



*Six Sigma Consulting*

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Six  
Sigma  
Consulting 

## Mission Statement and Objectives

Our mission is to design and implement a smart landscaping irrigation system that meets the needs of consumers and also significantly reduces excess water usage in Austin, Texas. Our focus is to reduce outdoor water use with innovative technological methods through a convenient and integrated control system. With water conservation and consumer interests in mind, water conservation issues are mitigated by accomplishing the following:

1. **Customer Service-** Provide friendly and helpful service to the City of Austin and our consumers while meeting their needs to conserve outdoor water use and save money.
2. **Innovative Irrigation System-** Design an integrated and innovative system that utilizes new technology to create the most efficient irrigation system for outdoor water use.
3. **Reduce Peak Day Usage-** Incorporate a method of reducing peak day usage into our irrigation system. This will be accomplished with convenience in mind for the City of Austin and water consumers.
4. **Financial Viability-** Create a financially viable product that meets consumer needs while generating a positive return on investment for Rainwater. The product will be universal enough to be transported to other markets.

As consumers start to use our product, the city will start to realize an increasing amount of benefits as more and more water is saved. Furthermore, the product's inherent capabilities coupled with our suggestions will be able to deal with peak day water usage.

## Situation Analysis

The City of Austin has continually battled the issue of excessive water usage. Its efforts are focused on total and peak day water usage. While many water conservation efforts have been focused on indoor water usage, the percentage of outdoor water usage continues to rise. Like many other cities nationwide, constrained water supplies are a major concern.

The City of Austin purchases rights to a set amount of water each year and is financially penalized when it exceeds that amount. Even with current water conservation policies, the amount of water consumed continues to grow at a yearly rate. The city is therefore looking for a comprehensive solution to deal with irrigation, one of the largest sources of water usage.

## **Consumer Identification and Target Market**

The City of Austin finds that single family residences use the largest amount of water, consuming about 40% of Austin's water during an average summer season. 58% of residential water usage is outdoor as found in a recent survey of houses in major cities. Therefore, our focus will be on the residential market since they are the largest segment and have the greatest potential to meet Austin's plan of reducing water usage by 1%. Further, we are also indirectly targeting the city of Austin because they are in need of an effective system that can reduce total water usage and meet peak day demands.

Our smart landscaping irrigation system effectively targets outdoor residential water usage. We offer several options to accommodate and meet the needs of the consumer base, which we have split into three different markets:

- Current Houses without automatic sprinkler systems
- Current Houses with automatic sprinkler systems
- New Houses under construction

Our water conservation service efforts have also developed a strategy for the city to conserve water through the use of new, efficient technologies. These recommendations will further serve to help Austin reduce total water usage while maintaining the capability to deal with peak day usage.

## **Product and Service Overview**

We have developed a comprehensive product line that will allow us to target the entire residential market. For consumers who manually irrigate their lawns, we offer an electronic timer system that incorporates water conservation best practices. For consumers who already have an automatic sprinkler system in place, we offer an advanced control unit package that can process weather and a multitude of other factors to conserve water and help with peak day usage. For new homes, we offer a revolutionary wick irrigation system with integrated fertigation and an advanced control unit that further reduces water usage.

### ***Electronic Timer Valve:***

The electronic timer valve is designed primarily to target residential homes without an automatic sprinkler system. It will be installed between the faucet and the hose and its main features include:

1. A programmable microcontroller that sets watering times
2. Ability to delay the watering cycle during rainy days
3. Automatic shut-off and turn on of the manual sprinkler according to set times

The electronic timer valve allows manual sprinklers the functionality of an automatic sprinkler system. The user inputs when it wants the sprinkler to water to lawn and the number of days in between watering times. This will allow consumers to save 20% of outdoor water use by allowing them to incorporate best practices such as watering lawns between 7pm and 10am. This will help consumers and Austin to save water.

***Electronic Control Unit:***

Our microprocessor-based control unit has many features that utilizes technology to implement best practices for water usage. The control unit also is internet ready, which allows it to constantly adjust for optimal water use. The control unit houses an integrated wireless receiver that links with a corresponding USB transmitter that comes with the package. There is also a software suite included with the unit to allow the consumer to monitor and control the unit from the convenience of his computer.

Benefits that occur with internet connectivity:

- Automatically updates watering patterns after accessing data from the National Oceanic & Atmospheric Association (NOAA) website.
- Combines internet data with data from the attached moisture controller to determine whether conditions are optimal for watering.
- City of Austin can send information to systems to reduce irrigation usage during peak days and enforce drought/conservation plans.

Inherent benefits that do not require a connection:

- Factors like lawn incline, soil condition, sprinkler type, plant species, and temperature are adjustable and automatically taken into account.
- Able to include up to 16 zones to accommodate all watering systems.
- A properly programmed control unit saves up to 45-50% of outdoor water use compared to a basic electronic timer system.
- Informs users of potential leaks and general system status

***Fertigation and Wick Irrigation:***

Fertigation is the practice of delivering fertilizer through an irrigation system, which has numerous benefits over traditional fertilization methods methods:

- Ensures grass receives fertilizer on an even, timely basis to ensure healthy grass, which requires less water than unhealthy grass.
- Provides easy way to fertilize lawns as opposed to manual methods
- Rate of fertilization can be adjusted according to needs
- Compatible with our electronic control unit

Wick irrigation provides numerous benefits over traditional spray irrigation such as:

- Even water distribution in the soil to ensure full coverage.
- Virtually eliminates run off water and need to account for wind.
- Reduced water loss up to 50%
- Less parts are required (2 passive parts as opposed to 6-8 moving parts) which means less chance of breakage and longer system life.

## **How our Product Solves Austin's Problem**

**(REFER TO WATER SAVINGS ANALYSIS TO SEE HOW MUCH WATER IS SAVED)**

### ***Water Conservation***

Consumers will decrease their individual water consumption by either 20/45/50% depending on which plan they follow. Consumers will have lower water bills and the decrease in usage will move consumers into a lower tier in the water price structure. The average consumer uses 51,480 gallons per year for irrigation, so a 45% decrease in consumption leads to 23,166 gallons saved. 20% for manual sprinklers leads to 4,118 gallons saved. 50% for new systems leads to 25,740 gallons saved. Overall average water usage by consumers is over 12,000 a month, which means \$3.88 a gallon. The gallons saved will fall within this price. Therefore, a consumer will save \$15.98 / \$89.88 per year on average. New system is not listed since it will not be a replacement of an existing asset and is therefore a bit more difficult to calculate.

- **Consumers** decrease water consumption by 20% / 45% / 50%
- Save \$15.98 / \$89.88 per year (Hard to calculate new system, but more than \$89.88)

The City of Austin will decrease water consumption by 1% to 3% and meet their goal of decreasing water consumption by 1%. Austin will stay within its water supply that they buy from the Lower Colorado River Authority, so they will avoid paying any fines in addition to the amount they pay for their 201,000 AcreFeet/year. Water costs \$115 / AcreFeet, so Austin is paying for \$23,115,000 for their water supply. The peak day usage plan will eliminate potential fines that Austin would have to pay.

- **City of Austin** decreases water consumption by between 1% to 3%
- Minimize additional charges and fines

### ***Peak Water Usage***

The City of Austin will have an override privilege to Rainwater electronic control units. Normally, Rainwater software on home computers automatically downloads weather information which is transmitted to the ECU that then controls the sprinkling system. However, on predicted peak days, the City of Austin can send a signal to the Rainwater software that a peak day is coming which will limit the sprinkler system's water output regardless of what the NOAA says.

## **Implementation**

### **(REFER TO IMPLEMENTAION SCHEDULE - GANTT CHART)**

We will begin by preparing a grant proposal to Austin and begin initial design on the electronic control system. The grant proposal will include a comprehensive plan that targets ALL residential consumers because that segment uses 40% of Austin's total water. The writing of this proposal will take two weeks as this is the deadline that we are given.

2 months into the design of the electronic control system, we will begin the design of the software for the control system as the plans for the control system should be fleshed out by the time to allow our software team at XemiComputers to begin development, which should take 6 months total. We will also begin the process of developing the electronic timer valve and the wick system. We will begin design of these two products in the latter stage because these are systems that we are intimately familiar with due to our knowledge of the irrigation industry. These two products should take no more than 4 months each to design.

4 months into the design of the electronic control system, our products should be reaching the prototype stage. At this point, our factories will undergo preparation to ensure that proper equipment and space will be allocated for the new products. This will take approximately 4 months as we arrange the factory floor plan while acquiring any productive capital needed to manufacture our products. After the equipment is in place, Rainwater will hire workers to operate the equipment in production.

After research and factory set up is complete, we will start to sell our products. We will go through traditional retailers such as Home Depot as well as do direct sales using our own sales representatives. Software maintenance will continuously be performed as well.

## **Risk Assessment**

Although we believe our business plan and revenue model is sound, we realize that there is always risk. Rainwater Inc faces several major competitors going into the irrigation systems market. Rainwater also faces competition from the many other water conservation techniques out there on the market.

*Xeriscaping.* This landscaping method focuses on conserving water by growing drought tolerant plants. These plants do not need to be watered as often as grass. While this saves a lot of water, it also faces a lot of problems. Many consumers do not wish to completely replace their lawns due to the cost and inconvenience that it places upon them. It is also hard overcoming the belief that a lawn should be composed of grass.

While this method poses risks to us we believe that our system imposes much less inconvenience on the consumer while saving water. Further, we believe that xeriscaping does not directly compete with our system because people will still need sprinkler systems after switching to xeriscaping.

*Rainwater Barrels.* This water conservation method harvests rain water collected from roof run-offs. Although water is conserved, there are several disadvantages with this method. For one, water can only be collected when it rains – and it may not necessarily rain in certain areas. Furthermore, the water collected is standing water, and bacteria growth can be inadvertently fostered. These barrels take up a lot of yard space as well and require manual work to open the tap. From the consumer standpoint, convenience is not an asset. Lastly, a significantly large sized barrel is necessary to save enough water to make a significant difference in water conservation.

*Efficient Nozzles.* These nozzles do prevent water leakage at the nozzle, but they do not adequately account for important weather factors. Due to wind and evaporation, spray nozzles are still not completely efficient. Runoff water is common. With our wick irrigation system, there is potentially zero runoff and no blow-off because nozzles are situated close to the ground and roots, which evenly distribute water in the soil.

## **Financial Analysis**

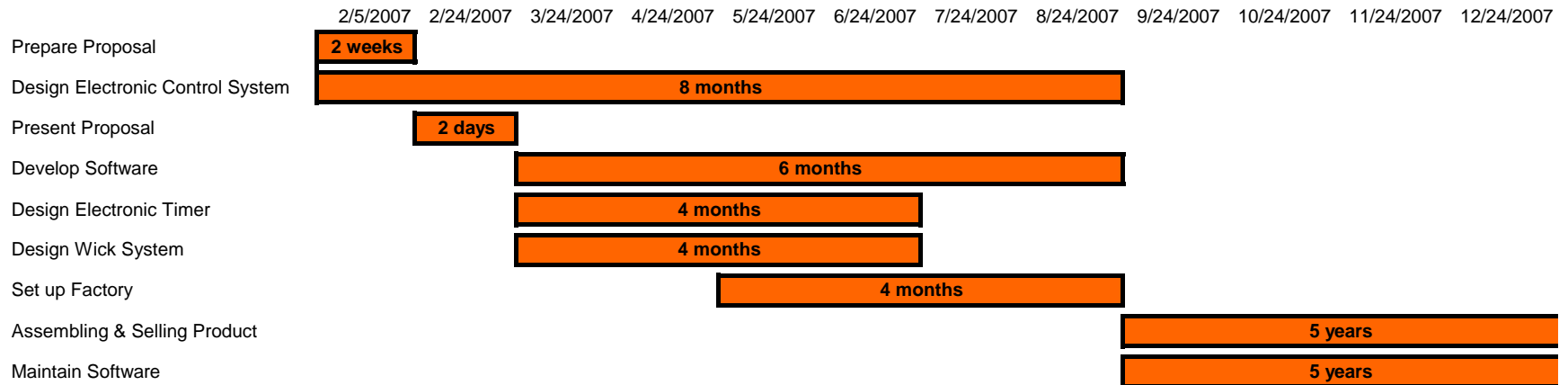
Rainwater performed an extensive amount of financial analysis and conducted sensitivity analysis as well to ensure that their product will meet with financial success in the marketplace. Using sensitivity and financial analysis, we determined:

- The cost to produce each product (**Financial Exhibit 1**)
- The cost and ROI to the customer (**Financial Exhibit 2**)
- Rainwater's NPV and ROI from selling 3 products (pessimistic, average, optimistic) (**Financial Exhibit 3**)
- The amount of water saved by each product (pessimistic, average, optimistic) (**Water Sensitivity Analysis**)

We essentially found out that Rainwater will be able to profit financially in all three scenarios (pessimistic, average, optimistic). Under the pessimistic scenario, Rainwater will be able to generate an NPV of \$26,682.91, recover all costs by year 3, and have an ROI of 4.11%. Under the average scenario, Rainwater will be able to generate an NPV of \$418,639.36, recover all costs by year 2, and have an ROI of 64.41%. Under the optimistic scenario, Rainwater will be able to generate an NPV of \$619,604.70, recover all costs by year 2, and have an ROI of 95.32%.

The only trouble that Rainwater could face occurs during the first year. The first year requires an outlay of cash to set up the initial process. However, this could be easily resolved by taking out a short-term loan that can be paid back within a year or two. Another solution would be to use the grant money to compensate for the outlay.

# Implementation Schedule GANTT Chart



## Water Savings Sensitivity Analysis

### Sensitivity Analysis of Amount of Water Saved - Existing Automatic Sprinklers

<b>% of Water Saved with 100% Compliance</b>	
Residential Usage (%)	40%
Outdoor Usage (%)	60%
Lawn Use (%)	60%
Water Use Savings (%)	45%
Homes with Sprinklers (%)	60%
Total Austin Water Supply Saved (%)	3.89% *

<b>% of Total Water Supply Saved by Sprinklers</b>	
<b>Optimistic Case (55%):</b>	<b>2.14%</b>
<b>Average Case (40%):</b>	<b>1.56%</b>
<b>Pessimistic Case (25%):</b>	<b>0.97%</b>

<b># of Houses That Purchase System</b>	
Total # of Austin Residential Properties	163,927
(%) of Properties with Sprinklers	60%
# of Residential Properties with Sprinklers	98,356
<b>Optimistic Case (50%):</b>	<b>54,096</b>
<b>Average Case (40%):</b>	<b>39,342</b>
<b>Pessimistic Case (25%):</b>	<b>24,589</b>

\*3.46% represents 100% acceptance of sprinklers;  
the optimistic, average, and pessimistic case corrects this assumption

### Sensitivity Analysis of Amount of Water Saved - Manual Sprinklers

<b>% of Water Saved with 100% Compliance</b>	
Residential Usage (%)	40%
Outdoor Usage (%)	60%
Lawn Use (%)	60%
Water Use Savings (%)	20%
Homes with Sprinklers (%)	40%
Total Austin Water Supply Saved (%)	1.15% *

<b>% of Total Water Supply Saved by Electronic Timer</b>	
<b>Optimistic Case (55%):</b>	<b>0.63%</b>
<b>Average Case (40%):</b>	<b>0.46%</b>
<b>Pessimistic Case (25%):</b>	<b>0.29%</b>

<b># of Houses That Purchase Electronic Timers</b>	
Total # of Austin Residential Properties	163,927
(%) of Properties without Sprinklers	40%
# of Residential Properties without Sprinklers	65,571
<b>Optimistic Case (50%):</b>	<b>36,064</b>
<b>Average Case (40%):</b>	<b>26,228</b>
<b>Pessimistic Case (25%):</b>	<b>16,393</b>

\*1.15% represents 100% acceptance of electronic timer;  
the optimistic, average, and pessimistic case corrects this assumption

## Water Savings Sensitivity Analysis (Continued)

<b>Sensitivity Analysis of Amount of Water Saved - New Houses</b>	
<b><u>% of Water Saved with 100% Compliance</u></b>	
Residential Usage (%)	40%
Outdoor Usage (%)	60%
Lawn Use (%)	60%
Water Use Savings (%)	50%
<b># New Homes / Total Homes (%)</b>	<b>10%</b>
Total Austin Water Supply Saved (%)	0.72% *
<b><u>% of Total Water Supply Saved by Sprinklers</u></b>	
<b>Optimistic Case (55%):</b>	<b>0.40%</b>
<b>Average Case (40%):</b>	<b>0.29%</b>
<b>Pessimistic Case (25%):</b>	<b>0.18%</b>
<b><u># of Houses That Purchase System</u></b>	
Total # of Austin Residential Properties	163,927
(%) of New Homes	10%
<b># of New Homes</b>	<b>16,393</b>
<b>Optimistic Case (50%):</b>	<b>9,016</b>
<b>Average Case (40%):</b>	<b>6,557</b>
<b>Pessimistic Case (25%):</b>	<b>4,098</b>
* .58% represents 100% acceptance of sprinklers by new houses; the optimistic, average, and pessimistic case corrects this assumption	

## Financial Exhibit 1

Product Cost for Existing Residential Rollout (Sprinklers)	
<b>Fixed Costs</b>	
Nonrecurring Engineering Costs	150,000
Software Development	150,000
Factory Setup Costs	150,000
<b>Total Fixed Costs</b>	<b>\$450,000</b>
<b>Variable Costs</b>	
Electronic Control Unit	275
Assembly	25
Transmitter	20
Moisture Detector	30
<b>Total Variable Costs</b>	<b>\$350</b>

Product Cost for New Residential Rollout (Sprinklers)	
<b>Fixed Costs</b>	
Nonrecurring Engineering Costs	200,000 *
Software Development	150,000 *
Factory Setup Costs	200,000 *
<b>Total Fixed Costs</b>	<b>\$550,000 *</b>
<b>Variable Costs</b>	
Electronic Control Unit	275
Emitter Tube	56.25
Electronic Control Valve	44
Piping	100
Fertigation System	80
Miscellaneous System Parts	50
Assembly	100
Transmitter	20
Moisture Detector	30
<b>Total Variable Costs</b>	<b>\$755</b>

Product Cost for Existing Residential Rollout (Timer)	
<b>Fixed Costs</b>	
Nonrecurring Engineering Costs	25,000
Factory Setup Costs	75,000
<b>Total Fixed Costs</b>	<b>\$100,000</b>
<b>Variable Costs</b>	
Electronic Timer Parts	15
Assembly	5
<b>Total Variable Costs</b>	<b>\$20</b>

## Financial Exhibit 2

<b>Selling Price and Customer Benefit Existing Automatic Sprinklers</b>	
Electronic Control Unit	300
Transmitter	25
Moisture Detector	50
Installation	90
Water Credit	(125)
<b>Cost to Customer</b>	<b>\$340</b>
Average Outdoor Water (1000 homes)	85,800
(%) Dedicated to Irrigation	60%
Amount of Water Used for Irrigation	51,480
(%) of Water Saved	45%
Amount of Water Saved	23,166
Cost per Gallon of Water	3.88
Amount of Money Saved (1000 homes)	89,884.08
<b>Average Household Savings</b>	<b>\$89.88</b>
<b>Return on Capital (10%)</b>	<b>4.99 years</b>

<b>Selling Price and Customer Benefit Manual Sprinklers</b>	
Electronic Timer Valve	25
<b>Cost to Customer</b>	<b>\$25</b>
Average Outdoor Water (1000 homes)	85,800
(%) Dedicated to Irrigation	60%
Amount of Water for Auto	51,480
(%) Less Water Usage through Manual	40%
Amount of Water Used for Manual	20,592
(%) of Water Saved	20%
Amount of Water Saved	4,118
Cost per Gallon of Water	3.88
Amount of Money Saved (1000 homes)	15,979.39
<b>Average Household Savings</b>	<b>\$15.98</b>
<b>Return on Capital (10%)</b>	<b>1.79 years</b>

## Financial Exhibit 3

<b>Discounted Cash Flows Model (Pessimistic)</b>					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Sales (in units)</b>					
Existing Residential Sprinklers	7,500	10,000	5,000	1,500	1,000
Electronic Timers	7,000	6,000	1,500	1,000	500
Wick System	800	800	800	800	800
<b>Cash Outflows</b>					
Nonrecurring Engineering Costs	(225,000)				
Software Development	(150,000)				
Factory Setup Costs	(275,000)				
Electronic Control Unit	(2,282,500)	(2,970,000)	(1,595,000)	(632,500)	(495,000)
Assembly	(302,500)	(360,000)	(212,500)	(122,500)	(107,500)
Transmitter	(166,000)	(216,000)	(116,000)	(46,000)	(36,000)
Moisture Detector	(249,000)	(324,000)	(174,000)	(69,000)	(54,000)
Emitter Tube	(60,000)	(60,000)	(60,000)	(60,000)	(60,000)
Electronic Control Valve	(35,200)	(35,200)	(35,200)	(35,200)	(35,200)
Piping	(80,000)	(80,000)	(80,000)	(80,000)	(80,000)
Fertigation System	(64,000)	(64,000)	(64,000)	(64,000)	(64,000)
Miscellaneous Parts / Maintenance	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)
Electronic Timer Parts	(105,000)	(90,000)	(22,500)	(15,000)	(7,500)
<b>Total Cash Outflows</b>	<b>(4,034,200)</b>	<b>(4,239,200)</b>	<b>(2,399,200)</b>	<b>(1,164,200)</b>	<b>(979,200)</b>
<b>Cash Inflows</b>					
Irrigation System Revenue	2,812,500	3,750,000	1,875,000	562,500	375,000
Electronic Timer Revenue	175,000	150,000	37,500	25,000	12,500
Wick System Revenue	660,000	660,000	660,000	660,000	660,000
<b>Total Cash Inflows</b>	<b>3,647,500</b>	<b>4,560,000</b>	<b>2,572,500</b>	<b>1,247,500</b>	<b>1,047,500</b>
<b>Total Cash Flows</b>	<b>(386,700)</b>	<b>320,800</b>	<b>173,300</b>	<b>83,300</b>	<b>68,300</b>
<b>Discount Rate</b>	<b>7.50%</b>				
<b>Risk Premium</b>	<b>10.00%</b>				
<b>Overall Discount Rate</b>	<b>17.50%</b>				
<b>NPV</b>	<b>\$26,682.91</b>				
<b>Payback Period</b>	<b>3 years</b>				
<b>ROI</b>	<b>4.11%</b>				

## Financial Exhibit 3 (Continued)

<b>Discounted Cash Flows Model (Average)</b>					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Sales (in units)</b>					
Existing Residential Sprinklers	11,700	15,600	7,800	2,340	1,560
Electronic Timers	11,375	9,750	2,438	1,625	813
Wick System	1,300	1,300	1,300	1,300	1,300
<b>Cash Outflows</b>					
Nonrecurring Engineering Costs	(225,000)				
Software Development	(150,000)				
Factory Setup Costs	(275,000)				
Electronic Control Unit	(3,575,000)	(4,647,500)	(2,502,500)	(1,001,000)	(786,500)
Assembly	(479,375)	(568,750)	(337,188)	(196,625)	(173,063)
Transmitter	(260,000)	(338,000)	(182,000)	(72,800)	(57,200)
Moisture Detector	(390,000)	(507,000)	(273,000)	(109,200)	(85,800)
Emitter Tube	(97,500)	(97,500)	(97,500)	(97,500)	(97,500)
Electronic Control Valve	(57,200)	(57,200)	(57,200)	(57,200)	(57,200)
Piping	(130,000)	(130,000)	(130,000)	(130,000)	(130,000)
Fertigation System	(104,000)	(104,000)	(104,000)	(104,000)	(104,000)
Miscellaneous Parts / Maintenance	(65,000)	(65,000)	(65,000)	(65,000)	(65,000)
Electronic Timer Parts	(170,625)	(146,250)	(36,563)	(24,375)	(12,188)
<b>Total Cash Outflows</b>	<b>(5,978,700)</b>	<b>(6,661,200)</b>	<b>(3,784,950)</b>	<b>(1,857,700)</b>	<b>(1,568,450)</b>
<b>Cash Inflows</b>					
Irrigation System Revenue	4,387,500	5,850,000	2,925,000	877,500	585,000
Electronic Timer Revenue	284,375	243,750	60,938	40,625	20,313
Wick System Revenue	1,072,500	1,072,500	1,072,500	1,072,500	1,072,500
<b>Total Cash Inflows</b>	<b>5,744,375</b>	<b>7,166,250</b>	<b>4,058,438</b>	<b>1,990,625</b>	<b>1,677,813</b>
<b>Total Cash Flows</b>	<b>(234,325)</b>	<b>505,050</b>	<b>273,488</b>	<b>132,925</b>	<b>109,363</b>
<b>Discount Rate</b>	<b>7.50%</b>				
<b>Risk Premium</b>	<b>10.00%</b>				
<b>Overall Discount Rate</b>	<b>17.50%</b>				
<b>NPV</b>	<b>\$418,639.36</b>				
<b>Payback Period</b>	<b>2 years</b>				
<b>ROI</b>	<b>64.41%</b>				

## Financial Exhibit 3 (Continued)

<b>Discounted Cash Flows Model (Optimistic)</b>					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Sales (in units)</b>					
Existing Residential Sprinklers	16,200	10,000	10,800	3,240	2,160
Electronic Timers	15,750	13,500	3,375	2,250	1,125
Wick System	1,800	1,800	1,800	1,800	1,800
<b>Cash Outflows</b>					
Nonrecurring Engineering Costs	(225,000)				
Software Development	(150,000)				
Factory Setup Costs	(275,000)				
Electronic Control Unit	(4,950,000)	(3,245,000)	(3,465,000)	(1,386,000)	(1,089,000)
Assembly	(663,750)	(497,500)	(466,875)	(272,250)	(239,625)
Transmitter	(360,000)	(236,000)	(252,000)	(100,800)	(79,200)
Moisture Detector	(540,000)	(354,000)	(378,000)	(151,200)	(118,800)
Emitter Tube	(135,000)	(135,000)	(135,000)	(135,000)	(135,000)
Electronic Control Valve	(79,200)	(79,200)	(79,200)	(79,200)	(79,200)
Piping	(180,000)	(180,000)	(180,000)	(180,000)	(180,000)
Fertigation System	(144,000)	(144,000)	(144,000)	(144,000)	(144,000)
Miscellaneous Parts / Maintenance	(90,000)	(90,000)	(90,000)	(90,000)	(90,000)
Electronic Timer Parts	(236,250)	(202,500)	(50,625)	(33,750)	(16,875)
<b>Total Cash Outflows</b>	<b>(8,028,200)</b>	<b>(5,163,200)</b>	<b>(5,240,700)</b>	<b>(2,572,200)</b>	<b>(2,171,700)</b>
<b>Cash Inflows</b>					
Irrigation System Revenue	6,075,000	3,750,000	4,050,000	1,215,000	810,000
Electronic Timer Revenue	393,750	337,500	84,375	56,250	28,125
Wick System Revenue	1,485,000	1,485,000	1,485,000	1,485,000	1,485,000
<b>Total Cash Inflows</b>	<b>7,953,750</b>	<b>5,572,500</b>	<b>5,619,375</b>	<b>2,756,250</b>	<b>2,323,125</b>
<b>Total Cash Flows</b>	<b>(74,450)</b>	<b>409,300</b>	<b>378,675</b>	<b>184,050</b>	<b>151,425</b>
<b>Discount Rate</b>	<b>7.50%</b>				
<b>Risk Premium</b>	<b>10.00%</b>				
<b>Overall Discount Rate</b>	<b>17.50%</b>				
<b>NPV</b>	<b>\$619,604.70</b>				
<b>Payback Period</b>	<b>2 years</b>				
<b>ROI</b>	<b>95.32%</b>				

## **Looking to the Future**

### ***Expansion***

Rainwater Inc currently focuses solely on residential landscaping but can easily expand into the commercial market. The commercial market will allow Rainwater to expand operations and boost revenue while saving the city additional water. Rainwater will also expand beyond Austin if implementation is successful and begin to target other cities.

### ***Automatic Meter Reading***

Rainwater Inc's can branch out into the newly expanding market of Automatic Meter Reading (AMR) Technology due to its extensive controls experience. AMR has been rolled out in towns across the U.S. with great success. Among the different types of AMR units, the fixed-network system shows the most promise and benefit.

An AMR system can detect potential leaks in people's homes due to meters running non-stop and inform homeowners, thereby saving them money from water loss and cutting down on overall city water consumption. This technology will definitely be considered in the future for municipality use. Rainwater Inc can use its position as a market leader of electronic controls to penetrate this market and potentially dominate.

### ***Managed Aquifer Recharge (MAR)***

We will suggest to Austin that they consider implementation of a managed aquifer recharge program. MAR is basically a method that recycles gray water by channeling treated gray water into a concrete basin that will allow the water to seep into a natural or man-made aquifer. The natural filtration process that occurs as water seeps into the aquifer transforms the treated gray water into potable water.

This process will benefit Austin by increasing its water supply and help it deal with peak day usage. This occurs because traditionally all treated waste water is sent to a watershed to be drained into a river. This process recycles up to 30% of gray water, which will greatly increase Austin's reservoir of potable water. With this extra capacity, Austin can deal with any shortages that occur during droughts or peak day usage.

### ***Pressure Reducing Valves***

Studies have shown that a 17.6% reduction in pounds per square inch (PSI) can correlate to an estimated 1.9% reduction in water usage for a neighborhood. Austin believes that 95% of people follow stage regulations. We suggest the City of Austin:

- 1. Install pressure-regulating valves in each home**
- 2. Regulate water usage in homes with Rainwater products**
- 3. Communicate stage regulations during droughts**

A pressure-regulating valve needs to be supplied with power and a signal to turn on and off. The pressure-regulating valves will be off on normal days. When the peak day is predicted to occur, the City of Austin will supply the signal and power. Depending on how many units are implemented, we can see savings up to 1.4 MGD.