TOWN OF KEARNY, ARIZONA

Water Conservation Plan
Drought Initiatives
Water Emergency Initiatives

Adopted by Kearny Town Council
November 8, 2004

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INTRODUCTION

The Town of Kearny is at a critical time in its history. A nine-year drought has hit the State of Arizona, with no end in sight. Arizona's water supplies are quickly feeling the effects of the drought, along with increased demand for potable water. Increases in population and new development are also pushing the limits of our water sources.

The time has come for our state, and its communities to evaluate the consumption and use of this precious resource. The Phoenix metropolitan area has began the process by establishing the Arizona Municipal Water Users Association in 1969, in an effort to develop an urban water plan. The real need for conservation, however, came from the City of Phoenix, in 1982 in response to a growing population, and an impending strain on their water system. The plan was revised in 1992, and again in 1998, when the city declared Level 1 Drought status.

The city's drought was an eye-opener for other communities, as the AMWUA and other Arizona cities made a push for conservation. Phoenix led the charge, with ten years of research and experience from failed and successful conservation campaigns. Phoenix' successes paved the way for other urban Arizona communities to adopt similar plans.

The Valley of the Sun municipalities joined with Phoenix-based advertising firm Parks & Co. to come up with a unified water campaign. Called "Water – Use it Wisely" (WUIW), the campaign relied heavily on research from Phoenix' conservation push to develop an attractive, yet recognizable water conservation program. Phoenix'

successes became WUIW's. Started in 2000, in the midst of the statewide drought, the slick ad and educational campaign brought national attention to urban conservation efforts.

The metropolitan areas have led the charge. In these continued dry conditions, it is time for smaller cities and rural communities to begin similar programs. Arizona's population is migrating from the cities and suburbs to less-congested areas. Pinal County, nestled in between Maricopa and Pima Counties, is absorbing the overflow of the population. New development is sprouting, not only near the county borders but also throughout the entire county. With that increased development comes an increased need for potable water. Although Arizona Water Company provides water from the Colorado River for a good portion of the county, the increase in demand still places a strain on communities that rely on groundwater, public or semipublic water aquifers, or Central Arizona Project.

The increased demand comes at a cost. Water use has already escalated, depleting water sources at a faster rate. Water delivery systems will be strained, as new service connections tap into existing lines, increasing the risk of breakdowns in the system. Communities will begin to fight for water rights, and some, including neighboring Native American Nations, have already begun contention for these aquifers. The nine-year drought adds to the strain, hindering the water supply replenishment rate, which is already too slow to meet the increasing demand. These factors will lead to higher water prices for communities, higher administration costs, and possible legislation or restrictions placed by the State of Arizona.

It is time for the Town of Kearny to begin planning for the future. Although the population may not increase significantly over the next 10 years, demand from the Town's aquifer will, as more people begin to tap the resource. Changes in infrastructure are underway to ensure the supply can meet demand and quality standards, but changes must be made to ensure proper and efficient use of our quickly diminishing water supply.

Table 1. Water System Profile

A	*SERVICE CHARACTERISTICS*			
1	Estimated Service Population	2,250.00		
2	Estimated Service Area	2.75		
B	*ANNUAL WATER SUPPLY*	*Annual Volume **	*% Metered*	
3	Total Annual Water Supply	159,593.00	100.00	
C	*SERVICE CONNECTIONS*	*Connections*	*% Metered*	
4	Residential, single-family	821.00	100.00	
5	Other (Com./Org./Gov't)	71.00	100.00	
6	Total Connections	892.00	100.00	
C	*WATER DEMAND*	*Annual Volume **	*% of Total*	*per Connect. **
7	Metered Residential Sales	103,125.00	64.60	125.61
8	Metered Non-Residential Sales	35,954.00	22.50	506.39
9	Other Metered Sales	-	-	-
10	Unmetered Sales	-	-	-
11	Non-account water	Unknown	-	-
12	Total system demand	139,079.00	87.15	155.92
D	*AVERAGE PEAK & DEMAND*	*Volume **	*Tot. Supply **	*% of Capacity*
13	Average day demand	381.04	1,500.00	25.40
14	Maximum-day demand	645.20	1,500.00	43.01
E	*PRICING*	*Rate-5,000 gal*	*Add. 1000 gal*	*Billing Cycle*
15a	5/8 inch meter	$ 19.00	$ 1.35	Monthly
15b	1 inch meter	$ 21.00	$ 1.35	Monthly
16a	2 inch meter	$ 32.00	$ 1.35	Monthly
16b	6 inch meter	$ 40.00	$ 1.35	Monthly

** per 1,000 gallons*

The Town of Kearny currently uses approximately 103.125 million gallons of water a year (Table 1). This is 87% of the total annual water supply available to the Town. This number is a warning sign. Although enough water is available to adequately supply the town, this may not last forever. History shows demand will only increase over time. Complicating matters will be the Gila River Indian Community's continuing fight over water rights, which may limit Kearny's access to the aquifer.

The Town currently operates under the Globe Equity 59 Water Decree, and can have its appropriated water supply reduced substantially in drought conditions. The Town's right to continue pumping, under drought restrictions from its main well (Number 2), is dependent on a Federal Court order and the availability of exchange water from Central Arizona Project. This exchange will come at a cost of approximately $20,000 to $40,000 per year. The Town has historically received support from American Smelting and Refining Company (ASARCO), but may not be available in the future. If the Gila Water Settlement is enacted there will be some stability in the Town's water rights, however, water conservation has not only become environmentally sound, but of substantial short and long-term economic importance.

On a daily basis, the average resident will use 344 gallons of water. This does not pose a threat currently but is significantly higher than the average user in Arizona. The average Phoenix resident will use 226 gallons of water per day. This has come about from over a decade of conservation implementation. The conservation efforts have paid off. The city has had very few water emergencies due to increased demand, and has not imposed restrictions or sanctions on its residents and businesses.

Kearny residents proved they have the ability to conserve. During the June 2004 water emergency, residents and businesses have shown they can significantly reduce their water consumption without any real concessions. Now is the time to draw on the community's ability to pull together in an effort to protect the resource.

There is infrastructure already in place to begin the conservation effort. The Town of Kearny has the ability to monitor the use of water through meters. A big step in conservation is the ability to monitor consumption, and the town has a more-than-adequate system in place, with a minimal amount of water unaccounted for. Kearny also has a very precise cost and pricing scale. Although improvements can be made to the scale, the scale will be a powerful tool in the conservation education process. With revisions to the system, this will also promote smarter water use.

Implementing the conservation plan will be relatively simple. Motivating consumers to observe the plan, however, will be the daunting task. A good portion of the public does not understand there is a limited supply of water. Most people believe if they pay their monthly bill, they are entitled to use as much water as they want, for whatever reason. Only until situations such as the water emergency, do they understand the well can "dry up."

A successful conservation campaign should motivate consumers to use less water on an immediate basis, then ease them into being smarter water consumers. The campaign must also demonstrate ways to conserve, rather than "preaching" the need to conserve. Above all, any plan needs to be simple enough to implement. If the measures are involved, consumers will not be motivated to conserve.

Implementation would focus on two aspects: economic benefits and citizenship. Emphasizing financial benefits would be used as a “hook,” getting consumers to begin conserving. This would include emphasizing conservation as a method to decrease water bills, or providing vouchers, credits, or rebates for smart water use, and installing water-conserving devices.

Although this appears to be an effective plan on its own, it routinely fails over time. First off, conservation may indeed decrease bills, but not significantly. During the Phoenix 1992 campaign, the user would save only a few dollars. Many will take a negative attitude, feeling cheated because the time, effort, and financial investment far outweigh any savings. Using this model alone, customers will not feel the need to conserve because they will see their efforts affecting only themselves. The general attitude would be “if I do not conserve water, the only effect will be a higher water bill for me.”

The more effective model is based on good citizenship. When emphasizing the effect on the community, people quickly become more willing to “do their part.” The model educates consumers on the effects wasteful practices have on the water system. It shifts the emphasis from the individual and their consequences to the consequences it will have on their neighbors, family, and the community as a whole. It also empowers the public to conserve, as if emphasizing a duty to conserve the resource.

GOALS

Table 2. Kearny's Average Water Consumption, without conservation measures

User	Total Water Use	Customers	Year Use/ Customer	Month Use/ Customer	Day Use/ Customer
Residential	103,125.00	821	125.61	10.47	.34
Non-residential	35,954.00	71	506.39	42.20	1.39
Total	139,079.00	892	1,958.86	163.24	5.37

** in thousands of gallons*

Water consumers currently use 87% of the town's annual water supply, or just over 139 million gallons, out of an available 159 million gallons. Although the water supply is adequate for the community, water use will only increase in time. Any jump in usage at the current rate will seriously place a strain on the community (90% usage is considered near emergent).

Phoenix residential users currently use approximately 225 gallons per day with conservation measures in place. Although Kearny can very easily reduce its consumption to this level, conservation goals take time, and may be easier to set a lower standard initially. As conservation efforts are monitored, it may be possible go even further, with little effort.

Although residential conservation will be the primary focus, the non-residential customers need to join conservation efforts. The average non-residential user demands nearly 75% percent more water than the average residential customer. At over 1,300 gallons per day, local business owners and other non-residential customers must find a way to reduce water use.

Table 3. Conservation Goals per Day

		% of water use reduction		
User	No conserv.	Minimal 10%	Realistic 12.5%	Optimistic 15%
Residential	344	310	301	292
Non-residential	1,387	1,248	1,214	1,179

** actual gallons*

Table 4. Water Saved from Conservation Measures

User	Residential	Non-residential	Total
10% reduction in water use			
Per day	27.91	9.87	37.78
Per month	837.42	296.07	1,133.49
Per Year	10,188.61	3,602.19	13,790.80
12.5% reduction in water use			
Per day	35.30	12.28	47.58
Per month	1,059.09	368.49	1,427.58
Per Year	12,855.60	4,483.30	17,338.90
15% reduction in water use			
Per day	42.69	14.77	57.46
Per month	1,280.76	443.04	1,723.8
Per Year	15,582.58	5,390.32	20,972.90

** in thousands of gallons*

A minimal 10% is a start, but an overly easy goal to achieve through minimal conservation activities. A realistic goal of 12.5% is plausible. It will require effort, but this makes users more conscious of their efforts, rather than just remembering to turn off a faucet. This goal forces residents to take note of water wasters such as leaks, faulty fixtures, and wasteful practices. The ideal goal, and recommendation, in light of the Governor's Drought Task force, for the town would be to reduce its total water usage by 15%. Using conservation methods, including retrofitting as well as overall water reduction can achieve this, but will take time. A 12.5% reduction can be seen as a stepping-stone to the 15% mark.

These goals are great for residential users and should work well for non-residential users as well. Granted, local business will have to work harder to achieve

goals, but with some retrofitting and updates in appliances, the businesses should be able to achieve similar results.

If the Town of Kearny manages to reduce its water demand by 15%, it would provide some relief on the annual water supply. Reducing the annual water demand by 19 million gallons will drop the total demand percentage to a healthier 74.2%. This will give the town “breathing room,” in the event of a reduction in water availability, pump shutdowns, or other water emergencies.

CONSERVATION METHODS

There are many ways the town can encourage conservation with little cost. Some aspects in the conservation process are already in place. With continued use of these measures, revamping others, and initiating new programs, the Town of Kearny will be well on its way to reach its conservation goal.

There is one consideration the town must take into account. Amid the push for conservation, there will be those who will look toward the Town of Kearny government to take the lead in conservation efforts. The town must also examine its practices, and change behavior. If the town does not institute the conservation methods, community members will not feel the need to conserve as well.

The only recommendation for metering is to add a meter at the water output source. Not only will assist Town personnel to monitor daily use, but can also be of use for leak detection.

Administrative Measures

The first step in conservation is effective water administration. This comes in the form of metering and presenting information about water use. Pricing is also another great tool for feedback, presenting a clear and precise measure for a customer's water use. Many of these measures are in place, and should either be continued, or revamped to give the customer the maximum amount of information.

Universal Metering. Half the battle in conservation is the ability to monitor water use. Universal metering of all taps, residential, commercial, as well as those not being charged for water use (town government) will only help in the conservation effort.

The Town of Kearny already has this in place. The town currently monitors 99% of all water services. The exception is for authorized use of hydrants during line flushing and fire fighting. Meters are kept current, and meter reading occurs on a monthly basis. The town also does random audits during meter reading for reads that appear abnormally high. Maintaining and continuing this practice will be a benefit to citizens' efforts to conserve.

The Town also has an audit system for hydrants. The Town conducts routine inspections on all town hydrants, looking for leaks or malfunctions. Any break or leak is quickly fixed, or the hydrant is replaced.

Cost and pricing. The town currently has an easy to understand and simple fee scale. This provides customers a clear and concise measure of the amount of water used. The Town of Kearny currently uses Caselle® software for billing. This has proved accurate, and has the ability to give detailed information. The program also has room for expansion, which will be vital in years to come.

The town does have a simple water fee schedule however it may be too simple. From a conservation standpoint, the current schedule does not hold users that either use a high volume of water or excessive users accountable. The high-end users are subject to the same fee scale as the average residential user. There are two solutions to the problem, albeit the solution will take effort, and outside consultation.

The first possible solution is to establish a commercial or non-resident fee schedule. Although most commercial users will pay a higher price for the first 5,000 gallons, there is no added incentive to be water wise. Creating a fee schedule more

indicative for commercial grade users may provide some incentive to be reasonable with water consumption.

Table 5. Current Fee Schedule for Single Family Homes – Tucson Water

Residential Block Rates-Single Family	
1-15 Ccf*	$ 1.03
16-30 Ccf	$ 3.60
31-45 Ccf	$ 5.05
Over 45 Ccf	$ 7.13

** Ccf = Hundreds of Cubic Feet (743 gallons)*

Table 6. Sample New Fee Structure for Kearny Water Services. ***NOTE: This is for demonstrative purposes only, not a suggestion for fee increases.***

Current Rate per 1,000 gallons	$ 1.35
Sample New Rate Structure	
1st 5,000 gallons	Per Meter *
Next 5,000 gallons (Block 1)	$ 1.35
Additional 5,000 (Block 2) 5% increase	$ 1.42
Next 5,000 gallons (Block 3) 5% increase	$ 1.48
Next 5,000 gallons (Block 4) 10% increase	$ 1.64

*Meter Schedule:
" meter: $ 19.00 for 5,000 gallons
1" meter: $ 21.00 for 5,000 gallons
2" meter: $ 24.00 for 5,000 gallons
4" meter: $ 32.00 for 5,000 gallons
6" meter: $ 40.00 for 5,000 gallons

The other solution is revising the price schedule, in an effort to hold water high-end users or abusers responsible. A way to revise would be to institute a fee schedule similar to Tucson Water's schedule. Tucson Water utilizes a "block" fee system. For every "block" of water used, you are charged a higher rate (Table 5). Although Tucson monitors water using hundred of cubic feet (Ccf, which equals 748 gallons), a similar system can be set up using the town's current benchmark of "per 1,000 gallons" (Table 6).

Most methods involving cost and pricing are punitive, but the town may also have the ability to provide benefits for conserving water. The City of Peoria offers incentives for adding water-conserving devices. As one of the most progressive water conservationists in Arizona, Peoria offers $100 credits, once yearly, on each customer's bill, provided they met specific water conserving criteria. Kearny, of course, cannot afford such a large credit, but may be able to offer smaller credits, such as $10-$20 every six months.

Specific criteria would have to be developed to determine if a homeowner would be eligible for a credit, but could be easily implemented. The difficult part would be in manpower, when homes are inspected for these devices.

Loss Prevention and Control. The consumer may not be aware of water loss. Leaks and breakage are prevalent in Kearny, particularly with the older lines currently in place. At the consumer end, the town has provided a service to residents on read days. Any unusually high reads are reported to the customer immediately. This gives the customer a chance to fix leaks, or correct problems. This conservation measure should be continued, with due diligence.

The consumer is not the only one responsible for loss prevention. Sometimes the failure falls before the end-user's meter. The town is aware it loses water. If no loss were present, a comparison between total water usage and the amount of waste taken in by the Waste Water Treatment Plant would account for nearly all water. Not all water makes it to the Treatment Plant, but this amount is minimal, compared to the overall amount of use.

Table 7. Water Usage vs. Waste Water Treatment Intake

	Water Usage	Waste Water Intake	Water Loss	Percentage
Yearly	139,079.00	121,740.10	17,338.90	12.47%

** in thousands of gallons*

The good news is the system is only losing approximately 13% of the total consumed water. The bad news is the 13% adds up to over 17 million gallons. It is assumed a certain percentage does go to fire fighting and flushing lines. This percentage, however, is unknown, and would be difficult to track (placing a meter while attempting to fight fires would be impractical). If a fair estimate were available, an estimate of loss due to delivery system failure would be available.

The older water system does have a propensity for leaks and breakage. These are only detected when there are physical manifestations of the problem, such as road depressions or standing water. The worst of it is these manifestations appear only after hundreds or even thousands of gallons have been lost. A system needs to be developed to monitor water output per day, and compare it to the end-user's total usage. Any significant loss would be a warning sign, noting failures in the delivery system.

The ideal scenario would be to systematically phase out the existing water delivery system conduits, and replace them with new lines. The lines currently used have been in the ground since the town's inception. Sediment, minerals, and other elements are straining the lines, making them very susceptible to failure. The new delivery system would curtail the loss significantly.

Complete replacement is a daunting task, one that may not happen immediately. A realistic approach is leak detection. There are several companies that have non-

invasive leak detectors. Conducting a leak audit on major water mains, or areas that are highly susceptible to leaks or breakage would save the town in the long run. Replacing faulty lines will save thousands of dollars in water loss, as well as street repair or other repairs due to water damage.

Education and Information

Educating the public on the need for conservation is the most important part of the water conservation plan. While the City of Phoenix did their research on conservation, they learned many residents were interested in conserving, but needed to learn how. In a phone survey conducted by Phoenix and Parks & Company, one of the most frequent comments made was, “Don’t tell me to conserve, show me how.”

This should be the mission statement for any conservation plan. All is well to present facts on why conservation is necessary, but unless the public is given direction, conservation will never happen.

Understandable/Educational bill. The beginning of conservation for the everyday user is to know how much water is used. The Town of Kearny currently places three services on one bill: water, sewer, and refuse. Sewer and refuse are flat fees that are easily picked out on the bill. The water portion, however, can be a little confusing.

If a little time was taken to really read the bill, it would not be so confusing, however, the average citizen does not do this. A person receiving a bill wants to be able to see it and understand it in a short amount of time, if they look at it. Most of the codes seem fairly obvious, but need to match the codes on the back of the bill. Another suggestion would be to place the asterisked-marked “* Water billed in thousands of

gallons” line to the front of the bill (Example 1). This would reduce the amount of initial confusion, and possibly reduce the number of calls the town receives regarding billing.

Example 1. Explanation of Charges

TOWN OF KEARNY

P. O. Box 639 * Kearny, AZ 85237-0639 * (520) 363-5547

Service to	Date	Account No.
123 Happy Street	01/01/2004	1234.1

Meter Reading		Used	Svc Code	Amount
Previous	Present			
185	200	15	WA	32.50
			SW	19.25
			GB	18.00
			OT	
			ST	2.80
			PE	
			Past Amount Due	

Codes should match back of card

CURRENT BILL
Due 01-01-04

Amount Due
72.55

* Water billed in thousands of gallons

Suggested Change

TOWN OF KEARNY

P. O. Box 639 * Kearny, AZ 85237-0639 * (520) 363-5547

EXPLAINATION OF CODES

WAT – WATER	MIS – MISCELLANEOUS CHARGES
TAX – SALES TAX	PEN – LATE PAYMENT PENALTY
SEW – SEWER	ADJ – ADJUSTMENTS
GBG – GARBAGE	PD – PAST DUE
OTH – OTHER SERVICE CHARGES	

PLEASE MAKE CHECKS PAYABLE TO
THE TOWN OF KEARNY

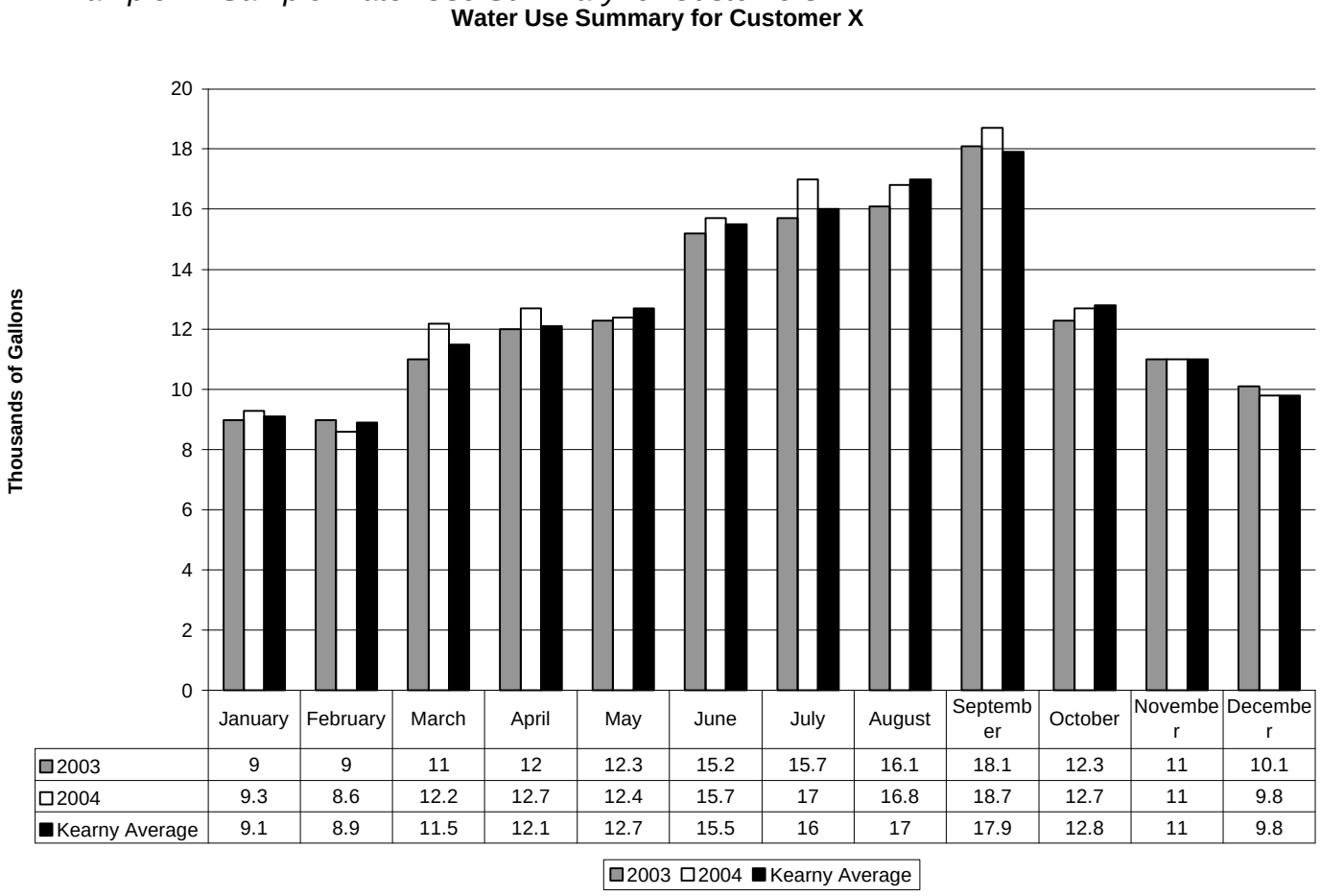
This bill may be paid by check or money order Only, 24 hours a day, 7 days a week at the Kearny Police Department.

Individuals with special accessibility needs may Contact Gary Eide, ADA coordinator for the Town of Kearny, at (520) 363-5547, or (800) 367-8939 (TTD Relay). If possible requests should be made 72 hours in advance.

Another suggestion is to make the bill more informative, rather than simply a list of charges. Information about their water use, year-to-date, and historical information, such as use from last year, would assist customers in determining their water consumption, as well as giving them billing information.

Unfortunately for the Town of Kearny, this measure may be cost-prohibitive. Additional costs in new forms, hours in reformatting bill production, and increased postage may be more effort and cost than what is necessary. An easier compromise would be either a quarterly or semi-annual mailer that details the user's water use for a specific period, as well as a previous year's use. This will give customers the ability to analyze their water consumption as well as a benchmark as they begin the conservation process.

Example 2. Sample Water Use Summary for Customers.



	January	February	March	April	May	June	July	August	September	October	November	December
2003	9	9	11	12	12.3	15.2	15.7	16.1	18.1	12.3	11	10.1
2004	9.3	8.6	12.2	12.7	12.4	15.7	17	16.8	18.7	12.7	11	9.8
Kearny Average	9.1	8.9	11.5	12.1	12.7	15.5	16	17	17.9	12.8	11	9.8

Informational Brochures. Creating brochures informing the public on various aspects of water conservation will be the driving force behind the conservation initiative. Informative brochures do not have to be expensive, as long as it gives information to the public. Slick and colorful brochures are available from WUIW, however a starter package can cost $2,500 to start. Compiling information specific to the area and using strategies that may appeal to the local flavor can come at a much less inexpensive price tag, especially since so many other communities are willing to share information.

Sample List of Public Information Brochures:

- 20 ways to reduce your water usage.
- Town water rates, fees, and services
- Hardware/technology information (retrofitting)
- Low water landscaping/Xeriscaping

Public Service Ad Campaign. In Kearny, the easiest way to disseminate information is through the local newspaper. *Copper Basin News* is always looking for filler, and brief articles on conservation works out well for both parties. Small news briefs, just long enough to provide a chunk of information, but short enough to read in a couple minutes, are perfect for these "public service announcements." Avoiding information overload is key – two or three suggestions is just enough to hook readers. Spacing articles out over a period of time, relative to the time of year, reinforces conservation efforts.

Mixed in with the articles, the town could purchase ad space occasionally. A catchy quip surrounded by eye-catching graphics will get the message across, and provide information with little effort. Staff can also work with the newspaper to slip in conservation graphics, as a way to fill space. These "bumpers" are used frequently in

the local paper, and usually come at little or no cost (newspapers will do this occasionally as a service to the community).

Household Audits. In conjunction with other measures, such as brochures and newspaper ads, the town can encourage household water use audits. These are a simple set of steps designed to make residents aware of water use and waste.

The simplest of the audits is the "toilet audit." Toilets are a large water waster when malfunctioning. These malfunctions are typically easily remedied once detected. When conducting a toilet audit, residents would place an amount of dye into the tank of their toilet. If the dye seeps from the tank into the basin within 10-15 minutes, there is a malfunction, typically with the flapper. When corrected, the audit can save a consumer 10-100 gallons of water a day.

Educational Programs. Pamphlets and mass communication are great ways to conserve. There are times, on the other hand, where more information or clarification is needed, or other people just need to be reached. The best way to do this is with a three-pronged attack, reaching very different groups.

1. Group/organization presentations. There are multiple service organizations that conduct monthly, biweekly, or weekly meetings. These are ideal groups to get the program started. Members typically are active in the community, and would be more than willing to begin to push the conservation agenda.

2. Formal/informal workshops. These are mini classes that will help illustrate ways to conserve. An example would be a workshop on installing drip irrigation, or having a staff member from Boyce Thompson Arboretum teach residents how to build a water efficient landscape.

3. School cooperative. Working with children is one of the easiest ways to begin smart conservation, and convey this message to adults (parents, grandparents, etc.). Designing short classroom units, as well

as experiential learning, such as a field trip to the water treatment plant, can serve as ways to get youth to use water wisely.

Water – Use It Wisely. Water – Use it Wisely is not only limited to the Phoenix metro area, but is now a nationwide campaign. Parks and Company have made available all of its resources, and are willing to include new conservationists, including municipal entities.

WUIW has so many resources that are available. The high-quality brochures and other paraphernalia are available, but at a cost. As discussed earlier, a typical starter package starts at $2,500. Although the price appears to be steep, the cost may be made up if the Town does begin to conserve. Joining the campaign, at a cost of $5,000, may be possible in the future, and will allow the Town total access to all of the campaign's materials, including licensing rights. However, most of WIUW's are available to the public, regardless of membership.

Water Conservation Commission. When, and if feasible, establishing a Water Conservation Committee, comprised of both Town Staff and local residents. By allowing citizens to provide input, the community at large may be more apt to join in the conservation effort.

Hardware Replacement/Modification (Retrofitting)

Replacing or modifying existing hardware, or retrofitting, is one of the most effective ways to conserve water without having to change some behavior patterns. Many water saving devices are fairly inexpensive, and can be found very easily. Items such as faucet aerators or low-flow showerheads are cheap and easy to install. Other measures take much more time and effort.

Retrofitting education is the key to get changes made. Marketing strategies, again, are the way to get the information out. A partnership with local merchants can help in the process. Asking the retailers to have water-conserving products available will help citizens start retrofitting, as well as keeping revenue within the town.

Some may be intimidated with more daunting retrofits, but with a little ingenuity, these fears can be circumvented. A “Helpful Neighbor” program would be a great way to help those who may not be mechanically inclined. A list of “handy” people, who would be willing to help their neighbors with the work could get more people interested in retrofitting.

A financial incentive may also facilitate the transition to water conservation devices. The City of Peoria offers rebates on certain water conservation hardware. Peoria will issue four hundred $100 rebates per year for residents who install hot water heater re-circulators. This may not be completely feasible for the Town of Kearny, but smaller rebates ($5 - $10 for instance) for items such as low-flow toilets or showerheads may be possible.

REGULATION

Encouraging water wise behavior is a non-invasive way to water conservation. It has proven highly effective. As in any community, there are people that are unwilling to change behaviors or practices, or will simply consider it a bother. No matter how much education or information is provided, some will choose not to conserve. This can be problematic. The future's water use is a serious concern, and people need to conserve. Ordinances and resolutions may have to be adopted to curtail wasteful water use.

Behavioral Regulation

The most problematic of this section is the proposal of behavioral regulations. These would be ordinances that deal with a resident's actions, and would add workload to local law enforcement. Conversely, water running down Tilbury Drive is too common, and usually occurs on a daily basis. Only with regulation can some of these wasteful practices be curtailed.

Suggested Behavioral Regulations

- Prohibit wasteful practices. For instance, a prohibition on excessive run-off due to washing sidewalks with a water hose, car washing without water saving nozzles, or random water-letting (e. g. filling a small above-ground pool, then letting the water out onto the street, instead of reusing water for plant watering or other similar use).
- Regulate water use practices. This includes the use of water sprinklers. *Example: sprinklers must be directed only where needed. Misdirection into neighbors' property or Town right-of-ways is prohibited.*

Residential Code Changes

Most of these regulations would apply to specific areas prone to water waste. These should be easier to implement, due to the nature of the planned community setting.

Suggested Residential Code Regulations

- Require low-flow devices on new or remodeled buildings. *Example: low-flow toilets, showerheads, water restricters*.
- Require low-flow devices before beginning a new service connection.
- Require re-circulating pumps on evaporative coolers.
- Regulate amount and type of decorative water fixtures (e. g. non-re-circulating water fountains).

Non-residential Code Regulations

Non-residential or commercial regulations are a must. With the average non-residential users using over 1,300 gallons a day, there needs to be some intervention to curtail waste. Many of these regulations would affect all businesses, rather than waiting for new development or remodeling.

Suggested Non-residential Code Regulations

- Require low-flow devices and fixtures for commercial buildings. *Example: Hotels must install low-flow showerheads and hot water re-circulators.*
- Require low-flow devices and/or re-circulating devices on high-use commercial operations (e. g. car wash or laundromat).

DROUGHT INITIATIVES

Drought is a natural climatic condition that occurs in the Copper Basin occasionally. On the edge of the Sonoran Desert, the Town of Kearny has been subject to droughts. Preparation and readiness for such events is necessary to ensure planned and appropriate responses.

These sets of responses, to be clear, are different than Water Emergency Initiatives. Drought Initiatives will occur when the community is placing a long-term strain on the available water supply, or when the available water supply drops by 25% or more, due to the lack of availability.

Upon recommendation from the Town's Water Resources Manager, the initiatives will be implemented by the Town Manager, with approval from the Town Council, to ensure water use remains manageable and costs are kept to a minimum.

Stage 1

Stage One initiatives will occur when a water shortage that will significantly affect the Town of Kearny is predicted or occurs. As a result, the following measures will be implemented:

- Increased water monitoring, and information provided to all Department Heads, regarding the change in water availability, and the need to conserve.
- Increased community conservation education.
- Reduction in water use by government entities, and encourage non-residential water reductions.

Stage 2

Stage Two initiatives will occur when the available water supply for a month's time drops to 80% or less of normal capacity. As a result, the following measures will be implemented, affecting all water customers:

- Voluntary water consumption reduction, by 5-10%, by household audits, eliminating waste, and reduction of outdoor water use.
- Landscape watering may only occur during the hours of 7:00 pm to 7:00 am.
- Decrease the frequency of landscape watering.
- Turn off outdoor decorative water features and misting systems.
- The Town of Kearny will develop and implement a public awareness program to alert residents to drought conditions, its impact on Kearny's water supply, and measures that will be imposed.

Stage 3

Stage 3 initiatives will occur when water storage ability falls significantly, a month's available water supply drops below 70% of normal capacity or when water shortages appear imminent. As a result, the following measures will be implemented, affecting all water customers:

- Voluntary initiatives from Stage 1 and 2 become mandatory.
- Identify major water users, and require them to develop a water conservation plan.
- Strict landscape watering schedule
  - Addresses ending in 0 or 5 – water on the 5th, 10th, 15th, 20th, 25th, or 30th
  - Addresses ending in 1 or 6 – water on the 1st, 6th, 11th, 16th, 21st, or 26th
  - Addresses ending in 2 or 7 – water on the 2nd, 7th, 12th, 17th, 22nd, or 27th
  - Addresses ending in 3 or 8 – water on the 3rd, 8th, 13th, 18th, 23rd, or 28th
  - Addresses ending in 4 or 9 – water on the 4th, 9th, 14, 19th, 24th, or 29th
- Intensify education and information efforts.
- Strict restrictions on non-essential water uses (recreational or otherwise)
- Implement civil penalties for wasting water.

Stage 4

Stage 4 initiatives will be implemented when a severe drought or imminent water delivery system failure occurs. As a result, the following measures will be implemented, affecting all water customers:

- All Stage 3 initiatives are mandatory.
- Mandatory water use restrictions, per Water Emergency Initiatives.
- Limits on changes or new water connections.
- Change in water fee schedule, in an effort to encourage water limits.

WATER EMERGENCY INITIATIVES

The Town of Kearny must be prepared to deal with acute water shortages in the event of facility malfunctions, delivery failure, or other inability to tap water resources. In the past, self-regulation has been successful, but the implementation measures, as well as procedure have been obscured. As a result, the Town of Kearny will implement Water Emergency Initiatives in times of need as determined by the Town Manager, upon recommendation by pertinent parties, and under the graces of the Town Council.

Definitions

Aesthetic Water Use: water use for ornamental or decorative purposes, such as fountains, reflective pools, or water gardens.

Commercial or Non-residential Water Use: water use that is integral to the operation of commercial and non profit establishments, and governmental entities, retail establishments, hotels, restaurants, and office buildings.

Conservation: practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Customer or end-user: any person, company, or organization supplied by the Town of Kearny.

Eating Establishments, Private: Any establishment which admits a limited or restricted portion of the public and which serves food and washes dishes.

Eating Establishments, Public: Any establishment which admits the public generally with no limitations or restrictions and which serves food and washes dishes.

Effluent: Treated wastewater, whether publicly or privately owned.

Fugitive Water: The pumping, flow, release, escape, or leakage of any potable water from any pipe, valve, faucet, irrigation system, or facility onto any hard surface such that water accumulates as to either create individual puddles in excess often square feet in size or cause flow along or off of the hard surface or onto adjacent property or public

right-of-way, arroyo, or other water course, natural or manmade. *Fugitive water* also means, during the irrigation of landscaping, the escape or flow of water away from the landscaping plants being irrigated even if such a flow is not onto a hard surface. Excluded from this definition is: incidental runoff caused by vehicle washing (provided that a positive shut-off nozzle is used), the periodic draining of swimming pools and spas, flushing of the water delivery system by means of running fire hydrants, and the intentional washing of hard surfaces for an explicit public health, safety, or sanitation purpose as approved by the Town Manager, his/her designate or the Public Works Supervisor.

Grey Water: Household wastewater other than from water closets and kitchen sinks.

Landscape Watering: methods used for the maintenance and upkeep of landscaped areas, including sprinklers, drip irrigation, spot watering, or other similar methods.

Non-essential Water Use: water uses that are not essential nor required for the public health, safety, and welfare, including:

- Irrigation of landscape areas, including parks, athletic fields, and golf courses, unless otherwise provided in this plan.
- Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane, or vehicle.
- Use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas
- Use of water to wash down buildings or structures for purposes other than immediate fire protection
- Flushing gutters or permitting water to run or accumulate in any gutter or street
- Use of water to fill, refill, or add to any indoor our outdoor swimming pools, spas, or similar recreational equipment.
- Use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life.
- Failure to repair a controllable leak within a reasonable period after having been given notice to repair such leaks
- Use of water from hydrants for construction purposes or any other purpose other than fire fighting.

Residential Water Use: water used for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or cleaning.

Waste: Any non-beneficial use of water within the Town limits that has the capacity to deprive other users within the Town limits of the use of water for beneficial purposes, as determined by the Council, Town Manager or his/her designate, or Public Works Director. *Waste* shall include, but is not limited to leaks in an indoor or outdoor non-residential plumbing system (faucets, hose bibs, shower heads, toilets, and the like) in excess of 0.25 gallons per minute, the unabated outdoor running of water from a hose, faucet, or other source not being used for irrigation, and the watering or irrigation of

plants and trees at times other than allowed under a conservation level during the time that a conservation level is in effect.

Wastewater: For purposes of this article means the liquid and water carried waste or sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions whether treated or untreated.

The Town of Kearny will closely monitor output, storage, and dissemination of water to all customers. Upon the recommendation from the Water Services Manager, the Town Manager will initiate Water Emergency measures, appropriate to the magnitude of the imminent or occurring water emergency.

Implementation

All information regarding the magnitude or severity of the Water Emergency, measures implemented, and other relative information will be distributed and initiated from Kearny Town Hall. If the emergency occurs after hours, the Kearny Police Station will distribute information until Town Hall is staffed.

In the event of a Water Emergency, all Town of Kearny employees available will be called on to distribute information or otherwise assist in the emergency. This includes administrative staff, public works, recreational staff, and other personnel not directly dealing with the emergency. The Kearny Police Department, Community Emergency Response Team (CERT), and others will be actively involved.

The Town Clerk, or his/her designee will develop all items for mass communication, and assign tasks for prompt dissemination of information. This may include, but not exclusive to:

- Signs at all businesses
- Flyers delivered to individual homes
- Phone calls

- Internet communications

Stage 1 – Self regulation
- Increase in water conservation education
- Volunteer water conservation efforts.
- Restrict watering to the hours of 7:00 pm – 10:00 am

Stage 2 – Moderate Water Reduction
- Continue measures from Stage 1
- Utilize news sources to communicate water restrictions
- Voluntary restriction of non-essential water use
- Voluntary watering schedule:
  - Addresses ending in an even number (0, 2, 4, 6, 8) on even-numbered days
  - Addresses ending in odd numbers (1, 3, 5, 7, 9) on odd-numbered days

Stage 3 – Strict Water Reduction
- Stage 1 and 2 measures become mandatory
- Strict landscape watering schedule
  - Addresses ending in 0 or 5 – water on the 5th, 10th, 15th, 20th, 25th, or 30th
  - Addresses ending in 1 or 6 – water on the 1st, 6th, 11th, 16th, 21st, or 26th
  - Addresses ending in 2 or 7 – water on the 2nd, 7th, 12th, 17th, 22nd, or 27th
  - Addresses ending in 3 or 8 – water on the 3rd, 8th, 13th, 18th, 23rd, or 28th
  - Addresses ending in 4 or 9 – water on the 4th, 9th, 14, 19th, 24th, or 29th

Stage 4 – Severe Water Restrictions
- Distribute information as quickly as possible
- Continue Stage 3 measures
- Strict limits on non-essential water users (e. g. car wash, golf course)
- Prohibition on all non-essential water uses
- Prohibition on all landscape watering
- Conserve essential water uses

Stage 5 – Emergent Water Restrictions
- Continue Stage 4 measures
- Mandatory shut-down of all non-essential commercial water users
- Prohibition on non-essential water appliances (e. g. washer, dishwasher)
- Restaurants and hotels must curtail as much water use as possible
- Limit on essential water use
  - Quick showers
  - Water for drinking and cooking only
  - Limit toilet and faucet use

Cessation of Initiatives

Upon the recommendation by the Water Resources Manager, or the end of the Water Emergency, the Town Manager will end all initiatives taken. The Town Clerk, or his/her designate, will distribute information in the same manner as when the Emergency Initiatives were implemented.

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