

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 Protection & Flood Mitigation Section
Susan Schneider and William Stenzel, AGO

DATE: January 23, 2012

SUBJECT: **Agenda Item 12, January 23-24, 2012 Board Meeting**
WM Rules and Regulations

John Hickenlooper
Governor

Mike King
DNR Executive Director

Jennifer L. Gimbel
CWCB Director

Introduction

The State of Colorado has had a weather modification ("WM") permitting program since 1972. The Executive Director ("the Director") of the Department of Natural Resources has authority to administer the program and promulgate rules. In 2010, the Department of Regulatory Agencies ("DORA") conducted a thorough review of the WM permitting program and provided a report to the legislature recommending reenactment of State's authority for the WM permitting program. Based upon the DORA report, the legislature passed Senate Bill 11-90, which renewed the State's permitting program and authorized the Director to promulgate new rules by July 1, 2012. The previous rules were last revised and adopted in 1986. The legislature made no major programmatic changes. The statutes, the 1986 rules and the proposed 2012 rules are attached hereto.

Background

The Director has delegated the authority to administer the program to the CWCB since 1987. The CWCB also provides grants for WM activities, so the CWCB and Staff have knowledge of and familiarity with the program. If acceptable, Staff will present the 2012 draft rules to the Director for consideration at CWCB meetings to allow the Board to provide input for the Director's consideration. The proposed rules omit annual licensing and require WM operators to be properly qualified to get a WM permit. The proposed rules require qualified operators, provide criteria to suspend operations for public safety, require liability insurance, provide for public notice and public hearings, and require annual reports with accurate information on operations. As noted in the DORA report, there is a lack of data from the operators to determine the efficacy of WM in Colorado. The rules propose to require that WM sponsors or operators collect such information. In 2011, the CWCB Staff organized a twenty-two member advisory committee to review the old rules and comment on and help define the proposed new rules. The Committee is broad based, consisting of scientists, permit holders, local governments, fiscal agents, researchers, and university affiliates. The proposed rules reflect only some of the advisory committee comments.

Staff Recommendation

The statute requires the Director to promulgate the rules, but since previous Directors have delegated the authority to the CWCB to administer the program, Staff suggests that the Director promulgate the new rules with consultation and input from the Board at a regularly scheduled Board meeting. Staff requests that the Director, in consultation with the Board, review the draft 2012 rules and provide feedback to staff and the AGO.

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 of 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



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.



DEPARTMENT OF NATURAL RESOURCES

**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 all rules established pursuant to the Weather Modification Act of 1972 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.
- 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. 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, Indian tribes, 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. **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). The application fee is required of all applicants, including persons employed by commercial firms, government and non-profit agencies.

D. **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 can be paid at the beginning or the end of each operational season but before the next season commences. 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) The significant expected negative ecological impacts which 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 any of the following:

- (1) Evidence of a liability policy of at least \$1 million, or five 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; or
- (2) Another manner approved by the Director in writing.

Applicants should consider maintaining liability insurance against the effects of weather modification operations, also called consequential loss insurance, that 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) and may grant, deny, or grant the application with additional terms and conditions.
- Rule 9. Hearing Required:**
- A. **Hearing Prior to Permit Issuance.** A public hearing is required prior to issuance 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.
- B. **Hearing Prior to Permit Renewal.** A public hearing may be conducted telephonically prior to a renewal of a weather modification permit unless there are significant changes in the weather modification operation, including changes to the target area or generator locations, as indicated by the Operational Plan described in Rule 10, below, or otherwise.
- 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 and/or ten years, pursuant to section 36-20-108(1), C.R.S. (2011). Permits granted for one calendar year may be renewed on an annual basis for four additional calendar years providing the permitted weather modification operation has not materially changed and the permit holder has satisfied all record keeping and reporting requirements.
- Rule 11. River Basin Notification Required:** The permit holder must notify the local National Weather Service weather forecast office, Colorado Avalanche Information Center ("CAIC"), and the County emergency managers and other agencies in the target area(s) as requested by the Director prior to each season of weather modification operations. 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 use the form provided by the Director, attached as Form WM4 to these Rules. 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 60 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 or 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.

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 Winter Weather Modification Operations:

A. **Snow Water Equivalent Thresholds.** Weather modification activities 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" sties. The Director or his or her designee may permit weather modification activities 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 target 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 .

B. **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, 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.

C. **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:

- (1) A storm that will produce unusually heavy precipitation or severe weather conditions in the operations area; or
- (2) A warm winter storm for snow above 8,000 feet elevation that may result in local flooding; or
- (3) Potential flood conditions, including a National Weather Service flash flood warning or a forecast of excessive runoff.

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: Permit holders or Operators should obtain periodic independent evaluations of their weather modification operations to determine whether the intended effect of cloud seeding in a target area is occurring. Using examples from wintertime snow enhancements, these may include:

- A. Indirect evaluations using numerical modeling of transport and diffusion over the terrain using realistic storm conditions; and
- B. Proxy evaluations using trace chemical analysis of snowfall in the target area; and
- C. Remote sensing of cloud property changes in liquid water content and snow particle content; and
- D. Direct monitoring of snow particle and icing rate changes from natural conditions; and
- E. Direct monitoring of snowfall accumulations in the target area versus in nearby equivalent areas; or
- F. Other techniques appropriate for evaluations of other methods of weather modification and/or cloud seeding.
- G. The Director further recommends that the permit holder conduct small scale-randomized experiments utilizing both sufficient observational data and accepted statistical techniques and predictor variables. For example, pulsed seeding during semi-uniform conditions can be effective when utilized with evaluative techniques C, D, and E above, and produce statistically significant results in a shorter period than seasonal evaluations.

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 except 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.

STATE OF COLORADO

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TO: Colorado Water Conservation Board Members

FROM: Kevin Houck, P.E., Chief
Watershed & Flood Protection Section

DATE: January 11, 2012

SUBJECT: **Agenda Item 13**
January 23-24, 2012 Board Meeting
Watershed & Flood Protection Section – Alamosa Levee Update

John W. Hickenlooper
Governor

Mike King
DNR Executive Director

Jennifer L. Gimbel
CWCB Director

Background

The Corps of Engineers, in partnership with the City of Alamosa, constructed a levee within the City to protect significant areas from flooding by the Rio Grande. This levee, completed in 1998 along the south bank of the river, was built to FEMA requirements, including three feet of freeboard above the 100-year flood profile. As such, FEMA regulatory floodplain mapping currently shows lands on the south side of the river as being protected by the levee. Following an inspection in September 2008, the Corps of Engineers (Corps) rated the levee as "unacceptable" for a number of reasons including vegetative growth, encroachments, and substandard maintenance. Follow-up inspections indicate that problems discovered during the 2008 inspection still remain.

Due to issues raised during recent inspections, CWCB staff is concerned about the levee and its ability to perform as intended during a major flood event. The CWCB Board expressed its support during the July 2011 meeting in Walden to continue to investigate the situation and determine the adequacy of the floodplain mapping as it relates to meaningful risk identification to the public.

Staff, in partnership with local officials and FEMA, initiated a floodplain map update for the San Luis watershed. It should be noted that the watershed labeled as "San Luis" by FEMA includes the Rio Grande within the City of Alamosa. This map update will include stakeholder participation and will include an investigation into the protection provided by the levee. Staff is also working with Anderson Consulting Engineers to develop a detailed assessment of the levee and to determine what needs exist for certification of the levee. The CWCB is performing this assessment to assist the community, but the actual certification will be a local responsibility.

Staff will update the board on the status of the map project, the levee needs assessment, and the plan for public outreach.

Staff Recommendation

This is an informational item and staff is not requesting board action.

