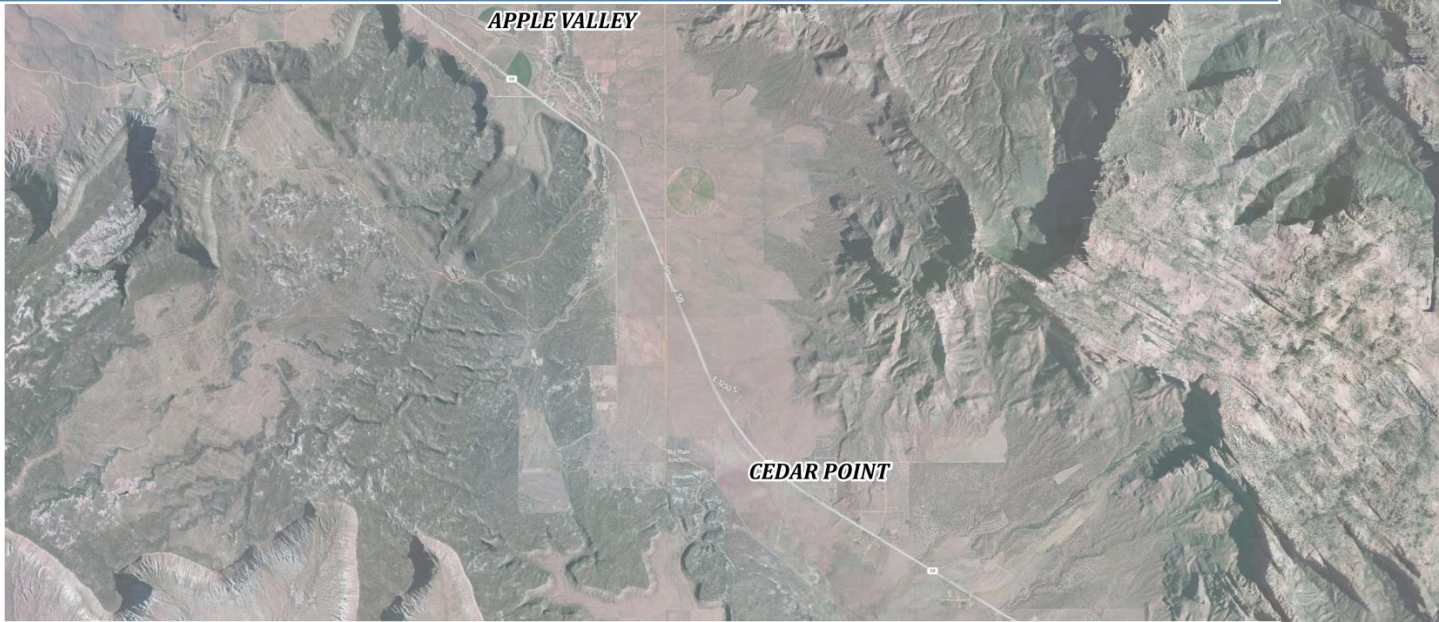


2012

# Big Plains Water & Sewer Special Service District



## Culinary Water Impact Fee Study



Ensign Engineering & Land Surveying  
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Final November 8, 2012

# 2012 CULINARY WATER

## IMPACT FEE STUDY

Prepared for the

### **BIG PLAINS WATER AND SEWER SPECIAL SERVICE DISTRICT**

Smithsonian Fire Department Building  
1777 North Meadowlark Drive  
Apple Valley, Utah  
84737

November 2012

Prepared by

### **Ensign Engineering and Land Surveying**

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**\* \* \* ENGINEER'S CERTIFICATION \* \* \***

**BIG PLAINS WATER AND SEWER  
SPECIAL SERVICE DISTRICT**

**CULINARY WATER SYSTEM IMPACT FEE STUDY**

November 1, 2012

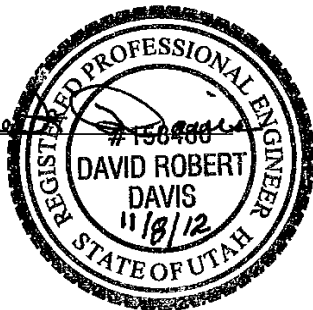
Prepared By:  
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I certify that, to the best of my ability, knowledge and understanding, the attached culinary water impact fee study and analysis:

- 1) Includes only the costs for qualifying public facilities that are:
  - a. Allowed under the Utah State Impact Fee Act, and
  - b. Are projected to be incurred or encumbered within six years after impact fees are paid;
- 2) Contains no cost for operation and maintenance of public facilities;
- 3) Offsets costs with grants or other alternative sources of payments;
- 4) Does not include costs for qualifying public facilities that will raise the level of service for the facilities, through impact fees, above the level of service that is by existing residents; and
- 5) Complies in all relevant aspects with the Utah State Impact Fee Act.

By: \_\_\_\_\_

D. Robert Davis, P.E.  
Project Manager  
Ensign Engineering



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## 1.0 Executive Summary

This report is an Impact Fee Study for the Big Plains Water and Sewer Special Service District's culinary water system. It analyzes the water system to determine the maximum impact fee that can be charged based upon a reasonable plan. It has been conducted following the requirements of the Utah State Law as identified in Chapter 36a- Impact Fee Act of Title 11 of the Utah State Code. Big Plains is a newly formed water and sewer special service district as a political subdivision of the state of Utah.

The District was formed to acquire the assets of and combine the operations of the existing Cedar Point and Apple Valley Private Water Systems. These two systems are in the proximity of the Town of Apple Valley located about 12 miles East of Hurricane and about 23 miles Northeast of St. George along state highway 59 in Washington County, Utah.

The Big Plains District has yet to collect any impact fees as the Town of Apple Valley and the private water companies have worked with new construction until the District is formed and fully operational. However, it is anticipated that the Big Plains District will be fully responsible for the culinary water systems within the District boundaries once the transition of assets from the private water companies is complete.

It is anticipated that the Big Plains District Board of Directors will utilize this Impact Fee Study to determine an appropriate Culinary Water Impact Fee and will adopt a resolution which will allow culinary water impact fees to be assessed on new developments within the District.

The concept of impact fees charged to new development arises from a fairness of equity issue. Existing residents presumably have already or are currently paying for an existing system of assets. When new development is constructed it often utilizes all or parts of the existing system assets or requires additional facilities in new locations to accommodate their growth. The new development then should have responsibility to pay for these assets so as not to place additional financial responsibilities on the existing residents. This report and Utah State Law outline the process by which these costs are equitably distributed between existing and new residents.

An understanding of the overall makeup of the culinary water system and its operation is important to an equitable distribution of costs. A culinary water system contains five key components:

- 1) Water Source of Supply
- 2) Water Rights
- 3) Reservoir Storage
- 4) Transmission and Distribution Pipelines
- 5) Water Treatment Facilities

The water source of supply may be from rivers, springs, purchased from another water supplier or, in the case of the Big Plains District, underground water. This includes the wells, pumps, motors, controls and other equipment necessary to obtain and supply water. The water rights are the licensed, legal right to use water from a specific source at a specific location. These rights are regulated by the State and are bought and sold between private or public owners. Water storage reservoirs are above ground or buried to hold a reasonable volume of water until it is ready to be used. They assure that water is available for fire protection, when necessary, and especially during summer seasons of high use when wells may not be able to supply sufficient water to meet the demands. Transmission lines pipe water from various sources

## Big Plains Water & Sewer SSD Culinary Water Impact Fee Study

to storage reservoirs or to general areas of use. Distribution pipelines deliver water to individual residential or business users. Water treatment facilities are used to make sure the quality of water meets State regulations. In the case of underground water supplied directly to the Big Plains District, no water treatment facilities are currently required.

The Culinary Water Impact Fee is calculated according to “Table 5- Culinary Water Impact Fee Cost per Equivalent Residential Connection“ in Section 4.0 – System Analysis of this report. The table calculates the culinary water impact fee by dividing the costs attributed to growth by the number of users and anticipated growth that will occur over a period of time. This growth is defined as the number of Equivalent Residential Connections (ERC) which is explained in “Section 1.5 – Equivalent Residential Connections”. The value of the existing and proposed culinary water system assets are defined in “Section 3.3 – District Asset Values”. The table then shows the percent of those existing or proposed assets which will be attributed to future growth. The costs attributed to growth are divided by the number of projected new growth users to determine a cost per new user. This is then the culinary water impact fee that should be charged to each new user.

The number of future growth ERC’s is determined by subtracting the current number of ERC’s from the 30 year projected number of ERC’s. The projected growth is 240 Equivalent Residential Connections as shown in Table 5 in the column labeled “New ERC’s Served”.

This means that the maximum culinary water impact fee that can be charged according to this study for each new growth Equivalent Residential Connection is \$13,743. The assessed amount will be determined by the Big Plains Board of Directors.

## ***1.1 Introduction***

This report is a Capital Facility Plan and Culinary Water Impact Fee Study prepared by Ensign Engineering for the newly formed Big Plains Water and Sewer Special Service District (BPWSSSD). The District was formed to acquire the assets of and combine the operations of the existing Cedar Point and Apple Valley Private Water Systems. These two systems are in the proximity of the Town of Apple Valley located about 12 miles East of Hurricane and about 23 miles Northeast of St. George along state highway 59 in Washington County, Utah.

## ***1.2 General Information***

Dating back to even before the incorporation of the Town of Apple Valley in 2004, citizens have expressed interest in converting the multiple private water companies in the area to public ownership. However, significant barriers have thus far prevented the successful completion of these transactions.

For reasons such as compliance with State Drinking Water Regulations, professional system operation, consistent maintenance and billing operations, access to funding alternatives, and long term sustainability, the critical stakeholders are committed to consolidation and eventual transfer of the private system to public ownership at this time.

Previous studies completed for the District by Ensign Engineering and others include:

- 1) District Environmental Assessment – 2011
- 2) Preliminary Engineering Report – 2011
- 3) Water System Computer Model and Analysis – 2011
- 4) System Optimization Study – 2012
- 5) Groundwater Sustainable Yield Report – 2012

The Town of Apple Valley has created the Big Plains Water and Sewer Special Service District (BPWSSSD). The creation of the BPWSSSD opens up additional options to stakeholders to partner with Federal and State agencies for funding support.

A cost analysis for purchasing the assets of the private water systems and constructing system improvements has been prepared. Funding applications and supporting documents have been prepared and submitted to the Utah State Division of Drinking Water and to the United States Department of Agriculture Rural Development Programs where they are currently under consideration.

When approved the funding would allow the District to purchase the private water system assets including wells, water rights, transmission and distribution piping systems, fire hydrants and storage reservoirs. Additionally, upgrades and improvements to these facilities would be constructed to create a compliant, sustainable culinary water system.



### 1.3 State Impact Fee Study Requirements

Utah State Law requires that impact fees on new development be assessed based upon a fair and reasonable evaluation of the anticipated costs and impacts created by the development. Requirements are stated in “Title 11, Chapter 36a- *Impact Fees Act*” of the “*Utah Code Annotated (1953 as amended)*.”

The law does state that local political subdivisions, such as the District, which serve populations of less than 5000 need not comply with the capital facilities plan requirements of the “Impact Fee Act”, but shall ensure that the impact fees required by them be based on reasonable plans. Where the population served by the District in the recent 2010 Federal Census was only 701, which is less than the 5000 minimum population required, the District is governed by this provision and does not have to prepare a formal capital facilities plan.

### 1.4 Population Projection

An important part of preparing an Impact Fee Analysis is understanding the population, service connections and growth rate of the study area. This information will allow the projections of demands that will be placed upon the water system in the future.

It is important to note that these are only projections and estimates. However, the need for additional water system facilities is only necessary when the actual population exists and not necessarily when it is projected to exist. Therefore, planning for future facilities can take place based upon population projections, but the need to construct and have facilities available only takes place when the actual population grows to the projected levels. To some extent, this makes the growth rate somewhat unimportant since new facilities will only be added when the demand for them, as evidenced by actual population growth, actually occurs. A 30 year projection from 2010 thru 2040 is shown in “Table 1- Population Projections” below.

**TABLE 1  
 POPULATION PROJECTIONS**

YEAR	APPLE VALLEY			CEDAR POINT			TOTAL		
	POPULATION	CONNECTIONS	GROWTH RATE*	POPULATION	CONNECTIONS	GROWTH RATE*	POPULATION	CONNECTIONS	GROWTH RATE
2010	701	174	5	165	41	3	866	215	8
2020	902	224	5	286	71	3	1,188	295	8
2030	1,104	274	5	407	101	3	1,511	375	8
2040	1,305	324	5	528	131	3	1,833	455	8

Number of people per connection = 4.03

\* Number of new connections per year

### ***1.5 Equivalent Residential Connections***

The concept of Equivalent Residential Connections (ERC's) can be used to evaluate the capacity of a water system. An equivalent residential connection, or ERC, represents the amount of culinary water used by a typical residential household.

It allows uniformity in comparing a variety of community facilities to state water requirements. It also provides a method of comparing the water use of commercial, industrial, office, apartment and types of water users on an equivalence basis. By assigning an ERC to a water user, such as an ERC of 6 to a convenience store or 12 to a church building, comparisons and projections can be made for all community water users. This can be applied to existing, as well as future, users. This way the impact of all water users of the system can be evaluated and compared in an “apples to apples” comparison.

## **2.0 Existing Culinary Water System**

### ***2.1 Background Information***

There are two existing private water systems serving the area. They are the Apple Valley Water Company and the Cedar Point Water Company. The two existing private water systems have been supplying culinary water to residents since 1984. In both cases, groundwater is pumped into a transmission and distribution pipe system as well as to storage reservoirs before it is delivered to the almost exclusively residential water users. The existing water systems have been evaluated and modeled in previous studies so that their existing assets and valuations can be determined. This was necessary so that funding could be secured to acquire these private systems for the new Big Plains District.

### ***2.2 Existing System Analysis***

The two culinary water systems will be evaluated to determine the future needs of the system. The cost of these future needs is expected to be borne by the growth of future residents. While the existing residents will enjoy the existing system, which they are paying for, at its current level of service without being required to pay for the new infrastructure required by growth. If the existing level of service is increased, the existing residents would be expected to share in the cost of such improvements.

#### ***2.2.1 Apple Valley Water Source***

Apple Valley Water Company's existing water delivery system uses two groundwater wells to deliver quality culinary water to all of its 174 connections<sup>1</sup>. The existing system functions and serves all connections with pressures in accordance with state requirements. Computer modeling has determined that state fire flow requirements are not met within the current service area.

The state water source requirement requires that a water system be able to produce the required amount of water. This required amount of water is based on indoor and outdoor use. Currently the Apple Valley Water Company exceeds the state water source requirement by 721 gallons per minute (gpm). The state requires 154 gpm be produced to the system and Apple Valley Water Company is producing 875 gpm. The existing Apple Valley water sources are summarized in “Table 2 Big Plains 2012 Existing Facilities” below.

---

<sup>1</sup> Estimated from existing homes counted on an aerial image.

### *2.2.2 Cedar Point Water Source*

Cedar Point Water Company's existing water delivery system uses three groundwater wells to deliver water to all of its 41 connections<sup>2</sup>. The existing system functions and serves all connections in accordance with state requirements, including: peak day demand, peak instantaneous demand, and fire flow.

Cedar Point Water Company's active sources produce 280 gpm and the existing demand is 37 gpm. No additional sources need to be developed in order to meet this requirement. The System Analysis section discusses the procedure for calculating source requirements. The existing Cedar Point water sources are summarized in "Table 2 - Big Plains 2012 Existing Facilities" below

---

<sup>2</sup> Provided from current water operator.

**TABLE 2  
 BIG PLAINS 2012 EXISTING FACILITIES**

Description		Capacity
Wells		Gallons per minute
	Apple Valley Well #1	475
	Apple Valley Well #2	400
	<b>Total Apple Valley Wells</b>	<b>875</b>
	Cedar Point Well #1	74
	Cedar Point Well #3	120
	Cedar Point Well #4	86
	<b>Total Cedar Point Wells</b>	<b>280</b>
	<b>Total All Wells</b>	<b>1155</b>
Reservoir Storage		Gallons
	Apple Valley Reservoir ( North)	230,000
	Apple Valley Reservoir ( South)	230,000
	<b>Total Apple Valley Reservoir Storage</b>	<b>460,000</b>
	Cedar Point Reservoir	1,000,000
	<b>Total Cedar Point Reservoir Storage</b>	<b>1,000,000</b>
	<b>Total All Reservoir Storage</b>	<b>1,460,000</b>

*2.2.3 Apple Valley Water Storage Reservoirs*

Apple Valley currently has 460,000 gallons of storage reservoir capacity in two side by side reservoirs which are designated the “North” reservoir and the “South” reservoir.(See Table below). They are two above ground painted steel tanks located north of the center portion of Apple Valley on North Golden Delicious Road. Both are at elevation 4842. The total existing reservoir storage required is 290,000 gallons of storage reservoir capacity. Therefore, they currently exceed required storage by 170,000 gallons. This excess capacity can be used for future growth. The existing Apple Valley water storage reservoirs are summarized in “Table 2 – Big Plains 2012 Existing Facilities” above.

#### *2.2.4 Cedar Point Water Storage Reservoir*

Cedar Point currently has 1,000,000 gallons of storage reservoir capacity in a single reservoir. The reservoir is located at elevation 5050. The total existing reservoir storage required is 210,000 gallons of storage. Therefore, they currently exceed required storage by 790,000 gallons. This capacity can be used for future growth. The existing Cedar Point water storage reservoirs are summarized in “Table 2 – Big Plains 2012 Existing Facilities” above.

#### *2.2.5 Apple Valley Water Distribution System*

Figure 1 – Apple Valley Water Company Existing System shows the existing distribution systems for Apple Valley Water Company.

Apple Valley Water Company’s water system consists of approximately 47,500 feet of six inch water line and 1,335 feet of two inch water line. The two tanks providing storage for the system are welded steel and are in good condition. The two wells providing water to the system provide adequate flows and pressure to supply water but the transmission and distribution lines for this water system are undersized and constrain the system from providing the necessary fire flow.

#### *2.2.6 Cedar Point Water Distribution System*

Figure 2 – Cedar Point Water Company Existing System shows the existing distribution systems for Cedar Point Water Company.

Cedar Point Water Company’s water system consists of approximately 13,540 feet of six inch water lines for transmission from the wells to the tank, 14,195 feet of eight inch water line, 10,385 feet of ten inch water line, and 635 feet of twelve inch water line. The transmission and distribution pipelines are newer pipes and are sufficiently sized to provide the required pressures and fire flows for the subdivision.

#### *2.2.7 Apple Valley Water Rights*

In accordance with Section R309-510 of the Utah State Administrative Code for Public Drinking Water Systems, and based upon 800 gallons per day per ERC, the indoor water right requirement is 146,600 gallons per year per ERC or about 0.45 Acre-Feet per year per ERC. The outside water right requirement for the Apple Valley area is 3.39 acre-feet per year per irrigated acre, including a 70 percent efficiency for sprinkler irrigation.

Apple Valley Water Company currently owns 734.02 acre-feet of water rights. The current required water right for Apple Valley Water Company is 112.73 acre-feet. This leaves a surplus of 619.29 acre-feet.

Future water rights demand for the year 2040 would be 181.72 acre-feet. This still would show a surplus of 552.30 acre-feet. Based upon the average yearly demand requirements, Apple Valley would have a substantial surplus of water rights both now and in the future.

A summary of the existing water rights owned by Apple Valley is shown in” TABLE 3 – WATER RIGHTS – Apple Valley Water Company”.

Figure 1- Apple Valley Water Company Existing System

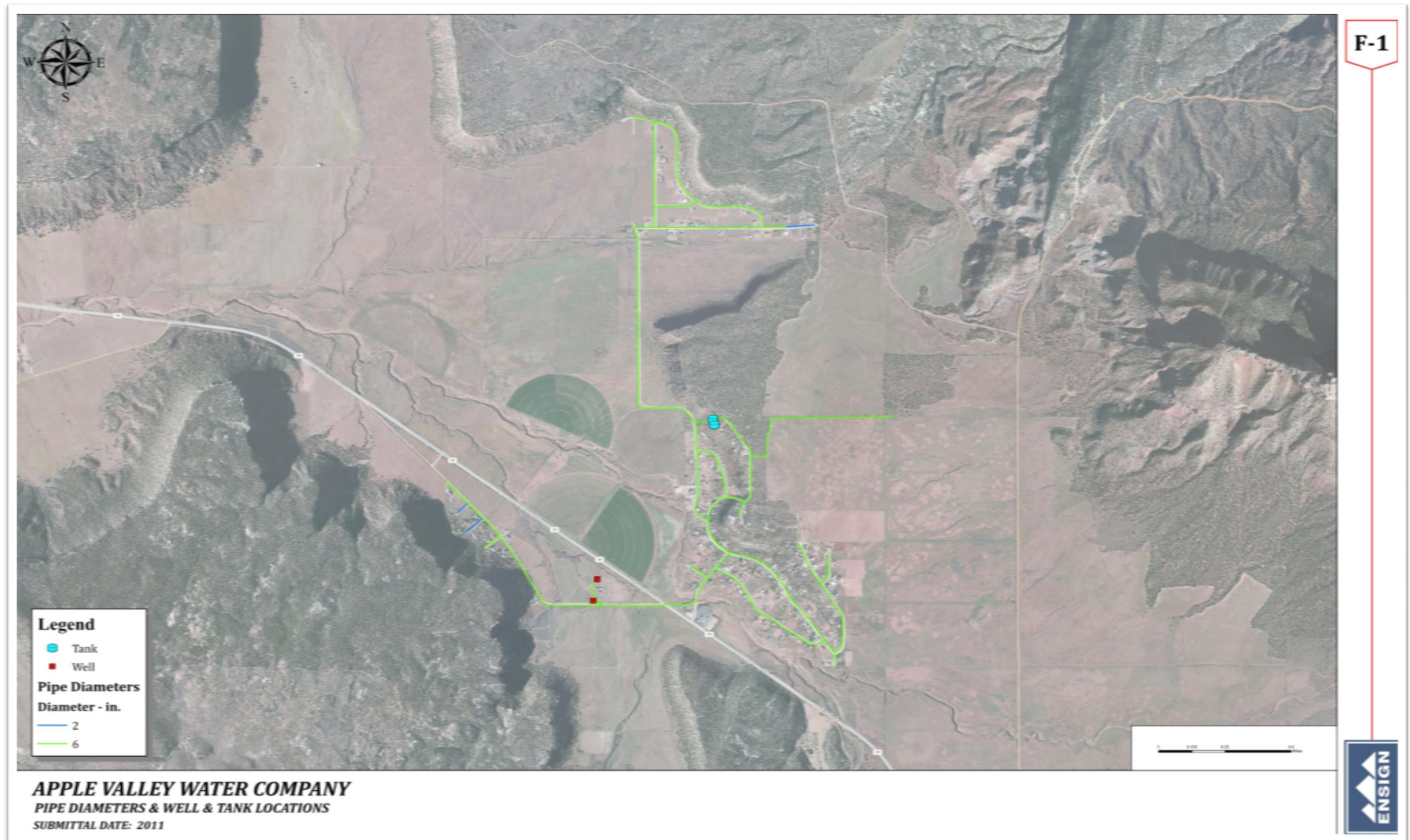
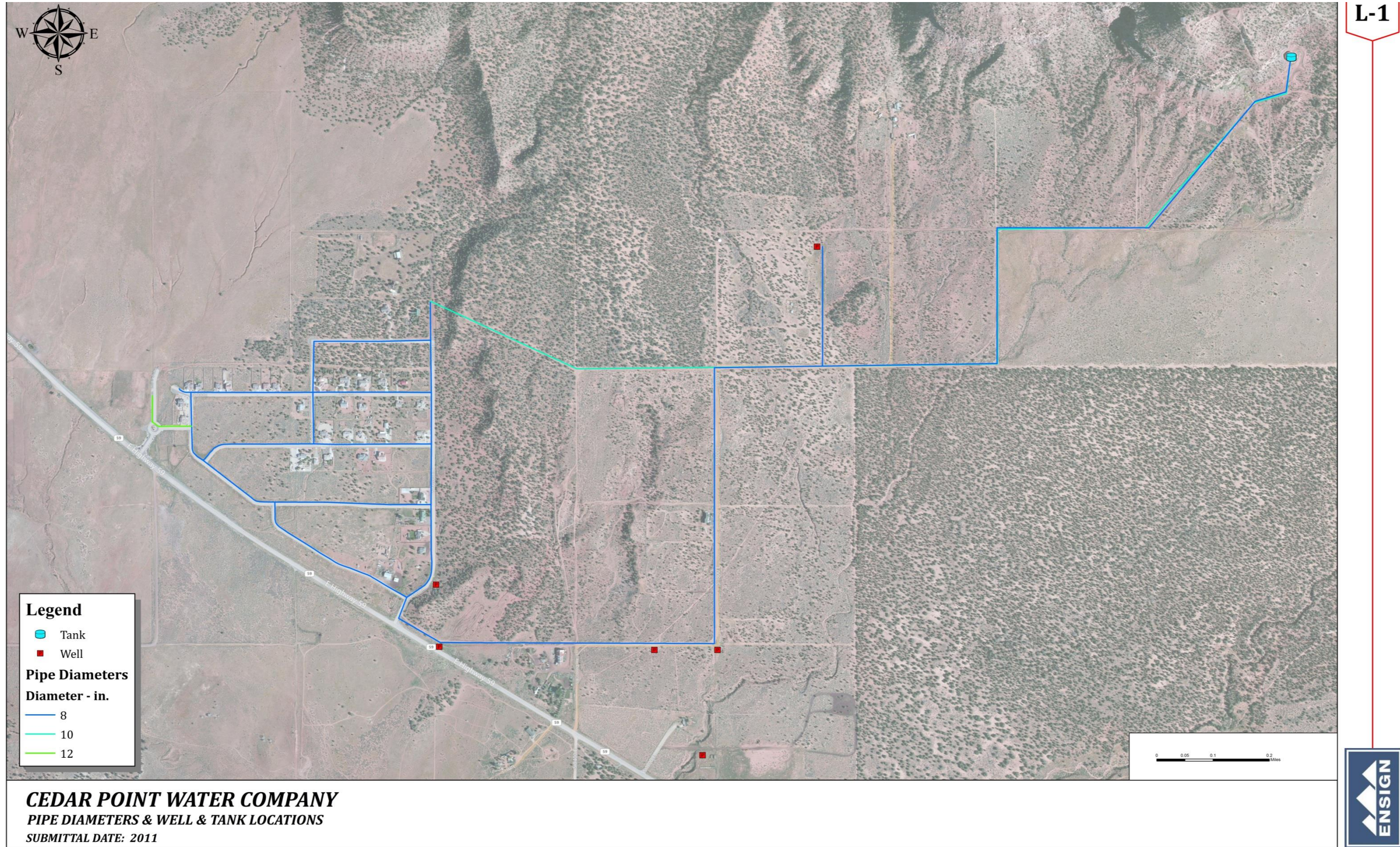


Figure 2 – Cedar Point Water Company Existing System



**TABLE 3 - WATER RIGHTS**  
**Apple Valley Water Company**

Number	Priority	Source	Flow	
			cfs	Ac-Ft
81-1799	1970	Well		1
81-2740	1969	Well		2
81-3106	1994	Well	0.137	52.02
81-3169	1967	Well	0.37	202.5
81-3200	1970	Well	0.37	62.5
81-4014	1969	Well		155
81-4599	1974	Well		259
<b>Total</b>				<b>734.02</b>

*2.2.8 Cedar Point Water Rights*

Cedar Point Water Company currently owns 362.95 acre-feet of water rights. The required water right for Cedar Point Water Company is 25.26 acre-feet. This leaves a surplus of 337.69 acre-feet.

Future water rights demand for the year 2040 would be 59.14 acre-feet. This still would show a surplus of 303.81 acre-feet. Based upon the average yearly demand requirements, Cedar Point would have a substantial surplus of water rights both now and in the future.

A summary of the existing water rights owned by Cedar Point is shown in “TABLE 4 – WATER RIGHTS – Cedar Point Water Company”.

**TABLE 4 - WATER RIGHTS**  
**Cedar Point Water Company**

Number	Priority	Source	Flow	
			cfs	Ac-Ft
81-3433	1974	Well		50
81-3430	1974	Well		16
81-3011	1974	Well		98.95
81-4600	1974	Well		198
<b>Total</b>				<b>362.95</b>



### **3.0 Capital Facilities Plan**

#### ***3.1 Overview***

Although State Law does not require Big Plains Water and Sewer Special Service District to create a Capital Facilities Plan because their population does not exceed 5,000, nonetheless a discussion of the District's assets and facilities growth plan is in order.

Because the District is newly created and has or is acquiring the assets of two existing private water companies from the Apple Valley and Cedar Point communities, they have started with no employees, no assets, no cash and are moving forward to create a viable Special Service District. Funding from State and Federal agencies has been made available to purchase the assets of the existing private water companies.

#### ***3.2 District Assets***

These existing assets of the privately held water companies were reviewed in depth in previous sections of this report. However they generally are classified in the following areas:

- 1) Water Source
- 2) Water Storage Reservoirs
- 3) Water Distribution Systems
- 4) Water Rights

All of these assets have or will become assets of the new Big Plains Water and Sewer Special Service District as they are purchased from private owners with funding provided through State and Federal funding agencies. They include groundwater wells with pumps, motors and electrical controls, water storage reservoirs, transmission and distribution piping, valves, fire hydrants, residential and commercial service connections, water meters along with existing roadway easements and underlying real estate and water rights.

In addition to these hard assets that will transfer from private ownership to the Water District, it is anticipated that portions of these facilities will be rebuilt, replaced or added upon with the funding that is being provided. It is anticipated that a new 500,000 gallon water storage reservoir will be constructed along with an associated transmission line. Some of the Apple Valley water distribution piping will be replaced and upsized to meet minimum Utah State regulations and fire flow requirements.

Funding will be provided for additional services required to facilitate the transfer and rebuilding of these assets for the Water District such as legal, engineering and surveying services. In addition, a contingency amount has been identified, but is as yet unallocated to specific assets.

#### ***3.3 District Asset Values***

General costs and values of the existing and proposed Water District assets have been established during the evaluation of the private water systems that will be acquired by the District. In addition, costs of the proposed construction or reconstruction of storage reservoirs and pipelines have been evaluated. The following shows the anticipated values of the Water District assets:

Big Plains Water & Sewer SSD  
Culinary Water Impact Fee Study

1) Water Source	\$ 260,000.
2) Water Storage Reservoirs	\$1,522,500.
3) Water Distribution Systems	\$2,169,720.
4) Water Rights	\$ 960,000.
5) Legal and Administrative Services	\$ 40,000.
6) Engineering Services	\$ 420,000.
7) Contingency and Misc. Services	<u>\$ 977,780.</u>
Total =	<b>\$6,350,000.</b>

Contingency and miscellaneous services are funded and anticipated needs, but are yet to be allocated to specific assets due to uncertainties in some water rights and other issues.

When loan interest costs are added to these asset values, the total costs for projects in the impact fee period is \$7,801,585.

With Loan Interest Cost Total = **\$7,801,585.**

“Table 5 – Culinary Water Impact Fee Cost per Equivalent Residential Connection” has been prepared to evaluate these assets and determine costs that should be allocated to future growth.

### ***3.4 Suitability of District Assets in a Public Water System***

As part of the funding and due diligence process for the acquisition of the private water systems, a careful evaluation of the various components of the existing water systems was conducted. A computer model was set up to simulate the operations of the water systems and various scenarios were evaluated to test for compliance with state regulations. The results of those evaluations are published in other reports such as the “Preliminary Engineering Report” and the “Water System Computer Model and Analysis” both published in 2011.

Generally, the existing water systems were in compliance with State regulations, however, some deficiencies were identified. For example, the pipe sizing in portions of the Apple Valley water system was too small to allow sufficient fire flow volumes to pass through the system as required by state law. Part of the funding to be provided will correct identified deficiencies and bring the systems into full compliance with Utah State regulations.

In addition, any future additions or expansions of the water system or any reconstruction of portions of the existing water system or its components would be designed and constructed to meet the then current state standards. Some reconstruction and new facilities are anticipated as part of the District start up process and those projects are included in this analysis. These additions and replacements would ensure a culinary water system meeting the communities needs and would be in full compliance with state regulations.

### ***3.5 Timeframe***

The planning timeframe for the Impact Fee Study is a 30 year period between 2010 and 2040. This is a sufficiently long period to anticipate growth of the system without extending projections beyond the reasonable ability to forecast. It allows the use of recent 2010 census records and does not exceed the

TABLE 5  
CULINARY WATER IMPACT FEE COST PER EQUIVALENT RESIDENTIAL CONNECTION

DESCRIPTION		TOTAL COSTS FOR PROJECTS IN IMPACT FEE PERIOD	% TO GROWTH	COSTS ATTRIBUTABLE TO GROWTH	NEW ERC'S SERVED	COST PER NEW ERC	% OF TOTAL IMPACT FEE
A	SOURCE OF WATER - Capital Project Costs						
A-1	5 Existing Groundwater Wells	\$ 260,000	83.46%	\$ 217,004	240	\$ 904.18	6.58%
B	WATER RIGHTS - Capital Project Costs						
B-1	Existing Water Rights Total (1,096.97)	\$ 462,124	42.71%	\$ 197,371	240	\$ 822.38	5.98%
B-2	Water Rights To Bank(856.11)	\$ 497,876					
C	RESERVOIR STORAGE - Capital Project Costs						
C-1	(3) Existing + (1) New Water Storage Reservoir	\$ 1,522,500	61.73%	\$ 939,839	240	\$ 3,916.00	28.49%
D	DISTRIBUTION SYSTEM - Capital Project Costs						
D-1	Apple Valley - 10% / Cedar Point - 30%	\$ 2,169,720	20.29%	\$ 440,236	240	\$ 1,834.32	13.35%
<b>TOTAL CAPITAL PROJECT COSTS</b>		<b>\$ 4,912,220</b>	<b>52.05%</b>	<b>\$ 1,794,450</b>	<b>240</b>	<b>\$ 7,476.88</b>	<b>54.41%</b>
E	OUTSTANDING LOANS						
E-1	Utah Drinking Water Board Loan / 0% - 30 yr.	[\$2,223,000]					
E-2	Interest Expense (30 years)	\$ -					
E-3	USDA Rural Dev. Loan / 3.75% - 40 yr.	[\$1,746,250]					
E-4	Interest Expense (30 years)	\$ 1,451,585	52.05%	\$ 755,523	240	\$ 3,148.01	22.91%
<b>TOTAL INTEREST COSTS</b>		<b>\$ 1,451,585</b>	<b>52.05%</b>	<b>\$ 755,523</b>	<b>240</b>	<b>\$ 3,148.01</b>	<b>22.91%</b>
F	ADDITIONAL SERVICES						
F-1	Legal Services	\$ 40,000	52.05%	\$ 20,819	240	\$ 86.75	0.63%
F-2	Engineering Services	\$ 420,000	52.05%	\$ 218,602	240	\$ 910.84	6.63%
F-3	Contingency & Miscellaneous Services	\$ 977,780	52.05%	\$ 508,917	240	\$ 2,120.49	15.43%
<b>TOTAL ADDITIONAL SERVICES COSTS</b>		<b>\$ 1,437,780</b>	<b>52.05%</b>	<b>\$ 748,338</b>	<b>240</b>	<b>\$ 3,118.08</b>	<b>22.69%</b>
<b>TOTAL COSTS</b>		<b>\$ 7,801,585</b>		<b>\$ 3,298,312</b>		<b>\$ 13,742.97</b>	<b>100.00%</b>

Total Culinary Water Impact Fee Cost per New ERC =

**\$ 13,743**

normal 30 to 50 years life of system assets such as well equipment, underground pipelines and storage reservoirs.

State law requires that all impact fees collected be expended within 6 years, with some minor exceptions, on projects that have been planned and constructed or are under construction or will be constructed within that timeframe. The projects and costs shown in this study are all anticipated to be built and paid for within the 6 years required by the impact fee regulations. It is further anticipated that additional projects, yet to be identified will be planned and constructed within the 30 year planning period. Development locations and timing will determine those projects. Future updates to the Impact Fee Study will identify and account for those projects.

## **4.0 System Analysis**

The following system analysis will evaluate existing and proposed culinary water system components to determine to what extent they are being used by the existing system users and what, if any, of their system capacity may be available to be used by additional users as future growth. The percentages of various components will be applied to the value of each asset to determine the cost per new Equivalent Residential Connection (ERC) in a calculation spreadsheet which will help to determine the Culinary Water Impact Fee that could be assessed to new connections that are added to the existing system.

### ***4.1 Source of Water***

The Apple Valley Water System has a water source capable of producing 875 gpm. Existing residents only require 154 gpm leaving 721 gpm available for future growth.

$$875 \text{ gpm} - 154 \text{ gpm} = 721 \text{ gpm}$$

The Cedar Point Water System has a water source capable of producing 280 gpm. Existing residents only require 37 gpm leaving 243 gpm available for future growth.

$$280 \text{ gpm} - 37 \text{ gpm} = 243 \text{ gpm}$$

The total system water source capacity for both systems is 1155 gpm.

$$875 \text{ gpm} + 280 \text{ gpm} = 1155 \text{ gpm.}$$

The total system water source capacity available for future growth is 964 gpm.

$$721 \text{ gpm} + 243 \text{ gpm} = 964 \text{ gpm.}$$

The percentage of water source capacity available to future growth is represented by the ratio of that capacity to the total system water source capacity. That percentage is 83.46%.

$$964 \text{ gpm} / 1155 \text{ gpm} = 83.46\%$$

### ***4.2 Water Rights***

The total water rights available from both private water companies and that anticipated to be acquired by the District is 1,096.97 acre-feet.

The total water rights required by the state to be available for the Apple Valley system is 112.73 acre-feet. The total water rights required by the state to be available for the Cedar Point system is 25.26 acre-feet. This is a total required for existing use by both systems of 137.99 acre-feet.

$$112.73 \text{ acre-feet} + 25.26 \text{ acre-feet} = 137.99 \text{ acre-feet}$$

The total water right required by the state to be available for the Apple Valley system in 2040 is 181.72 acre-feet. The total water right required by the state to be available for the Cedar Point system in 2040 is 59.14 acre-feet. This is a total required in 2040 for both systems of 240.86 acre-feet.

$$181.72 \text{ acre-feet} + 59.14 \text{ acre-feet} = 240.86 \text{ acre-feet}$$

The total water rights available of 1,096.97 acre-feet less that required for use by existing residents, 137.99 acre-feet, leaves a balance available for future growth of 958.98 acre-feet.

$$1,096.97 \text{ acre-feet} - 137.99 \text{ acre-feet} = 958.98 \text{ acre-feet}$$

The total water rights available of 1,096.97 acre-feet less that required for use through the year 2040, 240.86 acre-feet, leaves a balance available of 856.11 acre-feet that will be banked and held for use after the year 2040.

$$1,096.97 \text{ acre-feet} - 240.86 \text{ acre-feet} = 856.11 \text{ acre-feet}$$

However, the future growth anticipated during the 30 year planning period outlined in this study is 240 Equivalent Residential Connections. The existing residents represent 215 Equivalent Residential Connections for a total of 455 ERC's in the year 2040. This total of 455 ERC's will require a total of 240.86 acre-feet in water rights.

The difference between the 240.86 acre-feet of water rights that is required for 2040 and the 137.99 acre-feet of water rights required for the 2010 represents the water rights that will be used for growth during the 30 year study period. That number is 102.87 acre-feet.

$$240.86 \text{ acre-feet} - 137.99 \text{ acre-feet} = 102.87 \text{ acre-feet}$$

The percentage of water rights available to future growth is represented by the ratio of the water rights used for growth to the total water rights used in 2040. That percentage is 42.71%.

$$102.87 \text{ acre-feet} / 240.86 \text{ acre-feet} = 42.71\%$$

### ***4.3 Reservoir Storage***

The Apple Valley Water System has two existing water storage reservoirs capable of storing a total of 460,000 gallons. Existing residents only require 290,000 gallons leaving 170,000 gallons available for future growth.

$$460,000 \text{ gallons} - 290,000 \text{ gallons} = 170,000 \text{ gallons}$$

Big Plains Water & Sewer SSD  
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The Cedar Point Water System has one existing water storage reservoir capable of storing a total of 1,000,000 gallons. Existing residents only require 210,000 gallons leaving 790,000 gallons available for future growth.

$$1,000,000 \text{ gallons} - 210,000 \text{ gallons} = 790,000 \text{ gallons}$$

It is anticipated that one additional 500,000 gallon water storage reservoir will be constructed in the Apple Valley area. Existing residents will use 250,000 gallons leaving 250,000 gallons available for future growth.

$$500,000 \text{ gallons} - 250,000 \text{ gallons} = 250,000 \text{ gallons}$$

The total system water storage reservoir capacity for both systems plus the new water storage reservoir is 1,960,000 gallons.

$$1,000,000 \text{ gallons} + 460,000 \text{ gallons} + 500,000 \text{ gallons} = 1,960,000 \text{ gallons}$$

The total system water storage reservoir capacity available for future growth is 1,210,000 gallons.

$$170,000 \text{ gallons} + 790,000 \text{ gallons} + 250,000 \text{ gallons} = 1,210,000 \text{ gallons}$$

The percentage of water storage reservoir capacity available to future growth is represented by the ratio of that capacity to the total system water source capacity. That percentage is 61.73%.

$$1,210,000 \text{ gallons} / 1,960,000 \text{ gallons} = 61.73\%$$

#### ***4.4 Distribution System***

Apple Valley Water Company's water system consists of approximately 47,500 feet of six inch water line and 1,335 feet of two inch water line. The transmission and distribution lines for this water system are undersized and constrain the system from providing the necessary fire flow. Most of the existing lines will be rebuilt and upgraded to comply with minimum state standards. It is projected that only about 10% of the system, once rebuilt, will provide capacity for future growth.

Cedar Point Water Company's water system consists of approximately 13,540 feet of six inch water lines for transmission from the wells to the tank, 14,195 feet of eight inch water line, 10,385 feet of ten inch water line, and 635 feet of twelve inch water line. The transmission and distribution pipelines are newer pipes and are sufficiently sized to provide the required pressures and fire flows for the subdivision. Pipe sizes are sufficient that additional growth can be added to the existing piping system without negatively impacting the existing users. It is estimated that approximately 30% of the capacity of the existing transmission and distribution piping system is available for future growth.

Combining the two systems, it is estimated that approximately 20% of the overall system will be available for future system growth.

$$(10\% + 30\%) / 2 = 20\% \text{ (use 20.29\%)}$$

#### ***4.5 Total Capital Project Cost Percentages***

In the previous sections, a percentage of various system components that will be available for future growth has been calculated. Some costs of the existing system are not easily identifiable for future growth, such as legal and engineering costs. Therefore, the overall percentage that will be determined for the capital project costs will be applied to these types of costs.

A summary of the capital cost percentages that have been determined is shown below and in “Table 5 – Culinary Water Impact Fee Cost per Equivalent Residential Connection”.

1- Source of Water	83.46%
2- Water Rights	42.71%
3- Reservoir Storage	61.73%
4- Distribution System	<u>20.29%</u>
<b>Total Percentage To Growth =</b>	<b>52.05%</b>

#### ***4.6 Outstanding Loans***

Two funding sources and two different outstanding loans have been established to provide funding for the capital projects identified in this study. The first is a loan from the Utah State Division of Drinking Water in the amount of \$2,223,000. This loan bears an interest rate of 0% and will be repaid over a 30 year timeframe. The second is a loan from the United States Department of Agriculture – Rural Development in the amount of \$1,746,250. This loan bears an interest rate of 3.75% and will be repaid over a 40 year timeframe.

The principal amounts of these loans are included in the capital costs of the various water system components and the percentages allocated to future growth will therefore include the principal cost in the impact fee calculation. However, the interest accrued and paid for these loans is an additional cost which needs to be accounted for. Since the Utah State Division of Drinking Water loan is a 0% interest loan, no loan costs are incurred. The USDA-Rural Development loan, however, does accrue interest at 3.75% over a 40 year period. Because this Impact Fee Study only evaluates costs over a 30 year planning period, only the interest which accrues during that 30 year period will be included as part of the impact fee cost.

An amortization (See Appendix “A”) of the USDA-Rural Development loan shows that interest that will be paid and should be shown as a cost during the 30 year impact fee planning period amounts to \$1,451,585. Using the 52.05 % Total Percentage To Growth calculated in Section 4.5 above, the portion of this cost attributable to growth would be \$ 755,523.

$$\$1,451,585 \times 52.05\% = \$755,523.$$

#### ***4.7 Additional Services***

Additional costs and services needed to transfer assets from the private systems to the Water District or to design and build additional or replacement projects include legal and administrative fees, engineering fees, and contingency and miscellaneous services. Contingency costs will be spent on district assets. However, the exact placement of those costs has yet to be determined.

## 5.0 Conclusion

The Town of Apple Valley has been instrumental in helping to develop the new Big Plains Water and Sewer Special Service District. Many benefits accrue to the area residents by the creation of this district including compliance with State Drinking Water Regulations, professional system operation, consistent maintenance and billing operations, access to funding alternatives, and long term sustainability. The district anticipates continued development and growth. In order to assure the financial equity between the existing residents and the anticipated new growth, it is important to establish a culinary water impact fee which will allow new residents to buy into the existing system and fund the demands of their new growth as well.

The analysis done by this 2012 Culinary Water Impact Fee Study has identified existing and proposed capital improvement projects and existing system assets, determined the value of those assets and assessed the percentage of those assets that can or will be used to support future growth and development. Additionally, a growth rate has been projected over the study period to identify potential users and has spread the cost of the culinary water infrastructure needs over those users. Through this process it has been determined that the cost of improvements that will support the anticipated growth will be \$13,743.00 per equivalent residential connection. State Law requires and this study recommends that the Board of Directors of the Big Plains Water and Sewer Special Service District go through the process to evaluate and adopt this study and then, if they so desire, to establish a culinary water impact fee to be assessed on new development that does not exceed the \$13,743.00 per equivalent residential connection identified in this study. They can set the fee at any lesser amount, but not more than that identified herein.

## 6.0 Recommendations

The following recommendations are presented to implement the “2012 Culinary Water Impact Fee Study” report for the Big Plains Water and Sewer Special Service District:

- 1) The District should carefully consider the analysis presented in this Impact Fee Study and understand its effect on future growth and development within the District.
- 2) The District should follow the Utah Code to issue notices and hold a public hearing to accept public comment regarding the Impact Fee Study.
- 3) The District should prepare a culinary water impact fee resolution establishing the amounts and procedures that will be assessed to future builders and developers.
- 4) The District should enter into pioneer agreements with developers that have existing platted subdivisions without any infrastructure and future developers that through impact fees and connection fees the developers will assist in the upfront costs as expansion is needed in the systems. This will include, but not limited to, pipeline infrastructure, storage tanks, well development, water rights and other water infrastructure.
- 5) Every five years, or more often if conditions require, the Culinary Water Impact Fee Study should be updated or revised to reflect new projects and development needs along with updated cost information. This will ensure that inflationary factors and new development needs can adequately be addressed and kept in proper balance.



**APPENDIX " A "**

UNITED STATES DEPARTMENT OF AGRICULTURE  
RURAL DEVELOPMENT  
LOAN AMORTIZATION SCHEDULE

APPENDIX "A"

USDA RURAL DEVELOPMENT LOAN AMORTIZATION

BIG PLAINS WATER AND SEWER SPECIAL SERVICE DISTRICT  
2012 CULINARY WATER IMPACT FEE STUDY  
APPENDIX "A" - USDA RURAL DEVELOPMENT LOAN AMORTIZATION

PROPOSED LOAN REPAYMENT SCHEDULE

PRINCIPAL \$ 1,746,250  
INTEREST 3.7500%  
TERM 40 YEARS  
PAYMENT \$ 84,500

PMT NO.	YEAR	BEGINNING BALANCE	PAYMENT	PRINCIPAL	INTEREST	ENDING BALANCE	TOTAL INTEREST PAID
1	2013	\$ 1,746,250.00	\$ 84,500.00	\$ 19,015.63	\$ 65,484.38	\$ 1,727,234.38	\$ 65,484.38
2	2014	\$ 1,727,234.38	\$ 84,500.00	\$ 19,728.71	\$ 64,771.29	\$ 1,707,505.66	\$ 130,255.66
3	2015	\$ 1,707,505.66	\$ 84,500.00	\$ 20,468.54	\$ 64,031.46	\$ 1,687,037.13	\$ 194,287.13
4	2016	\$ 1,687,037.13	\$ 84,500.00	\$ 21,236.11	\$ 63,263.89	\$ 1,665,801.02	\$ 257,551.02
5	2017	\$ 1,665,801.02	\$ 84,500.00	\$ 22,032.46	\$ 62,467.54	\$ 1,643,768.56	\$ 320,018.56
6	2018	\$ 1,643,768.56	\$ 84,500.00	\$ 22,858.68	\$ 61,641.32	\$ 1,620,909.88	\$ 381,659.88
7	2019	\$ 1,620,909.88	\$ 84,500.00	\$ 23,715.88	\$ 60,784.12	\$ 1,597,194.00	\$ 442,444.00
8	2020	\$ 1,597,194.00	\$ 84,500.00	\$ 24,605.23	\$ 59,894.77	\$ 1,572,588.77	\$ 502,338.77
9	2021	\$ 1,572,588.77	\$ 84,500.00	\$ 25,527.92	\$ 58,972.08	\$ 1,547,060.85	\$ 561,310.85
10	2022	\$ 1,547,060.85	\$ 84,500.00	\$ 26,485.22	\$ 58,014.78	\$ 1,520,575.63	\$ 619,325.63
11	2023	\$ 1,520,575.63	\$ 84,500.00	\$ 27,478.41	\$ 57,021.59	\$ 1,493,097.22	\$ 676,347.22
12	2024	\$ 1,493,097.22	\$ 84,500.00	\$ 28,508.85	\$ 55,991.15	\$ 1,464,588.37	\$ 732,338.37
13	2025	\$ 1,464,588.37	\$ 84,500.00	\$ 29,577.94	\$ 54,922.06	\$ 1,435,010.43	\$ 787,260.43
14	2026	\$ 1,435,010.43	\$ 84,500.00	\$ 30,687.11	\$ 53,812.89	\$ 1,404,323.32	\$ 841,073.32
15	2027	\$ 1,404,323.32	\$ 84,500.00	\$ 31,837.88	\$ 52,662.12	\$ 1,372,485.45	\$ 893,735.45
16	2028	\$ 1,372,485.45	\$ 84,500.00	\$ 33,031.80	\$ 51,468.20	\$ 1,339,453.65	\$ 945,203.65
17	2029	\$ 1,339,453.65	\$ 84,500.00	\$ 34,270.49	\$ 50,229.51	\$ 1,305,183.16	\$ 995,433.16
18	2030	\$ 1,305,183.16	\$ 84,500.00	\$ 35,555.63	\$ 48,944.37	\$ 1,269,627.53	\$ 1,044,377.53
19	2031	\$ 1,269,627.53	\$ 84,500.00	\$ 36,888.97	\$ 47,611.03	\$ 1,232,738.56	\$ 1,091,988.56
20	2032	\$ 1,232,738.56	\$ 84,500.00	\$ 38,272.30	\$ 46,227.70	\$ 1,194,466.26	\$ 1,138,216.26
21	2033	\$ 1,194,466.26	\$ 84,500.00	\$ 39,707.52	\$ 44,792.48	\$ 1,154,758.74	\$ 1,183,008.74
22	2034	\$ 1,154,758.74	\$ 84,500.00	\$ 41,196.55	\$ 43,303.45	\$ 1,113,562.20	\$ 1,226,312.20
23	2035	\$ 1,113,562.20	\$ 84,500.00	\$ 42,741.42	\$ 41,758.58	\$ 1,070,820.78	\$ 1,268,070.78
24	2036	\$ 1,070,820.78	\$ 84,500.00	\$ 44,344.22	\$ 40,155.78	\$ 1,026,476.56	\$ 1,308,226.56
25	2037	\$ 1,026,476.56	\$ 84,500.00	\$ 46,007.13	\$ 38,492.87	\$ 980,469.43	\$ 1,346,719.43
26	2038	\$ 980,469.43	\$ 84,500.00	\$ 47,732.40	\$ 36,767.60	\$ 932,737.03	\$ 1,383,487.03
27	2039	\$ 932,737.03	\$ 84,500.00	\$ 49,522.36	\$ 34,977.64	\$ 883,214.67	\$ 1,418,464.67
28	2040	\$ 883,214.67	\$ 84,500.00	\$ 51,379.45	\$ 33,120.55	\$ 831,835.22	\$ 1,451,585.22
29	2041	\$ 831,835.22	\$ 84,500.00	\$ 53,306.18	\$ 31,193.82	\$ 778,529.04	\$ 1,482,779.04
30	2042	\$ 778,529.04	\$ 84,500.00	\$ 55,305.16	\$ 29,194.84	\$ 723,223.88	\$ 1,511,973.88
31	2043	\$ 723,223.88	\$ 84,500.00	\$ 57,379.10	\$ 27,120.90	\$ 665,844.78	\$ 1,539,094.78
32	2044	\$ 665,844.78	\$ 84,500.00	\$ 59,530.82	\$ 24,969.18	\$ 606,313.96	\$ 1,564,063.96
33	2045	\$ 606,313.96	\$ 84,500.00	\$ 61,763.23	\$ 22,736.77	\$ 544,550.73	\$ 1,586,800.73
34	2046	\$ 544,550.73	\$ 84,500.00	\$ 64,079.35	\$ 20,420.65	\$ 480,471.38	\$ 1,607,221.38
35	2047	\$ 480,471.38	\$ 84,500.00	\$ 66,482.32	\$ 18,017.68	\$ 413,989.06	\$ 1,625,239.06
36	2048	\$ 413,989.06	\$ 84,500.00	\$ 68,975.41	\$ 15,524.59	\$ 345,013.65	\$ 1,640,763.65
37	2049	\$ 345,013.65	\$ 84,500.00	\$ 71,561.99	\$ 12,938.01	\$ 273,451.66	\$ 1,653,701.66
38	2050	\$ 273,451.66	\$ 84,500.00	\$ 74,245.56	\$ 10,254.44	\$ 199,206.10	\$ 1,663,956.10
39	2051	\$ 199,206.10	\$ 84,500.00	\$ 77,029.77	\$ 7,470.23	\$ 122,176.33	\$ 1,671,426.33
40	2052	\$ 122,176.33	\$ 84,500.00	\$ 79,918.39	\$ 4,581.61	\$ 42,257.94	\$ 1,676,007.94
41	2053	\$ 42,257.94	\$ 43,843	\$ 42,257.94	\$ 1,584.67	\$ -	\$ 1,677,592.61