Grant Application to the Colorado Water Conservation Board
to Develop a Drought Management Plan
for the Pagosa Area Water And Sanitation District

The following provides the Colorado Water Conservation Board (CWCB) the requirements for a grant application to aid in the development of a Drought Management Plan for the Pagosa Area Water and Sanitation District (PAWSD or the District).

1. **Name and contact information of the entity seeking the grant.**

   Pagosa Area Water and Sanitation District (PAWSD)
   100 Lyn Avenue; PO Drawer 4610
   Pagosa Springs, CO 81157
   (970) 731-2691; (970) 731-2693 [Fax]
   www.pawsd.org
   Steve Hartvigsen, Chairman, PAWSD Board of Directors

2. **A list of the organizations and/or individuals including those hired or otherwise retained by the entity that will assist in preparation of the Plan, and a written statement of their role and contributions.**

   PAWSD will oversee and manage all aspects of the Drought Management Plan construction.

   Pagosa Area Water and Sanitation District
   Renee Lewis, Special Projects Manager
   Mat deGraaf, Water Conservation Coordinator
   Nancy Stahl, Office Manager
   100 Lyn Avenue; PO Drawer 4610
   Pagosa Springs, CO 81157
   (970) 731-2691; (970) 731-2693 [Fax]
   www.pawsd.org

   AMEC
   Courtney Peppler, Water Resource Engineer
   1002 Walnut St. Suite 200
   Boulder, CO 80302
   (303) 442-0616

   Harris Water Engineering
   Steve Harris – Water Resource Engineer
   954 E. 2nd Ave #202
   Durango, CO 81301

   The written statement of the roles and contributions of each participant is provided in **Attachment 1**.

   A PAWSD Organization Chart is included in **Attachment 1b**.

3. **The identification of retail water delivery by the covered entity for each of the past five years (in acre-feet or million gallons) and additional information characterizing past water use by sector (e.g., residential, commercial, industrial, irrigation) and source (e.g., surface water, groundwater, etc.).**

   Retail Water Delivery for the Past Five Years:

Table 1, below, provides data on the PAWSD retail water delivery for the past five years (2005 to 2010).

Table 1- PAWSD Retail Water Delivery (2005-2010)*

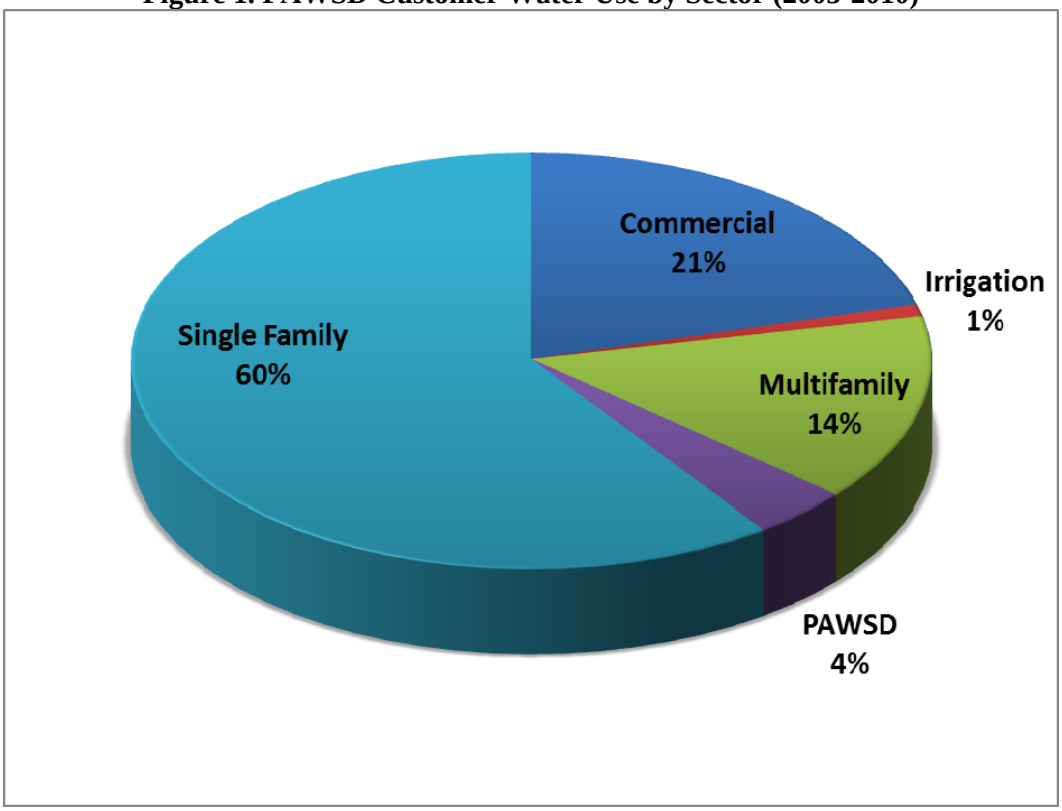
	2005	2006	2007	2008	2009	2010
Commercial	84,720,000	83,919,000	80,851,000	80,495,000	77,461,000	77,678,000
Irrigation	5,287,000	3,175,000	2,878,000	3,537,000	3,118,000	3,754,000
Multi-Family	56,620,000	55,302,000	57,644,000	56,249,000	56,153,000	59,541,000
PAWSD	9,765,000	13,895,100	16,179,000	16,392,000	18,432,000	17,214,000
Single Family	241,764,400	231,379,600	241,047,000	248,308,016	217,597,008	218,047,000
TOTAL	398,156,400	387,670,700	398,599,000	404,981,016	372,761,008	376,234,000
AF	1,221.90	1,189.72	1,223.26	1,242.84	1,143.96	1,154.62

*These numbers are from total water SOLD.

Additional Information Characterizing Past Water Use by Sector:

Figure 1, below, illustrates the PAWSD customer water use by sector from 2005-2010. Supporting documentation is provided in **Attachment 2**. As indicated, single-family accounts are the highest use sector, followed respectively by commercial, multi-family, PAWSD in-house, and irrigation accounts.

Figure 1. PAWSD Customer Water Use by Sector (2005-2010)



Water Sources:

All of the PAWSD's water is derived from surface water sources. The PAWSD encompasses approximately 41,408 acres, which is loosely divided into two general areas of reference: uptown and downtown. The uptown area receives its water from Fourmile Creek through the Dutton pipeline as well as from the San Juan River via a pumping station and pipeline located approximately 1.5 miles downstream of the Town of Pagosa Springs. The downtown area derives its water from the West Fork of the San Juan River via a diversion point located approximately 10 miles upstream from the Town of Pagosa Springs.

4. Background characterizing the water system, potential growth and any other pertinent issues that relate to the stated evaluation criteria.

Background Characterizing the Water System:

The Pagosa Area Water and Sanitation District (PAWSD) was established by general election in July of 1971 to provide water and wastewater service to the Archuleta County, Colorado area. The PAWSD currently serves 7240 single-family equivalent units (EU's) and operates approximately 290 miles of water line and 90 miles of wastewater line. A map of the PAWSD service area is included as **Attachment 3**.

To maximize the usability of its sometimes sporadic surface water sources, water is stored in reservoirs. The District currently has 4,338 acre-feet (AF) of existing usable storage. PAWSD storage is comprised of five reservoirs: Hatcher (798 AF usable capacity), Stevens (1770 AF usable capacity), Pagosa (1,235 AF usable capacity), Village (297 AF usable capacity), and Forest (238 AF usable capacity). Hatcher Reservoir receives its water supply from Fourmile Creek through the Dutton Ditch Pipeline. The Dutton Ditch diversion is capable of diverting water to Hatcher Reservoir, Stevens Reservoir, or both. When Hatcher Reservoir is full, water is diverted to Stevens Reservoir. When Stevens Reservoir is full it spills to Lake Pagosa through the Linn and Clark Ditch. When Lake Pagosa is full it flows through a few golf course ponds and spills into Village Lake. When Village Lake is full it spills into Lake Forest. Any overflow from Lake Forest spills into Martinez Creek, which joins Stollstiemer Creek, which feeds into the Piedra River prior to its union with the San Juan River at Navajo Lake. The District can also pump raw water from the San Juan River through the San Juan Pipeline to Village Lake, Lake Forest, or both.

After water is collected it must be treated at water treatment plants (WTP) to make it safe to drink and to remove any unpleasant odors, tastes, or color. The District has three WTPs; two of which operate continually through the year with the third serving as a back-up to meet peak demands during the summer months. The uptown area is served by the Hatcher and the San Juan Water Treatment Plants. As their names imply, the Hatcher WTP (treatment capacity of 2 million gallons per day (mgd)) treats water from Hatcher Reservoir while the San Juan WTP (treatment capacity of 3 mgd) treats water from the San Juan River. In synchronization, the River and Trujillo Road Booster Pump Stations can deliver approximately 3 million gallons of water per day to the San Juan WTP through a six-mile pipeline. The water for the downtown area gravity feeds from the West Fork of the San Juan River to a sedimentation pond. The water then goes to the Snowball WTP (treatment capacity of 1.5 mgd) where it is treated and enters the potable water system.

Once the water is treated, it is stored for use. In the uptown area, the Hatcher WTP pumps water to the Hatcher Storage Tank (500,000 gallon capacity), the Eagle Peak Tank (32,000 gallon capacity), via the Eagle Peak booster pump, the Reserve Tank (200,000 gallon capacity), the Elk Park Tank (150,000 gallon capacity), the Meadows Tank (1 million gallon capacity), and the Steven's Tank (1.5 million gallon capacity). In the downtown area, the Snowball WTP supplies water to the Snowball Storage Tank (250,000 gallon capacity), the Elk Run Tank (30,000 gallon capacity), the Cemetery Storage Tank (1 million gallon capacity), the Reservoir Hill Storage Tank (250,000 gallon capacity), and the Loma Linda Tank (220 gallon capacity) via the Loma Linda pump station. Water from the

Cemetery Storage Tank and the Reservoir Hill Storage Tank supplies water to Town and to Putt Hill One and Putt Hill Two Booster Stations, which pump the water up to the Putt Hill Storage Tank (150,000 gallon capacity). Water from the Putt Hill Storage Tank then gravity feeds to serve the Pagosa Hills area. In the event of an emergency, the uptown water treatment plants are capable of supplying water to the downtown area.

After the potable water has been used it is collected and treated at the Vista Wastewater Treatment Plant (WWTP). The hydraulic capacity of the Vista WWTP is 3.75 mgd. The collection system servicing this treatment plant consists of 26 sewer lift stations and approximately 90 miles of collection lines.

a. Current, and if available, past per capita water use for the last five years and the basis for this calculation.

Table 2 – PAWSD Total Water Demand per Equivalent Unit (EU)**

Equivalent Units (EUs) Served		Total Water Demand		Total Water Demand Per EU
Year	EU's	(gals)	(acre feet)	(gals/day/EU
2005	6,412	**617,382,000**	1,894.67	263.80
2006	6,743	**592,628,000**	1,818.70	240.79
2007	7,083	**634,212,599**	1,946.32	245.32
2008	7,227	**691,520,609**	2,122.19	262.15
2009	7,288	**672,949,764**	2,065.20	252.98
2010	7,199	**588,542,544**	1,806.17	223.98

The "Total Water Demand per EU" figures are derived from the total water produced divided by the number of EUs served, which are then divided by 365 (# of days in a calendar year).

**These numbers are from total water PRODUCED.

b. Past, current, and predicted population served by the entity and the source of this information.

The PAWSD service area encompasses the Town of Pagosa Springs as well as areas of Archuleta County. It is estimated that 75% of the population of Archuleta County lives within the PAWSD service area. A map of Archuleta County is included as **Attachment 5**. The methodology used in the PAWSD service area population estimate is collecting the current population number for Archuleta County then multiplying that number by 75% (0.75) to find the estimated current population served by PAWSD.

The US Census Bureau estimates the population percentage change from 2000 to 2010 to be 22.10%. Dividing this number by the number of years between 2000 and 2010 (10) produces an average annual population increase (e.g. growth) percentage of 2.21%. This percentage of growth is then added to the previous year's estimated population number to produce the next population number in the annual sequence.

Table 3 below shows the annual estimated population growth based upon figures gathered from the US Census Bureau. See **Attachment 6**.

Table 3 – Past, Current, and Predicted Population Served by PAWSD.

YEAR	POPULATION - Archuleta County	POPULATION - PAWSD Service Area
2010	12,084	9,063
2011	12,351	9,263
2012	12,624	9,468
2013	12,903	9,677
2014	13,188	9,891
2015	13,480	10,110
2016	13,778	10,333
2017	14,082	10,562
2018	14,393	10,795
2019	14,711	11,033
2020	15,036	11,277

c. Estimated water savings goals to be achieved through implementation of the Plan.

The District has a total reservoir storage amount of 4,338 AF. Based on the amount of water produced in 2010, 1806.17 AF, the District has approximately 2.40 years' worth of water in reserve. With an aggressive water conservation program in place that has been working to reduce water waste and firm up demand, overall water use is projected to continue to trend downward over time as it is anticipated that residences will be retrofitted with new and more water efficient appliances while the communities collective conscious will be heightened to the inherent value of water and the need to use it wisely. Based on current and future water use, PAWSD expects that demand reduction will be in the range of 1 to 1.5 percent per year occurring over the next 15 to 20 years, which will be a long term savings of 15 to 20 percent by 2020.

In the case of a drought situation, it is anticipated that through implementation of the various stages of the Drought Management Plan, most notably the mandatory water use restrictions, that the District sees an overall short-term demand reduction of 20-50%.

In addition to water savings and demand reduction goals, the District will construct the new Plan with the following objectives in mind:

- Ensure community health and safety through reliable and safe water supply.
- Improve communication between the District and its customers/stakeholders during times of drought.
- Ensure that the operations, communications, and faculty roles related to the implementation of various aspects of the Plan be clearly defined, well organized, and systematically executed to accomplish the short-term water use reductions desired.

5. Description of the impacts experienced by the covered entity during the 2000-2003 drought including a breakdown of water use by sector (e.g. municipal, commercial, industrial, irrigation, etc.) of those adverse impacts and steps taken to address 2002-2003 drought impacts to date. Include short term and long term impacts, as well as social and economic impacts where applicable and feasible.

The San Juan River, which serves as a primary source of raw water for the PAWSD, generally has an annual peak flow of 2000 cubic feet per second (cfs) or greater in the spring months of April or May. On April 20, 2002, the San Juan River flow peaked at a mere 262 cfs.

PAWSD had a drought plan in place which included trigger points based upon available water supply that served to enact various levels of water use restrictions. Prior to the summer of 2002, the plan had never been tested.

As raw water supplies slowed to a trickle and reservoir levels continued to fall, PAWSD enacted mandatory water use restrictions for all users as well as a $5.25 per EU drought surcharge to compensate for the required pumping costs to bring additional water from the San Juan River up to the San Juan Water Treatment Plant.

Following Level One Water Restrictions in May of 2002 that were voluntary, in June 2002, the District went into Level Two Water Restrictions. Outdoor watering of landscapes was prohibited, and the water rate structure adjusted to reflect scarcity. A 1 EU home or business that consumed 50,000 gallons of water in a single billing period would normally bill at $197.50 in the non-drought rate structure; that same account would now bill at $991.50. This got people's attention and caused quite a stir. As the summer wore on, the falling reservoir levels promoted algae growth that led to eutrophication that produced stagnant, foul smelling water, increased mosquito populations, and fish die-offs.

At the end of the crisis it was recognized that the financial ramifications of the Level Two Water Restrictions, coupled with a historic under-assessment of EUs, caused unfair financial burdens. Re-imbursement was later issued to those adversely affected, which were mostly hotels. The adjusted rate structure did have a positive effect in that the increased cost of water prompted many home and business owners to repair water leaks that previously were cheaper to let run than to repair. This led to a demand decrease that has persisted to present. In 2000, there were 5,081 EUs served with an average demand per EU of 421.12 gallons. As shown in Table 2 (p.4), the District in 2010 had 7,199 EUs with an average demand per EU of 223.98 gallons. This reduction is due, at least in part, to the drought shadow effect coupled with a progressive and active water conservation program.

The drought of 2002 stress-tested the drought management plan in place at the time and highlighted the areas that failed or were in need of revision, most notably the rate/EU structure. The District then began a community wide re-assessment of assigned E's to ensure locations were not under (or over) assessed. In 2004, the existing drought management plan was overhauled based upon the experiences and lessons learned in 2002.

Due to the makeup of the community, the percentage of water use per sector during this time of drought was roughly the same as it is currently (see Figure 1, p.2).

In the midst of the drought the District was also struggling with a customer database changeover from WB7 to Caselle. This was a major upgrade that was not complete until the following year. The new Caselle system allows for the generation of detailed water use reports that will better serve the District in times of future drought effect analysis. However, due to the timing of the changeover, that same data is not available for 2002 or the years preceding it.

Since the drought of 2002, PAWSD has revamped its trigger point stages and associated water use mitigation efforts. Below is an excerpt from the current PAWSD Drought Management Plan which was drafted in 2008 –

Between March 1st and October 1st, if:

> *1. the percentage (ratio) derived by dividing the "combined useable capacity of Hatcher, Stevens, Pagosa, and Forest Lakes" by the "estimated annual demand for the current year" is less than the percentages below, and*

2. the water supply into the reservoirs from Dutton Ditch and direct runoff does not appear to be adequate to fill the reservoirs,

then the following restrictions associated with percentages should be implemented:

- *Ratio of 90% or less triggers Voluntary Status*
- *Ratio of 70% or less triggers Level One restrictions*
- *Ratio of 50% or less triggers Level Two restrictions*
- *Ratio of 40% or less triggers Level Three restrictions*
- *Ratio of 30% or less triggers Level Four restrictions*

These trigger points and their associated reservoir usable capacity percent levels will be revisited in the Plan update.

6. Description of the Drought Management Plan project development, also referred to as, the scope of work.

Each task within the Scope of Work Narrative (**Attachment 4**) includes a description of the work to be performed. The foundational project tasks are:

1.0 - Stakeholders, Objectives and Principles
2.0 - Historical Drought Impact Assessment
3.0 - Drought Vulnerability Assessment
4.0 – Drought Mitigation and Response Strategies
5.0 – Drought Stages, Trigger Points, Response Targets
6.0 – Staged Drought Response Program
7.0 – Implementation and Monitoring
8.0 – Formal Plan Approval

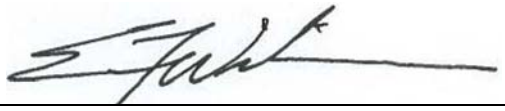
7. A detailed budget identifying all costs associated with the Drought Management Plan development project, including but not limited to hours spent on plan development (in-kind and cash), hourly wages, materials, and resources needed.

Each task within the Scope of Work worksheet **(Attachment 7)** details the task to be performed, the person(s) responsible for the task, the estimated time and cost associated with the task, as well as CWCB's contribution to each task.

A timeline for the estimated completion of tasks is outlined in **Attachment 8.**

Due to the fragile and variable nature of the surface water supplies that PAWSD wholly relies on to meet the demand of its customers, PAWSD is committed to water conservation and drought planning.

8. The signature of an individual with the authority to commit the resources of the entity seeking the grant.



Ed Winton
PAWSD General Manager

9. Description of the Plan Public Review Process that will be implemented, pursuant to section 6e of the CWCB-approved *Guidelines for the office to review and Evaluate Drought Mitigation Plans Submitted by Covered Entities and Other State or Local Government Entities,* including the period

of time the draft plan will be made publically available, the method of public notice, and the process for soliciting public comments.

Once in completed draft form, the Drought Management Plan will be made available for public review. This will be accomplished by presenting copies of the Plan to various stakeholder groups and organizations, posting notices at the Town of Pagosa Springs' Town Hall and the Archuleta County Courthouse soliciting public participation, distributing copies to the PAWSD Board of Directors, the Archuleta County Commissioners, and the Town Council of Pagosa Springs. The draft Plan will also be available for download on the PAWSD website (www.pawsd.org). The review period shall last 60 days from the date at which the draft Plan is made publically available. Public comment will be collected by PAWSD staff via email, written correspondence, telephone, and at regularly scheduled PAWSD meetings.

Attachment 1 - Statement of Roles and Contributions

Contributing Organizations

The Pagosa Area Water and Sanitation District
100 Lyn Ave
PO Box 4610
Pagosa Springs, CO 81147

AMEC Earth and Environment
1002 Walnut Street, Suite 200
Boulder, Colorado 80302

Contributing Individuals

1. Renee Lewis – Special Project Manager, PAWSD – Project lead, content guidance and oversight.

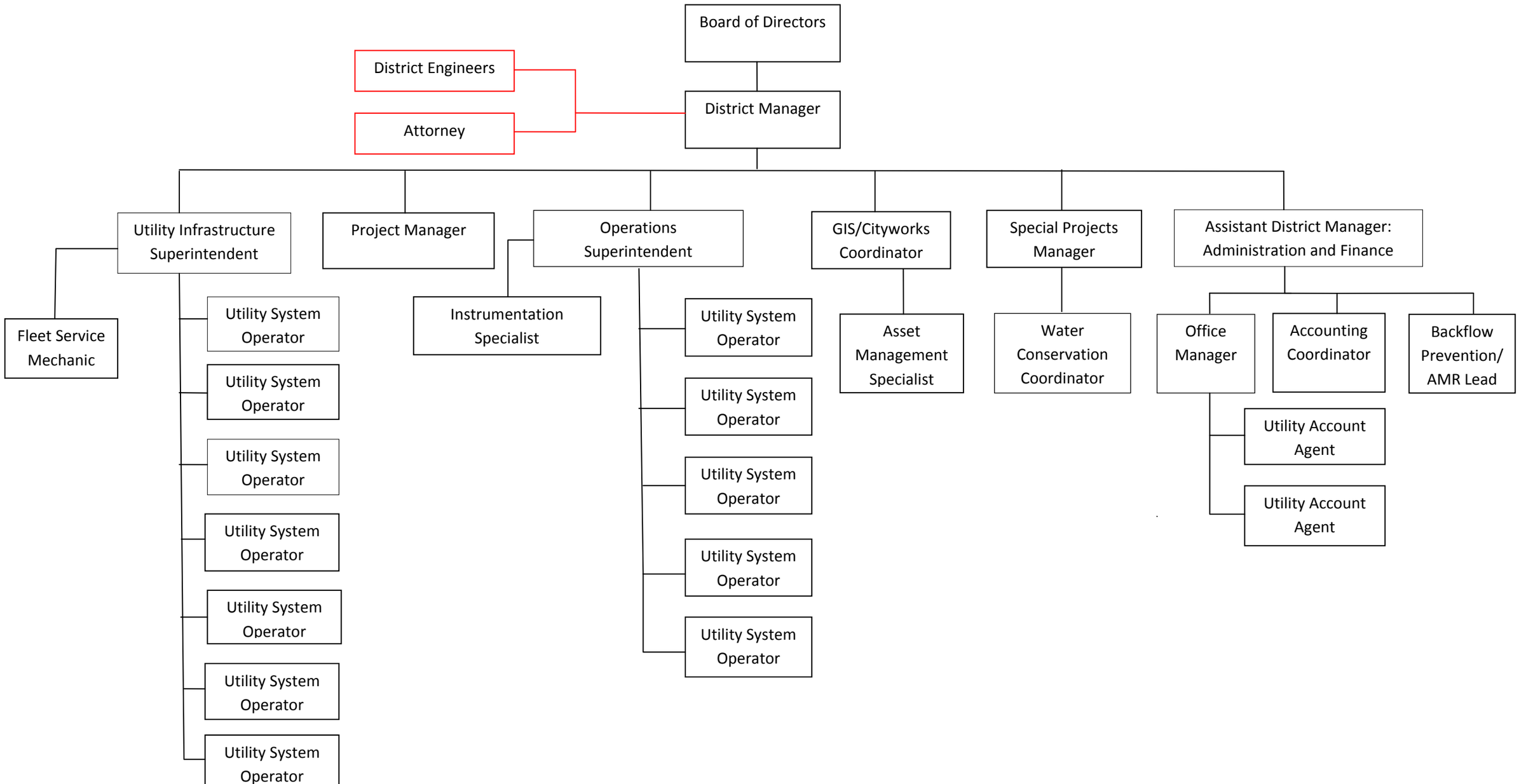
2. Mat deGraaf – Water Conservation Coordinator – PAWSD – data collection, content organization and assembly.

3. Nancy Stahl – Office Manager – PAWSD – data collection and financial oversight.

4. Courtney Peppler - Water Resource Engineer – AMEC – project support and consultation.

5. Steve Harris – Water Resource Engineer – Harris Water Engineering – update PAWSD firm yield report

Pagosa Area Water and Sanitation District
Organization Chart



Attachment 2 – Retail Water Deliveries (gals) by Sector / Year – 2005-2010

	2005	2006	2007	2008	2009	2010
Commercial	84,720,000	83,919,000	80,851,000	80,495,000	77,461,000	77,678,000
Irrigation	5,287,000	3,175,000	2,878,000	3,537,000	3,118,000	3,754,000
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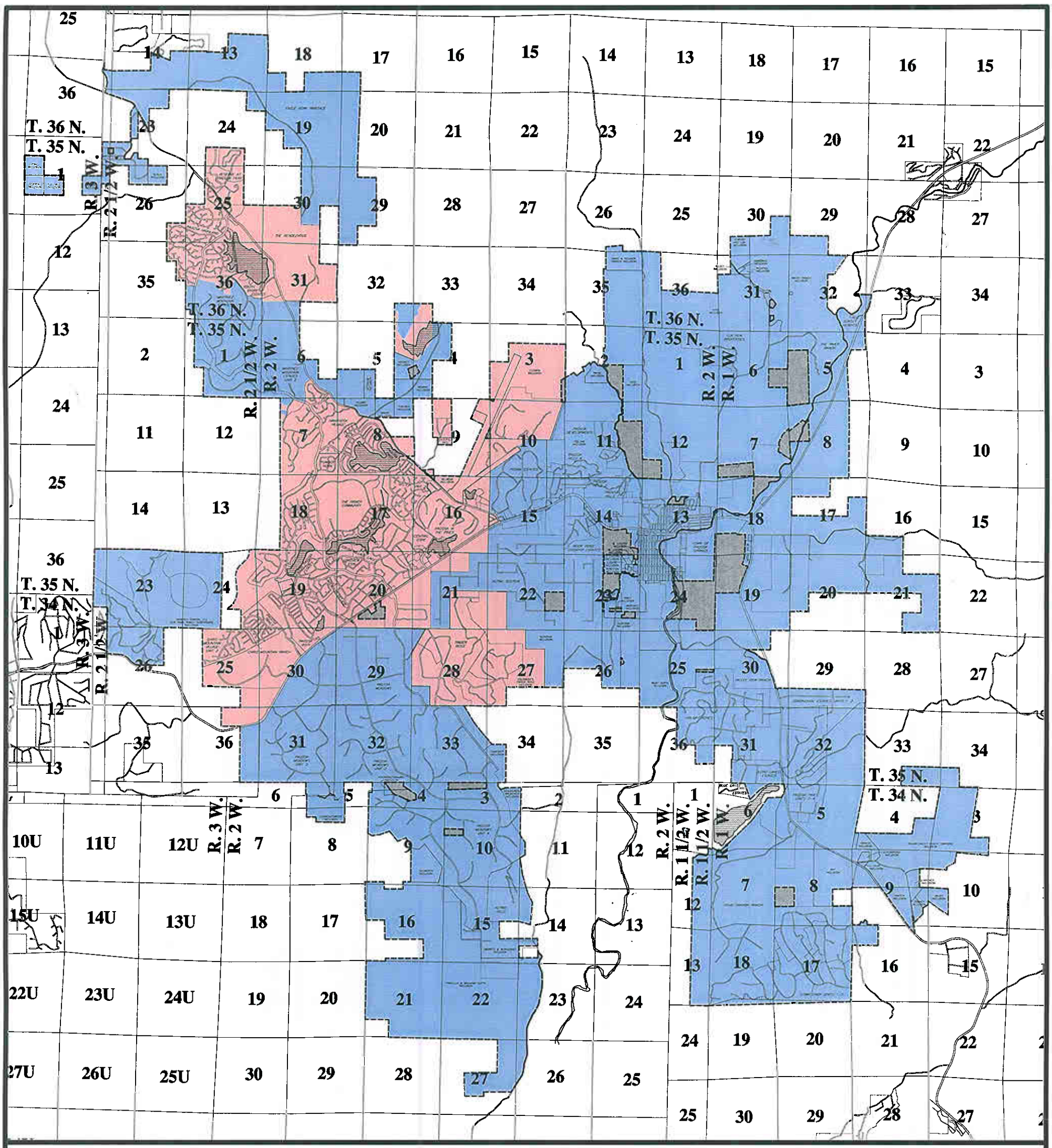


YEAR ADDED	INCLUSION NAME	EQUIVALENT UNITS
1994	Beaugureau & MacKenzie	2
	Echo Canyon Ranch	25
	Cloman	20
	Collins	2
	Dempsey & Leal	2
	Eagle Peak Ranches	12
	Giordano	1
	P. & M. Gupto	2
	R. Gupto	13
	Hyde	19
	Quintana	10
	Wilsey	1
1995	Martinez	1
	Sands	1
1996	Alpine Hills Subdivision	12
	Dawson	23
	Forrest	4
	Leake	2
	Maez	3
	Outerbridge	1
	Schaeper	2

YEAR ADDED	INCLUSION NAME	EQUIVALENT UNITS
1997	Ray	6
	Wagner	3
	Dillard	3
	Downey	1
	Bauer	1
	Wildflower Sub. (ex. lots 27, 35, 42-45)	45
	Kukla	1
	Tesman	1
	The River Ranch (S.J.R.E., LLC)	8
	Lucero	1
	Stretton	1
	Frazier (Valley View Ranch, Tr. 1)	1
	Victory Mgmt. (Valley View Ranch, Tr. 2)	2
	Clare (Valley View Ranch, Tr. 3)	1
	Frazier (Valley View Ranch, Tr. 4)	1
	Brown (Valley View Ranch, Tr. 5)	2
	Pond	1
	Gibson	1
	Phy. Med. (Barker)	1
1998	Tholmon	2
	Ketchum	2
	Colorado's Timber Ridge (Machock)	260
	Belmear	14

YEAR ADDED	INCLUSION NAME	EQUIVALENT UNITS
1999	Maes	1
	Macht Ranch	2
	Timbered Canyon, LLC (Elk Park)	119
	David and Yolanda Parker	4
2002	Lunnen/Carter (Hidden Meadows)	5
	Atkinson/Donhart	0
	Wienpahl	1
	Hansen	0
2003	Lomasney	1
	Payne	1
	Morris	1
2004	Humane Society of Pagosa Springs	2
	Hackett	1
2005	Jimmy Lucero	2
	Bernardo Lucero	1
	Madoline Lucero	2

P.A.W.S.D.

PAGOSA AREA WATER AND SANITATION DISTRICT

ORIGINAL SCALE: 1" = 7000'

0' 7000'

INCLUDED IN DISTRICT WATER AND SEWER SERVICE

INCLUDED IN DISTRICT WATER SERVICE ONLY

EXCLUDED FROM DISTRICT

MAP OF
PAGOSA AREA WATER AND SANITATION DISTRICT
ARCHULETA COUNTY, COLORADO

PREPARED BY

DAVIS ENGINEERING SERVICE, INC.
188 S. 8th STREET – P.O. BOX 1208
PAGOSA SPRINGS, COLORADO 81147

REVISED DECEMBER 14, 2005

SCOPE OF WORK NARRATIVE
PAGOSA AREA WATER AND SANITATION DISTRICT
2012 DROUGHT MANAGEMENT PLAN

Profile Existing Water System, Conservation Activities, and Use

Tasks

- Profile service area and infrastructure
- Profile existing supplies to include raw water supplies and water storage
- Customer profile to include annual retail water deliveries (AF), number of homes in the PAWSD service area, and profile of customer types

Drought Mitigation and Response Planning

Tasks

- General Description of drought
- Explanation of how drought affects the PAWSD water supply
- Explanation of the purpose and benefits of drought mitigation and response planning
- Describe how the drought management plan is coordinated with the State Drought Plan and the Archuleta County Emergency Response and Hazard Mitigation Plan.

Drought Planning and Water Conservation

Tasks

- Explanation of water conservation as a form of drought mitigation

1.0 Stakeholders, Objectives, and Principles

1.1 Drought Planning Committee

Tasks

- Importance of the stakeholder process
- Role of the Drought Committee in the development of the Plan

1.2 Objectives of the Drought Management Plan

Tasks

- List of the objectives and operating principles
- List of water use priorities – essential, social/economic, nonessential

2.0 Historical Drought and Impact Assessment

2.1 Historical Assessment of Drought, Available Supplies, and Demands

Tasks

- Discussion of the drought of 2002 and how it affected water supplies

2.2 Historical Drought Impact, Mitigation and Response Assessment

Tasks

- Impacts experienced during the drought of 2002
- Mitigation measures implemented to minimize drought impacts
- Drought response measures implemented during 2002 and the overall effectiveness of those measures

3.0 Drought Vulnerability Assessment

3.1 Water Supply Reliability and Drought Management Planning

Tasks

- Summary of water supply reliability planning efforts
- Obtain current and updated Firm Yield Report from Harris Water Engineering
- Description of how water supply reliability planning is related to drought planning

3.2 Drought Impact Assessment

Tasks

- Potential impacts that could occur during future droughts
- Discussion of the relative priorities assigned to the potential impacts

4.0 Drought Mitigation and Response Strategies

4.1 Drought Mitigation Measures

Tasks

- List of drought mitigation measures
- How existing conservation measures provide long-term drought mitigation

4.2 Supply-Side Response Strategies

Tasks

- List of selected supply-side response strategies

4.3 Demand-Side Response Strategies

Tasks

- List of selected demand-side response strategies

4.4 Drought Public Information Campaign

Tasks

- List of public drought campaign goals
- General components of the public drought campaign
- Pre-scripted messages targeted towards the public to be released through public information outlets during various drought stages

5.0 Drought Stages, Trigger Points, and Response Targets

5.1 Drought Stages, Trigger Points, and Response Targets

Tasks

- Presentation of the drought stages and corresponding drought trigger points

5.2 Drought Declaration and Predictability

Tasks

- Discussion of the challenges of early drought detection
- List of selected drought indicators and descriptions of how these indicators are reflective of water supply conditions
- Discussion of how the drought indicators, triggers, and other pertinent data are incorporated into the decision making process of declaring a drought
- Summary of how drought indicators will be monitored and general frequency of monitoring

6.0 Staged Drought Response Program

Tasks

- Supply and Demand side response measures
- Summery table that highlights the drought stages, trigger points, response targets, and a summary of drought response measures
- Staged public drought campaign plan

7.0 Implementation and Monitoring

7.1 Mitigation Action Plan

Tasks

- List of drought mitigation actions
- Steps necessary to implement each mitigation action
- Milestone deadlines
- Entities/Staff responsible for administrating the mitigation action

7.2 Monitoring of Drought Indicators

Tasks

- Drought data monitored on annual and seasonal basis
- Frequency of monitoring and general schedule of monitoring efforts
- Entities and staff responsible for drought monitoring

7.3 Drought Declarations

Tasks

- Summary of guidelines used by staff to evaluate drought conditions
- Decision maker(s) responsible for declaring a drought and corresponding drought stages
- Discussion of importance in identifying and declaring drought in a timely manner
- Staff or entity responsible for announcing drought declaration to the public

7.4 Implementation of the Staged Drought Response Program

Tasks

- Entitles/staff responsible for administering the staged drought response program
- Staff responsible for administering the drought public campaign
- Communication and coordination protocol among entities/staff

7.5 Enforcement of the Staged Drought Response Program

Tasks

- Enforcement policies appropriate for each drought stage
- How information on the enforcement will be conveyed to the public
- Responsibility for the administration of the enforcement effort and approving exceptions to the enforcement policy

7.6 Revenue Implications and Financial Budgeting Plan

Tasks

- Introduction to how the reductions in water use can reduce revenue and financially stress providers
- Estimates and/or qualitative discussion of the potential revenue reductions and how this would impact the average customer
- Description of the strategies for addressing revenue losses
- Financial resources necessary to implement the response programs
- Discussion of how drought surcharges and/or water rate increases would be conveyed to the public

7.7 Monitoring of Plan Effectiveness

Tasks

- Collect data such as demand data, lessons learned, conditions of the water supply system during the drought (e.g. reservoir levels and stream flows), public perceptions and response to the drought
- Staff/entities responsible for the data collection, evaluation, and recommendations on Plan improvements

8.0 Formal Plan Approval and Updates

8.1 Public Review Process

Tasks

- Opportunity for the public to review and comment on the Plan
- Description of the public review process and how the public may access the plan

8.2 Adoption of Ordinances and Official Agreements

Tasks

- Summary of the ordinances and policies necessary to implement the Plan
- List of official agreement(s) needed with other entities for drought related coordination efforts

8.3 Drought Management Plan Approval

Tasks

- Government body that approved or officially adopted the Plan
- Date of approval/adoption

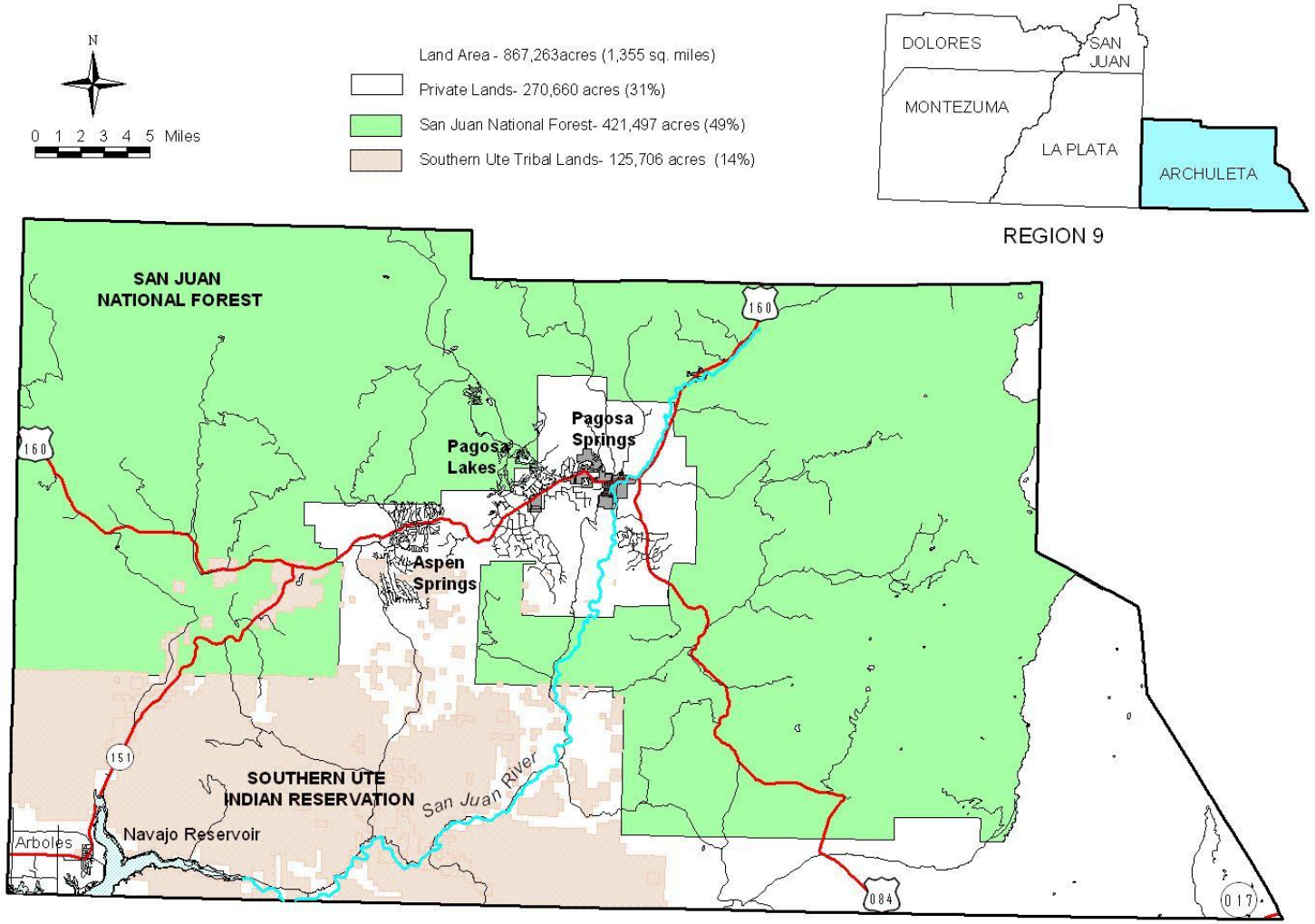
8.4 Periodic Review and Update

Tasks

- Frequency of when the plan will be updated (every 5 years)
- Anticipated date of the next update

Attachment 5

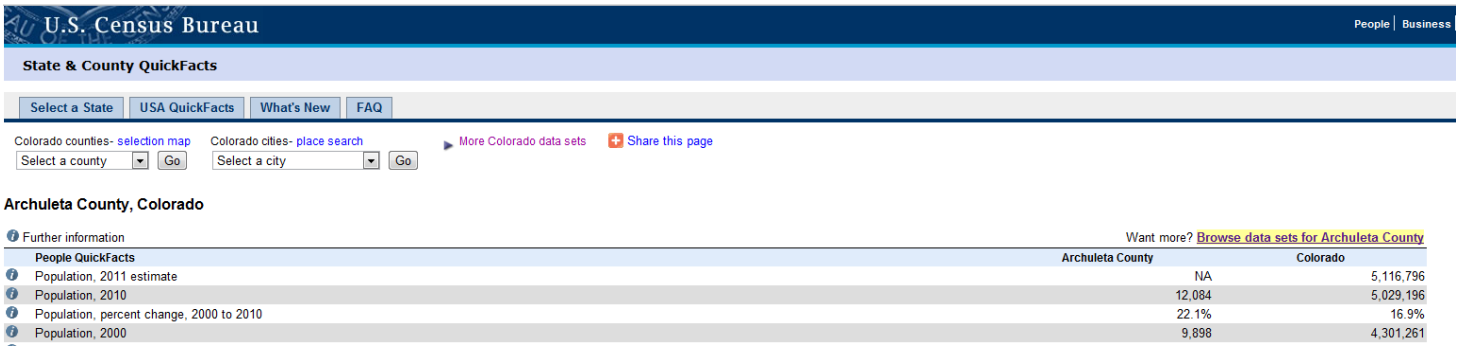
MAP OF ARCHULETA COUNTY



Archuleta County

Information Services
File c:\gis data\region 9\ceds
acreage estimates from http://www.nrel.colostate.edu/projects/comap/index.html

Attachment 6 – Population Served



U.S. Census Bureau

People | Business

State & County QuickFacts

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Archuleta County, Colorado

Further information

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People QuickFacts	Archuleta County	Colorado
Population, 2011 estimate	NA	5,116,796
Population, 2010	12,084	5,029,196
Population, percent change, 2000 to 2010	22.1%	16.9%
Population, 2000	9,898	4,301,261

Source location - http://quickfacts.census.gov/qfd/states/08/08007.html

Project Budget Estimate
2012 Drought Management Plan
Pagosa Area Water and Sanitation District
SCOPE OF WORK - Attachment 7

Tasks	rate ($/hr)	PAWSD - MdeG $ 45.00 Hours	PAWSD - MdeG $	PAWSD - RL $ 65.00 Hours	PAWSD - RL $	PAWSD - NS $ 55.00 Hours	PAWSD - NS $	AMEC - CP $ 125.00 Hours	AMEC - CP $	Harris - SH $ 250.00 Hours	Harris - SH $	TOTAL EXPENSES HRS	TOTAL EXPENSES $	CWCB %	CWCB $
Profile of Existing Water System		10	$450.00	5	$325.00									75%	$581
Drought Mitigation and Response Planning		12	$540.00	6	$390.00									75%	$698
Drought Planning and Water Conservation		6	$270.00	3	$195.00									75%	$349
	SUB-TOTAL	28	$1,260.00	14	$910.00							42	$2,170.00		$1,628
1.0 Stakeholders, Objectives and Principles															
1.1 Drought Planning Committee		6	$270.00	3	$195.00									100%	$465
1.2 Objectives of the Drought Management Plan															
Drought Committee Meeting #1 (To cover Sections 2, 3, and 4 of plan)		4	$180.00	2	$130.00			8	$1,000.00					100%	$1,310
Drought Committee Meeting #2 (To cover Sections 5, 6, and 7 of plan)		4	$180.00	2	$130.00			8	$1,000.00					100%	$1,310
	SUB-TOTAL	14	$630.00	7	$455.00			16	$2,000.00			37	$3,085.00		$3,085
2.0 Historical Drought Impact Assessment															
2.1 Historical Assessment of Drought, Available Supplies, and Demands		10	$450.00	4	$260.00	4	$220.00							75%	$698
2.2 Historical Drought Impact, Mitigation and Response Assessment		8	$360.00	4	$260.00	4	$220.00							75%	$630
	SUB-TOTAL	18	$810.00	8	$520.00	8	$440.00					34	$1,770.00		$1,328
3.0 Drought Vulnerability Assessment															
3.1 Water Supply Reliability and Drought Management Planning		12	$540.00	6	$390.00									75%	$698
3.1 Updated Firm Yield Report										10	$2,500.00			75%	$1,875
3.2 Drought Impact Assessment		6	$270.00	3	$195.00									75%	$349
	SUB-TOTAL	18	$810.00	9	$585.00					10	$2,500.00	37	$3,895.00		$2,921
4.0 Drought Mitigation and Response Strategies															
4.1 Drought Mitigation Measures		4	$180.00	2	$130.00									100%	$310
4.2 Supply-Side Response Strategies		10	$450.00	5	$325.00									75%	$581
4.3 Demand-Side Response Strategies		10	$450.00	5	$325.00									75%	$581
4.4 Drought Public Information Campaign		12	$540.00	4	$260.00									100%	$800
	SUB-TOTAL	36	$1,620.00	16	$1,040.00							52	$2,660.00		$2,273
5.0 Drought Stages, Trigger Points, Response Targets															
5.1 Drought Stages, Trigger Points, Response Targets		16	$720.00	8	$520.00									75%	$930
5.2 Drought Declaration and Predictability		16	$720.00	8	$520.00									75%	$930
	SUB-TOTAL	32	$1,440.00	16	$1,040.00							48	$2,480.00		$1,860
6.0 Staged Drought Response Program		16	$720.00	8	$520.00									75%	$930
	SUB-TOTAL	16	$720.00	8	$520.00							24	$1,240.00		$930
7.0 Implementation and Monitoring															
7.1 Mitigation Action Plan		16	$720.00	8	$520.00									65%	$806
7.2 Monitoring of Drought Indicators		12	$540.00	6	$390.00									65%	$605
7.3 Drought Declarations		12	$540.00	6	$390.00									65%	$605
7.4 Implementation of the Staged Drought Response Program		12	$540.00	6	$390.00									65%	$605
7.5 Enforcement of the Staged Drought Response Plan		16	$720.00	8	$520.00									65%	$806
7.6 Revenue Implications and Financial Budgeting Plan		6	$270.00	3	$195.00	8	$440.00							65%	$302
7.7 Monitoring of Plan Effectiveness		6	$270.00	3	$195.00									65%	$302
	SUB-TOTAL	80	$3,600.00	40	$2,600.00	8	$440.00					128	$6,640.00		$4,030
8.0 Formal Plan Approval and Updates															
8.1 Public Review Process		20	$900.00	10	$650.00			12	$1,500.00					100%	$3,050
8.2 Adoption of Ordinances and Official Agreements		6	$270.00	3	$195.00									0%	
8.3 Drought Management Plan Approval		6	$270.00	3	$195.00									0%	
8.4 Period Review and Update		6	$270.00	3	$195.00									0%	
	SUB-TOTAL	38	$1,710.00	19	$1,235.00			12	$1,500.00			69	$4,445.00		$3,050

PAWSD			
in-kind		labor	$7,281
CWCB			
project		labor	$21,104
TOTAL PROJECT			**$28,385**
	CWCB %		74%
	PAWSD %		26%

Estimated Timeline of Progress toward completion of the PAWSD Drought Management Plan