Craig O'Hare *has been the Water Programs Administrator for the City of Santa Fe's Sangre de Cristo Water Division since 1996. He oversees the utility's demand management program (conservation and drought management), public education activities, and is involved with long-range water planning. Prior to moving to New Mexico, Craig was an Executive Assistant to a Tucson City Council member for over four years and worked for the Arizona Department of Water Resources in water conservation and groundwater management for six years. Craig has bachelors' degrees in geography and business/economics from the University of California at Santa Barbara and did graduate work in water resources administration at the University of Arizona.*

Water and Growth Issues: City of Santa Fe

Craig O'Hare
City of Santa Fe
PO Box 909
Santa Fe, NM 87504-0909

Thank you very much. My first overhead illustrates what we did as a city to respond to the drought this past summer. I think we probably have the most severe water shortage emergency of any large city within the state and have implemented water use restrictions I want to share with you. As a result of that, the items listed under number two are really under a microscope. The mayor came out with a four point water plan. It is rather fitting that the title of this whole water conference is "Water, Growth and Sustainability," because there is probably no other three words that are being spoken more in Santa Fe than water, growth and sustainability. The drought has really brought a lot of attention and planning efforts on the following two issues. What are we doing growing so much when our water supplies are scarce? What are we doing in the area of conservation to make better use of our existing supplies?

As a result, in August the mayor came out with a "Four Point Water Plan for a Sustainable Future." Mayor Larry Delgado's first point is to increase our demand management efforts. The second point is to fast-track our San Juan-Chama Project water and increase, to the extent that we can, improving our near-term supply production capacities. The third point is to establish a water budget for new growth. That is very controversial, and in Santa Fe as you might imagine in any city, while nobody has mentioned the "m" word, moratorium, a growth management ordinance has certainly gotten the development and business community's attention. There is a discussion about limiting the number of new building permits in Santa Fe, before, or until we get our next big source of supply on-line, the San Juan Chama Project. Finally, the fourth point is the "Jemez y Sangre" long-range regional planning effort, which is

basically under the Interstate Stream Commission's regional planning initiative. I won't be discussing that. I will discuss the other three points in the mayor's four point plan.

In addition, there is something somewhat unique to our system I want to share with you. Our surface water resource, the Santa Fe River Watershed, poses a severe fire danger similar to what happened in Los Alamos last year with the Cerro Grande fire. We are working with the Forest Service on that. The watershed provides 40 percent of our water supply. We are concerned that we could lose that supply with a catastrophic fire.

I'd like to outline our three main sources of supply. The first is our watershed. On the right side you can see McClure and Nichols reservoirs coming out of Santa Fe Canyon, out of the Sangre Cristo Mountains. Again, providing about 40 percent of our supply on average. Eight wells in town, the "city wellfield," contribute 20 percent of our supply. Down along the Rio Grande is the Buckman wellfield making up about 40 percent of our supply. The real key for us during the drought was that our wells, both in the Buckman area and in town, will produce a maximum of about nine million gallons per day (MGD). That is including the new "Northwest well" that is still under protest. We were able to operate the Northwest well only under an emergency-use permit during the summer. Any demands above 9 MGD we basically have to pull out of our reservoirs. The reservoirs in April and May were at 55 percent of total storage capacity with our demands in the neighborhood of 16 to 18 million gallons per day. Virtually no runoff (less than 1 MGD) was adding to reservoir storage because of the bad snow season in 1999-2000. The hot, dry April, May, and June resulted in unusually high water demands that led to a significant decline in reservoir levels. The threat of running out of reservoir storage became very real. That resulted in a declaration of a "water shortage emergency" and the implementation of our supply shortage emergency ordinance. We included a sign in every public restroom in Santa Fe so that visitors and locals would know about the drought and what the water use restrictions were.

In early June, we initially went into Stage One, which was a voluntary program. Due to the restrictions being voluntary, it was not effective enough. In late June, we went to Stage Two, which included three day per week outdoor watering restrictions, a ban on home car washing, strict enforcement of "fugitive water," and a whole host of signage and literature distribution requirements for businesses. Another requirement was that hotels and motels were to install low-flow faucet aerators and showerheads if they did not have them already. I ended up getting the staff from the fire department and planning department to be our water cops. We had fines ranging from $20 to $100 for watering on the wrong day or for letting water run down the street. We issued over 700 violations and had the threat of turning off someone's water if they did not comply with those restrictions. We also had drought emergency surcharges. This was done both as an emergency demand reduction incentive and also to promote revenue stability during this time of reduced water sales. We were not able to implement them on our residential customers because of billing system problems, but we were on our commercial customers. Stage Two worked somewhat, dropping demands to around 11-14 mgd. We were dropping about 2-3 percent per week under Stage Two.

We did go to Stage Three, which included once a week irrigation restrictions, a full ban on planting outdoors, and a host of other restrictions. By limiting outdoor irrigating to once a week, we had concerns about turf quality in our parks and people losing trees. Nevertheless we were trying to ration what was left of our reservoir supply to get us into the fall when our demands are naturally down and to really try to avoid Stage Four. Stage Four would have banned all outdoor irrigating and all vehicle car washing. Stage Four also includes a building moratorium. By late summer, our reservoirs were down to 19 percent of total storage capacity with about the last 5 percent deemed to be not usable. So we were pretty close to running out of our reservoir supply. We were one storm, I believe, away from Stage Four. Luckily on August 18th and 19th we got the only decent monsoon event all summer. That one monsoon storm basically bought us about seven or eight weeks of reservoir storage space, and without that we probably would have gone into Stage Four.

So that was our drought, and basically what came out of our drought was a lot of folks arguing! What are we doing growing? How come I can't water my vegetable garden yet you're hooking up that new subdivision? Some really valid equity concerns were discussed. So there were those who wanted to focus on the demand side of the solution and those who wanted to focus on the supply side of the solu-

tion and those who really wanted to talk about linking up water and land use with growth and developing a nexus between all three of these.

An important message I would like to add is that Santa Fe is already a water conserving community. We have reduced our demands from 1995 through 1999 by over 21 percent, population adjusted. Our gallons per capita, per day usage is 143. I really do think that is the envy of many states around the west. That is our entire consumption divided by our population and a lot of cities are proud to have a rate of 180 gallons per capita per day. I think Albuquerque's goal is about 180. While we're going to be getting more into demand management, getting more involved in more aggressive conservation programs, we're not going to hang our hat on demand management as a way of getting out of a supply shortage and the problems of matching up supply and demand.

The business community has been focusing on the idea of drilling more wells, doing more immediately with getting supply online. We do have some capabilities with rehabilitating our existing wellfield, but one thing that is not totally understood by the business community is, given state groundwater law and the realities of legal protests, we just can't simply go out and drill eight or nine more holes in the ground and start pumping like mad. Nevertheless, we are going to be pursuing what we can in the way of increasing our supply production capacity in the next few years.

Our main supply-side focus is on our San Juan-Chama Project water. We are going to pursue return flow credits by delivering effluent back to the Rio Grande to get the right to divert more San Juan-Chama Project water. We have yet to work out the details of return flow credits with the Office of the State Engineer, and it is one of the $64,000 questions in our water planning strategy.

This is our San Juan-Chama Project implementation schedule. We're going to be constructing a pilot infiltration gallery on San Ildefonso Pueblo land within the next month. In addition, we are pursuing a full-scale project on a "dual tract" right now –the San Ildefonso Pueblo site and a site near our Buckman wells. Before this year's drought emergency, we were pursuing just an infiltration gallery project on San Ildefonso Pueblo land. Council has given us direction that they do not want to put all our eggs necessarily in that basket because of concerns that if it doesn't work out from a feasibility standpoint, we're going to be left a year-and-a-half down the road without a project.

When it comes to water and growth and, particularly, determining what is our reliable water supply, it is a very tough figure to come up with. Do you assume an average surface water runoff year or are you conservative and assume a drought year, or are you optimistic and assume you are going to have a wet year? Well, what we have done is to assume a median surface water flow in the Santa Fe River because that is our big supply variable. Our wells basically are relatively consistent in their production from one year to the next. We have said that if we have an average surface water runoff, we have 12,700 acre-feet per year of water to work with. Now what we used last year in 1999 was 11,200 acre-feet per year, so we have about 1,500 acre-feet per year of new growth that we can accommodate until we get up to that 12,700 acre-feet per year figure. Obviously that is assuming you have a normal surface water runoff year. But now and then, if we have another year like this year, we are going to be back in Stage Two, Three or even Four, and all bets are off as far as relying on a non-existent "median" runoff. What we are using for planning purposes is the median number and that is really hard to communicate to the general public. Half the time runoff will be below the median!

This is where our city planning department gets involved. We are working closely with our planning department on how many new housing units we can accommodate if we can "grow" up to 12,700 acre-feet per year in demands. We have additional demands of about .45 acre-feet per new dwelling unit per year. That's new demand created by that dwelling unit and the associated commercial and governmental demands with that. So with each new residential unit, it is assumed that an additional .45 acre-feet per year of new demands will be generated. If we grow at a rate of 600 dwelling units per year, we will get to 12,700 acre-feet in the year 2004, before our San Juan-Chama Project water is on-line. If we grow at 450 dwelling units per year, we will get there at 2006, roughly about when optimistic projections are for getting our San Juan-Chama Project water on-line. Finally, if we grow at 300 dwelling units per year, we have until 2010. That gives us a little bit of a cushion. Our long-term growth average has been about 475 new residential units per year. As a result,

there is discussion, not about a moratorium, but about a ramping down of the rate at which we issue new building permits.

One of the big issues in Santa Fe, along with other communities, is that when you constrain housing growth, the issue of affordable housing quickly becomes a serious concern. That concern has yet to be fully addressed, and this is something the council is grappling with. The business and development communities are urging the city to do whatever we can to increase our supply to avoid a growth management program.

Quickly I'll touch on our watershed concerns. We are in danger of having a Cerro Grande-like fire in our watershed. The fire danger in the watershed, a total of 17,000 acres, is primarily in the ponderosa pine and mixed conifer forest types. Again, the watershed contributes 40 percent of our water supply. If we have the weather conditions that existed during the Cerro Grande fire, and given that our forest conditions are identical to the Cerro Grande area–way over-grown from more than 100 years of fire suppression–our entire watershed could go up in one eight-hour burn period. This would result in a catastrophic crown replacement fire, creating major concerns about the sediment and ash run-off that would come into our reservoirs, potentially filling up our reservoirs and rendering our surface water treatment plant unusable. This could necessitate going to Stage Four immediately, whether or not we had a good snow year. Unfortunately, some members of the public view the proposed tree thinning program as a guise for full-scale commercial logging. There is a lot of mistrust of the national forest agency from past practices.

Ponderosa pine forests that have been allowed to naturally burn every five to twelve years from lightning will have in the neighborhood of 50 to 120 more mature, larger ponderosa pines per acre. Our watershed has in the neighborhood of 800 to 2000 very small diameter trees, densely packed together, just like the Cerro Grande site. What we are ultimately concerned about is that a catastrophic "stand replacement fire" would result in the decimation or our surface water supply for a number of years.

Thank you very much.