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SANTA FE

BOARD OF COUNTY COMMISSIONERS

STUDY SESSION

August 15, 2002

Paul Duran, Chairman
Jack Sullivan, Vice Chairman
Paul Campos
Marcos Trujillo [excused]
Javier Gonzales [excused]

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SANTA FE COUNTY

BOARD OF COUNTY COMMISSIONERS

SPECIAL MEETING/PRESENTATIONS

August 15, 2002

This special meeting of the Santa Fe Board of County Commissioners was called to order at approximately 6:00 p.m. by Chairman Paul Duran, in the Santa Fe County Commission Chambers, Santa Fe, New Mexico.

Roll call indicated the presence of a quorum as follows:

Members Present:
Commissioner Paul Duran, Chairman
Commissioner Paul Campos
Commissioner Jack Sullivan

Members Absent:
Commissioner Marcos Trujillo
Commissioner Javier Gonzales

GARY ROYBAL (Utilities Department Director): Good evening. My name is Gary Roybal, I'm the Utilities Department Director. Today we're going to have two presentations: one by the staff of the State Engineer's Office and another by the staff of the Environmental Department.

The first presentation will be presented by the staff of the State Engineer: Jack Frost, he's a licensed professional geologist. He's formerly the Santa Fe County Hydrologist. Jack works in the Hydrology Bureau on water rights applications in the Rio Grande, Estancia, and San Juan basins. He authored the state-wide domestic well study and is the project manager for the Española basin studies covering much of northern Santa Fe County.

Paul Wells has four years in the water rights units of the Office of the State Engineer. He has a B.S. in civil engineering and an M.S. in environmental engineering. Paul works on water rights applications in the Chama and Canadian and Pecos basins. He led the creation of the rules and regulations for underground storage and recovery for the water rights unit.

The State Engineer's staff will focus a presentation on aquifer injection, the rules and regulations that are associated with it from the State Engineer's perspective, and how they deal with return-flow credits on that process. So I'll turn it over to Jack or Paul, who's first?

JACK FROST: Thank you. I'm the hydrologist and Paul is the water rights

expert, so we're going to pass this back and forth a little bit. We're going to address questions posed by the County in a letter to some degree. Salient portions of the letter are listed here. So the County is interested in the regulatory and technical perspectives and issues associated with aquifer injection, storage recovery and recharge in New Mexico. More specifically, the technical feasibility of these technologies in the Santa Fe basin and the SEO position on return-flow credits associated with such programs. We'll try to address parts of that, but I must caution you that we won't be commenting on any pending water rights applications, nor on any specific projects that have been floated or proposed.

PAUL WELLS: Good afternoon. I'll start with some water right issue basics. Probably you're already aware of these two subjects right here. New Mexico has long-range water supply concerns and obligations: the growing population, how to conserve water and use the supplies that we have. The OSE practices active management of New Mexico's water resources. Underground storage and recovery and return flow credits are two tools that will most likely be part of any management plan to get a long term, sustainable water supply.

Water rights overview: this is mostly to do with conjunctive management of surface water with groundwater. The surface waters of the state are considered fully appropriated due to the demand of existing water rights and interstate and international compact obligations. New Mexico manages surface water and groundwater conjunctively, which I discuss to start with. By that is, stream depletions due to pumping groundwater must be offset by retiring valid existing water rights. Consequently, the development of aquifers connected to streams is limited due to the near depletions that groundwater appropriations create to the surface water systems.

So the two tools we're talking about today are underground storage and recovery and return-flow credits. Underground storage and recovery is almost like creating an underground reservoir. You store and recover your permitted water until times of demand when you need it. It has some environmentally friendly aspects compared to surface water reservoirs. But there are some environmental concerns that were raised at the hearing that we had, and it just has some environmental aspects that are more friendly than surface water reservoirs. It's a tool for mid and long-range, peak drought resource management, basically. You store the water when the supply is available, and you tap that supply in times of drought or immediate need.

We'll start with underground storage and recovery. The New Mexico Legislature passed the Groundwater Storage and Recovery Act in 1999. It was adopted to allow governmental entities, and it's a pretty specific list in the act of what governmental entities can participate in this Groundwater Storage and Recovery Act Program. They developed it to store water and recover that water at a later date. Basically, before the act, if you put water underground it became public water, and the act, basically, let them hold onto that and it doesn't let them create their underground reservoir, which is still their water. It doesn't become public water when it goes underground.

So the rules and regulations were promulgated by the Office of the State Engineer to carry out the purposes of the act. The effective date was January 31, 2001. It involved publication of a legal notice in numerous papers throughout the state, there was a hearing held,

and the regulations came out of that.

The basics of underground storage and recovery are recharge, which is kind of a general term. Basically, supplying your underground aquifer with water. There's multiple ways of doing it; there's service water systems, like infiltration basin pond, seepage trenches, where you dig a little bit into the surface and find the permial layer underneath the surface, and leach fields. There's also well recharge injection, when the well is specifically used for recharge. ASR is a term used when the well is used for recharge and also for recovery of that water. The storage: water is stored within a controllable area which Jack will get into more of the characteristics of what that involves later on. Monitoring maintenance is a requirement, and it can be a pretty involved process. The final step would be recovery, when the demand for the water is there. You use wells to pump that back out. Again, you can either use wells just for recovery purpose or ASR wells, which are used to inject and then also recover later on.

[Question]

MR. WELLS: Yes, the act doesn't specify there has to be any particular type of recharge.

So the use and amount of recovered water: the applicant must have a valid water right, and again, that's specified in the act, which is a very specific list. And it also covers San Juan/Chama project water. The water may only be used for the same place and purposes of use as the original right that was recharged. So unless you get a permit from Office of the State Engineer, whatever the place and purpose or the use that were associated with that water being recharged is how that water being recovered has to be used. The permit holder may recover only the amount of water that has reached the aquifer, remain within the area of hydrological effect, and can be recovered without impairment. We'll go back to Jack.

MR. FROST: Thank you. So folks need to appreciate that this process of ASR in New Mexico is technologically intensive. It's very cutting edge. Although there are many projects being initiated in the world, there aren't that many projects with a long history. It's a unique technology. So the water essentially is stored as a bubble of water of the same quality, more or less, in most cases. In water table aquifers, which exist around Santa Fe, the stored water may be in place in an aquifer that creates a mound on the water table, the first aquifer at depth underground. It may also be used to replenish a cone of depression caused by pumping in the vicinity of a well-field. And I think that's one of the things that the City of Albuquerque has in mind. They were big advocates of this act. They have a huge cone of depression in a very highly porous and permeable aquifer beneath Albuquerque. So they have a target to replenish as well as to create a stored reserve in.

Operationally, the local feasibility of the project must be demonstrated at the pilot stage level to receive a permit to conduct ASR in New Mexico. This can be a very expensive investment, to test the feasibility of the idea. So going in, you only have a generalized estimate of how this is going to work, what kind of rate you can put the water in the aquifer, take it out of the aquifer, what will be your gross storage volume over time. From the State Engineer's perspective, we want this process to be documented on the ground, and the effects on other rights and water users to be addressed. And places like the Santa Fe region is riddled

with domestic wells. The effects on any water user will have to addressed by this process.

To go on about the process, water quality of both the water to be stored and the aquifer may be issues. That's been found to be true elsewhere. Clogging of the well and the near field of the aquifer around the well can cause the behavior of the aquifer to change, the injection and withdrawal rates to diminish. Blending of the injected and the stored water can sometimes cause problems, either in the aquifer or in the recovered water. A very recent example of that is Florida, on a large scale, made a commitment to drill hundreds of ASR wells and now, during cyclic testing, meaning putting a slug of water in the ground and withdrawing it, they're finding that the recovered water is higher in arsenic than either the water in the aquifer or the water they put into the aquifer. So they're liberating arsenic from minerals in the rocks that they're injecting into.

It's another cost to be anticipated. If you're talking about a large scale project, you'd have to look at that, because frequently you have to treat or polish the water you're putting into the aquifer. And most projects that are active in America today are putting in potable water and taking it out, chlorinating it and blending it with other waters. But there are other types of water, being examples of storage like that.

MR. WELLS: Now we'll talk about the administrative process that would go into an application for an underground storage and recovery project. It would start with a pre-application — actually no application has been filed in New Mexico yet under this program. It would start with a pre-application meeting, which is just held with the applicant. They would come into our office and discuss what they had planned. They would present a kind of initial report along with that on the basic design, the draft of the project.

After that they would get together an application for a pilot project, and submit that with a capability report. The capability report talks about hydrologic, technologic and financial capability of actually putting a project together and getting it up and running. The feasibility report and the rules and regs for the underground storage and recovery are on our website, so they can be seen there.

Then after they submit their application for a pilot project, publication of legal notice occurs in the county affected, county or counties. A hearing will be held if it is protested. So people can protest. It's a standard legal notice process for any State Engineer application. One has to wait for three weeks and 10 days after the last publication date to file a protest. The OSE, well there will be decision from the hearing, and that'll probably involve OSE review and either the action will come out of the hearing from the hearing examiner, or it'll be remanded to the Office of the State Engineer and action will be taken. If it's approved, a pilot project will proceed, involving oversight by the Office of the State Engineer. Most of the process was envisioned that OSE would have an oversight as their main involvement. The applicant has the burden of getting the information that the project needs to verify the project will be feasible.

After a successful pilot or demonstration project is completed, they'll come back in and apply for a full-scale project. If the original notice covers the full intent of their full-scale project, they will not have to re-advertise. But if it does not, an additional legal notice will be required with the same process of they can be protested. Basically, the Office of the State

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Engineer will have continuous oversight. The full-scale project will also have a refined capability report based on the findings of the pilot and demonstration project. You can tell it's pretty much a new science and that's why these steps are in here, because there has not been an application filed yet in New Mexico and it's kind of a learning process for all parties involved.

So now we'll get onto return-flow credits. Return-flow credit, we've described it as a water right permit, it's based on a diversion route or a consumptive use amount. Things like irrigation often have a diversionary right, there could be a maximum diversion associated with that right, a common three acre-feet per acre. Sometimes water rights are based on a consumptive use amount. It's this type of right that people often apply for return-flow credits. An Office of the State Engineer authorized return-flow credit allows for a diversion beyond the recognized consumptive use amount, to the extent that the return-flow augments the hydrologic source. Basically, the water that returns to the source that the diversion was originally made from. A return-flow credit does not entitle an appropriator to increase their consumptive use amount. Therefore, your consumptive use amount, they say the part that will not return to the source cannot be increased under a return-flow credit or an application.

Administrative concerns: return-flow credit must be specifically requested through the OSE application process. That means if you want to increase your diversion you've got to make an application to do so. And again, that goes through the standard Office of the State Engineer application process. You submit your application, requiring legal notice, and then it's reviewed at the office, if it's not protested, or possibly go to hearing if it is protested.

The amount of return-flow credit is based on the annual measurement of permitted consumptive use and return-flow amounts. The accrued return-flow credits may not be carried over. Basically, return-flow is balanced over each year and so there's no carry over into the next accounting year. And that differs from the underground storage and recovery, which allows you to store and recover in a longer term. Just like underground storage and recovery, it requires proof of any applicable New Mexico Environment Department or other discharge permit that would be required based on the water being injected.

MR. FROST: My impression is, at the State Engineer, that return-flow requests are becoming more common, usually on older permits of community water supplies that are over-diverting. However, few real plans submitted for that, and some of those have been rejected because they don't possess the documentation to prove that the water is returning. There is a committee that I'm a member of on guidelines for return-flow plans, and we've met and written a lot in the last year or two. And at one of the meetings, someone showed up with some very serviceable documents about guidelines for return-flows, written in the '80s. Francis West may have been there when they were writing those. It's hard to get something like that out of the agency, basically.

A return-flow plan then, would be a submittal that's based on site-specific studies. It would involve hydrology and engineering. The actual return-flow must be calculable or measurable. The contents of the plan must address the water rights, the water budget, the water treatment, the water conservation measures that the system is employing, and then the actual return-flow by an engineering and hydrologic assessment, and a monitoring plan to follow up

on that. I can comment on two examples I'm familiar with. One is a community water system that discharges into an unlined lagoon right by a stream, and we all presume there is some percolation to the shallow water table which is connected to the river there. So there is some degree of return-flow. But where the State Engineer dings these systems is that you have to be conserving water, you have to be using it efficiently, your water rights must in order for us to proceed and evaluate.

Finally, the applicant in all of these issues, or the burden and the cost of the applicant, must demonstrate a method for determining the amount of disposition timing and location of return-flow. If it's a case like a city down the Rio Grande who has a lined concrete channel from its effluent treatment plant to the Rio Grande, if they have a meter or some kind of measurement on that, that's a very easy task for them.

Now we want to transition a bit to feasibility of projects like we're discussing in the Española basin. The City of Santa Fe and much of northern Santa Fe County overlies a portion of the Española geologic basin. It's a large trough filled with silt, sand and gravel. It's much akin to the Albuquerque and the lower Rio Grande basins that are contiguous and connected to the Rio Grande. The aquifers are thick, they're pretty fine-grained in the Santa Fe region, and they're cut by faults and volcanic rocks, which are pertinent to the Caja del Rio and the Jemez volcanic fields. But right now, the city wells, the Buckman well-field, Los Alamos wells, and new Pueblo golf course wells, and thousands of domestic wells rely on that source of supply.

Over the past five or six years, approximately $30 million has been spent on new studies concerning the hydrology and water resources in the middle Rio Grande area. Those studies are winding up, and we're moving a lesser amount of money and trying to attract more to the Española basin in general. In this past year, we've committed about $400,000 to renewing studies in the Española basin. There were waves of geologic studies and hydrologic studies conducted in the past. And actually, Santa Fe County was a participant in some of that. When there was a metropolitan water board, they co-funded a number of studies that are still valuable in the region.

Things that we're doing are drilling more monitoring wells near the well-fields and where the City is proposing additional wells. We're sponsoring field and research studies regarding the streams and aquifers. Money permitting, these will continue for several years, and we were just scoping the next year's worth of studies recently at our office.

I might add that these studies are not just cooked up at the State Enginee Office, that there's actually a group of people that are actively researching geology and hydrology in the region called the Española Basin Technical Advisory Group. It's been pulled together in the last year or so. The County Hydrologist is a member of that group or an invitee. One might call it a clearing house. It's not making hard and firm decisions, but we meet and present our ideas and discuss what's good to do and what's helpful to do. This includes geologists whose main research interest is not water resources, yet who are being very helpful and committed to trying to make their work reflect on water resources.

So what we're trying to do is build upon the pervious studies and ultimately we have an eye on designing refined administrative guidelines for this area. Administrative guidelines were

recently adopted in the Estancia basin, recently adopted in the middle Rio Grande. The way water rights applications are now reviewed in the middle Rio Grande today is different than they're reviewed here in a basin which has some connection to that MRG. I want to use this opportunity to pitch that there are lots of opportunities for city and county cooperation and getting together on funding projects. We already have a laundry list, and you're welcome to participate in that.

Regarding either return-flow plans or underground storage and recovery, site-specific studies are necessary. That means you're going to have to drill test wells, cores of section beneath where you intend to conduct activities. You're going to have to collect site-specific data on the physical/chemical properties and boundaries to the aquifer. In this region, I believe that the most optimum areas for USR are probably not yet identified, in part because our current knowledge is tied to scale. We know a lot about some well fields and a few wells, but there are square miles of land totally unevaluated in the basin.

The existing results that we have from pump tests and from the well fields and the history of production in the well fields reveal a wide variety of sub-surface conditions. We do not possess or have yet to find the thick gravel channel of the ancestral Rio Grande that lies under the city of Albuquerque and is believed to exist under the Pajarito plateau where some of Los Alamos' wells exist.

Based on what we know now and what's been published, by comparison to existing storage and recovery projects elsewhere, the Española basin is on the marginal side of geologic parameters.

MR. WELLS: So now it's time for the summary. Underground storage and recovery, it's an operational tool for committee water supplies with permitted water rights, and again those water rights are specifically defined in the act, and also in the rules and regulations. Underground storage and recovery allows the storage of off-peak and seasonably available water for later recovery, store in times of plenty and recover that water in times of need. Underground storage and recovery can minimize environmental impacts of surface storage. Basically, some of the environmental impacts associated with surface-water reservoirs do not exist with an underground kind of reservoir. Underground storage and recovery is not suitable everywhere; it might not be hydrologically or technologically or financially feasible, given other options that a governmental entity might want to consider. Finally, underground storage and recovery is not effluent injection and it is not coupled to return-flow credits.

The next slide is about return-flow credits summary. Return flow credits are an administrative procedure that recognizes offsetting effects of a permanent diversion. Basically, the source is recovers some of the water that is originally diverted. Return-flow credits are typically applied to community water systems where effluent is being discharged to the same stream their groundwater pumping is depleting. Return-flow credits should be commensurate with the depletion effects and time and location due to pumping. Because of demands on service water of New Mexico, the state needs effluent returned to streams, basically to meet interstate compact and also bow existing water rights downstream.

MR. FROST: In short, then, these are new tools. One of them is an

operational thing, USR is an engineering and hydrology dollar intensive effort whose burden is the applicant. Return-flow credits are an administrative way of dealing with water that is returned to the impacted area or to the source waters or to the nearby stream due to pumping a well.

In discussing this presentation with the State Engineer, he wanted us to make the point that the county or any applicant really needs to identify its needs and see how these tools fit the picture, and determine if and how they can help. Thank you.

MR. ROYBAL: Are there any questions? I think there was a question on what governmental entities are allowed to do – USR?

[Question out of audio range]

MR. FROST: That is a hydrology question. Most ASR projects are in confined aquifers. They have a top and bottom. You start pumping a well or putting water in it, you're going to create a pressure effect that extends much further than the elements of the water you are moving themselves. So a controllable volume in that example is the area that the water you're moving is moving to and from the well. And you know that area.

In a water table aquifer, though, you're creating — either you're filling a cone of depression, a physical drawdown around other wells or near other wells, or you're building up the water table in that vicinity. So the physical movement and the buildup are the same, it's not a pressure effect per se. You need to know how that effects other water users in the area, domestic wells, and in some examples, to control the height of that buildup as it approaches the surface. Away from streams, that not a big problem in the Santa Fe area because 100 or 200 feet to the water table. The controllable volume one way or another is based on sampling and measurement and modeling as well. Sorry for a complex answer. Sir?

[Question out of audio range]

MR. FROST: There have been no applications in New Mexico. The question was how many have been approved in New Mexico, and none have been.

MR. WELLS: The Alamogordo ran a pilot project prior to the regulations taking effect, so they weren't covered under the act, they didn't do any application process through the state engineer, they just kind of did it on their own. So once they put that water underground it became public water again, so they weren't able to recover it, it was just a testing thing they want to do.

MR. FROST: Actually, the City of Santa Fe ran some injection experiments in the Torreon well years ago, and again they used public water. I don't know how many cycles of experimental injection they tried or anything. An early consultant firm, CDM or Camp, Dresser and McKee worked on that, an early firm in ASR and other parts of the country worked on it. Sir?

Q: If ASR is not effluent injectino, what do you mean it's not coupled to return flow credit?

MR. WELLS: Well, return flow credit is more instantaneous, they bounce it over a year, but it's basically your yearly consumptive use cannot exceed your permitted right. Underground storage and recovery, you can store water for 10 years in a row and recover all of

that water on the 11th year. You create an underground reservoir for a lack of a better term, but it's a long-term planning option. Return-flow credit, it's a different permitting process, but the main thing is that it's balanced on a yearly basis.

It returns to the hydrologic source and I have a definition both the area of hydrologic effect and governmental entity are defined in the act. And governmental entity means 'Indian nation, tribe or pueblo or state political subdivision including municipality, county, acequia, irrigation district or conservancy district.' The area of hydrologic effect as defined in the act means 'the underground area where the water is stored and located, hydrologically connected surface waters, adjacent underground areas in which water rights exist that may be impaired, and the land surface above the underground areas, and any additional land surfaces used for seepage or infiltration. That's how it is in the act.

COMMISSIONER SULLIVAN: I had a question.

MR. WELLS: Yes.

COMMISSIONER SULLIVAN: If a private applicant wanted to pursue an underground storage and recovery project, could they do that? For example, could they become a conservancy district, make their area into a conservancy district and then proceed and go through the application and pilot process?

MR. WELLS: I'm not really familiar with the law on how they would become a conservancy district. But if they became one of the entities as described in the act, they would be covered. But if not, then not. Because the act is pretty specific on what governmental entities can participate.

COMMISSIONER SULLIVAN: I'm just curious as to how you form the conservancy district. There's a number of them, of course there's the Rio Grande conservancy district, and I think they're autonomous, are they not, from the cities or counties, aren't they a separate entity?

MR. FROST: Simply, they're water use associations, and some are governmental entities.

COMMISSIONER SULLIVAN: In and of themselves, kind of like co-ops or something like that, or mutual domestics?

MR. FROST: Let's keep it really simple. I can't define how they fit that list, neither of us can. Yes?

[Question not within range.]

MR. WELLS: I guess that's the question that hasn't been answered yet because it hasn't been applied for. The act does state what water rights can be— the water that is injected must have an associated water right. Now whether that effluent water still retains the water right associated with the original diverted water from the source is what has to be answered to answer your question. I can't give you a definite answer on that yet.

[Question regarding source and Española Basin Ground Water]

MR. FROST: To my knowledge, the Santa Fe group and the Ancha are regarded as a common source of supply, and they were treated as such in reviewing City of Santa Fe applications. The surface waters, the Santa Fe River, La Cienega, the Rio Grande

and the groundwater are all presumed to be intimately connected.

Question from ED regarding how often the OSE reevaluates return-flow credits that are in place.

MR. FROST: One comment about that, based on my limited experience, is that they're probably old permits with return-flow credits that aren't tracked very carefully, I'm guessing. But their reporting should be reviewed annually. And what happens there is your return-flow credit is based on the bookkeeping for that year and can vary. It can go up and down. And an interesting outcome of that is if a system is implementing conservation measures, there may be correspondingly less return-flow than they had at a different date. But again, the way we kind of snag them on that is that they have to be an efficient system to begin with. We don't want return-flow credit given as a local example of a system whose sewer flows under an irrigated field and gathers irrigation water, which is booked at the treatment plant as waste water. We've got to sort out, tease out, that leak from other sources and only credit the actual water that was delivered. It cuts both ways. There are community water systems that are on septic tanks. There are community water systems that are on septic tanks and small waste water systems that serve a part of the community. And finally, there are wastewater systems that gather wastewater from homes on domestic wells. So we want to sort out what the water right to the diversion of the community water system is, and what fraction of that is truly effluent to the source for the return-flow credit.

MR. WELLS: Part of that question is, is the reason behind an ongoing committee to create regulations to get a consistent standard for return-flow credits.

CHAIRMAN DURAN: Any other questions? Thank you Paul, Jack.

MR. ROYBAL: Are we ready for the next presentation? The next presentation is by the New Mexico Environmental Department. Karen Menetray will be giving this presentation. Karen has a bachelor's degree in geology and has worked for the groundwater quality bureau of New Mexico Environmental Department for approximately 10 years. Her current duties are the Industrial Waste Water Team leader and underground injection control coordinator for the Groundwater Pollution Prevention section. With her is Maura Hanning and Fred Kalish, who are available to answer any technical questions on the environmental side, and also with us is Marcy Leavitt, who is the Groundwater Quality Bureau chief. With that, I'll turn it over to Karen.

KAREN MENETRAY: Thank you for inviting us here to talk about groundwater discharge permitting for recharge systems. We've passed out hard copies of my slides so you can follow along and take home a souvenir.

The term 'recharge systems' is one that I sort of made up for this talk. It's not a regulatory term. I'm using it just to describe any system that might be used to replenish the aquifer.

First I'm going to give you a description of the groundwater discharge permitting in UIC program, Underground Injection Control program, and then I'm going to talk about permitted wastewater reuse systems that we have permitted in the past. I'm going to give a

description of possible waste water recharge systems and a description of the permitting process and regulatory issues specific to recharge systems. Then we're going to take questions and answers.

In 1967 the New Mexico Legislature enacted the New Mexico Water Quality act. This established the Water Quality Control Commission. In 1977 the Water Quality Control Commission put together regulations requiring permits for discharges onto or into the ground. And they set numerical standards for groundwater in New Mexico. The purpose of these regulations is to protect groundwater quality from contamination by discharges of effluent or leachate.

So in New Mexico, we started permitting groundwater discharges in 1977. And then in 1980, the federal government established the Safe Drinking Water and the Underground Injection Control program under that act. The purpose of that program is to protect drinking water from discharges under the ground or into the ground. New Mexico has primacy for this Underground Injection Control program, meaning that we have primary enforcement authority. EPA gives us a grant each year to implement this program. Even though none of us working in this program right now were around in the program in 1977 we still feel pretty proud that New Mexico had one of the first most comprehensive groundwater protection regulations in the country.

We don't have a separate set of regulations for underground injection control wells. Instead, our underground injection control program is integrated into our discharge permitting program under the Water Quality Control Commission regulations. So it's a state program. We have 21 staff people who work on discharge permits for approximately 900 permitted facilities statewide, and we oversee a variety of types of facilities, including dairies, municipal wastewater treatment plants, large capacity septic systems for churches, schools, mobile home parks, hard rock mines, contaminated soil and groundwater remediation projects, electrical generating facilities, food processors such as cheese manufacturers or chile dehydrators and commercial greenhouses. There's a lot more types of discharges that we regulate. That's just a sampling of the major types -- out of experience permitting different types of wastewater reuse, including irrigation of non food crops and landscaping, irrigation of public places such as golf courses, soccer fields and parks. Reuse in toilets, dust suppression at construction sites, and industrial reuse such as at electrical generating facilities.

Most of those reuse types that I just mentioned are generally well accepted by the public, but sometimes particular projects encounter opposition because people are concerned about coming into contact with treated wastewater and about the public health effects. Currently, we rely on a 1985 policy for the use of domestic wastewater effluent for irrigation. In order to update this policy, there's been a work group formed called the New Mexico Wastewater Reuse Work Group, and its meeting monthly to discuss requirements for reuse and reinjection. Fred Kalish on the front left here is heading up that work group.

In general, the Environment Department supports the reuse of water in order to conserve potable water supplies. But we're concerned about the health effects of contact with wastewater, and we need to make sure that it's done in a responsible manner.

If the County is contemplating a project to replenish the aquifer, here are some systems that might be used to accomplish that: infiltration impoundments, shallow sub-surface distribution systems, also known as leechfields, also known in regulatory terms as class 5 UIC wells, or vertical wells, also known as class 1 or class 5 UIC wells. And that could be a well completed above the aquifer or a well completed in the aquifer.

I'm going to give you a moment to read this definition, and then I'll paraphrase it. I mentioned UIC several times, and basically, what this definition is means is any hole in the ground that's used to inject fluids is a UIC well. This definition is a federal term that we've adopted in our state, and it's used to describe anything from septic systems to technically complicated deep injection wells. You'll notice it also says 'sub-surface fluid distribution systems,' so that's any kind of piping system underneath the ground that's meant to deliver fluids to the subsurface.

MS. MENETRAY: The question is, are there any injection wells in Santa Fe County right now? Yes, there are a lot of leechfields in Santa Fe County, and those are considered to be injection wells. Most of the kinds of injection wells that we currently regulate are large capacity septic systems or other types of domestic wastewater treatment systems that discharge to leechfields. And also, we have aquifer remediation systems that have injection wells for the reinjection of the treated groundwater.

CHAIRMAN DURAN: But most of it is wastewater?

MS. MENETRAY: Yes, most of it is.

CHAIRMAN DURAN: Anything other than wastewater?

MS. MENETRAY: We don't have any recharge wells that we've permitted anywhere in the state.

CHAIRMAN DURAN: Okay, thank you.

MS. MENETRAY: So we have a lot of experience with injection wells, we have a lot of experience with reuse on the surface, but we don't have any experience with permitting recharge wells, at this point.

This is a Environmental Protection Agency cartoon that depicts different types of injection wells. Although it doesn't show an aquifer recharge well, what it does is help you get the idea that an injection is designed to inject effluent from a particular activity to a particular depth in the subsurface. Starting from the left it shows a storm water injection well, a mining injection well, an oilfield injection well, and then an industrial waste injection well. And the big glass of water is meant to represent that the UIC program is to protect drinking water.

Regardless of what type of recharge system is selected, whether it's an impoundment or a vertical well or a leechfield, you're going to have to have a discharge permit. And probably regardless of the source of the water. A discharge permit is an approved plan to protect groundwater quality from the discharge of effluent or leachate which may move directly or indirectly into groundwater. It includes operational, monitoring, contingency and closure requirements. Operational requirements would be the construction, operation and maintenance of a treatment system used to treat the water before it's injected, for example. Monitoring

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requirements would include effluent quality monitoring before injection, groundwater quality monitoring from properly constructed monitoring wells around the injection area, and monitoring of the volume of wastewater that was injected. Monitoring requirements are designed to detect a problem before groundwater contamination occurs as a result of the injection. Contingency requirements describe actions to be taken in case there's a mechanical failure, a spill or if groundwater contamination occurs. Closure requirements describe the actions to be taken if the system closes down permanently so that groundwater contamination doesn't occur after closure.

So now I'll talk about how you obtain a groundwater discharge permit. The first step is to submit a notice of intent to the groundwater quality bureau. That's basically a one page form that describes the project and the concept of what's going to happen. Then it gives us the opportunity of informing the discharger whether a permit is required, and any obvious concerns that come up right away about what they're proposing. In this case, it would also give us an opportunity to have an early meeting with the county or the entity proposing the discharge and also get involved with the State Engineer and have us all meet together and talk about joint requirements.

The next step would be that a permit application would be submitted to the Environment Department. Then a public notice would be issued with a 30 day public comment period. If there's significant public interest, a public hearing would be held. Then the Environment Department reviews the application for completeness and technical issues, and a permit is issued if the application meets the Water Quality Control Commission regulations. The permitting time for a simple permit is about 180 days, but we wouldn't expect this to be a simple permit. We would expect there to be public comment, public interest, and probably a public hearing. In that case, it would take more than a year to get the permit issued.

Once the groundwater discharge permit is issued, the Environment Department has to ensure compliance with the permit, and the way we do that is the discharger submits monitoring reports to the Environment Department, and that usually occurs every 3 months with most permits. We do routing inspections and samplings. The permit has to be renewed every 5 years, so you go through the same process again every 5 years. There's enforcement penalties of up to $15,000 a day for violations of the permit or the regulations.

Again, I'm going to let you read this definition and then I'll summarize it. This is the regulatory requirement under the Water Quality Control Commission regulations for recharge wells. And basically what it means is that fluid that's injected into a recharge well has to meet drinking water standards before injection.

These are contaminants of concern, just in general, in wastewater for which there are groundwater standards. In organics such as metal and salts, organics such as hydrocarbons and pesticides, and biological perimeters such as bacteria. We can't really tell you what the monitoring requirements for a recharge project because we don't know what that project looks like yet. We would need to know the source of the water, the location of the recharge system and the type of the recharge system. But in general, we require comprehensive testing of wastewater at the beginning of permits to characterize what's in it. Then once we know what's

in it we can scale back a bit to a more reasonable monitoring plan for ongoing monitoring.

Here's some regulatory concerns that we would have for recharge system discharge permits. First of all, in the operational plans, is the treatment system adequate? We would require tertiary treatment including filtration and disinfection of wastewater before injection into the aquifer. We would also want to see a wastewater treatment plant that has a proven capability of meeting effluent limitations in the long term and has the ability to handle operational problems. The monitoring plan, we would require effluent monitoring prior to injection. Probably we would require batch treatment where a batch of wastewater was held and tested before it was injected into the aquifer.

The difficult questions are how frequently does one need to monitory, and for what perimeters? We would be looking to other states that have more experience with permitting recharge systems, and to this New Mexico Reuse working group to try to figure that out before we issued a permit for one of these. And of course, a monitoring plan would include properly constructed groundwater monitoring wells around the injection area.

For contingency plans we would want to make sure that there was an alternative disposal method in case effluent limitations weren't met, or if there's a mechanical failure. And then of course we'd want notification to NMED in the event of a failure.

That's a general description of permitting requirements. In summary, the Environment Department supports the responsible reuse of wastewater to offset the use of potable water. But we feel it's necessary to balance public health concerns with water planning. Permit requirements for recharge systems will be project specific. The Environment Department is currently developing guidelines and policies for reuse and recharge projects. The Environment Department encourages a planning meeting during the conceptual stage of any such project. Thank you.

COMMISSIONER SULLIVAN: I had a question. On your operational plan, you indicate tertiary treatment, filtration and disinfection. Is reverse osmosis required?

MS. MENETRAY: I don't think we've decided that yet.

COMMISSIONER SULLIVAN: The only reason I ask that is because a couple of months ago we looked at projects in the Phoenix area, and all of those had reverse osmosis systems as a part of them, and I didn't know whether there was something different about Phoenix than Santa Fe in terms of water.

MS. MENETRAY: I think one that's different about Arizona is that they have projects like this permitted, and we don't have any yet. Would my program manager like to address that question? This is why I brought my bosses along.

MAURA HANNING: I'm Maura Hanning, I'm the program manager for the Groundwater Pollution Prevention section. Karen has indicated that there's still a lot for us to figure out. But I've been sort of joking about the need for reverse osmosis, but Karen and Fred tell me I'm going overboard on it. So there is a lot we have to determine about what's safe. What we're learning in making decisions on surface reuse of wastewater is that it's a very difficult balance to find between supporting the reuse of wastewater to offset potable water use, and being effectively protective of human health. So we don't have an answer other than

tertiary treatment being required and needing to meet drinking water standards.

KAREN MENETRAY: I've also seen recently that in Kings County, Washington, they have an ongoing study of treatment processes before reinjection, so we might be able to glean some information from that study.

KAREN MENETRAY: Well, the idea of the recharge well is that it's a well that's intentionally designed to replenish an aquifer. We realize that there's plenty of systems out there that incidentally recharge aquifers, but the regulatory scheme to make them meet drinking water standards isn't there. In fact, there's probably not too many feasible treatment systems that could meet drinking water standards for individual homes.

CHAIRMAN DURAN: I just ran into someone yesterday for lunch who is, I can't remember the whole presentation he made to me, but it was a system that he was building into a project, actually a home, up in Taos. The water that would go into the—it filtered the water, it was a $10,000 system. So I think financially it might be hard for individual homeowners to do that, but from a project standpoint there might be some systems out there that would allow small scale development or even large scale development to treat the water and put it back into the aquifer. I can't remember the name of the system.

MS. MENETRAY: I think Fred, our domestic waste team leader, can address this. Certainly there are systems that can treat water better than septic tanks before reinjection. We don't have the regulations to make everybody do that right now. As regulators, it might be someplace that we would like to go, but we're sure we would encounter a lot of opposition.

CHAIRMAN DURAN: But maybe if the system was feasible for large scale developments it could be feasible for them. Maybe not on an individual basis, but for large scale development it might be financially doable.

FRED KALISH: I would just comment that I think the rate limiting step is going to be the cost involved and actually monitoring the effluent quality that's being used to recharge the aquifer. And that's why in the country right now the only projects that are going on are very large scale projects. Typically, the types of projects that are going on support an analytical lab right there to do the testing. Even a large development, it might not be economically feasible to keep up with the monitoring requirements. That remains to be seen.

CHAIRMAN DURAN: Well, why don't I get that information and give you call and you can give me some advice.

MR. KALISH: That would be great, we'd welcome that.

CHAIRMAN DURAN: I thought it was a great concept.

MS. MENETRAY: Well, again, I'm going to have to ask Fred to answer it, because he is leading the group, and I think it's just that the reuse part is coming first and the recharge part is going to come along next.

FRED KALISH: The idea right now is that the reuse work group that's

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meeting, our primary goal is to revisit and revise the 1985 policy for the reuse of treated and domestic wastewater for a variety of purposes. One aspect of the workgroup will be consideration of recharge projects and what kind of rules or policies might be warranted to those types of projects. I think what the outcome, as far as the reuse group, will be a recommendation to the Pollution Prevention section as far as some of these perimeters that we should consider in the development of the policy. What I can tell you for sure is the new reuse policy, we are looking at early next year as far as getting something out in draft form for public comment. As far as a draft policy for recharge projects, I think we're looking probably at least another 6 months to a year after that, I would anticipate.

MS. MENETRAY: His question was about a project that was proposed up near the Opera for a hotel up there. They were called Inn at the Opera, but I think they changed their name. They had proposed doing injection of treated effluent, and I think that they're objective was to receive return-flow credits from the State Engineer's office. How that worked out, I don't know why they ultimately didn't go forward with it. Fred, they changed their application to us, right?

MR. KALISH: Yes, what happened was their original proposal was to drill an injection approximately 20 feet or so above the aquifer, so not a direct injection into injection into the aquifer but some distance above it. Based on NMED's as far as assuring the treated wastewater would achieve a certain quality all the time, and also based on significant neighborhood concerns regarding the proposed plans, they in fact ended up revising their discharge permit application to pursue a more conventional approach which didn't involve an injection well, and it doesn't qualify, as I understand it, for return flow credits either, with the intent that maybe sometime in the future they may revisit their original proposed operational plan as a modification to their approved permit. So it's in limbo right now.

MR. ROYBAL: You mentioned that you encourage the reuse of effluent for other purposes such as irrigation. What kind of standards would you have to achieve? Would you have to achieve the same drinking water standards as you would if you were going to deep well injection?

MS. MENETRAY: No, as I mentioned, we use our 1985 policy, and basically that has a fecal coliform limitation of 100 counts if it's going to be in a public place. Also, we want to make sure that the nitrogen that's applied to the land is being taken up by grasses or some kind of crops so that nitrate doesn't get down to groundwater and cause groundwater contamination. If it's not a public place where that land application is being done, there are more relaxed standards for it.

MS. MENETRAY: For discharging to a surface water body there's a different part of the agency that deals with permits, they're called NPDES permits, National Pollutant Discharge Elimination Permits, and that's our surface water quality bureau. In our bureau we don't deal with discharges to surface water at all. You'd have to have yet another permit.

MS. MENETRAY: No matter what kind of system it is, we have to make sure

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that groundwater standards aren't violated, and that the drinking water standards kick in if it's a recharge well. If it's a surface impoundment, we're looking at New Mexico groundwater standards versus drinking water standards. I suppose it depends on the depth to water and what kind of treatment we could expect to see in the vadozone, but you may be required to treat to groundwater standards before putting water in that impoundment before it infiltrates.

CHAIRMAN DURAN: Any other questions? Thank you, Karen

MR. ROYBAL: Thank you, Fred, Maura and Marcy. That concludes our presentation for tonight, thank you.

CHAIRMAN DURAN: I'd like to thank you all for coming, and we look forward to working with you on these very important issues in the near future. And we're all going to have to work together to solve the problems that our community has. The meeting is adjourned. Thank you.

ADJOURNMENT

Chairman Duran declared this study session adjourned at approximately 7:45 p.m.

Approved by:

Board of County Commissioners
Paul Duran, Chairman

Respectfully submitted:
Karen Farrell, Commission Reporter

ATTEST TO:

REBECCA BUSTAMANTE
SANTA FE COUNTY CLERK

COUNTY CLERK REBECCA BUSTAMANTE SANTA FE COUNTY NEW MEXICO

1225, 231

COUNTY OF SANTA FE } ss
STATE OF NEW MEXICO
I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD ON THE 25 DAY OF Sept A.D. 20 02 AT 12:51 O'CLOCK P.M AND WAS DULY RECORDED IN BOOK 22-17 PAGE 180 - 197 OF THE RECORDS OF SANTA FE COUNTY
WITNESS MY HAND AND SEAL OF OFFICE
REBECCA BUSTAMANTE
COUNTY CLERK, SANTA FE COUNTY, N.M.
DEPUTY

COUNTY CLERK SANTA FE REBECCA BUSTAMANTE NEW MEXICO