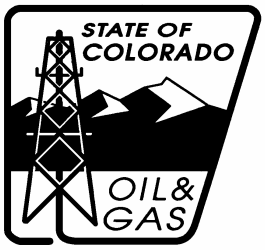
FY 1999-2000 REPORT TO THE

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 MEMORANDUM OF AGREEMENT
of
AUGUST 28, 1990

IMPLEMENTING PROVISIONS OF
SENATE BILL 181

DECEMBER, 2000

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WQCC ANNUAL REPORT FOR FY 1999-2000

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 implementing agency.

This tenth 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:

- The Monthly Staff Report is prepared for submittal to the COGCC Commissioners and is also distributed widely to interested parties. It describes ongoing staff activities such as compliance and enforcement actions, environmental and landowner issues, and other topics relevant to the mission of the COGCC.

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

- A total of 11 local public forums (LPF) have been held since October 1998, as provided for in Rule 508. These meetings are held so citizens can provide input to the COGCC regarding potential impacts to the environment and public health, safety, and welfare from the approval of applications to create drilling units (establish well spacing) or to increase well density within units. Two LPFs have been held in Yuma County, one in Las Animas County, two in Huerfano County, five in La Plata County, and one in Garfield County.

- Meetings are held in counties and areas where the oil and gas industry is active, particularly in areas where concerns ranging from potential impacts to public health, safety, and welfare to the economic effects of fluctuating commodity prices have been voiced.

- The Commission is committed to holding 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 1999-2000 hearings were held in Trinidad, Durango, and Glenwood Springs.

- 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. Users are able to access information regarding pits, spills/releases, and complaints on the web. Soon they will be able to access information regarding remediation projects too. Please visit our website at www.oil-gas.state.co.us.

COGCC Commissioners

Effective July 1, 2000, the geographical representation of the seven (7) Commissioners changed. Rather than representing each of the six (6) Congressional Districts and one (1) At-Large area, the statute now requires two (2) Commissioners be appointed from west of the continental divide. In addition, the five (5) other Commissioners are 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, real estate and ranching, environmental sciences, and finance and operations. Biographical sketches of the COGCC commissioners are included in Appendix 1.

COGCC Staff

The COGCC has thirty-five (35) employees as shown on the organization chart included as Appendix 2. Six (6) of the 12 engineers, field inspectors, and environmental protection specialists (EPS) are located in field offices in Grand Junction, Parachute, Durango, Brighton, Brush and Lamar, which helps to maximize their available field inspection time. The Parachute office was opened on August 17, 1998 in response to increased gas well drilling and urban development occurring along the I-70 corridor through the Piceance Basin.

COGCC Environmental Staff

The environmental staff is part of the Operations Unit, along the engineers and field inspectors. The placement of these disciplines into one group has improved implementation of COGCC programs and cross training. Morris Bell is the Manager of the Operations Unit. The map included in Appendix 3 shows the geographical areas of responsibility assigned to the engineer/inspector and environmental staff.

The COGCC environmental staff is comprised of three EPSs and the Environmental Supervisor, with expertise and professional experience in 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. The environmental staff works closely with the COGCC engineering staff and in particular with the field inspectors. Incidents resulting in environmental impacts are referred to the environmental staff.

The primary responsibilities of the environmental staff are discussed below:

WQCC ANNUAL REPORT FOR FY 1999-2000

A. Spill/Release Response: Operators are obligated to report spills and releases that occur as a result of oil and gas operations. Produced oil, gas, and water are the substances most commonly spilled or released. These substances fall under the E&P waste exemption, and therefore, 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, 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 MRDB database. Spill reports can be accessed via the COGCC website. There were approximately 264 reported spills and releases reported and remediated in FY99-00.

B. Complaint Response: The COGCC responds diligently to complaints, which are received from individuals and other agencies, and logs each into COGCC's MRDB database. Complaints can be accessed via the COGCC website. There were approximately 212 complaints filed and responded to in FY99-00. Often the complaints are from dissatisfied landowners, with concerns about alleged damage to their land or water wells. The environmental staff follows up where appropriate, taking samples where 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, well pluggings, 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 a stand-alone database, but will be incorporated into COGCC's MRDB database. During FY99-00, approximately 42 operators submitted approximately 140 new remediation projects for approval; and approximately 127 remediation projects were closed. The environmental staff is currently overseeing approximately 221 remediation projects.

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 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. The pit program required operators to:

- Inventory all pits, buried and partially buried tanks and vessels by 12/31/95;
- Test all the structures listed above to determine whether they leaked;

- Determine whether the structures listed above are located inside a Sensitive Area;
- Repair, replace, upgrade, or close those structures located within a Sensitive Area that leak by 12/31/97;
- Provide a written summary of the above activities by 12/31/97.

As a result of the program, a significant number of pits were closed in areas that COGCC staff considers sensitive, that is areas where there was a high potential for adverse impact to ground water. Many operators took advantage of the program, closing pits to eliminate discharges with potential impacts, performing closures using cost-effective methods, and reducing overall environmental liability. Approximately 10,845 earthen pits are still used for disposal of produced water throughout the state.

This year, a number of pits were closed, primarily in conjunction with plugging and abandonment of wells. Also, leaking buried or partially buried concrete vaults, tanks and structures were removed, replaced and impacts remediated. These closures and cleanups are conducted under the oversight of COGCC staff. The process begins with approval of a Site Investigation and Remediation Workplan (Form 27) that operators are required to submit.

The COGCC participated again this year with the EPA/USFWS in their Problem Oil Pit Program. By flying over the northeastern portion of Colorado, the EPA and USFWS identified 14 open pits that were covered with oil and/or apparent, unpermitted discharges of produced water. COGCC staff then inspected the problem pits. Where COGCC rules were violated, Notice of Alleged Violations (NOAVs) were written. Operators were required to remove oil from the pits and cease any unauthorized discharges. WQCD enforcement staff met with COGCC and EPA to discuss findings. EPA and WQCD have made several final determinations regarding actions under their enforcement programs.

E. Permitted Waste Management Facilities: Centralized Waste Management Facilities: The 900-Series rule modifications that became effective 12/31/97 included a change to the previous landfarm rule. The rule now applies to all centralized waste management facilities and includes E&P waste treatment methods such as large pits, thermal and centrifuge systems, or waste treatment for beneficial reuse, as well as landfarms. 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 siting, operation, financial assurance, and preliminary closure plans.

The Colorado Department of Public Health and Environment (CDPHE) HMHWM-SWM permits commercial E&P waste management facilities, while the COGCC permits non-commercial Centralized E&P Waste Management Facilities. Generally these are larger than a typical tank battery that might handle wastes from one to a few wells. These larger facilities handle wastes from many wells and possibly from more than one field or lease. These facilities are required to have financial assurance of $50,000. The COGCC has permitted, approximately 7 centralized landfarms, and 4 centralized pits.

The COGCC also permits commercial Underground Injection Well (UIC) facilities.

Effective October 6, 2000, the CDPHE HMHWM-SWU and the COGCC entered into a Memorandum of Understanding (MOU) related to commercial UIC wells. A copy of this MOU is provided as Appendix 4. The MOU is intended to recognize that the SWU and the COGCC may have overlapping regulatory authority regarding the disposal of E&P wastes at commercial Class II injection wells. To avoid duplications that may occur as a result of concurrent jurisdiction, the SWU will defer to COGCC regulation of disposal of E&P wastes at Class II commercial UIC disposal sites, including COGCC regulation of E&P wastes placed in surface structures appurtenant to such wells, prior to downhole disposal. The SWU will continue to exercise its authority under the Solid Waste Disposal Sites and Facilities Act regarding disposal of E&P wastes at commercial disposal sites, other than downhole disposal, and COGCC will defer to such regulation. One commercial UIC facility was permitted by the COGCC in 1999 in Weld County.

Pits: The COGCC has permitted a number of new pits outside Sensitive Areas for the disposal of produced water by evaporation and percolation. In addition, a few requests for waiving the pit permit and liner requirement in accordance with Rule 905 for small workover pits located outside Sensitive Areas have been approved. Permits for unlined earthen pits are approved only when there will not be a significant impact to ground water.

Landfarms: The COGCC has permitted 7 centralized landfarms to date. Each landfarm has monitoring wells and sampling requirements. Adverse impacts to ground water have not been detected at any of these facilities.

F. Beneficial Reuse of Produced Water: More than 90 percent of the water co-produced with oil and gas is disposed or used for enhanced recovery by underground injection. Most of the rest is disposed in evaporation and percolation pits. A small amount is discharged under CDPS permit as a waste and an even smaller amount is put to beneficial uses such as dust suppression on lease roads and emergency fire fighting. One landowner in La Plata County filed for and obtained the right from Water Court to use produced water for irrigation.

The water produced from coalbed methane wells, in general, has fairly low TDS and no liquid hydrocarbons. Many landowners have expressed an interest is using this water. The Office of the State Engineer – Division of Water Resources, the COGCC, and the WQCD currently are reviewing our respective rules and regulatory obligations pertaining to this water.

The COGCC has adopted a revision to Rule 907.c., to address produced water disposal and use of produced water as an alternate domestic water supply. The revised Rule will become effective December 30, 2000. The new rule is provided in Appendix 5.

Environmental Response Fund

The Severance Tax Trust Fund continues to be the source for the COGCC's $400,000 Environmental Response Fund (ERF). In addition, the General Assembly approved our Supplemental Budget Request for FY99-00 of $707,230 for a portion of the "3M Project", which is being conducted in La Plata County. The 3M Project will be discussed in more detail in Section 6.

During FY99-00 ERF money was used to plug and abandon orphaned wells and to fund a number of projects related to environmental issues. Detailed descriptions of these are provided in Section 6.

ERF Projects proposed for FY00-01include:

- Plugging, abandoning, and reclamation of approximately 21 orphaned oil and gas wells and associated facilities in Adams, Baca, Garfield, La Plata, Moffat, Montezuma, Morgan, Prowers, and Weld Counties.
- Complaint and Spill Response
- La Plata County Ongoing Seep Study

In addition, the General Assemble approved our FY00-01 Budget Amendment Request for $234,635 in Severance Tax funding for an extensive 2-year study in Las Animas County.

Data Management and Geographical Information Systems (GIS)

A major function of the COGCC is the management of records and data relating 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 in the Public Room, located in the COGCC Denver office. The number of records and data available through the COGCC continues to grow each year. The COGCC switched to an updated relational database in 1999. As part of this effort, tens of thousands of paper documents have been scanned into a digital format, which is retrievable on a computer. Many of the scanned records are currently available over the Internet; others await indexing to make them accessible.

Data pertaining to Spills, Complaints, and Pits are managed in the new database system. Data pertaining to Remediation Projects is currently maintained in a stand-alone database, but will be incorporated in the new system. Users are currently able to search the COGCC databases on the web, call up related scanned documents, and view plotted locations on a map.

The COGCC GIS Online Internet Map is up and running. This map contains several GIS layers including oil/gas wells, facilities (such as pits), roads, cities, counties, geology, basins, and regulatory contacts, to name a few. In addition, area-specific spatial data has been added for the San Juan Basin to provide information associated with new COGCC orders 112-156 and 112-157. These data include: spaced lands, the Fruitland Coal/Pictured Cliffs contact with distance buffers, and sampled water wells. The COGCC oil and gas wells and facilities layers are updated daily and are available as downloads to outside GIS users. Over the next year, the spacing order layer will be created and added to the map site. The COGCC staff can also access GIS Online via in Intranet system. GIS Online has proven to be a critical tool for permit review.

Over the past year, several exhibits have been prepared for COGCC public presentations using GIS. The GIS exhibits were presented as overhead transparencies and as inserts to PowerPoint presentations. In some cases, presentations were actually given using the Arcview

GIS software. Hundreds of hard copy maps were easily produced and distributed as handouts for these public meetings.

Industry Services

The COGCC continues to fulfill its obligation to provide services to the industry mainly 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 FY99-00, the COGCC found 23 operators in violation of rules and orders and assessed penalties totaling approximately $110,000. Violations included failure to properly set surface casing, timely surface reclamation, lack of reporting, closure of pits, pit maintenance, general site investigation and remediation, and failure to ensure mechanical integrity or plug and abandon wells.

Underground Injection Control (UIC)

On June 28, 2000, the COGCC requested the WQCC to conduct a rulemaking hearing to consider "Limited Use and Quality" classifications and revised standards of ground water in certain oil and gas producing horizons within specified areas. The new ground water quality classifications and standards are to be considered by the WQCC at your rulemaking hearing on December 12, 2000. These rules will apply to: the Lyons Sandstone in Weld County; the Parkman Sandstone in Weld County; the Sussex Sandstone in Weld County; and the D and J Sandstones in Adams, Arapahoe, Morgan, Washington, and Weld Counties.

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. Additional rulemaking will be proposed to the WQCC by the end of FY00-01.

3. COGCC COORDINATION WITH WQCD/WQCC

The COGCC, WQCD, and WQCC continued our quarterly meetings in FY99-00, with Kala Greene and now Lori Satterfield, and Bruce Johnson serving as the commissioner representatives of the WQCC and the COGCC, respectively.

During FY99-00 the WQCD and the COGCC entered into a Memorandum of Agreement (MOA) regarding response to spills/releases of E&P waste to surface water. This MOA was considered necessary because the existing regulatory scheme created circumstances where the regulatory efforts of the COGCC and the WQCD could overlap and become duplicative. A copy of the MOA is included as Appendix 5.

4. LEGISLATIVE ACTIVITY

In the 1999 Legislative Session, an Interim Legislative Committee was created to study

the regulation of oil and gas production in Colorado. As a result of the Committee study, three bills were introduced in the 2000 Legislative Session, one of which passed. Senate Bill 00-015 established geographical representation requirements for members of the COGCC. In addition, House Bill 00-1474 passed which clarified how the COGCC can spend forfeited financial assurance moneys.

The Department of Natural Resources has proposed legislation for the 2001 session to address surface damages, property owner notification and dormant oil and gas interests, including:

- Surface damage statute that would require a surface use agreement to be executed or an appraisal process to be initiated prior to any drilling and would require all damages to a surface owner's property be reimbursed. This contrasts with the current law that allows an operator to post a bond limited only to unreasonable crop loss or land damage in the absence of a surface use agreement. The proposed legislation would also require diminution of the property value to be compensated.

- Title insurance companies would be required to disclose to property buyers whether mineral rights have been severed, and if so, then the mineral owner may have the legal right to enter and use the surface without permission.

- The mineral rights would revert to the surface owner if they had not been used, taxed, or recorded for 20 consecutive years.

5. RULEMAKING

Revisions to COGCC Rule 907.c., related to the beneficial use of produced water are discussed above. The new language is provided in Appendix 6.

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

The relative activity of the oil and gas industry may be measured in part by the number of drilling and recompletion permits processed by the COGCC. This is shown on the charts in Appendix 7 labeled Monthly Breakout of Drilling and Recompletion Permits.

This section describes the oil and gas E&P activity by region, and highlights COGCC studies, issues and concerns relating specifically to ground water in each. 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 of this report.

SOUTHWEST COLORADO

Oil and Gas E&P Activity

Gas production has continued to increase in this area due to the drilling activity that ended in 1992. Drilling activity is currently rising again due the approved applications for increased well density in the San Juan Basin and very strong natural gas prices.

Public Involvement

COGCC Hearing

The COGCC 10/1999 hearing was held in La Plata County. COGCC commissioners were given a tour of several areas where infill drilling has either occurred or will be occurring, an enhanced coalbed methane recovery project, and two areas along the outcrop of the Fruitland Formation where methane seeps are occurring. In addition, the COGCC commissioners were briefed by representatives of the Southern Ute Indian Tribe (SUIT) about oil and gas activities occurring south of the Ute Line and the complicated matters related to ownership and jurisdiction of both the surface and mineral estates.

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 the ongoing monitoring of methane seeps along the Fruitland Coal outcrop.

La Plata County Issues

A lawsuit was filed on 12/14/98 by the Colorado Oil and Gas Association (COGA) and the Rocky Mountain Oil and Gas Association (RMOGA) against the La Plata County Board of County Commissioners seeking a declaratory judgement to decide whether the County surface location rule is preempted due to COGCC's occupation of the field and because the County rule impermissibly conflicts with COGCC rules and regulations. The COGCC moved to intervene with respect to matters affecting its jurisdiction. A hearing before the judge was held on September 22, 1999 and we continue to await a decision.

Ground Water and Other Environmental Issues

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 is the first instance where COGCC has required such a plan. Monitoring, testing, and reporting requirements are being met.

Increased Density for 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 Ute Line. 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 application by attaching conditions. The conditions included:

- requirement for COGCC hearing before drilling permits can be issued for wells within 1½ miles of the outcrop of the contact between the Pictured Cliffs and the Fruitland Formations.
- water well sampling near proposed additional wells.
- identification and remediation of plugged and abandoned oil and gas wells that have the potential to act as conduits for gas migration
- preparation by operators of annual drilling plans
- notification to the Colorado Division of Wildlife of the locations of new wells
- submitting Emergency Preparedness Plans to the county
- post completion pressure build-up tests.
- onsite inspections of certain proposed locations prior to permit approval.

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 coalbed methane (CBM) production. In addition, what appear to be new seeps have been identified in some areas. Gas seepage at the newly identified and expanding seeps could be linked to depressurization of the Fruitland coals near the outcrop.

COGCC staff developed the concept of the Monitoring, Mapping, and Modeling or "3M" project in the winter of 1998 and obtained approval for approximately $800,000 in Severance Tax funding from the General Assembly in the spring of 1999. As envisioned, the 3M project will provide the COGCC with the tools to document existing conditions and to track changes in water levels and formations pressures. This information will be used to project and to detect if and where changes in gas seepage from the Fruitland Formation occur, and to develop mitigation strategies.

The four technical components of the 3M Project include a detailed reservoir computer model, a detailed hydrologic computer model, hydrologic monitoring, and geologic mapping and subsurface correlations.

The SUIT, the US BLM, and the COGCC funded the development of a public domain CBM reservoir computer model. In addition, a vast amount of well data were provided on a voluntary basis by the operators as input into the model. The reservoir modeling effort is complete. The report, code, and input data will be available to the public by the beginning of December 2000. The results of the reservoir modeling were considered during deliberations regarding increased well density in the San Juan Basin.

The SUIT and the COGCC funded the development of a comprehensive ground water model of the Fruitland Formation using Visual Modflow. In addition, industry has funded the collection of approximately 80 produced water samples for detailed chemical and isotopic

analysis and for age dating. This information and chemical data already available from approximately 400 produced water samples were used in the hydrologic model. The hydrologic modeling effort is complete. The report and input data will be available to the public by the beginning of December 2000.

The Colorado Geological Survey has completed the detailed mapping of the entire outcrop of the Fruitland Formation from the Ute line east to the La Plata County/Archuleta County line. Geologic cross sections from downbasin control up to the outcrop, maps, and the report are available from the CSG and on the COGCC website.

The COGCC and the US BLM are funding the installation of a network of monitoring wells at seven locations between the outcrop of the Fruitland Formation and downbasin production. At each location two to four wells will be completed in different coal zones. The wells will be equipped with transducers and dataloggers and will be used for the long term monitoring of pressure and water levels in the Fruitland Formation. A contractor has been selected to drill and install the wells, access to all of the sites has finally been obtained, however other contracting delays have occurred. We are hoping to begin drilling in early 2001.

Orphaned Wells

Approximately $6,400 of bond money was used to plug and abandon 1 orphaned well, to restore the site, and to dispose of liquids from a large above ground storage tank and several drums in Montezuma County. This well was a potential conduit for gas migration into the shallower aquifers.

Phase III of the Fruitland Outcrop Seepage Study

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. During FY 99-00, $6,000 in ERF money was contributed to this project.

Pine River Ranches Subdivision Methane Seepage

Monitoring of ground water conditions using existing monitoring wells continues by an operator, although the active mitigation efforts have been stopped. In addition, permanent soil gas monitoring probes, a gas flux chamber, and meteorological station have been installed as part of the Phase III – 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 conducted on all wells in La Plata County annually. 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 6 complaints alleging impacts to water wells from oil and gas activities. Upon investigation, COGCC staff could not find any evidence to support these allegations.

NORTHWEST COLORADO

Oil and Gas E&P Activity

As reported in the 1999 report, Northwest Colorado continues experience an elevated level of oil and gas activity, especially in Garfield and Rio Blanco Counties. Routt County also experienced a dramatic increase in drilling permits for year 2000 over past years. Northwest Colorado drilling permits for year 2000 accounts for approximately 30 percent of the entire total drilling permits in the state. The driving forces behind the active development are the extensive natural gas reserves, the gas sales market and increasing natural gas prices, the change in COGCC rules allowing an increase in well density in the Rulison, Grand Valley, and Parachute Fields in Garfield County, and an expanding pipeline infrastructure that enables improved marketing of gas from the area.

Public Involvement

The Northwest Colorado Oil and Gas Forum

The Northwest Colorado Oil and Gas Forum (NWCOGF) continues to hold meetings approximately once per quarter. Meetings were held February 2, May 6, and August 3, at Rifle Town Hall in the town of Rifle, Colorado. The November 11, 1999 meeting was held in the city of Grand Junction, Colorado. The next NWCOGF meeting will be from 10:00 a.m. until 2:00 p.m. on November 2, 2000 at Rifle Town Hall. These meetings continue to be 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 have been well attended.

Agenda items have included updates on recent oil and gas activity in the area. Garfield County, Battlement Mesa area issues were addressed, concerning oilfield traffic, interim wellsite reclamation, ground water contamination, air impacts, and local outreach. Some of the year's presentations included:

- Barrett Resources made a presentation on their application for increasing their well density to 20-acre spacing in parts of the Rulison, Grand Valley, and Parachute fields.
- COGCC Deputy Director Brian Macke made two presentations, one on the COGCC Rule 508 Local Public Forum Process, and a second on navigating the COGCC website.
- The Western Colorado Congress/Grand Valley Citizens Alliance made a presentation on their organization and their needs for additional oil and gas development-related information and public outreach.
- Jim Hingeraker with the Mesa County Planning Department presented Mesa County's streamlined oil & gas permitting requirements.

COGCC Hearing

The COGCC August hearing was held August 21-22, 2000 at the Ramada Inn in Glenwood Springs, Colorado. The majority of the hearing was the Public Issues Hearing on Barrett Resources 20-acre well density in-fill application for parts of the Rulison, Grand Valley, and Parachute fields in Garfield County. This meeting was well attended. Because of the large amount of testimony presented the Public Issues hearing was continued until the September COGCC meeting which was held at the COGCC Denver Offices.

Ground Water Issues

Piceance Basin Baseline Water Quality Study

As a follow-up to the Phase II baseline water quality study, six new water wells, seventeen previously sampled water wells, and one surface site (spring) were sampled in the Piceance Basin during September of 1999. The resampled wells had previously been analyzed for major dissolved cations and anions, alkalinity, pH, TDS, and dissolved methane gas. Because these wells had been identified as containing dissolved methane gas and samples collected were analyzed for benzene, toluene, ethylbenzene, and xylenes. The six new wells were analyzed for the baseline suite of analytes. Copies of the analytical results have been sent to each water well owner with a cover letter explaining the results**.**

Approximately $12,200 of ERF money was spent on this study during FY 99-00.

Water Well Impact Complaints

COGCC staff sampled 13 wells and one spring in during FY 99-00 in response to requests from the water users in Garfield County. Laboratory results indicated no impacts to water quality as a result of oil and gas operations.

Approximately $4,800 of ERF money was spent on these ground water investigations during FY 99-00.

Wilson Creek Field Surface Water Discharge – Rio Blanco County

On October 11, 1999 COGCC staff observed an unauthorized discharge of water from an aboveground storage tank (AST) into the surface waters of Wilson Creek at the Wilson Creek Field in Rio Blanco County. Laboratory analyses indicated a benzene concentration of 4,500 µg/l, which exceeds the Colorado Basic Standards for Groundwater. Upon notification, Texaco discontinued the discharge immediately. The water in the AST was from recovery trenches to capture contaminated groundwater that had been previously identified from seeps. A Notice of Alleged Violation (NOAV) was subsequently issued to Texaco. This was followed by an Administrative Order by Consent (AOC) which recommended a fine of $30,000. The AOC was reviewed and approved by WQCD staff. Texaco signed the AOC and paid the fine amount. The cause of the discharge was identified and the situation abated to prevent further discharges from occurring. Additional monitoring wells will be installed at the Wilson Creek Field to determine the source of the contaminated groundwater. Work is scheduled for FY 00-01.

Garfield County Underground Blowout (Goad Well Remediation)

In October of 2000, the COGCC and the US EPA both approved the operator's (Barrett Resources) remediation system for the benzene, toluene, ethylbenzene, and xylenes (BTEX) contaminated ground water at the Goad residence located outside Rifle. The contamination is located in the immediate vicinity of the Goad Well, which was affected by the underground blowout of the Barrett Resources RMV 108-4 gas well. BTEX contaminated water will be recovered from a recovery well (OW-08) which is to be installed adjacent to the Goad Well. Recovered water will be treated at the surface via activated carbon and the treated water reinjected (gravity injection) into a well upgradient to the Goad Well, and outside of the BETX contaminated zone. System start-up is anticipated to be during November 2000. The operator will abandon the Goad Well. Once the benzene concentrations fall below the WQCC standards at all of the monitored wells, the COGCC will require one additional year of sampling and analysis. At completion of the remedial actions, the recovery well (OW-08) will be converted into a domestic water supply well for the Goad residence.

Additionally, during FY 99-00, the operator installed a downgradient point-of-compliance monitoring well at the site.

Tow Creek Field – Routt County

The COGCC has proceeded with the plugging, abandonment, and reclamation of the nine Allen Oil & Gas LLC (Allen Oil) Tow Creek wells in compliance with an August 20, 1999 COGCC Order. This order authorized the COGCC staff to claim the operator's bond for numerous violations of COGCC rules and regulations, unauthorized discharges of produced

water onto the flood plain alluvium of the Yampa River, and failure to meet a benchmark compliance schedule. To date COGCC staff has plugged and abandoned the Bradley #1 and the Bradley #5 wells, and has initiated removal and salvage of the Bradley #4 Tank Battery. The COGCC also conducted a limited site investigation of petroleum impacted soils to determine extent of possible soils clean up to below COGCC allowable levels. Reclamation work will continue on the Allen Oil Tow Creek wells though out FY 00-01.

In 1999, the operator filed suit in District Court seeking review of the Commission's order. Currently, the State Attorney Generals office has filed for dismissal of this suit and the court's decision is expected later this year.

Approximately $25,000 of ERF money was spent on this project during FY 99-00.

Horse Gulch Property – Moffat County

The Horse Gulch Property (HGP) is located approximately 10 miles south of Craig along State Highway 317 and adjacent to the Williams Fork River. The HGP consists of two abandoned adjacent earthen disposal cells containing approximately 1,000 yd^3 total of E&P waste contaminated soils. The HGP is in a sensitive area because of shallow ground water and close proximity of the Williams Fork River (approximately 1,500 feet south). The petroleum-contaminated soils in the lower of the two disposal cells exceed the COGCC allowable concentration of TRPH for sensitive areas.

The COGCC is preparing a scope-of-work for the removal of the contaminated soils to a landfill and the backfilling and reclamation of the property. It is anticipated that this work will be accomplished in spring 2001.

Approximately $1,000 of ERF money was spent on this project during FY 99-00.

Maudlin Gulch Field – Moffat County

COGCC staff continued the investigation reported in last year's report in response to a complaint from a landowner in Moffat County regarding water quality in the spring that supplies his nearby hunting camp. The camp is located downstream from the Maudlin Gulch Oil Field. In FY 99-00 COGCC staff sampled two springs and one water well in addition to resampling the hunting camp spring. After reviewing all analytical sampling data the COGCC staff has concluded that changes in the hunting camp's spring water can not be attributed to impact from oil & gas operations at the Maudlin Gulch Oil Field and this complaint has been closed.

Approximately $1,000 of ERF money was spent on this investigation during FY 99-00.

Orphaned Wells

Approximately $30,000 of ERF money and $7,000 of bond money, was used to plug and abandon four oil and gas wells and restore five well sites, including:

- One (1) orphaned well in Jackson County; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes; proper site

restoration.

- One (1) Tow Creek well (Bradley No. 1) in Routt County; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes; proper site restoration. The Bradley No. 5 well was plugged and abandoned in Fiscal year 2001.
- Three (3) orphaned well sites in Moffat County; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes; proper site restoration.

NORTHEAST COLORADO

Oil and Gas E&P Activity

The new COGCC Rule 318.A., which allows operators to drill lower density spacing without a hearing for down-spacing, resulted in an increase of drilling permits in the Wattenberg Area, for deepening to the Dakota and J-sand formations, and for recompletions into the Codell and Niobrara formations. Weld County, where the major part of the D-J Basin is located, accounted for approximately 29% of the total drilling permits in the State in 1999. Weld County has the most wells at over 10,000 (42%) and accounted for approximately 41% of the total drilling permits in the State from 1993-1999. Additionally, Weld County had 16% of 1998 gas production and 32% of 1998 oil production.

Other smaller oil fields are located in other counties in the Northeast quadrant of the state. These include Adams, Arapahoe, Elbert, Logan, Morgan, Phillips, Sedgwick, and Yuma Counties. The production is primarily stripper well operations, where oil production is ten (10) barrels or less per day.

Public Involvement

The COGCC continues to receive and follow-up on complaints received from the Weld County Health Department, Larimer County, NE Colorado Health Department, other municipalities and the public throughout northeastern Colorado.

Ground Water Issues

<u>Impacts to Ground Water and Surface Water</u>

There were five complaints alleging impacts to water wells in the northeastern portion of Colorado this year. Upon investigation, COGCC staff determined the impacts were not oil and gas related.

A number of complaints were received about spills, which in some cases had caused localized ground water impacts. A few spills and releases occurred in which the oil and/or condensate flowed into a surface water body. In all cases where water was impacted, the operators were required to perform site investigation and remediation of contaminated soil and ground water, to meet the COGCC standards. In addition, the COGCC continues to oversee the investigation and remediation of contaminated soil and ground water beneath gas plant and

compressor station facilities throughout the D-J Basin. Some of these projects have been ongoing for several years.

Approximately $16,550 of ERF money was spent investigating citizen complaints in northeastern Colorado.

Orphaned Wells and Sites

COGCC staff restored 13 old wellsites with $93,300 of ERF money. One other restoration project in Weld County also included burying and reclaiming 33 cement base sites for an additional $3,185.

- One (1) wellsite in Yuma County; plugging/abandonment and site restoration; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes.
- Two (2) wellsites in Logan County; plugging/abandonment and site restoration; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes.
- Three (3) wellsites in Washington County; plugging/abandonment, re-plugging, and site restoration; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes.
- Three (3) wellsites in Weld County; plugging/abandonment, re-plugging, and site restoration; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes.
- Four (4) wellsites in Adams County; plugging/abandonment and site restoration; proper plugging ensures that the shallow fresh water aquifers in this area are protected from fluid migration in the boreholes.

SOUTHEAST COLORADO

Oil and Gas E&P Activities

Raton Basin

Evergreen Operating Corporation has purchased a significant amount of production south of Highway 12 from Geomet/KLT. Evergreen is the major methane gas producer in the Raton Basin. Barrett Resources Corporation has purchased the remainder of the Geomet/KLT properties that are essentially undeveloped on private ranch property.

Cedar Ridge LLC has begun drilling gas wells at the northern end of Las Animas County and the southern end of Huerfano County, just west of the Town of Aguilar. Petroglyph Operating and Huber Oil & Gas are still evaluating the coals around La Vita, Colorado.

In the extreme southeast portion of the Raton Basin there are a number of water wells that have been completed in the Raton Coals, the same coals that being completed as methane gas wells. A water feasibility study was funded to evaluate alternative sources of water for this small area. The project is not yet complete, completion is expected in November.

The Raton Basin Project 2000-2001 has begun. Phase I, the infrared survey (IRS), has started at the south end of the basin in Las Animas County. The IRS instrument can detect methane in the atmosphere at 1 part per million. The instrument will be driven on jeep trails and local roads for the survey. Phase V, coal mine and mine feature mapping, is beginning. The subsurface and surface features of coal mines will be digitized into a database to produce a map showing the location of these features in the Raton Basin.

Gas Seep Investigation, Las Animas County

A methane gas seep was reported north and south of Highway 12 at the east end of the Basin Mine, centered in Section 28, Township 33 South, Range 67 West, Las Animas County. Two shut-in gas wells downgradient were implicated as the possible source of the seep. Field investigation revealed methane in the bradenhead of the eastern well, the Picketwire 28-10; the bradenhead also had 20 pounds of pressure. No gas was found in the casing in the western well, the Picketwire 28-11. Investigation of the soil adjacent to the wells, using a Flame Ionization Device (FID), revealed no methane. Two monitor wells installed by Basin Mine consultants near the Picketwire 28-11 had high levels of methane.

Stressed or dead vegetation is present at the seep. The areas of dead vegetation, the gas wells and the monitor wells were mapped using a Global Position System (GPS) instrument. The gas wells were drilled October, 1990. An infrared aerial photo dated August 26, 1990 was ordered from the EROS Data Center. An overlay of the GPS map was made and attached to the infrared photo, it shows the stressed and dead vegetation existed in almost the same spot before the gas wells were drilled.

Public Involvement

A local public forum was held in Walsenburg September 12 regarding a spacing order for coalbed methane development west of the town of Aguilar. A lot of fear and anger was expressed about the drilling of gas wells in “ranchettes” previously undeveloped for methane. The spacing proposed would be one well per 160 acres.

Groundwater Issues

Approximately $29,226.75 of ERF money, was used to plug and abandon nine (9) oil and gas wells. All 9 of the orphaned wells Pierre Shale wells were in Fremont County. Proper plugging ensures that the shallow fresh water aquifers in this are protected from fluid migration in the boreholes.

Cheyenne and Dakota Aquifers Protection

Placement of cement plugs across the Cheyenne and Dakota Aquifers is now a requirement for drilling permit approval in all areas in southeastern Colorado where these aquifers are present.

APPENDIX 1

COGCC COMMISSIONER BIOGRAPHIES

APPENDIX 2

COGCC STAFF ORGANIZATION CHART

APPENDIX 3

COGCC STAFF
GEOGRAPHIC AREAS OF
TECHNICAL RESPONSIBILITIES

APPENDIX 4

MOU SWU/COGCC

APPENDIX 5

MOA WQCD/COGCC

APPENDIX 6

COGCC RULE 907.c.

The COGCC adopted a revision to Rule 907.c., to address produced water disposal and use of produced water as an alternate domestic water supply. The revised Rule will become effective December 30, 2000. The new language appears in **CAP BOLD.**

c. Produced water.

(1) Treatment of produced water. Produced water shall be treated prior to placement in a production pit to prevent crude oil and condensate from entering the pit.

(2) Produced water disposal. Produced water may be disposed as follows:

A. Injection into a Class II well, permitted in accordance with Rule 325.;

B. Evaporation/percolation in a properly permitted lined or unlined pit;

C. Disposal at permitted commercial facilities; ~~or~~

D. Disposal by roadspreading on lease roads outside sensitive areas for produced waters with less than 5,000 mg/l TDS when authorized by the surface owner. Roadspreading shall not result in pooling or runoff of produced waters and the adjacent soils shall meet the allowable concentrations in Table 910-1**; OR**

E. DISCHARGING INTO STATE WATERS, IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE WATER QUALITY CONTROL DIVISION ("WQCD"). PRODUCED WATER DISCHARGED PURSUANT TO THIS SUBSECTION (2)(E) MAY BE PUT TO BENEFICIAL USE IN ACCORDANCE WITH APPLICABLE STATE STATUTES AND REGULATIONS GOVERNING THE USE AND ADMINISTRATION OF WATER.

(3) Produced water reuse and recycling. Produced water may be reused for enhanced recovery, drilling, and other uses in a manner consistent with existing water rights and in consideration of water quality standards and classifications established by the WQCC for waters of the state, or any point of compliance established by the Director pursuant to Rule 324D.

(4). MITIGATION. WATER PRODUCED DURING OPERATION OF AN OIL OR GAS WELL MAY BE USED TO PROVIDE AN ALTERNATE DOMESTIC WATER SUPPLY TO SURFACE OWNERS WITHIN THE OIL OR GAS FIELD, IN ACCORDANCE WITH ALL APPLICABLE LAWS, INCLUDING, BUT NOT LIMITED TO, OBTAINING THE NECCESARY APPROVALS FROM THE WQCD FOR CONSTRUCTING A NEW "WATERWORKS," AS DEFINED BY SECTION 25-1-107(1)(X)(II)(A), C.R.S. ANY PRODUCED WATER NOT SO USED SHALL BE DISPOSED OF IN ACCORDANCE WITH SUBSECTION (2) OR (3). PROVISION OF

PRODUCED WATER FOR DOMESTIC USE WITHIN THE MEANING OF THIS SUBSECTION (4) SHALL NOT CONSTITUTE AN ADMISSION BY THE OPERATOR THAT THE WELL IS DEWATERING OR IMPACTING ANY EXISTING WATER WELL. THE WATER PRODUCED SHALL BE TO THE BENEFIT OF THE SURFACE OWNERS WITHIN THE OIL AND GAS FIELD AND MAY NOT BE SOLD FOR PROFIT OR TRADED.

APPENDIX 7

MONTHLY BREAKOUT OF DRILLING AND RECOMPLETION PERMITS