



Agenda

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SANTA FE WATER CONSERVATION COMMITTEE MEETING
CITY HALL - 200 LINCOLN AVE.
CITY COUNCILORS' CONFERENCE ROOM
December 13, 2016
4:00 PM TO 6:00 PM

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES FROM THE NOVEMBER 15, 2016 MEETING

INFORMATIONAL ITEMS:

5. SOURCE OF SUPPLY – Drought Update (Alex Puglisi, 20 minutes)
6. INTEGRATED WATER STRATEGIES (Justin Lyon, 20 minutes)
7. STORMWATER IRRIGATION: A COMPARISON OF SOIL MOISTURE AT CURB CUTS WITH AND WITHOUT RAIN GARDENS (Aaron Kauffman, 20 minutes)
8. GROUP REPORTS FROM WATER CONSERVATION COMMITTEE WORKING GROUPS
 - A. GROUP A - Irrigation Rebate and QWEL (10 minutes)
 - B. GROUP B - Expansion of the K-12 Education Program (10 minutes)
 - C. GROUP C – Scorecard (10 minutes)
 - C. GROUP D - Water Conservation Codes, Ordinances and Regulations (Doug Pushard – 10 minutes)

MATTERS FROM PUBLIC:

MATTERS FROM STAFF:

MATTERS FROM COMMITTEE:

NEXT MEETING – TUESDAY JANUARY 10, 2017:

CAPTIONS: DECEMBER 27, 2016 @ 3 PM.

PACKET MATERIAL: DECEMBER 28, 2016 @ 3 PM.

ADJOURN.

Persons with disabilities in need of accommodations, contact the City Clerk's office at 955-6520, five (5) working days prior to meeting date.

SANTA FE WATER CONSERVATION COMMITTEE
MEETING INDEX
December 13, 2016

Item		Page
Call to Order	Councilor Peter Ives, Chair of the Water Conservation Committee called the meeting to order at 4:02 p.m. at the Water Division Conference Room.	1
Roll Call	A quorum was established at 4:05 p.m.	1
Approval of Agenda	Mr. Wiman moved to approve the agenda as presented, with a second from Mr. Coombe which was approved by voice vote.	1
Approval of Minutes from the November 15, 2016 WCC Meeting	Ms. Randall moved to approve the minutes of November 15, 2016 as presented with a second from Mr. Kauffman which passed by voice vote.	1
INFORMATIONAL ITEMS: • SOURCE OF SUPPLY • INTEGRATED WATER STRATEGIES • STORM WATER IRRIGATION: A COMPARISON OF SOIL MOISTURE A CURB CUTS WITH AND WITHOUT RAIN GARDENS • GROUP REPORTS FROM WATER CONSERVATION COMMITTEE WORKING GROUPS ○ GROUP A Irrigation Rebate and QWEL ○ GROUP B Expansion of the K-12 Education Program ○ GROUP C Scorecard ○ GROUP D Water Conservation Codes, Ordinances and Regulations	Discussion Only	2,3 3 3 4 4 4 4
MATTERS FROM THE PUBLIC	Discussion Only	4
MATTERS FROM STAFF	Discussion Only	4
MATTERS FROM COMMITTEE	Discussion Only	4,5
NEXT MEETING: Tuesday January 10, 2017 Captions: December 27, 2016 @ 3:00 p.m. Packet Material: December 28, 2016 @ 3:00 p.m.	Discussion Only	5
ADJOURN	There being no further business to come before the Santa Fe Water Conservation Committee the meeting was adjourned at 6:05 p.m.	5
SIGNATURES	<i>Lise Randall</i>	5

SANTA FE WATER CONSERVATION COMMITTEE MEETING
City Councilor's Conference Room
200 Lincoln Ave.
December 13, 2016
4:00 p.m. to 6:00 p.m.

1. CALL TO ORDER

Councilor Peter Ives, Chair of the Water Conservation Committee called the meeting to order at 4:02 p.m. at the Water Division Conference Room. A quorum was established at 4:05 p.m.

2. ROLL CALL

PRESENT:

Councilor Peter Ives, Chair
Lisa Randall
Stephen K. Wiman
Robert D. Coombe
Aaron T. Kauffman
Doug Pushard
Tim Michael
Justin Lyon
Bill Roth

NOT PRESENT/EXCUSED:

OTHERS PRESENT:

Christine Y. Chavez, City of Santa Fe Water Conservation Manager
Lisa Noriega, City of Santa Fe Water Conservation
Caryn Grosse, City of Santa Fe Water Conservation Specialist
Alex Puglisi, City Water Division
Andy Otto, Santa Fe Watershed
Linda Vigil for Fran Lucero, Stenographer

3. APPROVAL OF THE AGENDA

MOTION: Mr. Wiman moved to approve the agenda as presented, with a second from Mr. Coombe which was approved by voice vote.

4. APPROVAL OF MINUTES November 15, 2016 WATER CONSERVATION COMMITTEE MEETING

MOTION: Ms. Randall moved to approve the minutes of November 15, 2016 as presented with a second from Mr. Kauffman which passed by voice vote.

INFORMATION ITEMS

5. SOURCE OF SUPPLY – Alex Puglisi

Mr. Puglisi presented the drought monitor report (See Exhibit A). The map shows the city is below normal right now, hopefully there will be more precipitation by the end of December.

Mr. Pushard is present. *The previous items were approved now that a quorum is present.*

Mr. Puglisi presented two handouts. (See Exhibit B) This shows the average streamflow for last month.

Mr. Puglisi presented the water system daily report. (See Exhibit C) This report shows the totals in the reservoirs. If it does not increase production the City will have to stop at the Canyon Road Plant.

Mr. Puglisi presented information on Article 7. (See Exhibit D) He explained the agreement is between nearby states that assures a storage amount is available.

Mr. Michael is present.

Mr. Puglisi presented some information on the Rio Grande Compact. (See Exhibit E)

Mr. Puglisi discussed the water production report. (See Exhibit F).

Mr. Wiman asked about the downtown brown water investigation. Mr. Puglisi stated the PCE that was found in stormwater tests. New Mexico Environment Department (NMED) showed low levels in their testing as well. A nearby museum had a sump in the basement. They are now applying for a permit to discharge into the stormwater system. Some additional money was found to drill monitoring wells to locate the source of the PCE. There were several areas that it was found in. Remediation is the next step. Discussion of a superfund investigation has been had. There are some options. First they need to know how far the plume extends.

Mr. Lyon is present.

Mr. Puglisi explained the need for this to be addressed as the contaminants are in the ground water. The EPA has been generous but in the future the City or the State will have to continue the investigation. NMED released the TMDL on E Coli, which shows from Nichols to La Cienega Creek is impaired with E Coli. There will be a meeting in January at 6:00 p.m. on the TMDL for public input.

Mr. Pushard asked about the storage report of the reservoir what happens when it is below. Mr. Puglisi explained there are times when it cannot be delivered. But the rights are there. There is now the living river ordinance, which assumes it is there to keep the bypass channel flowing.

Mr. Wiman asked what a good multiplier to treat water from Buckman is. Mr. Puglisi stated there are some wells that are expensive to pump. Canyon Road can flow to nearly every tank in the city, however it takes several pumps to get it there. It can be looked at and he can bring back those numbers.

Councilor Ives asked if the PCE's only came from dry cleaning operations or where are the other sources? Mr. Puglisi explained that some were shown near the old armory.

Councilor Ives asked where is the majority of the PCB's coming from. Mr. Puglisi stated it is likely to be from the trails however a study needs to be done.

Councilor Ives discussed the Rio Grande study Mr. Puglisi discussed the report that the State has to present to Congress. The samples showed nuclear and sediment near Los Alamos.

Councilor Ives will be happy to advocate for funds for testing.

Mr. Roth is present.

Mr. Otto asked if there was any testing for pharmaceuticals. Mr. Puglisi stated yes along with NMED there was testing and results are available.

6. INTEGRATED WATER STRATEGIES – Justin Lyon

Mr. Lyon presented a slideshow on Ecological Wastewater Treatment & Integrated Water Strategies. Biohabitats the business he works for which is based out of Baltimore. The slideshow showed several projects that have been done all over the world.

Mr. Roth asked about the closed loop systems. Mr. Lyon stated it has to be a public utility when there is a certain amount of people it serves. Commercial is very different.

Councilor Ives asked what has been worked on locally. Mr. Lyon showed the system done at Bosque del Apache. Also they have put in for the current stormwater RFP.

Councilor Ives excused himself to another meeting. Ms. Randall will take over as chair.

Mr. Otto announced tomorrow at 10:30 am at the Drury the Green Lodging Initiative will give out the plaques. Ms. Grosse will be giving a speech on the commercial rebate.

7. STORMWATER IRRIGATION: A COMPARISON OF SOIL MOISTURE AT CURB CUTS WITH OR WITHOUT RAIN GARDENS – Aaron Kauffman

Mr. Kauffman presented his report (slideshow) on the project at the SFCC. The slideshow showed the comparison between the untreated areas and the rain garden areas using curb cuts.

Mr. Roth asked about the calculations of the plants and size of the area. Mr. Kauffman used a ¼ inch storm measurement. A discussion was held about the basin size.

Mr. Lyon asked if there was sufficient soil moisture content and if the water could have been spread out to make a larger area. Mr. Kauffman stated it could've been however you may be limited on the types of plants to place in the middle.

Mr. Coombe asked if the two areas were similar in soil. Mr. Kauffman stated they were.

Mr. Kauffman explained after this small project the next idea is to use the spaces in medians and other areas.

Mr. Roth asked if there was natural filtration. Mr. Kauffman states there is and the only thing that will be different is the salt used in the winter.

8. GROUP REPORTS FROM WATER CONSERVATION COMMITTEE WORKING GROUPS:

Ms. Chavez updated the Commission that the scorecard will be discussed in great length at the next meeting.

A. GROUP A – Irrigation Rebate and QWEL

Mr. Pushard stated the self-audit included in the packet that Ms. Grosse has worked on is ready for edits should any Commissioner find any. (See Exhibit G)

Ms. Grosse explained that she tried to make it user friendly.

Mr. Coombe recommends some incentives for those businesses and home owners who take the time to do the audit.

Ms. Chavez discussed the deliverables have a March deadline.

B. GROUP B – Expansion of the K-12 Education Program

Mr. Kauffman stated the city partners have committed for the money for the program. A draft is enclosed. (See Exhibit H)

C. GROUP C – Scorecard

Mr. Coombe and Ms. Chavez have worked on condensing the key objectives and outcomes. (See Exhibit I) There are samples for objectives for 2017.

A discussion was held about the goals of the scorecard.

D. GROUP D – Water Conservation Codes, Ordinances and Regulations

9. MATTERS FROM THE PUBLIC

There was not public comment.

10. MATTERS FROM STAFF

Ms. Chavez announced the Chapter 25 re-write is going to be taken to City Council in sections. The water conservation portion will go first. Ms. Chavez will keep the Committee posted.

Ms. Chavez thanked the Committee for the work done this year. If the Commissioners have any ideas for speakers or items they are always welcome to have them added to meetings.

11. MATTERS FROM THE COMMITTEE

Mr. Wiman announced Ms. Chavez has taken over the column in the Santa Fe Real Estate guide.

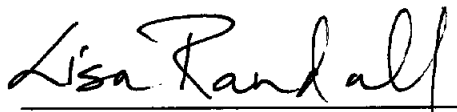
Mr. Pushard presented a recommendation for a new member for the Santa Fe County slot. A discussion was held that recommendation was given before but denied. If any other Commissioner has ideas for members Ms. Chavez will take the information.

12. NEXT MEETING – TUESDAY JANUARY 10, 2017

13. ADJOURN

There being no further business to come before the Santa Fe Water Conservation Committee the meeting was adjourned at 6:05 p.m.

SIGNATURES



Councilor Peter Ives, Chair



Linda Vigil for Fran Lucero, Stenographer

U.S. Drought Monitor

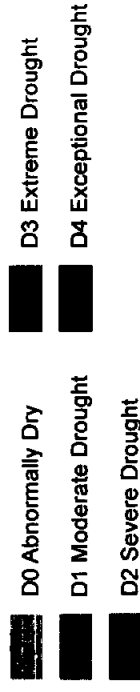
New Mexico

December 6, 2016
 (Released Thursday, Dec. 8, 2016)
 Valid 7 a.m. EST

Drought Conditions (Percent Area)

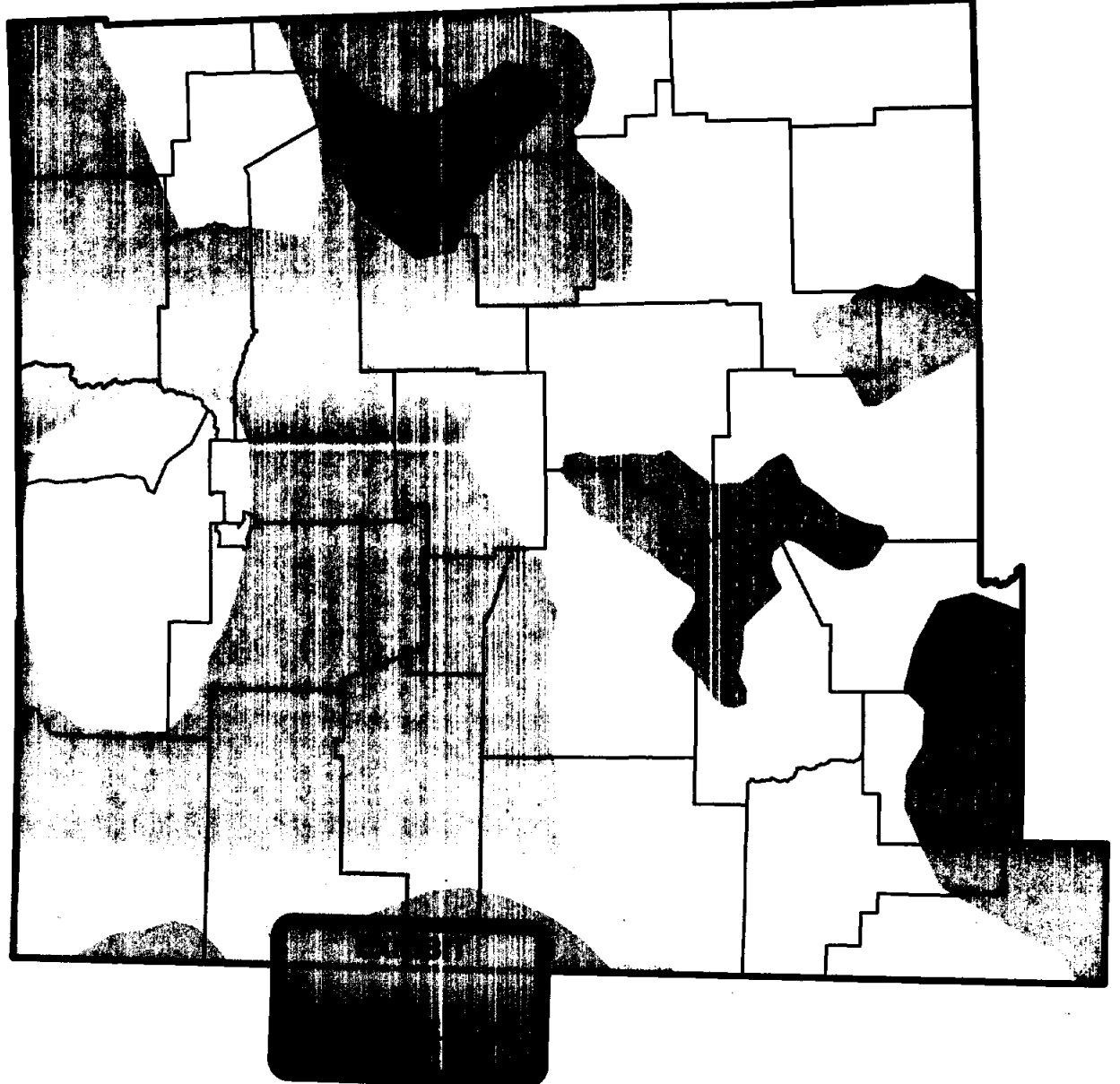
	None	D3-D4				D4
Current	46.23	53.77	4.99	0.00	0.00	0.00
Last Week 11/29/2016	46.23	53.77	4.92	0.00	0.00	0.00
3 Months Ago 9/6/2016	16.43	83.57	16.78	0.00	0.00	0.00
Start of Calendar Year 12/29/2015	73.76	26.24	0.00	0.00	0.00	0.00
Start of Water Year 9/27/2016	53.33	46.67	3.85	0.00	0.00	0.00
One Year Ago 12/8/2015	73.76	26.24	0.00	0.00	0.00	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
 Anthony Artusa
 NOAA/NWS/NCEP/CPC

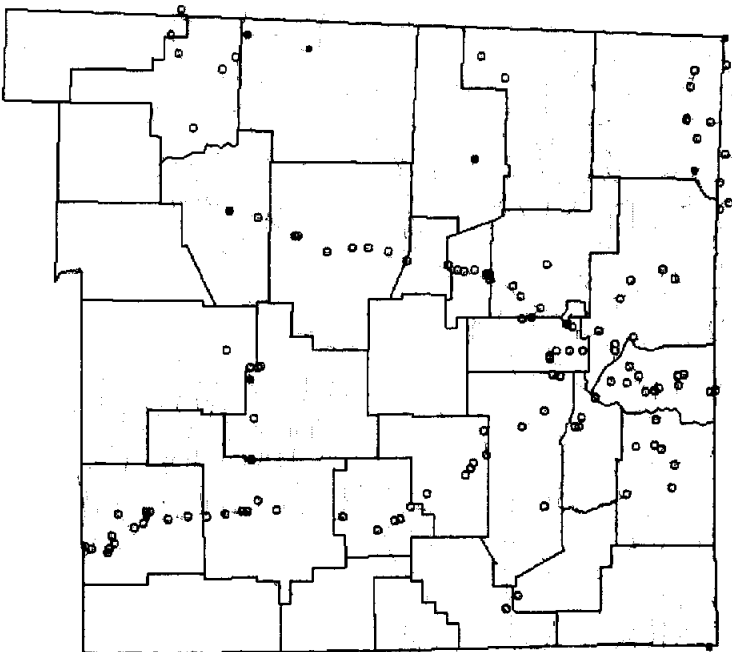


WaterWatch

Map of below normal 28-day average streamflow compared to historical streamflow for the day of year (New Mexico)

Monday, December 12, 2016

USGS



Search USGS streamgauge

Choose a data retrieval option and select a location on the map
☐ List of all stations ☒ Single station ☐ Nearest stations

Explanation - Percentiles classes				
☒ Below low	☒ Below	☒ Near normal	☒ Above	☐ Not assessed
Stream gauge	Stream gauge	Stream gauge	Stream gauge	Stream gauge
Stream gauge	Stream gauge	Stream gauge	Stream gauge	Stream gauge

WaterWatch: Water Resources Conditions

Summary

Hydrograph

Peak

Rating

USGS 06316000 SANTA FE RIVER
NEAR SANTA FE, NM

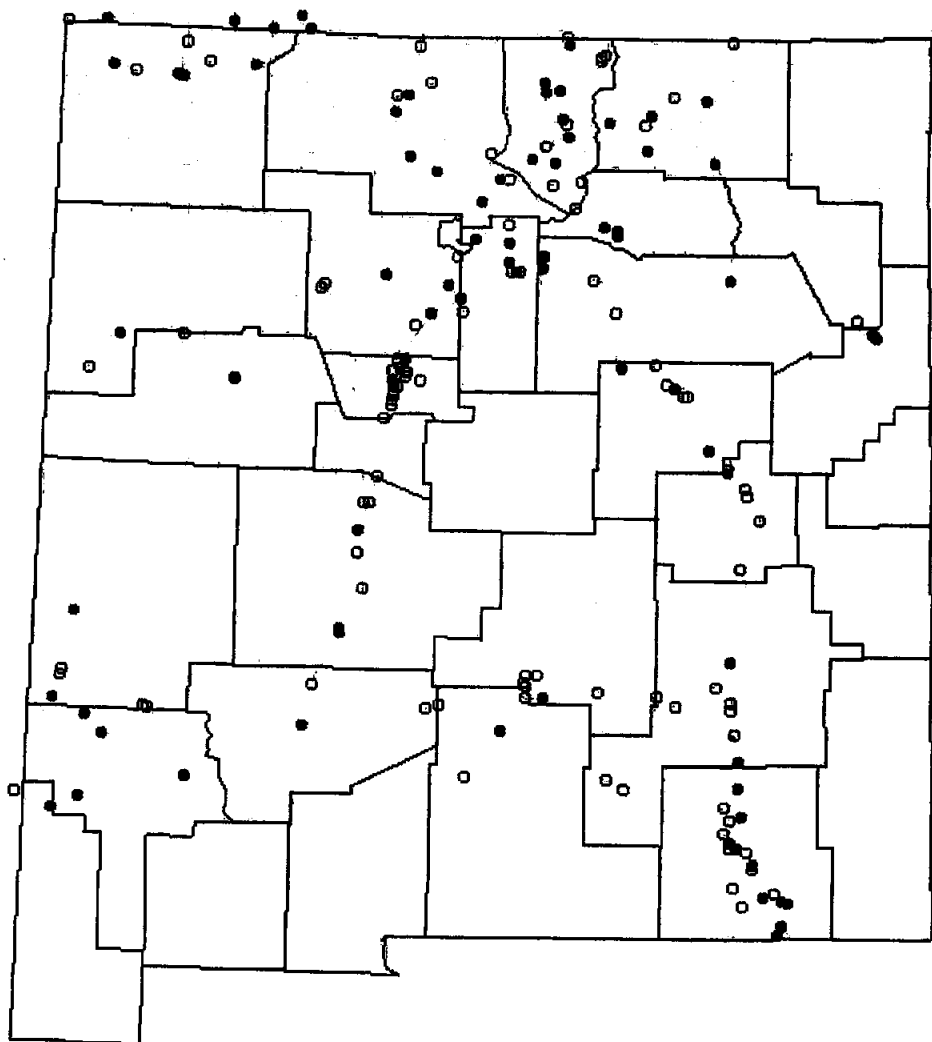
Drainage area:	18.2 mi ²
Discharge:	1.39 cfs
Date:	2016-12-12
No. of days:	28
Percentile:	34.47 %
Length of Record:	99 years
Class symbol:	☒
% normal (median):	72.02 %
% normal (mean):	56.97 %

hydrograph; Click for a large image.

WaterWatch

Map of real-time streamflow compared to historical streamflow for the day of the year (New Mexico)

Tuesday, November 01, 2016 11:30ET



Search USGS streamgage

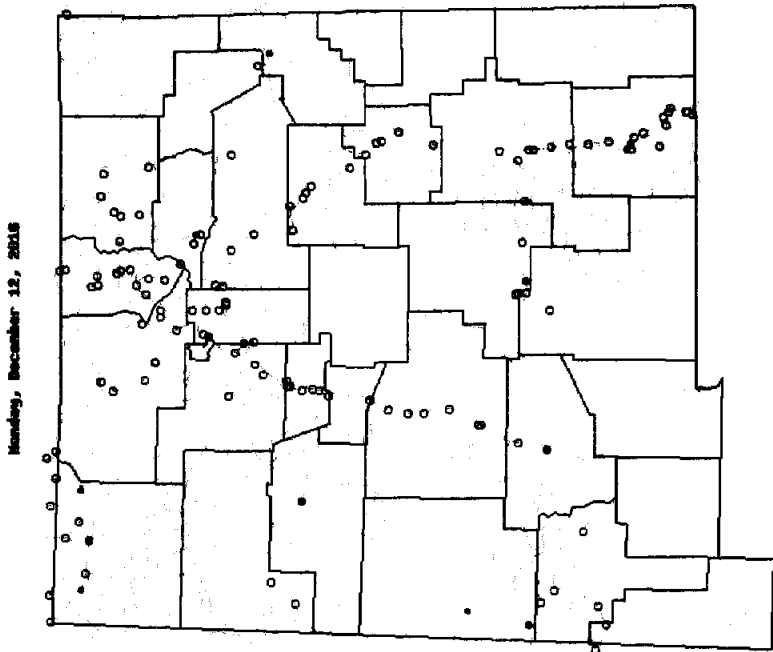
Choose a data retrieval option and select a location on the map

☐ List of all stations ☒ Single station ☐ Nearest stations ☐ Peak flow

Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

WaterWatch

Map of below normal 7-day average streamflow compared to historical streamflow for the day of the year (New Mexico)



Search USGS streamgage

Choose a data retrieval option and select a location on the map
☐ List of all stations ☒ Single station ☐ Nearest stations

Explanation - Percentile classes				
Below normal	Below 10th	10-24	25-49	50-74
Above normal	75-99	10-24	25-49	50-74

WaterWatch: Water Resources Conditions

SummaryHydrographPeakRating

USGS 08316000 SANTA FE RIVER
NEAR SANTA FE, NM

Drainage area:	18.2 mi ²
Discharge:	1.80 cfs
Date:	2016-12-12
No. of days:	7
Percentile:	50.00 %
Length of Record:	99 years
Class symbol:	
% normal (median):	100.00 %
% normal (mean):	78.26 %

Exhibit B

SANTA FE WATER SYSTEM DAILY REPORT IN MILLION GALLONS OF WATER (MG)



MONDAY December 12 2016

	December 12 2015	December 12 2014
CANYON WATER TREATMENT PLANT	2.411 MG	0.000 MG
BUCKMAN REGIONAL WATER TREATMENT PLANT ¹	3.497 MG	4.791 MG
CITY WELLS (INCLUDING ST. MICHAELS WELL)	0.000 MG	1.010 MG
BUCKMAN WELLS	0.000 MG	0.000 MG
TOTAL PRODUCTION OF SANTA FE WATER SYSTEM AND IMPORTED WATER FROM BRWTP	5.908 MG	5.801 MG
TOTAL STORAGE IN SYSTEM TANKS	22.520 MG	25.659 MG
GAIN OR LOSS OF STORAGE IN SYSTEM TANKS	(L) 0.024 MG	(G) 0.084 MG
ESTIMATED SFE RIVER DAILY INFLOW ABOVE MCCLURE RESERVOIR ²	1.68 MG	1.16 MG
ESTIMATED TOTAL STORAGE OF BOTH RESERVOIRS	16.6% STORAGE	11.8% STORAGE

1. INCLUDES SANTA FE COUNTY WATER DELIVERIES

2. USGS WEIR ABOVE MCCLURE:

http://waterdata.usgs.gov/nm/hwslw/?site_no=08315480&PARA=meter_cd=00065.00060

RESERVOIR CAPACITY IN MG	PLANNED	ACTUAL	CFS
NICHOLS	110.82	51.42%	
McCLURE	186.61	17.10%	
MG TOTAL	297.43	22.77%	
SANTA FE RIVER PASS THRU			0.30 CFS
ESTIMATED SFE RIVER DAILY STREAMFLOW @ GAGE BELOW NICHOLS RESERVOIR			0.30 CFS
ACRE-FEET USED AS OF	December 12	2016	561.61

NRCS SNOTEL GAGE STATIONS	CUMULATIVE SNOW WATER EQUIV. IN INCHES	CUMULATIVE SNOW DEPTH IN INCHES	DAILY PRECIPITATION IN INCHES
SANTA FE SNOTEL	2.6	11.0	0.0
ELK CABIN SNOTEL	0.4	2.0	0.0

SANTA FE WATERSHED PRECIPITATION	0.00
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NOTE: Snow, Precipitation, and Stream Gage data are estimates & reported when available

SANTA FE SNOTEL SITE: <http://www.wcc.nrcs.usda.gov/nwcc/entl-data0000.isr?site=922&days=7&state=NM>

ELK CABIN SNOTEL SITE: <http://www.wcc.nrcs.usda.gov/nwcc/entl-data0000.isr?site=921&days=7&state=NM>

WRCC RAWLS SITE: <http://www.rnrs.dri.edu/ksr-birframMAN.07mXSPV>

RIO GRANDE COMPACT COMMISSION REPORT
RIO GRANDE COMPACT

The State of Colorado, the State of New Mexico, and the State of Texas, desiring to remove all causes of present and future controversy among these States and between citizens of one of these States and citizens of another State with respect to the use of the waters of the Rio Grande above Fort Quitman, Texas, and being moved by considerations of interstate comity, and for the purpose of effecting an equitable apportionment of such waters, have resolved to conclude a Compact for the attainment of these purposes, and to that end, through their respective Governors, have named as their respective Commissioners:

For the State of Colorado
For the State of New Mexico
For the State of Texas

M. C. Hinderlider
Thomas M. McClure
Frank B. Clayton

who, after negotiations participated in by S. O. Harper, appointed by the President as the representative of the United States of America, have agreed upon the following articles, to-wit:

ARTICLE I

(a) The State of Colorado, the State of New Mexico, the State of Texas, and the United States of America, are hereinafter designated "Colorado," "New Mexico," "Texas," and the "United States," respectively.

(b) "The Commission" means the agency created by this Compact for the administration thereof.

(c) The term "Rio Grande Basin" means all of the territory drained by the Rio Grande and its tributaries in Colorado, in New Mexico, and in Texas above Fort Quitman, including the Closed Basin in Colorado.

(d) The "Closed Basin" means that part of the Rio Grande Basin in Colorado where the streams drain into the San Luis Lakes and adjacent territory, and do not normally contribute to the flow of the Rio Grande.

(e) The term "tributary" means any stream which naturally contributes to the flow of the Rio Grande.

(f) "Transmountain Diversion" is water imported into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, exclusive of the Closed Basin.

(g) "Annual Debits" are the amounts by which actual deliveries in any calendar year fall below scheduled deliveries.

(h) "Annual Credits" are the amounts by which actual deliveries in any calendar year exceed scheduled deliveries.

(i) "Accrued Debits" are the amounts by which the sum of all annual debits exceeds the sum of all annual credits over any common period of time.

(j) "Accrued Credits" are the amounts by which the sum of all annual credits exceeds the sum of all annual debits over any common period of time.

(k) "Project Storage" is the combined capacity of Elephant Butte Reservoir and all other reservoirs actually available for the storage of usable water below Elephant Butte and above the first diversion to lands of the Rio Grande Project, but not more than a total of 2,638,860 acre feet.

RIO GRANDE COMPACT

- (l) "Usable Water" is all water, exclusive of credit water, which is in project storage and which is available for release in accordance with irrigation demands, including deliveries to Mexico.
- (m) "Credit Water" is that amount of water in project storage which is equal to the accrued credit of Colorado, or New Mexico, or both.
- (n) "Unfilled Capacity" is the difference between the total physical capacity of project storage and the amount of usable water then in storage.
- (o) "Actual Release" is the amount of usable water released in any calendar year from the lowest reservoir comprising project storage.
- (p) "Actual Spill" is all water which is actually spilled from Elephant Butte Reservoir, or is released therefrom for flood control, in excess of the current demand on project storage and which does not become usable water by storage in another reservoir; provided, that actual spill of usable water cannot occur until all credit water shall have been spilled.
- (q) "Hypothetical Spill" is the time in any year at which usable water would have spilled from project storage if 790,000 acre feet had been released therefrom at rates proportional to the actual release in every year from the starting date to the end of the year in which hypothetical spill occurs; in computing hypothetical spill the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following the effective date of this Compact, and thereafter the initial condition shall be the amount of usable water in project storage at the beginning of the calendar year following each actual spill.

ARTICLE II

The Commission shall cause to be maintained and operated a stream gaging station equipped with an automatic water stage recorder at each of the following points, to-wit:

- (a) On the Rio Grande near Del Norte above the principal points of diversion to the San Luis Valley,
- (b) On the Conejos River near Mogote;
- (c) On the Los Pinos River near Ortiz;
- (d) On the San Antonio River at Ortiz;
- (e) On the Conejos River at its mouths near Los Sauces;
- (f) On the Rio Grande near Lobatos;
- (g) On the Rio Chama below El Vado Reservoir;
- (h) On the Rio Grande at Otowi Bridge near San Ildefonso;
- (i) On the Rio Grande near San Acacia;
- (j) On the Rio Grande at San Marcial;
- (k) On the Rio Grande below Elephant Butte Reservoir;
- (l) On the Rio Grande below Caballo Reservoir.

Similar gaging stations shall be maintained and operated below any other reservoir constructed after 1929, and at such other points as may be necessary for the securing of records required for the carrying out of the Compact; and automatic water stage recorders shall be maintained and operated on each of the reservoirs mentioned, and on all others constructed after 1929.

RIO GRANDE COMPACT COMMISSION REPORT

Such gaging stations shall be equipped, maintained and operated by the Commission directly or in cooperation with an appropriate Federal or State agency, and the equipment, method and frequency of measurement at such stations shall be such as to produce reliable records at all times. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE III

The obligation of Colorado to deliver water in the Rio Grande at the Colorado-New Mexico State Line, measured at or near Lobatos, in each calendar year, shall be ten thousand acre feet less than the sum of those quantities set forth in the two following tabulations of relationship, which correspond to the quantities at the upper index stations:

DISCHARGE OF CONEJOS RIVER	
Quantities in thousands of acre feet	
Conejos Index Supply (1)	Conejos River at Mouths (2)
100	0
150	20
200	45
250	75
300	109
350	147
400	188
450	232
500	278
550	326
600	376
650	426
700	476

Intermediate quantities shall be computed by proportional parts.

(1) Conejos Index Supply is the natural flow of Conejos River at the U.S.G.S. gaging station near Mogote during the calendar year, plus the natural flow of Los Pinos River at the U.S.G.S. gaging station near Ortiz and the natural flow of San Antonio River at the U.S.G.S. gaging station at Ortiz, both during the months of April to October, inclusive.

(2) Conejos River at Mouths is the combined discharge of branches of this river at the U.S.G.S. gaging stations near Los Sauces during the calendar year.

DISCHARGE OF RIO GRANDE EXCLUSIVE OF CONEJOS RIVER

Quantities in thousands of acre feet	
Rio Grande at Del Norte (3)	Rio Grande at Lobatos less Conejos at Mouths (4)
200	60
250	65
300	75
350	86
400	98
450	112
500	127
550	144
600	162

RIO GRANDE COMPACT
DISCHARGE OF RIO GRANDE EXCLUSIVE OF CONEJOS RIVER--Con.
Quantities in thousands of acre feet

Rio Grande at Del Norte (3)	Rio Grande at Lobatos less Conejos at Mouths (4)
650	182
700	204
750	229
800	257
850	292
900	335
950	380
1,000	430
1,100	540
1,200	640
1,300	740
1,400	840

Intermediate quantities shall be computed by proportional parts.

(3) Rio Grande at Del Norte is the recorded flow of the Rio Grande at the U.S.G.S. gaging station near Del Norte during the calendar year (measured above all principal points of diversion to San Luis Valley) corrected for the operation of reservoirs constructed after 1937.

(4) Rio Grande at Lobatos less Conejos at Mouths is the total flow of the Rio Grande at the U.S.G.S. gaging station near Lobatos, less the discharge of Conejos River at its Mouths, during the calendar year.

The application of these schedules shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) any new or increased depletion of the runoff above inflow index gaging stations; and (c) any transmountain diversions into the drainage basin of the Rio Grande above Lobatos.

In event any works are constructed after 1937 for the purpose of delivering water into the Rio Grande from the Closed Basin, Colorado shall not be credited with the amount of such water delivered, unless the proportion of sodium ions shall be less than forty-five percent of the total positive ions in that water when the total dissolved solids in such water exceeds three hundred fifty parts per million.

ARTICLE IV

The obligation of New Mexico to deliver water in the Rio Grande at San Marcial, during each calendar year, exclusive of the months of July, August, and September, shall be that quantity set forth in the following tabulation of relationship, which corresponds to the quantity at the upper index station:

RIO GRANDE COMPACT COMMISSION REPORT
DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND AT SAN MARCIAL
EXCLUSIVE OF JULY, AUGUST AND SEPTEMBER
Quantities in thousands of acre feet

Otowi Index Supply (5)	San Marcial Index Supply (6)
100	0
200	65
300	141
400	219
500	300
600	383
700	469
800	557
900	648
1,000	742
1,100	839
1,200	939
1,300	1,042
1,400	1,148
1,500	1,257
1,600	1,370
1,700	1,489
1,800	1,508
1,900	1,730
2,000	1,856
2,100	1,985
2,200	2,117
2,300	2,253

Intermediate quantities shall be computed by proportional parts.

(5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Ildefonso (formerly station near Buckman) during the calendar year, exclusive of the flow during the months of July, August and September, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.

(6) San Marcial Index Supply is the recorded flow of the Rio Grande at the gaging station at San Marcial during the calendar year exclusive of the flow during the months of July, August and September.

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico at any time of the year of the natural runoff at Otowi Bridge; (c) depletion of the runoff during July, August and September of tributaries between Otowi Bridge and San Marcial, by works constructed after 1937; and (d) any transmountain diversions into the Rio Grande between Lobatos and San Marcial.

Concurrent records shall be kept of the flow of the Rio Grande at San Marcial, near San Acacia, and of the release from Elephant Butte Reservoir to the end that the records at these three stations may be correlated. (Note: See Resolution of Commission printed elsewhere in this report.)

RIO GRANDE COMPACT

ARTICLE V

If at any time it should be the unanimous finding and determination of the Commission that because of changed physical conditions, or for any other reason, reliable records are not obtainable, or cannot be obtained, at any of the stream gaging stations herein referred to, such stations may, with the unanimous approval of the Commission, be abandoned, and with such approval another station, or other stations, shall be established and new measurements shall be substituted which, in the unanimous opinion of the Commission, will result in substantially the same results so far as the rights and obligations to deliver water are concerned, as would have existed if such substitution of stations and measurements had not been so made. (Note: See Resolution of Commission printed elsewhere in this report.)

ARTICLE VI

Commencing with the year following the effective date of this Compact, all credits and debits of Colorado and New Mexico shall be computed for each calendar year; provided, that in a year of actual spill no annual credits nor annual debits shall be computed for that year.

In the case of Colorado, no annual debit nor accrued debit shall exceed 100,000 acre feet, except as either or both may be caused by holdover storage of water in reservoirs constructed after 1937 in the drainage basin of the Rio Grande above Lobatos. Within the physical limitations of storage capacity in such reservoirs, Colorado shall retain water in storage at all times to the extent of its accrued debit.

In the case of New Mexico, the accrued debit shall not exceed 200,000 acre feet at any time, except as such debit may be caused by holdover storage of water in reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and San Marcial. Within the physical limitations of storage capacity in such reservoirs, New Mexico shall retain water in storage at all times to the extent of its accrued debit. In computing the magnitude of accrued credits or debits, New Mexico shall not be charged with any greater debit in any one year than the sum of 150,000 acre-feet and all gains in the quantity of water in storage in such year.

The Commission by unanimous action may authorize the release from storage of any amount of water which is then being held in storage by reason of accrued debits of Colorado or New Mexico; provided, that such water shall be replaced at the first opportunity thereafter.

In computing the amount of accrued credits and accrued debits of Colorado or New Mexico, any annual credits in excess of 150,000 acre feet shall be taken as equal to that amount.

In any year in which actual spill occurs, the accrued credits of Colorado, or New Mexico, or both, at the beginning of the year shall be reduced in proportion to their respective credits by the amount of such actual spill; provided that the amount of actual spill shall be deemed to be increased by the aggregate gain in the amount of water in storage, prior to the time of spill, in reservoirs above San Marcial constructed after 1929; provided, further, that if the Commissioners for the States having accrued credits authorize the release of part, or all, of such credits in advance of spill, the amount so released shall be deemed to constitute actual spill.

In any year in which there is actual spill of usable water, or at the time of hypothetical spill thereof, all accrued debits of Colorado, or New Mexico, or both, at the beginning of the year shall be cancelled.

RIO GRANDE COMPACT COMMISSION REPORT

In any year in which the aggregate of accrued debits of Colorado and New Mexico exceeds the minimum unfilled capacity of project storage, such debits shall be reduced proportionally to an aggregate amount equal to such minimum unfilled capacity.

To the extent that accrued credits are impounded in reservoirs between San Marcial and Courchesne, and to the extent that accrued debits are impounded in reservoirs above San Marcial, such credits and debits shall be reduced annually to compensate for evaporation losses in the proportion that such credits or debits bore to the total amount of water in such reservoirs during the year.

ARTICLE VII

Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000 acre feet of usable water in project storage; provided, that if the actual releases of usable water from the beginning of the calendar year following the effective date of this Compact, or from the beginning of the calendar year following actual spill, have aggregated more than an average of 790,000 acre feet per annum, the time at which such minimum stage is reached shall be adjusted to compensate for the difference between the total actual release and releases at such average rate; provided, further, that Colorado, or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such event the state, or states, so relinquishing shall be entitled to store water in the amount of the water so relinquished.

ARTICLE VIII

During the month of January of any year the Commissioner for Texas may demand of Colorado and New Mexico, and the Commissioner for New Mexico may demand of Colorado, the release of water from storage reservoirs constructed after 1929 to the amount of the accrued debits of Colorado and New Mexico, respectively, and such releases shall be made by each at the greatest rate practicable under the conditions then prevailing, and in proportion to the total debit of each, and in amounts, limited by their accrued debits, sufficient to bring the quantity of usable water in project storage to 600,000 acre feet by March first and to maintain this quantity in storage until April thirtieth, to the end that a normal release of 790,000 acre feet may be made from project storage in that year.

ARTICLE IX

Colorado agrees with New Mexico that in event the United States or the State of New Mexico decides to construct the necessary works for diverting the waters of the San Juan River, or any of its tributaries, into the Rio Grande, Colorado hereby consents to the construction of said works and the diversion of waters from the San Juan River, or the tributaries thereof, into the Rio Grande in New Mexico, provided the present and prospective uses of water in Colorado by other diversions from the San Juan River, or its tributaries, are protected.

ARTICLE X

In the event water from another drainage basin shall be imported into the Rio Grande Basin by the United States or Colorado or New Mexico, or any of them jointly, the State having the right to the use of such water shall be given proper credit therefor in the application of the schedules.

ARTICLE XI

New Mexico and Texas agree that upon the effective date of this Compact all controversies between said States relative to the quantity or quality of the water of the Rio Grande are composed and settled; however, nothing herein shall be interpreted to prevent

RIO GRANDE COMPACT

recourse by a signatory state to the Supreme Court of the United States for redress should the character or quality of the water, at the point of delivery, be changed hereafter by one signatory state to the injury of another. Nothing herein shall be construed as an admission by any signatory state that the use of water for irrigation causes increase of salinity for which the user is responsible in law.

ARTICLE XII

To administer the provisions of this Compact there shall be constituted a Commission composed of one representative from each state, to be known as the Rio Grande Compact Commission. The State Engineer of Colorado shall be ex-officio the Rio Grande Compact Commissioner for Colorado. The State Engineer of New Mexico shall be ex-officio the Rio Grande Compact Commissioner for New Mexico. The Rio Grande Compact Commissioner for Texas shall be appointed by the Governor of Texas. The President of the United States shall be requested to designate a representative of the United States to sit with such Commission, and such representative of the United States, if so designated by the President, shall act as Chairman of the Commission without vote.

The salaries and personal expenses of the Rio Grande Compact Commissioners for the three States shall be paid by their respective States, and all other expenses incident to the administration of this Compact, not borne by the United States, shall be borne equally by the three States.

In addition to the powers and duties hereinbefore specifically conferred upon such Commission, and the members thereof, the jurisdiction of such Commission shall extend only to the collection, correlation and presentation of factual data and the maintenance of records having a bearing upon the administration of this Compact, and, by unanimous action, to the making of recommendations to the respective States upon matters connected with the administration of this Compact. In connection therewith, the Commission may employ such engineering and clerical aid as may be reasonably necessary within the limit of funds provided for that purpose by the respective States. Annual reports compiled for each calendar year shall be made by the Commission and transmitted to the Governors of the signatory States on or before March first following the year covered by the report. The Commission may, by unanimous action, adopt rules and regulations consistent with the provisions of this Compact to govern their proceedings.

The findings of the Commission shall not be conclusive in any court or tribunal which may be called upon to interpret or enforce this Compact.

ARTICLE XIII

At the expiration of every five-year period after the effective date of this Compact, the Commission may, by unanimous consent, review any provisions hereof which are not substantive in character and which do not affect the basic principles upon which the Compact is founded, and shall meet for the consideration of such questions on the request of any member of the Commission; provided, however, that the provisions hereof shall remain in full force and effect until changed and amended within the intent of the Compact by unanimous action of the Commissioners, and until any changes in this Compact are ratified by the legislatures of the respective states and consented to by the Congress, in the same manner as this Compact is required to be ratified to become effective.

ARTICLE XIV

The schedules herein contained and the quantities of water herein allocated shall never be increased nor diminished by reason of any increase or diminution in the delivery or loss of water to Mexico.

RIO GRANDE COMPACT COMMISSION REPORT

ARTICLE XV

The physical and other conditions characteristic of the Rio Grande and peculiar to the territory drained and served thereby, and to the development thereof, have actuated this Compact and none of the signatory states admits that any provisions herein contained establishes any general principle or precedent applicable to other interstate streams.

ARTICLE XVI

Nothing in this Compact shall be construed as affecting the obligations of the United States of America to Mexico under existing treaties, or to the Indian Tribes, or as impairing the rights of the Indian Tribes.

ARTICLE XVII

This Compact shall become effective when ratified by the legislatures of each of the signatory states and consented to by the Congress of the United States. Notice of ratification shall be given by the Governor of each state to the Governors of the other states and to the President of the United States, and the President of the United States is requested to give notice to the Governors of each of the signatory states of the consent of the Congress of the United States.

IN WITNESS WHEREOF, the Commissioners have signed this Compact in quadruplicate original, one of which shall be deposited in the archives of the Department of State of the United States of America and shall be deemed the authoritative original, and of which a duly certified copy shall be forwarded to the Governor of each of the signatory States.

Done at the City of Santa Fe, in the State of New Mexico, on the 18th day of March, in the year of our Lord, One Thousand Nine Hundred and Thirty-eight.

(Sgd.) M. C. HINDERLIDER

(Sgd.) THOMAS M. McCLURE

(Sgd.) FRANK B. CLAYTON

APPROVED:

(Sgd.) S. O. HARPER

RATIFIED BY:

Colorado, February 21, 1939
New Mexico, March 1, 1939
Texas, March 1, 1939

Passed Congress as Public Act No. 96, 76th Congress,

Approved by the President May 31, 1939

RESOLUTION ADOPTED BY RIO GRANDE COMPACT COMMISSION
AT THE ANNUAL MEETING HELD AT EL PASO, TEXAS, FEBRUARY 22-24, 1948, CHANGING
GAGING STATIONS AND MEASUREMENTS OF
DELIVERIES BY NEW MEXICO

RESOLUTION

Whereas, at the Annual Meeting of the Rio Grande Compact Commission in the year 1945, the question was raised as to whether or not a schedule for delivery of water by New Mexico during the entire year could be worked out, and

Whereas, at said meeting the question was referred to the Engineering Advisers for their study, recommendations and report, and

Whereas, said Engineering Advisers have met, studied the problems and under date of February 24, 1947, did submit their Report, which said Report contains the findings of said Engineering Advisers and their recommendations, and

Whereas, the Compact Commission has examined said Report and finds that the matters and things therein found and recommended are proper and within the terms of the Rio Grande Compact, and

Whereas, the Commission has considered said Engineering Advisers' Report and all available evidence, information and material and is fully advised:

Now, Therefore, Be it Resolved:

The Commission finds as follows:

- (a) That because of change of physical conditions, reliable records of the amount of water passing San Marcial are no longer obtainable at the stream gaging station at San Marcial and that the same should be abandoned for Compact purposes.
- (b) That the need for concurrent records at San Marcial and San Acacia no longer exists and that the gaging station at San Acacia should be abandoned for Compact purposes.
- (c) That it is desirable and necessary that the obligations of New Mexico under the Compact to deliver water in the months of July, August, September, should be scheduled.
- (d) That the change in gaging stations and substitution of the new measurements as hereinafter set forth will result in substantially the same results so far as the rights and obligations to deliver water are concerned, and would have existed if such substitution of stations and measurements had not been so made.

Be it Further Resolved:

That the following measurements and schedule thereof shall be substituted for the measurements and schedule thereof as now set forth in Article IV of the Compact.

"The obligation of New Mexico to deliver water in the Rio Grande into Elephant Butte Reservoir during each calendar year shall be measured by that quantity set forth in the following tabulation of relationship which corresponds to the quantity at the upper index station:

RIO GRANDE COMPACT COMMISSION REPORT
DISCHARGE OF RIO GRANDE AT OTOWI BRIDGE AND ELEPHANT BUTTE EFFECTIVE
SUPPLY

Quantities in thousands of acre-feet	
Otowi Index Supply (5)	Elephant Butte Effective Index Supply (6)
100	57
200	114
300	171
400	228
500	286
600	345
700	406
800	471
900	542
1,000	621
1,100	707
1,200	800
1,300	897
1,400	996
1,500	1,095
1,600	1,195
1,700	1,295
1,800	1,395
1,900	1,495
2,000	1,595
2,100	1,695
2,200	1,795
2,300	1,895
2,400	1,995
2,500	2,095
2,600	2,195
2,700	2,295
2,800	2,395
2,900	2,495
3,000	2,595

Intermediate quantities shall be computed by proportional parts.

- (5) The Otowi Index Supply is the recorded flow of the Rio Grande at the U.S.G.S. gaging station at Otowi Bridge near San Ildefonso (formerly station near Buckman) during the calendar year, corrected for the operation of reservoirs constructed after 1929 in the drainage basin of the Rio Grande between Lobatos and Otowi Bridge.
- (6) Elephant Butte Effective Index Supply is the recorded flow of the Rio Grande at the gaging station below Elephant Butte Dam during the calendar year plus the net gain in storage in Elephant Butte Reservoir during the same year or minus the net loss in storage in said reservoir, as the case may be.

RIO GRANDE COMPACT

The application of this schedule shall be subject to the provisions hereinafter set forth and appropriate adjustments shall be made for (a) any change in location of gaging stations; (b) depletion after 1929 in New Mexico of the natural runoff at Otowi Bridge; and (c) any transmountain diversions into the Rio Grande between Lobatos and Elephant Butte Reservoir."

Be it Further Resolved:

That the gaging stations at San Acacia and San Marcial be, and the same are hereby abandoned for Compact purposes.

Be it Further Resolved:

That this Resolution has been passed unanimously and shall be effective January 1, 1949, if within 120 days from this date the Commissioner for each State shall have received from the Attorney General of the State represented by him, an opinion approving this Resolution, and shall have so advised the Chairman of the Commission, otherwise, to be of no force and effect.

(Note: The following paragraph appears in the Minutes of the Annual Meeting of the Commission held at Denver, Colorado, February 14-16, 1949.

"The Chairman announced that he had received, pursuant to the Resolution adopted by the Commission at the Ninth Annual Meeting on February 24, 1948, opinions from the Attorneys General of Colorado, New Mexico and Texas that the substitution of stations and measurements of deliveries by New Mexico set forth in said resolution was within the powers of the Commission").

RIO GRANDE COMPACT COMMISSION REPORT
RULES AND REGULATIONS FOR ADMINISTRATION OF
THE RIO GRANDE COMPACT

A Compact, known as the Rio Grande Compact, between the States of Colorado, New Mexico and Texas, having become effective on May 31, 1939 by consent of the Congress of the United States, which equitably apportions the waters of the Rio Grande above Fort Quitman and permits each State to develop its water resources at will, subject only to its obligations to deliver water in accordance with the schedules set forth in the Compact, the following Rules and Regulations have been adopted for its administration by the Rio Grande Compact Commission; to be and remain in force and effect only so long as the same may be satisfactory to each and all members of the Commission, and provided always that on the objection of any member of the Commission, in writing, to the remaining two members of the Commission after a period of sixty days from the date of such objection, the sentence, paragraph or any portion or all of these rules to which any such objection shall be made, shall stand abrogated and shall thereafter have no further force and effect; it being the intent and purpose of the Commission to permit these rules to obtain and be effective only so long as the same may be satisfactory to each and all of the Commissioners.

GAGING STATIONS ¹

Responsibility for the equipping, maintenance and operation of the stream gaging stations and reservoir gaging stations required by the provisions of Article II of the Compact shall be divided among the signatory States as follows:

- (a) Gaging stations on streams and reservoirs in the Rio Grande Basin above the Colorado-New Mexico boundary shall be equipped, maintained, and operated by Colorado in cooperation with the U.S. Geological Survey.
- (b) Gaging stations on streams and reservoirs in the Rio Grande Basin below Lobatos and above Caballo Reservoir shall be equipped, maintained and operated by New Mexico in cooperation with the U.S. Geological Survey to the extent that such stations are not maintained and operated by some other Federal agency.
- (c) Gaging stations on Elephant Butte Reservoir and on Caballo Reservoir, and the stream gaging stations on the Rio Grande below those reservoirs shall be equipped, maintained and operated by or on behalf of Texas through the agency of the U.S. Bureau of Reclamation.

The equipment, method and frequency of measurements at each gaging station shall be sufficient to obtain records at least equal in accuracy to those classified as "good" by the U.S. Geological Survey. Water-stage recorders on the reservoirs specifically named in Article II of the Compact shall have sufficient range below maximum reservoir level to record major fluctuations in storage. Staff gages may be used to determine fluctuations below the range of the water-stage recorders on these and other large reservoirs, and staff gages may be used upon approval of the Commission in lieu of water-stage recorders on small reservoirs, provided that the frequency of observation is sufficient in each case to establish any material changes in water levels in such reservoirs.

¹ Amended at Eleventh Annual Meeting, February 23, 1950.

RULES AND REGULATIONS

RESERVOIR CAPACITIES ^{/1}

Colorado shall file with the Commission a table of areas and capacities for each reservoir in the Rio Grande Basin above Lobatos constructed after 1937; New Mexico shall file with the Commission a table of areas and capacities for each reservoir in the Rio Grande Basin between Lobatos and San Marcial constructed after 1928; and Texas shall file with the Commission tables of areas and capacities for Elephant Butte Reservoir and for all other reservoirs actually available for the storage of water between Elephant Butte and the first diversion to lands under the Rio Grande Project.

Whenever it shall appear that any table of areas and capacities is in error by more than five per cent, the Commission shall use its best efforts to have a re-survey made and a corrected table of areas and capacities to be substituted as soon as practicable. To the end that the Elephant Butte effective supply may be computed accurately, the Commission shall use its best efforts to have the rate of accumulation and the place of deposition of silt in Elephant Butte Reservoir checked at least every three years.

ACTUAL SPILL ^{/2, /3, /4}

(a) Water released from Elephant Butte in excess of Project requirements, which is currently passed through Caballo Reservoir, prior to the time of spill, shall be deemed to have been Usable Water released in anticipation of spill, or Credit Water if such release shall have been authorized.

(b) Excess releases from Elephant Butte Reservoir, as defined in (a) above, shall be added to the quantity of water actually in storage in that reservoir, and Actual Spill shall be deemed to have commenced when this sum equals the total capacity of that reservoir to the level of the uncontrolled spillway less capacity reserved for flood purposes, i.e., 1,998,400 acre-feet in the months of October through March inclusive, and 1,973,400 acre-feet in the months of April through September, inclusive, as determined from the 1999 area-capacity table or successor area-capacity tables and flood control storage reservation of 50,000 acre-feet from April through September and 25,000 acre-feet from October through March.

(c) All water actually spilled at Elephant Butte Reservoir, or released therefrom, in excess of Project requirements, which is currently passed through Caballo Reservoir, after the time of spill, shall be considered as Actual Spill, provided that the total quantity of water then in storage in Elephant Butte Reservoir exceeds the physical capacity of that reservoir at the level of the sill of the spillway gates, i.e. -1,830,000 acre-ft in 1942.

(d) Water released from Caballo Reservoir in excess of Project requirements and in excess of water currently released from Elephant Butte Reservoir, shall be deemed Usable Water released, excepting only flood water entering Caballo Reservoir from tributaries below Elephant Butte Reservoir.

DEPARTURES FROM NORMAL RELEASES ^{/5}

For the purpose of computing the time of Hypothetical Spill required by Article VI and for the purpose of the adjustment set forth in Article VII, no allowance shall be made for the difference between Actual and Hypothetical Evaporation, and any under-release of usable water from Project Storage in excess of 150,000 acre-ft in any year shall be taken as equal to that amount.

^{/1} Amended at Eleventh Annual Meeting, February 23, 1950.

^{/2} Adopted at Fourth Annual Meeting, February 24, 1943.

^{/3} Amended September 9, 1998.

^{/4} Amended March 22, 2001; made effective January 1, 2001.

^{/5} Adopted June 2, 1959; made effective January 1, 1952.

RIO GRANDE COMPACT COMMISSION REPORT

EVAPORATION LOSSES § 17, § 18

The Commission shall encourage the equipping, maintenance and operation, in cooperation with the U.S. Weather Bureau or other appropriate agency, of evaporation stations at Elephant Butte Reservoir and at or near each major reservoir in the Rio Grande Basin within Colorado constructed after 1937 and in New Mexico constructed after 1928. The net loss by evaporation from a reservoir surface shall be taken as the difference between the actual evaporation loss and the evapo-transpiration losses which would have occurred naturally, prior to the construction of such reservoir. Changes in evapo-transpiration losses along stream channels below reservoirs may be disregarded.

Net losses by evaporation, as defined above, shall be used in correcting Index Supplies for the operation of reservoirs upstream from Index Gaging Stations as required by the provisions of Article III and Article IV of the Compact.

In the application of the provisions of the last unnumbered paragraph of Article VI of the Compact:

(a) Evaporation losses for which accrued credits shall be reduced shall be taken as the difference between the gross evaporation from the water surface of Elephant Butte Reservoir and rainfall on the same surface.

(b) Evaporation losses for which accrued debits shall be reduced shall be taken as the net loss by evaporation as defined in the first paragraph.

ADJUSTMENT OF RECORDS

The Commission shall keep a record of the location, and description of each gaging station and evaporation station, and, in the event of change in location of any stream gaging station for any reason, it shall ascertain the increment in flow or decrease in flow between such locations for all stages. Wherever practicable, concurrent records shall be obtained for one year before abandonment of the previous station.

NEW OR INCREASED DEPLETIONS

In the event any works are constructed which alter or may be expected to alter the flow at any of the Index Gaging Stations mentioned in the Compact, or which may otherwise necessitate adjustments in the application of the schedules set forth in the Compact, it shall be the duty of the Commissioner specifically concerned to file with the Commission all available information pertaining thereto, and appropriate adjustments shall be made in accordance with the terms of the Compact; provided, however, that any such adjustments shall in no way increase the burden imposed upon Colorado or New Mexico under the schedules of deliveries established by the Compact.

TRANSMOUNTAIN DIVERSIONS

In the event any works are constructed for the delivery of waters into the drainage basin of the Rio Grande from any stream system outside of the Rio Grande Basin, such waters shall be measured at the point of delivery into the Rio Grande Basin and proper allowances shall be made for losses in transit from such points to the Index Gaging Station on the stream with which the imported waters are commingled.

§ 18 Amended at Tenth Annual Meeting, February 15, 1949.

§ 17 Amended at Twelfth Annual Meeting, February 24, 1951.

§ 18 Amended June 2, 1959.

RULES AND REGULATIONS

QUALITY OF WATER

In the event that delivery of water is made from the Closed Basin into the Rio Grande, sufficient samples of such water shall be analyzed to ascertain whether the quality thereof is within the limits established by the Compact.

SECRETARY ¹⁸

The Commission, subject to the approval of the Director, U.S. Geological Survey, to a cooperative agreement for such purposes, shall employ the U.S. Geological Survey on a yearly basis, to render such engineering and clerical aid as may reasonably be necessary for administration of the Compact. Said agreement shall provide that the Geological Survey shall:

- (1) Collect and correlate all factual data and other records having a material bearing on the administration of the Compact and keep each Commissioner adviser thereof.
- (2) Inspect all gaging stations required for administration of the Compact and make recommendations to the Commission as to any changes or improvements in methods of measurement or facilities for measurement which may be needed to insure that reliable records be obtained.
- (3) Report to each Commissioner by letter on or before the fifteenth day of each month, except January, a summary of all hydrographic data then available for the current year - on forms prescribed by the Commission - pertaining to:
 - (a) Deliveries by Colorado
 - (b) Deliveries by New Mexico
 - (c) Operation of Project Storage
- (4) Make such investigations as may be requested by the Commission in aid of its administration of the Compact.
- (5) Act as Secretary to the Commission and submit to the Commission at its regular meeting in February a report on its activities and a summary of all data needed for determination of debits and credits and other matters pertaining to administration of the Compact.

COSTS ¹¹

In February of each year, the Commission shall adopt a budget for the ensuing fiscal year beginning July first.

Such budget shall set forth the total cost of maintenance and operating of gaging stations, of evaporation stations, the cost of engineering and clerical aid, and all other necessary expenses excepting the salaries and personal expenses of the Rio Grande Compact Commissioners.

Contributions made directly by the United States and the cost of services rendered by the United States without cost shall be deducted from the total budget amount; the remainder shall then be allocated equally to Colorado, New Mexico and Texas.

¹⁸ The substitution of this section for the section titled "Reports to Commissioners" was adopted at Ninth Annual Meeting, February 22, 1948.

¹¹ Amended at Eleventh Annual Meeting, February 23, 1950.

RIO GRANDE COMPACT COMMISSION REPORT

Expenditures made directly by any State for purposes set forth in the budget shall be credited to that State; contributions in cash or in services by any State under a cooperative agreement with any federal agency shall be credited to such State, but the amount of the federal contribution shall not so be credited; in event any State, through contractual relationships, causes work to be done in the interest of the Commission, such State shall be credited with the cost thereof, unless such cost is borne by the United States.

Costs incurred by the Commission under any cooperative agreement between the Commission and any U.S. Government Agency, not borne by the United States, shall be apportioned equally to each State, and each Commissioner shall arrange for the prompt payment of one-third thereof by his State.

The Commissioner of each State shall report at the annual meeting each year the amount of money expended during the year by the State which he represents, as well as the portion thereof contributed by all cooperating federal agencies, and the Commission shall arrange for such proper reimbursement in cash or credits between States as may be necessary to equalize the contributions made by each State in the equipment, maintenance and operation of all gaging stations authorized by the Commission and established under the terms of the Compact.

It shall be the duty of each Commissioner to endeavor to secure from the Legislature of his State an appropriation of sufficient funds with which to meet the obligations of his State, as provided by the Compact.

MEETING OF COMMISSION ^{/1} _{/10}

The Commission shall meet in Santa Fe, New Mexico, on the third Thursday of February of each year for the consideration and adoption of the annual report for the calendar year preceding, and for the transaction of any other business consistent with its authority; provided that the Commission may agree to meet elsewhere. Other meetings as may be deemed necessary shall be held at any time and place set by mutual agreement, for the consideration of data collected and for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approved by the Commissioner from each of the three signatory States.

(Signed) M. C. HINDERLIDER
M. C. Hinderlider

Commissioner for Colorado

(Signed) THOMAS M. McCLURE
Thomas M. McClure

Commissioner for New Mexico

(Signed) JULIAN P. HARRISON
Julian P. Harrison

Commissioner for Texas

Adopted December 19, 1939.

^{/1} Amended at Eleventh Annual Meeting, February 23, 1950.

_{/10} Amended at Thirteenth Annual Meeting, February 25, 1952.

PUGLISI, ALEX A.

From: PUGLISI, ALEX A.
Sent: Friday, October 28, 2016 12:08 PM
To: PUGLISI, ALEX A.
Subject: Article 7.

Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000 acre feet of usable water in project storage; provided, that if the actual releases of usable water from the beginning of the calendar year following the effective date of this Compact, or from the beginning of the calendar year following actual spill, have aggregated more than an average of 790,000 acre feet per annum, the time at which such minimum stage is reached shall be adjusted to compensate for the difference between the total actual release and releases at such average rate; provided, further, that Colorado, or New Mexico, or both, may relinquish accrued credits at any time, and Texas may accept such relinquished water, and in such event the state, or states, so relinquishing shall be entitled to store water in the amount of the water so relinquished.

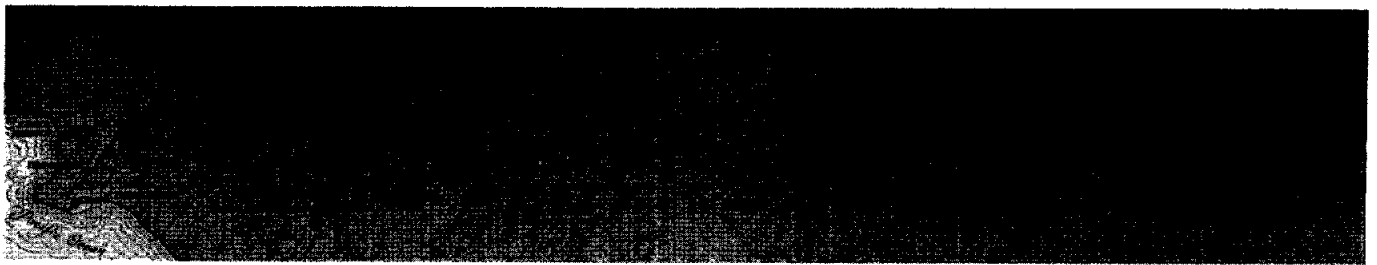
JFLECK AT INKSTAIN ([HTTP://WWW.INKSTAIN.NET/FLECK/](http://www.inkstain.net/fleck/))

A few thoughts from John Fleck, a writer of journalism and other things, living in New Mexico

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- The Colorado River (http://www.inkstain.net/fleck/colorado_river/)



(<http://www.inkstain.net/fleck/>)

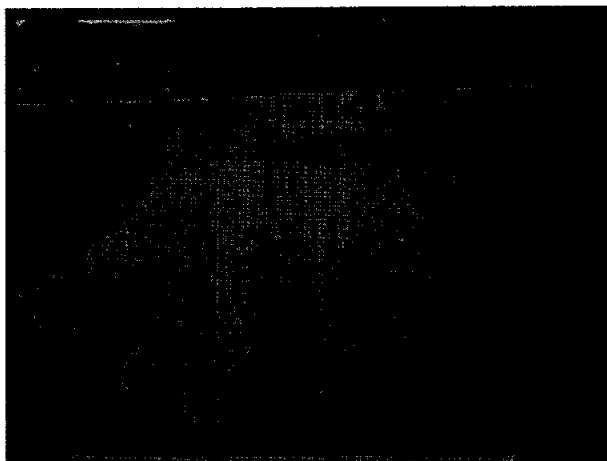
Article VII of the Rio Grande Compact

Posted by jfleck (<http://www.inkstain.net/fleck/author/jfleck/>) on 8 March 2015, 10:58 am (<http://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/>)

Article VII of the Rio Grande Compact is one of the keys to allocating the river's supply among Colorado, New Mexico, and Texas:

Neither Colorado nor New Mexico shall increase the amount of water in storage in reservoirs constructed after 1929 whenever there is less than 400,000 acre feet of usable water in project storage....

Operationally, this is critical. It means that in drought conditions, irrigators cannot store spring runoff in essentially all upstream reservoirs for summer use. There's been some flexibility written into the law in practice, but it only operates at the margin. It basically means that during droughts, one of the water managers' most important tools (storage) is constrained.



(<http://www.loc.gov/pictures/item/2008676650/>)

Elephant Butte Dam site: foundation of dam in bed of river, third section in foreground under construction, looking west, 1914 Feb. 27, courtesy Library of Congress

If my records are correct (and don't hold me to the date, this is me looking up stuff in my files on a Sunday morning without benefit of actually confirming with people who know, i.e. "doing journalism"), we've been in Article VII since July 8, 2010. But with the big last-of-February-first-of-March storm, there are signs usable project storage in Elephant Butte Reservoir could rise above the magic 400,000 acre feet some time around the first of May. That would allow the Middle Rio Grande Irrigation District to sock away a bit of extra water for late summer alfalfa cuttings.

The variables here illustrate the way a big reservoir integrates across both supply and demand functions. As soon as the Elephant Butte Irrigation District downstream begins taking its water out of Elephant Butte, it'll likely drop back below 400k and we'll be back in Article VII. The current "official" date for the start of irrigation is June 1, but it looks like it may be earlier – like the middle of May. Depending on runoff between now and then, EBID's start might even slip earlier, which would trigger the usual "black helicopters" north-south water war trope about how EBID and the federal government are in cahoots to keep Article VII storage restrictions in place.

I am generally skeptical of black helicopters.



(<https://twitter.com/intent/tweet?text=https://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/>) (<https://www.reddit.com/submit?url=https://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/>) (<https://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/>)

Filed under New Mexico (<http://www.inkstain.net/fleck/category/new-mexico/>), water (<http://www.inkstain.net/fleck/category/water/>) | 4 Comments (<http://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/#comments>) | Permalink (<http://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/>)

4 Comments

JFLECK AT INKSTAIN ([HTTP://WWW.INKSTAIN.NET/FLECK/](http://www.inkstain.net/fleck/))

A few thoughts from John Fleck, a writer of journalism and other things, living in New Mexico

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- The Colorado River (http://www.inkstain.net/fleck/colorado_river/)



(<http://www.inkstain.net/fleck/>)

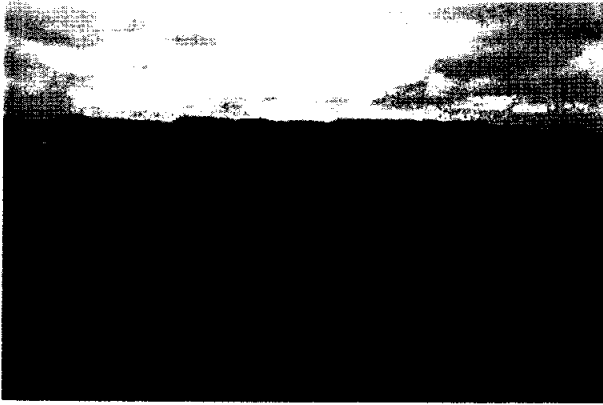
A glimmer of good water supply news for New Mexico's middle Rio Grande farmers

Posted by jfleck (<http://www.inkstain.net/fleck/author/jfleck/>) on 21 April 2015, 3:45 pm (<http://www.inkstain.net/fleck/2015/04/a-glimmer-of-good-water-supply-news-for-new-mexicos-middle-rio-grande-farmers/>)

Despite some hilariously complex argument over the accounting details, there finally is enough water in Elephant Butte Reservoir on the Rio Grande that everybody agrees it's now legal for the middle Rio Grande's farm water agency to store some water behind upstream dams to help stretch out this summer's irrigation season.

The runoff forecast is still lousy, but the flexibility allowed by the storage lessens the pressure on the Middle Rio Grande Conservancy District, which delivers farm water to some 60,000-ish acres in a narrow strip along the river valley through central New Mexico.

Here's some back story on Article VII of the Rio Grande Compact (<http://www.inkstain.net/fleck/2015/03/article-vii-of-the-rio-grande-compact/>), but basically it was written into the interstate water deal to ensure that in dry years, Colorado and New Mexico didn't hog a lot of water. If there's less than 400,000 acre feet of complicatedly bureaucratically described water of a certain type in Elephant Butte, upstream folks can't store, except when they can kinda sorta under certain narrow conditions (did I mention hilariously complex arguments over accounting details?). That makes farm water management substantially harder, because one of its basic principles involves storing some of the water during the spring runoff peak to use in the summer when the rivers get dry.



(<http://www.inkstain.net/fleck/wp-content/uploads/DSCF3548.jpg>)

New Mexico's Hatch chile, seen here last August, will get their first Rio Grande irrigation water beginning May 11.

Sometime in early April (somewhere between April 3 and April 9, depending on who you ask, see "hilariously complicated accounting") we came out of Article VII and the Middle Rio Grande Conservancy District was allowed to begin storing water for its farmers' summer use.

I'm pretty sure this is the first time we've been out of Article VII storage restrictions since July of 2010.

The forecast is still lousy. Elephant Butte Irrigation District managers, at a farmer meeting in Hatch this morning, announced that they'll begin a small early release for the Hatch Valley vegetable farmers on May 11, with a full release beginning May 28 that will wet the river and begin moving down the canals through the Mesilla Valley in southern New Mexico. (Prior to 2013, EBID had never had an irrigation season start later than March. 2013, '14, and '15: May.)



([HTTPS://TWITTER.COM/INTENT/TWEET?REDDIT\(BOT/SUBMIT?/HTTPS://WWW.INKSTAIN.NET/SAVE?](https://twitter.com/intent/tweet?text=REDDIT(BOT/SUBMIT?/HTTPS://WWW.INKSTAIN.NET/SAVE?))

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« Tiered water rates in the Cadillac Desert (<http://www.inkstain.net/fleck/2015/04/tiered-water-rates-in-the-cadillac-desert/>)

One more money quote from the California court decision on tiered water pricing

» (<http://www.inkstain.net/fleck/2015/04/one-more-money-quote-from-the-california-court-decision-on-tiered-water-pricing/>)

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WATER DELIVERIES UNDER THE RIO GRANDE COMPACT¹

by
S. E. Reynolds² and Philip B. Mutz³

A review of the record of the deliveries of the States of Colorado and New Mexico and the releases of water from project storage⁴ under the Rio Grande Compact between the States of Colorado, New Mexico and Texas may be of interest to students of the practical aspects of interstate water compacts. Plate I illustrates those records.

The accrued credits,⁵ or accrued debits,⁶ of the State of Colorado and the State of New Mexico at the end of each calendar year as determined at the following regular meeting of the Rio Grande Compact Commission are plotted on Plate I. The amount of water released from project storage for beneficial use in New Mexico and Texas and for delivery to Mexico under the Mexican Treaty of 1906⁷ during the calendar year indicated is also plotted.

Perhaps the most striking feature of Plate I is its illustration of the fact that both Colorado and New Mexico have been in a debit status during most of the time since the Compact became effective. Also well illustrated is the fact that releases from project storage have been less than the contemplated normal release⁸ of 790,000 acre-feet per year in all but four of the thirty-three years of Compact administration.

The practical effect of the almost continuous debit status of the two upstream states has been, by operation of the provisions of unnumbered paragraphs 2 and 3 of Article VI, to restrict the use of reservoirs constructed after 1937 in Colorado above Lobatos and after 1929 in New Mexico above San Marcial.

1. Rio Grande Compact (1938), N.M. Stat. Ann. § 75-34-3 (1953), Act of May 31, 1939, ch. 155, § 3 Stat. 785. [hereinafter Rio Grande Compact]

2. Rio Grande Compact Commissioner for New Mexico.

3. Engineer Advisor to Rio Grande Compact Commissioner for New Mexico.

4. Project storage: the combined capacity of Elephant Butte Reservoir and all other reservoirs actually available for the storage of usable water below Elephant Butte and above the first diversion to lands of the Rio Grande Project, but not more than a total of 2,638,860 acre-feet. Rio Grande Compact, Article I.

5. Accrued credits: the amounts by which the sum of all annual credits exceeds the sum of all annual debits over any common period of time. Rio Grande Compact, Article I.

6. Accrued debits: the amounts by which the sum of all annual debits exceeds the sum of all annual credits over any common period of time. Rio Grande Compact, Article I.

7. Convention between the United States of America and Mexico, May 21, 1906, 34 Stat. 785, T.S. No. 455.

8. The definition of hypothetical spill in Article I of the Rio Grande Compact is based on an annual release from project storage of 790,000 acre-feet. See also Rio Grande Compact, Articles VII and VIII.

and that a watermaster be appointed to enforce the Court's decree.¹² By the time this suit was dismissed in 1957, New Mexico's accrued debit was calculated at 529,400 acre-feet.

In 1948, with New Mexico's accrued debit standing at 176,800 acre-feet, the Congress, apprised of excessive losses of Rio Grande flows between Otowi gage and Elephant Butte Reservoir and of serious flood threats in that reach, particularly in the vicinity of Albuquerque, authorized the Middle Rio Grande Project. This authorization,¹³ together with a subsequent authorization,¹⁴ gave approval for the Bureau of Reclamation and the Corps of Engineers to cooperatively rectify the channel of Rio Grande, rehabilitate the works of the Middle Rio Grande Conservancy District, construct and rehabilitate levees, and construct and operate the Jemez Dam and Reservoir Project, Cochiti-Galisteo Dams and Reservoirs Project, and the Abiquiu Dam and Reservoir Project. Plate I suggests that the early stages of these works began to be reflected in New Mexico's improved Compact deliveries by about 1953; the rate at which the state's accrued debit was mounting began to decline. As the work authorized was accomplished New Mexico's delivery record improved and, with only four exceptions (1959, 1963, 1964 and 1965), New Mexico's annual delivery has exceeded the Compact requirement each year since 1956.

The cost of the works constructed to date under the Middle Rio Grande Project and subsequent authorizations is about \$160 million. Not all of this cost, of course, is assignable to the works needed to reduce waste and improve New Mexico's ability to meet its Compact delivery requirements; much of it is chargeable to the protection of life and property in the Middle Valley from floods.

There can be no doubt that the November 29, 1956 Order of the New Mexico State Engineer assuming jurisdiction over the drilling of wells and the appropriation of groundwater in the Rio Grande Basin above Elephant Butte Reservoir contributed to the liquidation of the New Mexico debit by preventing new ground water appropriations that would have diminished the flow of Rio Grande above Elephant Butte Reservoir and thus delayed the realization of credit status for New Mexico.

It is of interest to note that in the years 1968 and 1969 New Mexico's accrued debit was reduced by about 200,000 acre-feet. This large reduction can be attributed in part to the low level and rela-

12. *Texas v. New Mexico*, 352 U.S. 991 (1957).

13. Act of June 30, 1948, ch. 771, 62 Stat. 1171, Public Law 858, 80th Congress, approved June 30, 1948.

14. Act of July 14, 1960, § 201, 74 Stat. 480, 492.

status through 1951. Plate I indicates that Colorado reduced her credit by 119,700 acre-feet in 1950. This reduction in credit was not due entirely to an under-delivery for the year; in 1950 Colorado relinquished, pursuant to Article VII, 60,000 acre-feet of her accrued credits.

It appears that water management practices of hydrologic conditions, or both, changed in Colorado in 1950. In the years 1950 through 1967 Colorado consistently under-delivered, with minor exceptions in 1958 and 1966, until her accrued debit totalled 944,400 acre-feet at the end of 1967.

In 1966 Texas and New Mexico sued Colorado in the U. S. Supreme Court¹⁶ to enforce the Compact. The Court accepted jurisdiction and in May of 1968 the three states filed a "Memorandum of the Parties Relative to Motion for Continuance" in which they requested that the Court continue the case indefinitely on the condition that the State of Colorado undertake to deliver water at the Colorado-New Mexico state line to meet every year the delivery obligation established by the schedules of Article III of the Compact. The continuance was granted; in 1968 and each subsequent year Colorado exceeded her annual delivery obligation and her accrued debit at the end of 1972 was 766,200 acre-feet. It is apparent that Colorado's accomplishment is attributable to a number of measures including the curtailment of diversions enforced by agents of the state, improved drainage works, and control of groundwater use under the Water Right Determination and Administration Act of 1969.¹⁷

CONCLUSION

For most of the 33 years of Rio Grande Compact administration both Colorado and New Mexico have been in debit status and the use of reservoirs in both states has been restricted. By 1972 New Mexico had liquidated her debit and Colorado had established a definite trend toward credit status.

16. *Texas v. Colorado*, 391 U.S. 901 (1968).

17. *Colo. Rev. Stat. Ann.* §§ 148-21-1 to -45 (Supp. 1969).

**City of Santa Fe, Source of Supply Section/Water Division
Water Production Update - through November 28th
Public Utilities Committee Meeting
December 7, 2016**

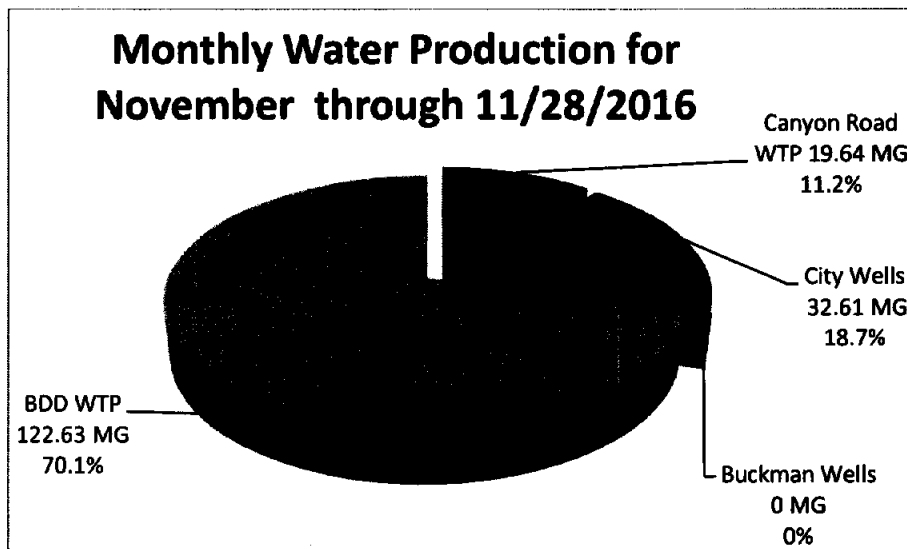
Old Filter Plant Site

Several neighborhood groups and associations have been informed of the transfer of use of this site from the Water Division to the Parks and Recreation Division. A meeting with "public stakeholders" is planned by the Water Division in conjunction with the Parks and Recreation Divisions in early December. A possible "Adopt-a-Park" arrangement with residents of the Canyon Road area has already been preliminarily discussed.

Water Production for November (through 11/26/2016)

Water production at the Canyon Road Water Treatment Plant (CRWTP) decreased significantly from previous months due to continued shutdown of the CRWTP to implement CIP projects, including the Master Control Center (MCC) relocation, asbestos tile removal and replacement, and other upgrades during mid to late October and early November. Total Production at the CRWTP through November 28th was 19.634 MG. The plant was completely offline through November 15th and is slowly being brought back to a constant winter production level. The Buckman Regional WTP produced 122.63 MG for the first 28 days of November, or an average of 4.38 MGD. Total production for the first 28 days of the month from all sources was approximately 174.9 MG. Production from all individual sources are illustrated in the chart below. Average daily usage (customer demand) during the month of August was down significantly from October (9.04 MGD). November consumption levels averaged 6.25 MGD in comparison to the previous month.

Nichols Reservoir storage levels have increased to 51.27% (111.47 MG) from 107.6 MG (49.92% storage). The storage level of McClure Reservoir has also increased slightly to 194.2 MG, or 17.82% of capacity, due to the CRWTP being offline, and Living River and irrigation releases to the Santa Fe River below Nichols decreasing to a winter daily flow of 0.3 MGD (**Living River Planned Release only**). The combined storage level for both reservoirs is 305.65 MG, which reflects a current reservoir storage level of 23.40%. Santa Fe River inflows to McClure Reservoir are currently at 0.97 MGD with an average of 0.70 MGD for the month.



Baca Street Well

The site is currently being investigate and remediated under the State of New Mexico's Petroleum Corrective Action Fund. (CAF). Contaminant concentration results for monitoring wells have been submitted by PNM to the New Mexico Environment Department's Petroleum Storage Tank Bureau NMED-PSTB. However, water level maps for wells at the site are still under preparation. NMED-PSTB granted PNM a thirty (30) day extension to submit all appropriate information so that NMED and the City would like to review both well contaminant concentrations and water level maps in concert with each other to understand the nature and extent of contamination at the site.

Downtown Ground Water Investigation

Conversations with NMED about the recently discovered sites contaminated with Volatile Organic Compounds (VOCs) are continuing, especially in light of newly proposed "Vapor Intrusion" regulations recently introduced to the NM Water Quality Control Commission by the agency and the finalization of the "Hawley Report" with regards to the PNM Baca Street site which discussing geologic formations and groundwater flow and influences within the City.

Drought/Monsoon, Storage, and ESA Update

NOAA has recently updated (11/10/16) ENSO (El Nino/La Niña) status to: **La Niña conditions are present and slightly favored to persist (~55% chance) during winter 2016-17.** Dry conditions in 2016/17 could present significant challenges to all water purveyors, water utilities, and irrigators if there is not significant filling and carry-over storage in regional reservoirs. Regional reservoir levels on the Rio Grande and Chama Rivers are still low. Upper Santa Fe River reservoirs are low so City draw down has been reduced accordingly, with a corresponding increase in BDD diversions from the Rio Grande, and moderate increases in groundwater well use. Preliminary estimates are for an approximate 95%-100% delivery of full firm-yield of San Juan-Chama Project (SJCP) water. There are no water-related Endangered Species Act (ESA) updates. Updates on ESA issues will be made as needed. Rio Grande Compact Article VII storage restrictions went back into effect 4/22/16, which means the City will not be allowed to impound "native" runoff into Nichols and McClure Reservoirs above the pre-Compact pool of 1,061 acre-feet (AF) (unless an exchange for water is made with the NMISC). Updates to this condition will be made as needed.

Current City of Santa Fe October, 2016 SJCP Reservoir Storage:

Heron:

5,029 AF. 2016 deliveries are at about 95% of annual total.

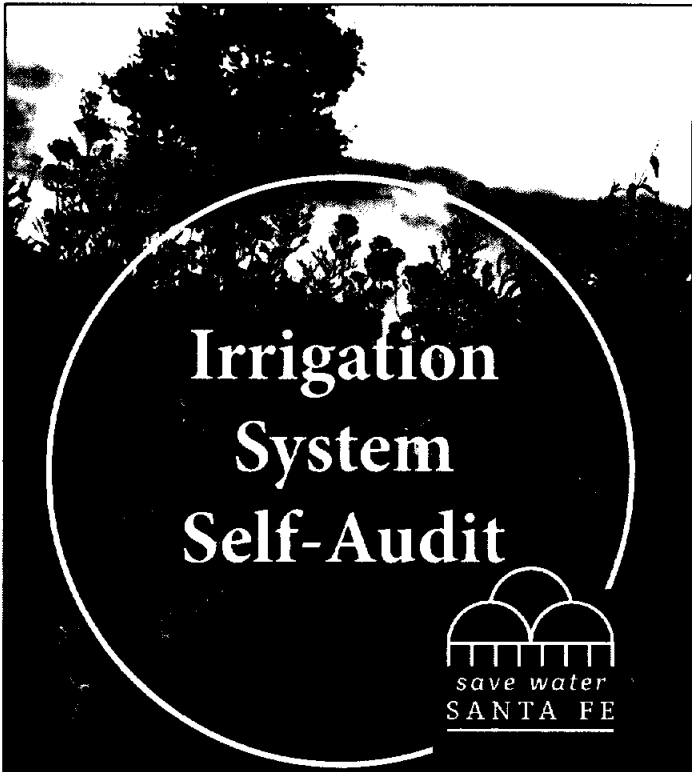
El Vado:

1,236 AF.

Abiquiu:

10,481 AF SJCP carry-over from previous years, no time limit to vacate due to storage agreement with ABCWUA

TOTAL: 16,746 AF



Irrigation System Self-Audit



Applicant Details: *(please print clearly)*

Water Account #:
Customer Name:
Contact Person:
Phone:
Email:

Installation Address:

Street :

City/State:
Zip code:

Mailing Address: *(if different from above)*

Address:

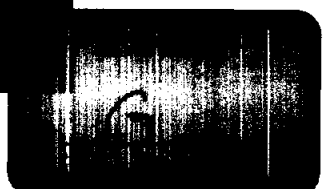
City/State:
Zip code:

Landscape irrigation accounts for about 38% of the water used in Santa Fe each year. Many homeowners have already converted their lawns to xeriscape and replaced sprinkler systems with drip irrigation, but leaks and/or over-watering can still waste water and money without contributing to the beauty of your yard.

This kit is designed to help you self-audit your home irrigation system to see if improvements can be made which can save money and water. While an irrigation audit may seem like a complicated process, these instructions are designed to help you work your way through the process one step at a time, with pictures and forms built into the instruction booklet.

As a thank you for taking the time to do this self-audit, when you return the kit and a copy of your completed audit, you will receive a <soil moisture sensor or rain sensor?>, which can be added on to most types of controllers to further reduce over-watering.

Place Vendor Logo Here



Irrigation System Self-Audit Instructions

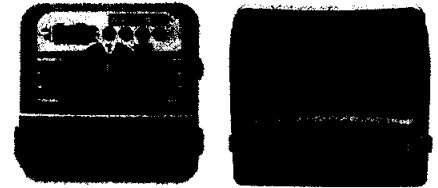
Self-audit kit contents:

25 catch cans	instruction booklet
1 soil probe	1 stop watch
1 pressure gauge (with attachments)	1 rain gauge
1 Rainbird green screwdriver	1 clipboard
1 Hunter adjustment tool	25 pink "problem" flags
1 screwdriver	60 flags (15 each of green, blue, red, yellow)

Step 1: Record Existing Settings

Use the enclosed clipboard to hold this booklet, make sure you have a pen or pencil and go find your irrigation controller (often located in the garage.) If you know where your controller manual is, it will be helpful to take it with you.

Record the current settings below; start times and watering days (run days).



Controller Settings

Current Run Days (circle)													
M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su
Current Start Times				1 _____		2 _____		3 _____					

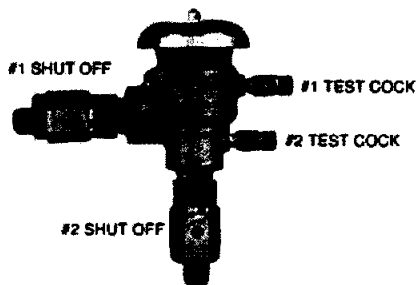
Step 2: Measure Water Pressure

1. Locate your backflow prevention device (typically on the side of the house.)
2. Thread the pressure gauge into the #1 test cock.
3. Using the standard screwdriver, slowly open the test cock by turning the screw.
4. If you cannot make a connection to the backflow device, use the hose spigot attachment. Thread it as you would a hose and open the spigot to measure pressure.
5. Record two pressures:

Static pressure: (sprinklers turned off)

Operating pressure: (sprinklers turned on)

6. Slowly close the test cock and remove the gauge.



*Pressure Vacuum Breaker
(old technology, not approved for new
irrigation systems)*



*Double Check Valve
(most common for residential irrigation
systems)*



*Reduced Pressure Double Check Valve
(typically used for commercial irrigation
systems)*

Step 3: Inspect Each Zone

1. Starting with Zone 1, turn on each zone and inspect the heads or emitters and observe the watering patterns.
2. Some controllers have a “test” mode that activates each zone for a selected test time. If not, manually turn on each zone for 5 minutes. Place a flag next to each sprinkler head or drip emitter. Use a different colored flag for each zone.
3. Place pink flags where you find broken heads, clogged emitters or other problems.
4. Record observed problems on the Zone Evaluation Checklist on the next page.
5. On the Audit Results chart on page 7, record the type(s) of heads. Spray heads have a fixed pattern and rotors move from side to side. High efficiency rotary nozzles have individual streams that rotate.

Zone Evaluation Checklist

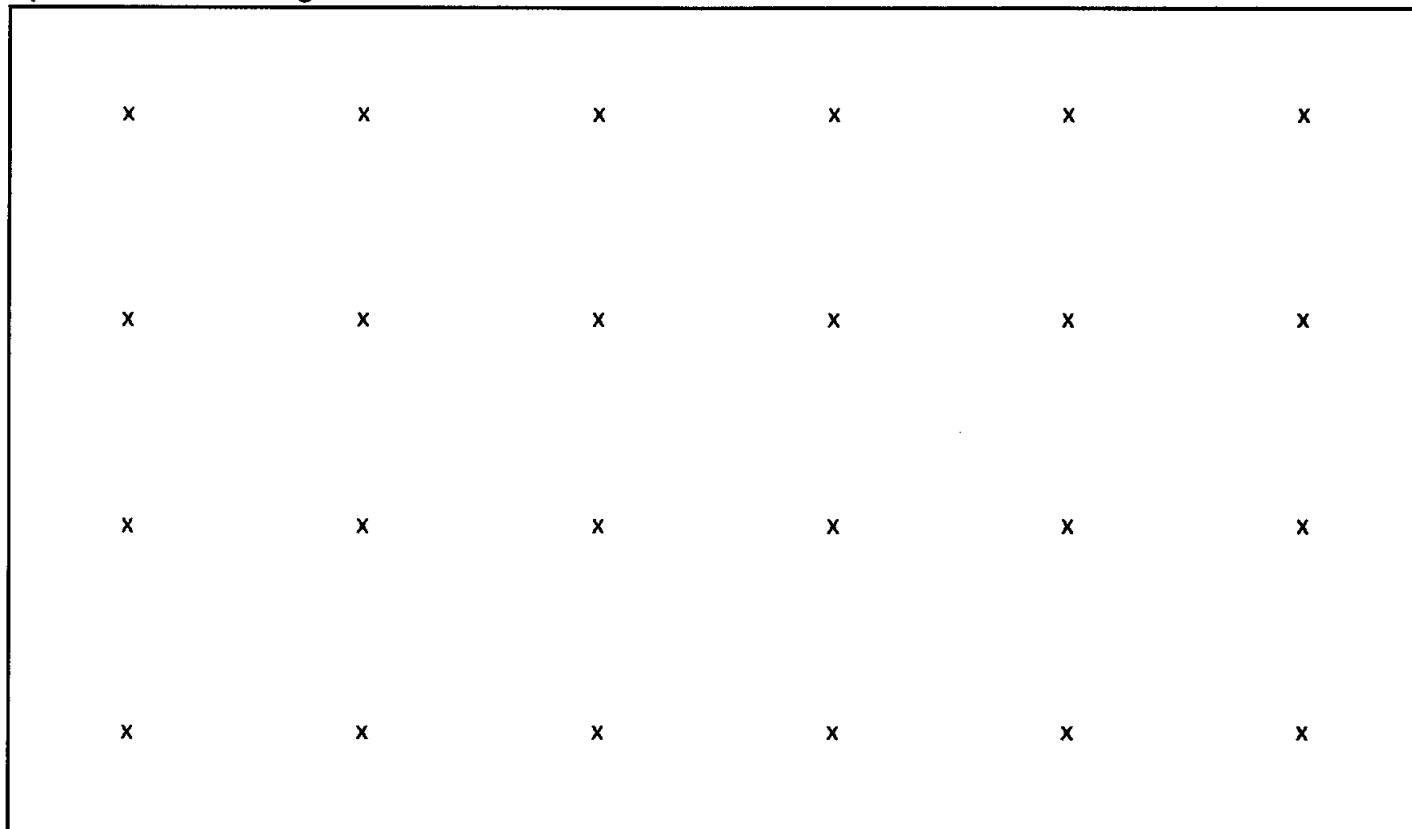
Observed Problems	Zone #											
	1	2	3	4	5	6	7	8	9	10	11	12
Low Pressure												
High Pressure												
Mixed Head Type												
Broken Head(s)												
Clogged Nozzle												
Tilted Head												
Low/Sunken Head												
Improper Arc or Radius												
Overspray												
Obstructions												
Low Head Drainage												
Underground Leak												
Comments												

Step 4a: Catch Can Test for Sprinklers

A catch can test is used to collect data which is used to calculate the precipitation rate (PR) and the distribution uniformity (DU). PR indicates how fast the sprinklers are applying water, measured in inches. DU measures how evenly the system applies water over the lawn.

1. Select an area for the catch can test. More than one zone can be done as long as the head type is the same in both zones.
2. For sprinklers, set out 24 catch cans in a grid six rows by four rows. Place the catch cans about two feet away from sprinkler heads and for drip emitters, place the cans right under the emitters.
3. Run a zone for 5 minutes (10 minutes for a rotor zone). If more than one zone waters the selected area, run the first zone for the suggested time and then the second zone for the same time and so on, without moving or emptying the catch cans.
4. Start the stop watch when the heads are fully pressured.
5. Shut off the zone precisely on time.
6. On the Catch Can Data chart (see next page), record the amount of water in each catch can at the corresponding point.
7. Observe the areas that receive less water—they may show stress or brown spots.
8. Empty catch cans and repeat for additional zones.

Sprinkler Catch Can Diagram



Run Time _____ min.

Catch Cans _____

Total Water (inches) _____

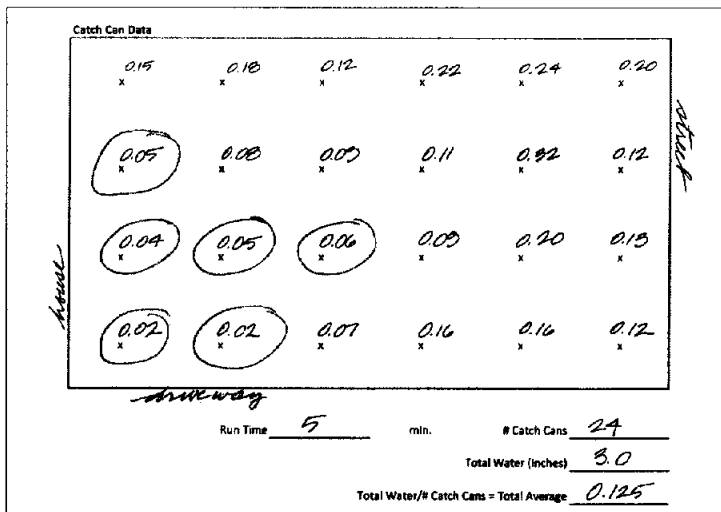
Total Water/# Catch Cans = Total Average _____

Drip irrigation zones can be evaluated by placing the catch cans at the beginning, quarter, halfway, three-quarter and end of each lateral line. This will check the uniformity of water distribution along the line. Be careful when placing the catch can that the water does not run back along the tubing instead of into the container.

1. Select an area for the catch can test. More than one zone can be done as long as the emitter type is the same in both zones.
2. Make a sketch of the drip line layout showing the lateral lines with drippers, dimensions of the zone and locations where the catch cans are placed. Take photos. Allow room to write in the data measurements.
3. Place the catch cans right under the emitters.
4. Run a zone for 10 minutes. If more than one zone waters the selected area, run the first zone for the suggested time and then the second zone for the same time and so on, without moving or emptying the catch cans.
5. On the Catch Can Data chart (below), record the amount of water in each catch can at the corresponding point.
6. Observe the areas that receive less water—they may show stress or brown spots.
7. Empty catch cans and repeat for additional zones.

[illegible]

Total Water/# Catch Cans = Total Average



Example of Sprinkler Catch Can Diagram

Step 5: Calculate Precipitation Rate and Distribution Uniformity

1. Add up the total amount of water in all the catch cans. This is the total water in inches over the audited area.
2. Divide this number by the number of catch cans used for the Total Average.
3. Circle the six lowest values and add them together to find the Low Quarter.
4. Divide the Low Quarter total by the number of catch cans (six); this is the Low Quarter Average.

Run Time _____ min. # Catch Cans _____

Total Water (inches) _____

Total Water/# Catch Cans = Total Average _____

Low Quarter (LQ) Total _____

Catch Cans Low Quarter _____

Low Quarter Total/# LQ Catch Cans = Low Quarter Average _____

Precipitation Rate (PR)

- Use the formulas below to calculate precipitation rate.

$$PR = \frac{\text{Total Average} \times 60 \text{ min}}{\text{Run Time (RT)}}$$

If RT is 5 min., PR = Total Average x 12 = _____ in./hr.

If RT is 10 min., PR = Total Average x 6 = _____ in./hr.

DU = $\frac{\text{Low Quarter Average}}{\text{Total Average}}$ = _____ or _____ %

Sprinkler Run Time
To apply .5 inches (minutes)

Precipitation Rate	Run Time	Run Time
0.20	108	120
0.25	87	96
0.30	72	80
0.35	62	69
0.40	54	60
0.45	48	53
0.50	43	48
0.55	40	44
0.60	36	40
0.65	33	37
0.70	31	34
0.75	29	32
0.80	27	30
0.85	25	28
0.90	24	27
0.95	22	25
1.00	21	24
1.05	20	23
1.10	20	22
1.15	19	21
1.20	18	20
1.25	17	19
1.30	16	18
1.35	16	18
1.40	15	17
1.45	15	17
1.50	14	16
1.55	13	15
1.60	13	15
1.65	13	15
1.70	12	14
1.75	12	14
1.80	11	13
1.85	11	13
1.90	11	13
1.95	11	12
2.00	11	12
2.10	10	11
2.20	1	11
2.30	9	10
2.40	9	10
2.50	9	10

Distribution Uniformity (DU)

Enter your DU in the chart below.

Distribution Uniformity

	Excellent	Good	Fair	Your System
Sprayhead	.75-.90	.55-.70	.40-.50	
Rotor	.80-.90	.65-.75	.50-.60	

Step 6: Calculate Run Times

1. Enter the PR for each zone tested on the Audit Sheet under Data.
2. On the Sprinkler Run Time chart, locate the PR in the left hand column. Find the Run Time recommended range, from Low to High.
3. In the Recommendations column under Run Time on the Audit Sheet, record the low and high times.
4. If a zone has partial or full shade, revise the run time under Adjusted Run Time.
5. Since clay soil can only absorb about $\frac{1}{4}$ inch of water per hour, divide the run time into two cycles.
6. Enter these times into the Run Time per Start column.
7. Now you know how long to water to apply $\frac{1}{2}$ inch. Typically, run the system once in the spring and fall and twice during most of the summer. Add a third day when the weather is hot and dry.
8. Enter a Run Time per Start for zones that were not tested by using the Run Times from similar zones (spray or rotor) and adjusting for shade.

Audit Results

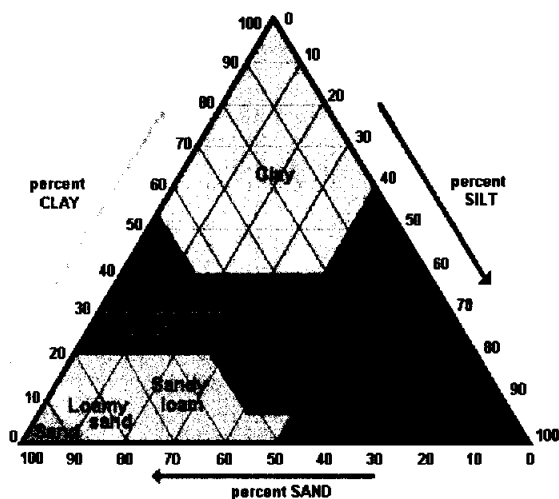
Zone	Existing				Data	Watering Schedule		
	Run Time (min.)		Head Type	Exposure	Precipitation Rate	Run Time (min.)	Adjusted Run Time (min.)	Run Time per Start (2 start times)
	A	B	Spray Rotor Drip MP Rotor	Sun Partial Shade Full Shade	(inches/hour)	(to apply 1/2 inch)	25% (partial shade) 50% (full shade)	(to apply 1/4 inch)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Step 7: Take a Soil Sample

Drip irrigation systems, in particular, depend upon the soil to move and store water. Soil is made up of sand, silt and clay particles. The percentage of these three particles is what determines soil type and how much water the soil can hold and how much water will be available to the plants.

1. Push the soil probe into the soil without twisting; twist it back and forth to remove a sample.
2. It's easiest to take the sample from a zone where you did the catch can test so the soil is moist.
3. With a screwdriver, separate the soil textures while looking for fine hair-like roots in the soil.
4. Use a ruler to measure the length of the roots and record below:

5. Place the soil sample in a quart jar with water and a few drops of dish soap. Shake the jar until the soil particles are suspended in the water and then allow to settle.
 - a. Sand will settle in just a few minutes.
 - b. Silt will settle on top of the sand in two to three hours.
 - c. Clay will settle on top of the silt in about 24 hours.
 - d. Some clay particles and organic matter will not settle at all.
6. Measure the layers and determine percentage of each type.



For example, a soil that is 40 percent sand, 40 percent silt and 20 percent clay is classified as medium loam.

Sandy soil has a low value for available moisture, clay soil has a moderately high value and loam has the highest available soil moisture. Organic matter, such as compost, added to the soil can help to improve the moisture capacity of the soil.



Step 8: Program Controller

1. Add up all the times in the Run Time per Start column. This is the time it takes to complete one watering cycle.
2. Enter a start time into the controller. Preferably, begin watering after midnight. When a complete cycle ends, enter a second start time to water the additional cycle.
3. For example, if the entire sprinkler cycle runs for 90 minutes, enter two start times in the controller; one at 2 a.m. and the second at 4 a.m. This waters the entire lawn's first $\frac{1}{4}$ inch, waits a half hour while the water is absorbed and applies the second $\frac{1}{4}$ inch.
4. If recommended run times are higher than your current run times, you may have other factors contributing to your efficiency. These are guidelines —you may be able to water less.
5. Monitor the appearance of your grass and adjust the run times up or down a few minutes for each zone.



City of Santa Fe
Water Conservation Office
Education Program Resource Guide

For more information visit:

www.santafenm.gov

www.savewatersantafe.gov

Contact:

wcoffice@santafenm.gov

505-955-4225

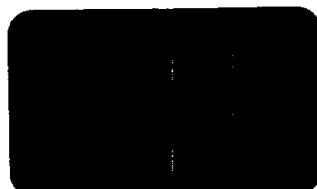


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MISSION STATEMENT

The City of Santa Fe Water Conservation Comprehensive Education Program is a collaboration of several city entities and their outreach programs to educate 4th grade students on where their water comes from, how it is treated, where wastewater goes and how it is treated and recycled and how recycling and energy play a role. While each entity has an outreach program of its own joining forces will allow the student a much richer experience in the coordinated activity than each one by itself. By educating these students on the “value” of water in every aspect, conserving that resource should be a natural next step.

OVERVIEW

The Comprehensive Education Program will allow a 4th grade classroom to travel the “path” of water. The program will begin with a tour of the watershed so that the students can gain perspective on where their water comes from. The next stop will be a tour of the Buckman Direct Diversion to get a better understanding of how surface water is treated before it is distributed into the drinking water supply. Three in-class presentations will then be given on the energy – water nexus, recycling and water conservation. The last step will be a tour of the Wastewater Treatment Plant where the students will learn about where their wastewater goes and how it's treated and reused. All participating classes will also get an automatic reservation to attend our annual Children's Water Fiesta. The students will be given a passport book with details on each part of the program and a place for them to document their experience and each participating partner will stamp their passport book as they go through that part of the program. The program is to be completed between the months of September through May. All program details will be coordinated with participating teachers and schools by City of Santa Fe Water Conservation Staff and all costs associated with transportation will be covered by the participating City of Santa Fe programs. Each part of the program is aligned with the Common Core Standards and the students will be assessed before and after each activity and before and after the program in its entirety.

ACKNOWLEDGMENTS

The City of Santa Fe Water Conservation Office would like to acknowledge the Santa Fe Water Conservation Committee for its help in getting this program off its feet. Ideas were surveyed from 4th grade teachers who attended our 2016 Children's Water Fiesta that were of tremendous value. Buckman Direct Diversion, Sustainable Santa Fe, City of Santa Fe Wastewater Treatment Plant, Keep Santa Fe Beautiful and Water Resources are the participating city partners who worked together on this collaboration and are to be commended for making resources available for this program.

Component/City Partner: Watershed Tour, City of Santa Fe Watershed Outreach Program				
Description: This tour is an experiential, hands-on, science based education program for fourth grade classrooms. This program provides a classroom session introducing watersheds and methods used to evaluate the health of an environment. This is followed by hike out to the watershed to investigate, explore and collect data. The program culminates in a classroom session to evaluate and interpret their data along with exploring ideas for water conservation. The activities are aligned with common core standards and benchmarks. Additional activities and evaluations are made available for teachers prior to and/or following the final classroom visits. Some extra coordination may be required with this activity due to situations which might arise that will affect the ability to gain access to the watershed. Students are asked to dress accordingly and to wear close toed comfortable shoes suitable for walking.				
Activity Type: In class presentation and field trip with bus transportation provided to and from the watershed				
Duration: One hour for in class presentation; 1/2 day tour				
Student Expectations Prior to Attendance: • Key terms: Watershed, wild-fire management, source protection and reservoir • Key concepts: Students should have a basic understanding of how water is collected in a watershed and where it comes from and also how it is stored				
Outcome/Learning Objectives: Students should become more educated on how and why snow is important in the winter and how it affects our water supply. The importance of soils in the watershed and watershed health should become more important as it becomes evident that those things affect the amount of water stored for our drinking water supply when it runs off the mountain and is collected in the reservoirs.				
Common Core Standards: CCSS.ELA-Literacy.W.4.1, CCSS.ELA-Literacy.RI.4.5, CCSS.ELA-Literacy.SL4.1.A, CCSS.ELA-Literacy.L.4.4				
Reading	Writing	Speaking & Listening	Language	Math
X	X	X	X	

Component/City Partner: Water Treatment, Buckman Direct Diversion				
Description: The field trip begins with an in-class presentation lasting 30-45 minutes that includes a hands-on activity and discussion. Safety and rules and guidelines for the tour will be discussed at this time. The tour will then begin at the raw storage/ pre-sedimentation basin which stores up to 8 million gallons of raw water. Students will learn about the process of getting water from the river to the treatment plant. This part of the tour will address the disposal of solids that have settled as a result of this process. The tour will then proceed to Flash Mix and Flocculation/ Sedimentation. Students will tour the Advanced Treatment Facility and learn about membrane filtration, ozone and biofiltration. BDD is the only facility in New Mexico that provides these advanced processes to be able to provide a very high quality water for Santa Fe. The students will see a booster station and will tour the Operator's Control room to see how the entire facility is monitored. The last stop is the Laboratory where students will discuss the testing and sampling required of the system.				
Activity Type: Field trip				
Duration: Three hours with bus transportation provided to and from the Buckman Direct Diversion Plant				
Student Expectations Prior to Attendance: • Key terms: Sedimentation • Key concepts: Students should have a basic understanding of where their water comes from and what the different sources are; surface water from the Rio Grande, surface water from the Santa Fe River, city well field and Buckman well field. Each source requires a different sort of treatment before it is considered of drinking water quality.				
Outcome/Learning Objectives: The tour provides perspective on how surface water is treated to drinking water standards. The BDD has advanced treatment processes unique to New Mexico.				
Common Core Standards: CCSS.ELA-Literacy.RI.4.7; CCSS.ELA-Literacy.SL.4.1.A; CCSS.ELA-Literacy.L.4.4; CCSS.Math.Content.4.MD.A.1				
Reading	Writing	Speaking & Listening	Language	Math
X		X	X	X

Component/City Partner: Water-Energy Nexus, Sustainable Santa Fe				
Description: This activity introduces the energy-water nexus. All energy sources, including electricity and sources such as fuel, oil and natural gas require water in their production. This is an in-class presentation with a hands on activity and discussion. The students start by learning about energy basics such as what energy is, how it is formed and where it comes from? Students will learn about energy sources (gasoline, electricity, natural gas) and their uses. The presentation includes information about energy use basics, energy units and the advantages and disadvantages of using different water sources.				
Activity Type: In class presentation				
Duration: One hour				
Student Expectations Prior to Attendance: • Key terms: energy, kilowatt hour, therm • Key concepts: Students should be able to define energy nexus in their own terms and be able to describe different sources of energy including solar, wind, electricity, etc.				
Outcome/Learning Objectives: Energy plays a big role in water and wastewater treatment and water distribution. Energy and water also play a big role in the food we consume and the materials and goods that we buy. It is impossible to discuss any aspect of water without establishing the equal importance of energy of efficiency as one resource affects the other.				
Common Core Standards: CCSS.ELA-Literacy.RF.4.4; CCSS.ELA.Literacy.SL.4.1; CCSS.Math.Content.4.MD.A.1				
Reading	Writing	Speaking & Listening	Language	Math
X		X		X

Component/City Partner: Recycling, Keep Santa Fe Beautiful				
Description: Recycling Saves Water: This program focuses on calculating the amount of water that recycling saves based on the total tons of commodity that gets collected in Santa Fe's recycling program. This two part activity demonstrates how much water production uses and then how much is saved through recycling. A recycling activity is also set up to have students "sort" through trash that is potentially recyclable which will educate students on how to most appropriately do it in their homes. It is also a chance for the program to showcase the new roll out carts and the increased recycling potential for city households.				
Activity Type: In class presentation				
Duration: One and a half hours long				
Student Expectations Prior to Attendance: • Key terms: recycling • Key concepts: Students should become familiar with the City's recycling program and have an idea of what things can be recycled in their new roll out bins				
Outcome/Learning Objectives: Connecting every day activities like recycling to water conservation gives students ideas about other things that can be done to save water besides things like turning off the water when they are brushing their teeth. Every day choices and behaviors can be modified to save water.				
Common Core Standards:				
CCSS.ELA-Literacy.W.4.2.A; CCSS.ELA-Literacy.SL.4.1.C; CCSS.Math.Content.4.NBT.A.1				
Reading	Writing	Speaking & Listening	Language	Math
	X	X		X

Component/City Partner: Water Conservation, City of Santa Fe Water Conservation Office				
Description: The Water Conservation Program will be using an Enviroscape model that demonstrates where the City's drinking water comes from, how it is treated, what different sources of wastewater come out of the home and where it goes and how it is treated and re-used. The model will do a good job in tying the entire program together as it briefly demonstrates every component in this program. The students enjoy the interactive display and the use of different media to demonstrate different parts of the model. All students enrolled in the program are also automatically registered to attend the annual Children's Water Fiesta. This is a one day event where the students will rotate through a series of five classes. Demonstrations in the past have been provided by Sandia National Labs, Los Alamos National Laboratory, New Mexico Office of the State Engineer and many others. All of the City Partners in this program will also be providing an activity at this event.				
Activity Type: In class presentation for the enviroscape model and then one day attendance at the Children's Water Fiesta with transportation being provided to and from the Convention Center.				
Duration: One hour for in class presentation; four hours for Water Fiesta				
Student Expectations Prior to Attendance: • Key terms: aquifer, ground water, surface water, biosolids • Key concepts: Students should have a basic understanding of the water cycle and be able to discuss the different sources of our drinking water.				
Outcome/Learning Objectives: The model brings together the different aspects of the program on a small scale basis. After the students have the opportunity to tour the watershed and treatment facilities they'll have gained perspective with these overlapping lessons. The Children's Water Fiesta is the programs strongest education effort in place. With over 650 students attending last year we accomplished a great deal of outreach pertinent to water conservation in a two day span. Attendance is limited and so automatic registration is a huge benefit to the classroom.				
Common Core Standards: CCSS.ELA-Literacy.SL.4.1.A; CCSS.ELA-Literacy.L.4.6				
Reading	Writing	Speaking & Listening	Language	Math
X		X	X	

Component/City Partner: Waste Water Treatment, City of Santa Fe Wastewater Management				
Description: The City of Santa Fe's Wastewater Treatment facility treats wastewater for use throughout the City. In this section of the education program, students will get a tour of the facility and learn about the treatment process and how wastewater gets from their homes to the facility. Students will learn about how water is treated by touring the head works, bar screen, cyclone grit separator, wet wells, aerated grit chamber, primary clarifiers, bio selectors, aerations basin and secondary clarifiers. Students will also be introduced to the tertiary treatment process which includes ultraviolet lighting for final treatment. The tour will end with a stop at the outfall located at the end of the wastewater plant. All the water that has been treated leaves the plant to receiving waters downstream from the plant. The students will learn about where this water goes and how it is reused for irrigation throughout the city through a purple pipe system. We ask that children be dressed accordingly and in layers and that closed toe shoes are worn.				
Activity Type: Field trip with bus transportation to and from the Santa Fe Wastewater Treatment Plant				
Duration: Two hours				
Student Expectations Prior to Attendance: • Key terms: effluent, purple pipe, potable and non-potable water • Key Concepts: Students should have an understanding of the different sources of wastewater in their home such as water that goes down the toilets, showers, sinks, laundry machines, dish washers, etc.				
Outcome/Learning Objectives: Students should gain appreciation of where wastewater goes that leaves their home and the benefit of treating wastewater to tertiary standards to be used for irrigation that normally would require drinking water as an irrigation source. Students should also be able to identify several different city properties that are irrigated with treated effluent through a purple pipe system.				
Common Core Standards: CCSS.ELA-Literacy.SL.4.1.A; CCSS.ELA-Literacy.L.4.1; CCSS.Math.Content.4.NF.B.3				
Reading	Writing	Speaking & Listening	Language	Math
		X	X	X

City of Santa Fe, New Mexico

memo

Date: December 8, 2016

To: Santa Fe Water Conservation Committee *copy*

From: Christine Y. Chavez, Water Conservation Manager

RE: Water Conservation Program Scorecard

Background:

A white paper was presented to the Santa Fe Water Conservation Committee in August of 2016 as guidance for the Scorecard subcommittee on development of a balanced scorecard for the Water Conservation Program. Because of the help of the subcommittee we were able to move forward with a draft of the scorecard that we will be considering in more detail in January's Water Conservation Committee meeting. The committee first began by looking at the City of Santa Fe Water Division goals that were established in December 2010. Though the goals might be somewhat outdated it was decided that alignment with the department goals should be of importance. We began by creating an outline of the goals with a list of specific water conservation initiatives that supported that specific goal.

City of Santa Fe Water Division: Mission, Goals and Objectives

1. Buckman Direct Diversion Project Goal
 - Education outreach partners
2. Capital Facilities Goal
 - Green Building Code – WERS
 - Lead by Example component
3. Communications Goal
 - Strategic Marketing Plan – has its own measurement plan for targeted outreach
 - Water Ion Customer Portal
 - New Radio Show
4. Customer Service Goal
 - Indoor and Outdoor audits
 - Assistance with rebates
 - Badger Ion customer calls on leaks
 - QWEL classes and QWEL lite classes
5. Facilities Operation and Maintenance Goal
 - Demo Garden
 - Solar Project Work

6. Financial Resources and Budget Goal
 - FY Plan
 - Budget planning early Spring
7. Human Resources Goal
 - Fill vacant positions
 - Plan for seasonal employee for enforcement
8. Information Management Goal
 - Conservation tracking software
 - Software interface with badger
9. Stewardship
10. Organizational Development Goal
 - PADP alignment throughout water division
 - Water Conservation Committee (subcommittee work)
 - Integration with Water Resources
11. Regional Water Management Goal
 - Collaborations with AWE, NMWCA, EPA WaterSense
 - Partnerships with non-profit groups
 - County member on the WCC
12. Water Demand Management and Conservation Goal
 - Badger Meters
 - Water Bank
 - Evaluation of new programs
13. Water Quality Goal
 - Backflow prevention work
14. Water Resource Planning and Management Goal
 - 40-year water plan
 - WCC Contribution
 - GPCD
 - AWWA Audit

Trying to narrow down the list to 3-4 applicable groups was necessary for tracking so the subcommittee combined categories together as logically as possible.

1. Education Outreach
 - a. Comprehensive Education program
 - i. Program metrics and measurement
 - b. QWEL classes and QWEL lite classes
2. Communications and Customer Service Goal
 - a. Eye on Water App
 - b. Survey
 - c. New radio show
 - d. Indoor and Outdoor audits
 - e. Residential and Commercial Rebates
 - f. Strategic Marketing Plan

3. **Effective Program Management**
 - a. **Human Resources**
 - b. **Financial Resources and Budget**
 - c. **Organizational Development**
 - i. **Water Conservation Committee**
 - ii. **Integration with Water Resources**
4. **Stewardship and Conservation**
 - a. **Regional collaborations**
 - b. **GPCD analysis**
 - c. **AWWA audit**

A draft of the scorecard is attached and the plan is to create a document documenting our baseline data for 2016. We will then use the scorecard that the Water Conservation Committee approves in January to track progress for 2017 and publish it in January 2018. Staff is still working on creating metrics and progress indicators for each overarching goal and the idea is to score either a yes or no if the goal is met at the end of 2017.

2016 Water Conservation Scorecard

The scorecard is intended to align with the Mission, Goals & Objectives of the City of Santa Fe Water Division as they apply to the Water Conservation Office. The goals have been grouped into four (4) main categories. A scoring mechanism will be created to reflect the accomplishments of the past year, as well as the goals being set for the future.

Goal: Education Outreach

Programs	Status	Completed	In Progress	Planned	Metrics	Comments
Education Initiative	New		2017-18		schools, classes, students	
Children's Water Fiesta	Ongoing	2016	2017		schools, classes, students	Incorporate into Education Initiative and expand to serve more students
Children's Poster Contest	Ongoing		2016-17		schools, classes, students	
Qualified Water Efficient Landscaper (QWEL)	Ongoing			2017	enrolled, passing, attendees	Transitioning to SFCC
Railyard Workshops/QWEL Lite	Ongoing	2016		2017		
Master Gardeners	Ongoing	2016				

Goal: Communications and Customer Service

Programs	Status	Completed	In Progress	Planned	Metrics	Comments
Eye On Water App Rollout	New		2016		participants	
Customer Survey	New	2016			participants, responses	
Revamp Radio Show	Ongoing	2016			inquiries	New branding, integration with social media
Indoor and Outdoor Audits	Ongoing	2016			requests, follow up	Rebate devices and values modified in 2016
Residential and Commercial Rebates	Ongoing	2016			devices, water savings, value	Rebate devices and values modified in 2016
Strategic Marketing Plan	Ongoing		2016	2017	analytics, costs, types	New branding, integration with social media

Goal: Effective Program Management

Programs	Status	Completed	In Progress	Planned	Metrics	Comments
Human Resources	Ongoing		2016-17			Fill vacancies
Financial Resources and Budget	Ongoing			2017		Reallocate resources from discontinued programs to new programs
Organizational Development	Ongoing		2016	2017		Professional development
Water Conservation Committee	Ongoing					
Integration with Water Resources	Ongoing		2017			Long Range Water Supply Plan, Reuse Feasibility Study, other planning tools

Goal: Stewardship and Conservation

Programs	Status	Completed	In Progress	Planned	Metrics	Comments
Regional Collaborations	Ongoing				participants, follow up	
GPCD Analysis	Ongoing	2015	2016	2017	population, sectors, production, consumption, reuse	
AWWA Audit	Ongoing		2016	2017-18	non-revenue water	

EyeOnWater Outreach December 1 - 7, 2016



Download this App
Have More Control
Set-up Leak Alerts
Save Money

Keep an eye on water using your phone, tablet or computer to spot costly leaks, set-up alerts and find ways to save water at home or work. Go to eyeonwater.com to enter your zip code, select Santa Fe and enter your account - do not enter any zeros

save water
SANTA FE
savewatersantafe.com

Keep an Eye on Water!

Santa Fe Water Conservation

Santa Fe water customers now have online access to their hourly water usage information with the new EyeOnWater technology. It will save water by identifying leaks and helping you understand your household water use trends. Customers are encouraged to sign up today at eyeonwater.com!

EyeOnWater - Intro

The City of Santa Fe Public Utility has Department recently began using EyeOnWater technology, allowing Santa Fe customers to monitor their water use data in n

Learn More

S.F. customers can now keep tabs on water tap with



Facebook & Instagram Posts - Reach and Engagement

Reach Post Engagements

6,962

219

Facebook Instagram



Create your own EyeOnWater account to monitor water usage

City of Santa Fe Public Utility Customers can now monitor their water usage and set up alerts for leaks or unusual usage. Learn more at eyeonwater.com and sign up today!

Communication Channels

3 Facebook posts
 3 Instagram posts
 Reach - 6,962

2 Nextdoor posts
 Reach - 4,512

3 YouTube videos
 Views - 217

1 Website post
 Pageviews - 1,798

Hutton Radio/santafe.com
 Reach - 246,000

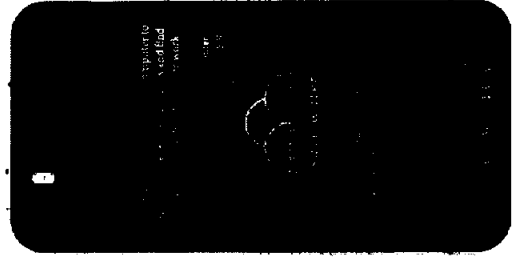
KSWV/ SF Hometown News
 Reach - 30,000

Santa Fe New Mexican
 Reach - 225,000

Green Fire Times
 Reach - 30,000

Santa Fe Reporter
 Reach 60,000

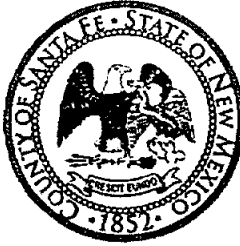
Utility Bill Inserts
 Reach - 38,000



Henry P. Roybal
Commissioner, District 1

Miguel Chavez
Commissioner, District 2

Robert A. Anaya
Commissioner, District 3



Kathy Holian
Commissioner, District 4

Liz Stefanics
Commissioner, District 5

Katherine Miller
County Manager

MEMORANDUM

DATE: December 2, 2016

TO: Katherine Miller, County Manager

FROM: Jerry Schoeppner, SFCo Hydrogeologist 

ITEM AND ISSUE: Request to Serve on City of Santa Fe's Water Conservation Committee

SUMMARY:

The City of Santa Fe has a vacancy on their Water Conservation Committee which I would like to be considered for and I am requesting permission to formally submit a letter of interest.

BACKGROUND:

The Santa Fe Water Conservation Committee was created in 2002 to identify and promote water conservation actions that can be implemented to reduce water use in the City. Committee members are appointed by the Mayor and consist of ten members, not including the chair. The Committee is charged with promoting water conservation, developing conservation proposals, and advising the city government on water conservation activities; identifying ways to educate the public on ways to conserve water; examining building code provisions, construction practices and land use policies and their effect on water use; propose changes in code, practice and policy that will promote further water conservation; and discuss and make recommendations on water conservation programs being undertaken by the City.

DISCUSSION:

The makeup of the City of Santa Fe's Water Conservation Committee (Committee) has recently changed by adding a member that is a resident of Santa Fe County. As you are aware, Santa Fe County has a very strong record of water conservation and participation on this Committee could be very beneficial to both the City of Santa Fe and the County.

ACTION REQUESTED:

Approval to submit my letter of interest to the City of Santa Fe's Water Conservation Committee to become a member.

December 5, 2016

RE: Letter of Interest to Serve on the City of Santa Fe's Water Conservation Committee

Councilor Ives:

I understand that the makeup of the City of Santa Fe's Water Conservation Committee (Committee) has recently changed by adding a member that is a resident of Santa Fe County and I would like to be considered for this vacancy. Technically, I live approximately 20 miles outside Santa Fe County's eastern border but I currently work in Santa Fe County, was born and raised in Santa Fe, have worked in Santa Fe my entire life, minus the time I attended college and I'm very interested in participating in actions that affect the area.

I am currently the County's hydrogeologist and have many years of technical and management experience in groundwater protection and restoration and now water quantity and conservation that I believe would be beneficial to the Committee. I have a Bachelor of Science degree in Geology from New Mexico State University and 29 years of experience mostly related to water quality. Prior to joining Santa Fe County in 2015, I held several technical and management positions with the New Mexico Environment Department. These positions involved regulatory oversight of facilities that posed a threat to groundwater resources from various contaminants such as hydrocarbons, solvents, nitrogen, metals, and radionuclides. Types of sites that I've regulated over the last 22 years ranged from small mom and pop facilities such as mobile home parks and gas stations to multi-nationally owned mines and Superfund sites. I've attached a copy of my resume which includes a more detailed list of my experience.

My previous experience related to water quality and limited experience with water quantity would hopefully add value to the Committee if selected to fill the vacancy. I recognize the importance of how water quality and quantity must be managed holistically rather than individually, how scarce water resources in the arid southwest must be protected and restored if impacted, and how crucial conservation, planning and discussion and implementation of innovative management strategies are to ensuring adequate water supplies today and in the future.

Based on my experience and background, I feel that I may be a good fit for this vacancy on the Committee. I am very interested in becoming a member of the Committee in order to be part of the solution to water conservation, supply and demand. If I am selected as a member for the committee, I will be diligent about that responsibility and will do my best to make positive and meaningful contributions.

Thank you for your consideration of my nomination.

Jerry Schoeppner
505-231-2346
Jerryschep@gmail.com

Cc: Kristine Chaves, City of Santa Fe Liaison
Doug Pushard, Committee Member

Gerard A. Schoeppner, PG-3240

P.O. Box 23930 • Santa Fe, New Mexico 87502 • Jerryschep@gmail.com • 505-231-2346

Professional Profile

- **Results oriented environmental administrator and project manager** with 29 years of experience in both private and public sectors, skilled in managing complex and multi-faceted programs and projects to successful results
 - **Experienced communicator and public speaker**, having represented the interests of public regulatory agencies and private companies
-

Highlights of Professional Accomplishments and Experience

Program administration and planning

- Managed the Ground Water Quality Bureau (GWQB) and the Petroleum Storage Tank Bureau (PSTB) to meet department goals and objectives and in compliance with the United States Environmental Protection Administration's (USEPA) guidelines. Duties included; managing the Corrective Action Fund, preparing and managing the operating budget, participating in strategic planning, conducting periodic staff meetings, attending Department meetings, conducting personnel management including supervising staff, hiring, firing and completing personnel actions, approving time reports, leave forms and overtime requests, conducting annual performance evaluations, participating in technical advisory and regulation revision committees, implementing changes to improve processes and coordinate work between various programs (GWQB - Pollution Prevention, Superfund Oversight, Mining Environmental Compliance, Remediation Oversight, Agriculture Compliance, and Grants and Planning Sections; PSTB - Remediation, Prevention and Inspection, Information Technology, and Financial Programs), presenting updates to the Petroleum Storage Tank Oversight Committee, the Water Quality Control Commission, presenting information to legislative interim committees, reviewing proposed legislation and completing bill analysis, developing written policies and completing paperwork and budget tracking necessary for Bureau operation
- Managed the Remedial Action Program of the Petroleum Storage Tank Bureau by tracking and assigning sites to staff, preparing program budgets, conducting periodic staff meetings, implementing changes to improve the program, coordinating Remedial Action Program staff work with Reimbursement and Prevention and Inspection Programs, oversight of staff training and paperwork management, and completing administrative paperwork necessary for program operation

Project management

- Leader of the Administrative Order on Consent team with project management responsibilities for remediation of historic mine sites. Responsible for maintaining consistency in management of sites and supervision of 3 technical staff in the GWQB's Mining Environmental Compliance Section
- Responsible for reviewing and issuing mining discharge permits, as well as oversight of cleanup activities in accordance with the Water Quality Control Commission abatement requirements and the Comprehensive Environmental Response, Compensation, and

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State of New Mexico/Environment Department/Ground Water Quality Bureau/Mining Environmental Compliance Section, Santa Fe, NM – Geoscientist, July 2004-October 2007

State of New Mexico/Environment Department/Ground Water Quality Bureau, Santa Fe, NM – Bureau Chief, July 2003-July 2004

State of New Mexico/Environment Department/Petroleum Storage Tank Bureau, Santa Fe, NM – Bureau Chief, October 2000-July 2003

State of New Mexico/Environment Department/Petroleum Storage Tank Bureau, Santa Fe, NM – Acting Remedial Action Program Manager, February 1999-May 2000 and August 1995-January 1997

State of New Mexico/Environment Department/Petroleum Storage Tank Bureau, Santa Fe, NM – Geologist, January 1993-October 2000

Tierra Engineering Consultants, Santa Fe, NM – Field Geologist, May 1989-January 1993

Controls for Environmental Pollution, Santa Fe, NM – Group Leader/lab technician, October 1987-May 1989

Selected Professional Certifications

- Professional Geologist, State of Wyoming, License # PG-3240
 - OSHA 40-hour hazardous materials worker
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Education

Bachelor of Science, Geology, NM State University, Las Cruces, New Mexico, August 1987

References furnished upon request