City of Santa Fe

Agenda

CITY CLERK'S OFFICE
DATE 7.5.17 TIME 11:49am
SERVED BY Melissa A. McDonald
RECEIVED BY Carmelona Spears

Santa Fe River Commission Agenda
Thursday, July 13, 2017 (Round House Room), 6 pm to 8 pm
City Offices at the Market Station Building at the Railyard
500 Market Street, Suite 200, Santa Fe, NM
505-955-6840

1. **ROLL CALL**
2. **APPROVAL OF AGENDA**
3. **APPROVAL OF MINUTES FROM APRIL 13, 2017 & MAY 11, 2017**
4. **COMMUNICATION FROM OTHER AGENCIES /COMMITTEES**

5. **INFORMATION/DISCUSSION/ACTION:**
   a) **Santa Fe River Monitoring Update (Alan Hook)**
   b) **River Commission Priorities & Goals Review (Zoe Isaacson)**
   c) **Stormwater Management Plan Update (Melissa McDonald)**

6. **MATTERS FROM COMMISSIONERS**

7. **MATTERS FROM STAFF**
   a) **Projects Status Report**

8. **CITIZENS' COMMUNICATION FROM THE FLOOR**

9. **SUB-COMMITTEE BREAKOUT SESSION**
   - **Outdoor Economy**
   - **Promoting a Living River**
   - **Watershed Revitalization**
   - **Species Resiliency**

10. **ADJOURN**

Next Scheduled River Commission Meeting is August 10, 2017
Captions & Packet Material are due by Tuesday August 2, 2017
Persons with disabilities in need of accommodations,
Contact the City Clerk's office at
(505) 955-6521 five (5) working days prior to the meeting date.

SUMMARY OF ACTION
SANTA FE RIVER COMMISSION
CITY OFFICES AT MARKET STATION
500 MARKET STREET, SUITE 200
THURSDAY, JULY 13, 2017, 6:00 PM

FROM THE FLOOR		
SUBCOMMITTEE BREAKOUT SESSION	**TABLED**	**7-8**
ADJOURN	**ADJOURNED**	**8**

SANTA FE RIVER COMMISSION
CITY OFFICES AT MARKET STATION
500 MARKET STREET, SUITE 200
THURSDAY, JULY 13, 2017, 6:00 PM

1. CALL TO ORDER

The meeting of the Santa Fe River Commission was called to order at 6:00 pm by Commissioner John Buchser, Chair, on Thursday, July 13, 2017, at the City Offices at Market Station, 500 Market Street, Suite 200, Santa Fe, New Mexico.

2. ROLL CALL

MEMBERS PRESENT
John R. Buchser, Chair
Phil Bove, Vice Chair
Jerry Jacobi
Zoe Isaacson
Dale Doremus

MEMBERS ABSENT
Anna Hansen, Alternate Commissioner, excused
Luke Pierpointe, Excused
Emile Sawyer, Excused
F. M. Patomi, Alternate Commissioner, excused

OTHERS PRESENT
Melissa McDonald, City of Santa Fe
Alan Hook, City of Santa Fe
Alex Puglisi, City of Santa Fe
Elizabeth Martin, Stenographer

3. APPROVAL OF AGENDA

Chair Buchser asked to move Mr. Puglisi up to after the agenda.

MOTION A motion was made by Commissioner Isaacson, seconded by Commissioner Doremus, to approve the agenda as amended.

VOTE The motion passed unanimously by voice vote.

4. APPROVAL OF MINUTES APRIL 13, 2017 AND MAY 11, 2017

Chair Buchser said on page 3 of the April minutes there is a misspelling, Jerry asked if something should go through preserve which is spelled as reserves. Irrigation season should be just irrigation. Ms. McDonald does not check in weekly but did say later in meeting that she had checked in with Bob on the flow and said he was ok with the flow. Strike the sentence about checking in with Bob. On page 4 the minutes say bolder structures and it should be boulder.

Chair Buchser said on the May minutes on page 4 there are several mentions of a ride. It should say bike ride.

MOTION A motion was made by Commissioner Doremus, seconded by Commissioner Jacobi, to approve the April minutes as amended.

VOTE The motion passed unanimously by voice vote.

MOTION A motion was made by Commissioner. Doremus, seconded by Commissioner Isaacson, to approve the May minutes as amended.

VOTE The motion was passed unanimously by voice vote.

5. COMMUNICATION FROM OTHER AGENCIES/COMMITTEES

None.

6. INFORMATION/DISCUSSION/ACTION

A. SANTA FE RIVER MONITORING UPDATE

Mr. Hook reviewed the update from the materials handed out to the Commissioners. The update is herewith incorporated into these minutes as Exhibit "1". This update will also be on the website.

B. RIVER COMMISSION PRIORITIES AND GOALS REVIEW

Commissioner Isaacson reviewed the updated priorities and goals. There was extensive discussion and the following changes were agreed upon:

- Spell out all Acronyms and abbreviations.
- The 50 year plan needs to be changed to the 40 year plan. The statement should say "40 year long range water supply plan to ensure the river and its corridor are protected."
- Capitalization needs to be consistent throughout.
- On the second subtask change Santa Fe Wetland to "Santa Fe Wetland preserve" and add "that helps the wetland within the Santa Fe Canyon Preserve."
- Where the documents talks about the 1995 River Corridor Master Plan add "created by the Santa Fe River Commission."
- On the second subtask where it addresses the Historic channel add "restoration channel."
- The last goal/objective should read " In the wastewater reuse plan, support sending treated water into the vicinity of Frenchys Field and retain significant flows below the wastewater treatment plan."
- Spell out low impact development techniques and add "such as rain gardens and bio basins as they relate to river and storm water runoff."

Chair Buchser said he appreciated all of Zoe's work on this project.

Ms. McDonald said thank you Zoe for all your hard work.

The revised Long Term Goals and Objectives document reflecting these changes is attached herewith to these minutes as Exhibit "2'.

C. STORM WATER MANAGEMENT PLAN UPDATE

Addressed briefly later in the meeting.

7. MATTERS FROM COMMISSIONERS

None.

8. MATTERS FROM STAFF

A. PROJECTS STATUS REPORT

Mr. Puglisi distributed the Draft Source Water Protection Plan which is herewith attached to these minutes as Exhibit "3".

Mr. Puglisi said the EPA asked that all municipal or publicly owned water systems have a plan for protecting drinking water. The BDD will have a separate plan. They have been given a draft to review. We will coordinate our 2 plans. Basically they asked that they be circulated for comments. We will be meeting with NMED soon to

finalize a draft for a larger public meeting where they want us to invite specific representatives from different groups within the City such as commerce, tourism and the public at large. We are putting together a list of people for a source water protection team and will get that to NMED. We would like your comments before the final draft so we can incorporate them in the final draft and invite a representative of this Body to be a member of the source water protection team. Then there will be a larger public meeting with NMED present. The plan is being written by a contracted company. We pay a conservation fee for every 10,000 gallon of water produced to go toward compliance establishment and protection. A large portion of the Drinking Water Division is funded by those fees. Since 911 there has not been very much money. The recommendation from EPA is that they be updated on a regular basis. They did have some money available this year and they want to spend it. We applied and got the funds. We appreciate your comments and if there is anything you feel is incorrect let us know. We are on a tight timeline. We need your comments within 2 weeks and then we will scheduled the meeting. The flows to McClure reservoir are dropping off. We are at a point where if we don't release the acequias who are entitled to water we will have an issue. We are trying to balance the living river flows but not go over the 2 million gallons a day.

Commissioner Jacobi said when the acequias call for water and the input is less than needed where does the other water come from

Mr. Puglisi said they can't get more.

Chair Buchser asked is there anything in particular you want us to look for in this plan. A lot of the potential problems are rated high risk. It is hard to know what to look for. What do you perceive to be the most useful to look at and where do you want to make sure they got it right.

Mr. Puglisi said we have some water experts here. He invited them to look at everything. Focus on the watershed section. We are trying to tie into the fire plan as well. Catastrophic fire in watershed will wipe out the watershed. Our sources are from above the reservoir. If you think there are items not mentioned that pertain to the river let us know. Anything you see that is misstated, unnecessary or anything else let us know. There may be things we are not looking at on the upper watershed.

Mr. Puglisi said email comments to Melissa and she can pass them on to him.

Ms. McDonald said we should determine who will be the point person to interface with this group.

Mr. Puglisi said if you have suggestions about other members of the community who should be represented let us know.

Ms. McDonald said it is a broad group of people. Any group you feel cares about

this send the information to her. They want a lot of different opinions.

Mr. Puglisi said we invite your input. There are well protection areas that we should be establishing. Zoning will be a part of it as well if we take this plan seriously. From a water quality point of view, source water protection and river protection are areas you guys are more inclined toward than other groups.

Commissioner Doremus asked is there an enforcement piece from EPA or Environment.

Mr. Puglisi said it is on us to implement fees.

Commissioner Doremus asked is there a move within the City to establish well head protection zones.

Mr. Puglisi said yes, but it got tied up in Committee. Our goal is to take it further here. At least in undeveloped areas.

Commissioner Bove said they can enforce it on tanks.

Mr. Puglisi said yes, by Federal regulation. There are a lot of land use and zoning Ordinances and changes. The storm water plan Melissa is heading up will factor in as well. At some point it would be interesting to have someone come do a presentation. There are ground water problems in Santa Fe, some due to past established businesses. There is a need for this type of plan.

Chair Buchser said one of the hydrologists at the State Engineers Office mentioned the old gas station at St. Francis and the river. He was quite concerned about the living river flows intersecting with the flume coming off of that area. That is the kind of thing you would like comments on, is that an example.

Mr. Puglisi said the clean up requirements for those type of sites should be encouraged to NMED. He does not know of any surface contamination at that site but there is ground water contamination. He thinks that site has been cleaned up but it should be commented on. The City needs to push NMED to get out and address these sites before there is an effect on the river. Not too many sites in Santa Fe have been addressed at this time.

Chair Buchser said there seems to be in the hundreds of high risk or moderate high risk things in this report.

Mr. Puglisi said there is some dry cleaning fluid solvent showing up in sumps that were pumping to the river. If there is any detectable amount they have to treat that. It was going into our storm water collection system and out to the river.

Commissioner Jacobi said several years ago we asked the City if they knew how much water was coming in from establishments in the City and we never found anyone who could answer that.

Mr. Puglisi said we want to explore that with NMED. They talked about doing a survey of downtown regarding sumps.

Commissioner Doremus said it would be interesting in the survey if they have noticed any increase since we have had Living River water.

Mr. Puglisi said we know we are effecting water levels. We met with NMED and they talked about knocking on doors and we said we would support them on that. In the past the problem was there was not a permit process for someone to hook onto the storm drains.

Commissioner Bove said when an excavation was done 25 years ago one of the culverts was a miss match to another culvert. At that break a lot of water was going over there at the underpass and they had to change how they were going to do the drainage. It shows you that changes in the environment by building things happen and we had no clue that it was there.

Commissioner Isaacson asked do you guys have a tie in to stay abreast of development and urban planning. She did not see much of that. It seems you would want to tie into that.

Mr. Puglisi said under the Ordinance they would be reviewed by most likely Land Use and we would rely on them to enforce those.

Commissioner Isaacson said it seems that needs to be an explicate statement in the plan.

Mr. Puglisi said call me with any questions.

Ms. McDonald said she will send out his contact information. Send the comments to her, but call him if you have questions.

Mr. Puglisi said we are looking at September to do press here on pharmaceutical sampling already done and the one recently done. NMED went out and did another round of sampling in May. They are doing comparisons and they are interested in doing press here and to others.

Commissioner Doremus asked where on the Santa Fe river.

Mr. Puglisi said below the treatment plant.

Ms. McDonald said we are sponsoring workshops and doing a seed ball throw. The flyer for this event is attached herewith to these minutes as Exhibit "4".

Ms. McDonald said the EPA and Tetra Tech are coming together really nicely right now. We are fully funded a the end of the year for Tetra Tech. We will be coming before this group with the information. We need Committees like this to be active in that effort. At the end of Summer or September we will do a kick off. We hope this Body will be involved in that. She will keep you updated.

Chair Buchser said on the new water bills the little box for the river fund needs to say something more than give money to river fund.

Ms. McDonald said she is working with the Water Department on that. The language is called out by Resolution and Ordinance. Maybe the people doing the bills were unaware of that. She appreciates you bringing that up. It is high on her list to contact them again. That is where a lot of our rain gardens are funded from.

Commissioner Jacobi asked is this data available on line.

Chair Buchser asked can you send it to us monthly.

Mr. Hook said yes.

Ms. McDonald said it is in the hydro graph.

Chair Buchser said he would like the Excel spreadsheet sent to us every month.

Ms. McDonald said the watershed has a new brochure that will be coming out.

Ms. McDonald showed the Board a new PR piece that is for the back of your smart phone.

9. CITIZEN'S COMMUNICATION FROM THE FLOOR

None.

10. SUBCOMMITTEE BREAKOUT SESSION

Tabled.

A. OUTDOOR ECONOMY

B. PROMOTING A LIVING RIVER

C. WATERSHED REVITALIZATION

D. SPECIES RESILIENCY

11. ADJOURN

There being no further business before the Commission the meeting adjourned at 8:02 pm.

John Buchser, Chair

Elizabeth Martin, Stenographer

JSAI

TECHNICAL MEMORANDUM

To: Alan G. Hook aghook@ci.santa-fe.nm.us
Water Resource and Conservation
Sangre de Cristo Water Division

From: Steven T. Finch, Principal Hydrogeologist

Date: July 13, 2017

Subject: Santa Fe River Monitoring Status

The City of Santa Fe, Sangre de Cristo Water Division contracted John Shomaker & Associates, Inc. (JSAI) to perform streamflow measurements along the Santa Fe River (Task 1) and to measure streamflow diversions (Task 2). A workplan defining the proposed monitoring stations for the 2017 Santa Fe River monitoring during the 'Living River' bypass flow period was submitted on May 17, 2017.

The monitoring stations are listed in Table 1. Attached is a map showing locations of monitoring stations between Nichols Reservoir and the Acequia Madre Diversion, and a flow diagram illustrating diversions from the Santa Fe River.

Table 1. Summary of Santa Fe River monitoring stations

Station #	Description	comment
1	Below Nichols	established gage at location.
2	TNC Diversion channel	staff gage at location
3	TNC Diversion Below Two Mile	Parshall Flume at location is inoperable
4A	Cerro Gordo Diversion	diversions overwhelm Parshall Flume
4B	Cerro Gordo Diversion Returns	3-inch diameter pipe with value
5	Santa Fe River Below Two Mile	natural river channel
6	Acequia La Muralla	headgate with no flume)
7	at Camino Pequeno	natural river channel
8	Acequia Madre	Parshall Flume
9	below Acequia Madre--At Patrick Smith Park	natural river channel
10	at St. Francis Street	established gage at location
11	at Ricardo Road	natural river channel
12	end of flow point	varied location

EXHIBIT 1

Monitoring Events Completed:

May 18th streamflow and diversion monitoring for all 12 stations
May 28th diversion monitoring only
June 2nd streamflow and diversion monitoring for all 12 stations
June 17th streamflow and diversion monitoring for all 12 stations

Other Field Investigation Items completed

1. Check flow from Aztec Spring Canyon near TNC at Santa Fe Canyon Preserve
2. Check for other potential diversions (May 18th and 28th)
3. Check for returns from ditches that diverted water (May 18th and 28th)
4. Monitor water levels in MW-1, MW-A, and MW-B at the New Mexigas site during each monitoring event.

Results

Observed end of flow points are summarized in Table 2, and a summary of measured flows and diversions can be referenced from Table 3. No return flows from acequia diversions were observed. At least two more monitoring events are likely needed to develop a preliminary water budget for the Santa Fe River segment at Patrick Smith Park (Station 9).

Table 2. Summary of End-of-Flow Points

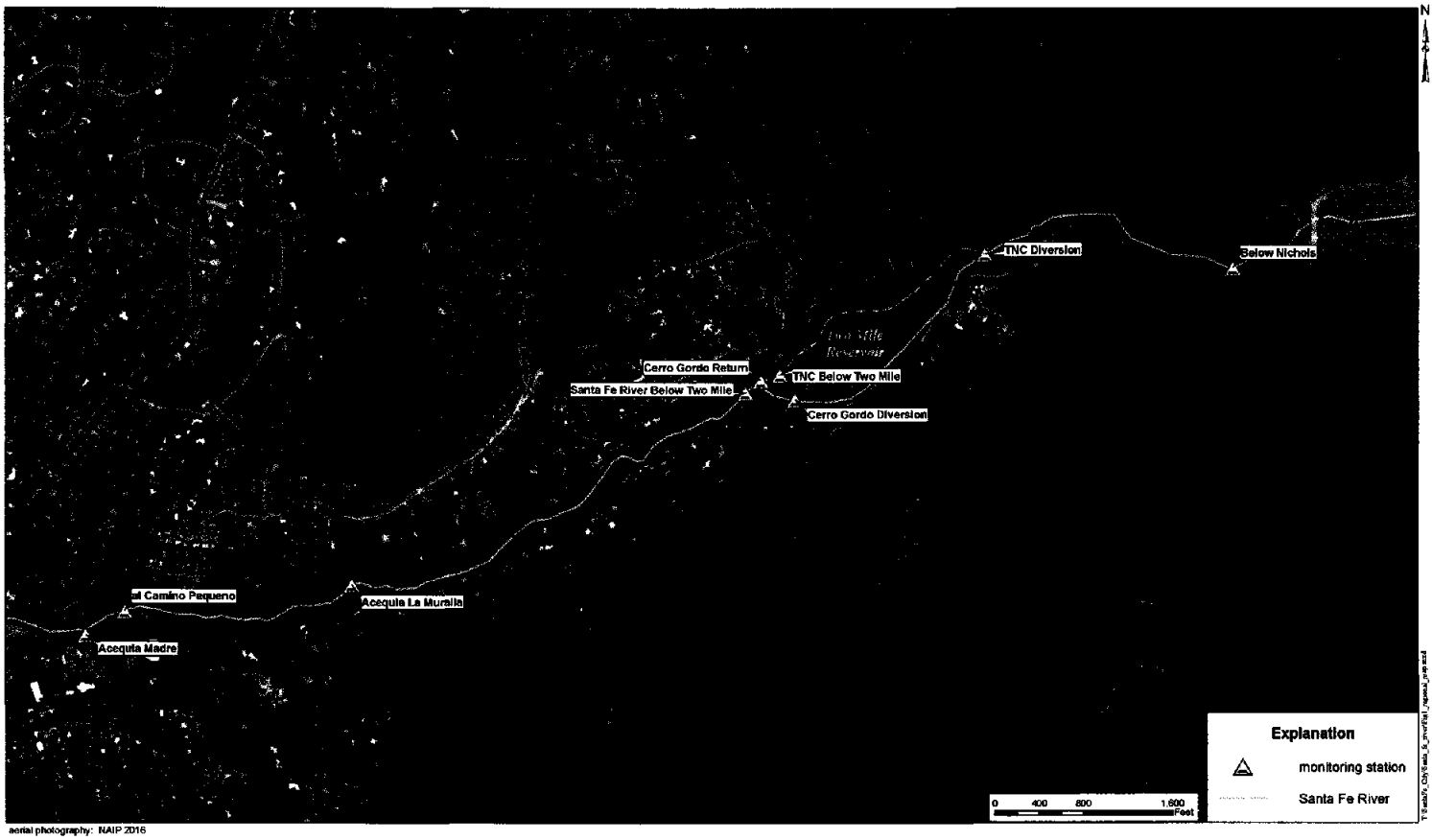
date	time	Lat/long	description	measured flow below Nichols (cfs)	Miles below Nichols Reservoir	comment
5/18/2017	17:00	35° 39' 32.8" 106° 01 02.1	downstream of San Ysidro Crossing	3.3	8.9	end of flow infiltrating in streambed
6/2/2017	16:30	35° 38' 18.6" 106° 04' 12.7"	flow observed at Rt 599	6.2	14.0	flow likely continued to WWTP discharge point; influenced by storm runoff
6/4/2017	14:30	35° 38' 30.9" 106° 03' 09.4"	between Cottonwood Dr and Rt 599	nm	11.4	
6/23/2017	11:00	35° 39' 26.7" 106° 01' 30.2"	at Lopez Ln	3.0	9.4	flow ends at small pool below grade structure, just downstream of bridge

Table 3. Summary of measured flows at monitoring stations

Site	Miles downstream	measured flow on 5/18/2017 (cfs)	measured flow on 6/2/2017 (cfs)	measured flow on 6/23/2017 (cfs)
Santa Fe River below Nichols Reservoir	0.0	3.3	6.2	3.0
TNC Diversion	0.4	1.4	1.2	0.3
Cerro Gordo Diversion	0.8	0.9	>0.9	>0.9
Cerro Gordo Diversion Returns	0.85	0.5	1.0	0.8
TNC Diversion Return below Two Mile Reservoir	0.75	2.5	1.8	0.7
Santa Fe River below Two Mile Reservoir	1.0	3.0	5.4	3.5
Acequia La Muralla	1.8	0.9	0.0	0.0
Santa Fe River at Camino Pequeno	2.2	2.2	5.2	3.2
Santa Fe River at Patrick Smith Park	2.4	2.2	5.4	3.1
Santa Fe River at St. Francis Drive	4.4	1.9	4.5	2.3
Santa Fe River at Ricardo Road	6.0	1.3	4.4	1.8

Attached:

1. Aerial photograph showing monitoring stations between Nichols Reservoir and Acequia Madre, Santa Fe, New Mexico
2. Illustration of diversions and stations from Nichols Reservoir to Acequia Madre headgate



Aerial photograph showing monitoring stations between Nichols Reservoir and Acequia Madre, Santa Fe, New Mexico.

JOHN SHOMAKER & ASSOCIATES, INC.

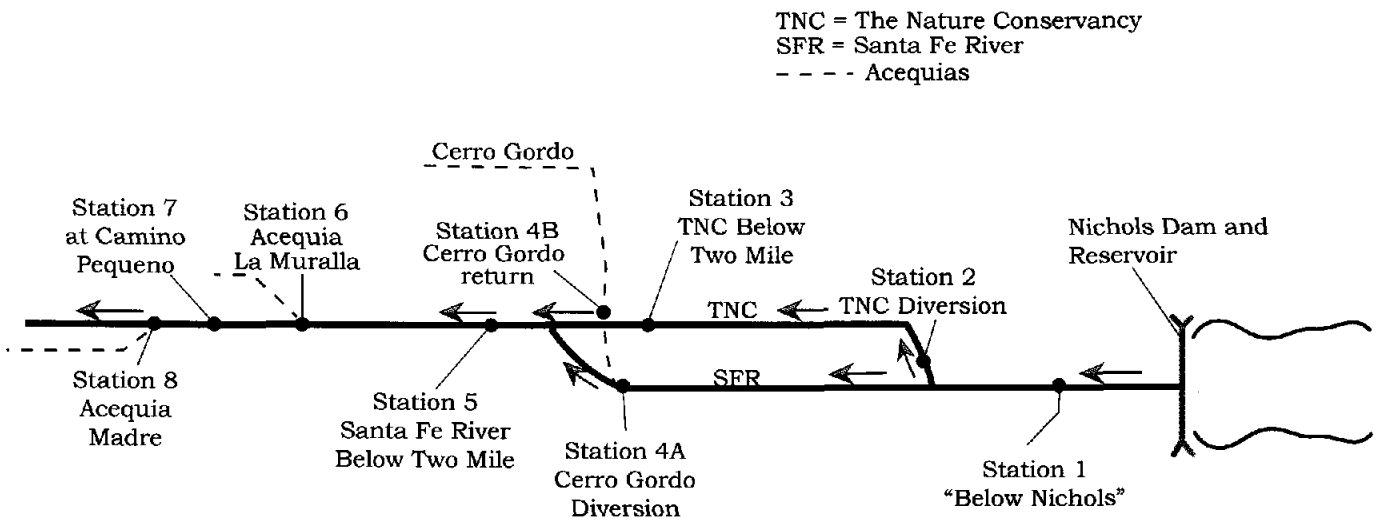


Illustration of stream gaging and diversion gaging stations along the Santa Fe River between Nichols Reservoir and Acequia Madre headgate.

Long-term Goal/Objective: Support Santa Fe River Corridor protection and enahncement. Including the develo mitiagtion plan, increased public awareness and scientific knowledge of the system.	
Subtasks:	Improve communication between River Commission/Governing Body/SF County
	Continue to guide governing body towards policies that help help the wetland within the SF Canyon and incourage use of historic channel
	Encourage and help support City's study of aquifer recharge from LR planned release
	Encourage and help support City's study of stormwater (including their increased effort in catchmer
	Create/Support electronic library of SF River resources that in their entirety give a sound understan
	Support increasing river, arroyo & watershed signage
	Update for 1995 River Corridor Plan created by the SF River Commission
	Support beautifying efforts and events along the river corridor (Ex. adult event that coincides with f and whimsical trash cans, painted porta-a-potties, etc...)
	Promote the SF River Fund
Long-term Goal/Objective: Advocate for intergration of water mangement between City and County to incour management	
Subtasks:	Improve communication between River Commission/Governing Body/SF County
	Encourage Green Policies & Low Impact Development (LID) techniques such as rain gardens and bic
	as they relate to river and stormwater runoff
	Help create an overarching vision that goes along with sustainability
	Provide input 40 year plan-- long range water supply plan to ensure the river corridor and the water
Long-term Goal/Objective: Continued Public Education and Outreach	
Subtasks:	Support public education campaigns regarding water quality, specifically the hazards of ecoli and hc human waste) poop-to-scoop
	Improve communication between River Commission/Governing Body/SF County
Long-term Goal/Objective: In the wastewater reuse plan, support sending treated water into the vicinity of l significant flows below wastewater treatment plant	
Subtasks:	Improve communication between River Commission/Governing Body/SF County

EXHIBIT 2

·pment of a 500 year flood
Preserve maintain beaver ponds
ıt and benneficial use)
ding of the basin and its complexity
fishing derby, art installations, fun
ıge a holistic approach to watershed
› basins
shed is protected
›w to prevent pollution (dogs and
Frenchy's field and retain

DRAFT

City of Santa Fe Water System
Source Water Protection Plan
Public Water System # 3505126

Prepared for City of Santa Fe, New Mexico

March 17, 2017

Daniel B. Stephens & Associates, Inc.

6020 Academy NE, Suite 100 • Albuquerque, New Mexico 87109

EXHIBIT 3

Table of Contents

Section **Page**

List of Figures

Figure

List of Tables

Table **Page**

List of Tables (Continued)

List of Appendices

City of Santa Fe Water System
Source Water Protection Plan
Public Water System # 3505126

1. Introduction

This source water protection plan (SWPP) has been prepared by Daniel B. Stephens & Associates, Inc. (DBS&A) for the City of Santa Fe, New Mexico (the City) (Figure 1), under contract with the New Mexico Environment Department (NMED) Drinking Water Bureau (DWB).

The NMED DWB assists communities in the protection of their drinking water systems through the Source Water Protection Program. By participating in this voluntary program, communities can assess a water system to identify and manage actual or potential sources of contamination to the drinking water supply. The program consists of a two-step process; the first step involves identifying the area(s) to be protected, identifying actual and potential contamination sources, and evaluating the susceptibility of the drinking water source area to contamination.

NMED encourages communities to then complete the second step of the planning process of developing and implementing a SWPP. The SWPP benefits the public water system by providing management and implementation strategies to ensure the security of the drinking water supply. Preventing contamination is much easier and less expensive than cleaning up a contaminated source or finding a new source.

This SWPP for Santa Fe has been developed using the *New Mexico Source Water and Wellhead Protection Toolkit* (NMED DWB, 2013). The plan identifies a Source Water Protection Team that has the responsibility of program development and implementation, thereby providing the community with the tools needed to prevent contamination of the City's Source Water Protection Area.

This SWPP has been developed through the cooperation of DBS&A, the City, the Source Water Protection Team, and NMED DWB. This document identifies actual and potential sources of

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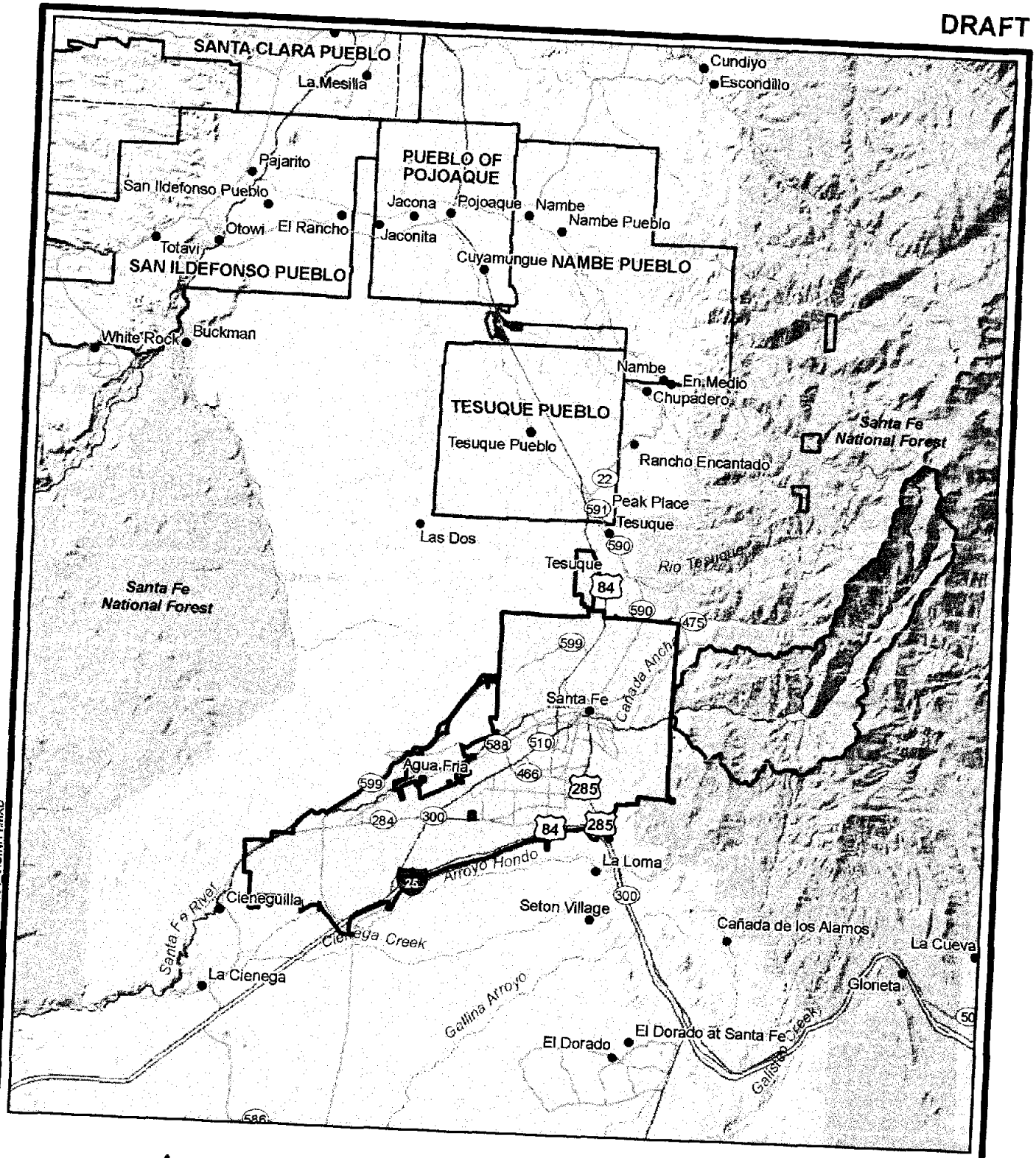

CITY OF SANTA FE WATER SYSTEM
SOURCE WATER PROTECTION PLAN
Vicinity Map

Daniel B. Stephens & Associates, Inc.
2/22/2017
JN NM15.0090

Figure 1

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contamination to the City's water sources and makes recommendations for preventing future contamination. The City and the Source Water Protection Team are responsible for implementing the SWPP and updating the plan on a regular basis.

1.1 Purpose

The purpose of the Source Water Protection Program is to protect drinking water sources before they become contaminated. The SWPP provides the management tool for current and future approaches to prevent source water contamination, thereby protecting the drinking water system and customer health.

1.2 Source Water Protection Program Background

U.S. Congress amended the Safe Drinking Water Act in 1996 to provide for the assessment and protection of sources of public water supply. The U.S. Environmental Protection Agency (EPA) provides information and encourages partnerships for source water protection planning. States completed source water assessments for all public water systems between 2002 and 2006. States are now implementing strategies to help local communities use the information obtained from these assessments. States may also provide resources to help fund local protection activities, such as wellhead protection programs for groundwater and watershed management programs for surface water. The source water assessment for the City of Santa Fe water system was completed in October 2003, and is provided as Appendix A.

2. Source Water Protection Team

The Source Water Protection Team has responsibility for input to the SWPP and implementation of recommendations of the SWPP. The NMED guidance recommends that the Source Water Protection Team include water system representatives, water consumers, and community stakeholders. Table 1 lists the members of the City of Santa Fe's Source Water Protection Team.

Table 1. Source Water Protection Team

Name	Affiliation	E-mail
Alex Puglisi	City of Santa Fe	aapuglisi@santafenm.gov
Alan Hook	City of Santa Fe	aghook@santafenm.gov

3. Water System Information

The City of Santa Fe water system serves approximately 78,000 customers (NMED, 2014). The majority of these customers, ??? , are within the City limits. However, the City also has the following water service agreements to serve customers within Santa Fe County (the County):

- Water service area boundary extension (WSABE) agreements
- Acéquia agreements
- The Las Campanas agreement
- City/County Water Resources Agreement
  - In 2005, the City and County signed the City/County Water Resources Agreement, whereby the City agreed to sell up to 500 acre-feet per year (ac-ft/yr) of wholesale water to the County in normal conditions and up to 1,350 ac-ft/yr in drought conditions. In 2015, the County purchased 105 acre-feet.

The City has two surface water and two groundwater sources:

- Surface water from the San Juan-Chama (SJC) Project via the Rio Grande
- Surface water from the Santa Fe River

- Groundwater from the Tesuque Formation
  - City Well Field (CWF)
  - Buckman Well Field (BWF)

Surface water from the Rio Grande is diverted at the Buckman Direct Diversion (BDD) and treated at the Buckman Regional Water Treatment Plant (BRWTP). These facilities are jointly owned by the City and the County, and are considered a separate water system from the City water system. Consequently, outside of the descriptions provided in this section, no further evaluation of BDD is included in this plan. For further source water protection information about BDD, reference the separate SWPP for BDD. All other sources are completely City-owned and operated, and are evaluated in this plan accordingly.

Table 2 lists the maximum daily capacity of each of the City's sources.

Table 2. Maximum Daily Capacity of City of Santa Fe Water Sources

Source	Maximum Daily Capacity (mgd)	Percent of Total (%)
Groundwater		
City Well Field	5.3	13.0
Buckman Well Field	12.4	30.5
Surface Water		
Canyon Road Water Treatment Plant	8.0	19.7
Buckman Regional Water Treatment Plant	15.0	36.9
Total	40.7	

Source: Brown and Caldwell, 2009
mgd = Million gallons per day

The sources are described in the following subsections.

3.1 Buckman Diversion

The SJC Project is a U.S. Bureau of Reclamation trans-basin transfer project that makes New Mexico's 11 percent allocation of Colorado River Basin water available to users in the north-

central part of the state (namely, the Middle Rio Grande Basin). This project diverts water from three different headwater streams of the San Juan River in Colorado (Rio Blanco, Little Navajo River, and Navajo River). Diversions can occur anytime during the year as long as stream flow exceeds the minimum allowable amount, and total diversions cannot exceed 1,350,000 acre-feet in any 10-year period (average annual yield of 96,200 ac-ft/yr). Diverted water travels underground for 27 miles across the Continental Divide into Heron Reservoir, located in Rio Arriba County, New Mexico at the confluence of Willow Creek and Rio Chama. The reservoir has a capacity of 400,000 acre-feet, approximately four years of supply for its designated downstream contractors (Table 3).

Table 3. Contractors of San Juan-Chama Project Water

Contractors	Annual Allocation (acre-feet)
Municipal	
Albuquerque	48,200
City of Santa Fe	5,230
Santa Fe County	375
Los Alamos	1,200
Los Lunas	400
Twining Water and Sanitation District	15
Española	1,000
Taos	400
Belen	500
Bernalillo	400
Jicarilla Apache Nation	6,500
San Juan Pueblo	2,000
Irrigation	
Middle Rio Grande Conservancy District	20,900
Pojoaque Valley Irrigation District	1,030
Other	
Cochiti Reservoir (U.S. Army Corps of Engineers)	5,000
Taos Pueblo Settlement	2,990

Water flows from Heron Reservoir southeast on the Rio Chama until it reaches the Rio Grande, approximately 5 miles north of Española (30 miles north of Santa Fe). City and County SJC

water from the Rio Grande is diverted at the BDD and treated at the BRWTP. The City of Santa Fe operates all BDD facilities.

3.2 City-Owned Sources

The CWF consists of 7 wells within the City limits. These wells are located near the Santa Fe River. The City can produce 4,865 ac-ft/yr from the CWF (City of Santa Fe, 2015). The BWF consists of 13 wells located 15 miles northwest of the City limits. The Buckman wells are located near the Rio Grande. Buckman wells 1 through 9 were originally drilled in the 1970s, and Buckman wells 9 through 13 came online in 2003. The City can produce 10,000 ac-ft/yr from the BWF (4,000 ac-ft/yr from Buckman wells 1 through 9 and 6,000 ac-ft/yr from Buckman wells 10 through 13) (JSAI and City of Santa Fe, 2016). The City also has the Northwest Well, which is not part of either well field, but pumps directly to the 10 million gallon Buckman Storage Tank. Table 4 provides detailed information about the City's wells.

Water diverted from the Santa Fe River is stored in McClure and Nichols Reservoirs prior to treatment at the Canyon Road Water Treatment Plant (CRWTP). The City is permitted to divert 5,040 ac-ft/yr from the Santa Fe River and can store up to 3,985 acre-feet in the two reservoirs combined (City of Santa Fe, 2015). McClure Reservoir has a capacity of 3,257 acre-feet (1,061 million gallons); Nichols Reservoir has a capacity of 684 acre-feet (223 million gallons).

The City's distribution system consists of ?? miles of pipeline, 8 storage tanks, and 4 booster stations distributed among 12 pressure zones. Figure 2 shows the City's existing water system. Table 5 lists the infrastructure by pressure zone (NMED, 2014).

To offset the use of treated water, the City makes reclaimed water available for purchase. Reclaimed water is used for irrigation, dust control, construction, livestock purposes, the educational pond at the New Mexico Department of Game and Fish (NMDGF) facility, and maintaining stream flow. Of the 5,844 acre-feet (1,904 million gallons) of reclaimed water produced in 2015, 18 percent (342 million gallons) was reused and 82 percent (1,562 million gallons) was discharged into the lower Santa Fe River (City of Santa Fe, 2015).

Table 4. Well Information, City of Santa Fe Water System

Name	Status	Drill Date	Well Depth (feet)	Casing Depth (feet)	Casing Diameter (inches)	Static Water Level (feet bgs)	Date of Static Water Level	2011 Pumping Rate (gpm)	Pump Rated Capacity (gpm)	Pump Setting (feet)	Depth to Top of Screen (feet bgs)	Depth to Bottom of Screen (feet bgs)
City Well Field												
Agua Fria	Active	1951	740	740	16	238	1994		840	400	201	740
Alto	Active	1968	741	725	12.75	156	2003 SWA		250	609	226	720
Ferguson	Active	1970	826	750	14	137	2003 SWA		270	610	175	746
Osage	Active	1971	809	770	NA	89	2003 SWA		500	428	210	760
Santa Fe	Active	1951	1,523	725	16	213	2003 SWA		220	550	200	725
St. Michaels	Active	1983	800	797	16	217	2003 SWA		490	714	382	782
Torreon	Active	1997	1,230	1,230	16	211	2003 SWA		400	504	400	1,200
Other City Wells												
Acres Estates	Not equipped											
Country Club Estates												
Hickox	Not equipped											
North West	Active	1998	2,000	500	14.625				960	760	500	2,000
Buckman Well Field												
Well 1	Active	8/06/1977	1,097	1,093	16	188.5	May 2015	1,180	546	840	257	1,093
Well 2	Active	7/27/1977	1,593	1,473	16	107.12	May 2015	765	534	680	234	1,578
Well 3		Improved 1/23/1990	1,500	NA	16	138.67	May 2015	500	NA	NA	500	1,480
Well 3a		1995	1,500	1,490	1	365	2003 SWA		350	350	500	1,490
Well 4	Active	4/10/1972	1,219	1,219	16	73.65	May 2015	690	374	750	454	1,214
Well 5	Active	5/25/1972	1,182	1,182	16	154.51	May 2015	430	294	750	244	1,170
Well 6	Active	6/23/1972	1,154	951	16	136.45	May 2015	1,110	766	730	291	1,148
Well 7	Active	6/19/1990	1,415	700	16	167.06	May 2015	1,010	700	800	700	1,400
Well 8	Active	8/10/1990	910	380	16	30.95	May 2015	660	530	620	380	900
Well 9	Active	12/12/2002	1,363		16 / 12	181.10	May 2015	415			320	1,320
Well 10	Active	9/23/2003	2,016		18 / 14	334.97	May 2015	1,040			500	1,980
Well 11	Active	7/24/2003	2,020		18 / 14	396.41	May 2015	865			450	1980
Well 12	Active	7/07/2003	1,930		18 / 14	399.85	May 2015	810			400	1900
Well 13	Active	9/16/2003	2,018		18 / 14	315.41	May 2015	1,110			400	1980

bgs = Below ground surface
gpm = Gallons per minute
NA = Not applicable
SWA = Source water assessment

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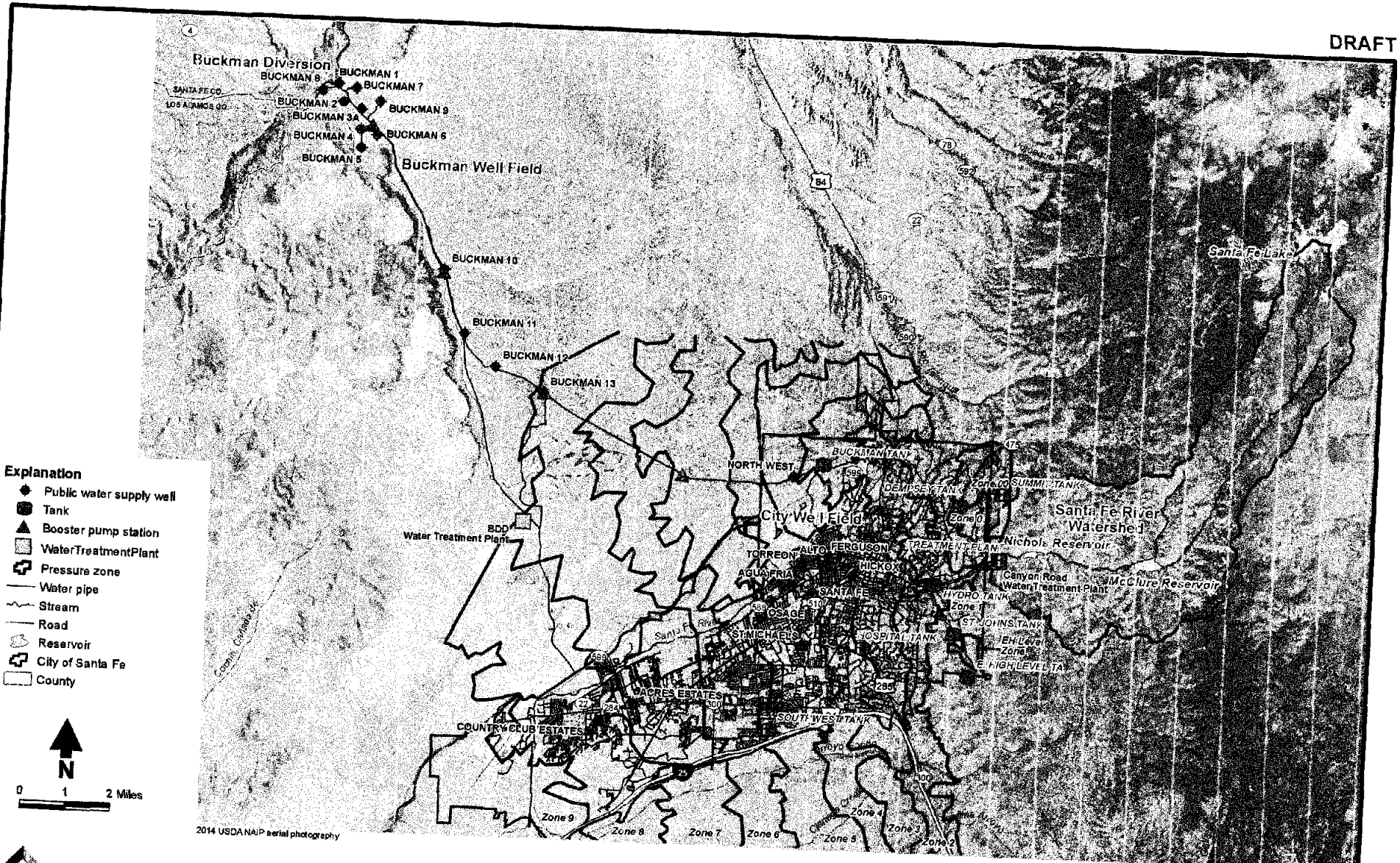

\\PROJECTS\NM15.0090_NMED_DWB_CAP_DEV\GIS\ARTA_REVISIONS\FIGURES\FIG02_WATER_SYSTEM.MXD

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CITY OF SANTA FE WATER SYSTEM
SOURCE WATER PROTECTION PLAN
Water System

Figure 2

Table 5. Infrastructure by Pressure Zone

Pressure Zone 1 South	*Pressure Zone 4*
• McClure Reservoir	• City Well Field
• Nichols Reservoir	*Pressure Zone 5 (largest pressure zone)*
• Sangre de Cristo Water Treatment Plant	• West County Water System [a]
• 2 million gallon ground storage tank	• Southwest ground storage tank
• St. Johns ground storage tank	• Buckman Booster Station
• East high level ground storage tank	*Pressure Zone 6*
• East high level booster station	• No facilities
Pressure Zone 1 North	*Pressure Zone 7*
• No facilities	• No facilities
Pressure Zone 00 (Summit High Level)	• Contains part of the County South Sector Water System [a]
• Summit ground storage tank	*Pressure Zone 8*
Pressure Zone 0 (Summit Low Level)	• No facilities
• Dempsey ground storage tank	• Contains part of the County South Sector Water System [a]
• Summit booster station	*Pressure Zone 9*
Pressure Zone 2	• No facilities
• 10 million gallon ground storage tank	• Contains part of the County South Sector Water System [a]
• Hydro ground storage tank	
Pressure Zone 3	
• Hospital Ground Storage Tank	
• St. John's Booster Station	

[a] Independent water system that purchases water from the City from a master meter

4. Hydrogeology

4.1 Regional Hydrogeology

Santa Fe County is located between the Jemez Mountains to the west and the Sangre de Cristo mountains to the northeast. Both surface water and groundwater are available in the area.

The City obtains surface water from the Rio Grande and the Santa Fe River. The 2016 Jemez y Sangre regional water plan (NM ISC and OSE, 2016) provides the following description of rivers in the area:

> The Rio Grande, which drains south through the region from Embudo to Cochiti Reservoir, is the major surface water feature (Figure 3-1), although use of this water is limited by provisions of the Rio Grande Compact. . . The Rio Chama, which flows into the Rio Grande near the northwest boundary of the planning region, also contributes a significant amount of water to the region, much of it imported water from the San Juan-Chama Project. The Santa Fe River, which supplies a portion of the City of Santa Fe water supply, Galisteo Creek south of Santa Fe, and the Rio Nambe, Rio Tesuque and Pojoaque River north of Santa Fe are also important tributaries in the region. The quality of the surface water in the region is generally very good to excellent.

The City's website (City of Santa Fe, 2017) gives a more detailed description of the Santa Fe River watershed:

> The Santa Fe River which runs for 46 miles from the headwaters near Lake Peak (12,408 feet) to the confluence with the Rio Grande (5,220 feet) is the center point of the Santa Fe River Watershed. The total area of the watershed is 182,400 acres (285 square miles) with the upper watershed comprising approximately 10% of this area. As a tributary to the Rio Grande, the Santa Fe River Watershed falls within the much larger, 116.6 million acres (182,200 square miles) Rio Grande Watershed. The Santa Fe River was the reason humans came to this area several thousand years ago. It flowed freely from its headwaters to the Rio Grande until it was dammed in 1881.

The City obtains its groundwater from the Tesuque Formation, part of the Santa Fe Group aquifer. Spiegel and Baldwin (1963) provides the following description of the Tesuque Formation:

> The Tesuque formation of middle (?) Miocene to early Pliocene age, here named for the town of Tesuque, 5 miles north of Santa Fe . . ., consists of several thousand feet of pinkish-tan soft arkosic, silty sandstone and minor conglomerate and siltstone. . .
>
> In the Santa Fe area, the Tesuque formation is generally exposed north of the Santa Fe River, and it is best exposed along the north edge of the Santa Fe area. The Tesuque, which represents the greater part of the Santa Fe group in the Santa Fe area, rests with at least local angular unconformity on the volcanic rocks of Oligocene and Miocene (?) age and is overlain with angular unconformity by the Ancha formation. Although near its base the Tesuque includes sediments derived from Tertiary igneous rocks, it consists principally of debris from Precambrian rocks.
>
> The color of the Tesuque formation ranges from grayish orange to moderate reddish orange and light brown. The usual pinkish color is due largely to the predominance of reddish grains of microcline. Crossbedding is common, and molds of desiccation cracks have been noted on the under surfaces of sandstones that rest on siltstones. Cementation by calcium carbonate is common, and in many specimens the cement is crystalline. The conglomerate, which is coarse, is common near the mountain front but less common farther west, partly because in general the lower beds are exposed only near the mountains. Clay is present only in very small amounts, but silt and very fine sand form a large proportion of the unit. The sand in many of the sandstone beds is fairly well sorted.

All of the City's wells are deep, ranging in depth from 740 feet (Agua Fria well in the CWF) to 2,020 feet (Buckman Well 11). In general, deep wells are less susceptible to surface contamination events.

4.2 Water Sources

The CWF and BWF draw groundwater from the Tesuque Formation. The City uses surface water from the Rio Grande and the Santa Fe River.

4.2.1 Source Water Quality

The City reports the results of required water quality sampling to customers in the annual consumer confidence report (CCR). In addition to the required sampling, the City conducts voluntary monitoring of sodium, a secondary contaminant, at the CRWTP and the CWF. The CCRs for 2013, 2014, and 2015 are provided in Appendix B. The CCRs show the results of City testing for contaminants in comparison to maximum contaminant levels (MCLs). No MCL violations were noted for 2013, 2014, or 2015.

Los Alamos National Laboratory (LANL) is located in the City of Los Alamos, approximately 25 miles southwest of the City of Santa Fe. While ChemRisk (2010) found that "[t]here are no contributions from LANL groundwater to the Buckman well field," in an abundance of caution, the City in conjunction with LANL and NMED has monitored three of the BWF wells since 2001 for possible groundwater contamination from past activity at LANL. From the 2015 CCR (Appendix B) regarding possible LANL contamination:

> In cooperation with Los Alamos National Laboratory (LANL) and the New Mexico Environment Department, the City currently monitors Buckman Wells 1, 6 and 8 for LANL derived contamination on a quarterly basis. Samples are analyzed for radionuclides, general inorganic chemicals, metals, high explosives and organics. This repeat sampling has occurred during the years 2001 – 2015 and has indicated that Laboratory-derived radionuclides are not present in the Buckman Wells 1, 2, 6 and 8. The results do indicate detectable levels of radionuclides associated with natural sources. These wells are part of the 13 wells that make-up the Buckman Wellfield. When these wells are used, water from these wells is delivered to the Buckman Tank prior to distribution into the system.

Naturally occurring arsenic is found near the BWF. The MCL for arsenic is 10 micrograms per liter (µg/L). Five wells (Buckman wells 1, 9, 11, 12, and 13) had average total arsenic concentrations above the MCL in 2011 (Table 6). John Shomaker & Associates, Inc. (JSAI) (2012) wrote the following:

> Buckman 1, 6, and 9 are next to or in fault zones, and yield groundwater elevated with arsenic when compared to Buckman 2, 3, 4, 5, 7, and 8. Buckman 1 and 9 yield groundwater above the drink water standard for arsenic (Table 3). The most viable alternative of reducing arsenic

concentrations from Buckman 1, 6 and 9 would be well replacement at locations away from the mapped fault zones (see Fig. 11). The replacement program should start with the well containing the highest arsenic concentration. There are no viable options for rehabilitating or replacing Buckman 11, 12, and 13.

Table 6. 2011 Average Arsenic Concentrations in the Buckman Well Field

Buckman Well	Average 2011 Total Arsenic Concentration (µg/L)
1	10.1
2	6.3
3	4.2
4	3.1
5	3.3
6	7.7
7	3.5
8	6.9
9	16.9
10	5.7
11	12.6
12	14.9
13	15.1

Source: JSAI, 2012

4.2.2 *Measured Water Levels and Production Rates*

Static water levels are reported in Table 4. Table 7 summarizes 2014 to 2016 production rates by source. Table 8 summarizes 2014 to 2016 production rates by month. Figure 3 and Table 9 provide monthly production for 2016 by water source.

Table 7. 2014-2016 Water Production by Source

Source	2014		2015		2016	
	acre-feet	% of Total	acre-feet	% of Total	acre-feet	% of Total
City Well Field			625	7.7		
Buckman Well Field			629	7.7		
Canyon Road WTP			3,509	43.0		
Buckman Regional WTP			3,403	41.7		
Total	8,564		8,167			

Source: City of Santa Fe, 2015
WTP = Water treatment plant

Table 8. 2014-2016 Water Production by Month

Month	Production (acre-feet)		
	2014	2015	2016
January		530	
February		467	
March		544	
April		721	
May		709	
June		866	
July		855	
August		899	
September		860	
October		713	
November		495	
December		508	
Total	8,564	8,167	

Source: City of Santa Fe, 2015

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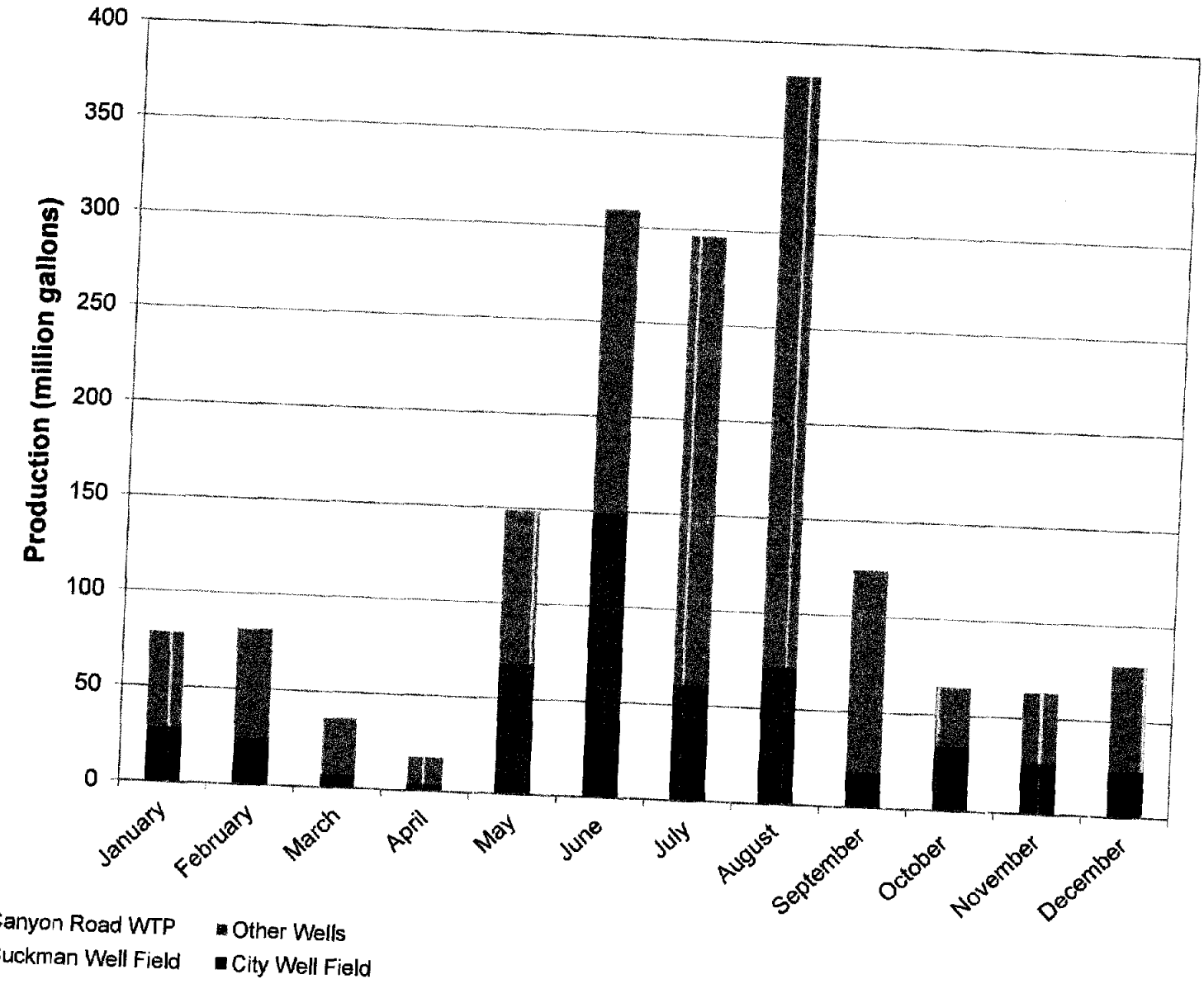

Figure 3

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CITY OF SANTA FE WATER SYSTEM
SOURCE WATER PROTECTION PLAN
2016 Monthly Production by Water Source

Table 9. 2016 Monthly Production by Source

Source	2016 Production (million gallons)											
	January	February	March	April	May	June	July	August	September	October	November	December
City Well Field	28.43	10.77	0.00	3.29	4.73	24.04	34.36	22.44	13.88	29.81	21.73	21.98
Buckman Well Field	0.00	13.88	7.05	0.00	63.69	125.22	26.62	49.19	4.71	4.09	4.83	2.08
Other Wells	—	—	—	0.10	0.11	0.27	0.13	109.49	2.59	6.68	0.16	0.02
Canyon Road WTP	50.19	57.13	29.41	14.35	80.50	159.71	235.57	201.70	103.15	24.27	36.94	55.11
Total	78.62	81.77	36.46	17.75	149.02	309.25	296.68	382.83	124.33	64.85	63.66	79.19

WTP = Water treatment plant

According to JSAI and City of Santa Fe (2016):

> Non-pumping water levels in BW1-9 have been rising since 2003 as total Buckman Well Field pumping has been decreasing and 28 percent of the total pumping has shifted to BW10-13 (Tables 3 and 4, Figs. 2, A2 through A10). Non-pumping water levels in BW10 are currently within a few feet of the initial 2003 measurement (Fig. A11). Non-pumping water levels in BW11-13 have not shown significant water-level declines over the past 5 years (Figs. A12 through A14). The observed stable trend for non-pumping water levels in BW10-13 is due to reduced pumping from the Buckman Well Field.

5. Water Supply Changes and Impacts

5.1 Historical Change and Impacts

BDD came online for the City in 2011, and has affected the City's water supply strategy. Since the BDD—a renewable and reliable surface water source—came online, it has provided the majority of the City's water supply. **(Further discussion to be added for the final draft.)**

In the last two decades, the City has made considerable progress in reducing its per capita use (Table 10). In 1995, the City's per capita use was 168 gallons per capita per day (gpcd); in 2015, it was 90 gpcd (a 46.4 percent decrease).

5.2 Need For Future Water Sources

The maximum daily capacity from all sources is 40.7 million gallons per day (mgd) (Table 2). In 2007, the City's average daily demand (ADD) was 8.7 mgd, and the maximum daily demand (MDD) was 13.8 mgd. In 2015, the ADD was **???** and the MDD was **???**. Projected ADD and MDD for the years 2020 and 2030 are provided in Table 11. Based on these projections, the City has sufficient capacity to meet its water demand through 2030.

Table 10. Daily Per Capita Use, 1995-2015

Year	Daily Per Capita Use (gpcd)
1995	168
1996	134
1997	139
1998	142
1999	139
2000	137
2001	139
2002	115
2003	117
2004	101
2005	107
2006	105
2007	104
2008	105
2009	103
2010	104
2011	107
2012	106
2013	101
2014	95
2015	90

gpcd = Gallons per capita per day

Table 11. Projected Water Demands, 2020 and 2030

	2020		2030	
	Average Day (mgd)	Maximum Day (mgd)	Average Day (mgd)	Maximum Day (mgd)
City of Santa Fe	12.1	20.2	13.5	22.4
Santa Fe County	1.5	3.0	2.6	5.2
Total	13.6	23.2	16.1	27.6

Source: Brown and Caldwell, 2009

6. Source Water Protection Area

The source water protection area (SWPA) is described as a buffer around wells, reservoirs, and on either side of streams and canals for use in identifying potential contamination from sources within close proximity. SWPAs have been delineated for all of the City-owned water sources (Figures 4 through 7):

- City Well Field
- Buckman Well Field
- Santa Fe River watershed, including Nichols and McClure Reservoirs

The methods for delineating SWPAs for groundwater and surface water sources differ, and are described in more detail in the following subsections. The delineated SWPAs meet the criteria of the NMED DWB guidance for establishing an area to evaluate for potential sources of contamination (PSOCs). DBS&A requested and received geographical information system (GIS) data used in NMED DWB's Source Water Protection Atlas (NMED DWB, 2017), an interactive mapping tool that contains active and inactive drinking water sources, regulated sites, and other information. These GIS data were used to generate the maps showing each source's SWPA and PSOCs.

6.1 Groundwater

Per NMED recommendations in the *New Mexico Source Water and Wellhead Protection Toolkit* (NMED DWB, 2013), the SWPA for groundwater sources is defined as the area within a 1-mile radius of each wellhead. In this plan, the delineated SWPAs are subdivided into four zones:

- Zone A: radius of 0 to 200 feet from the wellhead
- Zone B: radius of 201 to 500 feet from the wellhead
- Zone C: radius of 501 to 1,000 feet from the wellhead
- Zone D: radius of 1,001 to 5,280 feet from the wellhead

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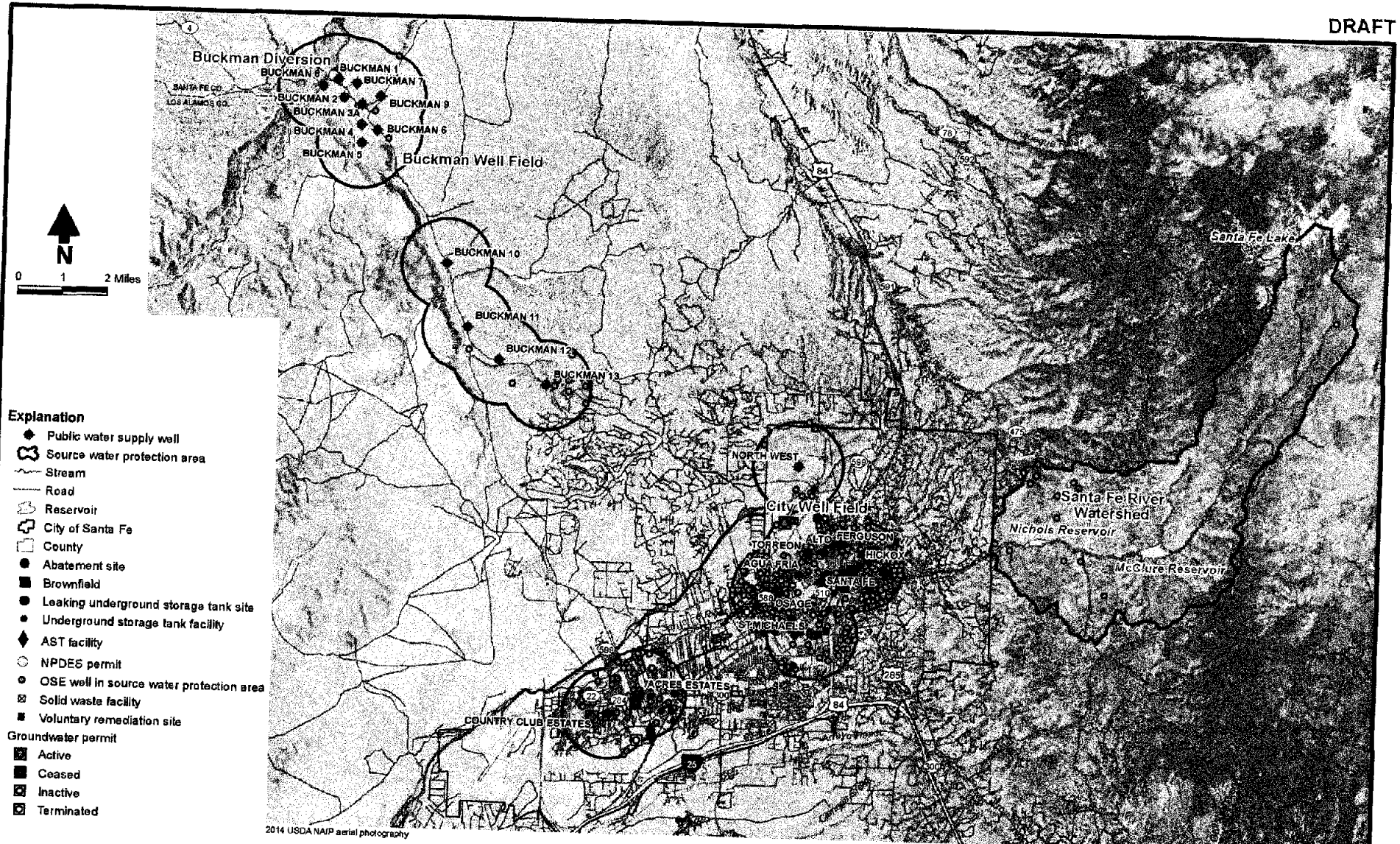

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CITY OF SANTA FE WATER SYSTEM
SOURCE WATER PROTECTION PLAN
Potential Sources of Contamination

Figure 4

FREE WORKSHOP SERIES

IN CELEBRATION OF NATIVE SEED

Join us for series of workshops on Seedballs. Learn about [illegible] seed, participate in a hands on demonstration, and make your own seed balls!

Bring your seedballs on August 19 in celebration of Native Plant Day.

BIKERS AND WALKERS WELCOME

WORKSHOP DATES

July 30th
10:00a - 12:00p
Plants of the Southwest
3095 Agua Fria St

August 8th
3:00p - 5:00p
Southside Farmer's Market
6009 Jaguar Dr.

New Mexico Native Plant Society
Santa Fe Chapter

SEED BALL THROW

August 19th
9:30a - 11a

Meet up Locations on both the

Southside
&
Northside

For location updates or more information visit
www.npsnm.org
or contact
sara@appliedeco.org

SANTA FE FARMERS MARKET

SNAPP Santa Fe Native Plant Project

Creative Activist Network

Santa Fe River Trails and Watershed

Plants of the Southwest

EXHIBIT 4