon Spring enters and mixes with the Apishipa River. Evaluation of the overall water quality and suitability for irrigation would require additional information on irrigation practices and soil properties.

The COGCC received complaints regarding erosion downgradient of a surface water discharge and that the additional water being added to the Cucharas River from a CBM outfall was flooding cottonwood trees. COGCC and WQCD Staff have investigated this complaint. The operator has voluntarily started working with the Army Corp of Engineers on a major erosion control program and is addressing the flooding issue by channeling the CBM water within the Cucharas River.

The COGCC received one additional complaint about surface water discharge of CBM water. However, this complainant requested that a surface water outfall be relocated so that the water would flow onto and through his property instead of being discharged into a nearby drainage that did not flow through his property.

Stormwater

Two NOAVs were issued to two different operators in response to complaints of sediment in Wet Canyon Creek (Las Animas County). The violations were issued for failure to minimize surface disturbance, alteration of natural features and for failure to prevent adverse environmental impacts to surface water. COGCC staff kept WQCD staff informed about these issues.

Overall gas operators have made tremendous progress on stormwater management issues. Extensive work has been conducted by operators within Raton Basin to install BMPs on access roads, well sites and pipeline right of ways.

Phase II - Methane Seep Mapping and Monitoring Program

Phase II of methane seep mapping and monitoring in the Raton Basin will be conducted. The results of the study will be compared to the results from the Phase I Baseline Methane Seep Mapping Program (Phase I Study) conducted in the Raton Basin from 2000-2003. The Phase I Study documented existing conditions throughout the Raton Basin. One of the key components of the study was the identification and accurate documentation of existing methane seeps. Since that time more than 1,000 additional CBM wells have been drilled. It is critical that another phase of methane seep mapping is conducted throughout the Raton Basin and that the results are compared to the results of the Phase I Study. The Phase II Methane Seep Mapping and Monitoring Program (Phase II) will proactively and systematically investigate previously identified methane seeps and also identify and map other areas, if any, where methane seepage is occurring, as well as document areas where methane seepage is not occurring. The contractor has been selected for this project and the kickoff meeting was held on November 20, 2006.

Orphaned Wells and Sites

Work on one orphaned well site was conducted in Southeast, Colorado this FY. Eight hundred forty two ($842.00) dollars were spent on the site evaluation of the Cascade/Hoffman site. The total purchase order amount for this project is $5,000.

APPENDIX 1

COGCC COMMISSIONER BIOGRAPHIES

BIOGRAPHICAL SKETCHES OF
COLORADO OIL & GAS CONSERVATION COMMISSIONERS
as of 10/05/05

John B. Ashby is President of Ashby Drilling Corporation, a contract drilling company which drilled many wells throughout the eastern plains of Colorado. He is presently retired from contract drilling and currently consults on oil and gas projects located in the Rocky Mountain region. Mr. Ashby began his industry career as a youth employed on a drilling rig, subsequently earned a B.S. in Geological Engineering from Colorado School of Mines and began his professional career with Tenneco Oil Company. He has worked throughout much of the United States and overseas. Mr. Ashby continues to assist the independent oil and gas sector with planning and supervision of well operations.

Brian Cree is the Vice President of Finance and CFO for ZettaCore, Inc., a semiconductor company developing molecular memory technology. He earned a BA in Accounting from the University of Northern Iowa in 1985. Mr. Cree has extensive experience in the finance and operations related to the oil and gas industry. He served as the Executive Vice President, Chief Operating Officer and Director of Patina Oil & Gas Corporation from 1996 to 1999 and held similar positions with Gerrity Oil & Gas Corporation from 1992 through its merger with Patina. Mr. Cree held several other management and officer level positions at Gerrity and The Robert Gerrity Company between 1987 and 1992. Prior to that he held staff and supervisory level positions in the public accounting firm of Deloitte and Touche for two years.

Kimberlee Miskell Gerhardt is a consulting geologist who has lived in La Plata County for six years. She earned a B.A. in Geology from Wellesley College (1977), a M.S. in Marine Geology and Geophysics from the University of Miami (1983) and a Ph.D. in Geology from Rice University (1989). Ms. Gerhardt began her professional career as a grade control geologist for Kerr-McGee Corp. in the Church Rock uranium mine near Gallup, N.M. She returned to graduate school and subsequently hired on with Exxon Production Research Company in Houston, Texas. During her ten years with EPR, Ms. Gerhardt worked on reservoir geology projects from Wyoming, Alaska, Texas, the USSR, Australia, Norway, Algeria, China, Angola and Nigeria. She is the past-president of the Four Corners Geological Society, a member of AAPG and has authored and co-authored various professional publications. Ms. Gerhardt is also interested in archeology and is currently pursuing research on lithic toolstone resources in southwestern Colorado.

Michael W. Klish is the Principal Environmental Scientist for WestWater Engineering. He has been an environmental consultant since 1986. Prior to 1986, Mr. Klish served as a representative for the U.S. Bureau of Land Management on numerous oil and gas exploration and development projects. He has extensive experience in biological resources inventory and impact mitigation, wetland delineation, and environmental documentation (NEPA). Mr. Klish received his BS degree in Forest and Range Management in 1972 and his MS degree in Plant Ecology in 1977 from Colorado State University. He specializes in the integration of natural resource values into project design, revegetation and reclamation, environmental documentation and specialized site design.

Peter M. Mueller is a consulting petroleum engineer. He attended the University of Colorado, majoring in Economics, and earned a B.S. in Petroleum Engineering from the Colorado School of Mines in 1978. During his career of over 25 years, Mr. Mueller has worked in management and/or staff positions in drilling, production, land, regulatory affairs, and gas management. He has worked for both majors and independents, including Westport Resources Corporation, Amoco Production Company, Mobil Oil, Tenneco Oil Company, and Anadarko Petroleum. Mr. Mueller is a member of the Society of Petroleum Engineers and the engineering honor society, Tau Beta Pi. He also serves on the Cardiac Care Board at Denver's Children's Hospital.

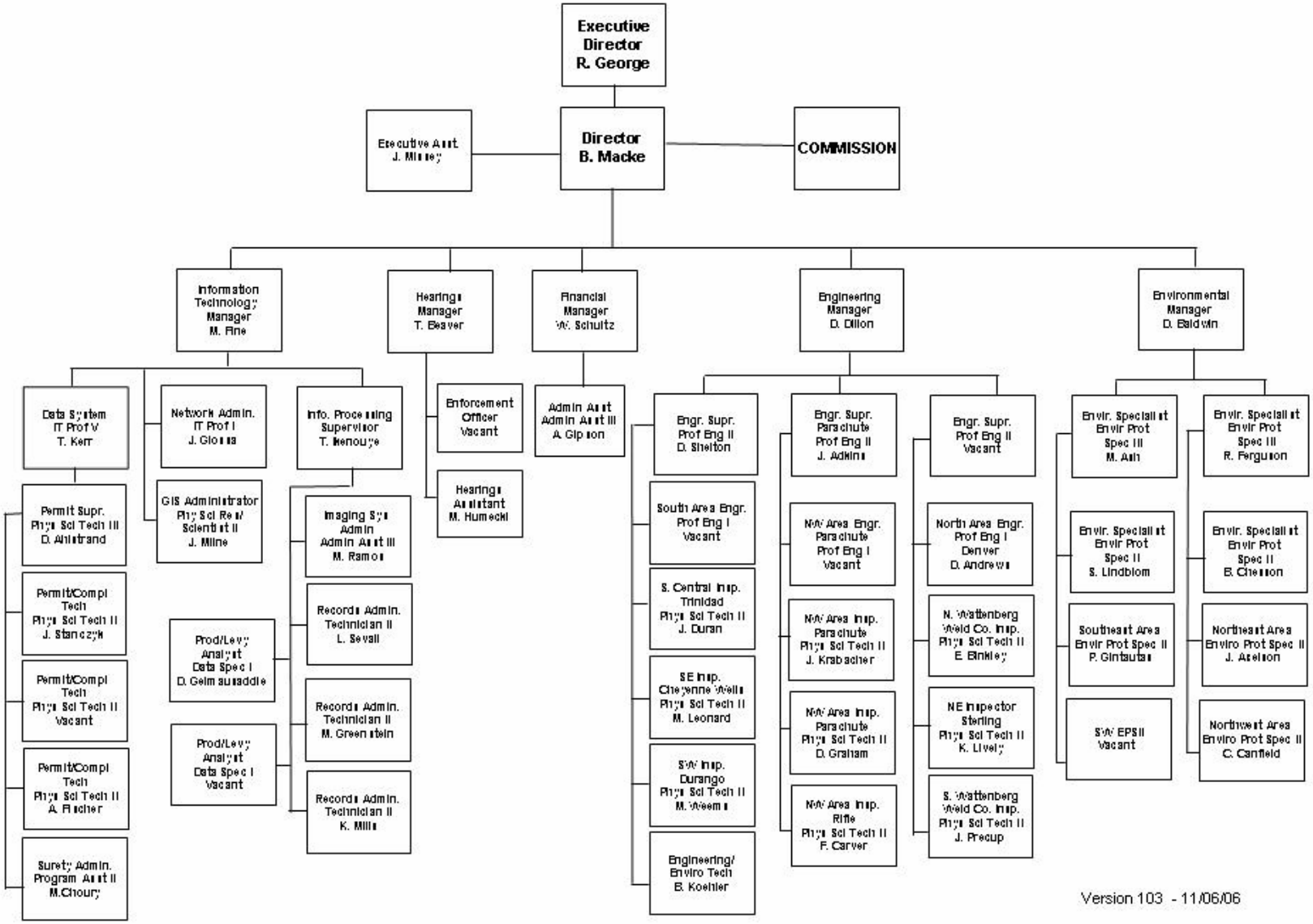
J. Thomas Reagan has over 45 years of experience as a senior corporate executive in the commercial banking and energy industries. He is currently Senior Vice President and Manager of Specialized Deposits at Wells Fargo Bank West in Denver. Mr. Reagan earned his degree in Petroleum Engineering from the Colorado School of Mines in 1953, and graduated from the Stonier Graduate School of Banking at Rutgers University in 1972. Mr. Reagan, a Colorado Registered Professional Engineer, has held several positions with independent energy companies. He has served on numerous boards for petroleum and engineering related organizations as well as charitable organizations. Mr. Reagan is a member of various professional societies.

Samuel B. Potter manages Jolley-Potter Ranches which include several properties in Garfield and Rio Blanco Counties. After earning a BS degree from Colorado State University in Agriculture Economics in 1970, he worked at the Colony Oil Shale project at Parachute Creek for the project's Mining Development Section. In 1972 Mr. Potter entered the insurance business and owned the Sam Potter Agency, Inc., an all lines agency in Rifle, Colorado, which specialized in farm and ranch, commercial and public entity business, until he sold the business in 2002 allowing him to concentrate on the family's ranching and recreation businesses. He has served on many local government and community boards including the Garfield County Airport Authority, Rifle Area Chamber of Commerce, Rifle Creek Golf Course, Rifle Area Oil Shale Impact Mitigation Task Force and is currently President of the West Divide Water Conservancy District, Vice President of the Grand River Hospital District and past member and Chair of the Garfield County Energy Advisory Board.

APPENDIX 2

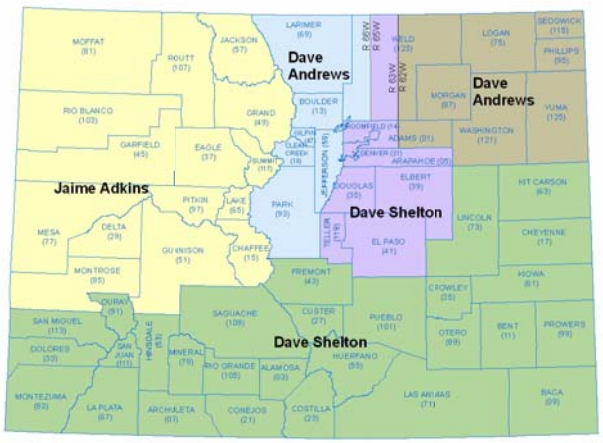
COGCC ORGANIZATION CHART

COLORADO OIL & GAS CONSERVATION COMMISSION ORGANIZATION

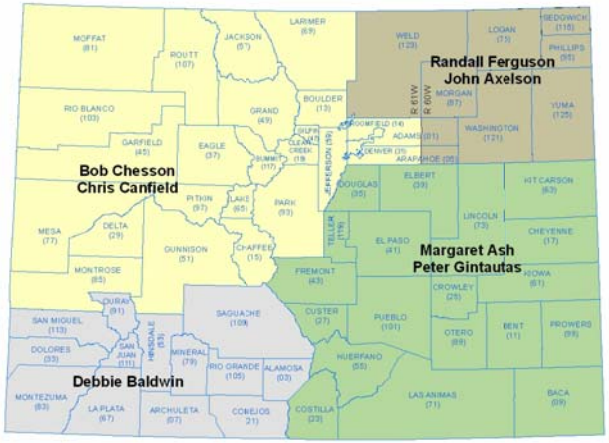


APPENDIX 3

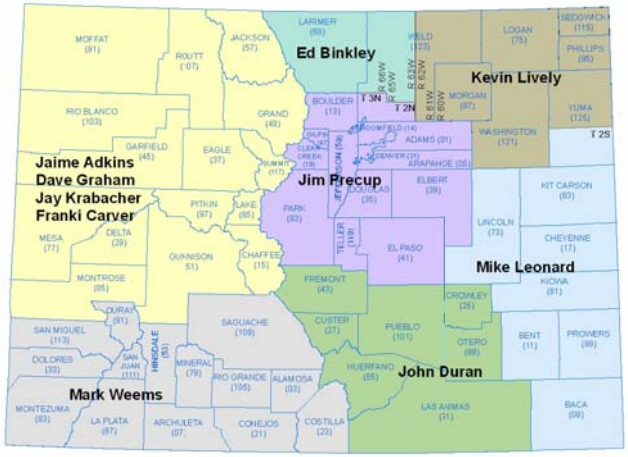
GEOGRAPHIC AREAS OF TECHNICAL RESPONSIBILITIES



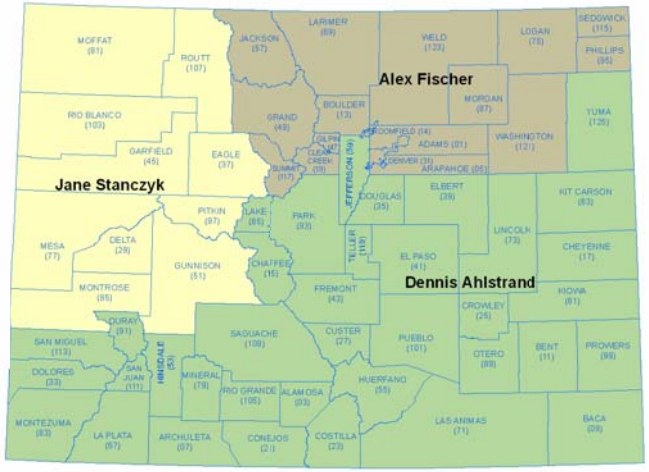
ENGINEERING



ENVIRONMENTAL



FIELD OPERATIONS



PERMITS (APDs)

STATE OF COLORADO
OIL & GAS
CONSERVATION COMMISSION

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Dave Andrews (145)
Margaret Ash (110)
Debbie Baldwin (111)
Bob Chesson (112)
David Dillon (104)
Randall Ferguson (118)
Alex Fischer (138)
Bob Koehler (147)
Steve Lindblom (114)
Dave Shelton (108)
Jane Stanczyk (119)

Field Offices

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