



City of Prescott

Public Works Department

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WWTP MASTER PLAN PUBLIC MEETING MEETING NOTES FOR DECEMBER 16, 2009

PRESENTERS: Dan Buhrmaster, Ken Abraham, Black & Veatch
Mark Courtney, Carollo Engineers

CITY STAFF: Mark Nietupski, Public Works Director
Jeff Low, Project Manager
Craig Dotseth, Utilities Manager

PUBLIC PRESENT: Ken Janecek, Lou Bellesi, Bill Kendig, Bob Luzius, John Zambrano,
Doris Cellarius, Mike Johns, Chuck Budinger, Cal Frey, Al Hoeger,
Sandy Griffis

1. The presentation was started at 4:08 p.m.
2. Dan Buhrmaster, Black & Veatch and Mark Courtney, Carollo Engineers, covered the Sundog and Airport WWTP Capacity and Technology Master Plan presentation that was also given to the Prescott City Council at a workshop on December 1, 2009. A copy of the presentation can be viewed at <http://www.cityofprescott.net/services/construction>.
3. The meeting was opened up for questions from the audience:
 - Q: Lou Bellisi asked whether the Airport Expansion included tertiary treatment.
 - A: Dan Buhrmaster responded that it does. Tertiary treatment does exist there right now, and it will be part of the expansion. Mark Courtney added that it will include filtration and disinfection.
 - Q: Lou Bellisi asked what the build out population that you are planning for in the expansion.
 - A: Mark Courtney will follow up with that number. Mark added that for the master plan, the City has an adopted general plan with land use in their GIS system. Then we take a detailed look at different types of zoning and attach numbers of people per unit based on existing zoning and existing development; then we use per acre amount for commercial/industrial uses. Then flows are calculated at build out.
 - Q: Doris Cellarius asked whether the airport plant sludge will ever be digested so that it can be reused, and what is the timeframe?
 - A: Mark Courtney indicated that the ultimate master plan will full solids treatment at the airport plant to allow for beneficial use. The City does not want to waste that resource and continuing land filling. Solids treatment is not included in the first phase of expansion, because there's an effort to keep capital costs down. The City just recently installed a centrifuge – a dewatering device for solids. During first phase another centrifuge will be added for dewatering; in future phases digestion (stabilization) of the solids so they could be beneficially used. Also, the by-product of the digestion process is methane gas that represents a potential green source of energy.
 - Q: Doris Cellarius asked if the City of Prescott is working with any other municipalities for efforts at best use of the sludge. Mark Courtney stated that the City is looking at regional cooperation for potential cost effective and beneficial solutions to biosolids.
 - Q: Sandy Griffis asked what beneficial land application is? Are we building mountains or roads with this stuff?

- A: Dan Buhmaster indicated that land application is an example of beneficial use of biosolids and is regulated by the EPA. In Phoenix, biosolids are often used on cotton fields. Biosolids are useful as a soil amendment and fertilizer.
- Q: Sandy Griffis asked if the City receives revenue for these biosolids.
- A: Mark Nietupski explained that there is no revenue; in fact there is a cost associated with trucking. The benefit of having the new dewatering facility reduces the weight of the materials, reducing the cost of hauling (\$40-\$50K annual savings).
- Q: Sandy Griffis stated that growth was driving the timing on the improvements. She feels that the growth controls that are being used are not conservative enough. There is no growth. People are moving away, businesses are moving.
- A: Mark Courtney stated that the increase in flow from growth has already occurred. Immediate improvements address existing needs with a little bit of cushion so you're not on the ragged edge. Mark Nietupski added that we are obligated to provide the service to treat the wastewater. We must have a facility capable of handling this. You have to design a facility that has enough head room to allow you to remain in compliance. We can't plan for no growth, because we are at capacity. We need to do something.
- Q: Sandy Griffis asked why no upgrades were performed for the past 20 years.
- A: Mark Nietupski stated that when the construction boom hit in 2000, the City was proactive in developing the water and wastewater models, understanding that we were going to have needs that needed to be met. There's a lot of work that goes into a master plan and water/wastewater models. This provides us with a working tool, a view of system needs. This master plan of the wastewater facilities is one of those projects that was identified through that modeling process. Mark Courtney added that growth is a big component of the master plan. We master-planned the facilities so the City can in economic fashion add phases to respond to growth if it does happen. But we have also concentrated on the City not having to make an over-investment for growth that hasn't happened today.
- Q: Bob Luzius asked what the timeline was for odor control portion of Sundog.
- A: Dan Buhmaster indicated that work would commence in about 2 years.
- Q: Bob Luzius stated that he had concerns because the City had an agreement with the County when the land swap was done for the Rodeo Grounds that the odor would be addressed.
- A: Mark Nietupski indicated that interim measures have been taken – covered dewatering boxes were purchased that have improved odors. Obviously, there is more to do.
- Q: Ken Janecek asked given these economic times with huge expenditures coming to get water supply, roads, improving infrastructure of sewage and water systems, picking up another \$88 million or \$32 million or \$9 million is a big deal. There's a time value in being able to delay that. He is interested that the City will be looking at regulations for restaurants/commercial who may be contributing to growth. If you're at 100% of BOD capacity and solids handling capacity, but you're half of hydraulic capacity because there's been a 300% increase, he thinks that the City should determine what percentage of the problem is disposals, what percentage is restaurants, how much is improved concentrated waste due to less infiltration. Numbers could change in February or March if the City completes the study.
- A: Dan Buhmaster stated that we are going to do the local limits study for the pre-treatment program. The sampling and testing associated with that task will start in January. That will break down what the domestic load is, versus the commercial and industrial loads. Ken Abraham added that there's a rule of thumb that engineers use

- when they estimate what a typical person produces in waste which is 100 grams per capita per day – ¼ pound of BOD waste dumped in sewer. The average Prescott citizen produces about 8% more BOD than the average person in the world. This could be attributed to disposals or it could be industrial, but probably domestic driven.
- Q: Ken Janecek asked if, from a standpoint of chemical treatment, is there a number that could be justified to spend on chemically optimizing the plant to delay the capital expenditures.
- A: Ken Abraham has evaluated this for the Sundog facility. If you took current flows and used ferric chloride to do a better job of removing BOD in the primary tanks, and then put it in the digesters to get more biomass and less sludge, we would spend about \$300,000 per year in chemicals. The disadvantage in doing that is the Sundog facility is operating right on the edge of denitrification. The state requires the facility to meet 8 mg per liter total nitrogen discharge limit, and the more BOD you take out, the less BOD you have available in the secondary process to do denitrification. If you take out too much BOD, you have to add methanol back in.
- Q: John Zambrano asked about performance and loading information for the plants – activated sludge system - pounds of BOD per day.
- A: Ken Abraham stated that the average flow at the Sundog WWTP is about 2.5 mgd, and the average BOD concentration is about 350 mg/liter BOD. The primary clarifier performance is about 55% suspended solid removal, and about 25% BOD removal. The plant is operating near its design rated capacity.
- Q: John Zambrano asked about food-to-mass (F/M) ratio.
- A: Ken Abraham said that the F/M ratio is low - approximately .05.
- Q: John Zambrano asked why we are worried about loads.
- A: Ken Abraham stated that loading is not currently a problem. The denitrification process needs to properly control oxygen concentration in the anoxic zone of the process. If you have too much oxygen in the anoxic zone, you stop denitrifying. So part of the upgrade is to separate the anoxic zones for denitrification from the oxidation ditch itself for better control. The other current problem is this plant is prone to filaments that inhibit sludge settling in the final clarifier. With a better denitrification process, there will be better control of filaments and settling characteristics.
- Q: John Zambrano asked if the Sundog expansion was to get to 3.6 mgd, not the ultimate capacity of 5.4 mgd?
- A: Ken Abraham answered that this initial plant expansion would be rated at 3.6 mgd.
- Q: Al Hoeger asked if storm drains empty to the treatment facility.
- A: Mark Courtney explained that the City's system is not a combined system. Prescott does have an issue with infiltration and inflow during storm events, and that does increase the flow at the plants. This is being addressed in the master plan, both from corrective action in the collection system and plans for flow equalization at the treatment plant to get a balance for preventing I & I on one side and treat the I & I that we can't prevent so it doesn't wash out the process.
- Q: Chuck Budinger voiced concerns about the concept that conservation is contributing to problem, in reduced flows coming into the system. If you get spikes flowing into the system during storm events you have extreme infiltration, therefore during dry periods you have extreme exfiltration coming from the pipe. That would imply that there is also a contribution from the quality of the pipes in the system that need to be looked at to equalize treatment.
- A: Mark Courtney stated that Prescott is proposing comprehensive programs for addressing and evaluating the collection system in the next year.

- Q: Chuck Budinger asked if this evaluation will include video cameras.
- A: Mark Nietupski explained that there will be video assessment and visual inspection of facilities, recording findings. Findings will be loaded into a maintenance management program, which will provide a comprehensive approach to dealing with collection and treatment systems.
- Q: Chuck Budinger asked if that will affect the first proposal you have for denitrification. If that's the high priority right now, does flow into the system affect that. Can you do denitrification as an independent process?
- A: Ken Abraham explained that we have a problem in dry weather with denitrification. The average Prescott resident is using 82 gallons per capita day, which is very low. The average in the U.S. is more like 125. The better job that conservation does makes the water more concentrated.
- Q: Chuck Budinger asked with the higher concentrated water coming in, the denitrification is the top priority to address that while the City goes back and looks at pipes and flow.
- A: Ken Abraham said this is correct. This could limit the ultimate hydraulic capacity of the plant. Dan Burmaster stated that you can argue that if the concentrations were more like they were in the past (prior to conservation) we'd still be at capacity.
- Q: Chuck Budinger stated that he hopes a lot of our recharge water isn't being lost in the pipes along the way.
- A: Craig Dotseth stated that one thing that comes into play with I & I, as the ground starts to get wet and come up, the pipes are buried. So as we get saturated, you get head pressure. So you have pressure forcing the water into the collection system. When the collection system is flowing, it is flowing by gravity so there is no pressure in there to force the water out.
- Q: Chuck Budinger stated that there are voids around the pipes.
- A: Craig Dotseth agreed that there are voids and there can be some exfiltration, but the head pressure and the ground table filling up with water is going to create that pressure that is going to force that water in and a much higher percentage that exfiltration.
- Q: Chuck Budinger stated that has heard that before and is not convinced. From a conservation standpoint he would like to see conservation work in the sense that you have lower demand on the aquifer and higher recharge, so more of that system becomes closed so that the water in equals the water out. Of course there will be loss from irrigation.
- A: Mark Courtney stated that most of our effluent is being reclaimed from surface recharge. If you're losing water out of the pipes that's recharge you don't have to treat. Kidding.....laughter.
- Q: Chuck Budinger said that this is a huge problem with impaired quality of the streams, and other non-profits are forming to look at cleaning up Watson Lake, and one of the contaminants there are nitrates. So if you're doing denitrification as your top priority, that falls right into these other groups interested in attacking this problem. This is a very positive step for the City. Without that flow coming in, you don't get recharge credits.
- A: Mark Courtney stated that it is definitely a water resource and as discussed before, Prescott has been very proactive with wastewater treatment to keep that in their water portfolio. We looked at I&I in detail in the collection system master plan a few years ago, and as part of this contract, we will look in more detail at I & I where we're looking at an economic balance between fixing the pipes, keeping that water in there and improvements at the plant and timing of improvements. The City is proposing

- more aggressive evaluation and rehab program on the collection system. Mark added that the City of Prescott's Public Works Department is excellent, because they are doing a lot with very few tools. You can see the deficiencies at the treatment plant and collection system, but they are keeping within permit. With the effects of temperature variations on biologic treatment it's a really tough job. The operations guys are doing a great job keeping ahead of that
- Q: Ken Janecek stated that Shaun has done such a good job at saving millions of gallons last year. What if we give her a second job of educating the public not to dump indiscriminately down the disposal. Wouldn't that be something that you could sell to the public?
- A: Dan Buhmaster stated that at the Council workshop it was brought up that the City has a program to collect pharmaceuticals so that they don't get flushed. It's very expensive to remove these pharmaceuticals, so if you can remove them at the source, it is a tremendous savings.
- Q: Ken Janecek asked that if you presume that you could get some significant reduction, if that's part of the reason we went from 145 to 370 BOD, because of disposal use, and if you reduce that down to a more manageable number so your hydraulic limit of 6 can be reached without reaching the biological limit, what does that do to the nitrogen problem?
- A: Mark Courtney indicated that being proactive on the pharmaceutical side is worthwhile, but as far as lifestyle changes of the community, you probably won't have a huge impact.
- Q: Shaun Rydell stated that we could evaluate the potential for some public education. Maybe work with restaurants on grease traps, and increase enforcement of codes.
- A: The City is looking at increasing enforcement of grease traps.
- Q: Doris Cellarius mentioned that there is a situation at the Hassayampa treatment plant, where effluent is placed on the golf course and sludge is put back into the sewer lines, contributing solids to the Sundog plant. Where is the primary flow to the Hassayampa plant.
- A: Craig Dotseth stated that the primary flow for the Hassayampa water reclamation facility is gathering in the APS/Mile High Middle School corridor. It is captured and pumped up to the reclamation facility.
- Q: Doris Cellarius asked if this is a good situation. Who is paying their way for the sludge that gets dumped back into the sewer?
- A: Mark Nietupski explained that this area would still be served by Sundog, regardless of the "scalping" plant being there. There was an agreement that was drafted when Hassayampa was developed that provides for that effluent use.
- Q: Shaun Rydell asked efficiency of indoors in residential development— if 70% of projected growth is residential, and what you're proposing for the plant for the future is to treat residential waste, are we looking at those efficiencies, because we now have .75 gallon flush toilets, waterless urinals, showerheads at 1.0. I hope the model that we don't run into that solid BOD problem again.
- A: Mark Courtney indicated that this was addressed in the master plan completed a few years ago. Historically around the country standard numbers are 100 per capita on wastewater. We're seeing 60 and 65. This number was used in the collection system master plan to do the projections. The City has been very proactive about the master plan, and a few years down the road, the City will do an update on their water and wastewater master plans, and will revisit flows. It's an ongoing process.
- Q: John Zambrano asked if arsenic levels will be met in effluent – 10?

- A: Ken Abraham indicated that there is no limit now, no tds limit, no chloride, no arsenic. Craig Dotseth added that we have a limit in our app quarterly report, and we meet it easily. We're at about 3 ppm.
- Q: Shaun Rydell stated that it sounds like there's a lot of opportunity and some value to the plant effluent (reclaimed water). With these additional upgrades has there been a value established for an acre foot of effluent.
- A: Craig Dotseth indicated that the current cost is \$500 per acre foot for construction purposes. Individual golf courses have their own agreements and set rates, which are reviewed annually. Mark Courtney stated that although the City is not selling the majority of their effluent now, they are still realizing the value, - for every gallon you reclaim and that stays in your water portfolio is one gallon less you have to pump out of your well.
- Q: Chuck Budinger asked about electrocoagulation for treatment of sludge.
- A: Craig Dotseth indicated that they have not gotten to solids handling in the master plan yet. Ken Abraham stated that the power that you would need is so huge that it would never be economical.
- Q: John Zambrano stated that there are hundreds of chemicals in our wastewater for which we have no water quality standards, and which potentially pose a public health threat. Simply taking effluent from treatment plants and saying it's drinkable if you meet the EPA water quality standards is not a good premise.
- A: Mark Courtney responded that it is not a good premise, but when we are recharging all of our effluent, eventually some of those micropollutants are in the waste stream – now that will apply to the valley before it applies to Prescott.
- Q: Ken Janecek stated that he thought that when the original contract was done, there was going to be an evaluation of what kind of EDC's could be currently going into the recharge facilities. Is this on the schedule for the near term?
- A: Dan Buhmaster stated that it is not currently part of the scope. Mark Courtney added that these issues are being looked at in a much grander scale than just Prescott...all the water agencies, wastewater agencies, research foundations – millions of dollars are being spent on research.
- Q: John Zambrano asked about reverse osmosis on your tap?
- A: Ken Abraham agreed that this would be the best idea in your own home. Mark Courtney added that the City spends millions of dollars to provide water to a house where a fraction of that water has to be potable. Eventually there may be dual systems with separate treatment standards.
- Q: Shaun Rydell asked if there is ever an opportunity for discussion at a grander level for that paradigm shift in this nation. Hopefully there is lobbying for this.
- A: Dan Buhmaster stated that a dual system would be costly, especially for an existing system. If you include this for new systems when you start development, it may actually pencil out.