

Galisteo Watershed Partnership
Quarterly Two-Part Meeting
Friday October 12, 2007

Introduction, Jan-Willem Jansens, Earth Works Institute

www.nmwaterconnections.org – people can post communications here in the interim; the Galisteo Watershed Partnership site will be launched in November.

Background & Purpose of the meeting:

The partnership was established in July of 2005, this is our 8th meeting since 2005. The purpose of this meeting is dialogue on water management as it relates to urban development, transportation mgt, conservation and ecological restoration, providing education to residents and landowners, enhancement of cultural and archeological resources. The watershed may also be designated as a special planning area.

Another purpose of today's meeting is to look at water resources in the Galisteo Watershed and to provide meaningful input to Santa Fe County.

Groundwater issues in the Galisteo Watershed are related to Espanola basin and Estancia basin – important to remember this. We want to answer unanswered questions about water and where it comes from in the watershed and where water extraction may impact streams and rivers downstream. Galisteo relies on nearly 100% groundwater

Jack Kolkmeier, Director, Land Use: Overview of Water and Growth Management Planning in Santa Fe County

Will cover two topics:

1. How the county has restructured its growth management office
 2. The growth management strategic plan
- Useful to have land-use and community perspective on these issue
 - Need to pick a place to start to untangle some of the problems we have
 - It is a challenge of questions, and we have to embrace a wide disparity of points of view
 - What are the important questions and how do we embrace everybody?
 - Somebody has to make a choice on how to move forward – government, private sector, etc.

At Santa Fe County, they realized the government structure wasn't working, public utility dept, land use dept, etc.

- We will need to be more cooperative to solve complex land use issues facing us
- Decided to put public works, land use, and utilities in one department
- Hope to create more streamlined structure

- Began working on growth management strategic plan – this work is led by Arnold Valdez
 - o Wanted to get a geographic handle on how to think about county problems in a more regional way – wanted to find a starting point
 - o Seeks to take issues out of the realm of politics, and put in the realm of geography and environment
 - o Still open to discussion in the months to come

- Strategic planning – will be coming up with future scenarios for each area for development and evolves, leading to actions
 - o Funding and timing should be attached to actions
 - o ICIP program – go to legislature for funding
 - o The important thing is taking action
 - o In 1999-2000 a development plan was created

- To summarize – pose four questions:
 1. **What kind of water service do you want?** Domestic wells, large utility company, want help, to be left alone?
 2. **What should the role of water in growth management be?** Zoning is hydrology based – is this how we want it? What about public works, wastewater, etc?
 3. **What role should the County play in growth management?** Do you want a lot of rules and regulations?
 4. **What should be connected?** (Should water issues be connected with oil and gas, wildlife, economic development, roads, etc?) What are the systems we use to connect these?

Hydrology Presentation: Peggy Johnson, NM Bureau of Geology [See power point]

Hydrology analysis includes:

- geologic mapping
- water level monitoring
- characterization of Ancha and Tesuque formations

- When you reduce pressure, it changes the hydrology – not a matter of the molecule of H₂O being used – (this effects water availability)

- Regional aquifers are complex, dynamic, three-dimensional systems with varying time scales
 - o 200-400 ft below the water table, you are looking at water that has been in the system 100s of years, etc.
 - o Bottom line – not looking at a sustainable resource. If you take it out, it will not be replenished quickly.
 - o Galisteo basin – poor water quality and availability

- Question: geologic formations – how static are they?
 - o The Rio Grande rift is very old
 - o Generally not active, not an earthquake hazard area

Hydrology Presentation: Karen Torres, Santa Fe County Hydrologist

- The County made a hydrologic model – put geologic data together mathematically with different water flow regimes to make predictions
- Southern Santa Fe County Regional Model
- Looked at existing models first – LANL’s models etc
- Santa Fe County model – includes Cerrillos, Madrid, etc.
- A lot of geologic complexity in the area south of Santa Fe
- Characterized the sub-surface to create cross sections to know what areas are favorable for water and which are not
- Used a GMS program to mathematically characterize the geology
- Characterizes geology in layers – even the first layer is varied and complex south of SF
 - o Ancho is what you look for when you look for water – has a lot of granite and holds a lot of water
- Made cross sections of the geology – one going N-S, one going E-W
- The model goes about 7-9,000 feet deep (this is deeper than a lot of water resources)
- For the water model, turned some of these layers off because they do not interact with water as much
- Also have to look at the structure, such as the faulting that occurs. Faulting is generally a barrier to water flow and reduces flow.
- So, how does the water enter the basin?
 - o Water coming in through recharge, through mountain front
- What you want to use the model for is to make predictions– look at water table levels pre-development and where there have been declines
- 1947-2004 data was utilized
- Declines in Los Alamos, Buckman Wells, declines in Madrid, etc.
- There has not been a lot of huge decline in the larger part of the basin

- Questions: is this a groundwater flow model or static? -
 - o it is a flow model
- Do deeper layers effect the water at higher layers?
 - o The deeper you go, the less conductive the units are, and the more slowly the water moves in these areas.
- How is this model used?
 - o The County uses it - anytime you want to dig a well you need to look at impacts. We use the model to simulate the pumping of water from that well to understand that impacts of extraction – it is used as a predictive tool.

Q&A and Discussion from Break-Out Groups

Summaries from facilitators:

- **Historical and Cultural Resources:** Four statements: (1) We'd like the County and public to recognize cultural resources and their link to water and archeological sites, (2) There is a need for data gathering, (3) Need to establish value for these resources within basin, (4) We have concerns about erosion, climate change, etc. – advocate for buffer zones around streams, stricter regulations
 - o Lucy Lippard – including the flow of history in these considerations is important
- **Open Space:** Alongside a growth management plan we want a bio-centric growth management plan – one that recognizes open space, critical resources, and natural resources as interwoven with the more anthropogenic plan. This leads to questions such as (1) What are the water needs associated with streams, etc?
- How can we involve more people in this process? Who needs to be at the table that is not here? How do we engage these stakeholders? How do we most effectively organize and communicate with decision-makers?
- **Growth Management & Transportation:** (1) How is the county addressing the issue of climate change and drought? (2) Will the county use aquifer storage and recovery? (3) Where will development cause more or less impacts? What is the role of water in growth management? Where will development cause more/less impacts on water?
- **Agriculture, Farming & Education:** (1) Important for the County and for us: where arable agricultural land is, including springs and waterways that exist on the land – we may need this land agriculturally in the future. (2) What agricultural practices are sustainable? (3) How much is development encroaching on agricultural land? (4) Can the county take a more integrated approach to land and water use (such as building of structures) and the interaction there? (5) Can realtors or the county hand out information to newcomers – how can you do this? “Rural living 101” packet, how to live in a fragile landscape.
 - o Jan-Willem Jansens - how do you create a community of land stewards that take care of water resources?
- **Oil and Extraction:** (1) Clarify County's role, (2) What are the horizontal and vertical effects could extraction have on water resources? Do we even have the information to answer that question? (3) What weight to give the different factors when addressing this issue and what are these factors? Should water have the greatest weight? (Economic developments, lifestyle, etc are other considerations).

Speakers Address Questions

Jan-Willem Jansens: In answering the issues that were raised, panelist should consider: do we have enough information to answer the questions raised? Where is the information lacking? What are the processes by which the county can move forward? What kind of public participation is needed or is it needed? What advice do we have based on the water component of these questions? Do we have enough hydrological insight to give these questions a place at the County, etc.?

Jack Kolkmeier: Has an idea of what to do for the meeting in November. Physical aspect is the base core, and then we decide what to do. At the November meeting, we should discuss and develop different scenarios.

- What is the future scenario that best addresses:
 - o water issues?
 - o climate change?
 - o community engagement?
 - o cultural and historical concerns?
 - o issues of density? (and this interaction with water resources?)
 - o for development, econ development – how does oil and gas, the film industry, etc. effect water resources?
- **What kinds of scenarios can we look at that we can consider for our next meeting?**

Question: Do we have enough reliable, definitive information to make these kinds of decisions? Enough info on how much water there is, how we can get it out, etc? If not, should the priority be to gather this information?

Jack: even if you don't have enough data, some decision will be made around you. But it is a great question.

Question: Would it be useful to put these scenarios in the context of the region?

Arnold: A quick overview of growth strategy, and what are the information sources? The County is attempting to do a comprehensive review of data, there is a detailed charting of information, now working on pulling the info together, correlating it with geographic info technically so we can visually present this info.

- We also need to educate our policy makers – will do detailed sessions with the board of county commissioners, mapping existing resources, environmental constraints, include infrastructure, etc.
- By itemizing and analyzing information, we will sort through this complex process, multi-department effort to bring together different resources and stakeholders.
- Take into account extracting core values, suitability for development, determine infrastructure needs and different development scenarios. Will be doing this in the coming months. Fiscal strategies will be arrived at, public participation will be elicited, and a strategic plan should be available mid 2008. In the process of this

comprehensive strategy we will be able to provide more definitive information and provide access to the information.

Karen: Has gathered data on water systems in the county. A lot of the information is out there, but you have to find it and it is a lot of work. She is having to create data, hoping to get good data together in this process that we can make decisions on. As for the aquifer in this area, springs tell us what is happening in the area – we don't have a good monitoring plan for these at this time. We can make a recommendation to put this plan together and get funding.

Question (Lucy): any plan to monitor domestic wells?

Karen: We make an assumption on domestic well use. The public in this area is fairly water conscious. There are a lot of data holes, however, even in our well data.

Question: What about depth to water in those wells rather than just monitoring usage?

Karen: Monitoring depth is tricky – needs to be a specific type of well to easily monitor this. You can take this information, but sometimes there is noise in this method and data doesn't reflect the aquifer.

Question: Any hope in getting inter-government cooperation between County and Indian Pueblos, etc. in monitoring?

- Inter-jurisdictional issues come into play – some don't want to share data because it may show something negative
- Are starting to get data from Los Alamos, which we never used to get

Question: Is the county using aquifer storage and recover?

Karen: I would love to look into that – it is the wave of the future. Costs are an issue with this. Have to be careful with issues of subsidence. This is why you want multiple sources of water and more water available to you than you actually need – like back-up wells (Buckman) in Santa Fe.

Question: How is the County preparing for/contemplating global warming causing a long drought? Are you worried about this?

Karen: I constantly worry about water and our resources and if we have enough. There are people who want to reduce the Co2 in the air, others that say we need to adapt to climate change. At the county we are in the middle. We recognize there is growth, people moving here, etc. We take a conservative approach, and want to ensure the resources are sustainable. Right now we have backup water (groundwater) if the Rio Grande runs dry. The best data that's out there does not predict that the Colorado Rockies will have great drops in precipitation, which is good news for us.

Peggy: We know enough to develop a groundwater model – we have a great tool that is sitting on the shelf. Take the tools you have, and fund their implementation and modification. Using models for groundwater assessment is an iterative process. You continue to monitor your system, compile data, and feed it back to continue improving your model. You will find places that the model does not work well – may need to do more monitoring or tweak your model. There are areas without enough data – around the margins, particularly the Galisteo watershed. Where there are wells there are data, the southern part of the basement is recent, so it is not in the database or in the conceptual models. We don't know a lot about water and geology in some parts of the Galisteo Watershed. Who's responsibility is it to monitor our resources? Most point at the State Engineer's Office. However, I believe it is the entities that develop and use these resources that should monitor these, fund these through their rate system to the end user. She recommends we continue to install monitoring wells.

Question: Does the county know what it needs to do, in the position to develop a plan to do this? Is there enough information to know what kind of monitoring needs to be done?-

Peggy: Cannot answer that. You could get a collaborative group amongst water-using stakeholders, county and city and plan for robust monitoring of streams and springs in your area – this may help settle conflicts. Need a set of monitor wells around new extractions – as you develop the resource, ask “how are you going to monitor it?”

Comment: Monitoring of Galisteo basin surface water flow would be of great use, and an opportunity for education for kids.

Jack: Two pieces are important – we have to be set up to do something – we have not had that up to this point, now are starting to. It is kinda the chicken and the egg issue. We are at the point where we are ready to take on your question. We are going to need a whole lot of information and resources from others (like Peggy). We need to organize ourselves to answer these questions.

Question: The water and geo data is mostly from State Engineer well requirements. Are there additional sets of info that are needed that the county can dictate from these well drillers, or info to ensure we have the most up-to-date data? Are there different sets of info that the model requires that are not coming in from the SE, should the county insist that this info be required from every well?

Peggy: If the drillers filled out the info correctly and where the wells are, we would have the info we need. Wells are often incorrectly located on maps; the system has been working on this process. Those problems are mostly worked out. The domestic, city, municipal wells provide a lot of info, but also remotely sensed data, surface characteristics, geo data sets, etc. are also used, as well as monitoring wells from USGS. Other methods could be used. They are costly. There is no info from the river to the plateau. There's a difference between a groundwater model, and measuring impact. There is no substitute for monitoring impact.

Question: Is the priority in the County and State on data acquisition? And getting the funding for it? How is the priority being set? Is this a high priority?

Jack: Yes. We want to collect as much information as we can to make decisions. It is a more systematic and comprehensive approach than the county has ever done before. As a wrap up and to prepare for the November meeting, we need to really focus on some scenarios (this is a very technical piece of strategic plan).

Comment: one scenario we are interested in is business as usual – if we don't have a growth mgt plan, what will the Galisteo basin look like in the future? What would we like it to look like?

Jack: We are getting a development pattern that is not based on business-as-usual. Another scenario could be basing development on water resources.

Jan-Willem Jansens: Looking at having oil and gas extraction in the WS and use it to produce water.

Comment: Use a ten year drought scenario, look at water sustainability and what we need to do in order to address this.

Comment: Do we wish to become a self-sufficient, self-contained county, or do we want to be net providers of water?

Comment: What if all the big ranches in the Galisteo basin – all the owners decided to sell them?

Comment: What happens when the large remaining ranchers break up, and what should they break up into?

Comment: Consideration of regionalization? As a net user or provider of water or resources, what is our impact? We need a broader view. Are regional issues being addressed, and do we want to address them?

Jack: A scenario about how to be regional could be useful.

Comment: Scenarios could be based on Jack's original questions.

Adjourn and Thanks: Jan-Willem Jansens

NEXT MEETING: FRIDAY, NOVEMBER 2: 8:30 – 12:15 in the Jemez Room.
Purpose of the meeting is to create an action agenda.