

Public Comments Received for May 21, 2009 Committee Meeting

From: Katrina Ziegweid [<mailto:kziegweid@yahoo.com>]
Sent: Wednesday, May 13, 2009 1:05 PM
To: info@tucsonpimawaterstudy.com
Subject: comments for May 21 meeting- water

Dear City Council (and others):

I read with great interest the topic of using stormwater, and the recommendation for using it at the lot level. What a great idea! Let's turn a problem (management of storm water) with costs into a SOLUTION that costs little.

OOPS! Well, if you know the cost of curb cuts for local homeowners, you would realize that the city MANDATES that curb cuts be done with a concrete saw, and the cost of each curb cut starts at \$350- yes, \$350.00, which is NOT affordable for your average homeowner.

I certainly am capable of taking a sledge hammer and creating my own curb cut, but since I cannot afford a concrete saw, and am not sure I want to venture to use one (esp. being without health insurance and desiring to maintain all my current limbs)- this isn't going to happen.

In effect, the city law greatly hampers individuals who wish to utilize this storm water to irrigate trees that would cool both their home AND the streets. Studies in Israel and California have shown that tree-lined streets can reduce temperatures in the neighborhoods by 5-15 degrees F.

Please! How can you make curb cuts affordable, or banish the requirement that they can be made without a concrete saw! Can the city purchase a concrete saw and loan it out to neighborhood groups? I know funding is tight- what if there was some sort of Curb Cutting Co-op (CCC-yeah! let's bring back the CCC!) in which homeowners could chip in a small amount and then get curb cuts at a reduced cost?

Thank you for your time regarding this important issue,
Katrina Ziegweid
A caring and concerned Tucson Citizen and homeowner

From: cstampingr@dakotacom.net [<mailto:cstamping@dakotacom.net>]

Sent: Thursday, May 14, 2009 5:39 AM

To: info@tucsonpimawaterstudy.com

Subject: Water Conservation: Pressure Washing exterior surfaces prior to painting

Dear Chairman and Members, Tucson Pima Water Study.,

On ,or about, 18 May, 2009, Southern Arizona Painting, under contract with the Wrightstown HOA, plans on pressure washing with potable water the exterior surfaces 108 townhomes prior to painting each town home.

Should pressure washing with potable water prior to repainting be protocol, the Tucson Pima Water Study should determine the total number of edifices in Tucson for each future year, determine the gallons of potable water required to pressure wash each type of edifice, the frequency in years for repainting each edifice, and the total gallons of potable water required each year to pressure wash the edifices. This total would be an annual evaporative loss of potable water.

If pressure washing is a protocol necessity to repainting, a means for using Class A effluent should be engineered and required for use. A better alternative would be the development of an alternative engineering means for cleansing exterior vertical surfaces. The latter is recommended due to the 2.4 teaspoons of mineral content, DISOLVED SOLIDS, per gallon of potable water in city zone 5 (Tucson Water's "Your Water Connection", sent with April billing).. Tucson Water projects the concentration of dissolved solids to increase with time. Pressure washing may increase exterior surface contamination rather than remove it.

In conclusion, is water pressure washing a needed precursor to repainting.

The townhouse on Lot 91, Wrightstown Square HOA, has been repainted twice without prepainting pressure washing-the last time over ten years ago.

Respectfully, Capt. Clyde H. Stagner, US Army ret. -who respects and appreciates your protocol for citizen response.

Brenda Garcia

From: Tina Lee [tinalee61@gmail.com]
Sent: Thursday, June 18, 2009 5:28 PM
To: Brenda Garcia; Nicole Ewing-Gavin
Subject: Re: Oversight Committee meeting packet for June 25, 2009.

Hi Brenda, Hi Nicole,

I won't be here next week but I promised I would send in my comments on the Growth Technical paper. So here they are:

1. Overall, the report is well-researched and informative and the benchmarking comparative analysis is helpful to get a general sense of how Tucson ranks among peer communities for various urban form factors.
2. However, I found the pervasive "rah rah" cheerleading tone (that not so subtly supports population growth, e.g., "Growth can be directed differently to our benefit."; "It confirms that solutions exist for our challenges." Etc.) to be annoying. Also, the oversimplification of Tucson's economic/educational conditions created a blatant bias for new urbanism as the magic bullet, thereby masking the potentially 'harder' and more complex choices that Tucsonan's will probably really face (e.g., p. 69: "In reality, we all will have a say."-- really? truly?)
3. As an example of oversimplification, p. 70 "This shows that enhanced habitat protection and urban growth are not incompatible; one does not have to occur at the expense of the other." The enhanced habitat protection model greatly oversimplifies the matter -- saying or claiming an area is preserved habitat does not ensure ecological sustainability of that habitat -- is there connectivity for the wildlife that inhabit the preserved area to other areas? Is the watershed/airshed that supports the habitat sufficiently protected to ensure its sustainability? Are the additional recreational pressures and indirect impacts (air quality, water quantity/quality impacts) resulting from the surrounding higher density communities accounted for in the assumption that preserved areas are truly 'protected'?
4. The recommendations in Section 4 do not include education and communication efforts that will surely be needed to convince the community to make the choices necessary to achieve the significant changes in urban form that are advocated in this White Paper. Neither do they encourage the County to coordinate planning and future development with ASLD.
5. Increasing densities typically require social/economic mitigation measures such as higher recreation or open space resources per-capita and this is not explored in any of the benchmarks for peer or future peer communities. I'd be interested in more info on this.
6. A couple statements made me scratch my head, trying to figure out what was being said. Examples follow:
 - p. 6 of cover sheet, regarding "the County must ensure that future development occurs in the most fiscally responsible manner. This includes adding value to the tax base and ensuring that affordable transportation and housing choices exist for residents such that residents can afford to continue paying for other goods and services." Fiscally responsible to whom? To the residents of the future developments? To the taxpayers paying for the public infrastructure?
 - p. 85 "Link urban form to activity space-time measures to facilitate the understanding of how urban

design strategies may shape individual space-time interactions." Say what????

7. Table 15 on p. 82 (also on p. 4 of cover sheet) needs better explanation, it's not intuitive what it's trying to explain. Also, this table somewhat implies that these 4 strategies or urban forms are mutually exclusive, but I would argue that they are not and I don't think you intend to imply that. This might also need some explanation.

OK! I probably sound like a kvetch, but it's a heroic job the White Paper team undertook and I greatly appreciate the research that went into it. I'm sorry I will miss the discussion, but the beaches of Oregon are calling my name....

Cheers,
tina

On Wed, Jun 17, 2009 at 4:12 PM, Brenda Garcia <Brenda.Garcia@wvm.pima.gov> wrote:

Yes-noted from previous email, but thanks again for confirming!

Brenda Garcia

Regional Wastewater Reclamation Department

Water Study

(520) 740-6845

From: Tina Lee [mailto:tinalee61@gmail.com]
Sent: Wednesday, June 17, 2009 3:31 PM
To: Brenda Garcia
Subject: Re: Oversight Committee meeting packet for June 25, 2009.

Hi B,

A reminder that I'll be AWOL for the next meeting! But I'm reading the report and will send the Nicole's my comments, thanks for checking!

tl

On Wed, Jun 17, 2009 at 12:17 PM, Brenda Garcia <Brenda.Garcia@wvm.pima.gov> wrote:

Dear Oversight Committee Members,

Please find attached the agenda for the June 25, 2009 Oversight Committee meeting and the May 21

and April 23, 2009 Draft Meeting Summaries for your review. As you are aware, the Growth, Urban Form and Cost of Infrastructure Technical Paper is available online for your review prior to the meeting. Last but not least, staff responses to Committee member questions raised at the last meeting regarding the Water Conservation, Stormwater Management and Riparian Protection Technical Papers are also available online at: <http://www.tucsonpimawaterstudy.com/Meetings.html>

If you have not already done so, please send me an RSVP confirming that you are planning to attend the 6/25/09 meeting so I can ensure we have a quorum.

Respectfully,

Brenda Garcia

City/County Cooperative Project

Water & Wastewater Infrastructure, Supply & Planning Study (WISP)

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Brenda.Garcia@wwm.pima.gov

Brenda Garcia

From: Thomas Sayler-Brown [tsaylerbrown@sbbl.biz]
Sent: Wednesday, June 24, 2009 11:37 AM
To: Brenda Garcia
Subject: Oversight Committee
Attachments: 7-17-77 Editorial.pdf

Brenda,

I won't be at the meeting tomorrow. I read the Riparian Restoration Efforts in the Santa Cruz River Basin report and the White Paper and offer the following comments:

Riparian Restoration:

1. On page 11, it states that "unfortunately", the Corps of Engineers' opinions are not represented. If it is unfortunate, will there be an effort to get their input?
2. Other than misspellings (analysed (page 6) and prioritise (page 14)

No other comments.

White Paper:

1. This is a well-researched document and well written (except for some minor grammatical errors). It tells me that we can plan for growth with consideration for conservation and balance. The discussions do not need to be about whether or not we should have development. Clearly, we can have development and growth with a conscious and conscientious planning effort.
2. I like the analysis of the scenarios presented. They can be mixed and matched and
3. I don't hear "rah-rah" in the report as suggested by Tina. I've attended other conferences regarding developing for density with public transportation systems and have seen the significant improvements to other municipalities and people's ways of life. Centralizing Tucson, expanding public transportation and building up the city has been my mantra for the past 17 years...in a rah-rah sort of way.
4. I've attached an editorial that I was given recently, and that I thought would be of interest.

Thomas Sayler-Brown, AIA

Principal



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06/25/2009

Summary of June 25, 2009 Comments on the Population and Land-Use White Paper

By Bob Cook

1. The relevant scenario comparison is between Status Quo and Smart Growth. What would be very useful for regional infrastructure planning is to have a detailed cost-benefit comparison between business-as-usual and a smart growth strategy.
2. To compare business as usual to enhanced open space, increased density and transit-oriented development scenarios may be informative in order to learn about these separate impacts on where growth will likely occur but it does not inform us about how to plan infrastructure under emerging real-world conditions.
3. Adding an additional one million people to the region under the Status Quo scenario would appear to be closer to impossible rather than "Most Easy" since business-as-usual has shown to be the most expensive and least efficient urban form in terms of total costs and benefits.
4. We are facing absolutely critical sustainability challenges in this region. This white paper did not address any other population growth assumptions except for "doubling our population." We are seriously unprepared for any slower growth scenarios playing out.
5. The committee has heard many presentations from the local scientific and academic community. These presentations show that population growth in the future could decline because of:
 - Water shortages
 - Increasingly higher energy and water costs/prices
 - Increasingly hotter and drier climate
 - Grassification of our local Sonoran Desert ecosystems
 - Higher fire danger in mountains and newly formed grasslands
 - Growing unemployment due to slowdown of development industry
 - The "herd dynamic" to join others escaping increasing hardship



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June 25, 2009

Mr. Jim Barry
Chairman
City/County Water & Wastewater Study
P.O. Box 2344
Tucson, AZ 85701

Dear Chairman Barry:

The Southern Arizona Home Builders Association appreciates having the opportunity to comment on the White Paper “Locations of Growth, Urban Form, and Cost of Infrastructure.” This topic more than any other – even water – dominates the public policy dialogue in Southern Arizona. The discussions are politically charged, contentious and rarely lead to any agreement.

There is no question this White Paper is a comprehensive and thoughtful analysis. It considers and accounts for the demand future growth will place on our water resources. The paper provides four potential growth scenarios. All are supported by research and facts. SAHBA agrees with the basic premise that future growth should not adversely impact current residents.

As the committee weighs the substance of this paper, and considers its impact on future water management decisions, it is important to remember that the four growth scenarios are not “either, or” options. They could be blended or modified. There are undoubtedly other scenarios that could, and should, be considered.

Locations of growth, urban form, and cost of infrastructure are regional issues. Representatives from Oro Valley, Sahuarita and Marana must have an equal seat at the table as this topic moves forward. Any discussions geared towards outcomes or decisions, through this process, or with policy makers in the future, must include a broad set of stakeholders that also includes representatives from the business community, neighborhood organizations and the environmental community.

We also ask committee members, and policy makers, keep in mind the importance of an economically viable region. Without economic stability all of our other priorities, like the arts, culture and environmental protection, suffer. If there were one area we think the report could be improved, it would be to include the role job creation, wealth creation and economic health plays in determining locations growth, urban form and cost of infrastructure. Having TREO provide an economic analysis and forecast would help refine the White Paper’s findings

even further. Ultimately, locations of jobs providers and income levels determine the type of housing products built and where people live.

In conclusion, we would like to commend the authors for their time and dedication to this White Paper. We encourage the authors, and Committee members and policy makers to begin working proactively with organizations like SAHBA to further explore these important issues. Our members can provide expert advice on where consumers want to buy, what types of products they are interested in and how they make their purchasing decisions. This information would prove extremely helpful as this discussion moves forward.

Sincerely,

A handwritten signature in black ink, appearing to read "David".

David Godlewski
Government Liaison, SAHBA

Date: 5 July 2009

To: City/County Water and Wastewater Study Oversight Committee and Staff

From: Bonnie Poulos

Re: Growth Technical Paper

The following are my comments and suggestions concerning the Growth Technical Report that was discussed at the June 25, 2009 meeting of this committee.

1. The Growth Technical Paper was written from a perspective that is biased toward the idea that Urban Form is the solution to the issues concerning future growth and increased population. Although well-written and researched, it struck me as a one-sided look at the complex land use issues that will affect the region over the next 20-50 years.
2. Further, the white paper did little to further our discussions about future needs and possible solutions to increasing amounts of wastewater and increasing demands for water that will inevitably follow an increase in the region's population base. It is obvious that a fair amount of research went into the writing of this report, but the conclusions drawn are not based on statistically significant data, at least not from what is shown in the report.
3. First and foremost, I'd like to make the request that all future white papers directly address their topics to the mission of developing sound (sustainable) water and wastewater policies in the future. Specifically, each white paper topic should focus their information on how it relates to the increasing scarcity of water and increasing amount of wastewater, the increasing costs to obtain new water and to treat more wastewater and possible ways to address those issues within the context of the white paper topic.
4. The Growth Technical Report was 100 pages long yet it barely addressed how land use planning affects the water and wastewater infrastructure needs when the population is double what it is today. The white paper spends most of the time showing figures and tables that are (questionably) interpreted as showing that increasing densities solves a host of problems associated with that kind of anticipated growth.
5. The table on page 8 of the report, which is repeated on page 82 as Table 15, is presented as a "qualitative" assessment of four proposed growth scenarios. It is lacking in substance and has no apparent scientific basis. To show that "higher infrastructure efficiencies" are not achievable in the status quo scenario, but are optimally achieved in the transit-oriented scenario, is subjective and misleading. The latter scenario may achieve greater efficiency in transit use, but greater efficiencies with regard to water use and wastewater treatment costs are unsubstantiated in the transit-oriented model. Likewise in this table, showing that "lower water, resource, energy, and land consumption" can only be best achieved by a transit-oriented scenario is open to much debate. And finally, under "more easily implemented" the status quo scenario is given high marks, with all the others receiving bare mention; I would argue that the current economy renders such an assessment untrue.

6. With all the cities of comparable size in the US, was it really necessary to use cities in Canada as peer communities (Edmonton, Vancouver, Calgary)? They may have similar demographics, but the political, regulatory and economic differences from US cities is quite significant.
7. Many of the figures and tables could easily be eliminated from this white paper; for example do we really need three views of the same figure (Figs. 7, 8, and 9) to show Tucson's relationship to the other cities with regard to density?
8. It really is not until page 51 of the white paper that the report really addresses water and wastewater and the usefulness of the data is questionable. In particular there are issues with Figs. 21, 22, 23 and 24.
 - a. First of all, the use of R^2 values without any supporting statistical data is pretty much meaningless except to show how close to the chosen line your data points lay. Correlations that shows R^2 values of 0.25 (Fig. 21), 0.53 (Fig. 22), and 0.33 (Fig. 23) are most likely not correlated to each other and even R^2 values of 0.82 (Fig. 24) are relatively meaningless when there are so few data points.
 - b. Even if one ignores the R^2 values and looks at the data points on the graphs, the conclusions reached are different from that reflected in the white paper. For example, with regard to the density of the water main network in a community and the density of people per square mile (Fig. 21), although there looks like a trend based on the line that was drawn through the data points, the statistical significance of the population density is critical to the interpretation of the data points which appear to show no added benefit above about 4,000 people per square mile. I would argue the same point in Fig. 22 where the density of the wastewater collection system is purported to be more efficient with increasing population density.
 - c. The conclusions drawn from Fig. 23, comparing water consumption to population density ($R^2=0.33$), are the most questionable of these three figures. The data points suggest that once a population density of about 3,000/sq.mi. is reached, there is no significant increase in per capita consumption of water. The report states "Water consumption is clearly influenced by population density as shown in Figure 23. The denser the community, the less water it uses." When in fact all you can say from the figure is that communities with densities less than 3,000/sq.mi. appear to use more per capita water than communities with densities greater than that. A more substantive question based on this data would be, how do those communities with population densities below 3,000/sq.mi. and are shown below the line, keep their water consumption as low as (or lower than) communities with densities of 5,000 to 10,000 per sq.mi.?
 - d. The premise of Fig. 24, that size of the water utility (number of people served) is related to the amount of water used per person, is compelling but with only 11 data points it is hard to know if the results are meaningful.
 - e. Even more significant is that there are no figures that show what the total use of water is by the peer communities based on the size of their population, which could present a

vastly different picture than per capita water use. An important bit of information is missing from all the scenarios with regard to water and wastewater needs because there is never any discussion of *total usage* in those density models.

9. On page 59, the report states “Dense communities consume less water, particularly those over a density of 3,000 per square mile.” Nowhere in the white paper is this proven. All that was presented was data that shows *per capita use* may be less over that density, but nothing was ever presented that showed dense communities consume less water overall.
10. A glaring deficiency of the white paper, aside from not being more focused on how land use planning impacts water and wastewater issues, is that there is no discussion of the cumulative effects of density (i.e., more numbers of people) on the infrastructure needs and available resources. I am at a loss to how we can come to any agreements about “population growth, water, urban form, land use planning and infrastructure” without understanding the impact of more people.
11. Another major problem with the white paper on Growth is the lack of attention to infrastructure costs. The report discusses growth areas such as the southwest region of unincorporated Pima County but fails to mention that the County’s recent Southwest Infrastructure study indicated costs of \$40,000 per rooftop for new infrastructure needs to accommodate the increased growth. I disagree with the recommendation that future development in new growth areas not be *overly* subsidized by existing residents – none of it should be subsidized by existing residents unless they receive real and tangible benefits from the new development. What about a discussion of what to do if the state legislature restricts jurisdictions from collecting impact fees? How new growth impacts the ability to maintain and rehabilitate existing infrastructure in the already urbanized core of the region is also not mentioned. Again, I have to ask, how do we have this discussion and hope to come to agreement if we ignore these issues in a white paper written ostensibly about growth in the region?
12. And finally I question the future of the Conservation Lands System (CLS) which really exists as a planning tool only for unincorporated Pima County. It provides policy direction, it is not an ordinance. Under the “enhanced habitat protection” scenario, no mention is made of the widely used planning tool that gets a property annexed into another jurisdiction that has no CLS mandate in order to circumvent habitat protection. It seems to me that this question is very germane if this is the basis for one of the four scenarios. How do the jurisdictions work together to promote the highest standards for land use planning in light of increased growth all over the region? At the present time, each jurisdiction is writing its own habitat protection policies – some of which are more like habitat takings policies – for undeveloped areas such as the Houghton corridor. Regional agreement on the CLS would be far less costly than acquiring all the sensitive lands that need protection from development and more effective than multiple plans in each jurisdiction.

C. Brooks comments on *Integrating Land Use Planning with Water Resources and Infrastructure Technical Paper*

- 1) CAGR D criticisms; hydrologic disconnect between pumping and recharge
 - a) While concerns about the hydrologic disconnect between recharge and pumping under CAGR D operations
 - b) . are valid, hydrologic reality dictates that it will be difficult in practice to effectively mitigate pumping by locating recharge closer to where the drawdown is occurring. Due to constraints on land availability, complexity of hydrogeology, and cost considerations in implementing recharge that directly mitigates effects of pumping it will prove to be very difficult in practice.
 - c) It is my opinion that seeking to routinely and effectively mitigate pumping effects by suitable location of recharge will result in many situations where it would simply make more sense to utilize the renewable supplies for the new development, rather than enroll in the CAGR D, because the renewable supply will be brought close enough to make its use economical vs. the cost of recharge. If such policies were strongly pursued the need for the CAGR D would be virtually eliminated, but at considerable cost.
 - d) There clearly are changes that need to be made to operation of the CAGR D. The suggestion made in the report that stricter limitations on permissible drawdown associated with groundwater pumping is an excellent one. Other possible changes to the CAGR D might include more frequent operating plans and strict limits on enrollment of member lands in a given time period that would be more reflective of the availability of surplus water to use for offsetting recharge.
- 2) Discussion of the “interim water service policy”
 - a) I believe it is overly optimistic to refer to this as a “policy” when in reality it is more of an acknowledgment that no policy has ever existed. The former city manager acknowledged as much in an interview published in the Daily Star last October. Until there is an actual policy to evaluate requests for extending water service to new development the City is entirely at the whim of outside forces that will determine how water is supplied to new developments outside of the obligated service area.
 - b) Because the city appears to be waiting on the results of this study to set that policy, it appears that one of the most important tasks of the committee is to establish some guidelines for that policy. The criteria listed in the technical paper are a good jumping off point for this discussion, but a more thorough analysis of the factors involved in such decisions is absolutely critical before a final policy is adopted and I would emphasize that the final policy should be in place before the economy turns around and growth pressures resume.
 - c) One criteria not specifically mentioned in the paper (although it may have been implicit) is whether or not a new development requesting water service from Tucson Water will in turn be contributing wastewater that

will be add to the City's effluent resources. I believe that should be a factor to consider in that process.

- d) Another thread of discussion that should be included under those criteria (as listed on pp. 16-17 of the report) are recent policy changes at the Arizona Corporation Commission (ACC) in how they regulate creation of new water companies to serve new developments and some of the conditions they are imposing on the grant of a certificate of convenience and necessity (CC&N). Recently they have been more aggressive in requiring full cycle water resource management (on-site utilization of effluent resources) for such developments, particularly when they involve significant turf watering areas such as golf courses or common areas. If the ACC continues on that path they can be a useful component in overall efforts to mitigate the effects of water use by new development.
- 3) Concerns with the effect of Prop. 207 and private property rights on city/county ability to regulate water use.
 - a) While there is limited ability to affect use of private property through regulation under Arizona law, especially after Prop. 207, that legislation does permit regulation that is necessary for health and safety of communities (somewhat broadly worded in the statute, to my knowledge the full extent of the exception hasn't been tested by a court) as well as providing for the possibility of waiver of rights by a landowner who would then be unable to pursue a takings claim (but this would require that the landowner be offered something in exchange for the waiver).
 - b) Rather than simply pointing to the difficulty of regulating existing land uses because of the strength of private property rights it might be useful to have a fuller discussion of what is possible with respect to existing permissible land uses.
 - 4) Discussion of wheeling and recharge agreements.
 - a) Excellent! This is the sort of regional cooperation on water supplies that we need to see more of. How long before we stop talking about it and start doing something about it?



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July 30, 2009

Mr. Jim Barry
Oversight Committee Chairman
City/County Water & Wastewater Study
P.O. Box 2344
Tucson, AZ 85701

Subject: Technical Paper on Integrating Land Use Planning with Water
Resources and Infrastructure

Dear Chairman Barry:

The Central Arizona Water Conservation District (CAWCD) appreciates the opportunity to add our comments to the Committee's discussion of integrating land and water use planning. We share your view that this is an important policy issue facing the region, and we support the Committee's efforts to improve planning coordination.

The WISP staff has done an admirable job of synthesizing material into the Technical Paper, and we believe that it can serve as a solid foundation for the Committee's deliberations. However, we are concerned that the sections dealing with the disconnect between groundwater pumping and renewable supplies place a disproportionate emphasis on the Central Arizona Groundwater Replenishment District (CAGRDR). We believe the Committee's understanding of this complex topic could benefit from greater context, particularly the role of the State's Assured Water Supply (AWS) Rules and how the region's existing renewable supplies are being put to use.

The 1980 Groundwater Management Act included the requirement for an "assured supply," but it wasn't until 1995, after a previously unsuccessful attempt, that the Arizona Department of Water Resources was able to pass AWS rules restricting the use of mined groundwater (through the use of renewable supplies). A key factor in getting those rules passed was the creation of a mechanism that would allow developers and water providers to meet the AWS requirement, particularly those without their own renewable supply. That responsibility was given to CAWCD in 1993 with the establishment of the CAGRDR. It is important to understand that the CAGRDR is simply the replenishment authority of the CAWCD and not a separate legal entity.

Membership in the CAGRDR satisfies one portion of the AWS Rules—"Consistency with the Management Goal." Applicants for a Certificate or Designation of AWS must satisfy all of the other Rule provisions, including an on-site physically available 100-year supply, independently of the CAGRDR. The CAGRDR's role then is to perform a service by acquiring and recharging renewable supplies to offset groundwater pumping by its Members. This helps Members satisfy their obligation to contribute to the achievement of safe yield in the Tucson AMA.

The safe yield management goal is calculated by ADWR on an AMA-wide basis, and as a consequence, the "Consistency with the Management Goal" portion of the AWS Rules can be satisfied on an AMA-wide basis. Importantly, this is true for the CAGRDR *and* those without a relationship to the CAGRDR. At its core, the disconnect between pumping and recharge/replenishment that is allowable under the AWS Rules is a direct result of the way safe yield is defined.¹ Given the magnitude of ongoing overdraft in the Tucson AMA (approximately 120,000 ac-ft/yr), most concur that safe yield remains a central water management challenge and thus the focus of the regulatory framework. Beyond that, there is long-standing interest in also addressing so-called sub-area issues,² including impacts caused by CAGRDR members. However, the relative magnitude and extent of those impacts are best understood and analyzed within the broader context of the AWS Rules and other groundwater uses. This is particularly relevant in the Tucson AMA, where the CAGRDR's enrollment and obligation is modest relative to overall municipal demand (CAGRDR reported member obligation in the Tucson AMA in 2008 was 4,290 ac-ft or about 2 percent of total municipal demand).

The replenishment "disconnect" has been the subject of a number of public processes and evaluations. Most recently it was considered as part of a stakeholder process lead by the Arizona Municipal Water Users Association, completed in late 2008. CAWCD participated in AMWUA's "Sustainability Policies Stakeholders Process" as did representatives of Tucson and Pima County.³ Stakeholders actually prepared an issue paper and concluded that a requirement for CAGRDR replenishment in the same location as member pumping

¹ §45-561.12 "'Safe-yield' means a groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area."

² See, for instance, the Safe Yield Task Force issue paper on "Sub-Area Management" at http://www.azwater.gov/AzDWR/Watermanagement/AMAs/TucsonAMA/documents/SYTF_Subarea_Mgmt.pdf

³ See http://www.amwua.org/stakeholder_process.html

Mr. Jim Barry
July 30, 2009
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may be problematic due to a lack of hydrologic feasibility for recharge, it may be prohibitively expensive, and it may not always be beneficial. To provide a more complete understanding of this issue, ADWR committed to completing a technical study to identify the potential areas of concern, the magnitude of the problem and the groundwater users contributing to the problem. CAWCD committed to assist ADWR in that effort, as appropriate. This is consistent with CAWCD's adopted Strategic Plan in which the CAWCD Board indicated its desire to evaluate the magnitude of the hydrologic impact of replenishment, and to identify CAGRDR roles, responsibilities and capabilities.

Bringing renewable supplies to areas of localized overdraft is an important water management objective. Indeed, the City of Tucson's own nearly-completed transition to sustainable supplies demonstrates the critical role that long range planning and infrastructure development can play. The Technical Paper cites some specific ways that, over time, that same kind of transition can occur in other parts of the region. We are encouraged to see this kind of discussion, and look forward to your process transitioning into the regional phases. The CAGRDR would welcome the opportunity to help further the region's goals as we continue to replenish its groundwater supply.

We conclude with some specific comments regarding language appearing on page eleven of the Technical Paper.

"While replenishment is supposed to occur close to the area of groundwater pumping, more than often it does not because of lack of recharge facilities in region."

This statement could leave the false impression that the CAGRDR is failing to do something it is "supposed to." State law allows the CAGRDR to perform replenishment on behalf of its Members anywhere within the same AMA in which the obligation is incurred. However, as a matter of practice and CAWCD Board policy, the CAGRDR makes every effort to replenish at the available recharge facilities closest to where the Member's groundwater was pumped. While this approach does not fully address the spatial disconnect, it is an example of the CAGRDR taking proactive measures, rather than failing to meet a requirement. Currently CAGRDR replenishes at facilities located in the southern portion of the Tucson AMA (Pima Mine Road USF) and in the northern portion (Lower Santa Cruz USF). In addition, the CAGRDR is studying opportunities to develop replenishment capacity in the Sahuarita – Green Valley area.

"This hydrological disconnect has led to significant groundwater declines in some areas of region, such as the Green Valley/Sahuarita area."

Attributing "significant groundwater level declines" in the Tucson AMA to the CAGRDR is inaccurate, and fails to acknowledge the impact of non-municipal users and CAP subcontract utilization. In the example cited—the Green Valley/Sahuarita area—municipal uses account for a small fraction of the groundwater withdrawals, and CAGRDR membership is a fraction of that municipal use. While CAGRDR Members are contributing to the localized overdraft, the predominant impact is from agricultural and industrial pumping.

Other areas of the Tucson region experiencing significant groundwater level declines include the Northwest (i.e., Oro Valley and Metro Water) and far eastern portion of the Tucson metro area. While most of the water providers in these areas are members of the CAGRDR (indeed, as is the City of Tucson), most also have their own renewable supplies (notably CAP subcontracts). Some of those subcontractors are meeting the AWS rules through annual storage and recovery of CAP water, not through CAGRDR replenishment. In this approach, the spatial disconnect is the same as it would be with the CAGRDR. As a consequence, these localized groundwater level declines are more properly attributed to the provider's own lack of renewable supply infrastructure, not the CAGRDR. Still other subcontractors are failing to use any of their CAP allocation.

"While the CAGRDR is obligated to acquire sufficient water resources to meet replenishment obligations, it is unknown how the CAGRDR will meet this obligation in the future."

The CAGRDR operates within the context of a statutorily-mandated Plan of Operation. The Plan must satisfy a series of criteria and be approved by the Director of the Arizona Department of Water Resources. The current Plan of Operation was approved by ADWR after an extensive public process. The Plan identifies supplies that can be used to meet projected obligations, along with financial resources necessary, recharge capacity, canal capacity and several other factors. While there is uncertainty regarding the precise composition of those supplies in the future, this is not unique to the CAGRDR. Indeed, the City of Tucson's own planning documents identify a similar uncertainty regarding future supplies. However, to mitigate the risk of future supply uncertainty, the CAGRDR recharges substantial additional water into a "Replenishment Reserve" account for use in times when supplies are temporary short or expensive.

"It is unknown what the financial implications will be to members from the costs to continue acquiring new water resources for replenishment"

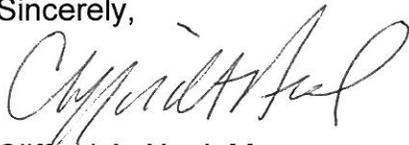
Mr. Jim Barry
July 30, 2009
Page 5

obligations.....As costs burdens grow on water customers to pay for the CAGR D, it reduces residents' ability to pay for other services (public and private), and in the extreme could lead to de-valuing of properties and home foreclosures."

These statements are not supported by fact. The AWS Rules require the use of renewable supplies, and there is no question that the cost of those supplies is increasing. But those costs are starting from a very low level, and this reality holds true for CAGR D members and non-members alike. Suggesting that the magnitude of those costs could reach levels that would jeopardize housing values is extremely speculative, and does not comport with what is known about supply acquisition costs (including forecasts included in the CAGR D's Plan of Operation). As indicated in the Staff's "CAGR D Appendix," those costs are currently less than \$6/month per household, with a projected increase to \$7.50/month in 2013/14. Moreover, those costs are tied directly to household water use, so customers have the ability to reduce their costs through conservation.

Thank you for your consideration of these comments. We look forward to continuing to work with you on this important effort.

Sincerely,



Clifford A. Neal, Manager
Planning and Replenishment

Memo: ***Finding Best Practices and Peer Reviewers for Large-Scale Water Management Plans***

From: Madeline Kiser

Contact information: e-mail: mkiser@dakotacom.net phone: 881-1531

To: City/County Water and Wastewater Study Oversight Committee

August 21, 2009

I. Overview:

Why understanding global best practices, and finding peer review, are important when creating large-scale water management plans

Given the complexity and changeability of these times, when the climate is shifting, populations grow, our supplies of energy and water are decreasing, and the ecosystems we depend on are becoming degraded, it's vital that individuals and groups charged with creating large-scale water management plans become familiar with best practices in this complex field. Also, that they seek (and publicly share) peer review of their plans from local as well as international experts, when possible, in order to ensure that the hardest issues and those which are politically contentious have been adequately and transparently addressed, and that local work is placed in a broader context.

For some reason – a significant problem – by and large, discussions about sustainable water management in Arizona exist as if in a vacuum, at least at the level of public debate, uninformed by decades of work outside the U.S. Values, laws, idiom, methodologies – a holistic approach that's being created around us – to managing water in a time of mounting scarcity and climate change, for the most part don't form part of local dialogue. In part, perhaps, this is true because we don't believe major changes in our environment are imminent. An unspoken belief, central to who we are, is that we are exceptional – that our financial resources and technology will set us apart from other countries, enabling us to meet our challenges through spending and engineering solutions. These core beliefs are our Achilles' heel.

Perhaps the most important goal of large-scale management plans needs to be translating the reams of data which inform them into a few clear messages which policy makers and the public can understand. One of the dangers, in these exceptional times of change, is drowning in data and failing to summarize – to connect the dots - and by default conveying the sense that the world we're living in is much as it has been, and water management, as well as our private lives and habits, can continue as they have without perhaps significant sacrifice. The abundance of data obscures the scale of the problem as well as integrated solutions to it.

Other countries, like Australia and South Africa, are seen as taking the lead in developing new approaches to managing water in a time of scarcity because water scientists and water managers in these countries have taken a significant first step – changing core perceptions about this moment, and conveying to the public and policy makers two

important concepts. First: Nature is the base of human civilization, and if we are to survive, we need to conserve it (therefore, conserving water for nature is seen as the principle goal vs. as a luxury, affordable only after human needs are met). Second: these are exceptional times, requiring difficult tradeoffs and sacrifice. ***The importance for sustainable water management of being able to generate public understanding of and political support for these simple concepts can't be underestimated – they are the basis for all the complex plans, data and programming that water management in these changing times requires. But it won't happen if documents don't transcend data, aren't clear, and don't take a stand.***

In a recent article, “Wake Up: Here is What a Real Water Crisis Looks Like,” about parallels between Australia and the Western U.S., international expert Peter Gleick speaks of the kind of major shift we need in the Southwest U.S., in how we view and manage water, in keeping with the international shift toward holistic management defined by sustainability principles underway elsewhere:

“This real [Australian] drought has, at last, led to transformational changes in Australian water policy – changes unlike the tiny, incremental modifications we've fought over in the Western U.S.” (Gleick, Pacific Institute blog posting, July 2, 2009)

A first significant step towards our transformation in Arizona amounts to a public relations campaign. All documents about water in this state need to convey the singularity and urgency of this moment; that technology can help us, but by itself isn't a solution and can't substitute for maintaining the ecosystems which sustain us as healthy as possible; and the tradeoffs we will have to make will be much harder than they have been and will require sacrifice. By creating acceptance for these ideas we begin to join a growing community of nations responding to this moment very differently than we are, and takes steps towards creating the political will we'll need to create substantive legal and policy changes regarding water.

II. Preparation for this memo

1. Interviews via e-mail and exchanges of documents

I wrote to two Arizona water experts and seven international water experts with experience creating and evaluating large-scale water management plans, and familiar with what can be called the new holistic, or sustainable water paradigm. Different titles and methodologies are ascribed to this paradigm, including Integrated Water Resources Management, environmental flows methodologies, sustainable water management, and others. There are differences among them, and, as the times change, and as striking a balance between conserving water for nature, for basic human needs, for industry and for development becomes more challenging, terms are merging and changing. But all share a few fundamental properties described below.

The two Arizona experts I contacted are Kathy Jacobs and Dr. Sharon Megdal, and I exchanged notes and documents with the following international experts, listed below. All have participated in creating and advising large-scale water management plans and are familiar with global best practices in this field:

Jamie Pittock – an Australian who is the former head of World Wildlife Fund’s freshwater program and who is knowledgeable about large-scale management plans throughout the world.

Dr. Jackie King – a South African aquatic scientist who for 20 years has served as a lead advisor about sustainable water issues for the World Bank. She’s directed and participated in creating large-scale water management plans, including national water plans for South Africa, Tanzania, the Mekong Basin, and other areas.

Dr. Kevin Rogers – a South African ecologist with experience implementing South Africa’s water law and creating management plans.

Katharine Cross - former director of the World Conservation Union’s website about environmental flows and the sustainable use of water.

(I also wrote to The Nature Conservancy Director of Sustainable Waters Program, Dr. Brian Richter; Dr. Peter Gleick, of the Pacific Institute; Sandra Postel of the Global Water Policy Project; and Dr. Carl Bauer, of the University of Arizona, but didn’t receive responses.)

I asked two questions:

Which examples can you give of best practices for large-scale water management plans – i.e., which countries and regions are taking the lead creating these plans, and why?

Is it possible to find peer review by knowledgeable experts of large-scale water management plans, to ensure that those who are creating these plans ask the hardest and most politically sensitive questions, and that the framework and methodologies they are using are in accordance to global best practices?

2. Reading

I read the white papers sent to my by the City/County Water and Wastewater Study Oversight Committee; Robert Glennon’s *Unquenchable* (for its call for national water reform in the US); sections of six long documents forwarded by international experts; and references cited in correspondence. In addition to this memo I’ll be sharing with the committee two of these items:

The Basin Plan: A Concept Statement, developed by Australia's Murray-Darling Basin Authority

“Wake Up, Here is What a Real Water Crisis Looks Like,” by Peter Gleick

III. Research Results:

Shared concepts and understandings evident in large-scale sustainable water management plans, and answers to interview questions:

1. Water is the source of life. Any alterations to aquatic systems – rivers, wetlands, aquifers – will ultimately affect people, cities, and industries, as well as nature. Any proposed alteration needs to be measured, as rigorously and transparently as possible, in terms of its social, environmental, and economic impacts.
2. Consensus among diverse groups about the degree aquatic systems will be altered needs to be reached *before* alterations take place. Dialogue about proposed changes – including turning to new technologies to provide new supplies of water – needs to be rigorous, open, inclusive, and transparent, and when possible include outside peer review.
3. These are exceptional times and demand new ways of understanding and managing water. These times will also demand a strict new conservation ethic reflected in private lives, water laws and adaptive management strategies, often amounting to very difficult decisions and exacting trade-offs.
4. Best practices: Australia and South Africa are held up as examples of global best practices for large-scale water reform. National water laws in these countries which give the right to water first to nature and people have been translated over two decades into national, regional and basin management policies and plans. This represents a profound shift away from piecemeal legislation based on the belief that water isn't scarce and on engineering and high-tech solutions to address scarcity. (U.S. experts, like Robert Glennon, Peter Gleick, and others are calling for national-level reform, given that legislation and policies enacted by the states overall isn't working in this time of change.)

In both Australia and South Africa however it's been extremely difficult to implement laws and policies. The transfer of knowledge between aquatic scientists, trying to make a case for the need to conserve aquatic systems as not only the base of plant and animal species, but of human life and civilization, has been slow, mainly because it takes time to accrue the necessary political will to support nature when there's ubiquitous pressure to develop. In Australia, climate change is making it extremely difficult to implement management plans (Jamie Pittock, July 6, 2009). But ultimately the process of implementing sustainable management plans will be slow, because it requires a transfer

of new scientific knowledge into the public realm, and incremental progress shouldn't be seen as a sign that this new paradigm and related stewardship principles aren't working.

5. One of the most important questions when creating large-scale management plans becomes: At which level, or levels – national, state, regional, local - do legal, policy and management changes need to come from, and how will these changes overlap? **How will regional water plans, for example, be affected by state or national plans and changes which take shape?** Those who are creating large-scale plans, as well as policy makers and the public, need to be able to answer these questions. In Australia and South Africa national-level reform has led to corollary regional and basin reforms. These plans are linked and support and inform each other.

6. There's an awareness among scientists and water managers considered leaders in the field of creating sustainable water management plans that they're working in tandem with other countries, and are part of an international movement. No one advocates "one-size-fits all" solutions, but a lot of cross-pollinating takes place, and open sharing with the public. Peer review is actively sought, in which local experts bring in outside experts to create meaningful dialogue and provide monitoring. This is an important habit, or trait, integral to the science and policies which have been developed.

7. Peer review: Only one of the experts interviewed, Dr. Jackie King, suggested ideas for peer reviewers – pointing to a global need which exists to create teams of peer reviewers with experience who can assist the overwhelming number of communities, regions and countries undergoing the same process as southern Arizona. (Dr. King suggested that we turn to World Bank researchers who have written about best global practices for large-scale water management plans. I can share more, if there's interest.)

IV. Comments on City/County White Papers, and a Wish List for the Committee's Final Report:

Having read through the committee's white papers for Phase II, its Phase I report, and attended numerous committee meetings, I'm still uncertain about how the data adds up, as Peter Gleick says, into clear transformational change. I'm also unsure of what our core values are, underlying the need for change?

I know the process of writing it has yet to begin, but I have the sense that, without the single guiding principle which is the core of the international sustainable water movement underway – water for aquatic systems must be conserved, above all, so they can continue to provide for ecosystems over time and for varied human needs – it will be challenging to come into clarity. Conserving water for nature will be seen as a luxury, separate from human needs, and high tech solutions turned to, to continue to bring new water into our region. This single conclusion about nature first is the "north" for the global movement in water science and management underway.

Nor is it as clear from documents and meetings:

- That this is a new, unique, and potentially dangerous moment. To paraphrase Robert Glennon: At the local and also national level, we need to keep this crisis from turning into a catastrophe.
- What the top challenges are that we face, and how they intersect, such as the water/energy/climate change nexus.
- What our top solutions are, and their social, environmental and economic costs and benefits. Thinking through options that are often mentioned:
 - How much will we be able to advance towards sustainability through **conservation** initiatives? Will **desalination** be feasible? What are the true costs of utilizing highly treated **effluent**, especially given the public health concerns about emerging contaminants, and that producing it is energy-intensive? We may have no other choice but to turn to highly treated effluent, but we need to understand what we're choosing. Can we continue to draw from the **Colorado** given that so many other areas are eying it as their solution? What role will **water transfers and markets** play?
- A sense of where our approach fits, within the global best practices for large-scale water management plans.
- At which scale, or scales, will change come from? If national and state policies are enacted how will they affect this regional plan?
- What is the ultimate purpose of this report and process – how will they help shape policy? Who will read the final report, and what will follow it?

Therefore my wish-list for the final report is the following:

1. That it state at the outset and without equivocation that this is a new moment in the Southwest, in Arizona, and in our section of the state regarding water, and explain why. (See the Murray-Darling plan's opening two paragraphs, under "Managing the Murray-Darling Basin.")
2. That it state at the outset that this new moment will require markedly new ways of understanding and managing water. These include:
 - Placing our efforts in the context of the global movement underway, which embraces conserving water for nature as a means to protect the environment, but also, people and human enterprises.
 - Rigorously and honestly questioning the social, environmental, and economic costs/benefits of top proposed new sources of supply. ***There's a lot we don't understand***

about our choices to increase supply and this uncertainty needs to be prominently mentioned.

- Wide-scale investment in creating a new culture of water, a new ethic – conservation, water harvesting, grey water use, etc.
- Address the scale, or scales, at which meaningful change will need to come from, and how will these scales overlap? This includes the need and potential for national and state legal and policy reforms.

I also feel that it's vital to turn to countries, like Australia or South Africa, which have struggled to implement this new approach to managing water over decades, and to entities, like the World Bank, which has published numerous global studies of best practices, and find peer reviewers for the committee's report and process. (It's striking that in order to publish an article in a top scientific journal, writers have to undergo peer review but plans which can affect millions don't have to submit to the same scrutiny.)

A last note: That the two countries that have taken the lead facing water scarcity with management policies and laws based on sustainability principles are having so much trouble implementing change should be seen as a caveat. Even under the best of circumstances, with sound principles and plans in place, the amount of upheaval the planet is experiencing is creating enormous challenges. Above all, the public and policy makers must understand *this*, in order to prepare people for a time of sacrifice.

Jim, Melaney, Nicole -

Re-reading the article I sent you about Australia by Peter Gleick, I found his recommendation to read this article below. It's excellent, and includes lessons for other countries. I've tried to winnow the many documents I read while doing research, and not send too much, but the sections on "where there's a will there's a way" and "what can we learn" merit sending, and might be informative when you structure your report.

I think we need to bring in a team of Australians, and hold highly visible, publicized forums about the comprehensive changes they've enacted. Many believe we can't follow Australia's lead, but I think sooner or later we're going to have to.

Have a good week - Madeline

In this paper I present a short history of Australian droughts and the government's response to the current crisis. This narrative is important for two reasons: first, for the striking parallels that we might draw with our attitude to climate change; and second for the lessons we might learn about how best to respond to this challenge.

“This is the death of the earth”[\[1\]](#)

Australia is the driest continent outside of Antarctica and the threat and presence of drought is just a part of life down-under. Since the first recorded drought in 1791 there hasn't been a single decade when some part of Australia has not been in drought.

Each time that drought has descended on Australia it has ravaged the country. It has wiped out crops, decimated stock numbers, raised terrible, choking dust storms, destroyed outback communities, drained rivers and dams, driven murderous bush fires and marred hundreds of thousands of lives. It has also cost the Australian economy billions of dollars.

The history of Australia is the history of drought. The Federation drought, which began in the mid-1890s and reached its devastating climax in 1902 one year after Federation, threatened water supply in Australia's largest city, prompting the government to declare 26 February 1902 a day of “humiliation and prayer”. At Bourke the mighty Darling River was reduced to a trickle and in Queensland the State's sheep flock was all but wiped-out[\[2\]](#).

The 1914-15 drought, which was ushered in by soaring temperatures and widespread bushfires, culminated in the catastrophic failure of the wheat crop. Flows in the Murray River were reduced to just 2% of normal levels and the outback town of Charleville was forced to import water by train.

The World War II drought set-in in 1937 and lasted until 1945. The wheat crop was devastated and sheep and cattle numbers plummeted. Bush fires raged across the States reaching their peak on 13 January 1939 – “Black Friday”. By August 1940, the Nepean dam in New South Wales was empty and water restrictions were put in place in Brisbane, Sydney and Melbourne.

The 1982-83 Drought was short and sharp. Once again the wheat crop failed and stock numbers were decimated. On the 8 September dramatic dust storms, the likes of which Australia had never seen, enveloped the state of Victoria and its capital city Melbourne, and then one week later bush fires added to the misery on what became known as “Ash Wednesday”. In total, the economic losses from the drought were estimated at A\$3 billion[3].

“We should all pray for rain,”

The Federation drought was considered to have been the worst drought on record...until now. The current drought, which Australians disarmingly call ‘The Big Dry’, is the most severe drought that Australia has experienced in over 100 years and it is probably the worst since European settlement in 1788.

The drought ‘began’ in 2002 and it is now in its seventh year. It has affected different regions at different times and to differing degrees. By April 2007 the situation was so dire that it prompted the then Prime Minister, John Howard, to appeal to higher powers – “We should all pray for rain,” he said. At that moment, 65 percent of all viable land in Australia was in drought and the water supply in Australian dams had declined to 25 percent of their total capacity[4]. The image below from NASA’s Earth Observatory Satellite, shows the extent of the drought in May 2005. Only the south-west corner of the continent has escaped the ravages of the drought.



Extent of drought, May 2005[5]

Nowhere was the situation more desperate than in the Murray-Darling Basin. The Murray-Darling Basin is the heart of Australia and its precious water its lifeblood. The basin, which

covers an area the size of France and Spain combined, comprises more than 150 distinct waterways, supports an agricultural industry worth A\$9 billion a year, is home to 16 internationally recognized wetlands and supplies water to more than 3 million Australians[6]. By mid-2007, flows in the Murray-Darling were at 5% of their average, and all along the river system giant red gums were dying from lack of water, fish were floating dead in deoxygenated pools and the precious soil had either been blown away as dust, or baked to concrete[7].

“Man must share the blame with Providence”

We live under the misguided belief that drought is a wholly natural phenomenon over which we have no control. This belief is false. Extremely low rainfall over an extended period of time is a natural phenomenon over which we have no control. But drought arises when this natural phenomenon is combined with a failure to anticipate, plan and adapt.

The drought in Australia was not caused by extremely low rainfall alone. It was also caused by the mismanagement of the country’s water resources over decades and by the public’s casual use of a precious resource and its indifference to the threat. That is not to say that drought could have been avoided even with the most complete planning. Some parts of Australia will always experience severe drought – that is part of the boom-bust cycle that some communities are willing to live with.

It was evident to all concerned that we were heading towards a disaster, yet the Government and the public were unable to take the difficult decisions before the catastrophe was virtually upon us. (And it is worth remembering that for many families the catastrophe was upon them). State Governments were still arguing over the allocation of water rights and citizens in Toowoomba, Queensland were still voting in a referendum *against* the recycling of their water, when water levels in many of Australia’s largest dams were as low as 15 percent.

It wasn’t until the drought had cost the Australian economy more than A\$20 billion, forced 10,000 farming families to flee the land[8], reduced wheat production by more than 60 percent, forced the NSW Government to appropriate water from farmers in order to cover the shortfall in the cities, and caused electricity black-outs because power stations were forced to shut-down production for lack of cooling water, before – finally – there was sufficient will on the part of the Government and the public to act.

Where there is a will, there is a way

As we so often see, where the political will exists, action can be swift. The Australian government and public finally, after years of procrastination, began to respond to the drought with a series of coordinated measures.

These measures included regulatory reform, strict water rationing backed up by heavy penalties, a steep increase in the price of the resource to better correspond with its value, investment in new

infrastructure and (critically) a powerful and highly visible public awareness campaign. The response was unprecedented and would have been unimaginable just a few years earlier.

Government cooperation and coordination

After decades of bickering and wrangling over priorities and funding, the Federal and State Governments finally reached agreement on how best to manage Australia's precious water resources. First came the National Water Initiative, which was signed by the last State government in April 2006^[9]. The initiative reforms the way in which Australia's water resources are regulated and managed, set-outs a framework for water entitlements and the foundation for water trading and underwrites massive funding for water infrastructure programs throughout the country. Then in July 2008, the State and Federal governments finally signed the Intergovernmental Agreement on Murray-Darling Basin Water Reform. It marks the first step to coordinate the management of Australia's most precious water resource. It is a landmark agreement that has been a long time coming, though many fear that it may have come too late to save the Murray-Darling.

Strict Limits and Penalties

The State governments introduced strict limits on water consumption which they rigorously enforced and backed-up with heavy penalties. These measures placed restrictions on the use of water and in some cases put quantitative limits on household water consumption. Water restrictions were introduced throughout Australia and water consumption targets were introduced in the major urban centres – and on the whole they have been met^[10]. Bans were placed on the use of hosepipes, washing your car, watering your garden, or filling your swimming pool. It was made compulsory to install rainwater tanks and water efficient shower heads. Such measures would have been politically unthinkable in other circumstances.

Higher Water Prices

Water prices were increased in most major cities to better reflect the scarcity and value of the resource. Prices in Sydney rose by 20 percent between 2005 and 2006, then by 17 percent in 2008. In Melbourne a 5% levy was introduced. And at the height of the drought, water prices in Brisbane were increased twice within the space of one week^[11]. Further price increases are planned by all major water authorities. Water prices in Melbourne will increase by 60 percent over the next four years^[12]. By 2018 Brisbane residents will have to pay almost double for their water^[13]. And in Sydney, water prices will rise by a further 14 percent between now and 2012^[14].

Significant New Investment

The Australian government also made commitments to spend more than A\$50 billion on water improvement measures over the next ten years. This will include major projects such as the building of desalination plants and new pipeline infrastructure, as well as investment of A\$3.7

billion in water conservation measures in the Murray-Darling Basin. In 2006, Perth became the first Australian city to operate a reverse osmosis seawater desalination plant, which now supplies 17% of Perth's drinking water supply. Desalination plants are also being planned in other parts of Australia, including Sydney, Melbourne, Adelaide and the Gold Coast. In total, there are hundreds of water improvement projects being funded by government, ranging from the creation of a comprehensive water accounting programme and better water metering in homes, to the construction of massive new water pipelines and improvements to farm irrigation systems[15].

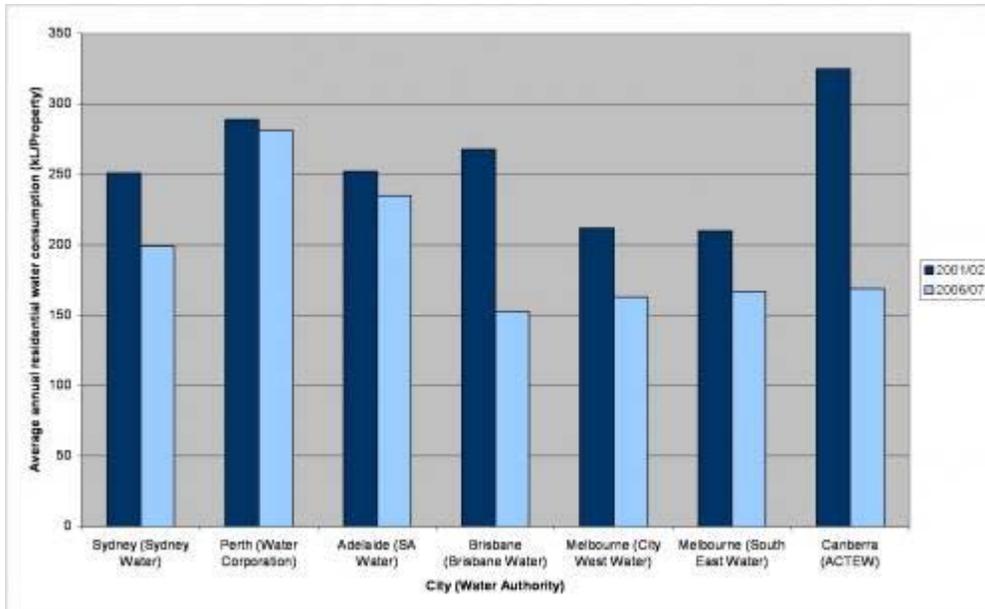
Public Education Campaign

All of the above measures were supported by a powerful and highly visible publicity campaign which stigmatized water misuse. Using water to clean your driveway was now as socially unacceptable as smoking in the office or letting your kids run around in the sun all day without proper sun protection. The drought sensibilised Australian's to the impact of drought and to the real value of water. Public attitudes to water changed. Between November 2005 and May 2007 (arguably the height of the drought) the percentage of Australians who cited water shortages as their primary concern rose for 22 percent to 55 percent[16]. In a similar vein, in October 2007, on the eve of the national election that unseated then Prime Minister John Howard, NewsPoll ranked water planning as equal second in the nation's list of political priorities; equal with education, just behind health, and well ahead of national security which ranked eighth. The merits of different shower heads and the best place to find a new rainwater tank became the subject of conversation around dinner tables in most Australian cities.

And the results?

Throughout Australia, water consumption has been reduced. Since the start of the drought, average household water consumption has fallen by more than 40 percent in Brisbane and Canberra and by about 20 percent in Sydney and Melbourne[17]. In Brisbane, at the height of the drought, the average person's water consumption fell to as low as 116 litres per person per day – compared with levels of 260 before the drought began[18]. In Canberra, water consumption was reduced by 35 percent within the space of just one year. In Melbourne, per capita water consumption in 2008 fell to its lowest level since 1934. And in Sydney, water consumption today is at the same level as it was in 1974, despite 1.2 million additional residents (imagine if we could say the same thing for energy!). These results are even more impressive when you consider that they reverse a nation-wide trend of increasing water consumption between 1993 and 2001, when per capita water consumption increased by 8 percent[19].

City (Water Authority)	Average annual residential water supplied (kl./Property)						Percentage change	
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2001-2007	2006-2007
Sydney (Sydney Water)	251	255	224	211	203	199	-21%	-2%
Perth (Water Corporation)	289	260	285	277	268	281	-3%	5%
Adelaide (SA Water)	252	273	245	235	233	235	-7%	1%
Brisbane (Brisbane Water)	260	256	258	264	185	153	-43%	-17%
Melbourne (City West Water)	212	214	188	187	183	163	-23%	-11%
Melbourne (South East Water)	210	209	186	184	187	167	-20%	-11%
Canberra (ACTEW)	325	320	248	240	261	169	-48%	-35%



Average annual residential water use in selected Australian cities, 2001 to 2007

What can we learn?

What makes the above narrative important are the lessons we might learn for combating climate change. The lessons are striking.

1. The threat of drought was clearly understood, yet implausible as it may seem, the government and public alike were unable to act despite a compendium of scientific evidence and a long history of repeated severe droughts.
2. A decades-long period of wrangling between different state governments, gross mismanagement of the water resource and public apathy, disbelief and inaction led directly to the catastrophe.
3. It was only when this catastrophe was upon us – when the situation was dire – that the government and the public found the collective will to act. Without this near catastrophe, we would have continued to walk into oblivion using too much water in the driest inhabited continent on the planet.
4. But when they did act it was swift. The Government was prepared to put in place and the public were prepared to accept draconian measures that would previously have been considered unthinkable.
5. The response was unprecedented in nature and in scale.
 - cooperation across state and federal governments;
 - root and branch reform of water management and planning;
 - introduction of strict limits on the use and consumption of water;
 - increased water prices and the introduction of water trading; and
 - massive public investment in new infrastructure.

6. That response was backed up by a powerful public awareness and education campaign that changed the public's attitude towards drought and made it socially unacceptable to waste water. This social element underpinned the regulatory and market response.
7. The results show that substantial reductions in the use of an essential resource – in the order of 20 to 40 percent – can be achieved in the space of a few years and at relatively low cost.
8. The public was prepared to accept significant price increases in an essential resource – of between 40 to 70 percent – where the reason for that price increase was understood and where the resource represented a relatively small proportion of the household's total expenditure.
9. Both the invisible hand of the market and the visible hand of strong, government intervention were required to achieve these outcomes.
10. But there can be no 'quick fix'; the above measures are just a start. We will need many more years of action and many more initiatives before the threat of drought is overcome.

Postscript

There is no happy ending to the above story – not yet. You don't solve a problem as great as this in a few years. While the drought has broken in some parts of Australia, large parts of the country, particularly the south-east, are still gripped by the Big Dry. Dam levels are still low. The Thomson Dam that was supposed to 'drought-proof Melbourne' is still at just 18% capacity[20]. Our responses have not always been the most cost-effective. Studies that examined the cost-effectiveness of different measures found that the cost per megalitre of water saved ranged from A\$770 to A\$33,395[21]. The Murray-Darling system is "beyond repair" according to the environment minister Penny Wong – a statement quickly denied by other stakeholders and subsequently corrected by the minister herself. The water consumption targets that were introduced have not always been met. Melbourne's water target of 155 litres per day was exceeded by 15% this summer. Water prices have risen, but Australians still spend less on water than they spend on any other essential services. The typical Australian household spends three times as much on electricity and twenty-five times as much on food and drink as they spend on water[22]. Each year water companies lose large quantities of water due to leaking pipes and overflows. Water losses in Brisbane, Sydney and Melbourne in 2007 were between 107 and 76 litres per connection per day. For the largest water authorities serving populations of more than 100,000 persons, the cumulative water losses amounted to 129 gigalitres – more than the total water consumption in Brisbane[23]. Many of the promised infrastructure projects are delayed or behind schedule or over budget or all three. And finally, in those areas where the drought has ended, there are signs that average daily water use is already creeping back up[24].

In Australia, it won't be until we have adapted the social and economic order to the natural order that we will have finally overcome the threat of drought. The same will be true for our global response to climate change.

[1] From the second stanza of T. S. Eliot's poem *Little Gidding*

There are flood and drought over the eyes and in the mouth,

Dead water and dead sand contending for the upper hand.

The parched eviscerate soil gapes at the vanity of toil,

Laughs without mirth. This is the death of the earth

[2] Sheep numbers fell from 91 million to 54 million, and cattle from 11.8 million to 7 million.

[3] Australian Bureau of Statistics, 1988, *Year Book Australia, 1988*, Commonwealth Government, Canberra.

[4] CSIRO, 2009, *Water Resources Observation Network, Dam Level Index* (<http://www.wron.net.au/DemosII/DamData/DamNodeView.aspx>)

[5] NASA, Earth Observatory Satellite, Vegetation Anomaly Image, May 2005, NASA, Goddard Space Flight Center, Greenbelt.

[6] The Murray-Darling Basin encompasses 14 percent of Australia's land mass and generates 39 percent of the national farm income. The Basin produces 53 percent of Australia's cereal grain, 95 percent of its orange crop and 54 percent of its apple harvest. In 2007 the World Wildlife Fund listed the Murray-Darling as one of the world's top ten rivers at risk.

[7] CSIRO, 2008, *Water Availability in the Murray-Darling Basin*, CSIRO, Canberra.

[8] Australian Bureau of Statistics (ABS), 2009, The ABS calculated that 10,636 families gave up farming during the most severe drought years between 2001 and 2006.

[9] The National Water Initiative was signed by the Commonwealth and all State Governments, except Western Australia and Tasmania, in June 2004. Tasmania signed the Agreement in July 2005. Western Australia signed the agreement in April 2006.

[10] Targets of 140, 155 and 135 litres per person per day were introduced in Brisbane, Melbourne and Sydney respectively at the height of the drought. The target in Brisbane has since been increased to 170 litres per person per day following the 'end' of the drought.

[11] ABC News, *Brisbane water price rises again*, 12 May 2006.

[12] Essential Services Commission, 2009, *Melbourne metropolitan water price review 2009-10 to 2012-13*, Essential Services Commission, Melbourne.

[13] Queensland Water Commission, 2009, *Bulk Water Prices 2008/2009 – 2017/2018*, Queensland Water Commission, Brisbane.

[14] Independent Pricing and Regulatory Tribunal of New South Wales, 2009, *Review of Prices for the*

Sydney Catchment Authority From 1 July 2009 to 30 June 2012: Water — Determination and Final Report, June 2009, Independent Pricing and Regulatory Tribunal of New South Wales, Sydney.

[15] Investments include A\$450 million for the Bureau of Meteorology to set up a comprehensive water accounting programme; A\$620 million is proposed to improve water metering; and A\$1.6 billion will be made available to improve the efficiency of farm irrigation systems.

[16] Roseth N., 2008, *Research Report 48: Community Views on Recycled Water. CRC for Water Quality and Treatment*, National Water Commission, Canberra.

[17] National Water Association of Australia (NWAA), 2008, *National Performance Report 2006-07*, NWAA, Melbourne.

[18] Queensland Water Commission, *The Water Report, 15 February 2009*, Queensland Water Commission, Brisbane.

[19] Department of Environment, Water, Heritage & the Arts, 2007, *State of the Environment, 2006: Indicator: HS-42 Water consumption per capita*, Commonwealth Government, Canberra.

[20] CSIRO, 2009, *Water Resources Observation Network, Dam Level Index* (<http://www.wron.net.au/DemosII/DamData/DamNodeView.aspx>)

[21]. Crase & Dollery studying the subsidies paid in Melbourne on water-saving investments for households found the cost per megalitre of water saved ranged from \$770 for AAA shower roses, through \$9,069 for rainwater tanks, to \$33,395 for AAA dishwashers. Crase, L. and Dollery, B. 2005, 'The inter-sectoral implications of 'Securing Our Water Future Together'', *International Journal of Environmental, Cultural, Economic and Social Sustainability*, Vol. 1, No. 5, pp. 13–22.

[22] The low price of water remains a major obstacle to serious water reform. The typical Australian household spends 0.7% of total expenditure on water, 2.6% on electricity and heat and 17% on food and non-alcoholic beverages. Australian Bureau of Statistics, 2004, *Household expenditure Survey and Survey of Income and Housing 2003/04*, Commonwealth Government, Canberra.

[23] Losses amongst the 11 largest Water Authorities serving populations of more than 100,000 persons were 128,966ML in 2006/07. Water consumption in Brisbane over the same period was 112,935ML. National Water Association of Australia (NWAA), 2008, *National Performance Report 2006-07*, NWAA, Melbourne.

[24] Queensland Water Commission, *The Water Report, 15 February 2009*, Queensland Water Commission, Brisbane.

From: Jim Barry [mailto:jbarry70@cox.net]
Sent: Saturday, August 22, 2009 11:44 AM
To: 'Madeline Kiser'
Subject: RE: Memo - Best Practices and Peer Review for Large-Scale Water Managements Plans

Madeline:

Thanks for this information; I'll look at it ASAP.

Jim

From: Madeline Kiser [mailto:mkiser@dakotacom.net]
Sent: Saturday, August 22, 2009 10:15 AM
To: 'Jim Barry'; 'Melaney Seacat'; 'Nicole Ewing-Gavin'
Subject: Memo - Best Practices and Peer Review for Large-Scale Water Managements Plans

Jim, Melaney, Nicole:

It was uplifting to see you the other night, still at the table, laughing, doing your singularly good work. Many thanks for your tenacity; I've missed you.

I'm writing to share the memo I promised I'd write. It needs editing and more effort, but I'm about to start a new teaching year and need to turn my attention to it. I wish I could have formatted more carefully and placed footnotes, etc. - all the important professional touches.

I'm also including as part of the memo and related research one short document and one page-long article (the link is below), both about Australian reforms, mentioned in the memo. More than what I've written these documents will give an overview of Integrated Water Resources Management concepts, and related plans, taking shape elsewhere and held up as best practices.

Again, for your service and dedication - thank you.

Best wishes, Madeline

http://www.sfgate.com/cgi-bin/blogs/gleick/detail?entry_id=42949



P. O. BOX 86117 • TUCSON, ARIZONA 85754

September 29, 2009

Joint City/County Water/Wastewater Oversight Committee
Tucson Pima Water Study
PO Box 2344
Tucson, Az. 85701

To the Members of this Committee:

The Tucson Mountains Association seeks to find a sustainable balance between fostering the health and well-being of those who reside within our geographic area, the eastern slopes of the Tucson Mountains and their foothills, on the one hand, and protection of natural habitat to preserve biodiversity in our region, on the other. We are seriously concerned that this Committee has not yet collected appropriate information on how we may be able to meet the needs of our citizens for healthy potable water, using harvested rainwater. If this Committee's work is to be relied upon to formulate water policy for the next several decades, we cannot understand how the Committee's work could possibly be done without thoroughly researching what technology is available and how reliable it can be, so that decision makers can be properly informed. The City of Tucson is contemplating a permanent water policy, for example, and awaiting this Committee's report to guide its work.

We request that Pima County and the City of Tucson find **unbiased and independent** sources of appropriate information, to prepare credible cost and benefit analyses, to educate and inform the people of Pima County and our elected leaders, about the feasibility of rainwater harvesting as a viable source of potable water within Pima County. We ask the members of this Committee to recommend to the City of Tucson and Pima County that your work cannot adequately be completed, and we cannot plan adequately for our water needs, without such a study and analysis. As part of this study, it would be helpful to include comparisons of rainwater harvesting systems to the traditional system of trenching in pipes with pumping and booster stations, reservoirs and tanks, etc., to provide water to presently unserved locations where real estate is likely to be developed.

We note that rainwater harvesting was mentioned in the "Technical Paper" provided to this Committee, dated September 10, 2009, and its attachments, and more indirectly in Appendix C to the previously provided Stormwater Harvesting Technical Paper. The signatories of the recent Technical Paper include four individuals from Tucson Water and other individuals with no particularly pertinent background or experience. The Technical Paper acknowledges that currently available sources of water will, with certainty, become increasingly expensive to obtain

*Letter to Joint City/County Water/Wastewater Committee
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and deliver, if adequate supplies will even be available in the future. It notes the severe difficulties that could arise from competition for CAP water, and the substantial expense of developing other sources. Yet it claims, rather glibly and with little support, that rainwater cannot be relied upon as a regular source of potable water because it falls generally within a limited season each year.

This Committee is aware of facts which make that analysis inexcusably facile. The household system brought to the Committee's attention (and hopefully viewed by now by at least some members), that of Charles J. Cole and his wife Carol Townsend, relies almost exclusively upon rainwater to fulfill household needs, maintain a swimming pool, and irrigate a vegetable garden. The rain, when it falls, is filtered and collected into a cistern, where it is held for the balance of the year. The rain that falls on the roof of the house alone is adequate to fill the cistern, and has provided sufficient water to supply the entire household's needs for at least the last four years, despite the current drought. Tucson Water's argument about unreliability because of the seasonable nature of rainfall is disproved by these plain and simple facts. Similarly, the suggestion that rainwater is suitable only for irrigating native drought-tolerant vegetation (p. 21) is specious. With proper design and planning, rainwater harvesting has such a great demonstrated potential that it deserves serious, objective study for the Tucson region, rather than superficial treatment. The Cole/Townsend system does not tell us what others should do, but rather that it is possible to meet all household needs, fill a pool and irrigate a garden, with the rain that falls on a single home rooftop in Tucson during a drought. What might be possible for an entire residential or commercial development, with shared cisterns and filtration? We need to know that, if we are making estimates of how much imported water we need.

The Technical Paper argues that "For these and other reasons, water utilities generally tend not to view rainfall as one of their sources of supply which can be delivered in a predictable and hence reliable manner." First, the vague reference to "other reasons" not specified should be viewed with skepticism, especially in light of the previous specious dismissal. Second, **the question is not whether a water utility should view this as one of its sources: the question is whether the people who reside and have businesses in Pima County can meet their water needs, in whole or in substantial part, by collecting and locally treating rainwater.** Perhaps a water utility should be only a secondary source, to be accessed occasionally, at least for new construction. Until we have good information about the viability of water harvesting systems, this question cannot be answered.

Tucson Water also sought to extrapolate from the "Stormwater Harvesting Technical Paper" a statistic that makes no sense whatever. They argue that typical pre- and post-development water runoff on a lot of one-fifth of an acre is the measure of what can be captured in a rainwater harvesting system, and they claim only a minuscule amount of water can be captured, based upon this information. Tucson resident and international rainwater harvesting expert Brad Lancaster, whose three-volume work Rainwater Harvesting for Drylands and Beyond

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has become a recognized standard, has measured the amount of rainwater he has collected on a one-eighth acre lot in Tucson, at over 100,000 gallons per year. More information is available at <http://www.harvestingrainwater.com>. With appropriate landscaping, including swales and berms, there need be almost no stormwater runoff. And as to the developed portion of a lot, with a well-designed system nearly all the water that falls upon it can be captured, stored, filtered and made more safely potable than most public water supplies. We might have far less undirected stormwater with which to contend, if we took action to encourage rainwater for household use, and not merely for gardening.

We submit that Tucson Water has demonstrated it is not a good source of information on rainwater harvesting, and in fact Tucson Water management has repeatedly exhibited a bias against it, as in this Technical Paper. For example, on several public occasions an acting deputy director of Tucson Water has deliberately provided disinformation, exaggerating the cost of the Cole/Townsend system, and brushed it aside as simply not feasible and not worthy of discussion. When asked by the undersigned how he calculated the exorbitant cost he claimed, he declined to provide any supporting information. Tucson Water management frequently cites a claimed cost per household for its water, knowing fully well that it is omitting the amount Tucson residents are paying, on average, for separate bottled or delivered drinking water (as wasteful a resource as one could find!). For another example, Tucson Water has acted aggressively to increase its water delivery region: when an out-of-town developer sought water for his five lots in the Tucson Mountains, Tucson Water asked him to find as many owners as possible nearby, so that it would be economically more feasible to expand its services nearly to the boundary of Saguaro National Park West. One of the saddest aspects of this is that the owners who are building homes there probably could have developed systems just like the Cole/Townsend system which is nearby, for about the same financial investment as they must make to pay for this extravagant and unnecessary urban infrastructure, so damaging to our fragile desert environment. The clear bias against rainwater harvesting indicates that Tucson Water should not be the source of information on the feasibility of rainwater harvesting as a source of potable water, if one wants objective and reliable results. We need this Committee to seek additional sources of information beyond what the City and the County have provided through that company.

There is a growing interest in rainwater harvesting in the Tucson area, both for landscaping and for total household water use, inside and out. The City of Tucson adopted forward-looking legislation in 2008, seeking to have at least the landscaping irrigation needs of commercial buildings supplied with rainwater. Residents are already building various systems for these purposes, some of which are cited in this Committee's Phase I report. There is tremendous potential for these systems to conserve water from traditional sources, while using rainfall that previously went untapped. The Tucson region's residents and developers need information about the practicability of such systems under various circumstances. Otherwise, when planning developments, people fail to consider possibly useful options and/or they independently "re-invent the wheel," sometimes missing out on good information because they

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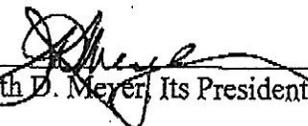
didn't find it. We need help from this Committee to gather information to provide to our policy-makers and to the public.

Once we have realistic measures of what portion of a development's needs can be met by harvesting rainwater, we can develop new standards for both commercial and residential development. Perhaps our currently existing CAP water and groundwater allocations need never be exhausted, even with substantial growth. In the long term, we may need to develop a local government agency to serve as a public source of information about the benefits and potential of rainwater harvesting. What kinds of systems are available, which ones are the best for certain circumstances, and what are the cost comparisons for the most feasible options? Which ideas are bad ones that should not be used? The first step in developing such an office is to develop appropriate, objective, unequivocal comparative information for available systems.

As this Committee pointed out in its Phase I Report, the City of Tucson needs to better manage its water policy, so that a utility agency such as Tucson Water is not free to increase its domain without regard for the economic, social and environmental harm it may be causing. The policy of encouraging landowners outside of the City of Tucson to depend upon Tucson Water's very limited resources must be corrected. But in order to formulate an appropriate water policy, we submit that we need to know what technology is available and practicable today, and at what cost, to use rainwater for all water purposes, including potable water for residential and commercial applications.

Thank you for your time and attention, and for your service on this Committee.

Very truly yours,
TUCSON MOUNTAINS ASSOCIATION

By 
Judith D. Meyer, Its President

cc: Hon. Bob Walkup, Mayor, City of Tucson
Tucson City Council
Pima County Board of Supervisors
Mike Letcher, City Manager
Chuck Huckelberry, Pima County Administrator



**City/County Water and Wastewater
Study Oversight Committee**



October 1, 2009

Clifford A. Neal, Manager
Planning and Replenishment
Central Arizona Water Conservation District
P.O. Box 43020
23636 North Seventh Street
Phoenix, Arizona 85024

Re: Your July 30, 2009 Letter to Jim Barry regarding the Technical Paper on Integrating Land Use Planning with Water Resources and Infrastructure

Dear Mr. Neal,

I thank you for sharing your perspective on the Technical Paper *Integrating Land Use Planning with Water Resources and Infrastructure*.

Staff prepared the attached response to your letter, both of which are now part of the public record.

Respectfully,

A handwritten signature in black ink, appearing to read "JTB", with a long horizontal line extending to the right.

Jim Barry, Chair
City/County Water and Wastewater Study

c: City/County Water/Wastewater Study Oversight Committee
C.H. Huckelberry, County Administrator, Pima County
Michael Letcher, City Manager, City of Tucson

City/County Staff Response to July 30, 2009 Letter from Cliff Neal with Central Arizona Project (CAP)

September 17, 2009

Thank you for your July 30, 2009 letter regarding the above technical paper. Your interest and participation in the City/County Water/Wastewater Infrastructure, Supply and Planning Study is very much appreciated as are your thoughtful comments on the technical paper on Integrating Land Use Planning with Water Resources and Infrastructure. In response to your specific comments:

Replenishment should occur close to the area of groundwater pumping. The law doesn't explicitly require replenishment to occur within the area of hydrologic impact, so although achieving safe yield is central to Tucson Active Management Area's goal, it would nevertheless be preferable for replenishment to occur in areas where groundwater levels continue to decline as a result of groundwater pumping. In some cases, groundwater replenishment is not occurring because recharge facilities are not located close to areas that rely on CAGR as the renewable source of supply. While we agree that CAGR is doing all that it is statutorily required, the statutory bar is set low. This is a concern not with the CAGR, per se, but with the minimal standard the CAGR is required to meet. Thus, while we recognize that the CAGR is not failing to provide recharge facilities, we still think that opportunities for regional collaboration exist and, as discussed in the technical paper's recommendations, regional solutions to address this hydrologic disconnect should be pursued, some with CAGR, itself, and others that would not require CAGR involvement.

This hydrologic disconnect has led to significant groundwater declines in some areas. This phase of the study addresses water planning as it relates to population growth, urban form and land use planning. As such it did not address agricultural or mining water use, some of which has senior rights. Not all groundwater level declines are attributable to the CAGR; in particular, the paper erred in attributing CAGR-replenished groundwater pumping as the cause of declines in the Green Valley area when most of the groundwater decline in that area can be attributed to longstanding mining and agricultural pumping. As population increases in Green Valley and Sahuarita, however, CAGR-replenished pumping is likely to become a larger issue. Population growth, land use planning and urban form guide and impact water planning and infrastructure needs which are all city and county governmental functions. The lack of infrastructure precludes the direct use of renewable water supplies in many areas such as the Northwest and far eastern portions of Pima County, through no fault of the CAGR.

It is unknown how the CAGR will meet its replenishment obligations. In spite of the uncertainty regarding the composition of CAGR supplies in the future, the CAGR's efforts to secure water supplies are appreciated. As water providers increase their use of available renewable water supplies such as CAP and reclaimed water, obtaining water will become more competitive and costly for all.

Financial implications are unknown. It is often stated that the days of cheap, inexpensive water are over. As demand for water supplies increase, and availability decreases, the costs to acquire and develop new water supplies will increase for the CAGR, as well as for all municipal water providers and others. It may be premature to state that costs will be extremely burdensome in the near future. While the CAGR has projected rates through 2013/14; future water costs are simply unknown at this time. Although water costs will increase, the paper's statement about the potential for de-valued properties and home foreclosures may have been overstated. That said, one of the fundamental issues with CAGR member land obligations is that the CAGR operates as a mechanism through which developers can offload the costs of acquiring new supplies through the CAGR, to future homebuyers and businesses. As with many of the issues with the CAGR, fault lies more with the legislature than with the District's professional efforts to meet its statutorily-derived obligations.

Your valuable input into this effort is acknowledged and appreciated. The City of Tucson and Pima County look forward to working with the CAGR and the other jurisdictions and water providers on collaborative solutions to address our future regional water resource challenges.

**Notes from WISP Open House
November 9, 2009**

- Surprised about Tucson Water wheeling water out to other companies that do not have renewable supplies. Tucson Water recharges in Avra Valley, which is already outside of the Tucson Basin.
- Do you know the allocation amounts for Oro Valley and Metro?
- Surprised that this report stated that growth and water are not related in Tucson. If water is cheap, potential new residents would move here.
- Education, incentives, rebates to encourage grey water use is odd. You can do this with pricing. Manage demand with pricing. Pricing seems to be out of the picture. Make it a financial benefit for people to preserve water.
- Need to have satellite wastewater treatment plants in the outskirts where waste water is in use. This came up in previous discussions. With new packages bundling wastewater and storing in the bottom of the valley its going to be too expensive to pump it back up. Quail Creek Golf Course uses ground water for wastewater credits. At least 50% of the golf courses in Tucson (amended to Pima County) are not using wastewater. This should be the number one priority for sustainability. (Also public parks, school grounds should be using the reclaimed system.)
- Land Use concerns - Continuing to build inside areas that can't afford infill. What are the opportunities for infill, for example on Grant Road and the use of permeable surfaces? We need to adjust landscaping, and surfaces for parking lots.
- Water mains - Do we have any data already collected on the current infrastructure throughout the city so when upgrades are needed for new development we will work with the private developer?
- Regarding population projections: If there were 2 million people in the Tucson region, would they all have water? What is the capacity?
- Water use per person is very elastic and highly price sensitive. The first line of conservation is to raise the price, pay/charge what it costs. Tucson has accommodated 10 years of growth without increasing supply.
- Lack of integrated thinking about the complexity of what is ahead of us. Happy to see climate change in the report. Dismal climate change news. Concerned with our carbon footprint and carbon and CO2 emissions. Experts speculate that a safe target for climate change is 2 degrees Celsius. There is a 50 percent chance that it could be as great a 4 degrees Celsius by 2065. What is our water energy connection? Because we get an allocation of water for CAP how much carbon is contributed to the system and furthermore once processes what is the carbon contribution to deliver?

80% reduction of carbon dioxide by 2050 would give each of us ½ ton carbon dioxide at our disposal.

- Is it appropriate to use the phraseology “growth pays for itself”? Once we reach a certain point, will we have to pay more? Will long-term residents not be able to meet their water needs?
- A persons water bill cost is always their first concern. Difference in attitude of our residents. Most think the water bill is a joke. It’s outrageously reasonable. Don’t forget our residents do care about the environment.

Brenda Garcia

From: Angie Gelsinon [angie@kaneenpr.com]
Sent: Wednesday, December 02, 2009 12:44 PM
To: Nicole Ewing-Gavin
Subject: FW: E-mail from TucsonPimaWaterStudy.com - Comments

-----Original Message-----

From: noreply@tucsonpimawaterstudy.com
[mailto:noreply@tucsonpimawaterstudy.com]
Sent: Wednesday, November 11, 2009 8:56 AM
To: info@tucsonpimawaterstudy.com
Subject: E-mail from TucsonPimaWaterStudy.com - Comments

Email Address: tlfinefrock@comcast.net

Comments/Questions: Would like to see simple "major" regional user statistics, will be required to define what actions will provide most effective/productive solutions. Also agree that most behavior modifications are driven by economics, trade-offs in costs and values, that some form of "reward/penalty" system will need to be created.

I did not see and would strongly suggest that the Study identify and discuss the connection between existing Brown electricity generation technology and water usage; 1/2 to 3/4 gallon of water now used to generate one kilowatt-hour of electricity; TEP 2010 one-year generation plan will consume from 5 to 7 million gallons of water(each year will increase).

Solutions for water and environmental and cost issues involved with the generation of electricity will create many undesirable conflicts and seemingly mutually exclusive choices and significantly burden the capacity for local economy to fund the solutions; the solution costs will be significant.

I would also suggest that the Study develop and support a Project I recently proposed to County Supervisors Elias and Day and Rep. Giffords office that they collaborate and lead an effort with Tucson Electric Power Company, U of AZ Technology Park(Bruce Wright), City of Tucson, Az Corp. Commission, Western Governors Assoc.,etc., to acquire Federal funding, such as ARRA and pending carbon tax legislation revenues, to design/construct a Hybrid Solar & Natural Gas electricity generating plant w/solar thermal storage utilizing Dry-Cooling(Heller)technology of sufficient size to provide most of Tucson/TEP electricity requirements. The dry cooling technology uses only 2% of the water used by existing technology. The Solar thermal storage would enable generation of electricity for 20 or so hours of a day, use the Natural Gas to augment the thermal energy reservoir during early morning hours or rare cloudy days. This Project and technology would also solve Brown power environmental issues, reduce associated air pollution, global warming and healthcare costs, and create recurring local economic stimulus via the provision of jobs, higher wages, AND stabilization of the cost of electricity for residential & business users for many decades, avoid the significant and recurring cost increases that will be required by Brown Power generation including the pending carbon penalty legislation.

The "prototype" Project and Partners would also provide the knowledge and foundation needed to develop improved/cost effective components and

allow replication by other Western States/Utilities w/water conservation & Brown power issues.

Either the City of Tucson or County could create a Power District, own the assets on behalf of taxpayers, and contract w/TEP for design, implementation, management, operation and maintenance of the facilities, said contract would contain appropriate cost and environmental continuous improvement performance goals and metrics with profit and compensation directly related to performance to those metrics.

As above, reliance on local funds to solve these issues will significantly burden local funding capacity, result in argumentative discussions regarding priorities, "who doesn't get what first", and reductions in other needed services.

The first new technology projects are rarely the most cost effective, however, we should not wait, further discussions in meeting rooms will not provide tangible solutions within the timeframe of our requirements, nor additional data required for better decisions. Our Federal Government and US DOE are promoting and funding these type of Projects now and the Western Governors Association is meeting this month to develop/consider solutions for these issues. The timing is right for aggressive Leadership and actions to acquire necessary consensus, collaboration and Federal & Western States funding of this or a version of this Project that will provide significant and tangible diverse benefits to our community and other western state communities.

Mr. Terry Finefrock
Long term Tucson Area Resident
520-444-9225

Do you wish to receive emails and posted mail information from the Water Infrastructure, Supply and Planning Study?

Yes

From: "Angie Gelsinon" <angie@kaneenpr.com>
To: "Nicole Ewing-Gavin" <Nicole.Ewing-Gavin@tucsonaz.gov>
Date: 11:23 AM 11/19/2009
Subject: FW: Draft, Phase II Staff Report

Comment Received.

From: Charles J. Cole [mailto:cole@amnh.org]
Sent: Thursday, November 19, 2009 11:19 AM
To: info@tucsonpimawaterstudy.com
Cc: judithdmeyer@msn.com
Subject: Draft, Phase II Staff Report

Hi, Folks:

This message is primarily for the citizens' committee, as they work with the draft staff report while drafting their own. Please ensure that this reaches members of the citizen's committee.

On the whole, I was quite pleased with the staff draft phase II report -- I applaud the contributors. I also agree that it is a good idea to try merging the advisory committee's report with this, in an analytical way that considers alternatives and can strengthen points of agreement but provide clear discussion of divergent views where necessary. I have only a few points to mention, and I suspect that some members of the committee have already thought about each point. So, I continue, although I feel superfluous.

You'll want an up-front Executive Summary with bullets for major points.

Two subjects I didn't see in the report are:

(1) recommendation to continue or make "permanent" Mayor and Council's restriction on expanding water service outside the City limits or obligated service area; with the huge obligated service area yet possibly to be developed, uncertainties of future supply, limits of present supply, and up-coming Phase III including other cities and towns with growth plans coming into the picture, the current restriction makes sense and the alternative does not;

(2) water quality -- testing and treatment; considering emerging contaminants, Tucson Water should have personnel responsible for staying abreast of the issues, new pollutants, especially locally (is atrazine used on golf courses here?), and ready to make recommendations; by the time the EPA regulates new pollutants, considerable damage can already be done; should Tucsonans should be exposed to lesser quality water than anybody else in the country?

Proposed Modification:

Under the section "Comprehensive, Integrated Planning," Goal #3, recommendation 3.2 on pp. 12-13. This recommendation is entirely biased toward extending the "obligated service area," as if there is no alternative. This is not an objective or scientific approach, because analyses of all relevant factors could result in the following

alternatives: (1) a recommendation that the "obligated service area" should not be extended; (2) it might be reduced; or (3) it might be modified with swaps, by trade-offs in location of the perimeter that could keep the total area the same or more or less, to keep the obligated service area most efficiently served.

Bottom Line Here: If it is advisable to have an "obligated service area" in the first place, objective analysis should prevail in deciding where and what size it should be, based on other criteria developed in the report.

Thank you very much for the opportunity to comment, and for your dedicated and generous hard work for Tucsonans.
Charles J. Cole, 6381 W. Sweetwater Dr., Tucson. 743-3402.

Brenda Garcia

From: Angie Gelsinon [angie@kaneenpr.com]
Sent: Wednesday, December 02, 2009 12:44 PM
To: Nicole Ewing-Gavin
Subject: FW: E-mail from TucsonPimaWaterStudy.com - Comments

-----Original Message-----

From: noreply@tucsonpimawaterstudy.com
[mailto:noreply@tucsonpimawaterstudy.com]
Sent: Friday, November 27, 2009 7:08 AM
To: info@tucsonpimawaterstudy.com
Subject: E-mail from TucsonPimaWaterStudy.com - Comments

Email Address: William.Altaffer@azbar.org

Comments/Questions: While I recognize the hard work and countless hours that the committee members and staff put into Phase II, I am disappointed with the lack of "outside the box" thinking that is reflected in the draft report.

This report largely serves as a road map for additional growth, arguing that growth should be channeled toward the southeast, where little infrastructure currently exists, or toward greater density in the city's core, where the infrastructure is aging and may be unable to handle the increased demand.

The elephant in the room that was never addressed is the issue of CAP water and salt. Specifically, according to some scientific studies, Tucson's full allotment of CAP water will bring 200,000 metric tons of salt to our valley each year. (The average railroad boxcar holds 100 tons of material.) While some will privately acknowledge the challenges this presents, no one has been willing to publicly address this issue. Perhaps it is the cost associated with removing salt from the CAP water. These include the construction of a desalinization plant, estimated at close to \$500,000 plus the annual operating and maintenance costs, estimated at \$25 million, plus the problem of disposing of the waste product. Doing nothing creates long-term risks to our infrastructure, soil and our health. This is a problem that requires imaginative problem-solving, and the Phase II report represents a failure to address this challenge.

What a shame that so many contributed so much time and effort, and all the community got in the end is "damn the torpedoes, full speed ahead."

Do you wish to receive emails and posted mail information from the Water Infrastructure, Supply and Planning Study?

No

Brenda Garcia

From: Angie Gelsinon [angie@kaneenpr.com]
Sent: Wednesday, December 02, 2009 12:44 PM
To: Nicole Ewing-Gavin
Subject: FW: E-mail from TucsonPimaWaterStudy.com - Comments

-----Original Message-----

From: noreply@tucsonpimawaterstudy.com
[mailto:noreply@tucsonpimawaterstudy.com]
Sent: Monday, November 30, 2009 6:04 PM
To: info@tucsonpimawaterstudy.com
Subject: E-mail from TucsonPimaWaterStudy.com - Comments

Email Address: greg@gardeningsights.com

Comments/Questions: Since much of our urban water use is on landscapes, why not pull together a group to create materials and a demonstration garden(s) to educate the public on NO-IRRIGATION landscaping here. We have an amazing palette of very tolerant native plants which, when combined with passive water harvesting and organic and gravel mulches can thrive without irrigation after about one year of supplemental irrigation to become established. I think most people fear that it would mean living with yards that look like creosote flats, so providing design ideas would be very important too.

Going to a native palette will also increase benefits for wildlife and create a Tucson sense of place that is missing in many parts of our community.

I know this works. My yard is designed entirely with natives and it is doing very well despite a year of paltry rainfall. Since installing it nine years ago, we've seen many more local and migratory songbirds and have a healthy population of native bees and other pollinators.

Do you wish to receive emails and posted mail information from the Water Infrastructure, Supply and Planning Study?

Yes

Brenda Garcia

From: Angie Gelsinon [angie@kaneenpr.com]
Sent: Wednesday, December 02, 2009 12:38 PM
To: Nicole Ewing-Gavin
Subject: FW: E-mail from TucsonPimaWaterStudy.com - Comments

-----Original Message-----

From: noreply@tucsonpimawaterstudy.com
[mailto:noreply@tucsonpimawaterstudy.com]
Sent: Tuesday, December 01, 2009 4:20 PM
To: info@tucsonpimawaterstudy.com
Subject: E-mail from TucsonPimaWaterStudy.com - Comments

Email Address: jmarques@ci.sahuarita.az.us

Comments/Questions: December 1, 2009

Ms. Melanie Seacat
Tucson Pima Water Study
PO Box 2344
Tucson, Az. 85701

Subject: Tucson Pima Water Study
Draft Phase II Staff Report

Dear Ms. Seacat:

The Town of Sahuarita has completed its review of the "Draft Phase II Report" prepared by City of Tucson and Pima County staff as part of the City/County Water and Wastewater Infrastructure, Supply and Planning Study. Overall, the effort approaches water and growth as it relates to the general study area and contemplates additional steps to include a regional dialogue to assure comprehensive water resource and land use planning. With respect to the inclusion of other jurisdictions and water companies, the Town offers the following comments.

The report notes Phases I and II provide a "foundation for the future regional process that is recommended in the scope" (p. 2). Later with respect to water resource planning, the report acknowledges, "The City of Tucson and Pima County should evaluate options for working with regional stakeholders...[but], ultimately this goal needs to be advanced through a regional process. Such a process might be convened by an existing regional entity..." (Recommendation 2.1, p. 32). While the study was commissioned under the direction of Tucson's Mayor and Council and the County Board of Supervisors, the Town agrees the goal of a regional dialogue for both water resource and land use planning would achieve greater participation if the effort were convened by a regional entity.

The report recommends "the City and County should continue to work with PAG to do growth and urban form scenario modeling on a regional level (including Marana, Oro Valley, Sahuarita, South Tucson, the Tohono O'odham Nation, the Pascua Yaqui Tribe, the San Xavier District and others)..." and notes an "emerging regional visioning process" (Recommendation 2.4, p. 11). The Town agrees a regional process would be beneficial and should include all jurisdictions.

The report notes "The City and County should work together with other jurisdictions to support regional solutions to address the hydrological disconnect between where water is being pumped and where it is being replenished" (Recommendation 3.5, pl 13). The Town agrees we need regional solutions to stormwater management that include as much capture as possible without degrading the environment or other property.

The report describes negative impacts from groundwater pumping and disassociated recharge and notes replenishment may not occur in the area of pumping, or the "pumping/recharge disconnect". The report also notes the County adopted an amendment to the Water Element section of the Pima County Comprehensive Plan, which considers "whether the proposed development will have access to renewable water supplies, where pumping is proposed in relation to where recharge is proposed, and whether groundwater dependent ecosystems would be impacted" (p. 12). Further, the report recommends "Outside of the Tucson Water Obligated Service Area, in unincorporated Pima County, the City and County should work together to conduct comprehensive water resource planning to identify sustainable water resources to serve these areas" (Recommendation 3.1, p. 12). The Town agrees the availability of renewable water supplies should be considered in the development process and believes a regional approach is needed to ensure recharge occurs within reasonable proximity to groundwater pumping and to ensure groundwater dependent ecosystems are protected. Further, water resources planning should be considered on a regional basis to develop a more complete perspective of the current and future availability of groundwater and other water resources within the region.

The report recommends "The City and County will work with stakeholders to develop a regional collaboration for riparian restoration. This effort should include exploring or continuing to pursue:...Enhancing the value of in-lieu mitigation funds..." (Recommendation 2.2, p. 18). While the Town agrees protection of riparian areas is critical, the use of in-lieu mitigation funds must be well thought-out, structured and prioritized on a regional basis to ensure destruction of riparian habitat does not occur in exchange for funding restoration elsewhere.

Recommendations 3.1 and 3.2 (p. 19) are good and could be considered for development of policies on a regional basis.

As reflected in the staff report, regional dialogue is critical to the success of proper management and planning of water resources and land use. Without a truly regional approach that includes the other jurisdictions and water providers, the effort limits the City and County to actions and goals that cannot achieve a sustainable future for our region. The Town appreciates the opportunity to comment on the Phase II staff report and looks forward to the opportunity to actively participate in this regional planning effort as the study advances.

Sincerely,

James R. Stahle
Town Manager

Do you wish to receive emails and posted mail information from the Water Infrastructure, Supply and Planning Study?

No

Brenda Garcia

From: Angie Gelsinon [angie@kaneenpr.com]
Sent: Wednesday, December 02, 2009 12:43 PM
To: Nicole Ewing-Gavin
Subject: FW: E-mail from TucsonPimaWaterStudy.com - Comments

-----Original Message-----

From: noreply@tucsonpimawaterstudy.com
[mailto:noreply@tucsonpimawaterstudy.com]
Sent: Monday, November 30, 2009 1:16 PM
To: info@tucsonpimawaterstudy.com
Subject: E-mail from TucsonPimaWaterStudy.com - Comments

Email Address: smegdal@cals.arizona.edu

Comments/Questions: November 24, 2009

Joint City/County Water/Wastewater Oversight Committee
Tucson Pima Water Study
PO Box 2344
Tucson, AZ 85701

Dear Committee,

We appreciate this opportunity to review and comment on the City of Tucson/Pima County Water Study Phase II report. At the University of Arizona, the Water Resources Research Center has been working for several years on projects recognizing and addressing environmental water needs in Arizona and in Tucson, specifically. We support the Staff Report's Guiding Principle of "Respect for the Environment," as our local riparian areas require critical attention. As noted in your report, restoration or enhancement of important riparian areas will require inputs of water as well as funding and staff resources.

Thank you for recognizing in your report the WRRRC's effort to establish a funding mechanism for supporting environmental enhancement in this community. We are glad to have had a longstanding partnership with the City of Tucson in developing this mechanism. We support the recommendation to initiate the Tucson Environmental Water Banking Program, which will provide a mechanism for using water conservation to develop water sources for environmental projects.

We are also in support of the recommendation to establish a regional framework for restoration with the assistance of local partners. As part of the establishing the Environmental Water Banking Program, our partners have been assembling information about restoration opportunities, including our recently updated report, "Riparian Restoration Efforts in the Santa Cruz River Basin." We agree that there is a need for a community-wide discussion in support of a regional plan for restoration. We have recently received funding to initiate a synthesis of available information about environmental water needs across the state, and would be interested in participating in such a discussion were it to be initiated.

We stand ready to work with the City and the County in moving forward with these important programs.

Sincerely,

Sharon B. Megdal, Director
Joanna Bate, Research Assistant

Do you wish to receive emails and posted mail information from
the Water Infrastructure, Supply and Planning Study?

No



**Southern Arizona
Home Builders
Association**

2840 N. Country Club Road
Tucson, Arizona 85716
Phone: (520) 795-5114
Fax: (520) 326-8665
Web: www.sahba.org

President
Jessica D. Whyde

2009 Executive Officers

Chairman
Michael Whyde
Pepper-Viner Homes

Vice Chairman
Ed Castelhana
Becklin Construction

Secretary
Martha Wright
Southwest Gas Corporation

Treasurer
John Shorbe, Sr.
Canoa Development, Inc.

2008 Past Chairman
Randy Agron
A. F. Sterling Home Builders

Legal Counsel
John E. Kofron
Fennemore Craig



November 30, 2009

Mr. Jim Barry
Chairman, City/County Water Study
P.O. Box 2344
Tucson, AZ 85701

Dear Mr. Barry:

First of all, I would like to commend you, the members of the committee, and Staff for your tireless work on this project. It has been an exceptional commitment of time, energy and brain power for an issue of significant importance to our region.

SAHBA supports sound water and wastewater management decisions. Water is a precious resource that cannot be taken for granted. We remain engaged on this important regional issue for our members and we serve actively as a member of the Tucson Regional Water Coalition (TRWC).

Throughout the City/County Study process SAHBA has participated both as a passive observer and also actively by providing written comments and contributing to the TRWC’s technical paper “Water as an Economic Resource.” Perhaps most importantly, it is our industry that has arguably the greatest stake in the outcome of this process. “Growth,” particularly whether or not we have enough water to accommodate it, has been the underlying theme from the beginning.

If water (or the perpetuation of a water scarcity...whether real or not) becomes the determining factor for future growth, it would create a situation that would be detrimental to our members and the broader community. Local businesses would go under, more jobs would be lost, more homes would be foreclosed, tax revenues would continue decline, social service programs would be increasingly strained and on, and on and on. Contrary to the views of some in this community, all of our problems would not be solved if there was no more growth.

We respect the role of Staff and the Study committee in this process. We know that it is not staff, nor the committee’s intent, or role, to stop growth and economic development under the guise of preserving scarce water resources. Staff and committee members have too much pride in their work and command of the issues to let that happen.

Yet while the draft staff report provides a comprehensive analysis of the issues that came before by the committee, and outlines numerous policy recommendations based on the findings, there are several areas that should be improved. We have broken down our comments into two types: 1) General Suggestions – broader issues that reoccur through the document and 2) Specific Suggestions – requested changes on specific points in the report. We trust that the

staff and/or the committee will find value in our comments and incorporate them into the document to strengthen the final product.

General Suggestions:

- The Committee Portion and Finalization of the Report – We are concerned the final steps of the Phase II Report are being rushed for political expediency. For example, the Committee Report (Oversight Committee Concerns & Findings) was not part of the draft available for public comment and it does not appear there is a plan to solicit input on this section. We also understand that the committee is going to finalize the report on December 3 without any process for responding to or considering public input. Additionally, we are concerned adequate time has not been spent by the Committee deliberating the Staff Report.

Committee “sign-off,” and referral to the Mayor and Council or Board of Supervisors should be delayed until all comments from the public has reviewed the Committee portion of the report, have been evaluated in the committee process, and until there is unanimous consent from the Committee that the Staff Report has been given enough consideration.

- Quantify Environmental Benefits – Where assertions are made that riparian or other environmental degradation has occurred, and a recommendation is made to improve the natural conditions, the report should provide specific and detailed information that quantifies the anticipated outcome. This information will help inform policy makers and be used to evaluate successes. If this information has been provided in a Technical Report, there should be a citation or footnote.

Ex. “A large percentage of the historic area of riparian habitat in southeastern Arizona has been lost to or degraded by past human activities. In addition, changing environmental circumstances further threaten remaining riparian areas, especially those already made vulnerable by human actions.”

- Quantify Costs – As policy makers, and the public, evaluate the recommendations outlined in the report, financial costs deserve to be taken into consideration. All costs, including government staff resources, should be quantified for areas that will lead to additional costs.

Ex. “Rainwater harvesting should also be an element of all public projects where feasible and encouraged and/or required for private developments.”

- Utilize Cost Benefit Analysis – A cost benefit analysis (preferably by a third-party/independent source) should be performed for any recommendations that do have a financial or cost component in order for policymakers to know the return on the investment of the decisions they are being asked to make.

Ex. “We should increase conservation and maximize our use and re-use of renewable locally-generated water sources such as rainwater harvesting, stormwater capture and recharge, graywater systems, and maximizing the use of effluent and reclaimed water.”

- Define and Validate “Quality Growth” – Throughout the document it is expressed that future growth has to occur in the right and/or sustainable way. However, without any defining criteria, policymakers and the public are unable to determine what the committee’s intentions were. Staff should provide clearer definitions and/or parameters on what type of growth is acceptable. The committee should also recommend Tucson water extend water services to any development that is slated to occur in an identified “growth area.”

Ex. “If growth does occur, how can we accommodate it in the most sustainable manner possible? The paper addresses the forms and location of growth and makes the point that quality of growth is more important to focus on than quantity of growth.”

- Occurrence of Future Growth – SAHBA, like Staff, the Committee, and local elected officials, supports sustainable growth. However, growth should not be viewed as something that can be “engineered.” Water should never be used as a tool to manage or engineer where future growth does or does not occur. This report is entirely void of any language or recommendations that validate the positive side of growth. This report fails to consider any of the unintended consequences (a stagnant community) of either no growth or policies that drive growth to other areas outside of the City and/or County. We ask that the committee minimize all references that imply growth management and include a section that highlights the benefits of growth to our community.
- ‘Wills’ and ‘Musts’ – Given that the report is providing “recommendations”, and not mandates, words like ‘will’ and ‘must’ should be removed in favor of ‘should’ in any Staff recommendations.

*Ex. “...certain water reservations for the environment **must** be made and sustained.”*

Specific Suggestions:

- See attachment.

We are confident the final Phase II report will be thoughtful, inclusive and respectful of our community’s environmental, social and economic needs. We are also confident that the elected representatives on the Board of Supervisors and Tucson City Council will initiate a thoughtful and transparent dialogue around each of the proposed recommendations before adopting any of them or directing staff to pursue them.

SAHBA remains committed to being a constructive part of this very important debate. If you have any questions, please contact me at 795-5114.
Sincerely,



David Godlewski
Government Liaison, SAHBA

SAHBA, SPECIFIC COMMENTS ON DRAFT PHASE II STAFF REPORT

Phase 2 Scope Guiding Principles

P. 3 – *“The adopted Scope of Work for Phase II includes a set of guiding principles which are grouped into four categories as follows:”*

This statement, and the bullet pointed list, is not an accurate reflection of what appears in the memorandum entitled “Updated Scope of Work” dated “April 1, 2008” from Nicole Ewing Gavin and Melaney Seacat to Messrs. Hein and Huckelberry. It goes beyond what has been approved and subtly interjects a “no growth” tone into the document (Ex. “Water conservation should be viewed as protecting a future water supply, not simply making more population growth possible.”). We ask that this section be replaced with the actual goals for Phase II which are outlined in the aforementioned memorandum.

II. SHARED GOALS AND RECOMMENDATIONS, Comprehensive, Integrated Planning

P. 6 – *“Water, in and of itself, does not provide answers for how to manage growth in a sustainable manner.”*

Water should not be used as a growth management tool as this sentence implies. We ask that it is removed.

P. 6 – *“Instead each of these services has been planned in a “silo” which has contributed to unmanaged growth, environmental problems, infrastructure and service deficits, and has diminished public resources.”*

This sentence is highly politicized and not supported by quantitative proof or analysis. We ask that it is removed.

P. 6 – *“Directing growth, both its form and location is critical to creating a sustainable water future.”*

The occurrence of growth is, in many ways, not an “engineered” process. We ask that the word ‘directing’ is removed.

P. 6 – *“In addition to form and location of growth, it is important to also consider type of growth. Is it just rooftops and retirees or does it include high paying jobs and young professionals?”*

This goes beyond what is appropriate for Staff and the Committee to consider as part of this Study. We ask that this sentence is removed.

P. 6 – *“While our population is likely still going to grow at some rate, there is no guarantee that in the future we will grow in the same manner as we have in the past. Declining growth is not necessarily a bad thing. Diversifying our economy can help to make our community more resilient to changing growth trends.”*

Statements like “declining growth is not necessarily a bad thing” is highly politicized and not supported by quantitative proof or analysis. We also question the Staff and Committee’s qualifications to make

statements about the composition of our local economy and how it may or may not influence future growth. We ask that these sentences are removed.

P. 8 – “The modeling exercise points out that as we grow, we have choices as a community and that we are not relegated to grow in the same form as we have in the past. In fact, it is clear that continuing our same pattern of growth is not a sustainable option going forward.”

To whom is it “clear”? Please clarify who is making this assumption.

P. 9 – *“Related to this, it is important that where we extend water and wastewater services matches up with where we want growth to occur.”*

Again, the occurrence of growth is, in many ways, not an “engineered” process. And water should not be used as a growth management tool. Water should be committed to its highest and best use. We ask that this sentence is removed.

P.10 - Recommendation 2.1 – *“The City and County should take steps to encourage growth and new development in areas identified as most suitable for development...”*

If future growth does occur where it has been identified to be most suitable, it seems only appropriate that Staff also recommends that Tucson Water extend service to those areas. Otherwise, what is the incentive to grow in certain areas? Will Staff agree to recommend that Tucson Water extend service to future residents in all identified growth areas? If not, we ask that this recommendation is removed.

P.10 - Recommendation 2.2 – *“The City and County should influence the location of future growth through where infrastructure is built and public services are provided.”*

This can be done by guaranteeing Tucson Water service around existing infrastructure even if it is beyond the current obligated to serve area. Until this type of incentive is in place, we ask that this recommendation is removed.

P.10 - Recommendation 2.3 – *“The City and County should influence the location of future growth through the acquisition of open space.”*

In other areas of the report Staff talks about adverse consequences of “sprawl.” However, the acquisition of more open space will likely lead to sprawl. Has Staff, or anyone else, conducted an analysis on the relationship between acquiring open space and the impact on where growth occurs?

P.11 - Recommendation 2.4 – *“The City and County should continue to work with PAG to do growth and urban form scenario modeling on a regional level...”*

We ask that all of the jurisdictions in So. AZ are included in this process as well.

P. 11 - GOAL #3 – *“The historic disconnect between land use planning and water resource and infrastructure planning has a number of negative impacts, including (1) continued groundwater level declines in some areas of the valley impacting both existing residents, customers, businesses, and the environment; and (2) the stimulation of growth in places that lack adequate water infrastructure, as well*

as other types of public infrastructure and services, causing costly impacts to local governments, other service providers, and existing tax payers.”

Lacking specific facts and figures about the precise cost to government and tax payers, we ask that this is removed. And in fact, SAHBA has a fact-based study that demonstrates new residential growth leads to a positive fiscal impact to local governments.

P. 12 - GOAL #3 – *“A concern with the current policy is that it does not prevent additional development from occurring outside of the Tucson Water service area. Developers are often able to find alternative access to water which usually means drilling wells, contributing to the pumping/recharge disconnect, and potentially contributing to continued groundwater declines and the adverse impacts associated with continued groundwater declines.”*

Provided that developers are complying with all local and state regulations/laws this language should be removed.

P. 13 - GOAL #4: *“GROWTH SHOULD PAY FOR ITSELF OVER TIME AND BE FINANCIALLY SUSTAINABLE”*

This sentence is highly politicized and not supported by quantitative proof or analysis. It goes beyond what is appropriate for Staff to recommend. Again, SAHBA has a fact-based study that demonstrates new residential growth leads to a positive fiscal impact to local governments. We ask that this goal is removed.

Page 14 – *“...certain water reservations for the environment must be made and sustained.”*

Why “must” they be made and sustained? At what level has a public discussion occurred where taxpayers/ratepayers have identified this as a priority? We ask that this be removed or the word must is substituted for ‘should’.

P. 17 – *“Restoration should also be viewed as a local economic opportunity. By employing local talent and community volunteers, we support the development of a local green economy. Community involvement in restoration also builds a sense of stewardship among participants. Children who have had limited opportunity to interact with nature, at-risk youth, and seniors with time available to share and an interest in doing so are all populations that could benefit from an opportunity to be directly involved in riparian restoration.”*

What facts or analysis supports this? Whom is the “payer”? Government? Absent an economic analysis to support this claim, we ask that it is removed.

P. 18 – *“...creating small pockets of desert-adapted habitat (i.e. upland or xero-riparian habitat) within the fabric of the urban community.”*

Does Staff support a landscape solution to accomplish this objective or must it occur through land set-asides? Would they be willing to eliminate other development/land use regulations to accomplish this goal?

P. 19 – *“Rainwater harvesting should also be an element of all public projects where feasible and encouraged and/or required for private developments.”*

Absent a third party cost/benefit analysis on rainwater harvesting, we ask that this is removed.

P. 21 – *“In order to balance the water needs for individual restoration projects with the ability to commit appropriate water supplies, it is important to match each restoration project with the least expensive water supply of suitable quality that is physically available for use at the restoration site.”*

Water should go to its highest and best use. There is no supporting documentation for this claim. We ask that it is removed.

Page 22 - Recommendation 5.1 – *“The City and County will finalize the IGA for the Conservation Effluent Pool, which will annually provide up to 10,000 acre feet of effluent for environmental enhancements. This agreement will be delivered to the City Mayor and Council and the County Board of Supervisors for review and approval.”*

We ask that the Staff modify this language to recommend that a public and transparent deliberation occur about the costs and benefits of this IGA.

Page 22 – Recommendation 5.2 – *“The City and County will work with stakeholders and other resource experts to link water conservation to the protection of future supplies and to environment preservation/restoration by identifying mechanisms to reserve water saved through conservation programs for specific environmental uses/projects.”*

We ask that the word ‘will’ be replaced for ‘should.’

Page 25 – *“Recommendation 2.4 - The City of Tucson and Pima County will continue encouraging rainwater harvesting on both residential and commercial properties to defray the high costs associated with stormwater management, and to develop a new source of local, renewable water supply.”*

Absent a third party cost/benefit analysis on rainwater harvesting, we ask that this is removed.

P. 27 – *“Because of the level of uncertainty we face, an adaptive, flexible, and regularly updated scenario planning approach is needed to ensure we are as prepared as a community for drought in the variety of ways it may get triggered and manifest itself. There is less need for certainty in forecasts than there is for a regularly monitored credible range of possibilities that the utilities and the community can prepare for.”*

We ask that staff includes language to the effect of “however, verified facts and figures will be used to support water policy and regulatory changes based on climate change and/or drought.”

Page 27 - Recommendation 4.4 – *“Incorporate the consideration and evaluation of the use of reclaimed water into the City and County development review processes.”*

Water should not be used as a growth management tool. We ask that this sentence is removed.

JANICE K. BREWER
Governor



HERBERT R. GUENTHER
Director

ARIZONA DEPARTMENT OF WATER RESOURCES

3550 North Central Avenue, Second Floor
PHOENIX, ARIZONA 85012-2105

(602) 771-8500

December 1, 2009

Tucson Pima Water Study
PO Box 2344
Tucson, Az. 85701

RE: Comments on Draft Phase II Staff Report

Dear Tucson/Pima Water Study Team:

The Arizona Department of Water Resources appreciates the opportunity to comment on the Draft Phase II Staff Report which was recently released.

In the Respect for the Environment section, the report lists several goals and recommendations. Recommendation 1.2 states that *"The City and County should evaluate the effectiveness of programs and policies, within their respective jurisdictional areas and water service areas, regarding the protection of groundwater-dependent and hydro-riparian areas from groundwater withdrawal and surface water diversions. This protection will be accomplished by evaluating the feasibility of **prohibiting, where legally possible, new non-exempt wells and limit pumping of new exempt wells within and near shallow groundwater ecosystems...**"* (emphasis added).

Arizona Revised Statutes, Title 45, Chapters 2 and 3.1, give the Arizona Department of Water Resources express authority over the drilling of wells throughout the state, as well as the authority over providing limitations on withdrawals/recovery from wells located within the Tucson AMA. Local jurisdictions may not have the legal ability to prevent the drilling of private wells, nor of limiting the pumpage from them. Therefore as a clarification, we suggest that the language in Recommendation 1.2 be modified. A suggested correction could include language such as "...City and County should promote changes to State law regarding drilling and pumping of wells within and near shallow groundwater ecosystems."

Please feel free to contact me if you have any questions about this clarification.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Tannler", written over a horizontal line.

Jeff Tannler, Area Director
ADWR Tucson AMA
400 West Congress, Suite 518
Tucson, AZ 85701

Brenda Garcia

From: Nancy Freeman [nancy.freeman@cox.net]
Sent: Tuesday, December 01, 2009 3:07 PM
To: Melaney Seacat; Nicole Ewing-Gavin
Subject: Tucson- Pima County Water Study Comments

Dear Friends, The WISPS website refused to take my comments--even though I eliminated the www. links.

Here is what I wrote, but keep in mind, for your reading ease, they will be posted on the Groundwater Awareness League website: www.g-a-l.info/study-comments.htm by tomorrow morning. Thanks for all your good work.

To: Tucson-Pima County Water Study Committee

From: Groundwater Awareness League
 P. O. Box 934
 Green Valley, AZ 85622
 520/207-6506
info@g-a-l.info

Date: December 1, 2009

Re: Comments on Draft Phase II Report

I think that the staff and committee have produced a truly excellent report with excellent ideas from the best of minds. The question remains: How to implement the ideas? I would suggest that an overseer job be created for each of the sections. This does not mean hiring new people, it means moving existing personnel to the new positions. These overseers would coordinate and evaluate all projects done in the assigned section.

Since I have not been able to attend Phase II as often as Phase I, some of my comments may be redundant to areas touched on in the report. However, I would like to emphasize some of the areas with clear details, as I think some of the details and facts have fallen through the cracks in getting the big picture. The comments cover the following concerns:

Concern I: Sustainable water supply for the region
 Concern II: Effective use of recycled water on turf
 Concern III: Stormwater Management
 Concern IV: Placement of new growth

Concern I: Sustainable water supply for the region

II. SHARED GOALS AND RECOMMENDATIONS (page 6)

The principal area of concern is the fact that the main user of CAP renewable water supply, Tucson Water, is recharging the CAP water in the Avra Valley Basin, which is a separate basin from the Tucson Basin. A recent Tucson Water Company report states that "our groundwater levels are rising." Upon examination of the statement, one finds that is misleading. While it is true the levels are rising in Avra Valley where CAP water is being recharged, and they are rising in the central well field where pumping has ceased—not necessarily from new water. The rise in the central well field could be simply from the water leveling out from the deep cones of depression caused by the traditional pumping.¹ Since the two basins are effectively not connected, so the recharge in Avra Valley will never balance out any pumping or overdraft in the Tucson Basin. There is a small connection "the narrows," but that passage drains from the Tucson Basin into the Avra Valley Basin and does not amount to much.

Tucson Water personnel maintain they "plan" to replace all of their groundwater pumping with direct delivery from

the Avra Valley recharge basins. However, this is impossible because of a number of the Tucson Water wells that are in outlying areas and not connected to the central system at all.

The numbers you have given in your report are not the current numbers (shown below), but future goals. When will those goals be reached? In the mean time, what is the amount of groundwater being pumped now through 2025 in the Tucson Basin?

How many acre feet will continue to be pumped outside the central region? How many Tucson Water wells are not connected to the central pipeline, therefore, will always be dependent on groundwater? How long will the Tucson Basin sustain this overdraft?

CAP 144,191
 CAGRDR 12,500
 Incidental Recharge 5,500
 Local Groundwater 24,750
 Effluent 30,500

Houghton/southlands region is being considered as prime areas for future development, yet there are no renewable supplies in that region at all. At the present, Vail and Corona de Tucson are drawing on aquifers with no recharge in the region. The ADWR Regional Flow Model for the Tucson AMA will be helpful in making an inventory of how much groundwater is being pumped in each outlying area.

GOAL #4: GROWTH SHOULD PAY FOR ITSELF OVER TIME AND BE FINANCIALLY SUSTAINABLE

The CAGRDR and the ADD water project make this goal totally impossible:
 ADD water project is now under discussion. The ADD water project is to support CAGRDR, an entity that is mandated to provide replenishment water for new developments.

If there is a new development after 1995, the development has to connect to a local water provider, or join CAGRDR as a member land. Homeowners in member lands have to pay for the replenishment of their water use through CAGRDR, with figures of usage provided by their water company. In other words, new development has to pay for its water use. However, if a local water provider is used, then the cost of the replenishment for new developments is taken on by the entire pool of water users.

This situation is very precarious for the future, as the CAGRDR through ADD is looking at very expensive ways to get more water. CAGRDR was created after all the allocations for CAP water were taken. Currently, they are using CAP water, but they have a low priority. In 2009, for the first time all excess CAP water was taken, making the CAGRDR water supply precarious. They are projecting they will have CAP water for 20 years, but only have been guaranteed excess water for 5 years. At the present time, the fee for CAP excess water is \$133 per acre foot. The cost of water projected for the proposed ADD projects is some \$2,000 per acre foot. So the price of water will be going up, and it will be paid for by the current water users who had their homes long before the 1995 mandate.

Report from U. S. Water News, July 1, 2008

Found at u.s. water website: uswaternews.com/archives/arcsupply/8capxoffi7.html

CAP officials look for future Arizona water solutions

TUCSON, Ariz. — The combined population of three of Arizona's most populous counties could double in 40 years and that has water experts dreaming up plans for the future.

One scenario could have three desalination plants on line by 2048 to increase the supply of Central Arizona Project water flowing to Phoenix and Tucson.

One plant could be removing salt from seawater along the Gulf of California in the Mexican state of Sonora — and its booty is shared by Arizona, California, Nevada and Mexico — and two other plants may be treating salt-laden groundwater in the areas of Buckeye and Gila Bend.

Experts also hope a huge nuclear power plant may be in operation along the Gulf of California in Sonora, producing 600 megawatts of power to provide the juice for the adjoining seawater desalination plant.

And by 2048, construction could be underway to expand the size of the concrete CAP canal running from the Colorado River to Tucson to deliver up to 2.2 million acre-feet of water a year. Currently, the aqueduct can deliver 1.8 million-acre feet.

The three-county Central Arizona Water Conservation District, which oversees the CAP, is looking at how the state could furnish water to support a 2048 population of 11.5 million in Pima, Pinal and Maricopa counties compared with less than six million today...

The project can be done at a hefty price tag for the environment and for the taxpayers. However, since this report emphasizes the need for water for the environment, it does seem counter-productive to turn the Sea of Cortez into a "dead sea." Second, the cost of the proposed nuclear power plant will be in the billions (no mention of solar energy). Third, the desalinization plant will cost over \$1 billion up, as that was the price tag of the Federal desalinization plant in Yuma that operated for 4 months. Then there is the cost of the pipeline to bring the water upstream to Havasu City where it can be put into the CAP pipeline.

The ADD second project idea is to pump out three aquifers: Butler Valley, Harquahala and McMullen Valley for "new" water for the CAP pipeline. I have no information on the habitat of plant, bird and animal life these aquifers are supporting. This study needs to be done before these aquifers are "mined" dry to serve water in Tucson.

From planning study-page 14: One contributor to this issue is the large unincorporated area in Pima County that does not generate the revenue that incorporated areas do (no sales tax and less state shared revenue coming in). In the past this issue has been framed as an annexation/no annexation debate. A sustainable water future is one in which we move beyond annexation debates and instead focus on fiscal sustainability for our entire community. Fiscal sustainability considers the life cycle cost of development, including how ongoing maintenance and the provision of public services are paid for in addition to upfront capital costs. It also addresses the adequacy of revenues collected to provide necessary public services, fairness and equity related to who pays for services, who receives services, and the level of investment we are making throughout the community.

This scenario is not necessarily the case. While Green Valley property owners pay in some \$32 to 34 million in Pima County property taxes each year. It is impossible to get any numbers out of the county as to a dollar amount of services Green Valley is getting for their money. The money often goes to the pool that can finance projects within Tucson City limits. This rift between where County taxes are collected and where the money is spent is worth looking into. I think there's a good chance that you will find it is the opposite—that the outlying areas are feeding the inner areas.

The Flood Control District (which I will cover later) is one example. They have a budget of \$58 million (compared to \$18 million for the state Arizona Dept. of Water Resources). The Flood Control District monies do not go to Green Valley, or any of the regions in the southeast that are troubled with horrific flooding.

There is a good possibility that this tendency with money spent would also hold for the Transportation Dept.

Other Sustainable Concerns:

1) Filling up landfills with old toilets

The replacing of old toilets with low flow ones is a good idea in commercial, school or office spaces where there is a large use of the toilets. However, in home settings, the majority of people are never at home. When we were in a drought situation in the 1970's in San Francisco, everyone just put a one-half gallon to one gallon (according to what worked) plastic jug filled with water in their toilet tank, thereby making the toilet used less water each flush. Again, this is an example of a simple, inexpensive answer, instead of government big-ticket rebates, landfill purchases, and hauling costs.

2) Native and desert plants not available in major nursery outlets

It is estimated that over some 60% of the water use is for out of doors. While we want water available to keep trees and plants alive, we should be more selective. ADWR provides a list of trees and plants that can be used for highway and commons areas. Why can't the County adopt the same rules for nurseries in the County. One objection is that Walmart, Home Depot, Target, etc. get their plants from somewhere in Arkansas or California. This ordinance would mean that there would be new growers and expansion of the current ones in Pima County region that specialize in native plants. Therefore, Walmart, etc. would buy locally and save on gasoline and trucking costs.

Concern II: Effective use of recycled water on turf

Water Supply

- Increase the use of reclaimed or recycled water on turf irrigation to substitute for groundwater use (Page 23)

I maintain that there should be satellite wastewater treatment plants, placed where there is are customers for effluent. The standard excuse for not using treated effluent on golf courses, school yards and similar facilities is that it is too expensive to pump the effluent up from Roger or Ina Road treatment plants to the places where it can

be used. However, has a study been done of the cost effectiveness of having satellite treatment plants in the regions where the wastewater is produced and sites are available to use the wastewater. This has recently been accomplished with the Vail region, which for years had been piping its wastewater over to Roger Rd., never to be seen again by the Vail residents. This practice is particularly egregious when noted that there is no recharge available for groundwater pumping in the Vail region at all.

Originally, when Tucson was small it was appropriate to use a drainage system to collect all the wastewater downhill at Roger Road and Ina Road. However, Tucson has expanded and the places where effluent can be used have multiplied, so that wastewater is being piped from some 15 miles away. Pima County Wastewater has not kept up with the times and insists on doing things the way they always have.

According to Jackson Jenkins of Pima County Wastewater Dept., only 17 of the 63 golf courses in Pima County were using effluent in 2009. I don't think this is acceptable. At a recent meeting, Chris Avery of Tucson Water mentioned that some schools could not afford the retrofitting. Seven hundred and twenty million dollars (\$720,000,000) are available for new multi-million dollar treatment plants, but not for retrofitting to use the effluent. Even a multi-million dollar pipeline is being constructed to move excess effluent from one plant to another. So funds available, it's a matter of reorganizing priorities according to new realities. Further, CAGR D gives small grants every year for water conservation projects. Surely, they would be amiable to fund schools retrofitting to be able to use wastewater. (Attachment I)

The Green Valley example has to be highlighted in the historical records of Pima County wastewater "management." Green Valley Wastewater Treatment Plant was out of compliance with ADEQ specifications (2002). Instead of providing funds for repairing the plant, Pima County negotiated a deal with the Quail Creek (in incorporated Sahuarita) developer to bring the plant up to standard in exchange for the wastewater. This deal was made in spite of the fact that there is a sizeable population in Green Valley that had been paying wastewater fees for years, and Pima County property taxes and has eight golf courses on which the effluent could be used.

Pima County did not even require that Quail Creek use the wastewater directly, so Quail Creek created recharge basins at the Green Valley treatment plant, and continues to pump groundwater for their extensive golf greens, and landscaping that includes turf and water features. In the past year, wastewater was connected for direct use on the lawn for a 2-acre Dog Park.

Concern III: Stormwater Management

I simply do not agree with Suzanne Shields statement the night of the Flood Control presentation in response to Mark Stratton's questioned as to why the stormwater could not be managed upstream, so that it does not pour into the city streets." Ms. Shields stated, "There is too much water." This statement does not hold up to facts since when stormwater gathers and pours down into the city, there is going to be more water to be dealt with. Further, many cities, including Phoenix and Denver, have reservoirs on every side of town, which serve as wonderful recreational facilities. Ms. Shield's further insinuation that there is not enough money does not hold up since the Flood Control Dist. never spends its entire budget even though it has money for contracts with consultants for studies that are never followed up on. Further, note the preponderance of Flood Control studies and projects within the Tucson City limits.

After stating that City and County should take steps to encourage growth and new development in areas identified as most suitable for development the following were listed in the report. If the County wants to develop in the south and southeast region, it must put up the capital to allay the flooding problems.

GOAL #2: DIRECT GROWTH TO SUITABLE GROWTH AREAS (page 9-10)

- Outside of the Conservation Lands System
- Within the Houghton corridor
- Within the Southlands area
- Within the Southwest area

I challenge the suitability of the Houghton corridor and the proposed development along Sahuarita Rd. unless extensive infrastructure is completed to capture the stormwater and put it to some good use, such as using dry wells to assist it to augment groundwater levels, restoring and creating riparian areas, or slowing it for use on existing plant life. To put in the flood control facilities and infrastructure first is an absolute necessity.

The Lee Moore Wash study has been completed at a cost of over \$1 million to taxpayers, which covers the

Houghton corridor. What specifications did it include for infrastructure to control flooding in the region? It is now known where the sheet flow occurs—although Flood Control personnel always knew where it was because the Pima Flood Control data base has maps with more details than the Lee Moore Wash study produced, including depth of flows.

For over \$1 million, the County now has an official map so that they can force residents in the sheet flood regions to sign a “Covenant” (Attachment II) that the County is not responsible for any damage to the structures they themselves permit. Consider the question: Why wasn’t \$1 million spent to put in some infrastructure to capture and allay the flood waters?

It is notable that the number of studies the Flood Control Dist. pays contractors to do always outnumbers the number of projects that are accomplished. The Flood Control website [<http://rfcd.pima.gov>] shows some 55 studies with sixteen of the studies done since 2000. Note that all 55 studies were conducted by consultants, not Flood Control Dist. personnel. (Attachment III)

The Flood Control project page (Attachment IV) only shows four infrastructure projects, either in process or completed. However, no timeline is given as is done in the studies page.

One example of a proposed development is in the Avis Acres region which has a horrific sheet flow. If the proposed development is to be accomplished, the county or the developers who own land in the region have to get together and make a comprehensive plan for this region. The main excuse used by the Flood Control Dist. is that all these homes are wild cat, so they can’t do anything. However, every home and every structure had to have a permit from the County. Further, most of them fit the actual description of wild cat—subdividing up to five times to avoid water rules. There is no evidence of such organization in most of the development in this region. In any event, the worse offenses are due to planned, platted, and approved developments. There is such a development right at the south-east corner of Sahuarita Rd. and Kolb. [Sycamore Canyon Estates, platted and approved in 1997 although it was in a wash.] There is a county ordinance that there should not be more flow out of the subdivision than flows into it. However, there is no monitoring and no compliance.

In the October Pima County Planning and Zoning Commission meeting, a letter was read from Michele Davis, a resident of Avis Acres, stating

With each new development that goes in we have to adjust to the fall-out. Each monsoon season brings trepidation as we don’t know how the water will flow due to what has been built since the last rain. We woke up on morning [summer, 1999] to find 18” of mud in our garage, anything that was not nailed down outside had been washed away and our full-size truck was stuck in a stand of trees... the only thing that stopped it from being washed away.

We, along with our neighbors, went house to house to look for our belongings and to put the word out as to what new things had shown up on our place, so that others could find their property. Never before had this happened [20 years resident], but we adjusted. We hired a backhoe to clean out the washes on our 10-acre property, as this flood [1999] had filled them in. We used that dirt to build a burm in front of our house to try to protect it. The next flood that came through filled in the washes again and jumped that burm of dirt. Again came the backhoe and the burm went higher....

A new development was put in and it changed the course of the water flow yet again. This time it jogged up on a neighbor’s property and then bounced back to the original wash, but took about 15 feet of my property with it....

The stories and the hardships caused by Pima County Development Services and Pima County Flood Control go on and on—even in approved, platted developments. I have spoken of them in several hearings and documented them on website pages. Here are two shocking examples:

Found on groundwater awareness league website:
g-a-l.info/SahuaritaHighlands.htm
g-a-l.info/SanPedroEstates.htm

The County is betraying its citizens, many of whom are living on family property bought in the 1970’s, with permitting of properties in these flood zones with no flood abatement infrastructure at all.

It should be recognized that the Transportation Dept. and its practices along the highways and byways have contributed to flooding. For example, culverts and ditches are silted up along the roads, so that stormwater backs

up only private property, and public roads. There are instances in the original (but not incorporated) Sahuarita region along Sahuarita Rd. that the Transportation Dept. blocked washes and piles up dirt along side of the roads to wash into the road at the next major rain event. In the past year, we have had some positive results with working with the Transportation Dept., but there is a lot more to be done.

Further, there is a disconnect between the Transportation Dept. and the Flood Control Dist. For example, culverts and ditches were cleared along Sahuarita Rd., which was good for the people where stormwater was backing up on their property, but what affect was the greater amount of water having and/or would have on the properties downstream? No one analyses this scenario.

Further, there is a disconnect between the Sheriff's Department, Transportation Dept. and Flood Control Dist. when there is a swift water rescue. The Sheriff's Dept. does not notify the Transportation Dept. or the Flood Control Dist. of the incidents.

Concern IV: Placement of new growth

Problems with the Comprehensive Plan

The citizens were misled on water issues when the Comprehensive Plan was formulated. Using the Kolb Rd. – Sahuarita Rd. region for an example. The residents were told that Tucson Water was going to provide water supply to new development. They did not realize that Tucson Water was going to pump from a supply well one one-half miles away, and if that well wasn't enough, Tucson Water would drill another one. The pumping would eventually impact the private exempt wells, how soon would depend on the number of houses served. There would be a further encroachment into the rural resident's, since there is a new state statute that if there is a water company to hook on to the residents are obliged to do so. This would mean that if a current resident wanted to dig a new well, or split their acreage, there is a possibility they would have to hook onto the new local water provider. The residents were not informed of these aspects of the water reality.

Further, the south and southeast regions do not have any renewable supplies available. Flood Control insists that capturing the stormwater will not augment groundwater levels, but they have no figures to show this to be a fact. It should be noted that stormwater is not considered to be renewable supplies. Even though Chandler showed good augmentation with their stormwater facilities, ADWR would not approve this method for their "renewable supply" requirements. However, the groundwater table was raised.

As you can see by the map below from the 2006 ADWR Report Regional Groundwater Flow Model of the Tucson Active Management Area, groundwater levels are predicted to decline considerable in the "southlands" and surrounding areas. Note: the map did not copy. It can be found on page 101 of the ADWR report, which is available online on ADWR website:
adwr.state.az.us/AzDWR/Hydrology/Modeling/documents/Modeling_Report_13.pdf

Attachment I: CAGR D grant info

02/02/2009 CAGR D Awards \$20,000 To Non-profit Organizations

Five grants totaling \$20,000 has been awarded by Central Arizona Groundwater Replenishment District (CAGR D) to nonprofit organizations for water conservation projects that reduce groundwater use within the CAGR D Member Lands and/or Member Service Areas.

The recipients are from CAGR D's three county (Maricopa, Pinal and Pima) service area and the amounts range from \$4,250 for turf conversion in Green Valley to \$4,250 for a Smart Controller Water Conservation Project in Queen Creek. The CAGR D grants and recipients:

- \$4,250 to convert about 12,000 square feet of turf to xeriscape in the Canoa Northwest subdivision which is in Green Valley in Pima County.
- \$4,250 to convert turf to xeriscape on the north side of West Palm Valley Blvd. between 133rd Drive and 132nd Drive in Litchfield Park.
- \$4,250 to purchase and install monitoring equipment and smart water controllers throughout Cortina in Queen Creek.
- \$4,250 to convert turf to xeriscape in University East in Queen Creek.
- \$3,000 for the installation of AQUA Conserve ET controllers for Sossaman Estates HOA in Queen Creek.

CAGR D will make up to \$20,000 in grants available twice a year under its Conservation Grant Program. CAGR D was established in 1993 by the state legislature to serve as a groundwater replenishment entity for its members. CAGR D's main responsibility is to replenish groundwater used by its member property owners and water

providers. CAGR is operated by the Central Arizona Water Conservation District (CAWCD) which also oversees the operations of Central Arizona Project.

For more information contact Marsha Esmeier at mesmirer@cap-az.com or call 623-869-2380.

Attachment II: Pima County Covenant

Attachment One: Covenant that must be signed by anyone building or improving property in flood plain as determined by Pima County—not FEMA Note: scan did not copy, covenant can be found at Groundwater Awareness League website
g-a-l.info/Covenant.htm

Attachment III: Flood Control Studies

Floodplain Studies

(mapping, basin management plans, etc.)

Active Floodplain Studies

- Lee Moore Wash Basin Management Study, Stantec Consultants

Completed Floodplain Studies

Special Study floodplain mapping project reports can be found on the Reports Page [contents below] 51 studies with 12 + 4 other studies since 2000 (noted in red). Note that all 55 studies were conducted by consultants, not the Flood Control Dist. personnel.

- Special Study 01 - Drainage Report for Arivaca Area Plan, Blanton & Co. 3/21/72
- Special Study 02 - Critical Watershed Management Plan Ruthrauff Road Area, Cella Barr Associates, May 13, 1983
- Special Study 03 - Flecha Caida Flood Improvement Study, Simons, Li & Associates, 1/28/86
- Special Study 04 - Tucson Mountain Basin Study, Camp Dresser & McKee, Inc., March 15, 1986
- Special Study 05 - Highlands Wash Basin Management Plan Report, A-N West, Inc., July 15, 1986 and Phase III Final Report, Camp Dresser & McKee, Inc., 1/25/90
- Special Study 06 - Riverside Terrace Basin Management Plan, Dooley-Jones & Associates, 3/13/87
- Special Study 07 - Ventana Canyon Estates, Erosion Setback Limits, Osborn, Petterson, Walbert and Associates, 2/4/88
- Special Study 08 - Millstone Manor No. 6, PCDOT&FCD, 6/20/88
- Special Study 09 - Sutherland Wash, H&H Report, PC DOT&FCD, 8/9/88
- Special Study 10 - Lee Moore Wash Watershed, PC DOT&FCD, 12/29/88
- Special Study 11 - Green Valley Drainageway No.9, CMG Drainage Engineering Inc., 1/12/89
- Special Study 12 - Valley View Wash, Flecha Caida Flood Phase 2, Simons, Li & Associates, Inc., 2/15/89 and
- Special Study 13 - Holladay Street & Forrest Avenue Watershed Study, McGovern, MacVittie Lodge & Dean, Inc., 1/22/90 and Drainage Relief Assessment for the Drexel/Westover Intersection, CMG Drainage Engineering, Inc., 11/25/91
- Special Study 14 - Southwest Basin Management Study, Anderson, Passarelli & Associates, 11/27/90
- Special Study 15 - Black Wash Drainage Analysis, Administrative Floodway, 7/00/90
- Special Study 16 - [Upper] Canada Del Oro Wash Letter of Map Revision Study, David Evans and Associates, 10/28/04
- Special Study 17 - Fortyniner's Interior Drainage Improvements, PC DOT&FCD, January 1992
- Special Study 18 - Soldier Trail Wash Floodplain Delineation, Arroyo Engineering, Inc., 6/29/94
- Special Study 19 - Tortolita Mountains Geomorphic Assessment, Arizona Geological Survey, June 1992
- Special Study 20 - Valencia Wash Basin Management Study, Alpha Engineering, 3/8/93
- Special Study 21 - Upper Carmack, South Branch, Sub-Basin Management Study, Robert L. Shand, P.E., Drainage & Flood-Control Engineering, 7/24/92
- Special Study 22 - 27 Mile Wash Flood Plain Delineation Study, Collins-Pina Consulting Engineers Inc., August 1992
- Special Study 23 - TanqueVerde Creek Management Study, Johnson-Brittain & Associates, July 30, 1993.
- Special Study 24 - Tortolita Area Basin Management Plan, Ph I, Ph IIB, Cella Barr Associates, 8/3/93
- Special Study 25 - Mt. Lemmon Culvert Study, CMG, Drainage Engineering, Inc., 11/19/93, and Final Drainage Report for Summerhaven Village Center, CMG Drainage Engineering, Inc., 9/13/05
- Special Study 26 - Southwest Basin Management Study Ph. II Part A, Volume 1 and Volume 2 Cella Barr Associates, 4/29/94
- Special Study 27 - New Tucson, Units 21, 22, 23, 24 & 27, Erosion-Hazard Setback Analysis for Unit 23, Martin-

- Mcltosh, 1/23/95. Hydrologic and Hydraulic Report for Units 22, 23 and 24, DJA Job No. 84-077.01. Hydrology Report, New Tucson, Unit 27, Environmental Engineering Consultants, 9/5/96
- Special Study 28 - Hydrology/Hydraulics Report for Demetrie Wash, McGovern, MacVittie, Lodge & Associates, Inc., 10/13/94
 - Special Study 29 - San Joaquin Estates Floodplain Status Hydrology Report for San Joaquin Estates -- Improvement Plans Lots 268 thru 290, Trimble Engineering, Inc., 3/22/87 and Drainage Reports for Phases III-A, IV and V of San Joaquin Estates, CMG Drainage Engineering, Inc., 5/31/89.
 - Special Study 30 - Hydrologic/Hydraulic Report for Palo Verde Ranch, ICON Consultants USA, Inc., 7/1/94
 - Special Study 31 - Brawley Wash Floodplain Study, Simons, Li & Associates, Inc., 9/6/96
 - Special Study 32 - New Tucson Units 26, 28, 29 & 30, ICON Consultants USA, Inc., 9/9/96 and Addendum I, ICON, 3/29/06 and Addendum II, ICON, 5/15/06
 - Special Study 33 - Milagrosa Hills Wash, Calle de Samuel to Agua Caliente Confluence, Simons, Li & Associates, 3/13/98
 - Special Study 34 - 49ers Country Club Lots 315 to 324, McGovern, MacVittie, Lodge & Associates, Inc., 8/15/95
 - Special Study 35 - Earp Wash, DJA Engineering Corp., 3/4/99
 - Special Study 36 - Camino Real Wash Letter of Map Revision, (Large File: 200 MB PDF format) Castro Engineering an JE Fuller Hydrology & Geomorphology, Inc., 2/23/2009
 - Special Study 37 - Camino de Oeste Wash, Arroyo Engineering, Inc., January 1999
 - Special Study 38 - Sahuarita Basin Management Study, CMG Drainage Engineering Inc., 1/5/00
 - Special Study 39 - HEC-1 and FLO 2-D Models for Finger Rock Wash, CMG Drainage Engineering Inc., 10/6/00 and Lower Finger Rock Wash, CMG Drainage Engineering Inc., Revised 2/28/94
 - Special Study 40 - Mission Wash Study for FEMA, McGovern, MacVittie, Lodge & Associates, unknown date
 - Special Study 41 - Chaparral Heights -- annexed by Oro Valley.
 - Special Study 42 - Brawley Wash Primary Flood Corridor Study, Simons, Li & Associates, 6/1/99
 - Special Study 43 - Idle Hour Wash Letter of Map Revision, Simons, Lie & Associates, 3/24/95
 - Special Study 44 - Central Arizona Project (CAP) Tucson Aqueduct, Bureau of Reclamation, U.S. Dept. of the Interior, Reach 3 May 1982, Reach 4 April 1984, Reach 5 June 1983
 - Special Study 45 - Summerhaven Hydrologic and Hydraulic Analysis, URS, 12/30/03
 - Special Study 46 - Sheet Flood Mapping for Unincorporated Pima County, PCRFC, 8/8/07
 - Special Study 47 - Silverbell Trails Estates, Delph Engineering, Inc., 10/1/03
 - Special Study 48 - Hacienda Sol Wash Floodplain Analysis, PC RFCD, 3/14/08 and Floodplain Analysis for an unnamed wash at the Intersection of Hacienda del Sol Road and River Road, PC RFCD, 3/14/08
 - Special Study 49 - Diamond Bell Ranch Hydrology, Psomas, 10/12/07
 - Special Study 50 - Floodplain Study for Flecha Caida Ranch Estates #9, Including Portions of Flecha Caida Ranch Estates #1 and #2 and Las Lomas de Catalina, JE Fuller Hydrology & Geomorphology Inc., 4/8/08
 - Special Study 51 - Floodplain Analysis for Tanuri Wash, (Large File: 136 MB PDF format), PCRFC, 6/2/08
- Other studies:
- Lee Moore Wash Basin Management Study (In progress)
 - July 31, 2006 Flood and Debris Flow Event
 - Drainage Study for the Curley School Detention Basin, Ajo, Arizona, DMJM Harris, January 2006. (10 MB PDF file)
 - Photographs of Walk-Through Inspection of Curley School Detention Basin (PDF)

Attachment IV: Flood Control District Drainage Infrastructure Projects

Drainage Infrastructure Projects (bank protection, drainage, etc.)

Active Drainage Infrastructure Projects

- Pantano Wash Bank Protection: Speedway Blvd. to Tanque Verde Rd. (Tucson)
 - Arroyo Chico Multi-Use Project (Tucson)
 - Mission View Wash Drainage Improvements (Tucson)
- ##### Completed Drainage Infrastructure Projects
- Camino Verde/Black Wash Box Culvert (

Environmental Projects

(restoration, riparian habitat, etc.)

Active Riparian Habitat and Ecosystem Restoration Projects

- Arroyo Chico Multi-Use Project (Tucson)
- Big Wash Rehabilitation (Oro Valley)(PDF format)

- El Rio Antiguo
- El Rio Medio (Tucson)
- Paseo de las Iglesias (Tucson)
- Tres Rios del Norte

Completed Riparian Habitat Restoration and Ecosystem Restoration Projects

- Cañada del Oro Ecological Reconnaissance (Oro Valley)
- Cienega Bottomlands Restoration Project (Pima County)
- Cortaro Mesquite Bosque Construction Project (
- Kino Environmental Restoration Project (KERP) (Tucson)
- Pantano Jungle Restoration Project (Pima County)
- Rillito River/Swan Wetlands Ecosystem Restoration Project (Tucson)

Water Resources Projects

Active Water Resources Projects

- Avra Riparian Restoration and Groundwater Replenishment Project (Pima County)

Completed Water Resources Projects

- Marana High Plains Effluent Recharge Project (Marana)

Other Projects

(Linear parks, culverts, etc.)

Active Other Projects

- Canada del Oro Wash Linear Park: Thornydale to Magee
- Rillito River Linear Park from Alvernon Way to Craycroft Road (Tucson)
- Santa Cruz River Linear Park from Grant Road to Camino del Cerro River Park (Tucson)
- Omni/Canada del Oro Wash Riverpark Project (Oro Valley)

Thanks,
Nancy Freeman
520/207-6506



TUCSON REGIONAL WATER COALITION

December 1, 2009

Dear City/County Study Oversight Committee and Staff,

Arizona Builders Alliance

Alliance of Construction
Trades

Marana Chamber of
Commerce

Metropolitan Pima Alliance

Northern Pima County
Chamber of Commerce

Safe and Sensible Water
Committee

Southern Arizona Home
Builders Association

Southern Arizona
Leadership Council

Tucson Association of
Realtors

Tucson Metropolitan
Chamber of Commerce

Tucson Utilities
Contractors Association

Tucson Hispanic
Chamber of Commerce

The Tucson Regional Water Coalition has closely monitored and when able participated in the City/County process throughout Phases I & II. Our efforts to engage and contribute to the process have included regular attendance of Oversight Committee meetings, formal correspondence on key issues, a presentation of our foundational principles on water sustainability, and the Phase II white paper and panel discussion on the economic value of water. The Coalition's participation has consistently focused on: 1) establishing an inclusive and transparent regional planning process; 2) recognizing the importance of water to regional economic growth/security and managing it accordingly; and 3) creating high-quality information to rationalize dialogue and decision-making.

The Coalition recently reviewed the Draft Phase II Staff Report. We are encouraged by the regional nature of some goals and recommendations. Discrete references and recommendations to work collaboratively as a region to acquire new water supplies, to use GO Bonds to pay for reclaimed line extensions, to establish performance-based regional conservation goals, and a commitment to compare the cost-effectiveness of various conservation methods against that of various supply augmentation options are positive steps toward more sustainable regional water planning. However, there are several other areas the Coalition feels must be addressed before the report is finalized.

The Coalition has stressed the importance of economic analysis throughout Phases I & II. Use of economic analysis in water policy and planning is widely considered a best practice approach by industry associations such as the American Water Works Association, industry professionals, and academia. Economic analysis methods provide much needed transparency and quality data to inform policy decisions, and are a fundamental building block to sound water management. The current draft does include occasional references to the use of cost-benefit analysis, but there are major policy recommendations throughout the document that lack sound analysis.

For example, the draft document includes a strong endorsement of rainwater harvesting at a variety of scales and for a variety of purposes. While the Coalition does not oppose rainwater harvesting, these broad policy endorsements lack analysis of costs and benefits associated with a range of alternatives and a comparison against other supply augmentation strategies such as water right acquisition. We recommend adding qualifying language throughout the document, committing the jurisdictions to perform the proper analysis to determine the cost-effectiveness of rainwater harvesting as well as other water conservation measures and supply augmentation alternatives. Any sums of money exacted from various industries and segments of the community by new regulations or fees should be justified by thorough and thoughtful analysis of alternatives.

Similarly, the draft document includes extensive discussion of allocating water resources to environmental restoration. The Coalition generally supports policy that allocates water to the environment, provided the community is informed of the associated costs and benefits of all allocation decisions (i.e. the pending Conservation Effluent Pool). As outlined in the Coalition's white paper on the economic value of water, there are potentially significant opportunity costs and/or replacement costs associated with reallocating water from urban to environmental uses. Therefore, we believe the jurisdictions should provide the public with more information about the costs and benefits associated with individual restoration projects and prioritize projects based on a comparison of net benefits. Moreover, high priority restoration projects (defined as those with the greatest net benefit) should be compared to net benefits associated with a variety of urban uses before reallocation is decided.

Reallocation decisions must involve an informed community discussion about whether we are collectively willing to forgo the net benefits of alternative uses of water. The jurisdictions have not performed the analyses needed to initiate a legitimate policy discussion on reallocating water from urban to environmental uses. Until these analyses are performed and a community values discussion initiated, the Coalition recommends the jurisdictions add qualifying language throughout the document committing to perform the proper analysis to determine net benefits of all water allocation decisions—particularly those reallocating resources out of the urban water sector such as the Conservation Effluent Pool.

The Coalition believes that all water reallocation decisions should be project-specific and approved individually. That is, rather than setting aside 10,000 acre-feet of water for environment restoration—as contemplated by the Conservation Effluent Pool—each proposed restoration project should determine the annual water demand, the duration of supplemental water, a detailed description of project benefits, and a description of project costs (including any opportunity costs associated with reallocation). This process ensures the community evaluates critical reallocation decisions with full-knowledge of specific costs and benefits, and accurately determines whether the proposed project is the best use of the region's water supplies at that time.

Finally, the Coalition has consistently voiced concerns regarding the limited participation rights granted to impacted parties during Phases I & II. Exclusion of key regional stakeholders from deliberative processes during Phases I & II delayed and possibly impaired efforts to convene a truly regional water planning process. It is critical that the Phase II Report include a commitment by the City and County to help convene a regional process. Cooperative regional water planning is a central element to our community's economic development efforts, and sends a positive message to those looking to invest and/or relocate in the Tucson region. We strongly recommend the City and County commit to a cooperative process focused on maximizing regional net benefits derived from utilization of the region's available water supply.

Sincerely,

Tucson Regional Water Coalition

Brenda Garcia

From: Angie Gelsinon [angie@kaneenpr.com]
Sent: Wednesday, December 02, 2009 12:37 PM
To: Nicole Ewing-Gavin
Subject: FW: E-mail from TucsonPimaWaterStudy.com - Comments

Comment received.

-----Original Message-----

From: noreply@tucsonpimawaterstudy.com
[mailto:noreply@tucsonpimawaterstudy.com]
Sent: Wednesday, December 02, 2009 9:43 AM
To: info@tucsonpimawaterstudy.com
Subject: E-mail from TucsonPimaWaterStudy.com - Comments

Email Address: twills16@cox.net

Comments/Questions: My concerns are regard the following paragraph from "Water -- Phase II Report" which was in an email I received today:

"The elephant in the room that the committee has failed to address is the issue of CAP water and salt. Specifically, according to some scientific studies, Tucson's full allotment of CAP water will bring 200,000 metric tons of salt to our valley each year. (The average railroad boxcar holds 100 tons of material.) While some will privately acknowledge the challenges this presents, no one has been willing to publicly address this issue. Perhaps it is the cost associated with removing salt from the CAP water. These include the construction of a desalinization plant, estimated at close to \$500,000 plus the annual operating and maintenance costs, estimated at \$25 million, plus the problem of disposing of the waste product. Doing nothing creates long-term risks to our infrastructure, soil and our health. This is a problem that requires imaginative problem-solving, and the Phase II report avoided this challenge."

Being a former PCWWM employee (now retired), I know how things get swept under the rug. However, by not doing anything about desalinization just passes the buck over o the homeowner like myself in added health issues (i.e.: high blood pressure) and damage to the infrastructure of our homes. It becomes a pay now issue (build a desalinization plant) or a pay later issue (health and/or home repairs).

WWM Director had lots of plans for future development. Shouldn't desalinization be part of them?

Do you wish to receive emails and posted mail information from the Water Infrastructure, Supply and Planning Study?

Yes