

DRY GULCH RESERVOIR PROJECT FEASIBILITY STUDY FOR CWCB LOAN APPLICATION

A. INTRODUCTION AND SPONSORS

The Pagosa Area Water and Sanitation District originally formed in 1971 and reorganized as the Pagosa Area Water and Sanitation District (PAWSD) in 1977. The PAWSD is a quasi-municipal corporation and a political subdivision of the State of Colorado. Their mission is to provide safe drinking water and wastewater services in an economical and environmentally responsible manner and to educate the community with regard to water conservation.

The PAWSD operates a comprehensive M&I water supply system that provides water for numerous beneficial uses to a large area, including the Town of Pagosa Springs, Fairfield Development, a corridor extending southeast along US Highway 84, a corridor extending northeast along US Highway 160 and other included areas. The PAWSD serves about 75 percent of the population of Archuleta County with M&I water. In addition, they provide water-based recreational benefits, as well as irrigation water for parks, athletic fields and golf courses. The current annual treated water demand is about 2,000 acre-feet (AF), plus about 900 AF of raw water irrigation and related demand.

The San Juan Water Conservancy District (SJWCD) was formed in 1987 as a political subdivision of the State of Colorado and a body corporate with all the powers of a public or municipal corporation as authorized by the statutes of the State of Colorado. The SJWCD includes approximately 100 square-miles of the 1,365 square-miles of Archuleta County, including the majority (approximately 95 percent) of the municipal and industrial (M&I) demand within the County. The purpose of the SJWCD is to conserve, maximize and utilize the water resources of the San Juan River and its tributaries, and that property within the District will be benefited by this purpose. Another primary function of the SJWCD is to address future water supply needs within the District. The highest priority of the SJWCD is to provide water for the health and welfare of its constituents.

The PAWSD and SJWCD (Districts) have been working together to plan and construct the facilities necessary to meet growing demands within their boundaries. In recent years, they have combined resources to perform engineering studies and evaluations necessary for long-range water resources planning. PAWSD is the loan applicant and is responsible for repayment of the loan but SJWCD will provide funding to PAWSD to assist in repayment including: (1) a \$1 million grant from SB179 funds to be used as the 10% local contribution for the Weber Property, (2) providing the Weber Property as collateral for this loan, and (3) transferring funds to PAWSD to assist in repayment of this loan and for other needs.

This feasibility study provides technical support for a loan application to the Colorado Water Conservation Board (CWCB) for land acquisition and pre-construction technical studies for the Dry Gulch Reservoir Project. The technical studies include: engineering, environmental, financial, land acquisition costs (appraisals, consultants), legal, and other services. This report summarizes and references work accomplished in previous reports prepared for the Districts and, where appropriate, updates this work to reflect the most current information. The previous reports include:

Alternative Reservoir Site Evaluation Appraisal Level Study. Harris Water Engineering, Inc. 1989 (1989 Report).

Appraisal Report to Evaluate Future Raw Water Demands and Water Supply Alternatives. Harris Water Engineering, Inc. 2003 (2003 Report).

Expert Opinion in Support of Water Court Case No. 04CW85, Water Division 7. Steven C. Harris. 2005 (2005 Expert Report).

B. PURPOSE OF DRY GULCH RESERVOIR PROJECT

The purpose of the Dry Gulch Reservoir Project is to provide adequate water for the health and welfare of the Districts' constituents due to unprecedented growth within their boundaries. Archuleta County is the third fastest growing county in Colorado. The 2005 population of the SJWCD and PAWSD service areas is approximately 9,500 full-time residents, up from about 7,500 in 2000. As an example of growth, historic water connections within the Districts average about 300 per year which is a growth rate of 5 percent to 7 percent. The current water storage capacity in the District is 2,900 AF. Studies indicate that an additional 12,500 AF of storage capacity will be necessary by the year 2040 to meet the water needs of area residents. Since the lead-time to construct a new reservoir is typically 20 years or more, **work to construct a new reservoir must begin immediately in order to have a reservoir constructed when needed.**

The Dry Gulch Reservoir Project will provide a firm raw water supply and a safety supply margin to meet the water needs within the Districts through the year 2100. Based on current growth projections, a 35,000 AF reservoir and associated diversion facilities are required to accomplish this goal. Based on the estimated schedule (described below), the earliest the Dry Gulch Reservoir Project can be planned, permitted, constructed, the reservoir filled, and ready for use is about 2025.

When the 2003 Report (referenced above) was originally prepared, the recommendation was to develop water supplies to meet the 2040 water demands. This would have required a 12,500 AF reservoir. Subsequent to the 2003 Report, evaluations were made that indicated 2025 would be the earliest the Reservoir could be constructed. Therefore, constructing Dry Gulch Reservoir to 12,500 AF to meet the 2040 demand was not

appropriate since plans to enlarge the Reservoir to meet the post 2040 demands would have to begin immediately after completing the 12,500 AF facility. Due to the 20 year lead time to construct or enlarge the reservoir it was clear that Dry Gulch Reservoir should initially be constructed as large as can be financed up to the 35,000 AF maximum capacity that the site can accommodate.

Of these, only the Dry Gulch site is truly feasible due to its location and economically favorable dam size to storage ratio (see Table W, page 46, 2003 Report). An extensive inventory and review of more than 13 potential sites revealed that there were two sites within the County which were best technically, economically, and environmentally. The other site has since been purchased for residential development.

Thus, time is of the essence to secure the best remaining potential reservoir site within the Districts, before it is either lost to development and/or a financial impossibility due to extreme land escalation costs in the County.

C. WATER DEMAND

The current PAWSD water demand is between 1,900 and 2,000 AF per year. The current PAWSD diversion capacity is 6.9 cubic foot per second (cfs) which is estimated to be adequate to meet the peak summer water demand for the next four to six years. Additional diversion capacity from the San Juan River will be needed in the near future and studies are nearing completion to select a plan to increase the diversion capacity from the San Juan River. With the enlargement of Stevens Reservoir the total existing storage will be increased from the current 2,900 AF to about 3,900 AF, which is estimated to be adequate to meet the storage needed for the demand and supply safety margin until about 2015. The Dry Gulch Reservoir Project cannot be constructed in time to provide the storage needs beyond 2015.

The PAWSD water demands include storage to meet the “supply safety margin” policy of the Boards of Directors of the Districts. That policy requires providing annual carry-over raw water storage in an amount equal to one-year of demand, which one-year demand is estimated at approximately 11,700 AF in 2040 and 32,000 AF in 2100. The policy addresses the possibility of catastrophic drought, system failures, and precipitation reduction/variability due to climate change.

The PAWSD presently has five small reservoirs (totaling less than 2,900 AF of usable storage capacity), three treatment plants, and two direct diversions out of the San Juan River. The primary San Juan River diversion is a 4.6 cfs pump and pipeline to the San Juan Treatment Plant. The second San Juan River diversion is a 2.3 cfs gravity diversion from the West Fork to the Snowball Treatment Plant. The PAWSD treated water distribution system is somewhat integrated so that water can be conveyed to nearly any part of the potable water service area.

The PAWSD is also about to begin construction (fall 2007) to enlarge the existing Stevens Reservoir from about 600 to 1,700 AF which will increase the total useable capacity to about 3,900 AF. The Stevens Reservoir enlargement is the last storage option available prior to needing Dry Gulch Reservoir.

Chapter 2 (pages 2 to 11) of the 2003 Report thoroughly describes the population (Census data) and equivalent unit (EU) growth within the Districts from 1990 to 2000. The Census data indicates an annual growth rate of greater than seven percent per year and the EU data indicates a growth rate of 7.1 percent. Table E, page 10 of the 2003 Report shows the estimated population and EU growth in 5 year increments through 2040. The 2040 water demand was estimated to be 11,732 AF to serve 35,861 EU's which is approximately 52,370 people.¹ The 2003 Report, Table D (page 8), estimated the water usage per person to be 215 gallons per day based on actual water treatment data from 1995 through 2000. To account for likely water conservation, the usage was decreased to 200 gallons per person per year in the future.

The Districts review actual growth and water usage data annually to continually monitor the estimated future water demands. The EU method is preferred for estimating growth because it indicates the water service commitments by PAWSD and more accurately reflects seasonal population fluctuations common in Archuleta County due to the large percentage of vacation homes and tourist-economy businesses. In January of 2007, the Districts reviewed the EU growth data from 2000 to 2006 and per capita daily use. This review indicated that future modifications should be made to the water demand estimates in the 2003 Report. Between 2000 and 2005 the actual EU growth was five percent per year (still very high). The actual growth rate in 2006 was 5.2 percent. Therefore, a five percent per year growth rate was used from 2000 to 2010 rather than the 7.1 percent in the 2003 Report. In addition, the water use rate decreased from just over 200 gallons per EU to under 200 gallons per EU after the 2002/2003 drought, probably as a result of aggressive conservation efforts.

Also, since the 2003 Report, PAWSD settled a dispute with the Pagosa Springs Valley Golf Club, LLC and Fairfield Resorts, Inc. by agreeing to provide up to 900 AF of raw water per year to supplement the filling of small lakes for recreational use and to irrigate the golf course and landscaping for condominiums and time share developments.

The change in growth rate, water use rate and the 900 AF commitment equates to a three year extension (from 2040 to 2043) of reaching 11,732 EU's. The year 2100 demand was estimated in the 2005 Report (page 3) to be approximately 32,000 AF based on a two percent growth rate from 2040 to 2100.

¹ Population is estimated to be 1.5 people per EU based on the actual data within the Districts.

D. WATER RIGHTS

The Districts have a portfolio of absolute and conditional water rights that are described in Chapter 3 (pages 18 to 24) of the 2003 Report and listed in Table I (page 24). In addition to these water rights, the Districts obtained additional water rights for the Dry Gulch Project allowing 35,000 AF of storage in Dry Gulch Reservoir and 180 cfs diversion from the San Juan River in Water Division 7 Case No. 04CW85.

The Districts have adequate water rights for the Project.

E. ANALYSIS OF ALTERNATIVES

Until 2002, the water source for two thirds of the PAWSD service area was diversions from Fourmile Creek through the Dutton Ditch into the Stollsteimer Creek drainage to serve the Pagosa Lakes area. These diversions were used to fill several reservoirs, primarily Hatcher and Stevens; however, the water rights were junior to irrigation water rights in the Dutton Ditch and were normally out of priority by the end of May. The reservoirs in the Stollsteimer Creek drainage are listed in Table H (page 19) of the 2003 Report.

In 2002, PAWSD constructed a 4.6 cfs pump and pipeline from the San Juan River to a new treatment plant. These facilities now provide the majority of the water supply for the Pagosa Lakes area.

In order to maximize the water supply from Fourmile Creek, PAWSD has constructed the Dutton Ditch pipeline which replaces the old open ditch with a pressure pipe in order to minimize conveyance losses and improve the ability to divert during winter months. PAWSD is also enlarging the Stevens Reservoir from about 600 to 1,700 AF which will be under construction in 2007.

In 1993, PAWSD assumed operation of the Town of Pagosa Springs water system which included a 2.3 cfs diversion from the West Fork of the San Juan River to the Snowball treatment plant. There is no storage associated with this supply. The water supply for the remaining one third of the PAWSD service area continues to be the Snowball Pipeline.

Beginning in the late 1980's, the Districts understood that additional storage capacity would be required to meet their long term demands. The 1989 Report evaluated different reservoir sites listed on Table IV-1 (page 13). The evaluation of these sites showed that the Hidden Valley Reservoir was the best site to store Fourmile Creek diversions and Dry Gulch Reservoir was the best site for San Juan River diversions. The Hidden Valley Reservoir site was purchased and developed by a private entity and is no longer available to the Districts. The Dry Gulch Reservoir site is the best remaining site; a 4,000 AF reservoir was evaluated in the 1989 Report.

The 2003 Report re-evaluated the reservoir options and again concluded that the Dry Gulch Reservoir was the best site (refer to cost per AF of yield shown in Table W, page 46). This report evaluated a 4,000 AF reservoir and a 12,500 AF reservoir both of which had essentially the same cost per AF of yield.

As described above, due to the 20 year lead time to construct Dry Gulch Reservoir, it would not be operational until between 2025 and 2030. If the reservoir was only constructed to meet the 2040 demand, plans for the enlargement to meet the post-2040 demands would have to begin upon completion of the initial reservoir. Generally the development plan is to construct as large a reservoir that is justified by future demand estimates and financing capability. The 2005 Expert Report extrapolates the 2040 water demands to 2100, which indicates that 35,000 AF of storage will not be adequate to meet the demands and the supply safety margin. The 35,000 AF reservoir will be needed by 2100 whether constructed in one or two stages.

F. SELECTED ALTERNATIVE

Dry Gulch is the best site available to the Districts to construct a reservoir to meet future water needs. The maximum capacity of the site is 35,000 AF. The studies to be conducted using funds from this loan will evaluate, based on updated demand information and financing capability, whether the 35,000 AF reservoir should be constructed in one or two stages.

The studies to be funded from this loan will include design of the selected dam and reservoir size and all appurtenant facilities. The studies to be conducted as part of the loan will also evaluate the capacity and design the pumping plant on the San Juan River to fill Dry Gulch Reservoir. The CWCB has an instream flow water right of 50 cfs in the summer and 30 cfs in the winter. In order to obtain a Corps of Engineers 404 Permit, additional environmental work in the river channel is expected to be necessary to determine if those flows are adequate to meet environmental criteria. The size of the pumping plant is based on the bypass amount, the demand, and the reservoir size. The larger the bypass and/or the demand, the larger the pumping size because a large bypass limits the periods of time that pumping can occur. The larger the reservoir, the smaller the pumping plant size because carryover storage is greater and complete refills are less frequent. The proposed studies will evaluate these and other variables and determine the best pumping plant size.

Land purchase and easements are being obtained to allow construction of the 35,000 AF reservoir which allows the maximum flexibility for development of the reservoir in one or two stages. The funds for studies and consultants to assist in land purchase and purchase of the land and easements are a significant component of this loan application.

G. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

The environmental impacts are associated with construction of a reservoir and diversion of water from the San Juan River. The Dry Gulch basin above the dam site is 2,100 acres in size. The water surface area for the 35,000 AF reservoir is approximately 620 acres at elevation 7,400 ft.

The 620 acres for the reservoir includes an irrigated pasture below the Park Ditch which enters the reservoir basin at about elevation 7,330 ft and leaves at elevation 7,300 ft. Above the Park Ditch the vegetation is dry meadows, scrub oak and pine trees. There is also a gravel pit within the reservoir basin. Though not inventoried, a few acres of wetlands are expected to exist in the creek channels, primarily from irrigation return flow. A buffer area around the reservoir water surface will be provided, the amount depending upon the cost of acquiring the land. If possible, the Districts will attempt to obtain control of the entire 2,100 acre drainage basin in order to control activities that affect water quality. The land area above the water surface would not be impacted by the reservoir. No major issues are expected in development of the reservoir basin.

The impact on the in-stream habitat in the San Juan River downstream of the Dry Gulch Project diversion is expected to create the greatest environmental issue for permitting agencies. Permitting agencies may require a streamflow bypass at the Dry Gulch Project diversion structure. The diversion structure capacities cannot be finalized until after the habitat studies are complete because the size of the diversion is dependent on the size of the bypass. If the bypass is the existing CWCB instream flow water right, a diversion amount of 80 to 100 cfs is adequate to meet the year 2100 demand; as the bypass increases, the diversion increases. A significant amount of field studies are expected to be necessary for the evaluations to assess the impact of various diversion amounts.

The social impacts of the Dry Gulch Project would be primarily associated with not having an adequate water supply for the residents of the Districts if the project is not constructed. The project will provide many recreational benefits to the residents of Archuleta County. The storage provided by the reservoir project will assure an adequate water supply despite drought, climate change or water shortages caused by a Colorado River Compact call.

H. INSTITUTIONAL CONSIDERATIONS

A number of institutional permits will be required to construct the project including:

- US Corps of Engineers Section 404 Permit (likely to require an EIS)
- US Forest Service Special Use Permit to land under the reservoir
- Colorado Division of Water Resources approval of dam designs
- Colorado Division of Wildlife review of habitat evaluations
- US Fish and Wildlife Service Endangered Species Section 7 Consultation

I. DEVELOPMENT PLAN AND SCHEDULE

The estimated 2006 cost for the 35,000 AF Dry Gulch Reservoir and pumping plant is shown on Table A to be \$66,330,000 without the costs that will be funded by this CWCB loan.

Figure A shows the proposed schedule for development of the Dry Gulch Reservoir Project. The schedule is predicated upon funds from this loan application being available in late 2008 or early 2009. Also, due to the long time period that may be required for land acquisition and the studies, the Districts are proposing that this loan application allow smaller multiple loans based on the amount and timing of expenditures.

The general categories of tasks are described below.

1. Land Acquisition

The general order of tasks is to first obtain the land necessary for the reservoir and facilities. A contract has nearly been completed for the Weber property, which is the heart of the Project and will contain the dam site, half of the reservoir basin, the pumping plant site and the pipeline to the reservoir. The total acreage being obtained is about 680 acres for a cost of \$9,100,000. The price of the property was established as of January 1, 2007, and the land owner is entitled to an accrual of interest on the price until closing. The land owner has the option to request partial or full payment upon 4 months notice. Up to \$700,000 is included in this application for accrued interest between January 1, 2007 and the date of closing. In the event that funds are not available from this loan when the land owner requests payment, PAWSD will obtain a bridge loan from commercial funding sources, which will be immediately repaid when CWCB loan funds are available.

SJWCD has received a \$1 million grant through Senate Bill 179 funds for the Weber Property purchase. SJWCD will provide these funds as the 10% local match for the loan funds necessary for acquiring the Weber Property, which results in the Weber Property acquisition loan being approximately \$8,800,000 depending on how soon the closing can occur.

At least one other private land owner holds land that is needed for the reservoir. The land is on the south side of the reservoir and includes about 150 to 200 acres depending on how the boundaries are "squared off." There may also be other small tracts that are needed. The cost of acquiring all these other private properties is estimated to be no more than \$1,500,000; closing may occur as late as 2012, but could occur sooner depending on negotiations with the land owners.

To obtain use of the USFS property that will be needed for the reservoir basin, two simultaneous options are being pursued. One is to obtain a Special Use Permit for use of USFS land and the other is to work a land exchange to obtain title to the property. A Special Use Permit is only issued for 25 years and always subject to changing USFS conditions, but there is no land cost. For the land exchange, PAWSD must purchase land (more costly than obtaining a permit), but uncertain future Special Use Permit conditions are avoided. The Districts' preference is to acquire enough USFS land needed for the reservoir water surface estimated to cost up to \$7,000,000, with closing estimated to be in approximately 2012.

The total cost to acquire private land to own and for the USFS land exchange is estimated at approximately \$8,500,000. Prior to closing loans for any of the property, appraisals will be prepared to support the loan amounts. This loan application seeks the flexibility to close loans as each of the land purchase agreements is completed.

2. Technical Studies

The main categories of technical studies are for determining land acquisition, environmental issues and facility design. The major tasks for each category and the estimated cost for each task are shown on Table B. The estimated \$5 million for technical studies is based on about half of the "engineering, administration, environmental" costs needed for pre-construction activities. The distribution of costs between the tasks shown on Table B will change, but the total is not expected to exceed \$5 million in 2006 dollars.

The \$5 million (2006 dollars) must be inflated to the estimated year the funds are needed using an inflation rate of 4% per year. The studies are scheduled to occur between 2009 and 2017. Assuming the funds are needed on a fairly even distribution over the 8 year period, about half the funds are needed prior to 2013 and half after 2013. Inflating the entire \$5 million at 4% for 7 years to 2013, results in an adjusted cost of \$6,580,000. Therefore, the portion of this loan application requested for technical studies is

\$6,580,000. Two loan closings are estimated for the study costs, one in 2013 and the second in 2020, but these dates and number of closings could change. The land acquisition studies involve consultants to assist in the USFS land exchange, appraisals, and any other work necessary to acquire the USFS land.

The environmental studies involve investigations and evaluations of (1) impacts of facility construction within the reservoir basin and (2) impacts to the San Juan River habitat below the pumping plant diversion. An environmental impact statement (EIS) is expected to be required by the Corps of Engineers to obtain the 404 Permit. The EIS is a major effort requiring extensive public involvement. The field studies and evaluation of the river habitat necessary to prepare the EIS and permit applications will require considerable effort and cost.

The technical studies involve development of designs for the pumping plant, dam embankment, pipeline into the reservoir, and construction cost estimates. The design of the dam embankment requires extensive and expensive geotechnical studies; preliminary and final embankment design; and review, comment and approval by the Division of Water Resources. Prior to beginning final embankment design the determination of the reservoir size must be finalized based on then current growth projections and construction cost estimates. The inflow design flood is not expected to be a major consideration because the drainage basin is only about 2,100 acres resulting in a very small or non-existent, spillway if adequate freeboard is available to store the design flood.

The pumping plant is also a major design effort. High head, variable speed pumps will be necessary to convey water from the river into the reservoir. The design will include the diversion from the river, the needed pumps, the pumping plant structure, and the pipeline to the reservoir.

3. Schedule

The schedule shown in Figure A is generally based on acquiring the necessary land prior to beginning the technical studies. The majority of the private land is under contract for purchase. The schedule is based upon not beginning technical studies until there is reasonable assurance that use of the USFS land for the reservoir can be obtained either by Special Use Permit or Land Exchange. For this reason, technical studies are not scheduled to begin until 2010. If the land acquisition occurs sooner than 2010, the technical studies might begin sooner. If land acquisition is slower than predicted the technical studies may be delayed accordingly.

Technical studies and permitting are estimated to occur from 2010 until late 2017, about 7 years. For instance, similar technical studies for PAWSD's currently ongoing small enlargement of Stevens Reservoir (from 600 to 1,700 AF) required approximately 5 years; therefore, 7 years for a much larger reservoir is a reasonable assumption. The period from 2018 to 2019 will be used for financing, elections if necessary, bidding, contractor selection, and beginning construction.

A consultant team will be selected to conduct the technical studies once funds from this loan application are available, in early 2009. Request for Proposals (RFP) will be developed and issued soon after funds are available. The RFP(s) will identify the types of expertise needed and the scope of the studies. Based on the responses to the RFP, a consultant team will be selected to conduct the technical studies and be ready to begin work in 2010. The consultant team will simultaneously conduct the studies and have maximum cooperation and integration of results amongst team members.

J. FINANCIAL ANALYSIS

1. Loan Amount

The loan amount is estimated to be a maximum of:

Weber Property	\$9,800,000
Other Private Property	\$1,500,000
USFS Property	\$7,000,000
Pre-Construction Studies	<u>\$6,580,000</u>
Total Pre-Const. Cost	\$24,880,000
Loan Amount	\$22,372,000
PAWSD Amount	\$2,488,000

\$1 million of the PAWSD contribution for the Weber Property will be provided by the \$1 million SB179 grant obtained by the SJWCD, which grant will equal slightly more than the 10% of the portion of the CWCB Loan for that purpose.

The Districts are requesting a loan term of 30 years at the middle municipal rate (currently 3.5%). The amount for each sub-item under the total Project cost are estimates. The amount needed for each sub-item may change during the course of the Project development, but the total loan amount cannot be exceeded.

2. Revenue

The attached Schedule of Revenue and Expenditures (Schedule) Table C is based on the worksheet provided by the CWCB with modifications for this loan application.

The loan repayment will be provided from funds collected by PAWSD in the "Water Resource Fee Component" (WRF) of the Capital Investment Fee, which is currently \$7,000 per EU but is adjusted upward each year based on inflation. The WRF was established to collect adequate funds from new EU's connected to the PAWSD water system from 2006 through 2040. The amount is based on all of the new facilities that PAWSD is responsible for funding during that period including the Dry Gulch Reservoir Project, which is about half of the total capital investment required through 2040. The other half of the capital expenses are for treatment plant expansion and distribution facilities.

Funds from the WRF are available for repayment of this CWCB loan and are shown on the attached Schedule of Revenue and Expenditures, Table C. Table C shows the amount estimated to be collected with the \$7,000 WRF. Table C indicates there will be adequate funds collected by the WRF for repayment of the CWCB loan. Attachment 10 of the loan application shows the impact of the CWCB loan debt service in the overall PAWSD and SJWCD financial planning for all capital improvements; which also shows PAWSD and SJWCD has adequate financial resources for debt service.

SJWCD also plans to develop funding sources to assist in repayment of the CWCB loan and for future construction of the Project. These funding sources have not yet been fully developed and are not necessary for repayment of the CWCB loan; however, these funds are reflected in the financial analysis in Attachment 10. These funding sources include Impact Fee assessments from the Town of Pagosa Springs and an increase in mill levy. In the event, there are not sufficient WRF funds and SJWCD funds to repay the CWCB loan, PAWSD will commit to including a surcharge on water rates for existing EU's in combination with funds available from the WRF. A monthly surcharge of up to \$5-\$10 per EU could be necessary to repay the CWCB loan in the event of less than expected income from the WRF. No surcharge is included in the attached Schedule because the WRF is expected to be larger than necessary for debt repayment.

The column for Total Revenue (column 6) shows the anticipated income based on the current WRF, which will increase for inflation; therefore, the income presented is expected to be larger. The annual income is extrapolated through 2050 when the loans are repaid.

3. Expenditures

Expenditures shown on the Schedule are required to fund the "Loan Reserve Fund" and for debt service on the loans.

The Schedule is based on four separate loans closed at different times, under this Loan Application. The estimated year for each loan and the number of loans that will be made will be determined between the CWCB and Districts based on the progress of the pre-construction activities for the Project. For the projection included with this loan application, the four loans are assumed to close in: 2009 for the Weber Property, 2012 for the remaining private land and USFS land exchange, 2013 for the first half of the study cost, and 2020 for the second half of the study cost. Each loan is for a period of 30 years and all loans are repaid by 2050. There may actually be more or fewer loans within this application based on discussions with CWCB staff as funds are provided by the CWCB during the course of the Project development.

Column 16 of Table C shows the total debt service through payout. Column 17 shows the total annual expenditure by PAWSD for debt service, reserve fund, and 10% contribution which is included in row 30 of Attachment 10. Attachment 10 to this loan application is a thorough analysis of the integration of this CWCB loan into the overall PAWSD and SJWCD financial plan for development of all capital investment through 2020.

TABLE A				
35,000 AF DRY GULCH RESERVOIR AND PUMP STATION				
2006 LEVEL COST ESTIMATE				
<u>Item Description</u>	<u>Units</u>	<u>Quantity</u>	<u>Cost/Unit</u>	<u>Total Cost</u>
Dry Gulch Dam and Reservoir Cost				
Clearing and Grubbing	lump sum	1	\$400,000	\$400,000
Mobilization	lump sum	1	\$300,000	\$300,000
Earth Excavation and Compaction	cubic yards	2936100	\$11	\$32,297,000
Toe Drain	feet	1400	\$200	\$280,000
Rip Rap	cubic yards	28900	\$50	\$1,445,000
Spillway, 60" Overflow Pipe	feet	1500	\$1,200	\$1,800,000
42" Outlet Pipe	feet	900	\$1,000	\$900,000
Cut-off Collars	cubic yards	50	\$5,000	\$250,000
Intake Structure	lump sum	1	\$500,000	\$500,000
Stilling Basin	cubic yards	3700	\$180	\$666,000
Filter Sand	cubic yards	33200	\$40	\$1,328,000
27" Pipeline Park Ditch Siphon	feet	800	\$200	\$160,000
Contingencies			35.0%	\$14,114,000
Total Field Construction Cost				\$54,440,000
Engineering and Management During Construction				\$3,922,000
TOTAL ESTIMATED RESERVOIR COST				\$58,362,000
Dry Gulch Pump Cost				
River Diversion	lump sum	1	\$300,000	\$300,000
30" DIP Pipe, to Snowball TP	feet	8,000	\$210	\$1,680,000
42" Pipeline To Dry Gulch Reservoir	feet	3,000	\$400	\$1,200,000
Pump Station	lump sum	1	\$2,500,000	\$2,500,000
River Crossings	lump sum	1	\$50,000	\$50,000
Highway Crossings	feet	120	\$300	\$36,000
Air Release Stations	lump sum	3	\$10,000	\$30,000
Blow Off Valves	lump sum	2	\$10,000	\$20,000
Contingency			25.0%	\$1,454,000
Total Field Construction Cost				\$7,270,000
Engineering and Management During Construction				\$698,000
TOTAL ESTIMATED PUMP COST				\$7,968,000
TOTAL ESTIMATED CONSTRUCTION COST w/o CWCB LOAN COSTS				\$66,330,000

Dry Gulch Reservoir Project - Figure B

ID	Name	Duration	Start Date	Finish Date	Fixed Cost	Predecessor ID
3	Obtain Water Rights	10d	3/28/2007	4/10/2007	\$0.00	
6	Acquire Weber Prop	70d	3/21/2007	6/26/2007	\$0.00	
10	CWCB Loan	500d	6/27/2007	5/26/2009	\$20,000.00	3,6
13	Fund Private Land	230d	5/27/2009	4/13/2010	\$25,000.00	6,10
87	USFS Land Trade	770d	6/27/2007	6/6/2010	\$10,000.00	6
89	USFS Special Use Permit Process	1860d	6/27/2007	8/12/2014	\$90,000.00	6
92	Finance USFS Land Trade	300d	6/9/2010	8/2/2011	\$10,000.00	10,87
7	Develop RFP for Consultants	130d	5/27/2009	11/24/2009	\$10,000.00	3,6,10
16	Select Team - Staff/Consultants	195d	11/25/2009	8/24/2010	\$10,000.00	7
18	Identify & Assign Tasks	65d	8/25/2010	11/23/2010	\$50,000.00	16
20	Prelim Pump & Pipeline Design	1200d	11/24/2010	6/30/2015	\$400,000.00	10,18
103	Final Pump Design	450d	7/1/2015	3/21/2017	\$300,000.00	20,96
26	IDF Report & Approval	390d	11/24/2010	5/22/2012	\$50,000.00	10,18
28	Dam Geotech Plan	130d	11/24/2010	5/24/2011	\$50,000.00	10,18
82	Geotech Field Work	260d	5/25/2011	5/22/2012	\$750,000.00	29
41	Prelim Dam Design	520d	5/23/2012	5/20/2014	\$300,000.00	26,82
96	Finalize Reservoir Size	200d	5/21/2014	2/24/2015	\$100,000.00	41,36
100	Final Dam Design	250d	2/25/2015	2/9/2016	\$250,000.00	96
56	DWR Dam Design Approval	390d	2/10/2016	8/9/2017	\$80,000.00	100
23	Scope EIS	350d	11/24/2010	3/27/2012	\$40,000.00	10,18
32	Basin Envir Field Work	520d	3/28/2012	3/25/2014	\$400,000.00	23
36	River Envir Field Work	520d	3/28/2012	3/25/2014	\$900,000.00	23
34	EIS Public Involvement	500d	3/28/2012	2/25/2014	\$50,000.00	23
38	Prepare Draft EIS	390d	3/26/2014	9/22/2015	\$400,000.00	32,36
43	404 Permit Process	390d	9/23/2015	3/21/2017	\$200,000.00	34,38
46	USFS Permit Approval	260d	9/23/2015	9/20/2016	\$20,000.00	89,34,38
49	Other Envir Permits	280d	9/23/2015	9/20/2016	\$100,000.00	34,38
52	Complete Envir	130d	3/22/2017	9/19/2017	\$150,000.00	43,46,48
58	Cost Estimate	65d	9/20/2017	12/19/2017	\$25,000.00	13,82,103,56,52
62	Develop Financial Plan	-130d	12/20/2017	6/19/2018	\$50,000.00	58
64	Bond Election	260d	6/20/2018	6/18/2019	\$0.00	62
66	Bid Documents	65d	6/19/2019	9/17/2019	\$100,000.00	64
68	Bid Project	65d	9/18/2019	12/17/2019	\$10,000.00	66
70	Contract w/Contractor	65d	12/18/2019	3/17/2020	\$50,000.00	68
72	Obtain Funds	65d	12/18/2019	3/17/2020	\$0.00	68
74	Notice To Proceed	30d	3/18/2020	4/28/2020	\$0.00	70,72
112	Task	1d	3/21/2007	3/21/2007	\$0.00	
					\$5,000,000	

SCHEDULE OF REVENUE and EXPENDITURES - TABLE C

Year	Estim Future New EU's/yr (1)	Estim Future Total EU's (2)	Estim Future Income per EU (3)	Water Component Income (4)	Water Rate Surcharges (5)	Total Revenue (6)	Year (7)	Loan Closings (8)	PAWSD 10% Grant (9)	CWCB Loan Reserve Fund Annual (10)	CWCB Loan Accum. (11)	Payments Loan #1 (12)	Payments Loan #2 (13)	Payments Loan #3 (14)	Payments Loan #4 (15)	Total Loan Payments (16)	Total of PAWSD 10% Ready Fund, Debt Paymt (17)
2009	372	7809	\$2,604,000	\$0	\$0	\$2,604,000	2009	\$8,800,000	\$B 179 Grant	\$49,357	\$0	\$493,571				\$493,571	\$5,629,228
2010	390	8199	\$2,733,150	\$0	\$0	\$2,733,150	2010		\$0	\$49,357	\$98,714	\$493,571				\$493,571	\$5,629,228
2011	328	8527	\$2,295,846	\$0	\$0	\$2,295,846	2011	\$7,650,000	\$850,000	\$49,357	\$148,071	\$493,571				\$493,571	\$1,343,906
2012	341	8869	\$2,387,680	\$0	\$0	\$2,387,680	2012	\$2,961,000	\$329,000	\$92,264	\$240,335	\$493,571	\$429,070			\$922,641	\$1,197,589
2013	355	9223	\$2,483,187	\$0	\$0	\$2,483,187	2013			\$108,872	\$349,207	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2014	369	9592	\$2,582,515	\$0	\$0	\$2,582,515	2014			\$108,872	\$675,822	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2015	384	9976	\$2,685,815	\$0	\$0	\$2,685,815	2015			\$108,872	\$1,088,717	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2016	399	10375	\$2,793,248	\$0	\$0	\$2,793,248	2016			\$108,872	\$1,482,694	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2017	415	10790	\$2,904,978	\$0	\$0	\$2,904,978	2017			\$108,872	\$1,893,566	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2018	432	11222	\$3,021,177	\$0	\$0	\$3,021,177	2018			\$108,872	\$2,393,566	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2019	449	11670	\$3,142,024	\$0	\$0	\$3,142,024	2019	\$2,961,000	\$329,000	\$108,872	\$2,893,566	\$493,571	\$429,070	\$166,075		\$1,088,717	\$1,197,589
2020	467	12137	\$3,267,705	\$0	\$0	\$3,267,705	2020			\$893,566	\$3,787,141	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2021	485	12623	\$3,398,413	\$0	\$0	\$3,398,413	2021			\$893,566	\$4,680,707	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2022	505	13128	\$3,534,349	\$0	\$0	\$3,534,349	2022			\$893,566	\$5,574,273	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2023	525	13653	\$3,675,723	\$0	\$0	\$3,675,723	2023			\$893,566	\$6,467,839	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2024	546	14199	\$3,822,752	\$0	\$0	\$3,822,752	2024			\$893,566	\$7,361,405	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2025	568	14767	\$3,975,662	\$0	\$0	\$3,975,662	2025			\$893,566	\$8,254,971	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2026	443	15210	\$3,101,017	\$0	\$0	\$3,101,017	2026			\$893,566	\$9,148,537	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2027	456	15666	\$3,194,047	\$0	\$0	\$3,194,047	2027			\$893,566	\$10,042,103	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2028	470	16136	\$3,289,869	\$0	\$0	\$3,289,869	2028			\$893,566	\$10,935,669	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2029	484	16620	\$3,388,565	\$0	\$0	\$3,388,565	2029			\$893,566	\$11,829,235	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2030	499	17119	\$3,490,222	\$0	\$0	\$3,490,222	2030			\$893,566	\$12,722,801	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2031	514	17632	\$3,594,928	\$0	\$0	\$3,594,928	2031			\$893,566	\$13,616,367	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2032	529	18161	\$3,702,776	\$0	\$0	\$3,702,776	2032			\$893,566	\$14,510,933	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2033	545	18706	\$3,813,859	\$0	\$0	\$3,813,859	2033			\$893,566	\$15,405,500	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2034	561	19267	\$3,928,275	\$0	\$0	\$3,928,275	2034			\$893,566	\$16,300,066	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2035	578	19845	\$4,046,123	\$0	\$0	\$4,046,123	2035			\$893,566	\$17,194,633	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2036	595	20441	\$4,167,507	\$0	\$0	\$4,167,507	2036			\$893,566	\$18,089,200	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2037	613	21054	\$4,292,532	\$0	\$0	\$4,292,532	2037			\$893,566	\$18,983,766	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2038	632	21685	\$4,421,308	\$0	\$0	\$4,421,308	2038			\$893,566	\$19,878,333	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2039	651	22336	\$4,553,948	\$0	\$0	\$4,553,948	2039			\$893,566	\$20,772,900	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2040	670	23006	\$4,690,566	\$0	\$0	\$4,690,566	2040			\$893,566	\$21,667,466	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2041	690	23696	\$4,831,283	\$0	\$0	\$4,831,283	2041			\$893,566	\$22,562,033	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2042	711	24407	\$4,976,221	\$0	\$0	\$4,976,221	2042			\$893,566	\$23,456,600	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2043	732	25139	\$5,125,508	\$0	\$0	\$5,125,508	2043			\$893,566	\$24,351,166	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2044	503	25662	\$3,519,516	\$0	\$0	\$3,519,516	2044			\$893,566	\$25,245,733	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2045	513	26155	\$3,589,906	\$0	\$0	\$3,589,906	2045			\$893,566	\$26,140,300	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2046	523	26678	\$3,661,704	\$0	\$0	\$3,661,704	2046			\$893,566	\$27,034,866	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2047	534	27212	\$3,734,938	\$0	\$0	\$3,734,938	2047			\$893,566	\$27,929,433	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2048	544	27756	\$3,809,637	\$0	\$0	\$3,809,637	2048			\$893,566	\$28,824,000	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2049	555	28311	\$3,885,830	\$0	\$0	\$3,885,830	2049			\$893,566	\$29,718,566	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
2050	566	28877	\$3,963,546	\$0	\$0	\$3,963,546	2050			\$893,566	\$30,613,133	\$493,571	\$429,070	\$166,075	\$166,075	\$1,254,792	\$1,254,792
Totals			\$150,081,855	\$0	\$0	\$150,081,855		\$22,372,000	\$1,508,000	\$893,566		\$14,807,133	\$12,872,110	\$4,982,264	\$4,982,264	\$37,643,770	\$40,045,335

Note: The 10% PAWSD contribution for the Weber Property loan closing (first loan) will be provided by the \$1 million grant to SJWCD from SB179 funds.

(Refer to Attachment 10 Line 29 where the Total Expenses below are integrated into the PAWSD financial plan.)

Annual Revenue from WRF

(Refer to Attachment 10 Line 27 for Total PAWSD Estimated Revenue)

Year	Estim Future New EU's/yr (1)	Estim Future Total EU's (2)	Estim Future Income per EU (3)	Water Component Income (4)	Water Rate Surcharges (5)	Total Revenue (6)
2009	372	7809	\$2,604,000	\$0	\$0	\$2,604,000
2010	390	8199	\$2,733,150	\$0	\$0	\$2,733,150
2011	328	8527	\$2,295,846	\$0	\$0	\$2,295,846
2012	341	8869	\$2,387,680	\$0	\$0	\$2,387,680
2013	355	9223	\$2,483,187	\$0	\$0	\$2,483,187
2014	369	9592	\$2,582,515	\$0	\$0	\$2,582,515
2015	384	9976	\$2,685,815	\$0	\$0	\$2,685,815
2016	399	10375	\$2,793,248	\$0	\$0	\$2,793,248
2017	415	10790	\$2,904,978	\$0	\$0	\$2,904,978
2018	432	11222	\$3,021,177	\$0	\$0	\$3,021,177
2019	449	11670	\$3,142,024	\$0	\$0	\$3,142,024
2020	467	12137	\$3,267,705	\$0	\$0	\$3,267,705
2021	485	12623	\$3,398,413	\$0	\$0	\$3,398,413
2022	505	13128	\$3,534,349	\$0	\$0	\$3,534,349
2023	525	13653	\$3,675,723	\$0	\$0	\$3,675,723
2024	546	14199	\$3,822,752	\$0	\$0	\$3,822,752
2025	568	14767	\$3,975,662	\$0	\$0	\$3,975,662
2026	443	15210	\$3,101,017	\$0	\$0	\$3,101,017
2027	456	15666	\$3,194,047	\$0	\$0	\$3,194,047
2028	470	16136	\$3,289,869	\$0	\$0	\$3,289,869
2029	484	16620	\$3,388,565	\$0	\$0	\$3,388,565
2030	499	17119	\$3,490,222	\$0	\$0	\$3,490,222
2031	514	17632	\$3,594,928	\$0	\$0	\$3,594,928
2032	529	18161	\$3,702,776	\$0	\$0	\$3,702,776
2033	545	18706	\$3,813,859	\$0	\$0	\$3,813,859
2034	561	19267	\$3,928,275	\$0	\$0	\$3,928,275
2035	578	19845	\$4,046,123	\$0	\$0	\$4,046,123
2036	595	20441	\$4,167,507	\$0	\$0	\$4,167,507
2037	613	21054	\$4,292,532	\$0	\$0	\$4,292,532
2038	632	21685	\$4,421,308	\$0	\$0	\$4,421,308
2039	651	22336	\$4,553,948	\$0	\$0	\$4,553,948
2040	670	23006	\$4,690,566	\$0		