

Colorado River Cloud Seeding Agreements Exhibit 1 Water Year 2007 Deliverables



Report to the: Six Agency Committee, Central Arizona
Water Conservation District, Southern Nevada Water
Authority, Colorado Water Conservation Board

Joe Busto, CWCB

December 10, 2009

STATE OF COLORADO

Colorado Water Conservation Board Department of Natural Resources

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TO: Tom Ryan, Metro Water District of Southern California
Jerry Zimmerman, Six Agency Committee
Colby Pellegrino, Southern Nevada Water Authority
Chuck Cullom, Central Arizona Water Conservation District

FROM: Joe Busto, CWCB Watershed Protection & Flood Mitigation

DATE: March 12, 2010

SUBJECT: Exhibit 1 - Water Year 2007 Deliverables – Colorado River
Cloud Seeding Agreements

Bill Ritter, Jr.
Governor

Harris D. Sherman
DNR Executive Director

Jennifer L. Gimbel
CWCB Director

Dan McAuliffe
CWCB Deputy Director

Introduction

This report constitutes the deliverables required under Exhibit 1, Water Year 2007 (WY07) of the Colorado River Basin cloud seeding agreements executed March 21, 2007. Exhibit 1 is attached to this transmittal letter and describes the Activities that were to be performed in WY07. The three Lower Basin States provided \$57,000 of which \$40,500 was spent. The contract calls for deliverables for each activity performed this year.

Tabs in this Package

The deliverables required under each Activity are included behind Tabs.

Exhibit 1 - Deliverables

Activity A – This Activity was to provide \$16,500 to the Colorado Springs Utilities for operational use in the Upper Roaring Fork River Basin program. High SNOTEL snow water equivalent readings activated the cloud seeding suspension criteria in the Upper Roaring Fork River Basin. This Activity was not implemented. The \$16,500 in funding was carried over to WY08 and the deliverables will be provided in the WY08 package. There is no Tab for this Activity in this package. Total spent \$0.

Activity B, Tab A – (P.O. EO PDA 08-00000019 for \$32,500 to Southwestern WCD)

In WY07 a purchase order for \$32,500 was issued to the Southwestern Water Conservation District. The Statement of Work for the purchase order details how the Lower Basin funding was utilized seeding three target areas. A request for extension of a seeding period was granted after review of SNOTEL readings and the suspension criteria. The Lower Basin funding extended the locally funded seeding period from March 15, 2007 through April 12, 2007. There are three programs that received equal shares of Lower Basin Funding. The programs are commonly known as Telluride/Upper San Miguel program, Western San Juan Mountains Program, and Eastern San Juan Mountains Program. The attached deliverables include: purchase order, statement of work, map of the three target areas, three permits, and the final operational report. Total \$32,500.

Activity C, Tab B – **(P.O. OE PDA 09-00000027 for \$8,000 to the Water Enhancement Authority)**. In WY07 a purchase order for \$8,000 was issued for cloud seeding activities conducted by the Water Enhancement Authority in two target areas on the Grand Mesa. With the development of new funding the CWCB has been working with them towards improving their reporting and coordination on operations, expenditures, and annual reports. The attached deliverables include: purchase order, statement of work, map of the two target areas, permit, and the final operational report. Total \$8,000.

Total expenditures in WY07: \$40,500
Carried over to WY08: \$16,500

Notes

Liability Insurance – It was not possible to enforce this agreement provision based on a March 17, 2007 execution date of Exhibit 1, which is two weeks from the end of the cloud seeding season. The Lower Basin Parties and CWCB have been named as additional insured beginning in WY08.

Western Weather Consultants, and the Water Enhancement Authority were the contractors or permit holders which conducted the operations in Colorado in WY07.

There is inconsistency between the names of the programs as used in the Exhibit, statements of work, permits, final reports, and maps as they are all prepared by different parties. A document will be prepared for WY08 which would explain the relationships between these different entities. The inconsistency in names has to do with names related to: the general area, specific drainages, names of project sponsors, division of programs that are interested in specific drainages etc.

State of Colorado - Colorado Water Conservation Board
 10 years of local funding spent on wintertime cloud seeding



Gunnison County Cloud Seeding Program

Winter	Local Revenue
2000-01	N/A
2001-02	N/A
2002-03	25,697.50
2003-04	80,283.75
2004-05	83,733.25
2005-06	68,538.13
2006-07	67,198.72
2007-08	34,696.64
2008-09	42,487.92
2009-10	58,500.00
TOTALS	461,135.91

Local Funds: Upper Gunnison River Water Conservancy District & Gunnison County

Western San Juan Mountains Cloud Seeding Program

Winter	Local Revenue
2000-01	58,126.00
2001-02	64,888.00
2002-03	57,780.00
2003-04	59,711.00
2004-05	61,920.00
2005-06	71,379.00
2006-07	60,524.00
2007-08	63,090.00
2008-09	76,100.00
2009-10	77,100.00
TOTALS	527,604.00

Local Funds: Southwestern Water Conservation District, Dolores Water Conservancy District, Animas La Plata Water Conservancy District, Durango Mountain Resort

Eastern San Juan Mountains Cloud Seeding Program

Winter	Local Revenue
2000-01	N/A
2001-02	N/A
2002-03	109,738.00
2003-04	102,951.00
2004-05	36,183.00
2005-06	25,968.00
2006-07	31,150.00
2007-08	30,128.00
2008-09	36,088.00
2009-10	34,800.00
TOTALS	407,006.00

Local Funds: Southwestern Water Conservation District, Pine River Irrigation District, Pagosa W&S District, City of Durango, Florida Water Conservancy District

Telluride Ski Area Cloud Seeding Program

Winter	Local Revenue
2000-01	46,000.00
2001-02	55,550.00
2002-03	47,806.00
2003-04	54,181.00
2004-05	4,067.00
2005-06	2,500.00
2006-07	20,510.00
2007-08	45,018.00
2008-09	49,920.00
2009-10	53,200.00
TOTALS	378,752.00

Local Funds: Dolores Water Conservancy District, Southwestern Water Conservation District, Telluride Ski and Golf Company

Vail/Beaver Creek Cloud Seeding

Winter	Local Revenue
2000-01	160,826
2001-2002	174,904
2002-03	167,010
2003-04	179,349
2004-05	141,263.00
2005-06	159,968.00
2006-07	161,765.00
2007-08	167,310.00
2008-09	172,403.00
2009-10	199,550.00
TOTALS	1,002,259.00

Local Funds: Vail & Associates

Central Rockies Cloud Seeding Program

Winter	Local Revenue
2000-01	N/A
2001-02	N/A
2002-03	699,570.00
2003-04	400,000.00
2004-05	41,500.00
2005-06	13,500.00
2006-07	0.00
2007-08	0.00
2008-09	0.00
2009-10	127,468.50
TOTALS	1,282,038.50

Local Funds: Denver Water

N/A = Didn't exist yet

Upper Roaring Fork River Cloud Seeding

Winter	Local Revenue
2000-01	N/A
2001-2002	N/A
2002-03	145,000
2003-04	124,605
2004-05	83,000.00
2005-06	92,748.00
2006-07	119,378.00
2007-08	60,880.00
2008-09	1,350.00
2009-10	0.00
TOTALS	357,356.00

Local Funds: Colorado Springs Utilities

Grand Mesa Cloud Seeding Program

Winter	Local Revenue
2000-01	\$7,200.00
2001-02	10,400.00
2002-03	12,900.00
2003-04	15,900.00
2004-05	6,400.00
2005-06	9,400.00
2006-07	6,600.00
2007-08	6,900.00
2008-09	7,700.00
2009-10	7,700.00
TOTALS	91,100.00

Local Funds: Water Enhancement Authority =
 Collbran Water Conservancy District, Fruitland
 Mesa Water Conservancy District, Kannah Creek
 Water User Association, Grand Mesa Water
 Conservancy District, City of Grand Junction,
 Crawford Water Conservancy District, Overland
 Ditch and Reservoir Company

EXHIBIT 1

2007 Annual Supplement

This Annual Supplement is made and entered into on March 15, 2007 by and among: the Six Agency Committee, Central Arizona Water Conservation District, the Southern Nevada Water Authority (Lower Basin Parties) and the Colorado Water Conservation Board (CWCB) all of which at times are referred to collectively as "Parties" or individually as "Party." This Annual Supplement is attached to a base Agreement to provide funds for weather modification Activities in the State of Colorado.

Objectives.

Activities for WY 2007 represent modest extensions of existing programs, and Activities should increase runoff to the Colorado River as well as build cooperation and local support for future Activities. The funds provided will not be used to purchase equipment for cloud seeding Operations in WY 2007. The fund amounts are approximate, and may be adjusted as the Parties deem appropriate. Only appropriate storms with the potential to increase precipitation will be seeded.

Contributions.

The following Parties will provide funding for WY 2007 as follows:

Central Arizona Water Conservation District	\$19,000
Six Agency Committee	\$19,000
Southern Nevada Water Authority	<u>\$19,000</u>
Total	\$57,000

Activities and Budget.

The \$57,000 in contributions will be spent extending Operations of three ongoing cloud seeding projects:

A. Roaring Fork and Frying Pan River areas: Colorado Springs Utilities Permit - \$16,500. This program has 16 seeding generators operating at the current time. It is proposed that the operations of this program be extended from March 16-31, 2007 with 900 additional seeding hours in one target area. The Colorado Springs Utilities Program has approximately \$5,100 available from their original funding this season, provided by the CWCB, to put toward this extension and this would be expended prior to using the Lower Basin Funds.

B. Western San Juan Mountains: Southwestern Water Conservation District Permit - \$32,500. This program has 22 seeding generators operating at the current time.

It is proposed that the operations of this program be extended from March 9-31, 2007 with up to 1,200 additional seeding hours in three target areas.

C. Grand Mesa: Water Enhancement Authority Permit - \$8,000. This program has 8 seeding generators operating at the current time. It is proposed that the operations of this program be extended from March 9-31, 2007 with up to 450 additional seeding hours in one target area. Based on SNOTEL data the Authority may request a one week permit extension from the CWCB, the cost of which is included in the total above. No equipment will be purchased with these Funds.

Responsibilities.

In return for the contributions above, the CWCB shall:

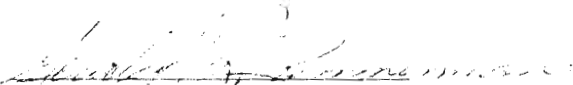
1. Distribute the contributions as described above.
2. Ensure that these contributions fund true extensions of Operations. Attachment 1 to this Annual Supplement is a table/letter prepared by CWCB which presents the amount of money historically spent (each of the last ten years) by each of the local Program Sponsors. It is the intent of the Parties that the funding identified in this Exhibit will not replace Colorado or local funding, but rather that funding from Colorado and local entities will remain constant and the additional funds will extend or enhance snowmaking Activities (local agency funding) as well as state funding. CWCB shall ensure that the Program Sponsors spend all local and state funds prior to spending the contributions made under this Exhibit.
3. Expenditures of funds shall only be for those activities specifically described in this Annual Supplement. No funds shall be used for public outreach or administration of the proposed activities in this WY.
4. Provide to each of the Lower Basin Parties maps of the seeding programs' operational areas showing locations of generators and target areas, a copy of the permits, and general operational plans for WY 2007.
5. Provide to the Six Agency Committee a copy of the operators' final operational seeding summary report and all other data described in the operators' permit with CWCB within 30 days of receipt from the operator.
6. Provide reasonable staff time for regulatory, logistical, administrative, and technical assistance.
7. Perform basic public relations and outreach. If public concerns are noted, then CWCB will document this and present the specific comments to the Lower Basin Parties.
8. Attend meetings between the Lower Basin Parties and the Program Sponsors as necessary to carry out the duties of this Annual Supplement.

9. Provide to the Lower Basin Parties a final accounting of funds spent and prepare a summary report of WY 2007 Activities under this Annual Supplement.


Schedule.

1. March 2007 – Agreement and Annual Supplement executed.
2. March 2007 – Funds transferred from Lower Basin Parties to CWCB.
3. March 31, 2007 – Extensions of operations are completed.
4. Spring 2007 – Evaluations completed.
5. Summer 2007 – Final Summary Report of WY 2007 Activities and itemized statement of accounting provided to Lower Basin Parties.

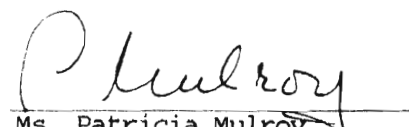
IN WITNESS WHEREOF, the Parties hereto have executed this Exhibit on the date and the year written above.


Mr. Gerald R. Zimmerman
Secretary
Six Agency Committee


3-1-07
Date


Mr. Larry Dozier
Deputy General Manager
Central Arizona Water Conservation District

3/15/07
Date


Ms. Patricia Mulroy
General Manager
Southern Nevada Water Authority

3-21-07
Date


Mr. Rod Kuharich
Director
Colorado Water Conservation Board

03.14.07
Date

ORIGINAL

**AGREEMENT AMONG THE SIX AGENCY COMMITTEE,
THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT,
THE SOUTHERN NEVADA WATER AUTHORITY AND THE
COLORADO WATER CONSERVATION BOARD TO PROVIDE FUNDS FOR
WEATHER MODIFICATION PROGRAMS IN THE STATE OF COLORADO**

This Agreement between: (1) the (California) Six Agency Committee, the Central Arizona Water Conservation District, and the Southern Nevada Water Authority (the "Lower Basin Parties"); and (2) the Colorado Water Conservation Board, facilitates weather modification programs within the State of Colorado (Parties).

In an effort to increase the supply of water available for use within the entire Colorado River System, the Parties seek to extend, expand, modify, or create new weather modification programs in Colorado. The weather modification activities to be implemented through this Agreement consist of cloud seeding appropriate orographic storms, evaluations, and other related activities ("Activities") to increase precipitation in the various program areas identified in this Agreement or any amendments thereto.

This Agreement consists of a base Agreement and any amendments in the form of Exhibits and incorporated by reference which describe weather modification activities and funding levels for a given Water Year (WY).

RECITALS

A. Parties

1. The Colorado River Board ("CRB") of California was created in 1937 by the California Legislature in recognition of the vital nature of the Colorado River water and power resources to the general well being of the state, its agencies, and its citizens. As California Water Code Section 12550 permits monies to be contributed in support of the state's funding of the Colorado River Board, the Six Agency Committee was created in 1950 to provide such support.

1.1. The Six Agency Committee is a Joint Powers Authority composed of six Southern California public agencies with Colorado River water and power interests: Coachella Valley Water District, Imperial Irrigation District, Los Angeles Department of Water and Power, Palo Verde Irrigation District, San Diego County Water Authority and The Metropolitan Water District of Southern California. The Six Agency Committee administers funds contributed by the represented agencies, which currently accounts for 100 percent of the CRB's budget. The purpose of the Committee is to administer funds contributed by the represented agencies for purposes that will protect and advance their rights and interests in the Colorado River System.

2. The Central Arizona Water Conservation District ("CAWCD") is a multi-county water conservation district established under A.R.S. §§ 48-3701 *et seq.*, that operates and maintains the Central Arizona Project.

3. The Southern Nevada Water Authority ("SNWA") is a Nevada joint powers agency and political subdivision of the State of Nevada, created by agreement dated July 25, 1991, as amended November 17, 1994, and January 1, 1996, pursuant to N.R.S. §§ 277.074 and 277.120. SNWA is authorized by N.R.S. § 538.186 to enter into this Agreement.

4. The Colorado Water Conservation Board ("CWCB") is a division of the State of Colorado, Department of Natural Resources, created for the purpose of aiding in the protection and development of the waters of the State of Colorado. The CWCB has been delegated the responsibilities for administration of the weather modification program within the State of Colorado, pursuant to C.R.S., Section 36-20-101, *et seq.*

B. Background

1. On May 2, 2005, the Secretary of the Interior announced her intent to undertake a process to develop Lower Basin shortage guidelines and explore management options for the coordinated operation of lakes Powell and Mead under low reservoir conditions. On June 15, 2005, the Bureau of Reclamation published a notice in the *Federal Register*, announcing its intent to implement the Secretary of the Interior's direction.

2. On August 25, 2005, the Governors' Representatives for the seven Colorado River Basin States ("Basin States") wrote a letter to the Secretary of the Interior expressing conceptual agreement in the development and implementation of three broad strategies for improved management and operation of the Colorado River: Coordinated Reservoir Management under low reservoir conditions and Lower Basin Shortage Guidelines; System Efficiency and Management; and Augmentation of Supply.

3. At the request of the Secretary of the Interior, the Parties have continued their discussions relative to the areas of agreement outlined in letters of August 25, 2005 and February 3, 2006.

4. In furtherance of the letters of August 25, 2005 and February 3, 2006, the Parties have reached agreement to take additional actions for their mutual benefit, which are designed to increase the supply of water available in the Colorado River System and improve the management of water in the Colorado River Basin. In addition, the Parties have agreed to implement actions toward optimizing cloud seeding activities.

5. The CWCB has regulatory authority over cloud seeding operators. Typically, such operators contract with local program sponsors such as water districts and water utilities for cloud seeding services in specific watersheds.

6. The State of Colorado, through the CWCB, has established a weather modification program (C.R.S. 36-20-102 *et al.*). The CWCB receives appropriations for the weather modification

program from the Colorado Legislature into the Construction Fund, and the Legislature has determined that the CWCB may accept funds from other entities (CRS 37-60-121).

C. Guiding Principles

1. States in the Upper Colorado River Basin have a variety of existing operational and experimental weather modification programs within the Colorado River Basin. These programs are funded, operated, and regulated at the state and local level.
2. Appropriately designed winter season orographic weather modification programs may increase winter snowpack in the Colorado River Basin. Increases in snowpack may increase water supply within the entire Colorado River System by increasing precipitation and runoff.
3. All Colorado River Basin States benefit from any increase of water supply in the Colorado River System. Any increase in runoff is additional Colorado River System water benefiting the Colorado River System as a whole.
4. Detailed efforts to quantify the effectiveness of weather modification may be appropriate to conduct. However, activities funded through this Agreement will not include analyses linking specific cloud seeding measures to flow in the Colorado River or its tributaries.
5. Economic benefits can be derived for the people of Colorado 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 (C.R.S. 36-20-102).
6. The CWCB reviews specific proposals for orographic cloud-seeding and issues permits when such projects meet specified criteria, including lack of substantial harm to the environment or to other water users (C.R.S. 36-20-112).
7. Notwithstanding these safeguards, there may be risks arising from cloud seeding that are outside the current state of scientific knowledge. The Parties agree they will consult to assess any such impacts that might arise. In addition, the Parties will consider funding of measures to address such effects should they materialize.
8. It is not the intent of the Parties to claim a right to any increase in water resulting from weather modification programs funded herein. Any water resulting from these programs is Colorado River System water and shall not be claimed specifically by any Party.
9. Although the primary use of the funds collected pursuant to this Agreement is for increasing the water supply of the Colorado River System, nothing in this Agreement shall be construed to prevent the CWCB from expending Funds in future years as identified in future Exhibits, in other basins besides the Colorado River Basin.

AGREEMENT

In consideration of the above recitals and the mutual covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Recitals. The Recitals set forth above are material facts that are relevant to and form the basis for the Agreement.

2. Definitions. As used in this Agreement, the following terms have the following meanings:

A. Activities. Those weather modification practices, performances, transactions, studies, research, operations, or other actions undertaken pursuant to this Agreement or any amendments thereto.

B. Colorado River System. This term shall have the meaning as set forth in Article II(a) of the Colorado River Compact of 1922 and as interpreted by any federal court having jurisdiction within the Ninth or Tenth Circuits of the United States Courts.

C. Director. The Executive Director of the Colorado Department of Natural Resources.

D. Evaluation Component. A scientific study by a third-party assessing the effectiveness of Operations in increasing snowpack.

E. Exhibit. A description of weather modification operations, evaluation and other Activities and funding commitments for a Water Year, to be executed by the Parties as an amendment to this Agreement.

F. Funds. Those monies contributed by the Lower Basin Parties to the CWCB for its administration and disbursement for Activities pursuant to this Agreement.

G. Operations. Winter orographic cloud seeding by professional operators which hold permits granted by the CWCB, excluding cloud seeding conducted for purposes other than increasing snow fall.

H. Program Sponsors. Local agencies within the State of Colorado which fund cloud seeding projects in their service areas or areas of jurisdiction.

I. Water Year. The period of time from October 1 of any calendar year for a 12-month period ending September 30 of the next calendar year.

3. Consistency with Existing Law. The Parties intend operation of this Agreement to be consistent with existing law, including but not limited to the Colorado River Compact, the Boulder Canyon Project Act as interpreted by the U.S. Supreme Court in Arizona v. California, 126 S.Ct. 1543 (2006), the Colorado River Basin Project Act of 1968 (43 U.S.C. §§ 1551 and 1552(a)), and all related rules or regulations.

4. Reaffirmation of Existing Law. Nothing in this Agreement is intended to, nor shall this Agreement be construed so as to, diminish or modify the rights or entitlements of any Party under existing law to waters from the Colorado River System.

5. Term. The term of this Agreement begins on the date of the last Party's execution of this Agreement and extends until either: (1) the Parties have performed all obligations set forth herein; or (2) a Party terminates the entire Agreement as set forth in Paragraph 14.

6. Funding. The sole purpose of this Agreement is to provide funding from Lower Basin Parties for Activities within the State of Colorado. The Lower Basin Parties will not make administrative or other decisions regarding certification or implementation of Activities undertaken through this Agreement.

6.1. The CWCB shall deposit all monies contributed by the Lower Basin Parties into the Construction Fund described above.

6.2. Any Funds provided to the CWCB pursuant to this Agreement which are unused and uncommitted by the end of a Water Year shall be moved to the next Water Year and credited against future operations in accordance with the terms of this Agreement and any amendments thereto.

6.3. The CWCB shall keep full and complete records of funds and expenditures made pursuant to this Agreement and its Exhibits according to commonly accepted standards of accounting. These records shall be available for inspection, audit, and reproduction by the Lower Basin Parties without charge during normal business hours. At the end of each Water Year, the CWCB shall provide an itemized statement to the Lower Basin Parties documenting how the Funds were spent, and any credits that are available to be applied to the next Water Year should Funds received exceed expenditures made.

6.4. The Parties agree that no Lower Basin Party will fund any Activities or similar activities outside of this Agreement with any Colorado public entity unless such Activities are specifically approved in writing by the CWCB.

6.5. CWCB shall expend funds contributed by the Lower Basin Parties only for Activities identified in the Exhibit.

6.6. The CWCB shall not use any monies collected pursuant to this Agreement or for the purposes of the Colorado River System, nothing in this Agreement shall be construed to require the CWCB to expend the funds in future years as identified in future Agreements with the Lower Basin Parties.

7. Services to be Performed. CWCB shall provide the services of its staff to perform and carry out the duties and responsibilities required under this Agreement at no additional cost to the Lower Basin Parties.

7.1. The Operations services to be performed under this Agreement will be performed only by entities permitted by the CWCB for weather modification. Copies of the permits for each weather modification project that is subject to this Agreement will be provided to the Lower Basin Parties upon request. A description of the Operations, generally, to be performed for each Water Year shall be included in any Exhibit to this Agreement.

7.2. Any Evaluation Component(s) to be conducted as part of any Water Year will be performed as described in the Exhibits.

7.3. Routine and day-to-day communications under this Agreement shall be between Mr. Rod Kuharich, Director of the CWCB and Mr. Gerald R. Zimmerman, Secretary of the Six Agency Committee, who will act of behalf of the Lower Basin Parties, or their designees or successors. The Parties may change these designated contacts by written notification to all other Parties.

8. Commencement and Completion of Services. The Parties may provide input and review on major features of the Activities, including costs, schedules, and any other items or proposed decisions that will have a direct impact on the proposed Activities funded pursuant to this Agreement and its Exhibits.

9. Exhibits. This Agreement may be amended yearly by Exhibits duly executed by the Parties. These amendments to the Agreement shall describe the Activities to be implemented in any Water Year, and shall contain at a minimum: (1) a detailed description of that Water Year's cloud seeding objectives; (2) the amount of financial contributions from the Lower Basin Parties; and (3) a budget and implementation schedule for the Water Year.

9.1. Nothing in this Agreement shall preclude a Lower Basin Party from executing an amendment to this Agreement with CWCB without the participation of another Lower Basin Party. In this event, the terms of such an amendment will apply only to the Parties executing that amendment. Any Lower Basin Party contemplating entering into an amendment without participation by another Lower Basin Party shall provide written notice to the other Lower Basin Parties at least 60 days before execution thereof and shall provide a copy of the executed amendment within 30 days of execution.

10. Modification. The Agreement or any amendments thereto may be supplemented, amended, or modified only by written agreement.

11. Joint Defense Against Third Party Claims. The Parties may in the future enter into an agreement for joint defense against third party claims.

12. Liability. The CWCB shall ensure that each of its weather modification vendors maintains a valid general liability insurance policy for \$1,000,000, adds the Parties as insured parties as part of the vendor's insurance policy, and provides a copy of an ACORD form to the Lower Basin Parties.

12.1. No Party, its directors, officers, agents, employees or authorized volunteers shall be responsible for any damage or liability occurring by reason of an act or omission of any other

Party in connection with any work, obligation, authority, or any criteria arising out of this Agreement.

13. Governing Law. Nothing in this Agreement is intended to conflict with Colorado law. In the event a court of competent jurisdiction determines that there is a conflict between Colorado law and this Agreement, Colorado law shall prevail. Likewise, if a court of competent jurisdiction determines there is a conflict between Colorado law and federal law under this Agreement, federal law shall prevail.

14. Termination. This Agreement may be terminated and weather modification permits may be modified or terminated as follows:

14.1. Nothing herein shall limit the Director's ability to immediately modify, temporarily suspend, or revoke a weather modification permit in accordance with Colorado law (C.R.S. 36-20-115). If a permit is so modified, temporarily suspended, or revoked, the Director will notify the Lower Basin Parties within 10 days, and the Parties will consult to determine whether a new amendment to this Agreement is necessary.

14.2. A Party may terminate its participation in this Agreement on 30 days notice by providing written notice to the other Parties. Termination of participation by one Party, except the CWCBC, does not result in termination of the Agreement. Termination by a Party, other than the CWCBC, will result in forfeiture of all Funds paid to the CWCBC by that Party, whether spent or not.

14.3. This Agreement may be terminated in its entirety by written agreement of the Parties or unilaterally by the CWCBC. In the event of complete termination of this Agreement, the CWCBC will refund to the Lower Basin Parties all Lower Basin Party Funds not expended as of the day of termination.

15. Availability of Information. For Activities performed under this Agreement, all information and data obtained or developed by CWCBC and its operators pursuant to the terms and conditions of their permit, and between CWCBC and its vendors as allowed by their contract shall be available upon request, except where prohibited by law, to the Parties, without further charge. However, use of said reports, data, and information shall appropriately reference the source of such information.

15.1. All Parties recognize that the information developed, exclusive of intra-governmental communications, is public information and available for release upon request.

16. Counterparts. This Agreement and any amendments thereto may be executed in counterparts, each of which shall be deemed an original, but all of which, when taken together, shall constitute one and the same instrument with the same force and effect as though all signatures appeared on a single document.

17. Integrated Agreement. This Agreement, and the Exhibit(s), contain the entire understanding of the Parties with respect to the subject matter hereof, and supersedes any prior understanding between the Parties, except as set forth herein, whether written or oral.

18. Ambiguities. Each Party and its counsel have participated fully in the drafting, review and revision of this Agreement and its Exhibits. A rule of construction to the effect that ambiguities are to be resolved against the drafting Party will not apply in interpreting this Agreement, including any amendments or modifications.

19. Third-Party Beneficiaries. This Agreement is made solely for the benefit of the Parties. No Party to this Agreement intends for this Agreement to confer any benefit upon any person or entity not a signatory upon a theory of third-party beneficiary or otherwise.

20. Assignment. No Party may assign its rights or obligations under this Agreement to another person or entity without written consent by all other Parties.

21. Notices and Authorized Representatives. Notice given pursuant to the provisions of this Agreement, or which are necessary to carry out its provisions, must be in writing and delivered personally to whom the notice is to be given, or mailed, postage prepaid, addressed to that authorized representative. The Parties' authorized representatives and their addresses for this purpose are as follows:

Mr. Gerald R. Zimmerman
Secretary
Six Agency Committee
770 Fairmont Avenue, Suite 100
Glendale, CA 91203-1068

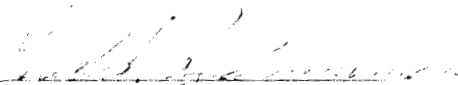
Mr. Larry Dozier
Deputy General Manager
Central Arizona Water Conservation District
P.O. Box 43020
Phoenix, AZ 85080-3020

Ms. Kay Brothers
Deputy General Manager
Southern Nevada Water Authority
1001 S. Valley View Blvd
Las Vegas, NV 89153-0001

Mr. Rod Kuharich
Director
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, CO 80203
cc: Joe Busto
CWCB Weather Modification Coordinator
1313 Sherman Street, Room 721
Denver, CO 80203

21.1. Any party may change the address or addressee to which communications or copies are to be sent by giving notice of such changes of address or addressee to Mr. Kuharich above, acting as the project manager and who will notify the other Parties of any such changes.


IN WITNESS WHEREOF, the Parties hereto have executed this agreement on the date and the year written above.



Mr. Gerald R. Zimmerman
Secretary
Six Agency Committee



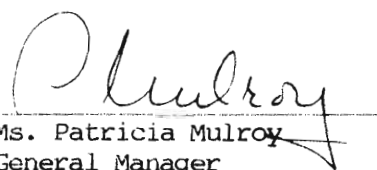
Date



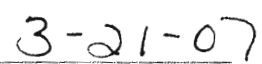
Mr. Larry Dozier
Deputy General Manager
Central Arizona Water Conservation District




Date



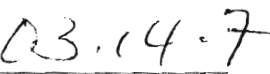
Ms. Patricia Mulroy
General Manager
Southern Nevada Water Authority



Date



Mr. Rod Kuharich
Director
Colorado Water Conservation Board



Date

22. Exhibits

1. 2007 Annual Supplement

WATER CONSERVATION BOARD
1313 SHERMAN STREET, ROOM 721
DENVER, CO 80203

DATE: 08-08-07



**PURCHASE
ORDER**
STATE OF COLORADO

Buyer: **MAGGIE VAN CLEEF**
Phone Number: **303-866-4188**
Agency Contact: **STEVEN SHULL**
Phone Number: **303 866 3998**

IMPORTANT
The PO# and Line # must
appear on all invoices,
packing slips, cartons
and correspondence

P.O. # **OE PDA 08000000019** Page# **01**

ACC: 08-07-07

State Award #

FEIN **840628885** Phone: **970-247-1302**

BID #

Vendor Contact:
Purchase Requisition #:

Invoice in Triplicate
To: **DIVISION OF WATER CONSERVATION
1313 SHERMAN STREET, ROOM 721
DENVER, CO 80203**

**V
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R** **SOUTHWESTERN WATER CONSERVATION DIS**
PO BOX 475
DURANGO **CO 81302**

Payment will be made by this agency
Ship To: **DIVISION OF WATER CONSERVATION
1313 SHERMAN STREET, ROOM 721
DENVER, CO 80203**

INSTRUCTIONS TO VENDOR:

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- 2. All chemicals, equipment and materials must conform to the standards required by OSHA.
- 3. NOTE: Additional terms and conditions on reverse side.

Delivery/Installation Date: **10-30-07**
F.O.B. DESTINATION STATE PAYS NO FREIGHT

SPECIAL INSTRUCTIONS:

LINE ITEM	COMMODITY/ITEM CODE	UNIT OF MEASUREMENT	QUANTITY	UNIT COST	TOTAL ITEM COST
01	9184300000				\$32,500.00
WEATHER MODIFICATION EXTENSION IN THE WESTERN SAN JUAN MOUNT PER ATTACHED WORK SCOPE					

DOCUMENT TOTAL = **\$32,500.00**

THIS PO IS ISSUED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS
This PO is effective on the date signed by the authorized individual.

FOR THE STATE OF COLORADO

Authorized Signature
8/10/07
Date

STATEMENT OF WORK FOR SAN JUAN MOUNTAINS 2006-07 WINTER SEASON

Our weather modification contractor, Western Weather Consultants provides cloud seeding services for three seeding programs in the San Juan Mountains. The three programs are coordinated by the contractor to maximize the seeding coverage of the generator network established around the northwestern and southern regions of the San Juan Mountains program areas and appropriately distribute the operational costs to each appropriate program.

The WESTERN SAN JUAN PROGRAM is scheduled to provide seeding operations over the Upper Dolores, LaPlata and Animas River Basins from November 1, 2006 to January 31, 2007. All suitable weather systems will be appropriately seeded during this time period. There are approximately seventeen ground-based cloud nuclei generators in place to provide approximately 1,950 hours of seeding coverage to the project area for the 2006-07 season.

The EASTERN SAN JUAN PROGRAM is scheduled to provide seeding operations over the Upper Florida, Pine and western half of the Piedra River Basins from November 1, 2006 to January 31, 2007. All suitable weather systems will be appropriately seeded during this time period. There are approximately ten ground-based cloud nuclei generators in place to provide approximately 920 hours of seeding coverage to the project areas for the 2006-07 season. The Project area immediately around Pagosa Springs and the Upper San Juan River Basin will start out on Standby this season.

The UPPER SAN MIGUEL /LIZARD HEAD PASS PROGRAM is scheduled to provide seeding operations over the Upper San Miguel Basin around the Lizard Head Pass region and the Northwestern slopes of the San Juan Range around Groundhog Reservoir from November 1, 2006 to January 31, 2007. All suitable weather systems will be appropriately seeded during this time period. This program has seven ground-based cloud nuclei generators in place to provide 700 hours of seeding coverage to the project area for the 2006-2007 operational periods.

During the 2006-2007 Extended Seeding Period (March 15, 2007 through April 12, 2007) funded primarily by the Lower Colorado River Basin States, the San Juan generator network provided 1,137.75 seeding hours during favorable weather events. 1,020.41 seeding hours were funded from the extension funding support provided by the Lower Colorado River Basin States and 117.34 hours were funded by additional funds provided by the local program participants.

FINAL OPERATIONAL SEEDING SUMMARY REPORT

**For
THE WESTERN SAN JUAN WEATHER MODIFICATION PROGRAM INCLUDING
THE UPPER DOLORES, LA PLATA, HERMOSA / ANIMAS, FLORIDA
AND PINE RIVER DRAINAGE BASINS
AND THE DURANGO MOUNTAIN RESORT SKI AREA**

Sponsoring Organizations:

**Durango Mountain Resort
Dolores Water Conservancy District
Southwestern Water Conservation District
La Plata Water Conservancy District
City of Durango
Pine River Irrigation District
Colorado Water Conservation Board**

**California Six Agency Committee
Central Arizona Water Conservation District
Southern Nevada Water Authority**

**(Mr. Tom Ryan, with the Metropolitan Water District of Southern California
Is the Lower Colorado River Basin State's Coordinator)**

Operational Period:

November 1, 2006 – March 31, 2007

Program Conducted by:

**WESTERN WEATHER CONSULTANTS, LLC
P.O. BOX 58
DURANGO, COLORADO 81302**

FINAL CLOUD SEEDING SUMMARY REPORT 2006 - 2007

SAN JUAN MOUNTAINS WEATHER MODIFICATION PROGRAM

INTRODUCTION

Western Weather Consultants are pleased to present to you the results of the 2007 San Juan Mountains Weather Modification Program. The five month winter cloud seeding program was conducted from November 1, 2006 through March 31, 2007, and extended through April 12, 2007. The Program target area includes all river basin drainages from the Dolores River through the Pine River, and Durango Mountain Resort. (See Map 1 attached.)

OPERATIONS

The 2006-2007 winter seeding season started with dryer weather patterns over the Western United States returning to a more normal sequence of weather systems by late February and March, resulting in slightly below average precipitation being recorded over the region. November started out with well below average snow pack in the San Juan's with the Animas River Basin reporting 18% of normal SWE, and the Dolores / San Miguel River Basins reporting 19% of normal SWE. November was quite a warm month with a few systems moving in from the North or Northwest throughout the Western San Juan Region that met the criteria for seeding. By the end of November, the Animas River Basin was recording an average of about 29% snow pack, and the Dolores / San Miguel River Basins were averaging about 38% snow pack. November provided us with the least seeding opportunities of the season and most of them only lasted twelve to twenty four hours per operation. December had six seeding opportunities, twice

as many as November, but they were again shorter in duration, resulting in continued below normal snow pack. The Animas River Basin was about 48% normal of snow pack, and the Dolores / San Miguel River Basins were averaging about 61% of normal for snow pack. January also had six seeding opportunities, with five of the six having a more southerly inflow of moisture, but again the duration of the storms were short. The southerly storms typically provide more moisture and helped the snow pack in the San Juan's gain some ground, but by the end of January The Animas River Basin was only about 61% normal of snow pack, and the Dolores / San Miguel River Basins were averaging about 71% of normal for snow pack. February we had some hours left over due to the lack of seeding events the previous months, and extensions toward the middle of the month. We only had three opportunities for additional seeding in the San Juan's. The first two weather events were from the North Northwest, and only lasted about twelve hours each, but the last was from the South and lasted about thirty six hours. By February 28th Due to another warm, dry month, the Animas River Basin's snow pack was loosing ground with only about 50% normal of snow pack reported, and the Dolores / San Miguel River Basins dropping to about 62% of normal for snow pack. March was a catch up month with six seeding events lasting eleven days, all from the South, and with good moisture. Seeding operations were funded by a combined interest of the lower Colorado River Basin States and some additional local funding. The Western San Juan's ended the seeding season with below normal snow water equivalent with the Animas River Basin reporting 72% of normal snow pack, and the Dolores / San Miguel River Basins, with about 78% normal snow pack.

Table A below includes the dates of all of the seasons seeding operations, the number of generators utilized per operation, and the total number of hours the generators were used for seeding, the San Juan Mountains Program.

TABLE A
Operational Summary for 2006-2007 Seeding Season
Western San Juan Program

Event	From	To	Days	# Gen.	WDO Hrs.	DO Hrs.	AL Hrs.	DM Hrs.	FL Hrs.	
1	11/11/2006 20:30	11/12/2006 10:00	2	10	40.00	34.50	5.50	11.50	12.00	
2	11/14/2006 5:00	11/14/2006 17:15	1	13	38.50	18.25	7.75	23.25	5.75	
3	11/27/2006 13:15	11/29/2006 8:30	3	17	84.50	111.50	48.25	139.50	77.50	
4	12/10/2006 13:45	12/11/2006 20:30	2	20	70.75	72.75	16.75	35.50	53.00	
5	12/17/2006 6:00	12/17/2006 23:00	1	16	44.25	42.75	7.50	44.50	47.75	
6	12/18/2006 13:30	12/21/2006 7:00	3	18	93.75	50.25	18.00	153.50	122.00	
7	12/27/2006 18:00	12/29/2006 0:00	2	6	28.00	26.50	16.00	36.25	17.00	
8	1/4/2007 20:00	1/5/2007 20:00	2	20	51.75	91.50	13.00	73.25	52.50	
9	1/12/2007 5:00	1/13/2007 19:00	2	13	43.38	69.38	36.00	144.25	80.50	
10	1/19/2007 19:00	1/20/2007 22:00	2	16	49.38	26.00	8.00	103.25	9.13	
11	1/30/2007 17:00	1/31/2007 20:30	2	11	64.25	62.37	12.00	74.13	29.00	
12	2/1/2007 14:00	2/1/2007 22:00	1	11	24.00	15.25	7.00	23.00	8.00	
13	2/11/2007 20:00	2/12/2007 10:00	2	8	48.75	20.75	3.00	10.50	5.00	
14	2/13/2007 10:00	2/14/2007 8:00	2	13	13.75	24.25	12.00	103.75	78.00	
15	2/23/2007 9:00	2/23/2007 22:00	1	6	2.00	4.00	0.00	32.75	18.00	
16	3/10/2007 15:00	3/10/2007 22:00	1	5	16.50	17.50	0.00	0.00	0.00	
17	3/27/2007 19:30	3/30/2007 21:00	4	20	0.00	0.00	0.00	0.00	0.00	
18	4/11/2007 20:00	4/12/2007 11:00	2	19	0.00	0.00	0.00	0.00	0.00	
25	TOTALS				35.00	713.50	687.50	210.75	1008.88	615.13

An analysis of San Juan Mountains Program seeding precipitation increase was completed using Snotel Precipitation Sites data from November 11, 2006 through April 12, 2007. The data used was from Snotel Sites within your target area. The results are displayed in Table B below as follows:

TABLE B

Target Area Snotel Precipitation during the 2006-2007 Operating Seasons Nov. 11, 2006 thru April 12, 2007

Snotel Site	Normal Precipitation Season	Actual Precipitation Season	Precipitation During Seeding	Estimated Unseeded Precipitation	Estimated Precipitation Increase	Estimated Precipitation Increase
Elevation	% Normal	% Normal	% Actual	% Normal	% Seeded	% Actual
Red Mtn. Pass 11,000' MSL	23.4 100.00%	18.7 80%	9.1 48.66%	17.86 76.33%	0.84 10.15%	0.84 4.69%
Up. San Juan 10,200' MSL	29.2 100.00%	20.4 70%	7.7 37.75%	19.66 67.33%	0.74 10.64%	0.74 3.77%
Vallecito 10,800' MSL	16.5 100.00%	9.9 60%	7.3 73.74%	9.28 56.26%	0.62 9.23%	0.62 6.64%
Stump Lakes 11,200' MSL	17.1 100.00%	13.5 79%	6 44.44%	12.96 75.78%	0.54 9.91%	0.54 4.17%
Beartown 11,600' MSL	22.3 100.00%	13.2 59%	6.8 51.52%	12.52 56.16%	0.68 11.06%	0.68 5.41%
Molas Lake 10,500' MSL	18.9 100.00%	11 58%	4.9 44.55%	10.50 55.56%	0.50 11.34%	0.50 4.75%
Spud Mtn. 10,600' MSL	23.6 100.00%	16.6 70%	8.4 50.60%	15.82 67.05%	0.78 10.20%	0.78 4.91%
Lizard Head Pass 10,200' MSL	14.3 100.00%	10 70%	5 50.00%	9.48 66.26%	0.52 11.73%	0.52 5.54%
El Diente 10,000' MSL	13 100.00%	6.4 49%	5.8 90.63%	5.72 43.99%	0.68 13.30%	0.68 11.90%
Lone Cone 9,600' MSL	12.5 100.00%	9.2 74%	6.8 73.91%	8.51 68.05%	0.69 11.36%	0.69 8.15%
Columbus Basin 10,785' MSL	23.2 100.00%	18.6 80%	7.8 41.94%	17.79 76.66%	0.81 11.66%	0.81 4.58%

Table B shows the normal precipitation amount versus the actual precipitation amount observed for the period and its percentage of normal, the amount of precipitation that occurred during the seeding events as a percent of the seasons total, the estimated amount of precipitation that would have occurred without a seeding program, the estimated increase in precipitation as a percentage of the amount during the seeded period and the estimated increase in precipitation as a percentage of the amount for the entire season.

The estimate of the total additional acre feet of snowpack water available for runoff resulting from Western Weather Consultant's cloud seeding efforts is plotted on Map 2 attached. Map 2 shows the Snotel Sites, the estimated increase in precipitation figures contained in Table B and contour lines denoting estimated increased precipitation from seeding in 2/10 inch increments for your target area. The Map also defines the size of the various regions within your seeding target area for the calculation of the acre feet from the precipitation increases.

The information in Table B and Map 2 is translated into estimated increased water in the snowpack in acre feet of water for each of the basins seeded in and around your Program target area for the 2006 - 2007 Program as follows:

November 11, 2006 to April 12, 2007

Target Areas

Upper Animas River – 650 Sq. Miles X 0.69”

Upper La Plata River – 35 Sq. Miles X 0.70”

Upper Florida River – 90 Sq. Miles X 0.64”

Upper Pine River – 300 Sq. Miles X 0.69”

Dolores River – 400 Sq. Miles X 0.65”

Total Area 1475 Sq. Miles

Estimate of Total Water Increase – 53,206 AF

The procedure for estimating the precipitation increases as a result of cloud seeding in this and previous year's reports, is based on two separate seeding program research analyses conducted by Western Weather Consultants.** The two programs used were conducted over the Colorado mountains utilizing similar seeding applications and weather event identification criteria. Both of these analyses produced extremely similar seeding response results. The research analyses utilized a conservative estimate of the seeding responses to the associated prevailing wind direction of the storm systems and forms the basis of the process by which we estimate precipitation increases.

** Precipitation increase estimates were made utilizing previous research results from the Colorado River Basin Pilot Project (research randomized seeding program), June, 1976; and 10 and 16 Year Data Sets from two separate precipitation sources for the Vail/Beaver Creek Seeding Program (operational seeding program), March, 2001.

SUMMARY AND RECOMMENDATIONS

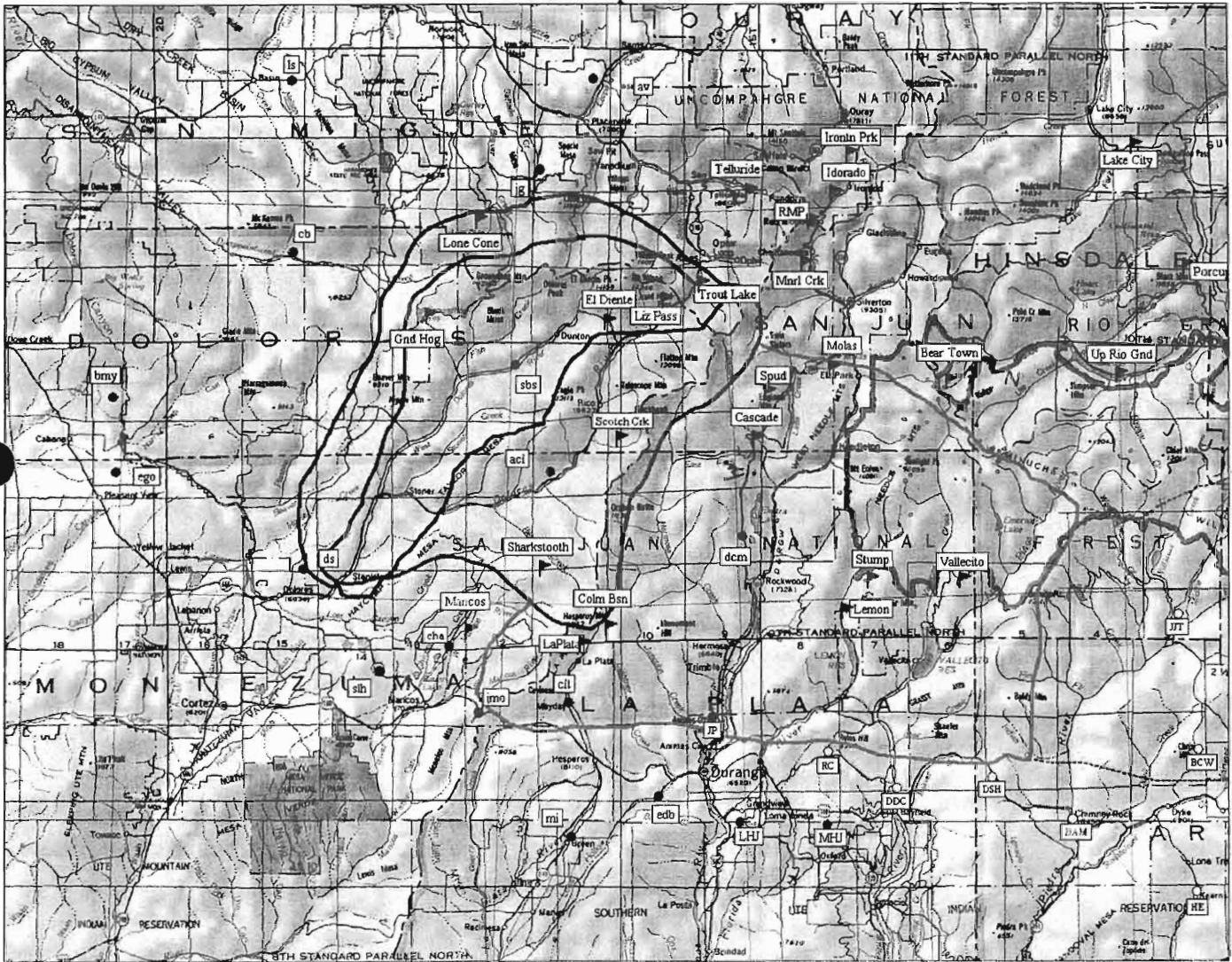
We believe the 2007 San Juan Mountain Weather Modification Program conducted by Western Weather Consultants was very successful by producing an estimated additional 53,206 acre feet of water in the snowpack throughout the target area. We also believe that this valuable service of providing additional water for increased water demands was achieved in a cost effective manner.

Since Colorado has frequent periods of drought, we recommend that our clients consider conducting cloud seeding weather modification programs on a routine basis each year. Provisions can always be made to suspend or terminate the cloud seeding program in above normal precipitation/snowpack years when additional water may not be beneficial. We recommend this approach for several reasons. First, it cannot be accurately predicted if

precipitation during the coming winter season will be above or below normal. Having a cloud seeding program in place takes advantage of each seeding opportunity. Second, seeding in normal to above normal years of precipitation provides additional precipitation resulting in valuable carryover storage in surface reservoirs and/or underground aquifers that can be drawn from during dry years. Third, the continuity of conducting a cloud seeding program each year provides for the planned budgeting of the program and thereby prevents potential difficulties in attempting to obtain special funding during a drought situation. And finally, conducting a cloud seeding program only after drought conditions may mean fewer cloud seeding opportunities and therefore, less additional precipitation generated from the program.

Therefore, we recommend that the programs in the San Juan Mountains Weather Modification Program be continued in the 2007-2008 season. We also recommend the placement of an additional generator.

Map 1



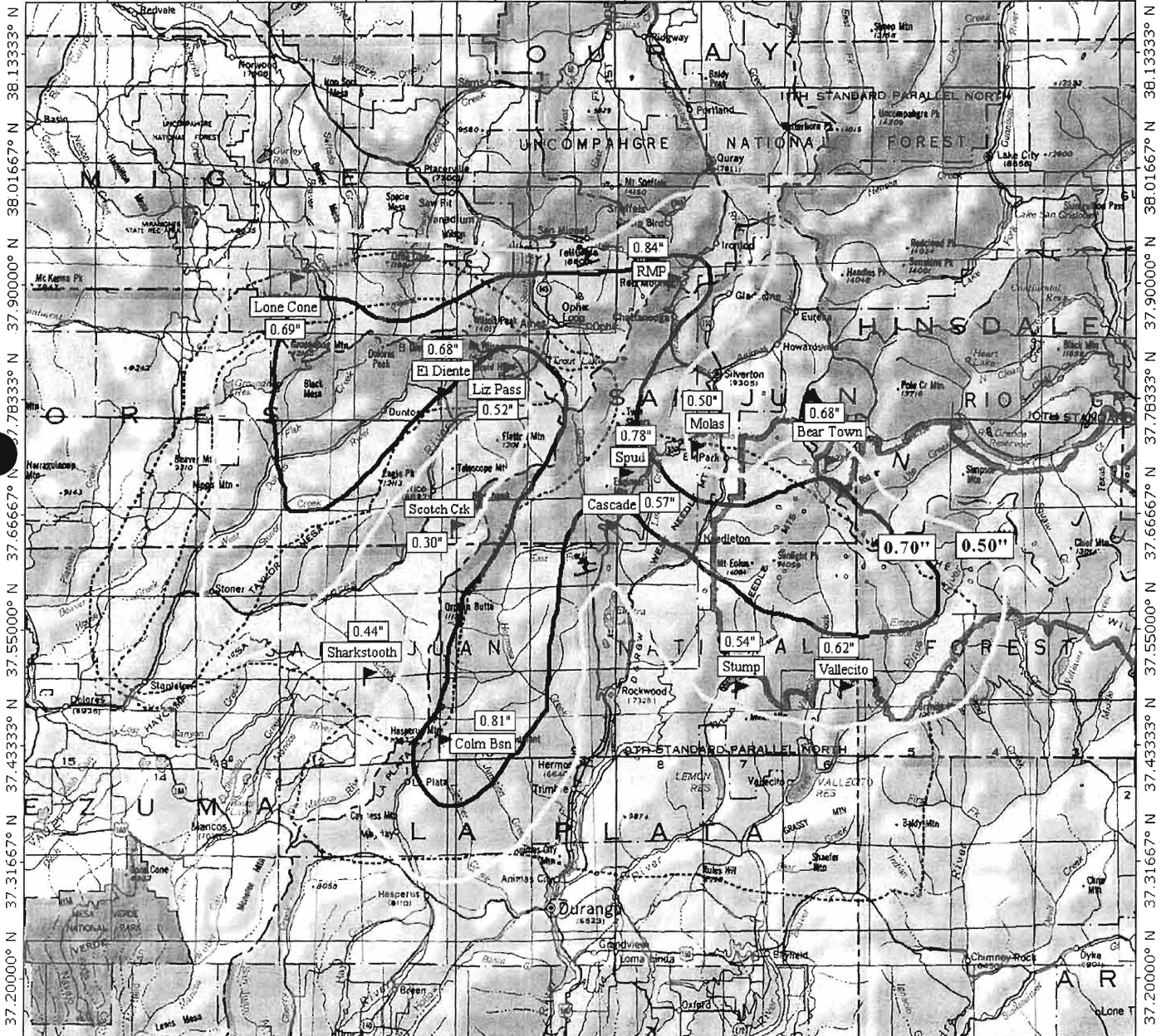
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Map created with TOPO! © 2003 National Geographic (www.nationalgeographic.com/topo)

Map 2

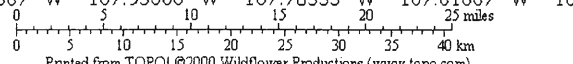
TOPOI map printed on 06/27/07 from "south 06-07 seedling effect map 2.tpo" and "Untitled.tpg"

108.45000° W 108.28333° W 108.11667° W 107.95000° W 107.78333° W 107.61667° W 107.45000° W WGS84 107.13333° W



108.45000° W 108.28333° W 108.11667° W 107.95000° W 107.78333° W 107.61667° W 107.45000° W WGS84 107.13333° W

TN MN 11°



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WATER CONSERVATION BOARD
 1313 SHERMAN STREET, ROOM 721
 DENVER, CO 80203

DATE: 09-10-07



**PURCHASE
 ORDER**
 STATE OF COLORADO

IMPORTANT
 The PO# and Line # must
 appear on all invoices,
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 and correspondence

P.O. # 0B PDA 08000000027 Page# 01

Buyer: **MAGGIE VAN CLEEF**
 Phone Number: 303-866-4188
 Agency Contact: **STEVEN SHULL**
 Phone Number: 303 866 3998

ACC: 09-07-07

State Award #

FEIN 841180992 Phone: 970-872-3586
 Vendor Contact:
 Purchase Requisition #:

BID #

V
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WATER ENHANCEMENT AUTHORITY
 13231 2900 ROAD
 HOTCHKISS CO 81419

Invoice in Triplicate

To: **DIVISION OF WATER CONSERVATION
 1313 SHERMAN STREET, ROOM 721
 DENVER, CO 80203**

Payment will be made by this agency

Ship To: **DIVISION OF WATER CONSERVATION
 1313 SHERMAN STREET, ROOM 721
 DENVER, CO 80203**

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3. NOTE: Additional terms and conditions on reverse side.

Delivery/Installation Date: 09-30-07
F.O.B. DESTINATION STATE PAYS NO FREIGHT

SPECIAL INSTRUCTIONS:

LINE	COMMODITY/ITEM CODE	UNIT OF MEASUREMENT	QUANTITY	UNIT COST	TOTAL ITEM COST
001	91843000000				\$8,000.00
	WEATHER MODIFICATION EXTENSION IN THE GRAND MESA & ELK MOUNT PAID FOR WITH DONATIONNS FROM CAL, ARIZ, & NEV.				

DOCUMENT TOTAL = \$8,000.00

FOR THE STATE OF COLORADO

THIS PO IS ISSUED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS
 This PO is effective on the date signed by the authorized individual

[Signature]
 Authorized Signature

9/10/07
 Date

WATER ENHANCEMENT AUTHORITY

**P.O. Box 181
Austin, CO 81410**

Statement of Work for Water Enhancement Authority Extended Operations

Grand Mesa and West Elk Mountains. The purpose of the program is to enhance water supplies for irrigators in the region by providing additional water during spring run-off and to help fill the reservoirs that have a combined storage of over 60,000 acre feet.

WEA extended its 2006-2007 season with an additional 450 hours of generator operation beyond what we could have initially completed without additional funds. The additional \$8000 was used to cover operational expenses for this expanded seeding time, with no purchase of equipment.

Contact information: Peter Kasper, Secretary / Manager
P.O. Box 181
Austin, CO 81410
(970) 589-0694
Email: pkasper11@hotmail.com

CLOUD SEEDING - 2006-2007

A Summary of Cloud Seeding Operations by Water Enhancement Authority

During the winter of 2006-2007, a clouding-seeding program was conducted by Water Enhancement Authority over Grand Mesa and the west Elk Mountains in western Colorado. The program was sponsored by the Grand Mesa, Crawford, Fruitland and Colbran Conservancy Districts, and KannahCreek/City of Grand Junction. Water Enhancement Authority operated under Colorado Weather Modification Permit No. 2000-3.

This cloud seeding program was operated with thirteen (13) ground-based generators located around the target area. (A map is attached showing the target area and generator locations.) Generator operators were contacted by telephone and told when to start and stop their generators. Generators were filled with a solution of 2% (by weight) of silver iodide and acetone. This mixture was burned with propane. Approximately six (6) grams of silver iodide were released per hour of operation per generator. Suspension criteria threshold was never approached.

The Water Enhancement Authority started its program on November 27, 2006 with the last seedable storm occurring on April 29, 2007. During this period there were eight (8) seedable storms. Approximately 3066 grams of silver iodide were released. Following is a list of storm dates and generator operations:

STORM #1 Generators operated:

Total hours: 70

Total grams AGI: 420

DATE: 11/27/06 4,6,7,8,9,11,12

STORM #2 Generators operated:

Total hours: 60

Total grams AGI: 360

DATE: 12/11/06 1,2,3,8,9,11

STORM # 3 Generators operated:

Total hours: 96

Total grams AGI: 576

DATE: 12/19/06 1,2,3,4,5,6,7,8,9,11,12,13

STORM #4 Generators operated:

Total hours: 49

Total grams AGI: 294

DATE: 1/5/07 1,2,3,4,6,9,13

STORM # 5 Generators operated:

Total hours: 72

Total grams AGI: 432

DATE: 1/12/07 4,5,6,7,8,9,11,12,13

STORM # 6 DATE: 1/14/07

Generators operated: 4,5,6,7,8,9,13

Total hours: 42

Total grams AGI: 252

STORM # 7 DATE: 2/24/07

Generators operated: 1,2,3,4,6,7,8,9,11,12,13 Total hours: 66

Total grams AGI: 396

STORM # 8 DATE: 2/28/07

Generators operated: 3,6,7,13

Total hours: 16

Total grams AGI: 96

STORM # 9 Generators operated:

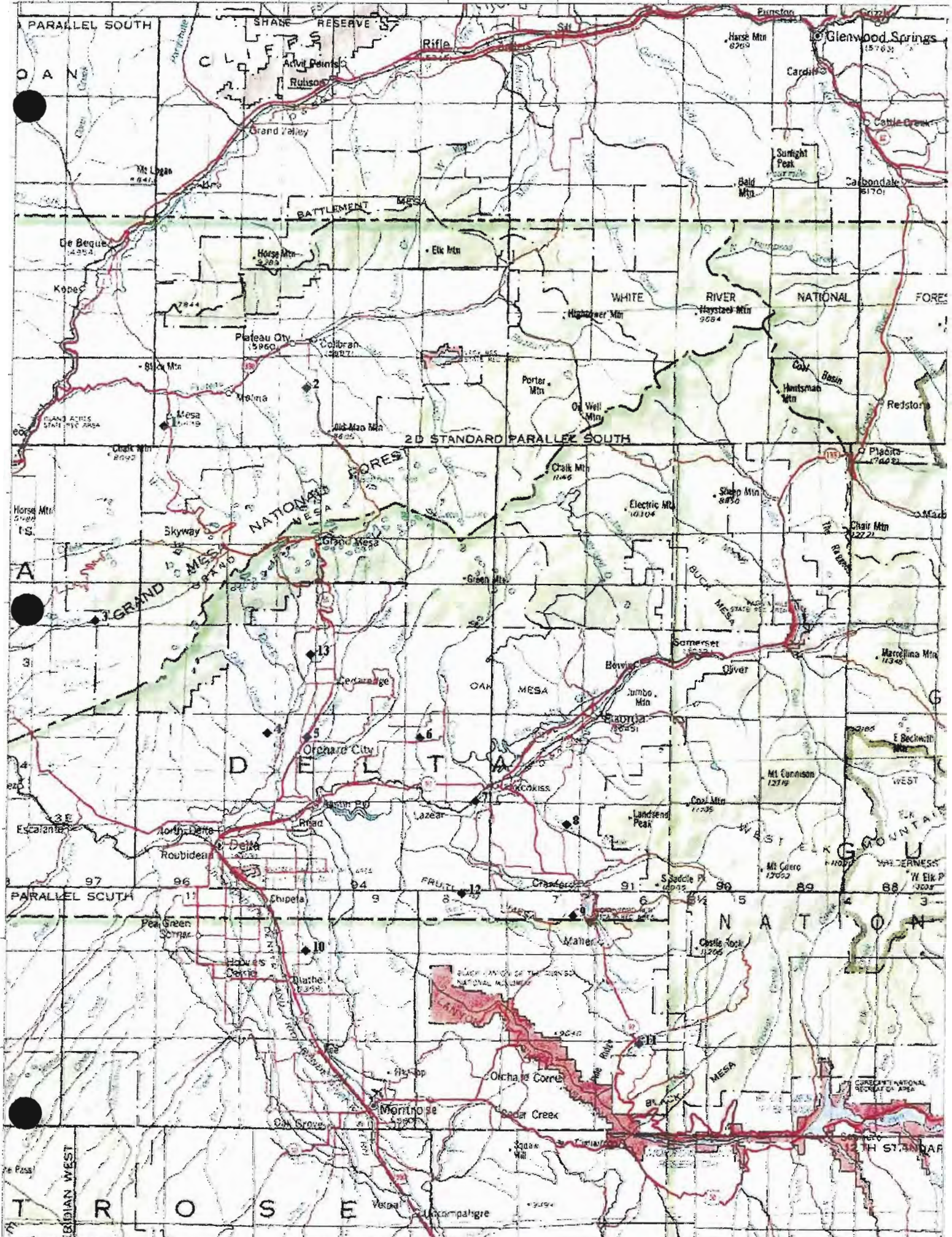
Total hours: 40

Total grams AGI: 240

DATE: 3/29/07 1,2,3,6,7,8,9,11,12,13

GENERATOR OPERATORS - 2006-2007

1. Dennis Bevan, 5511 481/2 Road, Mesa, CO 81643 268-5511
2. Hazel Place, 5815 ME Road, Collbran, CO 81624 487-3347
3. Danny Vanover, 6800 Purdy Mesa Road, Whitewater, CO 81527 241-3889
4. Fletcher Kehmeier, 19754 North Road, Eckert, CO 81418835-3605
5. Gene Young, 13307 Hwy 65, Eckert, CO 81418 835-3491
6. Pete Kasper, 13231-2900 Road, Hotchkiss, CO 81419 872-3586
7. Bolinger and Queen, 32874 J Road, Hotchkiss, CO 81419 872-3371
8. Don Little, 7334 Crawford Road, Hotchkiss, CO 81419 921-7581
9. Bill Mugford, 1483 Black Canyon Road, Crawford, CO 81415 921-7221
10. Lester Jones, 60489 Carnation Road, Olathe, CO 81425 323-5344
11. Don Meek, 82551 Hwy 92, Maher, CO 81421 921-5757
12. Steve Allen, 31500 Road, Crawford, CO 81415 921-7821
13. George Fulton, 18919 Green Valley Road, Cedaredge, CO 81413 856-7357



O A N

A

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97

96

94

9

Glenwood Springs

Cable Creek

Carbonade

Redstone

Placita

Chair Mtn

Marcellina Mtn

E Beckwith

W Elk P

W Elk P

Castle Rock

Castle Rock

Castle Rock

Castle Rock

WATER ENHANCEMENT AUTHORITY

**P.O. Box 181
Austin, CO 81410**

April 1, 2007

Joe Busto
Colorado Water Conservation Board
1313 Sherman Street, #721
Denver, CO 80203

Dear Mr. Busto:

The purpose of this letter is to request funds from the Colorado Water Conservation Board for the Grand Mesa Water Enhancement Authority for extending the cloud seeding program for the 2006-2007 season, using funds from the Lower Basin Parties

Please issue the Water Enhancement Authority a State of Colorado purchase order for \$8,000.

Please contact us with any questions about our operations.

Sincerely,

Peter A. Kasper, Secretary / Manager



State of Colorado Weather Modification Permit

Permit No. 2002-01

PERMITTEE:

Lawrence M. Hjermsstad, President
Western Weather Consultants, LLC.
P.O. Box 58
Durango, CO 81302-0058

PERMITTED PROJECT:

Commercial seeding operation of winter storm clouds with ground based cloud nuclei generators to augment snowpack. The permit is designed to assist in recovery from three consecutive drought years by augmenting snowpack. The generator will use 41 generators to augment snowpack, streamflow and reservoir storage. The target areas of this permit are the Upper Colorado, Upper South Platte, Upper Arkansas, Upper Fryingpan, Upper Roaring Fork and Mt. Holy Cross – Homestake River drainage basins. Target areas are identified on the attached map and include generator sites 1-41 for Denver Water and sites A-F for the Upper Arkansas Water Conservancy District and the Southeastern Colorado Water Conservancy District. There are eight counties in the target area that are Grand, Summit, Park, Clear Creek, Eagle, Lake, Pitkin, and Chaffee. Adjacent counties that might be affected include Gunnison, Garfield, Routt, Jackson, Larimer, Boulder, Gilpin, Jefferson, Denver, Douglas, Teller, Fremont, Saguache, and Mesa.

PERIOD OF PERMIT:

Approval is hereby given for operations from November 1, 2002 through March 31, 2003, with conditional approval given for future years' operations from November 1 through March 31 of 2003-2004 through the same operational seasons up to the operational year 2006-2007. This permit is subject to the permit renewal requirements of section 36-20-114(2), CRS, and of the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1. This permit shall automatically terminate on March 31, 2007.

TERMS AND CONDITIONS

Western Weather Consultants, LLC is hereinafter referred to as the "Permit Holder" and the Denver Water Board, Southeastern Colorado Water Conservation District and the Upper Arkansas Water Conservation District will be hereinafter referred to as the "Project Sponsors". By accepting Permit # 2002-01, the Permit Holder and Project Sponsors agree to all of the Terms and Conditions in this Permit. This permit is limited by and subject to the following terms and conditions. The terms suspension criteria and seeding threshold are used interchangeably in the Terms and Conditions and refer to a Snow Water Equivalent percentage of snowpack of USDA-NRCS SNOTEL and Snowcourse measurements at each of the designated monitoring sites. The Permit Holders and Project Sponsors must agree that:

1. The State of Colorado, Department of Natural Resources ("DNR"), and the Colorado Water Conservation Board ("CWCB") reserve the right to revoke or suspend this permit for any reason. In addition, the DNR and CWCB reserve the right to investigate weather modification operations at any or all generator sites identified in this permit for any reason.
2. The Permit Holder and the Project Sponsors hold harmless the state and its employees harmless against any and all claims, damages, liability, court awards, including costs, expenses and attorney fees incurred as a result of impacts from any weather modification operations performed by the Permit Holder and Project Sponsors.
3. Any entity (government, private or public sector) that feels weather modification operations in the target area are or will be harmful to life, property, wildlife and the environment can provide written comments to the CWCB and the Project Sponsors for consideration. Comments can be used to revise suspension criteria and/or suspend operations at nay site or sites for current and subsequent operational years.
4. The project must be carried out in conformity with the Operational Plan attached hereto as Exhibit A, except for those operations modified by these Terms and Conditions. This permitted project is also subject to the statutes and rules governing weather modification in Colorado (Article 20, Title 36, C.R.S. and the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1).
5. **Additional suspension Criteria** - The Project Sponsors and the Permit Holder accept any liability for cloud seeding operations near the Climax Mine, operated by Climax Molybdenum Company ("Climax"). At the August 16, 2002 public hearing on this permit, a representative of Climax voiced the company's concerns regarding the proposed operations. The Permit Holder and the Project Sponsor are required to pursue any of the following courses: (1) tighten suspension criteria on the network of generators located near the Climax Mine that affect the Tenmile Creek to the following levels. The Snow Water Equivalent (SWE) at the Fremont SNOTEL will be used by the Project Sponsors to monitor conditions SWE levels and a more stringent suspension criteria will be enforced that equates to 155% of average on December 1, 140% of average on January 1, 130% of average on February 1, 120% of average on March 1, and 120% of average on April 1, and/or (2) and/or create and agreement with Climax to compensate for the incremental costs of water treatment operations above what is normal that is agreeable to both the Project Sponsors and to Climax, and/or (3) suspend seeding operations in the Climax Mine area at generator sites 13, 14, 15 and 41 or any others that can reasonably affect Climax. The Project Sponsors will provide the CWCB and DNR with copies of any agreements with Climax.

6. This permit is subject to changes by the DNR and the CWCB if any of the Terms and Conditions in this permit are insufficient to provide accurate suspension criteria for the target area. The DNR and CWCB may add new suspension criteria at any time.
7. The target areas shall include areas of Grand, Summit, Park, Clear Creek, Eagle, Lake, Pitkin and Chaffee counties, with generators operating generally above 8,500 feet in elevation in the South Platte, Colorado and Arkansas Basins. The target areas are confined to those requested in the application and addressed at the public hearing (see maps attached for the Denver Water Board and for the Southeastern Colorado WCD and the Upper Arkansas WCD).
8. Seeding will be conducted only under conditions when seeding is likely to be beneficial in the target areas. The permit holder shall refrain from indiscriminate seeding activities or "overseeding," which may be grounds for revocation of this permit. The drought of 1999-2002 resulted in a deficit that can only be replenished through a responsible and sustainable program that augments snowpack in amounts up to average and moderately above average.
9. Denver Water may use no more than 41 manually operated ground based generators, the Southeastern Colorado Water Conservancy District and the Upper Arkansas Water Conservancy District may use no more than 13 manually operated ground based generators. The permit holder shall provide the Director of the CWCB with a map showing specific locations of each generator, and with the name, address, and telephone number of each generator operator before seeding commences each year.
10. The Permit Holder is required to record Global Positioning Systems data, including latitude, longitude and elevation, for each generator location and make that information available to the Project Sponsors and the CWCB by January 31, 2003 for this year and by November 1 of each seeding season in subsequent years. During the seeding season, the Permit Holder's cloud seeding generator operators are required to keep a seeding log for each generator (see attached form). The permit holder is to compile all the seeding logs into one summary log and fax this summary log to the CWCB at (303) 866-4474 by December 7, January 7, February 7, March 7, and April 7 of each year of operation under this permit.
11. Any subsequent change in the location of generators or identity of operators shall require the prior written approval of the CWCB Director. Any request for approval of such a change must be in writing and must include the GPS location information for each generator and operator contact information.
12. Prior to the seeding season the Permit Holder is required to send a letter of notification and a map of generator sites and the target area to the Colorado Avalanche Center and County Emergency Managers by November 1 in each of the target area counties and adjacent counties. The notification letter must identify a contact name and phone number for each of the Project Sponsors, the CWCB, and the Permit Holder. The contact name for the CWCB for operational year 2002-03 shall be Joe Busto at (303) 866-4807.
13. Seeding shall be done with a solution of silver iodide in acetone burned in a propane tank at an average rate of release from any single variable or fixed rate generator not to exceed 7 grams per hour. The maximum time that each generator may operate per season is 2900 hours.
14. The Project Sponsors are required to track and graph the suspension criteria at the designated SNOTEL and Snowcourse sites listed in the two tables in section 17 of the Terms and Conditions. Graphs prepared by the Project Sponsors will be presented to the CWCB for each of the designated

monitoring sites on January 1, February 1, March 1 and April 1 for each seeding season. If any one of the SNOTEL or Snowcourse sites exceeds the suspension criteria the Project Sponsors and Permit Holder shall suspend cloud seeding operations until the actual Snow Water Equivalent for the year is less than the suspension criteria.

15. The Permit Holder and Project Sponsors together shall prepare a brief annual report of cloud seeding operations. This report will summarize the past year's seeding operations and include a summary of all seeding logs for every generator site (November 1 – March 31). The annual report will also contain a graph for each of the suspension criteria or monitoring sites for USDA – NRCS SNOTEL and Snowcourse suspension criteria monitoring sites identified in section 16 of this permit. Each graph for the monitoring sites will include: (1) the 30-year average for SWE, (2) the seeding threshold in SWE, and (3) year's actual SWE for the operational year. The annual report will also have a brief discussion of the effectiveness and benefits of the past year's operations.
16. The permit holder shall suspend seeding operations if the average of the snowpack accumulations measured in equivalent inches of water at the SNOTEL and Snow course sites selected in the table below to represent the target area exceed the suspension criteria developed that is defined by the following points:
 - A. 175% of average SWE on December 1st
 - B. 175% of average SWE on January 1st
 - C. 160% of average SWE on February 1st
 - D. 150% of average SWE on March 1st
 - E. 140% of average SWE on April 1st

Snowpack accumulation shall be monitored bi-weekly from snow survey measurements through SNOTEL and Snowcourse data compiled by the Natural Resources Conservation Service, U.S. Department of Agriculture. SNOTEL and Snowcourse monitoring sites representing the target area were selected. Reporting on SNOTEL sites will start December 1 and reporting on Snowcourse sites will start January 1 or as soon as data is available for the particular Snowcourse site. Average snowpack will be calculated as the unweighted average of the water content of the snowpack for the 30-year period from 1971 to 2000 at identified SNOTEL sites or for the period of record for the individual SNOTEL or Snowcourse site. The following SNOTEL and Snowcourse sites were picked for proximity to communities, mountain passes and the overall target area and shall be monitored by the Permit Holder and the Project Sponsors for compliance with the suspension criteria listed in this permit at sections 16 (A-E) and in the tables listed below. The table lists two numbers the first number is the period of record SWE for that SNOTEL or Snowcourse Site and the second number (bolded number) is the seeding threshold or suspension criteria.

Additional Suspension Criteria around Climax Mine

Tighter suspension criteria and a lower seeding threshold is a requirement of this permit for the cloud seeding generator sites that are reasonably expected to affect Fremont Pass and that are reasonably expected to affect Climax Molybdenum Mine. The seeding threshold or suspension criteria for Fremont Pass SNOTEL site 155% of average in the month of December, 155% of average in January, 140% of average in February, 130% of average in March. Generator sites 13, 14, 15 and 41 could potentially affect Climax Mine and will be monitored closely also, however 155-155-140-130 suspension criteria only applies to generator sites reasonably expected to affect Fremont Pass.

The following SNOTEL and Snowcourse sites will be monitored for suspension criteria and seeding operations will either be suspended or seeding times scaled back as not exceed the Snow Water

Equivalent listed in the following table. The SNOTEL site and suspension criteria for Fremont pass SNOTEL site are shaded in gray below and will be monitored by all Project Sponsors.

Denver Water Permit Suspension Criteria

Generators 1-41	Site Type	NRCS Site	County	Basin	Elev.	Dec 1	Jan 1	Feb 1	Mar 1	Apr 1
						Site avg.	Site avg.	Site avg.	Site avg.	Site avg.
						175% of avg.	175% of of avg.	160% of of avg.	150% of of avg.	140% of of avg.
	Snowcourse	Como	Park	South Platte	10370	No data	No data	4.7 7.52"	6.3 9.45"	8.6 12.04"
	Snowcourse	Horseshoe Mountain	Park	South Platte	11220	No data	No data	6.8 10.88"	8.5 12.75"	10.3 14.42"
	SNOTEL	Brumley	Lake	Arkansas	10600	2.4 4.2"	4.0 7"	5.8 9.28"	7.9 11.85"	10.1 14.14"
	SNOTEL	Hoosier Pass	Park	Colorado	11140	4.3 7.52"	6.8 11.9"	9.3 14.88"	11.7 17.55"	14.7 20.58"
	SNOTEL	Michigan Creek	Park	South Platte	10600	3.4 5.95"	5.5 9.62	7.7 12.32"	10.0 15"	11.9 16.66"
13, 14, 15, 41	SNOTEL	Fremont Pass	Summit	Colorado	11400	4.1 6.35"	7.4 11.47"	10.4 14.56"	12.9 16.77"	16.2 19.44"
	SNOTEL	Copper Mountain	Summit	Colorado	10500	2.9 5.07"	5.8 10.15"	8.7 13.92"	11.2 16.8"	14.0 19.6"
	Snowcourse	Glenmar Ranch	Grand	Colorado	8750	No data	No data	5.5 8.8"	7.4 11.1"	8.7 12.18"
	Snowcourse	Gore Pass	Grand	Colorado	9400	No data	No data	4.1 6.56"	7.1 10.65"	9.2 12.88"
	Snowcourse	Corral Creek	Grand	Colorado	9700	No data	No data	10.1 16.16"	13.1 19.65"	14.6 20.44"
	SNOTEL	Stillwater Creek	Grand	Colorado	8720	1.6 2.8"	3.2 5.6"	5.4 8.64"	7.2 10.8"	7.8 10.92"
	SNOTEL	Berthoud Summit	Grand	Colorado	11300	3.9 6.82	7.5 13.12"	11.1 17.76"	14.3 21.45"	18.4 25.76"
	Snowcourse	Blue River	Summit	Colorado	10500	No data	No data	5.6 8.96"	7.3 10.95"	8.4 11.76"
	SNOTEL	Summit Ranch	Summit	Colorado	9400	2.6 4.55"	4.9 8.75"	6.7 10.72"	8.5 12.75"	11.1 15.54"
	SNOTEL	Hoosier Pass	Park	South Platte	11400	4.3 7.52"	6.8 11.9"	9.3 14.88"	11.7 17.55"	14.7 20.58"
	Snowcourse	Snake River	Summit	Colorado	10000	No data	No data	5.4 8.64"	7.0 10.5"	7.9 11.06"
	SNOTEL	Arrow	Grand	Colorado	9680	3.0 5.25"	6.0 10.5"	8.6 13.76"	11.1 16.65"	14.2 19.88"
	Snowcourse	Vasquez	Grand	Colorado	9600	No data	No data	8.4 13.44"	10.9 16.35"	14.2 19.88"
	Snowcourse	Empire	Clear Creek	South Platte	9600	No data	No data	4.3 6.88"	5.6 8.4"	7.5 10.5"
	SNOTEL	Loveland Basin	Clear Creek	South Platte	11400	3.8 6.65"	6.2 10.85"	10.1 16.16"	12.7 19.05"	18.6 26.04"
	SNOTEL	Vail Mountain	Eagle	Colorado	10300	5.6 9.8"	9.3 16.27"	13.5 21.6"	16.9 25.35"	22.3 31.22"
	Snowcourse	Shrine Pass	Summit	Colorado	10700	No data	No data	10.9 17.44"	14.3 21.45"	18.1 25.34"
	Snowcourse	Tennessee Pass #2	Lake	Arkansas	10280	No data	6.0 10.5"	7.3 11.68"	10 15"	11.9 16.66"
Generators 1-41	Site Type	NRCS Site	County	Basin	Elev.	Dec 1	Jan 1	Feb 1	Mar 1	Apr 1
						Site avg.	Site avg.	Site avg.	Site avg.	Site avg.
						175% of avg.	175% of of avg.	160% of of avg.	150% of of avg.	140% of of avg.
	SNOTEL	Buckskin Joe	Park	South Platte	11150	4 7"	6.5 11.38"	9.1 14.56"	11.4 17.1"	14 19.6"
	Snowcourse	Mosquito Creek	Parks	South Platte	10980	No data	No data	6.6 10.56"	8.2 12.3"	9.5 13.3"
	Snowcourse	Berthoud Pass	Grand	Colorado	9700	No data	No data	10.6 16.96"	14 21"	16.2 24.22"
	Snowcourse	Granby	Grand	Colorado	8600	No data	No data	4.7 7.52"	6.4 9.6"	7.2 10.08"
	SNOTEL	Jones Pass	Grand	Colorado	10400	4.2 7.35"	7.1 12.42"	9.7 15.52	12.8 19.2"	16.2 22.68"
	SNOTEL	Lake Eldora	Gilpin	South Platte	9700	2.8 4.9"	5.2 9.1"	7.5 12"	9.8 14.7"	12.4 17.36"
	SNOTEL	Grizzly Peak	Summit	Colorado	11100	4.4 7.7"	7.6 13.3"	10.7 17.12	13.7 20.55"	17.1 23.94"
	SNOTEL	Jackwacker Gulch	Clear Creek	South Platte	10960	2.5 4.37"	4.4 7.7"	6.6 10.56"	8.5 12.75"	11.1 15.54"
	SNOTEL	Independence Pass	Pitkin	Colorado	10600	4.1 7.17"	7.2 12.6"	10.0 16"	13.1 19.65"	16.8 23.52"
	Snowcourse	Geneva Park	Park	South Platte	9600	No data	No data	2.5	3.2	3.8

								4"	4.8"	5.32"
	Snowcourse	Fourmile Park	Lake	Arkansas	9700	No data	3.5 6.25"	4.6 7.36"	4.9 7.35"	1.4 1.96"
	SNOTEL	Echo Lake	Clear Creek	South Platte	10600	2.8 4.9"	4.2 7.35"	5.6 8.96"	7.0 10.5"	8.7 12.18"

The following SNOTEL and Snowcourse sites will be monitored for suspension criteria and seeding operations will either be suspended or seeding times scaled back as not exceed the Snow Water Equivalent listed in the following table.

Southeastern Colorado WCD and Upper Arkansas WCD suspension criteria

Generators A-J	Site Type	NRCS Site	County	Basin	Elev.	Dec 1 Site avg.	Jan 1 Site avg.	Feb 1 Site avg.	Mar 1 Site avg.	Apr 1 Site avg.
						175% of avg.	175% of avg.	160% of avg.	150% of avg.	140% of avg.
	Snowcourse	Fourmile Park	Lake	Arkansas	9700	No data	3.5 6.25"	4.6 7.36"	4.9 7.35"	1.4 1.96"
	SNOTEL	Brumley	Lake	Arkansas	10600	2.4 4.2"	4.0 7"	5.8 9.28"	7.9 11.85"	10.1 14.14"
	Snowcourse	St Elmo	Chaffee	Arkansas	10400	No data	No data	7.3 11.68"	9.3 13.95"	11.1 15.54"
	Snowcourse	Monarch Pass	Chaffee	Arkansas	10500	No data	No data	10.6 16.96"	14.2 21.3"	17.1 23.94"
	SNOTEL	Porphyry Creek	Gunnison	Gunnison	10760	3.8 6.65"	6.6 11.55"	9.9 15.84"	16.9 25.39"	15.9 22.26"
	Snowcourse	Trout Creek Pass	Chaffee	Arkansas	9720	No data	No data	3.3 5.28"	4.9 7.35"	4.5 6.3"
	Snowcourse	Weston	Park	South Platte	9300	No data	No data	2.7 4.32"	3.2 4.8"	3.0 4.2"
	SNOTEL	Independence Pass	Pitkin	Colorado	10600	4.1 7.17"	7.2 12.6"	10.0 16"	13.1 19.65"	16.8 23.52"
	SNOTEL	Ivanhoe	Pitkin	Colorado	10400	No data	5.4 9.45"	8.3 13.28"	11.4 17.1"	14.4 20.16"
	Snowcourse	Tennessee Pass #2	Lake	Arkansas	10280	No data	6.0 10.5"	7.3 11.68"	10 15"	11.9 16.66"
14, 15, 41	SNOTEL	Fremont Pass	Summit	Colorado	11400	4.1 6.35"	7.4 11.47"	10.4 14.56"	12.9 16.77"	16.2 19.44"
	SNOTEL	Rough & Tumble	Park	South Platte	10360	1.9 3.32"	4.1 7.17"	6.2 9.92"	8.0 12"	10.0 14"

17. In, addition, the Permit Holder shall not undertake operations, or shall suspend seeding operations if:

- A. The National Weather Service forecasts a storm that may produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the target area.
- B. The Colorado Avalanche Center issues an avalanche forecast warning for avalanche areas located in the target areas, or
- C. The Director of the CWCB or the Project Sponsors order suspension of seeding for any reason.

18. The Permit Holder shall inform the County Emergency Managers of intent to seed within 24 hours f commencing any seeding operation when the risk of avalanche in the areas outside the target area reasonably expected to be affected are high, or snowpack at any SNOTEL or Snowcourse monitoring site selected to represent the target areas are above 140% of normal, provided that each entity seeking advance notification of potential seeding operations has informed the permit holder of a point of contract that is available 24 hours a day. The Permit Holder shall prepare and maintain the following written records and reports:

- A. A daily record of operations, which includes at a minimum the information required by Form WM3 (copy attached), documentation of meteorological conditions during operations for later

evaluation by others, information on which seed/no seed decisions are based, and information utilized in making avalanche suspension decisions. The mentioned record shall be maintained by the Permit Holder's office.

- B. A monthly summary report indicating at a minimum the number of weather systems with seeding opportunities during the month, the number of operational days in the month, the specific dates and times and from which generators seeding actually occurred, total run times, rates and total weight of seeding agent used in the month.
- C. An annual report shall be submitted to the Director of the CWCB no later than August 1 of each year for the preceding winter's operations that includes a scientific evaluation of the effectiveness of the project in the target area, any impacts in the area reasonably expected to be effected and in downwind areas, and any recommended changes in the operating plan. This report is subject to requests for additional data and analysis.

All such reports shall be public records subject to the provisions and limitations of Part 2 of Article 7 of Title 24, CRS.

19. The monthly reports shall be submitted in a timely manner to the following entities:

- Director, Colorado Water Conservation Board
- The Colorado Avalanche Center
- The Colorado Department of Transportation

20. An annual report shall be submitted in a timely manner to the above mentioned entities and the following additional entities by July 30th of each year for the preceding years operations. The following entities will receive this report as well as those entities named in # 20:

- Eagle County Board of Commissioners
- Park County Board of Commissioners
- Grand County Board of Commissioners
- Summit County Board of Commissioners
- Clear Creek County Board of Commissioners
- Lake County Board of Commissioners
- Pitkin County Board of Commissioners
- Gilpin County Board of Commissioners
- Chaffee County Board of Commissioners
- Colorado Climate Center, Colorado State University
- Colorado Department of Transportation
- Colorado Division of Water Resources
- Colorado Division of Wildlife

21. The state reserves the right to examine and audit the daily logs, books and records of the Permit Holder concerning the project which is the subject of this permit for a period of two years after the termination date of this permit.

22. The Permit Holder shall be responsible for obtaining all permits, licenses, or other approvals, and for filing all notices or reports required by, federal, state, or local laws in addition to this permit.

23. Each Project Sponsor will pay a 2% commercial fee required by section 36-20-113, CRS, which is 2% of the amount of the contract between the permit holder and Project Sponsors. This commercial fee is due at the beginning of each cloud seeding season (November 1 of every year) for the length of this permit. The commercial fee is only applicable in years that the Project Sponsors decide to operate a weather modification program.

24. All notices, reports, records, payments and other communications that the Permit Holder must provide to the Director shall be addressed as follows:

Director
Colorado Water Conservation Board
1313 Sherman St. # 721
Denver, Colorado 80203

25. Violation of or deviations from the "Terms and Conditions" of this permit may result in revocation or suspension of this permit as provided by law.

11.01.02

DATE

Rod K. h-L

Rod Kuharich, Director
Colorado Water Conservation Board

11-1-02

DATE

Greg E. Walcher

Greg E. Walcher, Executive Director
Colorado Water Conservation Board

Telluride



State of Colorado Weather Modification Permit

Permit No. 2002-03

PERMITTEE:

Lawrence M. Hjermstad, President
Western Weather Consultants, LLC.
P.O. Box 58
Durango, CO 81302-0058

PERMITTED PROJECT:

Commercial seeding operation of winter storm clouds with ground based cloud nuclei generators to augment snowpack. This permit is to use 9 generators to augment ski resort snowpack streamflow for the target area of the Upper San Miguel Basin above Placerville with the primary focus on the Telluride Ski area. The Sponsors of this project are the Telluride Ski & Golf Company and the Southwestern Water Conservation District.

PERIOD OF PERMIT:

Approval is hereby given for operations from November 1 through March 31, 2002 with conditional approval given for future years operations from November 1 through March 31 of 2002-2003 through operational season 2011-2012, subject to the permit renewal requirements of section 36-20-114(2), CRS, and of the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1. This permit shall automatically terminate on March 31, 2012.

TERMS AND CONDITIONS

Western Weather Consultants, LLC is hereinafter referred to as the "Permit Holder" and Telluride Ski & Golf Company and the Southwestern Water Conservation District will be hereinafter referred to as the "Project Sponsors". By accepting Permit # 2002-03, the Permit Holder and Project Sponsors agree to all of the Terms and Conditions in this Permit. This permit is limited by and subject to the following terms and conditions. The terms suspension criteria and seeding threshold are used interchangeably in the Terms and Conditions refer to a Snow Water Equivalent percentage of snowpack that is generally between 1.75 and 1.2 times the period of record for USDA NRCS SNOTEL and Snowcourse measurements at each of the designated monitoring sites.

1. The State of Colorado, Department of Natural Resources ("DNR"), and the Colorado Water Conservation Board ("CWCB") reserve the right to revoke or suspend this permit for any reason. In addition, the DNR and CWCB reserve the right to investigate weather modification operations at any or all generator sites identified in this permit for any reason.
2. Any entity (government, private or public sector) that feels weather modification operations in the target area are or will be harmful to life, property, wildlife and the environment can provide written comments to the CWCB and the Project Sponsors for consideration. Comments can be used to revise suspension criteria for current and subsequent operational years.
3. The project must be carried out in conformity with the Operational Plan attached hereto as Exhibit A, except for those operations modified by these terms and conditions. This permitted project is also subject to the statutes and rules governing weather modification in Colorado (Article 20, Title 36, C.R.S. and the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1).
4. The target area shall include area of the Upper San Miguel Basin above Placerville with the primary focus is the Telluride Ski area generally above 8,500 feet in elevation in the Upper San Miguel Basins. The target area and authority to see is located solely within San Miguel County. (see attached map)
5. Seeding will be conducted only under conditions when seeding is likely to be beneficial in the target areas. The permit holder shall refrain from indiscriminate seeding activities or "overseeding", which may be grounds for revocation of this permit. Due to the lack of opposition at the public hearing held October 15, 2002 in Telluride the previous Terms and Conditions in Permit 97-01 that stated yearly coordination meetings with the neighboring towns are repealed. However, if at any time during the period of this permit concerns are raised by an entity
6. No more than nine (9) manually operated ground based generators shall be used. The permit holder shall provide the Director of the Colorado Water Conservation Board (CWCB) with a map showing specific locations of each generator, and the name, address, and telephone operator before seeding commences in each year. The permit holder is also required to record GPS coordinates for each generator site including latitude, longitude and elevation coordinates. Any subsequent change in the number or location of generators or of operators shall require the prior written approval of the CWCB Director.

7. Seeding shall be done with a solution of silver iodide in acetone burned in a propane tank at an average rate of release from any single variable or fixed rate generator not to exceed 7 grams per hour.
8. The permit holder shall suspend seeding operations if at any time the average of the snowpack accumulations measured in equivalent inches of water, at the SNOTEL and snow course sites selected to represent the target area exceeds a continuous function defined by the following points:
 - A. 175% of average on December 1st
 - B. 160% of average on January 1st
 - C. 150% of average on February 1st
 - D. 145% of average on March 1st
 - E. 140% of average on April 1st

Snowpack accumulation will be monitored at least weekly from snow survey measurements conducted by the Natural Resources Conservation Service, U.S. Department of Agriculture.

Average snowpack will be calculated as the unweighted average of the water content of the snowpack for the 30-year based period from 1971 to 2000 at identified SNOTEL sites. The following SNOTEL sites shall be monitored for compliance with the above suspension criteria:

Telluride Ski & Golf Co. and Southwestern WCD suspension criteria

Generators	Site Type	NRCS Site	County	Basin	Elev.	Dec 1	Jan 1	Feb 1	Mar 1	Apr 1
						Site avg.	Site avg.	Site avg.	Site avg.	Site avg.
						175% of avg.	160% of avg.	150% of avg.	145% of avg.	140% of avg.
	SNOTEL	Lizard Head Pass	Dolores	Dolores	10,200	4.2 7.35"	7.0 11.2"	9.4 14.1"	12.6 18.27"	16.1 22.54"
	SNOTEL	Red Mountain Pass	Gunnison	Ouray	11,200	6.3 11.02"	10.1 16.16"	14.6 21.9"	19.2 27.84"	25.5 35.7"
	Snowcourse	Telluride	San Miguel	San Miguel	8,800	No data	No data	6 9"	7.9 11.45"	8.4 11.76"
	Snowcourse	Trout Lake # 2	San Miguel	San Miguel	9,780	No data	No data	8.8 13.2"	11.5 16.67"	14.4 20.16"
	SNOTEL	Mineral Creek	Animas	San Juan	10,040	4.2 7.35"	6.7 10.72"	9.6 14.4"	12.4 17.98"	15.5 21.7"
	SNOTEL	Lone Cone	San Miguel	San Miguel	9,600	4.4 7.7"	7.8 12.48"	11.3 17.4"	15.1 21.89"	17.5 24.5"

9. The permit holder shall not undertake, or shall suspend, seeding operations if:
 - A. The National Weather service forecasts a storm to produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the project area.
 - B. The Colorado Avalanche Center issues an avalanche forecast warning for the avalanche paths located in the target area of in the area near the Town of Ophir, or
 - C. The Director of the CWCB orders suspension of seeding for any reason.
10. The Permit Holders shall inform the following entities of its intent to seed within 24 hours of commencing any seeding operation when the risk of avalanche in the areas outside the target area reasonably expected to be affected are high or snowpack at any SNOTEL monitoring site selected to represent the target areas is above 120% of normal. This is only provided that each entity

seeking advance notification of potential seeding operations has informed the Permit Holder of a point of contact which is available 24 hours a day:

- | | |
|---------------------------------------|---|
| 1) Town of Ophir | 5) Ouray County Commissioners |
| 2) City of Ouray | 6) San Juan County Commissioner |
| 3) Town of Silverton | 7) The Colorado Avalanche Center |
| 4) San Miguel County
Commissioners | 8) The Colorado Department of
Transportation (District #5) |

11. The Permit Holder shall prepare and maintain the following written records and reports:

- A. A daily record of operations, which includes at a minimum the information required by Form WM3 (copy attached), documentation of meteorological conditions during operations for later evaluation by others, information on which seed/no seed decisions are based, and information utilized in making avalanche suspension decisions, shall be maintained by the permit holder at its offices.
- B. A monthly summary report indicating at a minimum the number of weather systems with seeding opportunities during the month, the number of operational days in the month, the specific dates and times and from which generators seeding actually occurred, total run times, rates and total weight of seeding agent in the month
- C. An annual report shall be submitted to the Director of the CWCB no later than September 1 of each year for the preceding winter's operations, a scientific evaluation of the effectiveness of the project in the target area, any impacts in the area reasonably expected to be effected and in downwind areas, and any recommended changes in the operating plan. All such reports shall be public records subject to the provisions and limitations of Part 2 or Article 72 of Title 24, C.R.S.

12. The monthly reports shall be submitted in a timely manner to the following entities:

- Director, Colorado Water Conservation Board
- The Colorado Avalanche Center
- The Colorado Department of Transportation

13. An annual report shall be submitted in a timely manner to the above mentioned entities and the following additional entities by July 30th of each year for the preceding years operations. The following entities will receive this report as well as those entities named in # 12:


- Telluride Ski and Golf Company
- Southwestern Colorado water Conservation District
- San Miguel County Board of Commissioners
- Montrose County Board of Commissioners
- Ouray County Board of Commissioners
- Dolores County Board of Commissioners
- San Juan County Board of Commissioners
- Colorado Department of Transportation, District 5
- Colorado Division of Water Resources
- Colorado Division of Wildlife District Office

14. The state reserves the right to examine and audit the daily logs, books and records of the Permit Holder concerning the project which is the subject of this permit for a period of two years after the termination date of this permit.
15. The Permit Holder is required to record Global Positioning Systems data, including latitude, longitude and elevation, for each generator location and make that information available to the Project Sponsors and the CWCB by January 31, 2003 for this year and by November 1 of each seeding season in subsequent years. During the seeding season, the permit holder's cloud seeding generator operators are required to keep a seeding log for each generator (see attached form). The permit holder is to compile all the seeding logs into one summary log and fax this summary log to the CWCB at (303) 866-4474 by December 7, January 7, February 7, March 7, and April 7 of each year of operation under this permit.
16. Prior to the seeding season the permit holder is required to send a letter of notification and a map of generator sites and the target area to the Colorado Avalanche Center and County Emergency Managers by November 1 in the each of the target area counties and adjacent counties. The notification letter must identify a contact name and phone number for each of the Project Sponsors, the CWCB, and the Permit Holder. The contact name for the CWCB for operational year 2002-03 shall be Joe Busto at (303) 866-4807.
17. The Permit Holder shall be responsible for obtaining all permits, licenses, or other approvals, and for filing all notices or reports required by, federal, state, or local laws in addition to this permit.
18. Each Project Sponsor will pay a 2% commercial fee required by section 36-20-113, C.R.S., which is 2% of the amount of the contract between the Permit Holder and Project Sponsors. The commercial fee is due at the beginning of each cloud seeding season (November 1 of every year) for the length of the permit. The commercial fee is only applicable in years that the Project Sponsors decide to operate a weather modification program.
19. All notices, reports, records, payments and other communications that the Permit Holder must provide to the Director shall be addressed as follows:
Director
Colorado Water Conservation Board
1313 Sherman St. # 721
Denver, Colorado 80203
20. Violation of or deviations from the "Terms and Conditions" of this permit may result in revocation or suspension of this permit as provided by law.

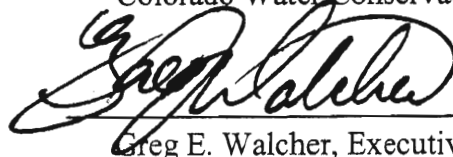
11.21.02

DATE

DATE



Rod Kuharich, Director
Colorado Water Conservation Board



Greg E. Walcher, Executive Director
Colorado Water Conservation Board

Eastern San
Juan



State of Colorado Weather Modification Permit

Permit No. 2002-02

PERMITTEE:

Lawrence M. Hjermstad, President
Western Weather Consultants, LLC.
P.O. Box 58
Durango, CO 81302-0058

PERMITTED PROJECT:

Commercial seeding operation of winter storm clouds with ground based cloud nuclei generators to augment snowpack. This permit is to use 11 generators to increase streamflow and reservoir storage for the Upper reaches of the Piedre, San Juan, Blanco and Navajo River drainage basins. The target areas are Archuleta, Hinsdale and Mineral counties. The Project Sponsors are the San Juan Water Conservancy District and the Southwestern Water Conservation District.

PERIOD OF PERMIT:

Approval is hereby given for operations from November 1, 2002 through March 31, 2003, with conditional approval given for future years' operations from November 1 through March 31 of 2003-2004 through the same operational seasons up to the operational year 2009-2010. This permit is subject to the permit renewal requirements of section 36-20-114(2), CRS, and of the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1. This permit shall automatically terminate on March 31, 2010.

TERMS AND CONDITIONS

Western Weather Consultants, LLC is hereinafter referred to as the "Permit Holder" and the San Juan Water Conservancy District and Southwestern Water Conservation District will be hereinafter referred to as The "Project Sponsors". By accepting Permit No. 2002-02, the Permit Holder and Project Sponsors agree to all of the terms and conditions in this permit. This permit is limited by and subject to the following terms and conditions. The terms suspension criteria and seeding threshold are used interchangeably and refer to a Snow Water Equivalent percentage of snowpack that is generally between 1.75 and 1.4 times the period of record for USDA-NRCS SNOTEL and Snowcourse measurements at each of the designated monitoring sites. The Permit Holder and Project Sponsors must agree that:

1. The State of Colorado, Department of Natural Resources ("DNR"), and the Colorado Water Conservation Board ("CWCB") reserve the right to revoke or suspend this permit for any reason. In addition, the DNR and CWCB reserve the right to investigate weather modification operations at any or all generator sites identified in this permit for any reason.
2. The Permit Holder and the Project Sponsors hold the state and its employees harmless against any and all claims, damages, liability, court wards, including costs, expenses and attorney fees incurred as a result of impacts from any weather modification operation performed by the Permit Holder and Project Sponsors.
3. Any entity (government, private or public sector) that feels weather modification operations in the target area are or will be harmful to life, property, wildlife and the environment can provide written comments to the CWCB and the Project Sponsors for consideration. Comments can be used to revise suspension criteria and/or suspend operations at any site or sites for current and subsequent operational years.
4. The project must be carried out in conformity with the Operational Plan attached hereto as Exhibit A, except for those operations modified by these terms and conditions. This permitted project is also subject to the statutes and rules governing weather modification in Colorado (Article 20, Title 36, C.R.S. and the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1).
5. This permit is subject to changes by the DNR and the CWCB if any of the terms and conditions in this permit are insufficient to provide accurate suspension criteria for the target area. The DNR and CWCB may add new suspension criteria to this permit at any time.
6. The target areas shall include areas the areas of Archuleta, Hinsdale, and Mineral County, with generators operating generally above 8,500 feet in elevation in the Lower Piedre and San Juan Basins. The target areas are confined to those requested in the application and addressed at the public hearing. (see attached map – Exhibit G)
7. Seeding will be conducted only under conditions when seeding is likely to be beneficial in the target areas. The Permit Holder shall refrain from indiscriminate seeding activities or "overseeding," which may be grounds for revocation of this permit. The drought of 1999-2002 resulted in a water deficit that can only be replenished through a responsible and sustainable program that augments snowpack in amounts up to average and moderately above average.
8. The Project Sponsors and Permit Holder may use no more than 11 manually operated ground based generators. The Permit Holder shall provide the Director of the CWCB with a map showing specific

locations of each generator, and with the name, address, and telephone number of each generator operator before seeding commences each year.

9. The Permit Holder is required to record Global Positioning Systems data, including latitude, longitude and elevation, for each generator location and make that information available to the Project Sponsors and the CWCB by January 31, 2003 for this year and by November 1 of each seeding season in subsequent years. During the seeding season, the Permit Holder's cloud seeding generator operators are required to keep a seeding log for each generator (see attached form). The Permit Holder is to compile all the seeding logs into one summary log and fax this summary log to the CWCB at (303) 866-4474 by December 7, January 7, February 7, March 7, and April 7 of each year of operation under this permit.
10. Any subsequent change in the location of generators or identity of operators shall require the prior written approval of the CWCB Director. Any request for approval of such a change must be in writing and must include the GPS location information for each generator and operator contact information.
11. Prior to the seeding season the Permit Holder is required to send a letter of notification and a map of the target area to the Colorado Avalanche Center and County Emergency Managers by November 1 in the each of the target area counties. The notification letter must identify a contact name and phone number for each of the Project Sponsors, the CWCB, and the Permit Holder. The contact name for the CWCB for operational year 2002-03 shall be Joe Busto at (303) 866-4807.
12. Seeding shall be done with a solution of silver iodide in acetone burned in a propane tank at an average rate of release from any single variable or fixed rate generator not to exceed 7 grams per hour. The maximum time that each generator may operate per season is 2900 hours.
13. The Project Sponsors are required to track and graph the suspension criteria at the designated SNOTEL and Snowcourse sites listed in the table in section 15 of the terms and conditions. Graphs prepared by the Project Sponsors will be presented to the CWCB for each of the designated monitoring sites on December 7, January 7, February 7, March 7 and April 7 for each seeding season. If any one of the SNOTEL or Snowcourse sites exceeds the suspension criteria the Permit Holder shall suspend cloud seeding operations until the actual Snow Water Equivalent for the year is less than the suspension criteria.
14. The Permit Holder and Project Sponsors together shall prepare a brief annual report of cloud seeding operations. This report will summarize the past year's seeding operations and include a summary of all seeding logs for every generator site (November 1 – March 31). The annual report will also contain a graph for each of the suspension criteria or "monitoring sites" for USDA – NRCS SNOTEL and Snowcourse suspension criteria monitoring sites identified in section 15 of this permit. Each graph for the monitoring sites will include: (1) the 30-year average for SWE, (2) the seeding threshold in SWE, and (3) year's actual SWE for the operational year. The annual report will also have a brief discussion of the effectiveness and benefits of the past year's operations.
15. The Permit Holder shall suspend seeding operations if the average of the snowpack accumulations measured in equivalent inches of water at the SNOTEL and Snowcourse sites selected in the table below to represent the target area exceed the suspension criteria developed that is defined by the following points:
 - A. 175% of average SWE on December 1st

- B. 175% of average SWE on January 1st
- C. 160% of average SWE on February 1st
- D. 150% of average SWE on March 1st
- E. 140% of average SWE on April 1st

Snowpack accumulation shall be monitored bi-weekly from snow survey measurements through SNOTEL and Snowcourse data compiled by the Natural Resources Conservation Service, U.S. Department of Agriculture. SNOTEL and Snowcourse monitoring sites representing the target area were selected. Reporting on SNOTEL sites will start December 1 and reporting on Snowcourse sites will start January 1 or as soon as data is available for the particular Snowcourse site. Average snowpack will be calculated as the unweighted average of the water content of the snowpack for the 30-year period from 1971 to 2000 at identified SNOTEL sites or for the period of record for the individual SNOTEL or Snowcourse site. The following SNOTEL and Snowcourse sites were picked for proximity to communities, mountain passes and the overall target area and shall be monitored by the Permit Holder and the Project Sponsors for compliance with the suspension criteria listed in this permit in sections 15 (A-E) and in the tables listed below. The table lists two numbers the first number is the period of record SWE for that SNOTEL or Snowcourse Site and the second number (bolded number) is the seeding threshold or suspension criteria.

The CWCB developed suspension criteria and attention shall be paid to the SNOTEL network around Vallecito and Lemon Reservoirs by the Permit Holder and the Project Sponsors. The SNOTEL sites Stump Lakes and Vallecito are reasonably expected to be affected by cloud seeding operations in this basin. The forest fire of 2002 known as "Missionary Ridge" fire has led to flooding and erosion on the Animas, Florida Rivers. The Permit Holder will need to develop a degree of coordination with the La Plata County Emergency Managers in January, February and March of every year and monitor the conditions at the mentioned sites. In two years when hydrologic conditions in the watershed are closer to normal and vegetation is rejuvenating suspension criteria can be requested to be adjusted back to typical levels.

Eastern San Juan Mountains Permit Suspension Criteria

Generators	Site Type	NRCS Site	County	Basin	Elev.	Dec 1	Jan 1	Feb 1	Mar 1	Apr 1
						Site avg.	Site avg.	Site avg.	Site avg.	Site avg.
	SNOTEL	Upper San Juan	Mineral	San Juan	10130	7.4 12.95"	12.9 22.57"	19.0 30.4"	25.6 38.4"	31.7 44.38"
	SNOTEL	Middle Creek	Mineral	Rio Grande	11250	3.4 5.95"	5.5 9.62"	7.7 12.32"	10.0 15"	11.9 16.66"
	SNOTEL	Beartown	Mineral	Rio Grande	11600	7.7 13.47"	11.5 21.12"	15.0 24"	20.0 30"	24.6 34.44"
	SNOTEL	Upper Rio Grande	Hinsdale	Rio Grande	9400	1.7 2.97"	2.9 5.07"	3.9 6.24"	5.4 8.1"	5.9 8.26"
Generators	Site Type	NRCS Site	County	Basin	Elev.	Dec 1	Jan 1	Feb 1	Mar 1	Apr 1
						Site avg.	Site avg.	Site avg.	Site avg.	Site avg.
	SNOTEL	Vallecito	La Plata	San Juan	10880	5.8 9.57"	9.0 14.85"	11.3 16.95"	16.4 22.96"	19.3 25.09"
	SNOTEL	Stump lakes	San Juan	Animas	11200	7.1 11.71"	9.6 15.84"	12.4 18.6"	16.2 23.1"	20.3 26.39"
	SNOTEL	Wolf Creek Summit	Mineral	Rio Grande	11000	10.0 16.5"	14.3 23.59"	20.1 30.15"	26.0 36.4"	33.3 43.29"

16. In addition, The Permit Holder shall not undertake operations, or shall suspend seeding operations if:
 - A. The National Weather Service forecasts a storm that may produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the target area.
 - B. The Colorado Avalanche Center issues an avalanche forecast warning for avalanche areas located in the target areas, or
 - C. The Director of the CWCB or the Project Sponsors order suspension of seeding for any reason.
17. The Permit Holder shall inform the County Emergency Managers of intent to seed within 24 hours of commencing any seeding operation when the risk of avalanche in the areas outside the target area reasonably expected to be affected are high, or snowpack at any SNOTEL or Snowcourse monitoring site selected to represent the target areas is above 120% of normal, provided that each entity seeking advance notification of potential seeding operations has informed the permit holder of a point of contract that is available 24 hours a day. The Permit Holder shall prepare and maintain the following written records and reports:
 - A. A daily record of operations, which includes at a minimum the information required by Form WM3 (copy attached), documentation of meteorological conditions during operations for later evaluation by others, information on which seed/no seed decisions are based, and information utilized in making avalanche suspension decisions. The mentioned record shall be maintained by the Permit Holder's office.
 - B. A monthly summary report indicating at a minimum the number of weather systems with seeding opportunities during the month, the number of operational days in the month, the specific dates and times and from which generators seeding actually occurred, total run times, rates and total weight of seeding agent used in the month.
 - C. An annual report shall be submitted to the Director of the CWCB no later than June 30th of each year for the preceding winter's operations that includes a scientific evaluation of the effectiveness of the project in the target area, any impacts in the area reasonably expected to be effected and in downwind areas, and any recommended changes in the operating plan. This report is subject to requests for additional data and analysis.

All such reports shall be public records subject to the provisions and limitations of Part 2 of Article 7 of Title 24, CRS.

18. The monthly report shall be submitted in a timely manner to the following entities:
 - Director, Colorado Water Conservation Board
 - The Colorado Avalanche Center
 - The Colorado Department of Transportation
19. An annual report shall be submitted in a timely manner to the above mentioned entities and the following additional entities by June 30th of each year for the preceding years operations. The following entities will receive this report as well as those entities named in # 18:
 - San Juan Conservancy District

Western San
Juans



State of Colorado Weather Modification Permit

Permit No. 2000-2

PERMITTEE:

Lawrence M. Hjermstad, Manager
Western Weather Consultants, LLC
P.O. Box 58
Durango, Colorado 81302-0058

PERMITTED PROJECT:

Commercial seeding operation of winter storm clouds from ground based cloud nuclei generators from November 1 through March 31. The target area is described in the "Terms and Conditions" herein.

PERIOD OF PERMIT:

Approval is hereby given for operations from November 1, 2000 through March 31, 2001, with conditional approval given for future years' operations from November 1 through March 31 of 2001-2002 through operational season 2009-2010, subject to the permit renewal requirements of section 36-20-114(2), CRS, and of the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1. This permit shall automatically terminate on March 31, 2010.

Department of Agriculture.

Average snowpack will be calculated as the unweighted average of the water content of the snowpack for the 30-year base period from 1961 to 1990 at identified snotel sites. The following snotel site shall be monitored for compliance with the above suspension criteria:

<u>Snotel Sites</u>	<u>Elevation</u>	<u>Average 1961 to 1990 Water Content in inches</u>				
		<u>Dec 1</u>	<u>Jan 1</u>	<u>Feb 1</u>	<u>Mar 1</u>	<u>Apr 1</u>
Lizard Head Pass Snotel	10,200	1.9	6.3	9.6	12.7	15.8
Scotch Creek Snotel	9,100	2.1	5.9	8.4	11.4	15.1
Cascade Snotel	8,880	2.0	6.0	9.1	12.0	12.6
	Average	2.0	6.1	9.0	12.0	14.5
	Threshold	4.0	10.7	14.4	18.0	20.3

7. The permittee shall not undertake, or shall suspend, seeding operations if:
 - A. The National Weather Service forecasts a storm to produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the project area,
 - B. The Colorado Avalanche Center issues an avalanche forecast warning for avalanche paths located in the target area, or
 - C. The Director orders suspension of seeding for any reason.

8. The permittee shall inform the Colorado Department of Transportation (Region 5) of its intent to seed within 48 hours of commencing any seeding operation when the risk of avalanches in the area reasonably expected to be affected are high, as determined by the Colorado Avalanche Center, or snow pack at any snotel monitoring site selected to represent the target area is above 120% of normal.

9. The permittee shall prepare and maintain the following written records and reports:
 - A. A daily record of operations, which includes at a minimum the information required by Form WM3 (copy attached), documentation of meteorological conditions during operations for later evaluation by others, information on which seed/no seed decisions are based, and information utilized in making avalanche suspension decisions, shall be maintained by the permittee at its offices.
 - B. A monthly summary report indicating at a minimum the number of weather systems with seeding opportunities during the month, the number of

2000-2001 WESTERN SAN JUAN PROGRAM GENERATOR OPERATORS

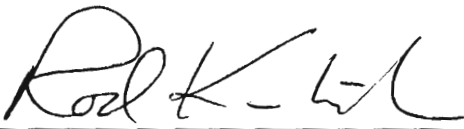
Site	Name	Phone Number	Address	Other Notes
A5	Cliff Bankston	(970) 749-3546	Rural Route #1 Norwood, CO 81423	.50
B6	Stuart Steves Barbara	(970) 882-4094	P. O. Box 997 Dolores, CO 81323	.50 Best call eve. Leaves~7:30AM
C	Bryce Young Michelle & Cherrie	(970) 562-4704W 562-4712H	P. O. Box 773 Dove Creek, CO 81324	.14
D8	Clair & Ann Larsen Ann's mother	(970) 562-3828 562-3832	28377 Hwy 145 Dolores, CO 81323	.14
E	Eddie Oliver Glenna & Morgan	(970) 562-4772	P. O. Box 276 Pleasant View, CO 81331	.14
F7	Don Setser Mary	(970) 882-7528H 882-4662W	P. O. Box 583 Dolores, CO 81323	.50 Best call eve
G	to be located			
H	Jack Ott Mary Ann	(970) 533-7365	Box 1 Mancos, CO 81328	.14
I	Charlie Taylor J. Ferguson	(970) 385-4585 247-3448	4317 Co. Rd. 124 Hesperus, CO 81326	.14 J. F. Landowner
J	Jim Isgar Brenda & Matt	(970) 385-7664	11190 Co. Rd. 141 Hesperua, CO 81326	.14
K	to be located			
L	Larry Hjermstad	(970) 247-8813W 247-1827H	1102 Co. Rd. 220 Durango, CO 81303	.14
M	Mike Hjermstad	getting new phone	1034 Faraday Rd. Durango, CO 81303	.14

Director
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Telephone: 303-866-3441
FAX: 303-866-4474

14. Violations of or deviations from the "Terms and Conditions" of this permit may result in revocation or suspension of this permit as provided by law.

04.12.01
Date


Rod Kuharich, Director
Colorado Water Conservation Board

for Greg E. Walcher, Executive Director,
Colorado Department of Natural Resources

Exhibit A

Operational Plan

Map of the Target Area

List of Generator Operators for 2000-2001

Weather Modification Suspension Criteria Graph

Form WM3, monthly operations summary report (blank form)

1. Operation Plan (continued)

and p ibals. Also available will be radar data, half-hourly satellite maps from the National Weather Service, rawinsonde data and other forecast aids to assist in selecting favorable storm periods suitable for modification to achieve the intended objectives.

3) Types of Aircraft:

There will be no aircraft used for seeding on this program. All cloud nuclei generators will be operated from the ground.

4) Description of the Seeding Devices, Materials and Seeding Rates, etc.:

Twelve (12) manually operated ground-based cloud nuclei generators will be located within and around the project areas. These manually operated generators will be the same type as used on the Colorado River Basin Pilot Project and projects operated by Western Weather Consultants, Inc. during the past six years. In previous use, these generators have proven to be efficient nuclei generators, safe and require very little maintenance. The solution used will be a 4% silver iodide and a 1.25% sodium iodide solution in acetone. The solution when burned in a propane flame at a rate of 20 grams per hour per site will produce approximately 10^{16} effective nuclei in cloud systems with a 500 mb temperature around -20° C. This variable output generator will be operated at rates from 5 to 15 grams per hour depending on the seedability of cloud conditions.

5) Description of How the Project will be Implemented and Carried Out:

The operational procedures to be used by the applicant to achieve the stated objective are to produce silver iodide crystals (artificial cloud nuclei) from the network of ground-based generators for diffusion by favorable wind flows into selected storm or cloud types favorable for reasonable precipitation increases over the project area. An analysis of low-level wind fields, cloud characteristics, stability parameters, terrain features, and synoptic

9. A Description of the Safeguards Employed by the Applicant or Licensee to Prevent Substantial Damage to Land, Water Rights, People, Health, Safety and Environment.

We will retain the right to suspend operations during any period we determine detrimental. Facilities will be maintained to gather and analyze weather data providing a continuing weather watch. We will also maintain liaison with the program participants, the U.S. Weather Bureau, the U.S. Forest Service and the Department of Natural Resources regarding potential adverse conditions.

PROPOSED METHOD OF CONTROLLING THE WEATHER MODIFICATION OPERATIONS

The forecast and operations center of Wester Weather Consultants, Inc., Durango, Colorado will monitor on a seven day per week basis the weather patterns over Colorado and the Western United States during the five-month permitted operating period. Meteorologists licensed by the State of Colorado to operate weather modification programs will determine if particular weather events are suitable for precipitation augmentation by cloud seeding in accordance with the operational criteria stated in this proposal.

Prior to initiating any seeding operations, a thorough hazard analysis will be evaluated. A potential weather system judged suitable for seeding will be evaluated for its potential to develop into a blizzard, severe storm, or heavy precipitating storm possibly associated with a potential major avalanche episode. Also, the effects of the weather event on ranching, agriculture, highway travelers, municipal interests and industry will be considered. This evaluation will be concentrated upon those areas to be seeded along with considerations of potential dis-benefits to adjacent areas which may be influenced by augmented precipitation. No seeding will be initiated during a period determined to have a high potential hazard evaluation.

Once a seeding operation has been initiated, monitoring of existing and forecast weather conditions will continue throughout the duration of the seeding operation. All new meteorological information will be assessed as well as reports from generator operators,

9. Controlling Weather Modification Operations (continued)

Following each seeding operation, each generator operator that was instructed to run his nuclei generator will submit a written report on the actual operations times, verify the seeding rates and note any weather observations or operational discrepancies during his requested operating period. A summary of these reports for each seeding operation will be provided to the Department of Natural Resources on a regular basis as required.

The generator network will be serviced primarily by trained and experienced personnel with up to 25 years of recent field experience on weather modification programs. Additional help as needed will assist these technicians in maintaining the availability and proper operation of the generators in the network. Because of their familiarity with the types of weather conditions considered for seeding, the technicians' weather observations from the various portions of the seeding areas provide additional information to the meteorological personnel for continuous operational program control.

10. Describe how other weather modification projects (if any) could be affected adversely by the proposed project:

There will be a coordination of the seeding operations in the San Juan Program and the Telluride and Upper San Miguel Program to optimize the seeding affects in both Program areas.



State of Colorado Weather Modification Permit

Permit No. 2000-3

PERMITTEE:

Jene Young
Grand Mesa Water Enhancement Authority
1339 Highway 65
Eckert, Colorado 81418

PERMITTED PROJECT:

Commercial seeding operation of winter storm clouds from ground based cloud nuclei generators from December 1 through May 31. The target area is described in the "Terms and Conditions" herein.

PERIOD OF PERMIT:

Approval is hereby given for operations from January 25, 2000 through May 31, 2001, with conditional approval given for future years' operations from December 1 through May 31 through operational season 2009-2010, subject to the permit renewal requirements of section 36-20-114(2), CRS, and of the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1. This permit shall automatically terminate on May 31, 2010.

TERMS AND CONDITIONS

This permit is limited by and subject to the following terms and conditions:

1. The project must be carried out in conformity with the Operational Plan attached hereto as Exhibit A, except for those operations modified by these terms and conditions.
2. The target area is the Grand Mesa generally above 8,000 feet elevation and the West Elk Mountains southeast of the Grand Mesa generally above 8,000 feet elevation. The proposed target area is within an area approximately described as follows: beginning near the Town of Paonia at the NE corner of T14S R92W 6PM, thence west along the north boundary of T14S to the east boundary of R98W, thence north along the east boundary of R98W to the north boundary of T11S, thence east along the north boundary of T11S to the west boundary of R95W, thence north along the west boundary of R95W to the north boundary of T9S, thence east along the north boundary of T9S to the east boundary of R89W, thence south along the east boundary of R89W 6PM extended into the NMPM to the north boundary of T49N NMPM, thence west along the north boundary of T49N NMPM to the east boundary of R7W NMPM, thence north along the east boundary of R7W NMPM extended into the 6PM to the north boundary of T14S 6PM and more or less to the point of beginning. (see map in Exhibit A).
13. Seeding will be conducted only under conditions when seeding is likely to be beneficial in the target areas. The permittee shall refrain from indiscriminate seeding activities or overseeding, which may be grounds for revocation of this permit.
14. Not more than thirteen (13) manually operated ground based generators shall be used. The permittee shall provide the Director of the Colorado Water Conservation Board (the Director) with a map showing the specific location of each generator, and the name, address, and telephone number of each operator before seeding commences in each year. Any subsequent change in the number or location of generators or of operators shall require the prior written approval of the Director.
15. Seeding will be done with a solution of silver iodide in acetone burned in a propane flare at an average rate of release from any single variable or fixed rate generator not to exceed seven (7) grams per hour.
16. The permittee shall suspend seeding operations if at any time the average of the snow pack accumulations, measured in equivalent inches of water, at the snotel sites and snow-courses selected to represent the target area exceeds a continuous function defined by the following points:
 - A. 200% of average on December 1st,
 - B. 175% of average on January 1st,
 - C. 160% of average on February 1st,
 - D. 150% of average on March 1st,

- E. 140% of average on April 1st,
- F. 135% of average on May 1st,
- G. 130% of average on June 1.

Snow pack accumulation will be monitored at least weekly from snow survey measurements conducted by the Natural Resources Conservation Service, U.S. Department of Agriculture.

Average snow pack will be calculated as the unweighted average of the water content of the snow pack for the 30-year base period from 1961 to 1990 at identified snotel sites. The following snotel site shall be monitored for compliance with the above suspension criteria:

Average 1961 to 1990 Water Content in inches

<u>Snotel Sites</u>	<u>Elevation</u>	<u>Dec 1</u>	<u>Jan 1</u>	<u>Feb 1</u>	<u>Mar 1</u>	<u>Apr 1</u>	<u>May 1</u>	<u>Jun 1</u>
McClure Pass	9,500	3.2	7.3	11.6	15.4	18.3	13.8	3.2
Mesa Lakes	10,000	4.4	6.9	9.6	12.1	15.9	14.4	3.4
North Lost Trail	9,200	2.8	6.4	11.4	15.5	18.4	13.4	0.1
Park Reservoir	9,960	6.9	11.6	16.3	20.8	26.6	30.4	13.2
	Average	4.3	8.1	12.2	16.0	19.8	18.0	5.0
	Threshold	8.7	14.1	19.6	23.9	27.7	24.3	6.5

7. The permittee shall not undertake, or shall suspend, seeding operations if:
 - A. The National Weather Service forecasts a storm to produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the project area,
 - B. The Colorado Avalanche Center issues an avalanche forecast warning for avalanche paths located in the target area, or
 - C. The Director orders suspension of seeding for any reason.

8. The permittee shall inform the Colorado Department of Transportation (Region 3) of its intent to seed within 48 hours of commencing any seeding operation when the risk of avalanches in the area reasonably expected to be affected are high, as determined by the Colorado Avalanche Center, or snow pack at any snotel monitoring site selected to represent the target area is above 120% of normal.

9. The permittee shall prepare and maintain the following written records and reports:
 - A. A daily record of operations, which includes at a minimum the information required by Form WM3 (copy attached), documentation of meteorological

conditions during operations for later evaluation by others, information on which seed/no seed decisions are based, and information utilized in making avalanche suspension decisions, shall be maintained by the permittee at its offices.

- B. A monthly summary report indicating at a minimum the number of weather systems with seeding opportunities during the month, the number of operational days in the month, the specific dates and times and from which generators seeding actually occurred, total run times, rates, and total weight of seeding agent used in the month.
- C. An annual report shall be submitted to the Director no later than September 1 of each year for the preceding winter's operations. The annual report shall include a complete record of operations, a numerical evaluation of the effectiveness of the project in the target areas, any impacts in the area reasonably expected to be effected and in downwind areas, and any recommended changes in the operating plan.

All such reports shall be public records subject to the provisions and limitations of Part 2 of Article 72 of Title 24, CRS.

The monthly report shall be submitted in a timely manner to the following entities:

- 1) Director, Colorado Water Conservation Board
- 2) Colorado Avalanche Center
- 3) Colorado Department of Transportation, Region 3

The annual report shall be submitted in a timely manner to the above named entities and the following additional entities:

- 4) Delta County Board of Commissioners
- 5) Mesa County Board of Commissioners
- 6) Gunnison County Board of Commissioners,
- 7) Colorado Division of Wildlife District Office
- 8) Colorado Climate Center, Colorado State University
- 9) Grand Mesa National Forest District Office
- 10) Gunnison National Forest District Office

- 10. The State reserves the right to examine and audit the daily logs, books, and records of the permittee concerning the project which is the subject of this permit for a period of two years after the termination date of this permit.
- 11. The permittee shall be responsible for obtaining all permits, licenses, or other approvals, and for filing all notices or reports, required by federal, state, or local laws in addition to this permit.

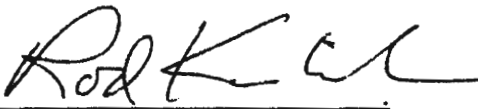
12. The commercial fee required by section 36-20-113, CRS., shall be two percent of the annual expenses for each year's operation and shall be paid to the Director by June 30 of each year.
13. All notices, reports, records, payments and other communications that the permittee must provide to the Director shall be addressed as follows:

Director
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Telephone: 303-866-3441
FAX: 303-866-4474

14. Violations of or deviations from the "Terms and Conditions" of this permit may result in revocation or suspension of this permit as provided by law.

03.09.01
Date



Rod Kuharich, Director
Colorado Water Conservation Board

for Greg E. Walcher, Executive Director,
Colorado Department of Natural Resources

Exhibit A

Operational Plan

Map of the Target Area

List of Generator Operators, 2000-2001

Weather Modification Suspension Criteria Graph

Form WM3, monthly operations summary report (blank form)

Weather Modification Sites and Target Areas San Juan/Dolores River Basins - Exhibit A

Target Areas

- Eastern San Juan
- Western San Juan
- Western Dolores/San Miguel
- Rivers
- Lakes
- Highways
- SNOTEL Sites

Generator Sites

- # Existing
- # New

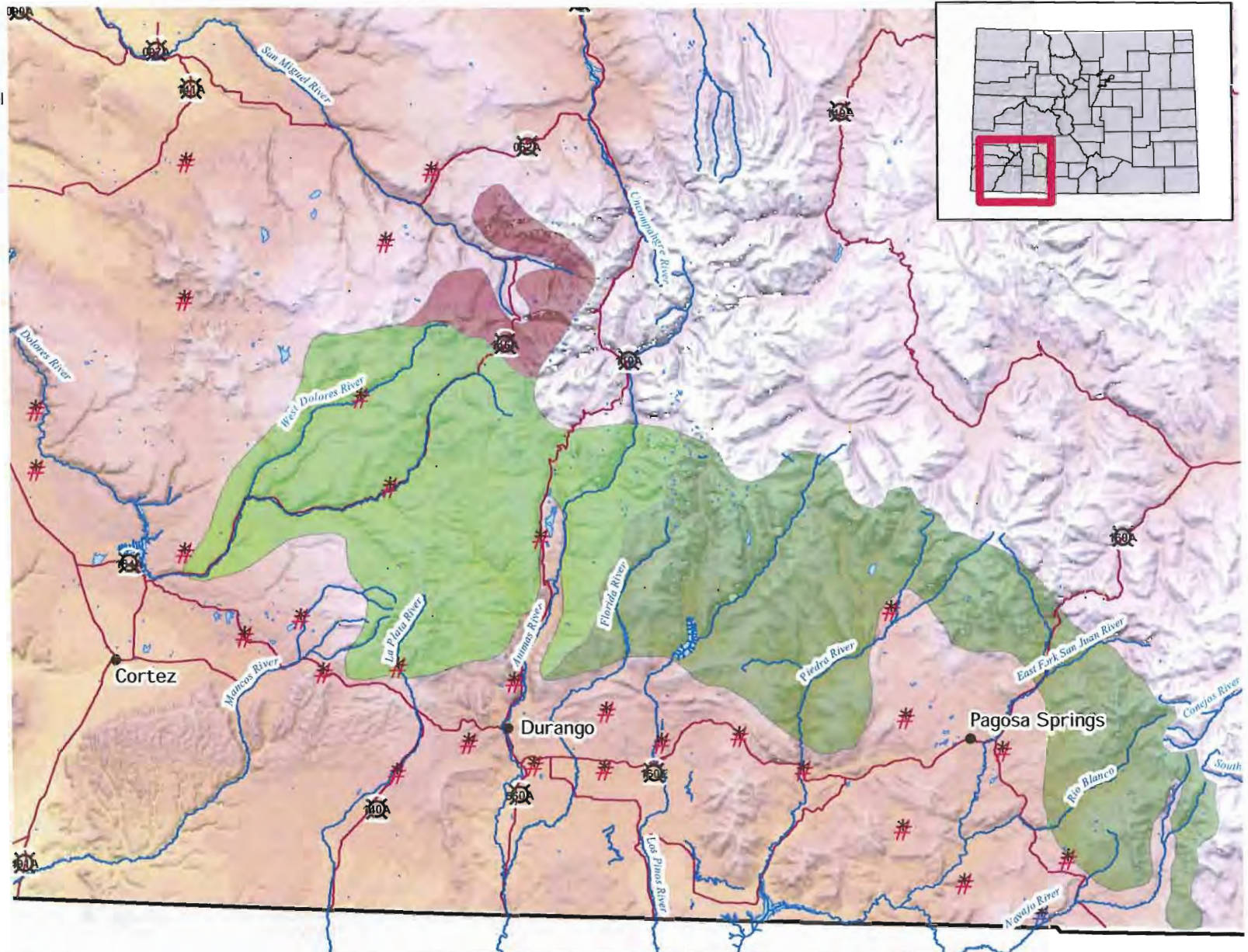
of Generators: 30

Target Area Coverage:

E. San Juan: 1100 sq miles

W. San Juan: 990 sq miles

W. Dolores/San Miguel: 147 sq miles



0 5 10 20 Miles



Map created by Carolyn Fritz
DWCB GIS Coordinator
September 28, 2007

Program Sponsors:

Colorado Water Conservation Board, Southwestern Water Conservation Dist., New Mexico Interstate Stream Commission

E. San Juan - SWCD, Pine River Irrigation Dist., Pagosa Area W & S, San Juan WCD

W. San Juan - SWCD, Dolores WCD, Durango Mtn. Resort, Animas La Plata WCD, City of Durango

Weather Modification Sites and Target Areas Grand Mesa

-  SNOTEL Sites
-  Generators
- Target Areas**
-  Grand Mesa North
-  Grand Mesa South
-  Lakes
-  Rivers
-  Highways

of Generators: 13

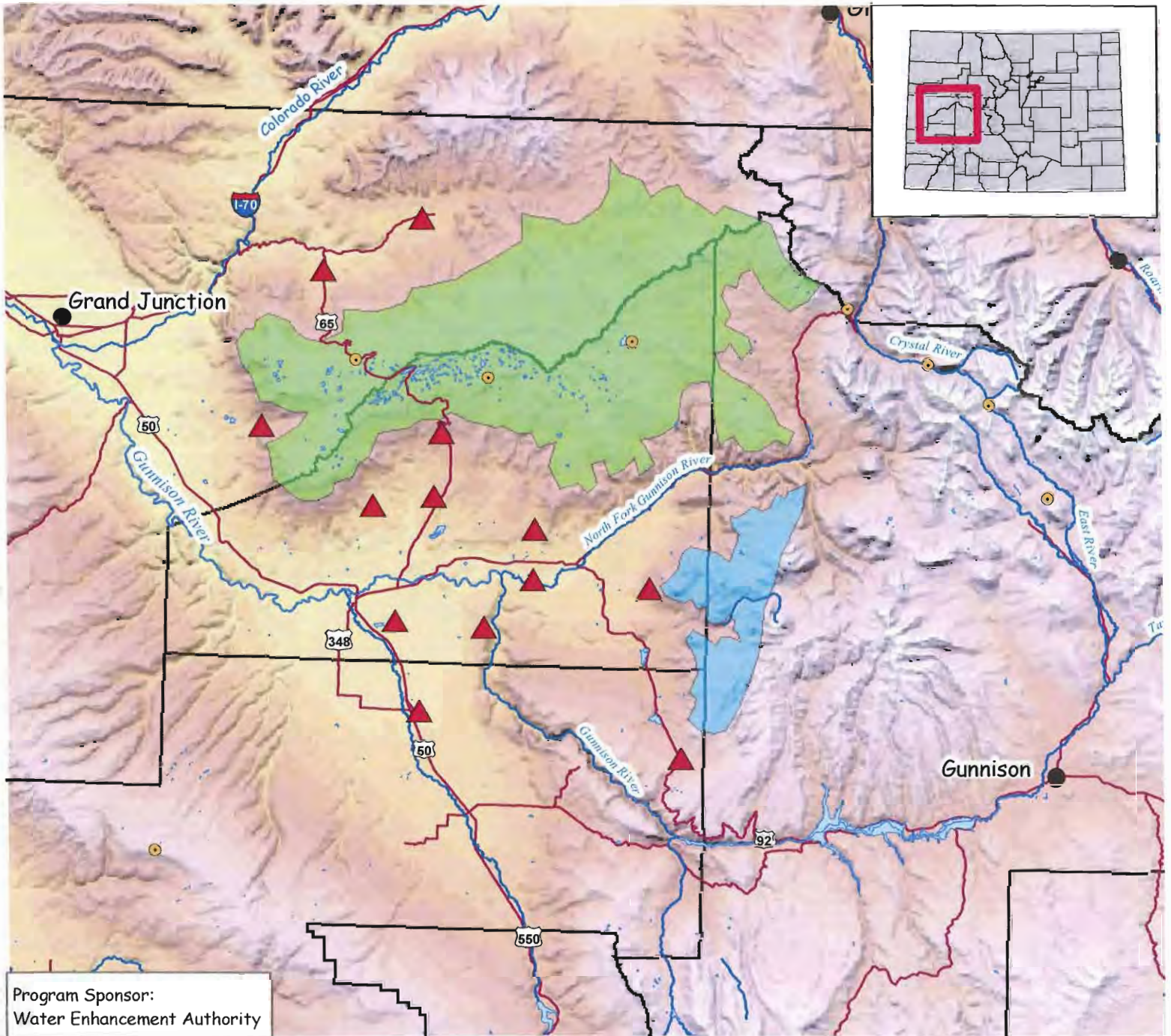
Target Area Coverage:
 Grand Mesa North: 754 sq miles
 Grand Mesa South: 115 sq miles



0 3 6 12 Miles



Map created by Carolyn Fritz
 CWCB GIS Coordinator



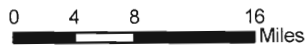
Program Sponsor:
 Water Enhancement Authority

Weather Modification Sites and Target Areas Vail and Upper Arkansas

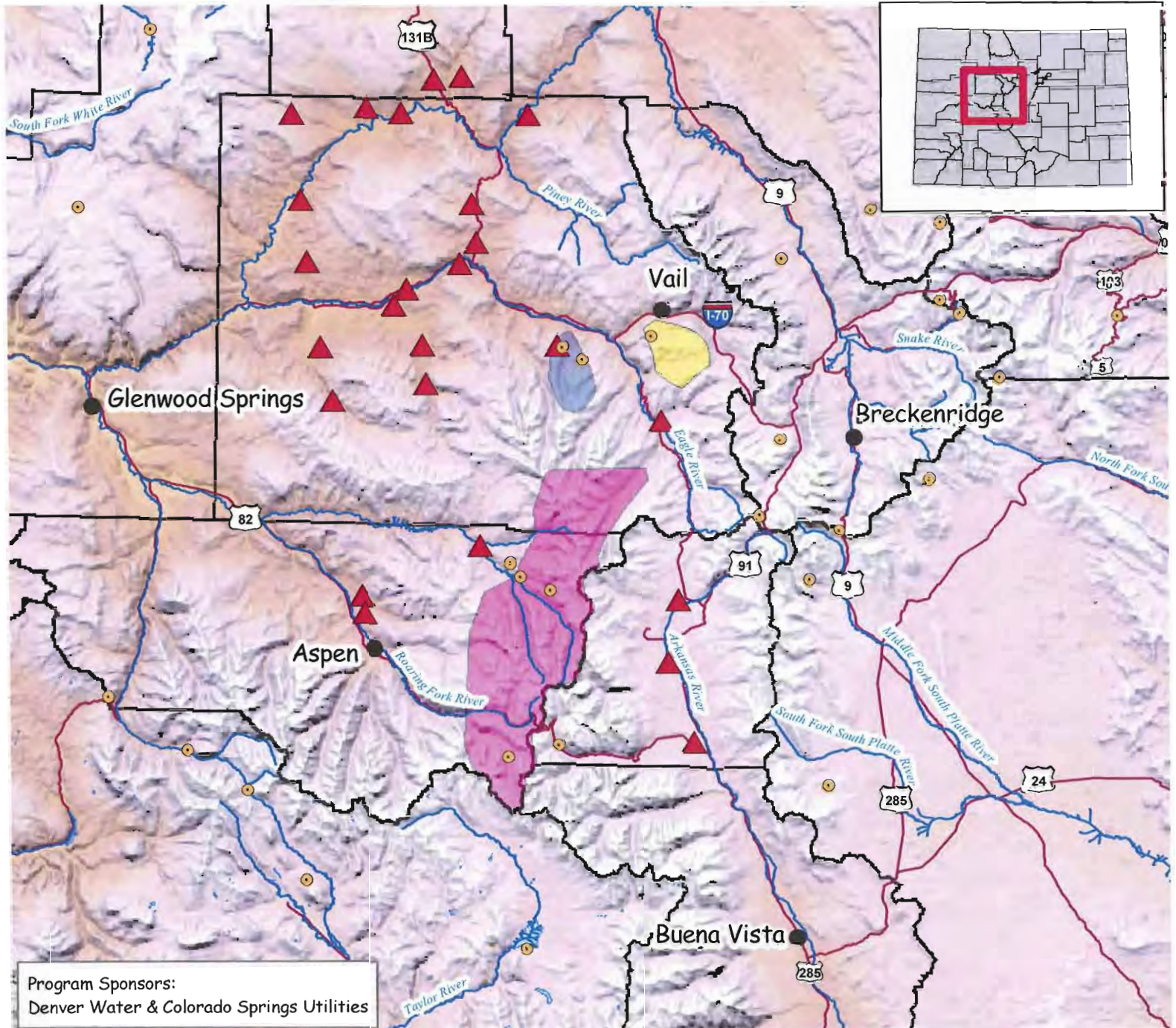
-  SNOTEL Sites
-  Generators
- Target Areas**
-  Beaver Creek
-  Upr Ark w/ CO Basin
-  Vail
-  Rivers
-  Lakes
-  Highways

of Generators: 25

Target Area Coverage:
 Beaver Creek: 21 sq miles
 Upper Arkansas: 227 sq miles
 Vail: 24 sq miles



Map created by Carolyn Fritz
 CWCB GIS Coordinator



Program Sponsors:
 Denver Water & Colorado Springs Utilities

Western San
Juans



State of Colorado Weather Modification Permit

Permit No. 2000-2

PERMITTEE:

Lawrence M. Hjermstad, Manager
Western Weather Consultants, LLC
P.O. Box 58
Durango, Colorado 81302-0058

PERMITTED PROJECT:

Commercial seeding operation of winter storm clouds from ground based cloud nuclei generators from November 1 through March 31. The target area is described in the "Terms and Conditions" herein.

PERIOD OF PERMIT:

Approval is hereby given for operations from November 1, 2000 through March 31, 2001, with conditional approval given for future years' operations from November 1 through March 31 of 2001-2002 through operational season 2009-2010, subject to the permit renewal requirements of section 36-20-114(2), CRS, and of the Colorado Weather Modification Rules and Regulations, 2 CCR 401-1. This permit shall automatically terminate on March 31, 2010.

TERMS AND CONDITIONS

This permit is limited by and subject to the following terms and conditions:

1. The project must be carried out in conformity with the Operational Plan attached hereto as Exhibit A, except for those operations modified by these terms and conditions.
2. The target area shall include portions of the Western San Juan Mountains generally above 9,000 feet in elevation in the Dolores River, Animas River, and Pine River drainage basins including the lower Animas River drainage basin around the Purgatory-Durango Mountain Resort ski area and the Hermosa and East Fork River drainage basins. The target area is located in parts of La Plata, San Juan, and Montezuma counties within the state of Colorado (see map in Exhibit A).
3. Seeding will be conducted only under conditions when seeding is likely to be beneficial in the target areas. The permittee shall refrain from indiscriminate seeding activities or overseeding, which may be grounds for revocation of this permit.
4. Not more than thirteen (13) manually operated ground based generators shall be used. The permittee shall provide the Director of the Colorado Water Conservation Board (the Director) with a map showing the specific location of each generator, and the name, address, and telephone number of each operator before seeding commences in each year. Any subsequent change in the number or location of generators or of operators shall require the prior written approval of the Director.
5. Seeding shall be done with a solution of silver iodide in acetone burned in a propane flare at an average rate of release from any single variable or fixed rate generator not to exceed 7 grams per hour.
6. The permittee shall suspend seeding operations if at any time the average of the snowpack accumulations, measured in equivalent inches of water, at the snotel sites and snow-courses selected to represent the target area exceeds a continuous function defined by the following points:
 - A. 175% of average on December 1st,
 - B. 175% of average on January 1st,
 - C. 160% of average on February 1st,
 - D. 150% of average on March 1st, and
 - E. 140% of average on April 1st.

Snowpack accumulation will be monitored at least weekly from snow survey measurements conducted by the Natural Resources Conservation Service, U.S.

Department of Agriculture.

Average snowpack will be calculated as the unweighted average of the water content of the snowpack for the 30-year base period from 1961 to 1990 at identified snotel sites. The following snotel site shall be monitored for compliance with the above suspension criteria:

<u>Snotel Sites</u>	<u>Elevation</u>	<u>Average 1961 to 1990 Water Content in inches</u>				
		<u>Dec 1</u>	<u>Jan 1</u>	<u>Feb 1</u>	<u>Mar 1</u>	<u>Apr 1</u>
Lizard Head Pass Snotel	10,200	1.9	6.3	9.6	12.7	15.8
Scotch Creek Snotel	9,100	2.1	5.9	8.4	11.4	15.1
Cascade Snotel	8,880	2.0	6.0	9.1	12.0	12.6
	Average	2.0	6.1	9.0	12.0	14.5
	Threshold	4.0	10.7	14.4	18.0	20.3

7. The permittee shall not undertake, or shall suspend, seeding operations if:
 - A. The National Weather Service forecasts a storm to produce unusually heavy precipitation that could contribute to avalanches or unusually severe weather conditions in the project area,
 - B. The Colorado Avalanche Center issues an avalanche forecast warning for avalanche paths located in the target area, or
 - C. The Director orders suspension of seeding for any reason.
8. The permittee shall inform the Colorado Department of Transportation (Region 5) of its intent to seed within 48 hours of commencing any seeding operation when the risk of avalanches in the area reasonably expected to be affected are high, as determined by the Colorado Avalanche Center, or snow pack at any snotel monitoring site selected to represent the target area is above 120% of normal.
9. The permittee shall prepare and maintain the following written records and reports:
 - A. A daily record of operations, which includes at a minimum the information required by Form WM3 (copy attached), documentation of meteorological conditions during operations for later evaluation by others, information on which seed/no seed decisions are based, and information utilized in making avalanche suspension decisions, shall be maintained by the permittee at its offices.
 - B. A monthly summary report indicating at a minimum the number of weather systems with seeding opportunities during the month, the number of

operational days in the month, the specific dates and times and from which generators seeding actually occurred, total run times, rates, and total weight of seeding agent used in the month.

- C. An annual report shall be submitted to the Director no later than September 1 of each year for the preceding winter's operations. The annual report shall include a complete record of operations, a numerical evaluation of the effectiveness of the project in the target areas, any impacts in the area reasonably expected to be effected and in downwind areas, and any recommended changes in the operating plan.

All such reports shall be public records subject to the provisions and limitations of Part 2 of Article 72 of Title 24, CRS.

The monthly report shall be submitted in a timely manner to the following entities:

- 3) Director, Colorado Water Conservation Board
- 4) Colorado Avalanche Center
- 6) Colorado Department of Transportation, Region 5

The annual report shall be submitted in a timely manner to the above named entities and the following additional entities:

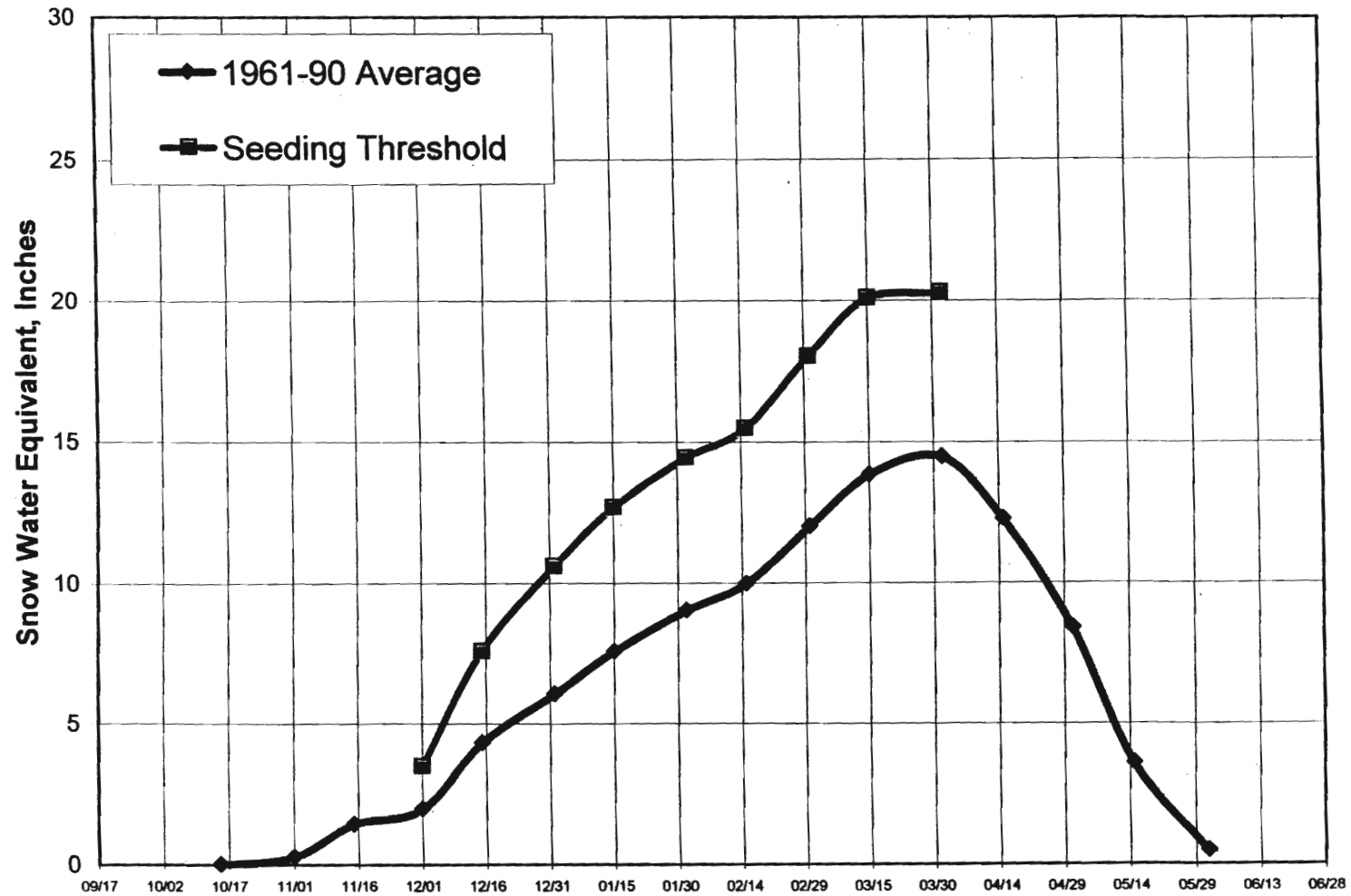
- 7) La Plata County Board of Commissioners
- 8) San Juan County Board of Commissioners
- 9) Montezuma County Board of Commissioners
- 10) Colorado Division of Wildlife District Office
- 8) Colorado Climate Center, Colorado State University
- 9) San Juan National Forest District Office
- 10) Uncompahgre National Forest District Office

10. The State reserves the right to examine and audit the daily logs, books, and records of the permittee concerning the project which is the subject of this permit for a period of two years after the termination date of this permit.
11. The permittee shall be responsible for obtaining all permits, licenses, or other approvals, and for filing all notices or reports, required by federal, state, or local laws in addition to this permit.
12. The commercial fee required by section 36-20-113, CRS., shall be two percent of the final contract price for each year's operation and shall be paid to the Director by June 30 of each year.
13. All notices, reports, records, payments and other communications that the permittee must provide to the Director shall be addressed as follows:

2000-2001 WESTERN SAN JUAN PROGRAM GENERATOR OPERATORS

<u>Site</u>	<u>Name</u>	<u>Phone Number</u>	<u>Address</u>	<u>Other Notes</u>
A5	Cliff Bankston	(970) 749-3546	Rural Route #1 Norwood, CO 81423	.50
B6	Stuart Steves Barbara	(970) 882-4094	P. O. Box 997 Dolores, CO 81323	.50 Best call eve. Leaves~7:30AM
C	Bryce Young Michelle & Cherrie	(970) 562-4704W 562-4712H	P. O. Box 773 Dove Creek, CO 81324	.14
D8	Clair & Ann Larsen Ann's mother	(970) 562-3828 562-3832	28377 Hwy 145 Dolores, CO 81323	.14
E	Eddie Oliver Glenna & Morgan	(970) 562-4772	P. O. Box 276 Pleasant View, CO 81331	.14
F7	Don Setser Mary	(970) 882-7528H 882-4662W	P. O. Box 583 Dolores, CO 81323	.50 Best call eve
G	<u>to be located</u>			
H	Jack Ott Mary Ann	(970) 533-7365	Box 1 Mancos, CO 81328	.14
I	Charlie Taylor J. Ferguson	(970) 385-4585 247-3448	4317 Co. Rd. 124 Hesperus, CO 81326	.14 J. F. Landowner
J	Jim Isgar Brenda & Matt	(970) 385-7664	11190 Co. Rd. 141 Hesperua, CO 81326	.14
K	<u>to be located</u>			
L	Larry Hjermstad	(970) 247-8813W 247-1827H	1102 Co. Rd. 220 Durango, CO 81303	.14
M	Mike Hjermstad	getting new phone	1034 Faraday Rd. Durango, CO 81303	.14

Weather Modification Suspension Criteria Western San Juan Mountains

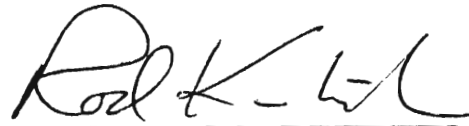


Director
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, Colorado 80203

Telephone: 303-866-3441
FAX: 303-866-4474

14. Violations of or deviations from the "Terms and Conditions" of this permit may result in revocation or suspension of this permit as provided by law.

04.12.01
Date



Rod Kuharich, Director
Colorado Water Conservation Board

for Greg E. Walcher, Executive Director,
Colorado Department of Natural Resources

Exhibit A

Operational Plan

Map of the Target Area

List of Generator Operators for 2000-2001

Weather Modification Suspension Criteria Graph

Form WM3, monthly operations summary report (blank form)

Operational Plan:

1. A Description of the Objectives of the Proposed Project.

The nature of the proposed program is to augment natural precipitation within the project area to provide improved snowpacks and additional water supplied for storage and beneficial use. The operational technology and procedures utilized in this program were derived from previous snowpack augmentation programs operated in Colorado, specifically: The Climax and Wolf Creek research programs, the Colorado River Basin Pilot Project and the last 25 winters' programs operated by WESTERN WEATHER CONSULTANTS,LLC in the Central Colorado and San Juan Mountains.

The objectives of the project are to increase snowpacks in the drainage basins of all major mountain massifs in the project area which should result in increased run-off into the storage systems in these basins and result in an additional water supply for agricultural, industrial or domestic use along with an additional snowpack for winter recreational use.

2. A Written Description of the Target Area and the Area Reasonably Expected to be Affected by the Project. See attached Map.

The target area consists of the Western San Juan Mountains above 9,000 ft. MSL from the Dolores River Drainage to the west to the Florida River Drainage to the east. This includes the Lower Animas River Drainage around the Durango Mountain Resort Ski Area and the Hermosa and East Fork River Drainages.

The areas reasonably expected to be affected by the project are those areas above 9,000 ft MSL inside the target area and in the uppermost ridges immediately adjacent and downwind of the target area (See attached map).

3. Description of How the Project Will be Implemented and Carried Out.

1) Office Location:

WESTERN WEATHER CONSULTANTS,LLC
1102 Co. Rd. 220
Durango, CO 81303

2) Weather Data Available:

The National Facsimile Circuit and National Weather Service teletype systems will provide regular government weather data including surface and upper air weather data, synoptic surface and significant upper level maps and wind data from rawinsondes

1. Operation Plan (continued)

and p ibals. Also available will be radar data, half-hourly satellite maps from the National Weather Service, rawinsonde data and other forecast aids to assist in selecting favorable storm periods suitable for modification to achieve the intended objectives.

3) Types of Aircraft:

There will be no aircraft used for seeding on this program. All cloud nuclei generators will be operated from the ground.

4) Description of the Seeding Devices, Materials and Seeding Rates, etc.:

Twelve (12) manually operated ground-based cloud nuclei generators will be located within and around the project areas. These manually operated generators will be the same type as used on the Colorado River Basin Pilot Project and projects operated by Western Weather Consultants, Inc. during the past six years. In previous use, these generators have proven to be efficient nuclei generators, safe and require very little maintenance. The solution used will be a 4% silver iodide and a 1.25% sodium iodide solution in acetone. The solution when burned in a propane flame at a rate of 20 grams per hour per site will produce approximately 10^{16} effective nuclei in cloud systems with a 500 mb temperature around -20° C. This variable output generator will be operated at rates from 5 to 45 grams per hour depending on the seedability of cloud conditions.

5) Description of How the Project will be Implemented and Carried Out:

The operational procedures to be used by the applicant to achieve the stated objective are to produce silver iodide crystals (artificial cloud nuclei) from the network of ground-based generators for diffusion by favorable wind flows into selected storm or cloud types favorable for reasonable precipitation increases over the project area. An analysis of low-level wind fields, cloud characteristics, stability parameters, terrain features, and synoptic

Operational Plan (continued)

meteorological features will determine the network of generators which will best seed the cloud systems over the project area for each situation and will provide a method for adjusting the network as new weather information becomes available.

With a "best" initial network to seed a situation established, the generator operators are telephoned to turn on their generators at a specified time and run them at a specific burn rate. On the same call they will be given a specific turn-off time which could be subject to change by another phone call from the meteorologist at WESTERN WEATHER CONSULTANTS, LLC. Incoming weather data into the forecast office allows a continuous monitoring of any changes in conditions and any necessary adjustments of termination in the seeding operation. There will also be a liaison between the meteorological control office and the program participants and field maintenance technicians and selected generator operators located near the project areas as to any developing conditions that may warrant a change in the seeding operation.

6) Any Additional Information which May Be Required to Describe the Operations and the Proposed Method of its Evaluation.

Many design and operational features of this program have been based upon the findings and experience learned through operating the Bureau of Reclamation's Colorado River Basin Pilot Project in the Upper San Juan River Basin. The placement of ground-based generators, identification of storm systems with favorable modification potential and concern for public safety and awareness through responsible operations are specifically some of the refinements to be incorporated into the proposed wintertime weather modification program.

An operational report will be furnished to the program participants and the Director of Natural Resources following each seeding season in which precipitation within the project area will be indicated with any pertinent comments to comparisons with respect to normal or precipitation in adjacent areas. This proposed program will be operated nearly identical to programs operated by WESTERN WEATHER CONSULTANTS, LLC. during the past 25 years in Colorado. Evaluations of these programs have been made under contracts from the State of Colorado to C.S.U. We would anticipate similar evaluation results from this proposed program.

9.

A Description of the Safeguards Employed by the Applicant or Licensee to Prevent Substantial Damage to Land, Water Rights, People, Health, Safety and Environment.

We will retain the right to suspend operations during any period we determine detrimental. Facilities will be maintained to gather and analyze weather data providing a continuing weather watch. We will also maintain liaison with the program participants, the U.S. Weather Bureau, the U.S. Forest Service and the Department of Natural Resources regarding potential adverse conditions.

PROPOSED METHOD OF CONTROLLING THE WEATHER MODIFICATION OPERATIONS

The forecast and operations center of Wester Weather Consultants, Inc., Durango, Colorado will monitor on a seven day per week basis the weather patterns over Colorado and the Western United States during the five-month permitted operating period. Meteorologists licensed by the State of Colorado to operate weather modification programs will determine if particular weather events are suitable for precipitation augmentation by cloud seeding in accordance with the operational criteria stated in this proposal.

Prior to initiating any seeding operations, a thorough hazard analysis will be evaluated. A potential weather system judged suitable for seeding will be evaluated for its potential to develop into a blizzard, severe storm, or heavy precipitating storm possibly associated with a potential major avalanche episode. Also, the effects of the weather event on ranching, agriculture, highway travelers, municipal interests and industry will be considered. This evaluation will be concentrated upon those areas to be seeded along with considerations of potential dis-benefits to adjacent areas which may be influenced by augmented precipitation. No seeding will be initiated during a period determined to have a high potential hazard evaluation.

Once a seeding operation has been initiated, monitoring of existing and forecast weather conditions will continue throughout the duration of the seeding operation. All new meteorological information will be assessed as well as reports from generator operators,

9. Controlling Weather Modification Operations (continued)

the State Patrol, and field maintenance personnel in the seeded areas. Changing weather conditions that would indicate the onset of potentially severe or hazardous weather conditions will result in the suspension of seeding operations throughout the duration of these potentially hazardous weather conditions.

Snowpack accumulation will be monitored from snow survey measurements as conducted by the Soil Conservation Service. Special snow measurements may be available from selected high mountain sites about January 1, 2001. Regular snow measurement will commence for all snow observation sites on February 1, 2001 and the first detailed analysis of snow accumulations in the seeded areas will be completed using these measurements. Several mutually agreeable snow measuring sites including the Snotel sites will be selected throughout the seeded and adjacent areas to monitor the seasons accumulation of snowpack.

Evaluations of snowpack and snowmelt runoff in the springtime indicate that minor flooding and stream flow problems can exist when late winter snowpacks reach 150 percent of normal. More substantial flooding problems can be anticipated when late winter snowpacks in excess of 170 percent of normal melt off in the springtime. Since this program is designed for reasonable levels of snowpack enhancement for an outlook of an adequately abundant summertime water supply for storage and use, we propose to suspend seeding operations in any major portion of a seeding area when one or more of the following occurrences takes place:

- a. When the average snowpack reaches 175 percent of normal snowpack through December and 160 percent of normal for January.
- b. When the average snowpack reaches 150 percent of normal snowpack during the month of February.
- c. When the average snowpack reaches 140 percent of normal snowpack during the month of March.

Seeding operations would continue in the remaining mountain regions under normal operative procedures. This comparative normal for these representative snow observation sites will be the latest fifteen-year average as published by the Soil Conservation Service.

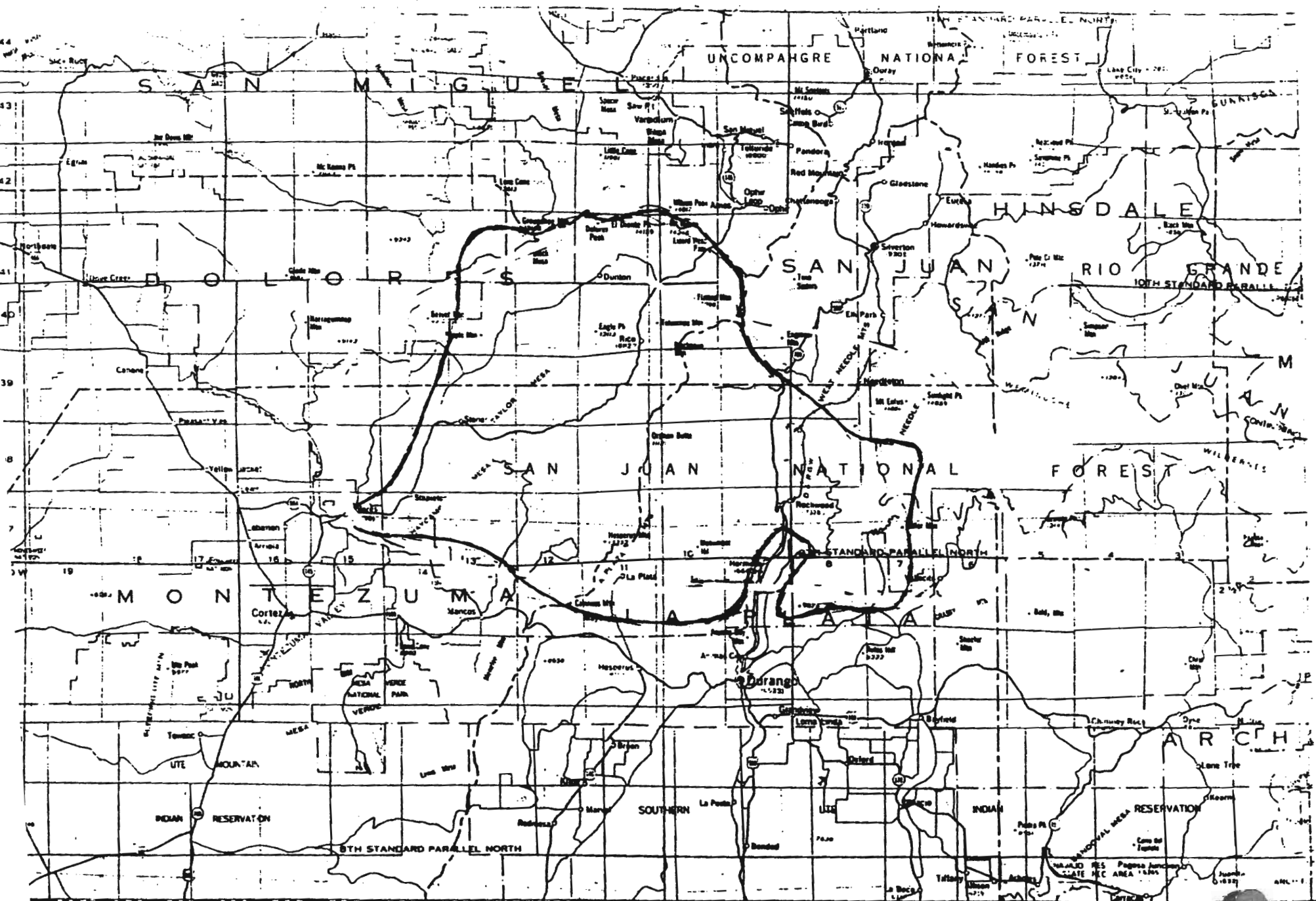
9. Controlling Weather Modification Operations (continued)

Following each seeding operation, each generator operator that was instructed to run his nuclei generator will submit a written report on the actual operations times, verify the seeding rates and note any weather observations or operational discrepancies during his requested operating period. A summary of these reports for each seeding operation will be provided to the Department of Natural Resources on a regular basis as required.

The generator network will be serviced primarily by trained and experienced personnel with up to 25 years of recent field experience on weather modification programs. Additional help as needed will assist these technicians in maintaining the availability and proper operation of the generators in the network. Because of their familiarity with the types of weather conditions considered for seeding, the technicians' weather observations from the various portions of the seeding areas provide additional information to the meteorological personnel for continuous operational program control.

10. Describe how other weather modification projects (if any) could be affected adversely by the proposed project:

There will be a coordination of the seeding operations in the San Juan Program and the Telluride and Upper San Miguel Program to optimize the seeding affects in both Program areas.



MAP OF SAN JUAN FOREST AREA