

STATE OF COLORADO

Colorado Water Conservation Board Department of Natural Resources

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TO: Colorado Water Conservation Board Members

FROM: Joe Busto, Watershed & Flood Protection Section
Susan Schneider and William Stenzel, AGO

DATE: May 1, 2012

SUBJECT: **Agenda Item 28, May 15-16, 2012 CWCB Board Meeting**
Weather Modification Rules and Regulations Rulemaking Hearing

John Hickenlooper
Governor

Mike King
DNR Executive Director

Jennifer L. Gimbel
CWCB Director

Introduction

Staff has drafted revised Rules for weather modification programs in Colorado to supersede the existing 1986 Rules, with input from a fourteen-member Advisory Committee. The draft Rules and notice of rulemaking were filed with the Secretary of State on April 12, 2012, noticed in the Colorado Register and through the Board's subscription email list and website. The draft Rules will be considered for adoption by the Executive Director ("the Director") of the Department of Natural Resources at the rulemaking hearing on May 16 at 3:00 p.m. The Director will consider input from the CWCB and public comment in deciding whether to adopt the proposed Rules or to adopt the Rules with revisions.

Background

Senate Bill 11-90 requires the Director to promulgate revised weather modification Rules by July 1, 2012. The draft Rules remove previous references to annual licensing and instead reference permitting. The draft rules also require weather modification operators to demonstrate that they are adequately qualified pursuant to the application and public hearing processes. Draft Rule 19 requires operators or permit holders to submit proposals to project sponsors to evaluate the program periodically.

At the January CWCB meeting, the Director and the Board reviewed the draft Rules, approved a formal rulemaking hearing in May, and appointed Casey Shpall as the hearing officer. The Board also suggested that Rule 19 include stronger evaluation requirements. At the March meeting, the Board recognized the potential financial impact of stronger evaluation requirements. Staff revised Rule 19 to require permit holders to submit periodic evaluation proposals to project sponsors, but left the implementation and funding of those proposals to the discretion of project sponsors. The Rule was drafted to meet the concerns expressed in the 2010 report from Department of Regulatory Agencies ("DORA") on weather modification, as well as the General Assembly comments during hearings on weather modification, that there is a need to prove the efficacy of the program. DORA reported that "the very uncertainty of the efficacy of weather modification justifies continued State involvement." Thus, the Director and the Board should consider whether evaluations should be proposed and not required or whether evaluations should be required, but allow the project sponsors to determine the extent of the evaluation. Staff has proposed language to discuss for the latter option, which is attached hereto as Exhibit 1.

EXHIBIT 1

Currently proposed Rule 19:

Weather Modification Evaluations: The Director desires to promote continuous research, development, and evaluation of permitted programs. Permit holders shall submit periodic evaluation proposals to the Project Sponsors. Periodic is defined as at least once during a five-year permit or twice during a ten-year permit. A periodic evaluation should be outside of the normal annual reporting methods. Evaluations that are peer reviewed and published in journals can count as “independent” evaluations. The Director recommends the following list of data and types of studies for use in the evaluation.

Alternative proposed Rule 19:

Weather Modification Evaluations: The Director desires to promote continuous research, development, and evaluation of permitted programs. Permit holders shall submit periodic evaluation proposals to the Project Sponsors. Periodic evaluations shall be submitted to the CWCB as at least once during a five-year permit or twice during a ten-year permit. A periodic evaluation should be outside of the normal annual reporting methods. Evaluations that are peer reviewed and published in journals can count as “independent” evaluations. The Director recommends the following list of data and types of studies for use in the evaluation.

Proposed
Colorado Weather Modification Rules and Regulations

2 CCR 401-1
Implementing Title 36 - Article 20
Weather Modification Act of 1972

May 16, 2012
Rulemaking Hearing



Department of Natural Resources
Colorado Water Conservation Board

DEPARTMENT OF NATURAL RESOURCES

EXHIBIT 1

**COLORADO WEATHER MODIFICATION RULES
AND REGULATIONS**

June 30, 2012



RULES AND REGULATIONS FOR COLORADO WEATHER MODIFICATION

DEPARTMENT OF NATURAL RESOURCES

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RULES AND REGULATIONS FOR COLORADO WEATHER MODIFICATION

- Rule 1.** **Title:** The previous Colorado Weather Modification Rules and Regulations were adopted August 1, 1986, and are amended here under the same title (referred to herein collectively as the “Rules” or individually as “Rule”). These Rules supersede the August 1, 1986 Rules.
- Rule 2.** **Authority:** Section 36-20-107(1), C.R.S. (2011), empowers the Executive Director of the Department of Natural Resources (“Director”) to promulgate rules necessary to effectuate the purposes of the Weather Modification Act of 1972 (the “Act”). Section 36-20-107(3)(a), C.R.S. requires the Director to ensure that the Rules are up to date and consistent with the Act. The Director may delegate to the Director of the Colorado Water Conservation Board, or another designee, the authority to administer the Act, to issue permits, and to regulate weather modification activities permitted pursuant to the Act pursuant to section 36-20-108(3)(b) C.R.S. (2011).
- Rule 3.** **Purpose and Scope:**
- A. **Purpose.** The purpose of these Rules is to provide regulation of and standards for weather modification in Colorado in accordance with the legislative declaration provided by the Act, section 36-20-101, C.R.S. (2011), and pursuant to the legislative direction provided by section 36-20-107(3)(a). Rules for regulation of weather modification operations are of statewide concern to the state of Colorado and the Department of Natural Resources. The state of Colorado, through the Colorado General Assembly, recognizes the economic benefits that can be derived for the people of Colorado from weather modification, while minimizing possible adverse effects through implementation of proper safeguards and collection of accurate information. The Colorado General Assembly authorized the Director to issue permits applicable to weather modification operations pursuant to the Act, section 36-20-108(1), C.R.S. (2011). This direction is intended to ensure that weather modification operations implement proper safeguards and provide accurate information on operations.
- B. **Scope.** These Rules apply to all weather modification operations in the state of Colorado, including, but not limited to, those by individuals, corporations, local government agencies, regional government agencies, state government agencies, and federal government agencies.
- Rule 4.** **Definitions:** These Rules adopt the defined terms provided by section 36-20-104, C.R.S. (2011) of the Act. Further terms are defined as provided herein.
- Rule 5.** **Application for a Permit:**
- A. **Application for Permit.** An application for a weather modification permit must be submitted at least 45 days before the beginning date of proposed weather modification operation.

B. **Requirements for Operator.** The qualifications, education, and experience of any prospective Operator to engage in weather modification operations must be demonstrated to the Director pursuant to section 36-20-112(1)(g), C.R.S. (2011). An application for a permit must therefore include evidence of one of the following:

- (1) A minimum of four years of field experience in the management and control of weather modification operations or research; and
- (2) A degree in engineering, the physical sciences, or meteorology; or
- (3) Certification by the Weather Modification Association as a Certified Operator; or
- (4) Other training and relevant experience that the Director accepts as indicative of sufficient competence in the field of weather modification to engage in weather modification activities.

At least one such Operator shall be available at all times and days during weather modification activities for immediate consultation by the Director.

C. **Modification, Suspension or Revocation of Permit.** The Director may revise the terms of a permit if the operator is first given notice and opportunity for a hearing on the need for a revision and the Director determines the revision is necessary to protect the health or property of any person or to protect the environment. The Director may suspend or revoke a permit if it appears that the operator no longer has the qualification necessary for the issuance of the permit or has violated any provision of the Act after giving the operator notice and opportunity for a hearing pursuant to sections 36-20-119 and 36-20-120, C.R.S. (2011). While the Director may only issue one active permit for activities in any geographic area if two or more projects may adversely interfere with each other, the Director may issue more than one permit for activities in any geographic area if one of the permits becomes inactive due to a project sponsor's termination of a contract with a permit holder and the cessation of weather modification operations.

D. **Permit Fee.** A permit application or renewal must include the appropriate application or renewal fee designated by the Director pursuant to section 36-20-113, 114, C.R.S. (2011), as set forth in a policy discussed at a Board meeting and published on the Board website. The application fee is required of all applicants; including persons employed by commercial firms, government and non-profit agencies and should be sufficient to pay the direct costs of reviewing the permit application, holding public hearings and monitoring the Permitting Program.

E. **Commercial Fee.** Applicants for commercial weather modification operations must also pay a Commercial Fee. The amount of this Commercial Fee is 2% of the yearly contract between the permit holder and the operation sponsors. If the permit holder and operation sponsor are the same, then the Commercial Fee is 2% of the operation's yearly budget. The Commercial Fee shall be paid at the beginning of each operational season, or may be prorated to be paid half at the beginning of the operational season and half at the end of the season at the discretion of the Director. The Commercial Fee compensates for permitting, regulatory compliance and environmental monitoring functions performed by

the Director or his or her designee. The Director may waive the Commercial Fee in extraordinary circumstances.

Rule 6. Required Information and Proof of Financial Responsibility:

A. **Required Information.** The weather modification permit application must include the following information:

- (1) A description of the objectives of the proposed weather modification operation; and
- (2) The specific time period for the operation; and
- (3) A written description and map identifying the specific target area and the area reasonably expected to be affected by the operation; and
- (4) A description of how the operation will be carried out, including, but not limited to, the location of the office, weather data used, aircraft types, seeding devices and material, seeding rates; and
- (5) How the proposed operation is designed to provide economic benefit to the target area (applicable to commercial operations only); and
- (6) How the proposed operation is reasonably expected to benefit both persons living in the target area and the people of Colorado; and
- (7) How the proposed operation is scientifically and technically feasible; and
- (8) How the proposed operation is designed for developing the knowledge and technology of weather modification (applicable to research and development operations only); and
- (9) The potential risks that the proposed operation could cause, such as harm to land, water, people, health, safety, property and the environment, and the adequate safeguards proposed for use by the operator to prevent harm; and
- (10) How other weather modification operations and research projects (if any) could be affected adversely by the proposed operation; and
- (11) Any significant expected negative ecological impacts that may result from the operation, such as how precipitation patterns could be altered, how increased runoff would affect erosion, and the environmental impacts of any chemicals utilized in the operation; and
- (12) Provide scientific literature and documentation that the proposed form of weather modification is viable and likely to produce the intended effect.

B. **Proof of Financial Responsibility.** The application must also furnish proof of financial responsibility adequate to meet obligations reasonably likely to be attached to, or

result from, the proposed weather modification operation as required by section 36-20-112(c), C.R.S. (2011). Proof of financial responsibility may be shown by

evidence of a liability policy of at least \$1 million, or three times the value of the weather modification operation, whichever is greater, including proof that the insuring company is authorized to do business in Colorado, and a cancellation clause with a 30-day notice to the Director.

Above these minimum requirements above, Applicants should consider maintaining liability insurance against the effects of weather modification operations, also called consequential loss insurance, which is not normally a part of ordinary liability insurance.

Rule 7. Publication of Legal Notice of Intent: Applicants for a weather modification permit must publish a legal notice or notices of intent to modify weather in the counties to be affected by the weather modification operations, and/or any other newspapers required by the Director, including regional newspapers, pursuant to section 36-20-112(e), C.R.S. (2011) and in accordance with the timeline provided by section 36-20-104(7). The target area is defined as the area in which the operator desires to produce effects. Counties which may reasonably be expected to be affected by the operation include, at a minimum, those counties that are adjacent to the county (or counties) containing the target area. Applicants must use a form for legal notices approved by the Director. Affidavits provided by newspaper publishers, radio or television station managers, or sheriffs are sufficient proof of publication.

Rule 8. Evaluating Permit Applications: The Director shall evaluate applications for compliance with the criteria provided by section 36-20-112, C.R.S. (2011). The decision made will be to grant, deny, or grant the permit with additional terms and conditions.

Rule 9. Hearing Required:

Hearing Prior to Permit Issuance or Renewal. A public hearing is required prior to issuance or renewal of a weather modification permit pursuant to section 36-20-112(e), C.R.S. (2011) and held in accordance with section 36-20-108(3)(b). The Director or his or her designee will record the hearing, and will consider public input, as well as all other information presented at the hearing to evaluate applications.

Rule 10. Duration of Permits: Permits shall be granted for a maximum of one calendar year, except for ground-based winter cloud seeding, which may have a duration of five years, and may be renewed for five years or ten years, pursuant to section 36-20-108(1), C.R.S. (2011). Consistent with section 36-20-114(2), permits granted for one calendar year may be renewed on an annual basis for four additional calendar years without a public hearing providing the permitted weather modification operation has not materially changed and the permit holder has satisfied all record keeping and reporting requirements.

Rule 11. Target Area Notifications Required: The permit holder must notify the local National Weather Service weather forecast office, Colorado Avalanche Information Center ("CAIC"), the County emergency managers, and the CSU Colorado Climate Center, unless

otherwise requested by the Director prior to each season of weather modification operations. The permit holder must document notification in annual reports.

Rule 12. Yearly Operational Plan Required: The permit holder must submit an annual Operational Plan to the Director. The Operational Plan must include the following information:

- (1) A map depicting the target area and weather modification equipment locations; and
- (2) An unlocked spreadsheet including the latitude and longitudinal directions of each weather modification equipment location; and
- (3) Evidence of compliance with the notifications required by Rule 11; and
- (4) The Operator's current contact information; and
- (5) Declaration of the weather modification operational suspension criteria; and
- (6) Acknowledgement of the Director's suspension criteria to be followed during the year.

Rule 13. Reports: The Director requires the permit holder to maintain and submit the following reports pursuant to section 36-20-117, C.R.S. (2011):

- A. **Daily Log:** The permit holder must maintain a current, daily log shall at the operation office. This log must be made available for inspection by the public. The daily log must include the date, time of each period of operations, rate of dispersion of seeding agent and total amount of seeding agent dispersed. The Director encourages automated logging of operations over manual logging of operations.
- B. **Annual Reports:** The permit holder must compile annual reports in accordance with section 36-20-117(3), C.R.S. (2011). The permit holder must provide the Director with a written annual report that evaluates the weather modification operation within 90 days of concluding its operations season.
- C. **Additional Record-Keeping for Aircraft-Based Operations:** In addition to the above record-keeping requirements, any person conducting a weather modification operation with an operational target area that includes any part of Colorado that employs aircraft must record and maintain the following information:
 - (1) The date; and
 - (2) Time period (in minutes); and
 - (3) Rates of dispersion for seeding agent for each flight; and
 - (4) Total amount of seeding agent dispensed;

- (5) Description of each flight track logged in such a manner as to allow a complete and accurate reconstruction of the run and identified at the beginning and ending of each flight by radial and distance from a standard reference point, ground fixes in statute miles from a nearby town or landmark, or geostationary positioning system (“GPS”) location; and
- (6) Other information required by the Director.

Rule 14. Weather Modification Activities Subject to Applicable Permitting and Regulation:

Permit holders are subject to all applicable local, state, and federal permitting and regulation. Permit holders should be aware that all cloud seeding operations must be reported to the National Oceanic and Atmospheric Administration (Public Law 92-205).

Rule 15. Modification of a Permit and Best Management Practices: The Director may revise a weather modification permit in accordance with section 36-20-115, C.R.S. (2011), including the addition or a revision based on best management practices, operational criteria, or as otherwise necessary to protect the health or property of any person or to protect the environment. The permit holder may request a hearing regarding permit revisions pursuant to section 36-20-112(e), C.R.S. and held in accordance with section 36-20-108(3)(b).

Rule 16. Compliance with American Society of Civil Engineers Standard Practices: The Director may require permit holders to comply with applicable American Society of Civil Engineers Standard Practices documents to design, operate, and evaluate weather modification operations.

Rule 17. Suspension of Weather Modification Operations:

A. Ground-Based Winter Cloud Seeding: The permit holder must suspend ground-based winter cloud seeding operations when the following conditions are in the target area:

- (1) **Snow Water Equivalent Thresholds.** Weather modification operations must be suspended at any time the snowpack water equivalents exceed the following: 175% of average on December 1st, 175% of average on January 1st, 160% of average on February 1st, 150% of average on March 1st and 140% of average on April 1st. The Director or his or her designee will determine where and how snowpack water equivalents are to be measured, including at selected “SNOTEL” sites. The Director or his or her designee may permit weather modification operations to continue in a portion of the operation target area where snowpack water equivalents are below these suspension criteria percentages, if the operation will not impact the area where snowpack water equivalents are above these suspension criteria percentages. These thresholds are designed to keep the seeding effect to within the realm of natural variability of the local climate as measured at each SNOTEL station.
- (2) **Avalanche Hazard Levels.** Weather modification operations may be suspended by the Director due to high avalanche hazard levels, and must be suspended by the permit holder due to extreme avalanche hazard levels for highway corridors, as

determined by the Colorado Avalanche Information Center (CAIC). The CAIC works in coordination with the Department of Transportation and National Weather Service to determine avalanche hazard levels. The permit holder must monitor CAIC avalanche hazard levels, and coordinate with the Director and CAIC to determine whether suspension of operations is warranted by high avalanche hazard levels.

- (3) National Weather Service Forecasts. The permit holder must suspend weather modification operations when the National Weather Service forecasts the following conditions for the target area: a warm winter storm with a snow level above 8,000 feet elevation and rainfall below that elevation that may result in local flooding or potential flood conditions, including a flood or flash flood watch, warning or advisory that is in effect for drainages located on or near the cloud seeding operations area.

B. **Aerial Summer Cloud Seeding:** The permit holder must suspend aerial summer cloud seeding operations when the National Weather Service has issued a flash flood warning, storms are producing a funnel cloud or tornado, or the operational meteorologist observes any condition that warrants temporary suspension of the program. The permit holder must suspend winter aerial cloud seeding operations according to the suspension criteria of Rule 17.A.

C. **Other Weather Modification Operations:** The Director may determine and implement suspension criteria for other types of weather modification operations, as necessary. For example, hail cannon weather modification operations must be confined to a small localized area directly over the target area, and limited to periods of heavy rain and hail tracking directly toward and over the target area.

Rule 18. Suspension of Weather Modification Operations by Emergency Managers: Emergency managers may require the immediate temporary suspension of weather modification operations for any reason.

Rule 19. Weather Modification Evaluations: The Director desires to promote continuous research, development, and evaluation of permitted programs. Permit holders shall submit periodic evaluation proposals to the Project Sponsors. Periodic is defined as at least once during a five-year permit or twice during a ten-year permit. A periodic evaluation should be outside of the normal annual reporting methods. Evaluations that are peer reviewed and published in journals can count as “independent” evaluations. The Director recommends the following list of data and types of studies for use in the evaluation.

A. The following are examples of data for evaluations:

- (1) Standard meteorological data from surface weather stations;
- (2) Radar and other remote sensing data, cloud physics data;
- (3) Streamflow data;
- (4) SNOTEL and snow course data;
- (5) Hail pad data, upper air data;
- (6) Upper air data;

- (7) Precipitation gauge;
- (8) Modeling simulations;
- (9) Trace chemistry data from snow sampling; or
- (10) Ice nucleus data

B. The following are examples of types of evaluations:

- (1) Predictive and/or diagnostic cloud modeling;
- (2) Modeling of transport and diffusion of seeding material;
- (3) Airflow, temperature, and liquid water measurements in the target area;
- (4) Target versus control analysis of precipitation or snow water;
- (5) Trace chemistry analysis in snowpack to assess targeting;
- (6) Precipitation gauges comparisons;
- (7) Aircraft cloud microphysical studies;
- (8) Plume tracking of cloud seeding aerosols or tracers;
- (9) Analysis of precipitation from existing projects that employ a randomized design in their seeding operations; or
- (10) Other evaluations outlined in various published documents related to the conduct of weather modification projects.

Rule 20. Weather Modification Advisory Committee.

A. **Formation of Weather Modification Advisory Committee:** Pursuant to section 36-20-108, C.R.S. (2011) the Director may create a weather modification advisory committee. Members of this committee shall be appointed by the Director, and serve for a period of time as determined by the Director.

B. **Duties of the Weather Modification Advisory Committee:**

- (1) Advise the Director on applications for weather modification permits; and
- (2) Advise and make recommendations concerning legislation, policies, administration, research, and other matters related to cloud seeding and weather modification activities to the Director; and
- (3) Other duties as determined by the Director.

Rule 21. Procedure for granting emergency permits. Notwithstanding the foregoing, the Director may exempt weather modification operations from these requirements, and others, as provided by section 36-20-109, C.R.S. (2011), including for activities of an emergency nature for protection against fire, frost, hail, sleet, smog, fog, or drought. The procedure for issuing an emergency permit is as follows:

A. A permit may be granted on an emergency basis through the waiving of one or more of these rules when evidence is presented that clearly defines the situation as an emergency.

B. Upon presentation of evidence satisfactory to the Director that an emergency condition exists or may reasonably be expected to exist in the very near future that may be alleviated

or overcome by weather modification activities, the Director shall issue a permit for those activities.

- C. Within 10 days after the granting of an emergency permit, and if the permittee desires to continue the permitted weather modification activities, the permittee shall publish a legal notice of intent to modify weather as provided by Rule 7 herein. In addition to the requirements of Rule 7, the permittee shall describe the objectives of the emergency action, the success to date, and the future plans under the permit. The Director will evaluate whether to revoke the emergency permit, modify it, or permit its continued operations as soon as is practical after the public hearing on the weather modification activities.

Rule 22. Severability: If any portion of these Rules is found to be invalid, the remaining portion of the Rules shall remain in force and in effect.

Rule 23. Effective Date: June 30, 2012.

POLICY NUMBER: _____

SUBJECT: WEATHER MODIFICATION FEES COLLECTED

EFFECTIVE DATE: July 1, 2012

POLICY: The Weather modification permit application fee is set at \$300. The commercial fee is 2%.

PURPOSE: The purpose of the Colorado Weather Modification Permit Application Fee is for the CWCB to set a fee that is sufficient to pay the direct costs of reviewing the permit application, holding public hearings and monitoring the Permitting Program. § 36-20-113, C.R.S. (2012). The Executive Director of Natural Resources has continuously delegated the authority to the CWCB Director to administer the Colorado Weather Modification Permitting Program since 1987. The CWCB Director has one staff member dedicated to issuing permits, holding hearings, and monitoring activities for public health and safety. Staff also ensures permit holders are financially responsible, that there is accurate annual reporting, and an adherence to suspension criteria as a condition of continued validity of the permit. The Attorney General's Office also participates in the permitting process.

APPLICABILITY: This Policy is applicable to all applicants seeking a Colorado Weather Modification Permit that will conduct ongoing operations in Colorado.

PROCEDURE: The Procedure for getting a Colorado Weather Modification Permit is described herein. The applicant will submit an application to the CWCB Director with the required \$300 fee to review the application. If the applicant meets the minimum requirements to hold a permit in Colorado outlined in the Colorado Weather Modification Rules and Regulations, then a hearing will be held in or near the intended target area. The Notice of Intent will advertise a public hearing for two weeks prior to conducting the public hearing. The Notice of Intent must be approved by the CWCB and the Attorney General's Office prior to publication. Copies of the application and other hearing materials will be made available to the public prior to or, at a minimum, at the public hearing. The public hearing will be recorded by the CWCB staff. The CWCB staff, in consultation with the Attorney General's Office, will catalog all written and oral materials received from the public hearing process and develop a record of decision. The determination in the record of decision will be to deny, approve, or approve with terms and conditions a weather modification permit and will be submitted to the CWCB Director. The CWCB Director may or may not sign a Colorado Weather Modification Permit. A Colorado Weather Modification Permit cannot be issued by CWCB staff without the Director's signature. Applicants are encouraged to be proactive and allow at least two months from submittal of application for a final decision by the CWCB Director.

Applicants for commercial operations must also pay a Commercial Fee if a Colorado Weather Modification Permit is issued. The amount of this Commercial Fee is 2% of

the yearly contract between the permit holder and the project sponsors. If the permit holder and project sponsors are the same, then the Commercial Fee is 2% of the operations' yearly budget. The Commercial Fee shall be paid at the beginning of each operational season. The Commercial Fee compensated for permitting, regulatory compliance, and environmental monitoring function performed by the Director or his or her designee. The Director may waive the Commercial Fee in extraordinary circumstances.

Approved by the CWCB
May __, 2012 Board Meeting
Agenda Item # 28

To: Division Directors, Deputy Directors, Senior Administrative Staff
Executive Director's Office
DEPARTMENT OF NATURAL RESOURCES

From: Mike King, Executive Director
DEPARTMENT OF NATURAL RESOURCES

Date: July 1, 2012

Subject: Administrative Order DNR 12-___
Weather Modification Act Responsibilities

The Colorado Department of Natural Resources Administrative Order DNR 12-___, regarding the Weather Modification Act Responsibilities, is attached. This administrative order is effective the date signed and shall remain in effect until revised or rescinded.

ADMINISTRATIVE ORDER

NUMBER: DNR 12-__

DATED: July 1, 2012

THE DEPARTMENT OF NATURAL RESOURCES AND ITS DIVISIONS

Weather Modification Act Responsibilities

Pursuant to sections 24-1-107 and 36-20-108(3)(b) C.R.S. (2012), I hereby delegate to the Director of the Colorado Water Conservation Board the responsibilities and authority vested in the Executive Director of the Department of Natural Resources pursuant to section 36-20-101, et seq., C.R.S. (2012).

It is my intention that this delegation of authority and responsibilities is consistent with the continuation of the exercise of those responsibilities and authority by the Director of the Colorado Water Conservation Board since the original designation in 1987.

Effective Date: July 1, 2012

MIKE KING

DATE

Executive Director

Colorado Department of Natural Resources

West's Colorado Revised Statutes Annotated [Currentness](#)

Title 36. Natural Resources--General

☞ Weather Modification

→ [Article 20. Weather Modification \(Refs & Annos\)](#)

→ [§ 36-20-101. Short title](#)

This article shall be known and may be cited as the “Weather Modification Act of 1972”.

→ [§ 36-20-102. Legislative declaration](#)

The general assembly declares that the state of Colorado recognizes that economic benefits can be derived for the people of the state from weather modification. Operations, research, experimentation, and development in the field of weather modification shall therefore be encouraged. In order to minimize possible adverse effects, weather modification activities shall be carried on with proper safeguards, and accurate information concerning such activities shall be made available for purposes of regulation. While recognizing the value of research and development of weather modification techniques by governmental agencies, the general assembly finds and declares that the actual practice of weather modification, whether at public or private expense, is properly a commercial activity which the law should encourage to be carried out, whenever practicable, by private enterprise.

→ [§ 36-20-103. Declaration of rights](#)

The general assembly declares that the state of Colorado claims the right to all moisture suspended in the atmosphere which falls or is artificially induced to fall within its borders. Said moisture is declared to be the property of the people of this state, dedicated to their use pursuant to [sections 5 and 6 of article XVI of the Colorado constitution](#) and as otherwise provided by law. It is further declared that the state of Colorado also claims the prior right to increase or permit the increase of precipitation by artificial means for use in Colorado. The state of Colorado also claims the right to modify weather as it affects the people of the state of Colorado and to permit such modification by activity within Colorado.

→ [§ 36-20-104. Definitions](#)

As used in this article, unless the context otherwise requires:

(1) Repealed by [Laws 1992, H.B.92-1018, § 8, eff. March 19, 1992](#).

(2) “Director” means the executive director of the department of natural resources, as created by article 33 of title 24, C.R.S.

(2.5) “Ground-based winter cloud seeding” means the seeding of clouds between the months of November through May of each year by the use of ground generation equipment.

(3) Deleted by [Laws 1996, S.B.96-90, § 1, eff. July 1, 1996](#).

(4) “Operation” means the performance in Colorado of any activity to attempt to modify or having the effect of modifying natural weather conditions other than usual and customary activities not conducted primarily for weather modification and having only a minor effect on natural weather conditions.

(4.5) “Operator” means any person who conducts a weather modification operation in Colorado.

(5) “Permit” means a certification of project approval to conduct a specific weather modification operation within the state under the conditions and within the limitations required and established under the provisions of this article.

(6) “Person” has the same meaning as that provided in [section 2-4-401\(8\), C.R.S.](#)

(7) “Publication” or “publish” means a minimum of at least two consecutive weekly legal notices in at least one newspaper of general circulation in the county or counties, or portions thereof, included within the proposed operation. It shall not be necessary that notice be made on the same day of the week in each of the two weeks, but not less than one week shall intervene between the first publication and the last publication, and notice shall be complete on the date of the last publication. If there is no such newspaper, notice shall be by posting in at least three public places within the county, or portions thereof, included within a proposed operation. Publication of notices provided for in this article may be made, at the discretion of the director, by notices broadcast over any or all standard radio, FM radio, television stations, and cable television. Such broadcast notices shall make reference to locations or publications wherein details of the subject matter of the notices are located.

(8) “Research and development” means theoretical analysis, exploration, experimentation, and the extension of investigative findings and theories of a scientific or technical nature into practical application for experimentation and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes both in the laboratory and in the atmosphere.

(9) “Research and development operation” or “research and development project” means an operation which is conducted solely to advance scientific and technical knowledge in weather modification. Research and development operations may be conducted by state or federal agencies, state institutions of higher education, and bona fide nonprofit research corporations or by commercial operators under contracts with such entities solely for research purposes.

(10) “Weather modification” means any program, operation, or experiment intended to induce changes in the

composition, behavior, or dynamics of the atmosphere by artificial means.

→ **§ 36-20-105. Administration**

(1) The executive director of the department of natural resources is hereby charged with the administration of this article.

(2) The director shall issue all permits provided for in this article. The director is hereby empowered to issue rules and regulations the director finds necessary to facilitate the implementation of this article, and the director is authorized to execute and administer all other provisions of this article pursuant to the powers and limitations contained in this article.

→ **§ 36-20-106. Repealed by Laws 1992, H.B.92-1018, § 9, eff. March 19, 1992**

→ **§ 36-20-107. Duties of the director--rules--repeal**

(1) The director shall promulgate rules, in accordance with article 4 of title 24, C.R.S., necessary to effectuate the purposes of this article.

(2) Repealed by [Laws 1996, S.B.96-90, § 3, eff. July 1, 1996](#).

(3)(a) No later than June 30, 2012, the director, acting by rule, shall ensure that all rules established pursuant to this article are up to date and consistent with this article.

(b) This subsection (3) is repealed, effective January 1, 2013.

→ **§ 36-20-108. Powers of the director**

(1) The director may issue permits applicable to specific weather modification operations. For each operation, said permit shall describe the specific geographic area authorized to be affected and shall provide a specific time period during which the operation may continue, which period may be discontinuous but for operations other than ground-based winter cloud seeding may not have a total duration exceeding one calendar year from the day of its issuance. A separate permit shall be required for each operation. Permits for ground-based winter cloud seeding shall have a duration of five years. If a permit for a ground-based winter cloud seeding operation is renewed, the second permit shall have a duration of five years and any third or subsequent permit shall have a duration of ten years. The director shall issue only one active permit for activities in any geographic area if two or more projects therein might adversely interfere with each other.

(2) The director shall, by regulation or order, establish standards and instructions to govern the carrying out of

research and development or commercial operations in weather modification that the director considers necessary or desirable to minimize danger to land, health, safety, people, property, or the environment.

(3)(a) The director may make any studies or investigations, obtain any information, and hold any hearings the director considers necessary or proper to assist the director in exercising the director's power or administering or enforcing this article or any regulations or orders issued under this article.

(b) All hearings conducted under this article shall be conducted pursuant to the provisions of this article and article 4 of title 24, C.R.S., and the director or the director's designee shall conduct any hearing required by this article or the director may, by the director's own action, appoint an administrative law judge pursuant to part 10 of article 30 of title 24, C.R.S., subject to appropriations made to the department of personnel, to conduct any hearing required by this article. Any hearing shall be conducted under the provisions and within the limitations of article 4 or title 24, C.R.S., and this article.

(4)(a) The director may, upon approval of the governor, represent the state in matters pertaining to plans, procedures, or negotiations for interstate compacts relating to weather modification, but, before any such compacts may be implemented, the consent of the general assembly must be obtained.

(b) The director may represent the state and assist counties, municipalities, and public agencies in contracting with commercial operators for the performance of weather modification or cloud-seeding operations. Counties, municipalities, and other public agencies of this state are hereby granted the authority to contribute to and participate in weather modification.

(5) In order to assist in expanding the theoretical and practical knowledge of weather modification, the director may participate in and promote continuous research and development in:

(a) The theory and development of weather modification, including processes, materials, ecological effects, and devices related to such matters;

(b) The utilization of weather modification for agricultural, industrial, commercial, municipal, recreational, and other purposes;

(c) The protection of life and property and the environment during research and operational activities.

(6) The director may conduct and may contract for research and development activities relating to the purposes of this article.

(7) The director, subject to limits of the department of natural resources' appropriation, may hire any technical or scientific experts or any staff deemed necessary to carry out the provisions of this article.

(8) Subject to any limitations imposed by law, the department of natural resources, acting through the director, may accept federal grants, private gifts, and donations from any other source. Unless the use of the money is restricted, or subject to any limitations provided by law, the director may:

(a) Spend it for the administration of this article;

(b) By grant, contract, or cooperative arrangement, use the money to encourage research and development by a public or private agency; or

(c) Use the money to contract for weather modification operations.

(9) The director shall prescribe those measurements reasonably necessary to be made prior to and during all operations to determine the probable effects of an operation.

→ **§ 36-20-109. Permit required--exemptions**

(1) No person may engage in activities for weather modification and control without a weather modification permit issued by the director; nor may any person engage in any activities in violation of any term or condition of the permit.

(2) The director, to the extent he considers exemptions practical, may provide by regulation for exempting the following activities from the fee requirements of this article:

(a) Research, development, and experiments conducted by state and federal agencies, state institutions of higher education, and bona fide nonprofit research organizations;

(b) Laboratory research and experiments; and

(c) Activities of an emergency nature for protection against fire, frost, hail, sleet, smog, fog, or drought.

→ **§ 36-20-110. Repealed by Laws 1996, S.B.96-90, § 6, eff. July 1, 1996**

→ **§ 36-20-111. Repealed by Laws 1996, S.B.96-90, § 7, eff. July 1, 1996**

→ **§ 36-20-112. Permit required--when issued**

(1) The director, in accordance with regulations, shall issue a weather modification permit to each applicant who:

(a) Deleted by [Laws 1996, S.B.96-90, § 8, eff. July 1, 1996.](#)

(b) Pays the permit fee, if applicable;

(c) Furnishes proof of financial responsibility adequate to meet obligations reasonably likely to be attached to or result from the proposed weather modification operation. Such proof of financial responsibility may, but at the discretion of the director shall not be required to, be shown by presentation of proof of a prepaid insurance policy with an insurance company licensed to do business in Colorado, which insurance policy shall insure liabilities in an amount set by the director and provide a cancellation clause with a thirty-day notice to the director, or by filing with the director an individual, schedule, blanket, or other corporate surety bond in an amount approved by the director. The director shall not require proof of financial responsibility in excess of the limitations imposed by [section 24-10-114, C.R.S.](#), from any political subdivision of the state authorized to conduct ground-based winter cloud seeding weather modification activities pursuant to this article.

(d) Submits a complete operational plan for each proposed project prepared by the operator in control which includes a specific statement of objectives, a map of the proposed operating area which specifies the primary target area and shows the area reasonably expected to be affected, the name and address of the operator, the nature and object of the intended operation, the person or organization on whose behalf it is to be conducted, and a statement showing any expected effect upon the environment and methods of determining and evaluating the same. This operational plan shall be placed on file with the director and with any other agent as the director may require.

(e) Publishes a notice of intent to modify weather in the counties to be affected by the weather modification program before the operator secures a permit and before beginning operations. The published notice shall designate the primary target area and indicate the general area which might be affected. It shall also indicate the expected duration and intended effect and state that complete details are available on request from the operator or the director or from the other agent specified by the director. The publication shall also specify a time and place, not more than one week following the completion of publication, for a hearing on the proposed project. Proof of publication shall be furnished to the director by the operator.

(f) Receives approval under the criteria set forth in subsection (3) of this section;

(g) Provides the information that is requested by the director regarding the qualifications, education, and experience of the operator.

(2) Before a permit may be issued, the director or his authorized agents shall hold a public hearing on the proposed project. Said hearing shall be held in a place within a reasonable proximity of the area expected to be affected by the proposed operation.

(3) No permit may be issued unless the director determines, based on the information provided in the operational plan and on the testimony provided at the public hearing:

(a) Deleted by [Laws 1996, S.B.96-90, § 8, eff. July 1, 1996.](#)

(b) That the project is reasonably expected to benefit the people in said area or benefit the people of the state of Colorado;

(c) That the project is scientifically and technically feasible;

(d) Deleted by [Laws 1996, S.B.96-90, § 8, eff. July 1, 1996.](#)

(e) That the project does not involve a high degree of risk of substantial harm to land, people, health, safety, property, or the environment;

(f) That the project is designed to include adequate safeguards to prevent substantial damage to land, water rights, people, health, safety, or to the environment;

(g) That the project will not adversely affect another project; and

(h) That the project is designed to minimize risk and maximize scientific gains or economic benefits to the residents of the area or the state.

→ [§ 36-20-113. Permit fee](#)

(1) The fee for each permit or the renewal thereof under [section 36-20-114](#) shall be at least one hundred dollars. If the operation is a commercial project, the director shall set a fee that is sufficient to pay the direct costs of review of the permit application, public hearings regarding the application, and monitoring of permit operations under this article. Said fees are intended to provide at least a portion of the moneys necessary to administer this article. Said fees shall be deposited into the Colorado water conservation board construction fund created in [section 37-60-121, C.R.S.](#) Said fees are hereby continuously appropriated to the department of natural resources, for allocation to the Colorado water conservation board for purposes established by this section.

(2) Deleted by [Laws 2006, c. 210, § 16, eff. July 1, 2006.](#)

→ [§ 36-20-114. Limits of permit](#)

(1) Except for ground-based winter cloud seeding, a separate permit is required annually for each operation. If an operation is to be conducted under contract, a permit is required for each separate contract. Subject to the provisions of subsection (2) of this section, a permit may be granted for more than one year's duration. A permit for ground-based winter cloud seeding shall be issued for a period of five years. If a permit for a ground-based winter cloud seeding operation is renewed, the second permit shall have a duration of five years and any

third or subsequent permit shall have a duration of ten years.

(2) The director may conditionally approve a project other than ground-based winter cloud seeding for a continuous time period in excess of one year's duration. Permits for such operations must be renewed annually. In approving the renewal of a permit for a continuous program, the director may waive the procedures for initial issuance of a permit in [section 36-20-112](#) and, upon review and approval of the project's operational record, the director may issue a renewed permit for the operation to continue. In such instances, the fees imposed pursuant to [section 36-20-113](#) may be prorated and paid on an annual basis.

(3) A project permit may be granted by the director without prior publication of notice by the operator in cases of fire, frost, hail, sleet, smog, fog, drought, or other emergency. In such cases, publication of notice shall be performed as soon as possible and shall not be subject to the time limits specified in this article or in article 4 of title 24, C.R.S.

→ [§ 36-20-115. Modification of permit](#)

(1) The director may revise the terms and conditions of a permit if:

(a) The operator is first given notice and a reasonable opportunity for a hearing on the need for a revision; and

(b) It appears to the director that a revision is necessary to protect the health or property of any person or to protect the environment.

(2) If it appears to the director that an emergency situation exists or is impending which could endanger life, property, or the environment, the director may, without prior notice or a hearing, immediately modify the conditions of a permit or order temporary suspension of the permit on the director's own order. The issuance of such order shall include notice of a hearing to be held within ten days thereafter on the question of permanently modifying the conditions or continuing the suspension of the permit. Failure to comply with an order temporarily suspending an operation or modifying the conditions of a permit shall be grounds for immediate revocation of the permit.

(3) It shall be the responsibility of the operator conducting any operation to notify the director of any emergency which can reasonably be foreseen or of any existing emergency situations in subsection (2) of this section which might in any way be caused or affected by the weather modification operation. Failure by the operator to so notify the director of any such existing emergency, or any impending emergency which should have been foreseen, may be grounds, at the discretion of the director, for revocation of the permit for operation.

→ [§ 36-20-116. Scope of activity](#)

Once a permit is issued, the operator shall confine his or her activities within the limits of time and area spe-

cified in the permit, except to the extent that the limits are modified by the director. The operator shall also comply with any terms and conditions of the permit as originally issued or as subsequently modified by the director.

→ **§ 36-20-117. Reports of operator**

(1) The director may promulgate rules requiring any operator who has been issued a weather modification permit to file certain reports regarding operations conducted under the permit.

(2) Deleted by [Laws 1996, S.B.96-90, § 13, eff. July 1, 1996](#).

(3) All reports filed under the provisions of this section are declared to be public records subject to the provisions and limitations of part 2 of article 72 of title 24, C.R.S.

→ **§ 36-20-118. Operations affecting weather in other states**

Weather control operations may not be carried on in Colorado for the purpose of affecting weather in any other state if that state prohibits such operations to be carried on in that state for the benefit of Colorado or its inhabitants.

→ **§ 36-20-119. Suspension--revocation--refusal to renew**

(1) The director may suspend or revoke a permit if it appears that the operator no longer has the qualifications necessary for the issuance of an original permit or has violated any provision of this article.

(2) The director may refuse to issue another permit to any applicant who has failed to comply with any provision of this article.

→ **§ 36-20-120. Repealed by Laws 1996, S.B.96-90, § 15, eff. July 1, 1996**

→ **§ 36-20-121. Hearing required**

(1) Except as provided in [section 36-20-115](#), the director may not suspend or revoke a permit without first giving the operator notice and a reasonable opportunity to be heard with respect to the grounds for the director's proposed action.

(2) Said hearing shall be conducted by an administrative law judge.

→ **§ 36-20-122. Governmental immunity**

The state and its agencies, counties, and municipalities, all other public entities (as defined in [section 24-10-103\(5\), C.R.S.](#)) within the state, and the officers and employees thereof are immune from liability resulting from any weather modification operations approved or conducted by them under the provisions and limitations of this article. Nothing in this section shall be construed as providing any broader waiver of immunity than is provided by article 10 of title 24, C.R.S.

→ **§ 36-20-123. Legal recourse--liability--damages**

(1) The mere dissemination of materials and substances into the atmosphere pursuant to an authorized project shall not give rise to the contention or concept that such use of the atmosphere constitutes trespass or involves an actionable or enjoined public or private nuisance.

(2)(a) Failure to obtain a permit before conducting an operation, or any actions which knowingly constitute a violation of the conditions of a permit, shall constitute negligence per se.

(b) The director may order any person who is found to be conducting a weather modification operation without a permit to cease and desist from said operation. Any person who fails to obey said order commits a class 6 felony and shall be punished as provided in [section 18-1.3-401, C.R.S.](#)

→ **§ 36-20-124. Permit as defense in actions**

The fact that a person was issued a permit under this article, or that the person has complied with the requirements established by the director pursuant to this article, is not admissible as a defense in actions for damages or injunctive relief brought against the person.

→ **§ 36-20-125. Judicial review**

Judicial review of any action of the director may be had in accordance with the provisions of [section 24-4-106, C.R.S.](#)

→ **§ 36-20-126. Penalties**

(1)(a) Any person responsible for conducting a weather modification operation without first having procured the required permit and any person who contracts with or pays another person known to be without a permit to conduct a weather modification operation commits a class 6 felony and shall be punished as provided in [section 18-1.3-401, C.R.S.](#)

(b) Any person operating an aircraft conducting a weather modification operation, which operation has not re-

ceived the required permit, shall have this violation reported to the United States department of transportation, federal aviation administration, by the director.

(2) Any person who makes a false statement in the application for a permit, who fails to file any report as required by this article, or who violates any other provisions of this article, except as otherwise provided in [section 36-20-123 and subsection \(1\)](#) of this section, is guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not more than five thousand dollars, or by imprisonment in the county jail for not more than six months, or by both such fine and imprisonment. Each such violation shall be a separate offense.

➔ **[§ 36-20-127. Repeal of article](#)**

This article is repealed, effective September 1, 2018. Prior to such repeal, the function of the issuance of permits for specific weather modifications operations through the director shall be reviewed as provided for in [section 24-34-104, C.R.S.](#)

END OF DOCUMENT

**First Regular Session
Sixty-eighth General Assembly
STATE OF COLORADO**

REENGROSSED

*This Version Includes All Amendments
Adopted in the House of Introduction*

LLS NO. 11-0114.01 Kate Meyer

SENATE BILL 11-090

SENATE SPONSORSHIP

Schwartz, Giron, Guzman

HOUSE SPONSORSHIP

Baumgardner,

Senate Committees

Agriculture and Natural Resources
Appropriations

House Committees

A BILL FOR AN ACT

101 **CONCERNING THE CONTINUATION OF THE ISSUANCE OF PERMITS FOR**
102 **WEATHER MODIFICATION OPERATIONS, AND, IN CONNECTION**
103 **THEREWITH, IMPLEMENTING A SUNSET REVIEW**
104 **RECOMMENDATION OF THE DEPARTMENT OF REGULATORY**
105 **AGENCIES AND CONTINUING INDEFINITELY THE "WEATHER**
106 **MODIFICATION ACT OF 1972".**

Bill Summary

(Note: This summary applies to this bill as introduced and does not reflect any amendments that may be subsequently adopted. If this bill passes third reading in the house of introduction, a bill summary that applies to the reengrossed version of this bill will be available at <http://www.leg.state.co.us/billsummaries.>)

Shading denotes HOUSE amendment. Double underlining denotes SENATE amendment.
*Capital letters indicate new material to be added to existing statute.
Dashes through the words indicate deletions from existing statute.*

SENATE
3rd Reading Unamended
March 14, 2011

SENATE
Amended 2nd Reading
March 11, 2011

Sunset Process - Senate Agriculture and Natural Resources Committee. The bill implements the recommendations made by the department of regulatory agencies (DORA) in DORA's 2010 sunset review of the "Weather Modification Act of 1972". **Sections 1, 2, and 3** of the bill extend weather modification permitting by the executive director of the department of natural resources (executive director) until September 1, 2020. **Section 4** requires the executive director to adopt rules by June 30, 2012.

1 *Be it enacted by the General Assembly of the State of Colorado:*

2 **SECTION 1. Repeal.** 24-34-104 (42) (a), Colorado Revised
3 Statutes, is repealed as follows:

4 **24-34-104. General assembly review of regulatory agencies**
5 **and functions for termination, continuation, or reestablishment.**

6 (42) The following agencies, functions, or both, shall terminate on July
7 1, 2011:

8 (a) ~~The issuance of permits for specific weather modification~~
9 ~~operations through the executive director of the department of natural~~
10 ~~resources in accordance with article 20 of title 36, C.R.S.;~~

11 ==

12 **SECTION 2. Repeal.** 36-20-127, Colorado Revised Statutes, is
13 repealed as follows:

14 **36-20-127. Repeal of article.** This article is repealed, effective
15 July 1, 2011. Prior to such repeal, the function of the issuance of permits
16 for specific weather modifications operations through the director shall
17 be reviewed as provided for in section 24-34-104, C.R.S.

18 ==

19 **SECTION 3.** 36-20-107 (1), Colorado Revised Statutes, is
20 amended, and the said 36-20-107 is further amended BY THE
21 ADDITION OF A NEW SUBSECTION, to read:

1 **36-20-107. Duties of the director - rules - repeal.** (1) The
2 director shall ~~establish~~ PROMULGATE rules, ~~and regulations,~~ in accordance
3 with article 4 of title 24, C.R.S., necessary to effectuate the purposes of
4 this article.

5 (3) (a) NO LATER THAN JUNE 30, 2012, THE DIRECTOR, ACTING BY
6 RULE, SHALL ENSURE THAT ALL RULES ESTABLISHED PURSUANT TO THIS
7 ARTICLE ARE UP TO DATE AND CONSISTENT WITH THIS ARTICLE.

8 (b) THIS SUBSECTION (3) IS REPEALED, EFFECTIVE JANUARY 1,
9 2013.

10 **SECTION 4. Safety clause.** The general assembly hereby finds,
11 determines, and declares that this act is necessary for the immediate
12 preservation of the public peace, health, and safety.

COLORADO WEATHER MODIFICATION RULES AND REGULATIONS

August 1, 1986

These rules and regulations are issued pursuant to the State Administrative Procedures Act, C.R.S. 24-4-101 et seq. and 36-20-101 et seq. Section 36-20-107 empowers the Executive Director of the Department of Natural Resources (in consultation with a ten-member advisory committee) to issue rules and regulations required to implement the Weather Modification Act. The rules include the information needed by persons applying for licenses and permits. Applicants may also wish to read the Act.

A. General Information

A license is granted for expertise in a specified form of weather modification technology (e.g., snow augmentation, hail suppression). A permit is required for each weather modification project and projects must be directed by persons who hold a current Colorado weather modification license.

B. Application for License

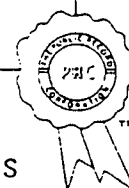
- (1) Use Application for License (Form WM1) to apply for a license. Form WM1 should be submitted at least 45 days before the beginning date of proposed project use.
- (2) Licensees must meet at least one of the following requirements:
 - a. Eight years professional experience in weather modification field research or operations with at least three years as project director.
 - b. Baccalaureate degree in engineering, mathematics or physical sciences and three years experience in weather modification field research or operations.
 - c. Baccalaureate degree in meteorology or baccalaureate degree in engineering (which includes, or is in addition to, twenty-five semester hours of meteorology) and two years experience in weather modification operations or research.
 - d. Certification as manager by the Weather Modification Association.
- (3) A license fee of \$100 is required of all applicants including persons employed by commercial firms, government and non-profit agencies.



- (4) A license expires at the end of the calendar year in which it is issued.

C. Application for Permit

- (1) Use Form WM2 to apply for a weather modification permit. Submit Form WM2 at least 45 days before the beginning date of a proposed project. Information requested includes:
 - a. A description of the objectives of the proposed project.
 - b. A written description and map identifying the target area and the area reasonably expected to be affected by the project.
 - c. A description of how the project will be carried out including location of office, weather data used, aircraft types, seeding devices and material, seeding rates, etc.
 - d. How the proposed project is designed to provide and offers promise of providing economic benefit to the target area (applicable to commercial projects only).
 - e. How the proposed project is reasonably expected to benefit both persons living in the target area and the people of Colorado.
 - f. How the proposed project is scientifically and technically feasible (applicable to commercial projects only).
 - g. How the proposed project is designed for and offers promise of expanding the knowledge and technology of weather modification (applicable to research projects only).
 - h. The risk that the proposed project could cause substantial harm to land, water, people, health, safety, property and the environment and the safeguards proposed for use by the operator to prevent substantial harm.
 - i. How other weather modification projects (if any) could be affected adversely by the proposed project.
 - j. The significant ecological impacts which may result from the project such as how precipitation patterns might be changed and how increased runoff would affect erosion.
 - k. Provide evidence of a liability policy of at least \$1 million to show financial responsibility. Provide proof that the insuring company is authorized to do business in Colorado.



(2) Legal Notice of Intent

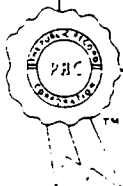
Licensees applying for a permit shall publish a legal notice of intent to modify weather in the official newspapers of those Colorado counties which lie wholly or partly within the target area of the proposed project and in those counties which are reasonably expected to be affected by the project. Official newspapers are those newspapers designated by County Commissions for publication of legal notices. The target area is defined as the area in which the operator desires to produce effects. Counties which may reasonably be expected to be affected by the project include, at a minimum, those counties that are adjacent to the county (or counties) containing the target area. Consult Form WM4 for suggested wording for the legal notice.

a. The legal notice shall:

1. be published in at least one newspaper of general circulation in the counties included within this proposed operation; publication constituting a minimum of at least two consecutive weekly legal notices with not less than one week intervening between the first publication and the last publication. Notice shall be complete on the date of the last publication.
2. state the purpose, intended effects, dates and sponsor(s) of the proposed project.
3. designate the target area by referring to townships and ranges and by referring to lines drawn between prominent points. Counties contained therein should be named.
4. state that a copy of the licensee's application for permit is available on request from the licensee, the Executive Director, or other persons or agencies specified by the Executive Director.
5. state the time and place for the public hearing, as scheduled by the Department of Natural Resources. The hearing shall not be held more than one week following completion of publication of the notice of intent.

b. If the County Commissioners have not designated a newspaper for publishing legal notices, the required notice shall be posted in at least three public places in the county. Posting shall be not more than fourteen days nor less than seven days before the public hearing.

c. Affidavits provided by newspaper publishers, radio or television station managers, or sheriffs are sufficient proof of publication.



(3) Evaluating Permit Applications

Information provided on Form WM2 will be used by the Executive Director to decide (based on the criteria in C.R.S. § 36-20-112) if a permit should be granted.

(4) Granting of Permits

Permits shall be granted for a maximum of one year. Exceptions may be made for projects scheduled to last up to 18 months. Permits may be renewed during the five years following the date of issue providing conditions under which the permit was issued have not changed substantially.

C. Reports

- (1) A current, daily log (which includes the information required by Form WM3) shall be kept by the permittee at the project office and made available for inspection by the public in a manner that does not interfere with the project.
- (2) Form WM3 shall be submitted biweekly to the Executive Director not later than ten days after the end of the reporting period.
- (3) Annual reports shall be made in accordance with C.R.S. § 36-20-117(3). A written final report which evaluates the project shall be submitted to the Executive Director and to county commission offices (in those counties in which publication of a legal notice of intent is required) within 30 days of completion of the project.





Office of Policy, Research and Regulatory Reform

2010 Sunset Review: Weather Modification Act of 1972

October 15, 2010





Executive Director's Office

Barbara J. Kelley
Executive Director

Bill Ritter, Jr.
Governor

October 15, 2010

Members of the Colorado General Assembly
c/o the Office of Legislative Legal Services
State Capitol Building
Denver, Colorado 80203

Dear Members of the General Assembly:

The mission of the Department of Regulatory Agencies (DORA) is consumer protection. As a part of the Executive Director's Office within DORA, the Office of Policy, Research and Regulatory Reform seeks to fulfill its statutorily mandated responsibility to conduct sunset reviews with a focus on protecting the health, safety and welfare of all Coloradans.

DORA has completed the evaluation of the Weather Modification Act of 1972. I am pleased to submit this written report, which will be the basis for my office's oral testimony before the 2011 legislative committee of reference. The report is submitted pursuant to section 24-34-104(8)(a), of the Colorado Revised Statutes (C.R.S.), which states in part:

The department of regulatory agencies shall conduct an analysis of the performance of each division, board or agency or each function scheduled for termination under this section...

The department of regulatory agencies shall submit a report and supporting materials to the office of legislative legal services no later than October 15 of the year preceding the date established for termination....

The report discusses the question of whether there is a need for the regulation provided under Article 20 of Title 36, C.R.S. The report also discusses the effectiveness of the Executive Director of the Colorado Department of Natural Resources in carrying out the intent of the statutes and makes recommendations for statutory changes in the event this regulatory program is continued by the General Assembly.

Sincerely,

Barbara J. Kelley
Executive Director





Bill Ritter, Jr.
Governor

Barbara J. Kelley
Executive Director

2010 Sunset Review: Weather Modification Act of 1972

Summary

What Is Regulated?

Weather modification is considered to be any program, operation, or experiment intended to induce changes in the composition, behavior, or dynamics of the atmosphere by artificial means. Examples of current weather modification operations in Colorado include hail cannons and wintertime cloud seeding.

Why Is It Regulated?

Colorado claims, in the name of the people of the state, the right to all moisture suspended in the atmosphere which falls or is artificially induced to fall within its borders.

Who Is Regulated?

Between fiscal years 04-05 and 09-10, the Director of the Colorado Water Conservation Board (Director and CWCB, respectively) issued nine weather modification permits: eight for wintertime cloud seeding and one for a hail cannon.

How Is It Regulated?

To obtain a permit, an operator must, among other things, pay the required fee; provide information regarding the qualifications of the operator; publish notice of the intent to modify the weather; provide evidence of liability insurance and submit a complete operational plan. A public hearing is held on each permit applied for.

Permits for wintertime cloud seeding are valid for an initial five-year period, with one five-year renewal option. After this, such permits may be renewed for 10-year periods.

Permits for hail cannons are valid for one year periods, although the notice and hearing requirement is followed every five years.

What Does It Cost?

The application fee is \$100. A commercial fee of two percent of the value of the contract between the project sponsor(s) and the operator is also assessed.

What Disciplinary Activity Is There?

There have been no disciplinary actions. However, between fiscal years 04-05 and 09-10, there were 15 suspensions of weather modification operations due to high avalanche risk or high snowpack levels.

Where Do I Get the Full Report?

The full sunset review can be found on the internet at: www.dora.state.co.us/opr/oprpublications.htm.

Key Recommendations

Continue the Weather Modification Act of 1972 for nine years, until 2020.

The efficacy of weather modification is far from a settled question. It is this uncertainty that justifies continued State involvement in and oversight of weather modification operations. Water is a precious commodity in Colorado and one in which the State of Colorado has a direct interest. As such, continued State involvement in this area is justified.

Require the Executive Director to promulgate new rules no later than January 1, 2012.

The rules pertaining to weather modification have not been revised in 24 years. In that time, things have changed. For example, prior to 1996, weather modification operators themselves were licensed. While this is no longer the case, according to statute, the rules still contain provisions pertaining to operator licensing. These rules create confusion, because they conflict with the statute, and they exceed the Director's statutory authority. The rules should be revised.

Major Contacts Made During This Review

California Department of Water Resources
City of Durango
Colorado Attorney General's Office
Colorado Avalanche Information Center
Colorado Department of Public Health and
Environment, Air Pollution Control Division
Colorado Department of Natural Resources
Colorado Environmental Coalition
Colorado Press Association
Colorado Springs Utilities
Colorado State University
Denver Water
Desert Research Institute
Dolores Water Conservancy District
Durango Mountain Resort
Gunnison County

Metro Water District of Southern California
New Mexico Interstate Stream Commission
National Center for Atmospheric Research
North American Weather Consultants
Pagosa Area Water and Sanitation District
Pine River Irrigation District
Sierra Club – Rocky Mountain Chapter
Southern Colorado Farms
Southwestern Water Conservation District
U.S. Department of Agriculture, Natural
Resources Conservation Service
Utah Division of Water Resources
Western Weather Consultants
Wyoming Water Development Office
Vail Resorts

What is a Sunset Review?

A sunset review is a periodic assessment of state boards, programs, and functions to determine whether or not they should be continued by the legislature. Sunset reviews focus on creating the least restrictive form of regulation consistent with protecting the public. In formulating recommendations, sunset reviews consider the public's right to consistent, high quality professional or occupational services and the ability of businesses to exist and thrive in a competitive market, free from unnecessary regulation.

Sunset Reviews are Prepared by:
Colorado Department of Regulatory Agencies
Office of Policy, Research and Regulatory Reform
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Background

Introduction

Enacted in 1976, Colorado's sunset law was the first of its kind in the United States. A sunset provision repeals all or part of a law after a specific date, unless the legislature affirmatively acts to extend it. During the sunset review process, the Department of Regulatory Agencies (DORA) conducts a thorough evaluation of such programs based upon specific statutory criteria¹ and solicits diverse input from a broad spectrum of stakeholders including consumers, government agencies, public advocacy groups, and professional associations.

Sunset reviews are based on the following statutory criteria:

- Whether regulation by the agency is necessary to protect the public health, safety and welfare; whether the conditions which led to the initial regulation have changed; and whether other conditions have arisen which would warrant more, less or the same degree of regulation;
- If regulation is necessary, whether the existing statutes and regulations establish the least restrictive form of regulation consistent with the public interest, considering other available regulatory mechanisms and whether agency rules enhance the public interest and are within the scope of legislative intent;
- Whether the agency operates in the public interest and whether its operation is impeded or enhanced by existing statutes, rules, procedures and practices and any other circumstances, including budgetary, resource and personnel matters;
- Whether an analysis of agency operations indicates that the agency performs its statutory duties efficiently and effectively;
- Whether the composition of the agency's board or commission adequately represents the public interest and whether the agency encourages public participation in its decisions rather than participation only by the people it regulates;
- The economic impact of regulation and, if national economic information is not available, whether the agency stimulates or restricts competition;
- Whether complaint, investigation and disciplinary procedures adequately protect the public and whether final dispositions of complaints are in the public interest or self-serving to the profession;
- Whether the scope of practice of the regulated occupation contributes to the optimum utilization of personnel and whether entry requirements encourage affirmative action;
- Whether administrative and statutory changes are necessary to improve agency operations to enhance the public interest.

¹ Criteria may be found at § 24-34-104, C.R.S.

Types of Regulation

Consistent, flexible, and fair regulatory oversight assures consumers, professionals and businesses an equitable playing field. All Coloradans share a long-term, common interest in a fair marketplace where consumers are protected. Regulation, if done appropriately, should protect consumers. If consumers are not better protected and competition is hindered, then regulation may not be the answer.

As regulatory programs relate to individual professionals, such programs typically entail the establishment of minimum standards for initial entry and continued participation in a given profession or occupation. This serves to protect the public from incompetent practitioners. Similarly, such programs provide a vehicle for limiting or removing from practice those practitioners deemed to have harmed the public.

From a practitioner perspective, regulation can lead to increased prestige and higher income. Accordingly, regulatory programs are often championed by those who will be the subject of regulation.

On the other hand, by erecting barriers to entry into a given profession or occupation, even when justified, regulation can serve to restrict the supply of practitioners. This not only limits consumer choice, but can also lead to an increase in the cost of services.

There are also several levels of regulation.

Licensure

Licensure is the most restrictive form of regulation, yet it provides the greatest level of public protection. Licensing programs typically involve the completion of a prescribed educational program (usually college level or higher) and the passage of an examination that is designed to measure a minimal level of competency. These types of programs usually entail title protection – only those individuals who are properly licensed may use a particular title(s) – and practice exclusivity – only those individuals who are properly licensed may engage in the particular practice. While these requirements can be viewed as barriers to entry, they also afford the highest level of consumer protection in that they ensure that only those who are deemed competent may practice and the public is alerted to those who may practice by the title(s) used.

Certification

Certification programs offer a level of consumer protection similar to licensing programs, but the barriers to entry are generally lower. The required educational program may be more vocational in nature, but the required examination should still measure a minimal level of competency. Additionally, certification programs typically involve a non-governmental entity that establishes the training requirements and owns and administers the examination. State certification is made conditional upon the individual practitioner obtaining and maintaining the relevant private credential. These types of programs also usually entail title protection and practice exclusivity.

While the aforementioned requirements can still be viewed as barriers to entry, they afford a level of consumer protection that is lower than a licensing program. They ensure that only those who are deemed competent may practice and the public is alerted to those who may practice by the title(s) used.

Registration

Registration programs can serve to protect the public with minimal barriers to entry. A typical registration program involves an individual satisfying certain prescribed requirements – typically non-practice related items, such as insurance or the use of a disclosure form – and the state, in turn, placing that individual on the pertinent registry. These types of programs can entail title protection and practice exclusivity. Since the barriers to entry in registration programs are relatively low, registration programs are generally best suited to those professions and occupations where the risk of public harm is relatively low, but nevertheless present. In short, registration programs serve to notify the state of which individuals are engaging in the relevant practice and to notify the public of those who may practice by the title(s) used.

Title Protection

Finally, title protection programs represent one of the lowest levels of regulation. Only those who satisfy certain prescribed requirements may use the relevant prescribed title(s). Practitioners need not register or otherwise notify the state that they are engaging in the relevant practice, and practice exclusivity does not attach. In other words, anyone may engage in the particular practice, but only those who satisfy the prescribed requirements may use the enumerated title(s). This serves to indirectly ensure a minimal level of competency – depending upon the prescribed preconditions for use of the protected title(s) – and the public is alerted to the qualifications of those who may use the particular title(s).

Licensing, certification and registration programs also typically involve some kind of mechanism for removing individuals from practice when such individuals engage in enumerated proscribed activities. This is generally not the case with title protection programs.

Regulation of Businesses

Regulatory programs involving businesses are typically in place to enhance public safety, as with a salon or pharmacy. These programs also help to ensure financial solvency and reliability of continued service for consumers, such as with a public utility, a bank or an insurance company.

Activities can involve auditing of certain capital, bookkeeping and other recordkeeping requirements, such as filing quarterly financial statements with the regulator. Other programs may require onsite examinations of financial records, safety features or service records.

Although these programs are intended to enhance public protection and reliability of service for consumers, costs of compliance are a factor. These administrative costs, if too burdensome, may be passed on to consumers.

Sunset Process

Regulatory programs scheduled for sunset review receive a comprehensive analysis. The review includes a thorough dialogue with agency officials, representatives of the regulated profession and other stakeholders. Anyone can submit input on any upcoming sunrise or sunset review via DORA's website at: www.dora.state.co.us/pls/real/OPR_Review_Comments.Main.

The regulatory functions of the Executive Director of the Department of Natural Resources (Executive Director and DNR, respectively) as enumerated in Article 20 of Title 36, Colorado Revised Statutes (C.R.S.), shall terminate on July 1, 2011, unless continued by the General Assembly. During the year prior to this date, it is the duty of DORA to conduct an analysis and evaluation of the administration of the weather modification permitting program by the Executive Director pursuant to section 24-34-104, C.R.S.

The purpose of this review is to determine whether the currently prescribed regulation of weather modification operations should be continued for the protection of the public and to evaluate the performance of the Executive Director. During this review, the Executive Director must demonstrate that the regulation serves to protect the public health, safety or welfare, and that the regulation is the least restrictive regulation consistent with protecting the public. DORA's findings and recommendations are submitted via this report to the legislative committee of reference of the Colorado General Assembly.

Methodology

As part of this review, DORA staff attended a meeting of the DNR's Colorado Water Conservation Board (CWCB); interviewed DNR staff, representatives of project sponsors, operators, and environmental organizations; reviewed DNR records, Colorado statutes, DNR rules, and the laws of other states; and performed a literature review.

Weather Modification

Water is an important commodity in Colorado, and indeed, in the entire Western U.S. Eighty percent of Colorado's surface water comes from snowpack runoff.² Snowpack, and its resulting runoff, are vital to consumers, agriculture and the wintertime sports industry.

As Colorado's population continues to grow, so, too, does the stress on the state's water supplies. As a result, water managers are constantly exploring new ways to increase the supply of water, whether through storage or increased precipitation.

Weather modification, put simply, refers to that area of endeavor that attempts to increase precipitation over a particular area (also referred to as a target area) or to alter the form in which that precipitation falls to the ground (i.e., rain, snow or hail).

Although there are a variety of techniques utilized in weather modification efforts, only two are utilized in Colorado: ground-based wintertime cloud seeding and hail cannons.

To understand how these techniques attempt to alter the weather, it is first necessary to explore the general nature of how precipitation forms naturally.

In very general terms, as moist air rises, the water vapor in the air condenses to form a cloud of tiny water droplets of supercooled liquid water (SLW). The SLW coalesces around nuclei, such as dust particles or other substances, until they become so heavy that they drop out of the cloud as precipitation. To form precipitation, then, a sufficient supply of both SLW and nuclei must be present in the cloud. If either is missing or there is an insufficient supply of either, there may be no precipitation.

Obviously, weather systems are much more complex than this description indicates. However, this general description is suitable for providing a rudimentary understanding of weather modification as it occurs in Colorado.

Given the proper conditions, when the SLW coalesces around the nuclei, it freezes to form snow. Theoretically, then, the greater the number of nuclei present, the greater the snowfall.

To enhance this process, ground-based wintertime cloud seeding operations attempt to increase the nuclei, or seeds, in the cloud. Most operations in Colorado consist of placing a propane-fired generator that burns silver iodide at high elevation. When a suitable storm approaches, the generator is activated and silver iodide is released into the atmosphere. This silver iodide then acts as the nuclei for snow formation.

² Colorado Climate Center, *Drought Resources: Q&A About Drought*. Retrieved on September 16, 2010, from <http://climate.colostate.edu/droughtqanda.php>

In a typical scenario, a water district or a water utility, or a consortium of such, may determine that it desires to increase precipitation in the area that supplies its water so as to increase water supplies. These program sponsors secure the services of a cloud seeding operator, which, in turn, conducts the necessary studies to determine the target area and the ideal sites for the seed generators. The operator will also obtain the necessary permits.

The operator contracts with those who own the land upon which the operator seeks to place the generators. Such a contract may also provide that the land owner will turn the generator “on” and “off” when the operator so requests. Alternatively, some generators can be turned “on” and “off” using cellular telephone technology.

The second type of weather modification technique utilized in Colorado, the hail cannon, requires another brief lesson in meteorology. Hail forms when the water droplets that form around the nuclei are carried by winds higher aloft into the cloud, where the air is cooler. Rather than forming crystals, as in the case of snow, the droplets freeze and begin to fall. As they fall through the cloud, they accrete more water before they are, once again, carried higher aloft by winds. As this process repeats, the hail stones grow increasingly larger and heavier until, at last, the hail stone is too heavy for the wind to carry it higher aloft and, instead, it falls out as hail.

The theory behind the hail cannon, then, is to disrupt hail formation so that the precipitation falls out as rain, rather than hail, or not at all. Its use in Colorado is currently limited to a single farm in the San Luis Valley. This technique is used in an attempt to prevent hail damage to sensitive agricultural crops.

The hail cannon itself basically consists of a 20-foot long barrel that is aimed skyward. The cannon mixes acetylene and air, and when ignited with a spark from a spark plug, sends an acoustical wave into a cloud to disrupt hail formation. Since this acoustical wave essentially pulverizes the hail stones, the timing of cannon activation must be such that hail formation is disrupted while the hail stones in the cloud are still relatively small.

Legal Framework

History of Regulation

In 1951, the General Assembly enacted the Weather Control Act (WCA), and in doing so, claimed the right to all moisture suspended in the atmosphere that fell into or became part of the natural streams of Colorado. The WCA also proclaimed the State's right to increase precipitation by artificial means, so long as doing so did not cause material damage to others.

The WCA created a five-member, Governor-appointed commission and required anyone conducting weather control or weather modification operations to obtain a license from the Commissioner of Agriculture.

Applicants for licensure had to demonstrate that they possessed the skill and experience reasonably necessary to accomplish weather control without damage to property or people, and financial responsibility. The license fee was set at \$100.

In 1963, administration of the WCA was transferred from the Commissioner of Agriculture to the Executive Director of the Department of Natural Resources (Executive Director and DNR, respectively).

By 1971, the number of weather modification projects in Colorado had increased substantially, leading many to worry that the WCA was inadequate. As a result, the General Assembly enacted the Weather Modification Act of 1972 (Act) with the passage of House Bill 72-1019, which, among other things:

- Created a 10-member technical advisory committee;
- Required each weather modification operation to be individually permitted;
- Required publication of proposed weather modification operations; and
- Required public hearings to be held before permits are issued.

House Bill 79-1127 increased the criminal penalty for operating without a permit from a misdemeanor to a felony. It further required the Executive Director to report to the Federal Aviation Administration anyone operating a weather modification operation from an airplane without a permit.

In 1987, the Executive Director delegated the authority to administer the Act to the Director of the DNR's Colorado Water Conservation Board (Director and CWCB, respectively).

The General Assembly repealed the technical advisory committee in 1992, and in 1995 the Act underwent its first sunset review.

Senate Bill 96-90 implemented sunset recommendations that repealed the licensing requirements for individuals involved in weather modification operations, and repealed specific reporting requirements and authorized the Executive Director to establish them by rule.

Weather Modification Act of 1972

Colorado claims, in the name of the people of the State, the right to all moisture suspended in the atmosphere which falls or is artificially induced to fall within its borders.³

Weather modification is considered to be any program, operation, or experiment intended to induce changes in the composition, behavior, or dynamics of the atmosphere by artificial means.⁴

In passing the Act, the General Assembly recognized the economic benefits to be derived from weather modification and determined that operations, research, experimentation and development in the field of weather modification should be encouraged, provided proper safeguards are in place in order to minimize possible adverse effects.⁵

The Executive Director is charged with administering the Act⁶ and is authorized to, among other things:

- Issue permits to weather modification operations;⁷
- Establish standards and instructions to govern research and development or commercial operations in order to minimize danger to land, health, safety, people, property or the environment;⁸
- Make studies or investigations, obtain information and hold any hearings necessary to assist the Executive Director in the administration of the Act;⁹
- Represent the State in matters pertaining to plans, procedures or negotiations for interstate compacts relating to weather modification, recognizing that the consent of the General Assembly and approval of the Governor is needed prior to implementation of any such compact;¹⁰
- Participate in and promote continuous research and development in the theory, development and utilization of weather modification;¹¹
- Conduct and contract for research and development activities relating to weather modification; and¹²
- Accept federal grants, private gifts and donations from any source.¹³

³ § 36-20-103, C.R.S.

⁴ § 36-20-104(10), C.R.S.

⁵ § 36-20-102, C.R.S.

⁶ § 36-20-105(1), C.R.S.

⁷ § 36-20-108(1), C.R.S.

⁸ § 36-20-108(2), C.R.S.

⁹ § 36-20-108(3)(a), C.R.S.

¹⁰ § 26-20-108(4)(a), C.R.S.

¹¹ § 36-20-108(5), C.R.S.

¹² § 36-20-108(6), C.R.S.

Each weather modification operation must have its own permit that describes the specific geographic area authorized to be affected and the specific time period during which the operation will be conducted. A permit for a ground-based operation that does not involve cloud seeding is valid for one year. A permit for a ground-based operation that conducts cloud seeding is valid for five years during the initial and first renewal periods, and for 10 years for subsequent renewals.¹⁴ The Executive Director may refuse to renew a permit if the applicant has failed to comply with any provision of the Act.¹⁵

To initiate the permitting process, an applicant must:¹⁶

- Pay the required fee;
- Provide information regarding the qualifications, education and experience of the operator;
- Publish, in the counties to be affected, a notice of intent to modify weather, along with a description of the primary target area and the time and place of the hearing regarding the proposed operation;
- Provide evidence of liability insurance of at least \$1 million to meet any obligations reasonably likely to be attached to or result from the proposed weather modification operation; and
- Submit a complete operational plan that includes:
 - Statement of objectives;
 - Map of the proposed operating area that specifies the primary target area and shows the area reasonably expected to be affected;
 - A description of how the project will be carried out, including location of offices, weather data used, aircraft types, seeding devices and materials, seeding rates, etc.;
 - Name and address of the operator;
 - Nature and object of the intended operation;
 - Person or organization on whose behalf the operation is to be conducted (i.e., the operation's sponsor); and
 - Statement showing any expected effect on the environment.

¹³ § 36-20-108(8), C.R.S.

¹⁴ §§ 36-20-108(1) and 36-20-114(1), C.R.S.

¹⁵ § 36-20-119(2), C.R.S.

¹⁶ § 36-20-112(1), C.R.S., and Rule (C)(1)(c).

The permit fee must be at least \$100 and must be sufficient to cover the direct costs of reviewing the permit application, the public hearings regarding the application, and monitoring of permit operations.¹⁷ The Executive Director may exempt from the permit fee requirement, those operations that involve:¹⁸

- Research, development and experiments by state and federal agencies, state institutions of higher education, and bona fide nonprofit research organizations;
- Laboratory research and experiments; and
- Activities of an emergency nature for protection against fire, frost, hail, sleet, smog or drought.

Prior to issuing a permit, the Executive Director must determine that the project:¹⁹

- Is reasonably expected to benefit the people in the area or of the state;
- Is scientifically and technically feasible;
- Does not involve a high degree of risk of substantial harm to land, people, health, safety, property, or the environment;
- Is designed to include adequate safeguards to prevent substantial damage to land, water rights, people, health, safety or the environment;
- Will not adversely affect another project; and
- Is designed to minimize risk and maximize scientific gains or economic benefits to the residents of the area or the state.

A permit holder must maintain, for each day a weather modification activity is undertaken, a log that records:²⁰

- Date;
- Starting and ending time of the activity;
- Primary target area;
- Generator number or other location identifier;
- Wind direction;
- Seeding material used, including the dispersal rate and total amount used; and
- Total number of hours the activity lasted.

This log must be made available for inspection by the Executive Director or the public. Additionally, the permit holder must submit biweekly and annual reports to the Executive Director.²¹

¹⁷ § 36-20-113, C.R.S.

¹⁸ § 36-20-109(2), C.R.S.

¹⁹ § 36-20-112(3), C.R.S.

²⁰ Rule (C) and Form WM3.

²¹ Rule (C).

Once issued, a permit may be modified by the Executive Director if it appears necessary to protect the health or property of any person or to protect the environment, and the operator is given notice and reasonable opportunity for a hearing.²² However, if an emergency situation exists or is pending that could endanger life, property or the environment, the Executive Director may suspend or modify a permit, provided a hearing is held no more than 10 days after such an action.²³

The Executive Director may suspend or revoke a permit if it appears that the operator no longer has the qualifications necessary for the issuance of an original permit.²⁴ A hearing to revoke or suspend a permit must be held before an administrative law judge.²⁵

Any person who operates a weather modification program without a permit, or who knowingly violates the conditions of a permit commits negligence *per se*.²⁶ The Executive Director may order such person to cease and desist.²⁷

A person commits a Class 6 felony, which is punishable by between 12 and 18 months' imprisonment, a fine of between \$1,000 and \$100,000, or both,²⁸ if he or she:

- Conducts a weather modification operation without a permit;²⁹
- Pays another person known to be without a permit to conduct a weather modification operation;³⁰ or
- Fails to comply with the Executive Director's order to cease and desist from operating without a permit.³¹

Finally, the Executive Director must report to the Federal Aviation Administration any person who conducts a weather modification operation from an airplane without a permit to do so.³²

²² § 36-20-115(1), C.R.S.

²³ § 36-20-115(2), C.R.S.

²⁴ § 36-20-119(1), C.R.S.

²⁵ § 36-20-121(2), C.R.S.

²⁶ § 36-20-123(2)(a), C.R.S.

²⁷ § 36-20-123(2)(b), C.R.S.

²⁸ §§ 18-1.3-401(1)(a)(III)(A) and (1)(a)(V)(A), C.R.S.

²⁹ § 36-20-126(1)(a), C.R.S.

³⁰ § 36-20-126(1)(a), C.R.S.

³¹ § 36-20-123(2)(b), C.R.S.

³² § 36-20-126(1)(b), C.R.S.

Program Description and Administration

Although the Executive Director of the Department of Natural Resources (Executive Director and DNR, respectively) is statutorily charged with administering the Weather Modification Act of 1972 (Act), this authority has been delegated to the Director of the DNR's Colorado Water Conservation Board (Director and CWCB, respectively).

The Director, in turn, employs 1.0 full-time equivalent employee to oversee the day-to-day operations associated with the Act. This employee is responsible for issuing, denying, suspending and revoking weather modification permits, and for monitoring conditions to determine whether weather modification operations should be suspended.

Permitting

All weather modification operators in Colorado must obtain a permit from the Director.

The process typically begins with the project sponsor selecting an operator. In practice, the operator generally assumes responsibility for obtaining the permit.

The operator submits an application to the Director to begin the process. The application must outline the locations where equipment is to be sited, as well as all target areas. Additionally, the application must provide information as to the identity of the project sponsors, the value of the contract between the sponsor(s) and the operator, and the operator's qualifications. Finally, the operator must submit evidence of having liability insurance.

The Director, along with the Attorney General's Office (AGO), drafts a Notice of Intent to be published in the newspapers of the counties in which the target areas are located, as well as in the newspapers of all counties that touch the target area counties. The operator ensures that these publications take place.

The Director then holds public hearings on the permit. Following this, a Record of Decision is drafted and the permit is issued.

Permits for ground-based cloud seeding operations are issued for five years. They may be renewed for an additional five-year period. All renewals after that may be 10-year periods. Between fiscal years 04-05 and 09-10, there have been eight active permits:

- Central Rockies Cloud Seeding Program sponsored by Denver Water.
- Eastern San Juan Mountains Cloud Seeding Program sponsored by City of Durango, Florida Water Conservancy District, Pagosa Water and Sanitation District, Pine River Irrigation District and Southwestern Water Conservation District.
- Grand Mesa Cloud Seeding Program sponsored by Water Enhancement Authority.³³
- Gunnison County Cloud Seeding Program sponsored by Gunnison County and Upper Gunnison River Water Conservancy District.
- Telluride Ski Area Cloud Seeding Program sponsored by Dolores Water Conservancy District, Southwestern Water Conservation District and Telluride Ski and Golf Company.
- Upper Roaring Fork River Cloud Seeding Program sponsored by Colorado Springs Utilities.
- Vail/Beaver Creek Cloud Seeding Program sponsored by Vail & Associates.
- Western San Juan Mountains Cloud Seeding Program sponsored by Animas La Plata Water Conservancy District, Dolores Water Conservancy District, Durango Mountain Resort and Southwestern Water Conservation District.

Permits for ground-based non-cloud seeding operations, such as hail cannons, are valid for one year, although the notice and hearing requirement is followed every five years. Only one permit for hail cannon operations has been granted -- in the San Luis Valley.

The Director charges two fees associated with weather modification permits: an application fee and a commercial fee. Both fees are used to cover the direct costs of reviewing permit applications, public hearings held on the permit applications, and monitoring permitted weather modification operations. The application fee is \$100.

The commercial fee is calculated as two percent of the value of the contract between the project sponsor(s) and the operator, or, if the sponsor and the operator are one and the same, as is the case with the hail cannon permit, the fee is based on the costs of running the actual weather modification program.

³³ Water Enhancement Authority comprises City of Grand Junction, Collbran Water Conservancy District, Crawford Water Conservancy District, Fruitland Mesa Water Conservancy District, Grand Mesa Water Conservancy District, Kannah Creek Water User Association and Overland Ditch and Reservoir Company.

Table 1 illustrates, for fiscal years 04-05 through 09-10, the amount of revenue generated by the commercial fees.

Table 1
Revenues Realized from Commercial Fees

Fiscal Year	Revenue from Commercial Fees
04-05	\$19,032
05-06	\$9,452
06-07	\$9,899
07-08	\$11,233
08-09	\$11,024
09-10	\$10,499
Total	\$71,139

The high level of fees collected in fiscal year 04-05 can be attributed to the fact that one operator paid two years' worth of fees at one time.

Subsequent fluctuations occur because the fees are based on the value of the contract between the operator and project sponsor, and may be driven by the number of days seeding occurs.

Suspensions

One of the more crucial aspects of the permitting program administered by the Director is the ability to suspend cloud seeding operations. Although the suspension criteria are outlined in each permit, as opposed to a rule or statute, the criteria are consistent from one permit to another.

An operator must suspend cloud seeding operations when:

- The National Weather Service forecasts a storm that is expected to produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the project area (Avalanche Suspension);
- The Colorado Avalanche Center issues an avalanche forecast warning for avalanche areas located in the target area (Avalanche Warning Suspension);
- The Director or the project sponsors order suspension of seeding for any reason; or
- The snow water equivalent of the snowpack in the target area measures at or above (Snowpack Suspension):
 - 175 percent of historical average on December 1;
 - 175 percent of historical average on January 1;
 - 160 percent of historical average on February 1;
 - 150 percent of historical average on March 1; or
 - 140 percent of historical average on April 1.

Although the Director is authorized to “order” the suspension of seeding operations, in practice, such suspensions are more collaborative in nature. For example, when one of the conditions above is present, staff of the CWCB contacts the operator, typically by phone, and both parties agree that operations will be suspended. CWCB staff reports that no operator has refused an informal request to suspend operations.

Table 2 illustrates, for fiscal years 04-05 through 09-10, the number of suspensions put into effect.

Table 2
Suspended Cloud Seeding Operations, by Fiscal Year

Type of Suspension	04-05	05-06	06-07	07-08	08-09	09-10	Total
Avalanche	3	0	1	5	1	0	10
Avalanche Warning	2	0	0	0	0	0	2
Snowpack	0	0	0	3	0	0	3
Total	5	0	1	8	1	0	15

As these data demonstrate, cloud seeding has not been suspended often, but the suspension criteria have been utilized an average of 2.5 times each year.

Analysis and Recommendations

Recommendation 1 – Continue the Weather Modification Act of 1972 for nine years, until 2020.

The first sunset criterion asks whether regulation is necessary to protect the public health, safety or welfare. With respect to weather modification, it is reasonable to question the efficacy of weather modification operations. If such operations are effective, then perhaps regulation is necessary. If such operations are not effective, regulation may not be necessary.

Recall that the two types of weather modification operations conducted in Colorado are ground-based, wintertime cloud seeding and hail cannons.

If cloud seeding works, then it is reasonable to expect snowfall, and thus, snowpack to increase. This can create dangerous conditions in terms of hazardous driving conditions and increased risk of avalanches and springtime floods.

Similarly, if hail cannons work and disrupt the mechanics of a particular storm system, the damage caused by the hail may be less extensive than would have otherwise occurred. However, the disrupted mechanics of the storm may also disrupt or redistribute rainfall.

In both instances, the risk of public harm is clear, and would seem to warrant regulation.

However, if cloud seeding does not work, and snowfall is not impacted by seeding operations, is there any harm that would justify regulation? Recall that cloud seeding generators release silver iodide into the atmosphere. At first blush, this would appear to be grounds to regulate: a foreign substance is released into the air, and that substance must fall to the ground at some point.

However, some research does not support this conclusion: “Accumulations [of silver] in the soil, vegetation, and surface runoff have not been large enough to measure above natural background.”³⁴

Indeed,

The toxicity of silver and silver compounds (from silver iodide) was shown to be of low order . . . the small amounts of silver used in cloud seeding are 100 times less than industry emissions into the atmosphere in many parts of the country or individual exposure from tooth fillings.³⁵

³⁴ Steven Hunter, *Optimizing Cloud Seeding for Water and Energy in California*, prepared for California Energy Commission, March 2007, p. 17.

³⁵ Steven Hunter, *Optimizing Cloud Seeding for Water and Energy in California*, prepared for California Energy Commission, March 2007, p. 16.

Based on this evidence, then, it is reasonable to conclude that if cloud seeding does not work, then regulation is not necessary because the risk of harm to the public is remarkably low.

Similarly, if a hail cannon does not work, the public harm is, at worst, the nuisance presented by the sound of the cannon being fired. Again, it is reasonable to conclude that regulation is not necessary.

Unfortunately, the efficacy of weather modification, in all of its many forms, is far from a settled question, and is likely to remain so for the foreseeable future. The problem rests with the weather itself. No two storms are identical, follow the same track or impact the same areas. As a result, it is difficult, if not impossible, to run a control to determine what happens when weather modification occurs and when it does not.

As such, the regulation afforded by the Weather Modification Act of 1972 (Act) is sufficient. The Act requires operations to be permitted so that operations can be halted when snowpack reaches certain thresholds, requires operators to maintain records of when they operate, and, at least with respect to cloud seeding operations, to record how much silver is used. These are reasonable requirements and do not represent an overly burdensome process.

On the other hand, California has a robust cloud seeding industry and no state regulation. According to officials there, the lack of regulation has had no negative impacts primarily because most cloud seeding operations are sponsored by public entities, such as water districts (as is the case, for the most part, in Colorado).

Thus, the California experience tends to argue in favor of sunseting the Act – no known negative outcomes have resulted from the lack of regulation.

However, the very uncertainty of the efficacy of weather modification justifies continued State involvement. Water is a precious commodity in Colorado and one in which the State of Colorado has a direct interest. As such, continued State involvement in this area, via the Act, is justified.

For all these reasons, the General Assembly should continue the Act for nine years, until 2020.

Recommendation 2 – Require the Executive Director to promulgate new rules no later than January 1, 2012.

Section 36-20-107, Colorado Revised Statutes, requires the Executive Director to promulgate rules “necessary to effectuate the purposes of” the Act. This has not been done since 1986.

The Colorado Weather Modification Rules and Regulations (Rules) address pertinent provisions relating to the permitting process, notification requirement, and required reports.

However, the Rules also address the licensing requirements for operators.³⁶ The statutory authority to issue such licenses was repealed in 1996, following the last sunset review of the Act.

Additionally, the rules require permit holders to have \$1 million in insurance to meet any obligations reasonably likely to be attached to or result from the weather modification operations. Given that this standard was put in place 24 years ago, it is reasonable to question its continued adequacy.

The simple fact that the Rules have not been revised in 24 years is not, in and of itself, problematic. If nothing had changed in those 24 years, there would be no problem. However, a lot has changed, and the Rules currently exceed the Executive Director’s statutory authority.

Worse, perhaps, the rules are confusing. The Executive Director does not issue licenses to operators, yet the Rules create the perception that such a license is required.

Ordinarily, this type of issue would result in an administrative recommendation to the agency. However, the 1995 sunset report of the Act contained an administrative recommendation that recommended that the rules be updated since, at the time, they had not been updated since 1986. That recommendation was not followed, and the rules have become only more obsolete. Therefore, the General Assembly should require the Executive Director to promulgate new rules no later than January 1, 2012.

³⁶ Rule B.

CWCB Weather Modification Amended Rules
Rulemaking Schedule (Timeline)

March 30, 2012: File Notice of Rulemaking and proposed amended Rules with the Secretary of State and Dept. of Regulatory Agencies.

April 10, 2012: Notice of Rulemaking published in Colorado Register.

May 15-16, 2012 (date TBD): Board holds rulemaking hearing in conjunction with May Board meeting.

May 31, 2012: File Rules with the Secretary of State and Dept. of Regulatory Agencies.

June 11, 2012: Rules published in Colorado Register.

June 30, 2012: Rules effective.

THEORY OF THE EARTH

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NOTICE OF PUBLIC RULEMAKING HEARING BEFORE
THE COLORADO WATER CONSERVATION BOARD BY THE DEPARTMENT OF
NATURAL RESOURCES

Colorado Weather Modification Rules and Regulations
Colo. Code Regs. § 401-1 (2011)

SUBJECT

This is a notice of a public rulemaking hearing before the Colorado Water Conservation Board ("CWCB") for promulgation by the Executive Director of the Department of Natural Resources ("Executive Director") of adoption of rules and regulations, titled "Colorado Weather Modification Rules and Regulations" ("the Rules"). Senate Bill 11-090 requires that the Director of Natural Resources update the Rules by July 1, 2012. This requirement is codified by statute at section 36-20-107(3)(a), C.R.S. (2011). The attached Rules are intended to supersede and replace the 1986 Colorado Weather Modification Rules and Regulations codified in the Code of Colorado Regulations at 2 Colo. Code Regs. § 401-1 (2011). The updated Rules are summarized below, and for the convenience of interested persons, are attached to this notice as Exhibit 1. A hard copy is available upon request to the CWCB staff, located at 1313 Sherman Street, Room 721, Denver, CO 80203; (303) 866-3441, as well as from the CWCB website at www.cwcb.state.co.us. The Executive Director, in consultation with the CWCB, may change the updated Rules as set forth in Exhibit 1 at the rulemaking hearing. The Executive Director, in consultation with the CWCB, will consider any alternative proposals related to the proposed Rules that fall within the scope of the Notice.

HEARING SCHEDULE

Prehearing Conference

Interested persons can attend the Prehearing Conference in person or by phone.

Date: April 27, 2012

Time 10:00 am

Place: 1580 Logan Street, Office Level 2, conference room
Denver, Colorado 80203

Prehearing Conference Call Information:

Call-in number: 1-877-820-7831, participant passcode: 961987#

Rulemaking Hearing

Date: May 16, 2012

Time 3:00 pm

Place: Hotel Glenwood Springs
52000 Two Rivers Plaza Road
Glenwood Springs, Colorado 81601.

PUBLIC PARTICIPATION

All public comments on the proposed Rules should be made in writing. Verbal presentation of the information contained in the written comments will not be necessary; however, the Executive Director will allow brief verbal summaries of written comments to be made, to the extent time allows, as described below. Although the Executive Director strongly encourages all interested persons to submit their comments in writing, a short period of time at the end of the rulemaking hearing (a total of 30 minutes or less) will be reserved for General Public Comments by those persons who do not provide written comments.

Written Comment Deadline

Twenty double-sided copies of all public written comments must be delivered to the CWCB office at 1313 Sherman Street, Room #721, Denver, CO 80203 by the close of business (5:00 pm) on April 20, 2012 and send by email to steve.wolff@state.co.us. The CWCB will accept and consider late written comments and day-of hearing written comments, but any person who fails to deliver written comments by the April 20, 2012 deadline will not be entitled to make a Scheduled Oral Presentation, as described below.

Oral Presentations

The opportunity for two types of oral presentations will be available to the public. The first, referred to as Scheduled Oral Presentation, will be an assignment of up to 15 minutes of time on the agenda. (NOTE: Time will be allocated depending upon the number of people seeking a Scheduled Oral Presentation.) The second, referred to as a General Public Comment, will be allotted three minutes or less (determined by the available time and number of speakers) and scheduled on a "first come, first serve" basis.

Scheduled Oral Presentations are available for persons who deliver their written comments to the CWCB on or before April 20, 2012. Anyone who submits written comments by April 20, 2012 but cannot attend the Prehearing Conference may make a written request for a Scheduled Oral Presentation at the rulemaking hearing on or before April 20, 2012, but will have to accept whatever time slot is available after those attending the prehearing conference have been assigned a time slot.

Rebuttal Statements Deadline

Any rebuttal statement must be submitted to the CWCB in the same manner as written comments (described above), and to all persons who provided written comments, by May 3, 2012, at 5:00 pm. Rebuttal statements are constrained to address topics raised in the written comments.

PROPOSED AGENDA OF RULEMAKING HEARING

3:00 pm	Rulemaking procedures explained
3:15	Staff presentation
3:35	Scheduled oral presentations
4:05	Break
4:15	General public comment
4:30	Staff Response to questions during oral presentations and public comment
4:45	Deliberation by Executive Director and Board Discussion
5:00	Hearing adjourns

NOTE: THIS AGENDA MAY BE MODIFIED AT THE PREHEARING CONFERENCE DEPENDING UPON THE NUMBER OF SPEAKERS.

Availability of Administrative Record

The Administrative Record, including public written comments and all other written materials to be considered by the Executive Director, in consultation with the CWCB, in this rulemaking will be available for inspection at the CWCB office during normal business hours (8:00 am – 5:00 pm) and available on the CWCB website at www.cwcb.state.co.us. Copies are available upon request from the CWCB for a fee of 25 cents per page, plus postage (if the copies are to be mailed).

HEARING PROCEDURE

The rules of evidence or civil procedure will not apply to the rulemaking hearing. No member of the public or CWCB staff shall have the right to cross examine any person speaking at the hearing. Executive Director or CWCB members may ask questions of any person appearing before them. At the end of all public comment, the Executive Director, in consultation with the CWCB, may allow members of the public to submit questions to the Executive Director or CWCB to ask, in his or her discretion.

The Executive Director or the chair of the CWCB may stop any Scheduled Oral Presentation or General Public Comment if the person speaking has exceeded his/her allotted time. No exhibits, maps, demonstrative exhibits or physical evidence may be presented in the oral summary unless such material was attached to the participant's written comments. Once materials are submitted to the CWCB, the material becomes part of the Administrative Record and the property of the CWCB, and will not be returned to the person offering the material.

Subject to section 24-4-103, C.R.S. (2011), the Executive Director, in consultation with the CWCB, may modify the proposed revised Rules prior to promulgating final revised Rules.

DESCRIPTION OF THE SUBJECT AND ISSUES INVOLVED

The Rules provide the technical standards and a process for obtaining, operating and maintaining a weather modification permit in Colorado. The purpose of the Rules is as follows:

To provide regulation of and standards for weather modification in Colorado in accordance with the legislative declaration provided by the Weather Modification Act of 1972 ("Act"), section 36-20-101, C.R.S. (2011), and pursuant to the legislative direction provided by section 36-20-107(3)(a), C.R.S. (2011). Rules for regulation of weather modification operations are of statewide concern to the State of Colorado and the Department of Natural Resources. The State of Colorado, through the Colorado General Assembly, recognizes the economic benefits that can be derived for the people of Colorado from weather modification, while minimizing possible adverse effects through implementation of proper safeguards and collection of accurate information.

Prior to the rulemaking hearing, CWCB staff and counsel reviewed several other states' weather modification rules and interviewed regulators in those states to understand their regulatory practices. The CWCB staff and counsel convened a sixteen-member advisory committee of weather and climate experts, permit holders, project sponsors, and fiscal managers of programs to provide their experience with weather modification regulatory programs.

The primary changes between the 1986 Rules and the proposed are as follows:

Senate Bill 1996-90 repealed annual licensing of qualified operators and gives permits to qualified operators. As part of the current rulemaking, the proposed Rules broaden the qualifications to include other degrees and training and experience that could be counted in addition to the traditional meteorology degree.

At the request of project sponsors of ongoing weather modification operations, and due to the five-year and ten-year duration of winter ground based permits, the proposed Rules include a process for issuing a new permit in the same target area if sponsors elect to not contract with their original permit holder.

The proposed Rules now require periodic evaluation proposals be submitted to the project sponsors by the permit holders of weather modification operations, a variety of established data collection and evaluation techniques are provided.

The Colorado General Assembly authorized the Director to issue permits applicable to weather modification operations pursuant to the Act, section 36-20-108(1), C.R.S.

(2011). This direction is intended to ensure that weather modification operations implement proper safeguards and provide accurate information on operations.

A COPY OF THE PROPOSED RULES IS ATTACHED AS EXHIBIT 1.

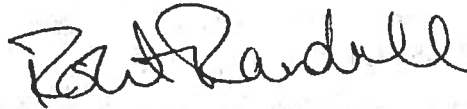
EFFECTIVE DATE

The Rules shall become effective 20 days after publication of the final rules in the Colorado Register.

SPECIFIC STATUTORY AUTHORITY

The statutory authority for the adoption of the Rules is found in 36-20-107, C.R.S. (2011). The CWCB has administered the weather modification permitting program since 1987 pursuant to an Executive Director's Office administrative order. At a regularly scheduled CWCB Board meeting on January 20, 2012, the CWCB staff requested approval for a process to assist the Executive Director by providing a rulemaking hearing at the May 15-16, 2012 CWCB board meeting and also requested Deputy Attorney General Casey Shpall as the hearing officer. The motion was approved unanimously. The Executive Director has agreed to utilize the CWCB Board meeting process for the rulemaking hearing, although the responsibility and authority to promulgate new rules resides with the Executive Director.

Dated this 30th day of March, 2012.



Robert W. Randall, Deputy Director

for

Mike King, Executive Director
Department of Natural Resources

Colorado Weather Modification Rules and Regulations

Statement of Basis and Purpose – March 30, 2012

Proposed Basis and Purpose for Colorado Weather Modification Rules and Regulations:

1. The General Assembly required the Executive Director of the Department of Natural Resources (“Executive Director”) to promulgate new rules to ensure that the Colorado Weather Modification Rules and Regulations (“Rules”) are up to date and consistent with Senate Bill 11-090, , the Weather Modification Act of 1972 (the “Act”), section 36-20-107(1), C.R.S. (2011)) by June 30, 2012.
2. The General Assembly gave the Executive Director the responsibility to ensure weather modification operations are carried out with proper safeguards to minimize danger to land, health, safety, people, property, or the environment, recognizing that economic benefits are derived for Colorado from weather modification. § 36-20-102 & 108(2), C.R.S., (2011). The General Assembly also authorized the Executive Director to issue weather modifications permits pursuant to section 36-20-108(1).
3. These Rules are promulgated to carry out the authority and responsibilities of the Executive Director to govern the research and development or commercial operations in weather modification Director considers necessary or desirable to minimize danger to land, health, safety, people, property, or the environment. § 36-20-108(2), C.R.S., (2011).
4. In 1987, the Executive Director delegated authority to administer the Act to the Director of the Colorado Water Conservation Board (“CWCB”). §§ 24-1-107, 36-20-108(3)(b), C.R.S. (2011).
5. The purpose of the Rules is to provide regulation of and standards for weather modification in Colorado in accordance with the legislative declaration provided by the Act and ensure that the Rules are up to date and consistent with the Act. The proposed Rules replace the current Rules in their entirety.
6. The Rules better define and update the qualifications, education, and experience necessary to obtain a permit to conduct commercial weather modification operations. § 36-20-112(g), C.R.S. (2011).
7. The Rules allow the Executive Director to modify, suspend or revoke a permit, give the operator an opportunity for a hearing, and to issue a second permit in a target area if it does not conflict with a existing permit because it has become inactive. § 36-20-109(1), C.R.S. (2011).
8. The Rules define the commercial fee as 2% of the yearly contract between the permit holder and the operation sponsors, or if the permit holder and operation sponsor are the same, then 2% of the weather modification operation’s annual

budget. This commercial fee is separate from the permit application fee, and assists the state in operating a permit compliance, environmental monitoring and evaluation program. §36-20-112(b), C.R.S. (2011).

9. The Rules update the requirements for publication of legal notices and public hearings. These updates are in accordance with the Act, but reflect the trend over time away from official newspaper of records in each county. § 36-20-104(7), C.R.S. (2011).
10. The Rules require weather modification operators to notify the National Weather Service, Colorado Avalanche Information Center, County Emergency Managers, and the Colorado Climate Center prior to each season's operations. Any emergency manager may temporarily suspend weather modification operations. The Rules also provide criteria for temporarily suspending operations due to avalanche hazards and for other weather-related emergencies. These provisions are necessary in order to allow weather modifications to be restricted during weather emergencies, and are consistent with the Act, which requires the Executive Director to immediately modify a weather modification permit due to emergencies. § 36-20-115(2), C.R.S. (2011).
11. The Rules include additional reporting requirements for aircraft operations. § 36-20-126(1)(b), C.R.S. (2011).
12. The Rules require permit holders to comply with American Society of Civil Engineer's Standard Practices documents to design, operate, and evaluation weather modification operations. § 36-20-108 (5)(c), C.R.S. (2011).
13. The Rules provide that weather modification permit holders submit periodic evaluation proposals, outside of the normal annual reporting requirements to the project sponsors and State of Colorado. The data and evaluation types listed in Rules are established standards and practices, and are intended to refine and develop weather modification programs. §§ 36-20-104(8) & (9), C.R.S. (2011).
14. The Rules were developed in consultation with a sixteen-member advisory committee of weather modification and climate experts, permit holders, project sponsors, and fiscal managers of programs to provide their experience with weather modification regulatory programs.

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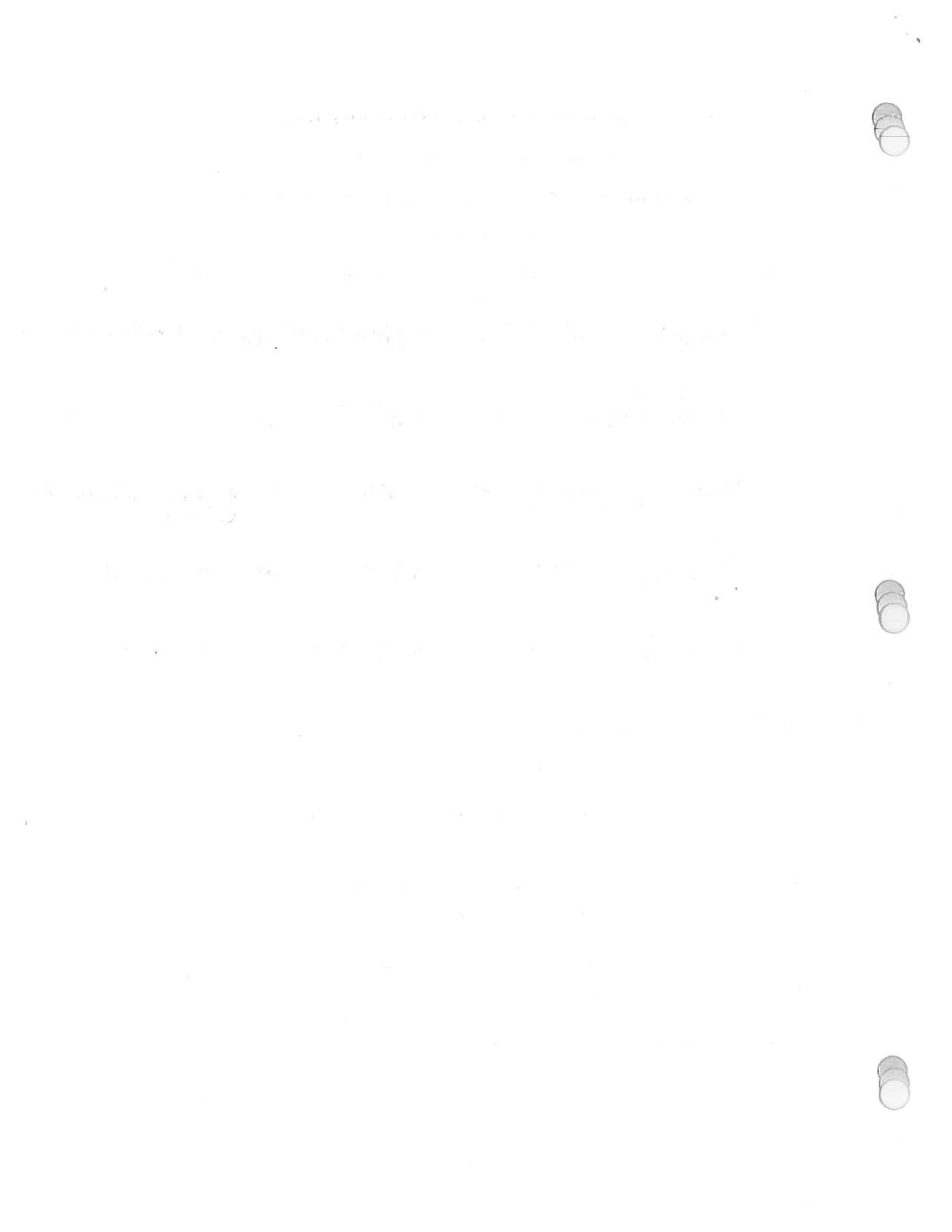
Colorado Weather Modification Rules and Regulations

Prehearing Conference – 10:00 AM April 27th, 2012

1580 Logan Street 2nd Floor conference Room, Denver, CO 80203

Sign In Sheet

	Name	Agency	Phone	Email
1.	Casey Shpall	AGO	3/866-5069	Casey.Shpall@state.co.us
2.	Will Stenzel	ABO	3/866-3505	william.stenzel@state.co.us
3.	Susan Schneider		3/866-5046	susan.schneider @state.co.us
4.	Joe Busto	CWCB	866-3441	joe.busto@state.co.us
5.	Kevin Hovick	CWCB	3/866-3441	kevin.hovick@state.co.us
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April 10, 2012

RE: Cloudseeding-Weather Modification

To who it may concern.

I have lived on the front range for over fifty years. I remember our winter snows and the wall of clouds that used to come over the divide. And I remember our first year of wildfires. And last week, we lost another 4000 acres, 27 homes, and three people to another wildfire. I listened to the four firefighter units trapped in the fire and dispatch tell them to stay in their trucks and let the fire roll over them. Winter of 2010, the ski areas reported a 500% above normal snowpack, while we received 6 total inches 40 miles away.

Last year I requested sound programs with stronger evaluations showing effective scientific evaluations proving that cloudseeding was not impacting areas downwind from the areas involved in cloudseeding. I know that there is equipment available to measure the effects of cloud seeding downwind and that there are knowledgeable scientist without a special interest that can provide these evaluations. And that the taxpayers should not have to bear the financial burden to provide these evaluations, if the benefits of the cloudseeding program are to provide additional water for special interest organizations. They need to pay for this research. But this evaluation is essential or the cloudseeding programs need to be abandon.

Our water right statues were originally developed for the benefit of agricultural water. And that this water was to be returned to the river and aquifer systems. Now I read that this water is being purchased by water districts and sold to drilling companies for fracking wells, to never be returned to our river and aquifer systems. Where are the statues that allow this?

Our cattle count is down 10 million cows since the 1980's. And our farmers growing crops were recently outbid by the energy/water districts for purchasing additional water. And said that with this purchase it will improve the economy. When there are no cattle or crops to sell, how does that improve the economy. And the farms and ranches are foreclosed. I remember looking from the top of Kenosha Pass, there were haystacks as far as you could see on the valley floor. This was the best hay in the nation. I used to buy that hay. Now there is not one haystack in South Park. I do not want to eat beef from Brazil and my vegetables from Mexico and the rest made in China.

Every six weeks, I drive south on Highway 285. As you come into the Salida area, there was a beautiful ranch with black angus and an abundance of beautiful green grass. Last year, the cattle were gone and the fields are brown and nobody is home.

I can't imagine what Colorado is thinking. There were no wildfires prior to the cloudseeding program. My well is now producing 40 gallons a day. The diseased trees are everywhere. We used to have beautiful mountains, now we have hundreds of thousands of acres of ash and burned homes. Is this the trade off so that our water districts can now sell their water to fracking companies?

I asked for this equipment and evaluations last year about this time and it was denied. I am not sure who is representing who. And I have little time for organizing demonstrations, educating my neighbors, getting petitions signed, meeting with agricultural groups, neighborhoods impacted by the existing fracking and mountain neighbors impacted by the fires. But that is the next step, the public needs to know why their families were killed in the fires. We need snow cover on the ground in the winter, not in reservoirs in the mountains to be transferred via tunnels to the metro areas.

Thank you for your time and please let me know how we can proceed.

Diane H. MacMillan

PO Box 2169

Evergreen, Colorado

303.674.4000

diane@dunlookin.com