Recycled Water Committee Meeting

Greenhouse, 2500 E. 23rd Ave.

March 24, 2016

Facilitator: Lisa Carlson

Members present: Scott Gilmore (late), Brenley McKenna, Russell Plakke, Sonia John, Alan Polonsky, David Matthews, Cindy Johnstone, Doug Woods, Bill Jacobi, Bahman Sheikh, Damian Higham, Mark Cassalia, Rob Davis, Sonrisa Lucero, Katie Knoll, Raeann Gagne

Agenda items are as follows:

- Welcome, Member Introductions, Agenda Review, Ground Rules
- Denver Water Salinity Research (Brenley McKenna)
- 2015 CSU Report (Bahman Sheikh)
- Implications of CSU Report
- Next Steps and Action Items
- Adjourn

Lisa: For those people that were unable to attend today's meeting it was recorded and available to those that are interested in listening to it, also Raeann will be taking minutes for us.

(Introductions were made)

Ground rules were covered last time, but I thought they should be repeated. The ground rules for this meeting include one person speaking at a time, be concise and share the air to that everyone can participate, please speak up during the meeting and avoid the 'real' conversations that happen during the breaks, be hard on the issues and not the people. I've never seen it helpful to personalize things because it escalates conflict and doesn't help during deliberations. For decision making rules, though we won't be making any large decisions today, future decisions will be based on consensus. The goal is that everyone will understand the reasons for the decisions. The fall back to this, because this is an advisory committee, is that Denver Water and Parks & Rec are going to have to take what was said here on advisement. If we are on the border on everything we will want to work to see if we can reach consensus but if we can't because of the time elements then we will have to work off of the majority votes that are present. The last rule is that misery is optional, if you need to stand up because your back hurts then please so, please use the restroom if it is needed and feel free to let us know if more breaks are needed or the agenda isn't working for you. Please silent your cell phone before we get into the meeting. Do these rules still make sense?

(Agreement from the group)

Brenley: 2015 CSU SOIL REPORT (presentation)

I will be giving you all a brief overview on some research Denver Water has done on this subject. I will just walk us through where we started and where we are now, and where we could go in the future. So I will be talking briefly about some of the water quality parameters, just to give a brief introduction and provide some definitions so when Bahman comes on you have more context because not everyone is a water expert. I will emphasize a little more on the 2015 report which Bahman will be going over. Then we can talk about next steps for the future. Professor Qian collected the data in 2014. We are doing a

tree study with CSU to collect tree tissue samples (baseline study like we did with the soil) just collecting data at the ten selected sites. The same professor will be doing the tree study, her goal is to have the same species at the different locations and look at particular trees. We will also be doing more research.

Sonia: Why are we just finding out about this study now? The group was never notified about this. Denver Water just moved forward with the study and never notified us we have been a group for several months now. **Sonia:** Why did she collect it?

Damian: We had a discussion and at the time it wasn't part of the scope of work in the contract.

Sonia: Can the committee see the study?

Lisa: Yes we can send it out to the group.

Brenley: The final report will come out in the Summer.

Sonia: We are supposed to be honest and you're doing stuff behind the scenes.

Brenley: It's not a secret. We made a decision before this group was even formed and I am sharing with you now.

Lisa: Brenley just wanted to give the group a brief summary of what is going on.

Doug: What I think they are trying to do is offer the information to us and provide us with the data once they receive it.

Lisa: Now that this will be available to you all let's be proactive and move forward.

Sonia: What if there is issues with the other study, then we have to correct it. Then you tell us oh by the way we already signed the contract.

Lisa: We don't have stuff or time to have this discussion now. We promise to get you the information. We have a guest here from out of town and I really want to hear from him.

Rob: I'm interested in working with CSU on the studies.

Brenley: We're just collecting baseline data. In the future we canwork with another researcher and do comparisons on the data. I am extremely excited to have Bahman here, he even made it in the blizzard. He is a world renowned expert and can really help this group. He went through the CSU report for us.

Bahman: IRRIGATING LANDSCAPES WITH RECYCLED WATER (presentation)

It is a pleasure to be here today. I don't see snow in San Francisco. Brenley already went over everything so it will save a little time. The study is very extensive and has a lot of data.

Bahman: Yes

David: Is this species specific?

Bahman: This is not about trees it's about soil. Plants have another graph and I will get to that in a few minutes.

Russell: Denver Water has 3 potable water plants (not used for drinking water).

Alan: Denver resident's use potable water to irrigate grass.

Bahman: Denver is at 2.8 we're fine we're not in a danger zone.

Sonrisa: Looks like to me that calcium is helping.

Bahman: Yes, they both counter act.

Bahman: There is a cd available on-line about Managing Salinity of Recycled Water for Landscape Irrigation.

Doug: Do you have any specific recommendations after reviewing the CSU study?

Bahman: In the CSU report it only gives us data. I hope I was able to give you a clear picture. We are not in a place that will cause problems. The only problem we do have is at Wash Park.

David: We don't always know where the samples come from in the parks. That's why having an organized plan is very important.

Sonia: What Doug had mentioned about the recommendation was gypsum is part of the solution because it was very vague.

Doug: I think when we do get to that point we will have to add some per acre. At this time I don't see anything alarming regarding the soil.

Bahman: I don't think so. Water goes in and out. The problem I hear is that trees are suffering not the soil. Gypsum will not help the trees only the soil.

Cindy: Are the trends in good condition. Does the soil have a capacity if over 10 years what will it do, does it go higher?

Bahman: We cannot project at this time no trend line. Things go up and down and varies place to place. The only thing that is consistent is the global temperature change.

Cindy: How hard is it to do a soil test?

Bahman: It's very easy to do.

Rob: Before working for Denver I worked for the City of Westminster. I did different soil samples in several spots. Different tree species like conifers had problems. The samples always came back good but they all had very high levels of sodium. Not sure what experience you have with trees.

Bahman: Did you measure the sodium concentration?

Rob: In 2007 I took samples from multiple sites with potable/non-potable water and it was still consistent. Soil was never the issue that is what stunned me. This was done with the City of Westminster not Denver.

Bill: Trees wash out the soil and suck up the sodium. With trees you need to worry about foliage and concentration.

Brenley: I'm very familiar with this as I previous worked for the City of Westminster. Ground water data near the city hall where there is depression in the ground and showed higher levels of TDS. The trees are exposed to ground water. Did testing with potable/non-potable water.

Russell: Gypsum – Is that because it dissolves to slow?

Bahman: The soil is really compacted it dissolves and passes through.

Cindy: Back to the soil. Does the sodium always go down and not saturate?

Bahman: Yes, it goes down, down, down and the excess gets to the ground water it could eventually cause problems.

Sonrisa: So calcium really doesn't do anything to salinity?

Bahman: Yes that is correct.

Doug: Plants the water goes into the soil. The sodium is held in the soil and the salt goes up into the roots of the trees. Gypsum helps with structure.

Bahman: Gypsum helps eliminate absorption. High levels of chloride can really cause damage to plants. Not with the levels we have now. An Arborist should be consulted with problems of certain trees let them know what you have done already to find out what the cause is.

Lisa: Bahman's presentation will be available to everyone.

Sonia: How does the City of Westminster compare to Denver?

Brenley: They are very comparable. The lift station infiltration after the one repair they've seen a 20% reduction in salinity. This information should be available on their website.

Bahman: Thank you for having me today.

Sonia: Would like the dates of when/dates when the samples were collected. It appears there was an unexpected problem in 2014 and more samples had to be taken, that's why I want to know the dates. Salts in the parks will peak with a lot of precipitation. New samples were taken in July and August why couldn't the professor wait until September and October? Right now it's problematic. I will pass out Central Denver Precipitation.

Bahman: Rains take out the salt.

Doug: In the parks we are irrigating and flushing.

Russell: It's much more difficult to manage in July/August rather than September/October (leaching), it varies with the rain.

Bill: Don't worry about the soil worry about the plants. The salts leach out.

Rob: Need more studies for tree tissue.

Scott: Sonia we got it we will get you the information.

Sonrisa: I feel there is some sensitivity on the data that was collected. The SAR values went down in 2015 (we don't have that problem now). One of the factor is the affected tree health by the levels of sodium. What are the other outcomes of using recycled water? It's always more complex. As a group we need come up with a general agreement. I think we are all interested in the next steps of using recycled water.

Lisa: We need to come up with an agreement on what the problem is, then come up with a solution. So then we can move forward. We need to understand the problem.

David: Before we do these studies we need to have the basis. We need a person to oversee these studies and have a purpose.

Cindy: Good information provided in today's meeting. So our soil is not in the risk area but the healthy area that's interesting information. If they do these studies they need to be more cost effective.

Damian: Cheesman Park is now on recycled water.

Brenley: This data was already collected before I started working here. It started being collected in 2004. That's why we are here today. It might not be the best but we acknowledge that.

Cindy: I'm anxious to protect our trees. We can't wait until it's an immediate problem.

Scott: There have been thousands of studies done, I don't care about that. I need viable recommendations. I need a list of recommendations. I manage the parks and will be moving forward with things this is not just about trees there are citywide issues, water quality issues that I'm working with Al on. Things are really challenging.

Lisa: The steering committee group has come up with meeting topics moving forward. We will get those out to you.

- Effective Planting Zones
- Baseline Data Collection
- Data Gaps
- Research Plans

Rob: Recycled water is something we have to have.

Lisa: One other thing we need to define and agree with is what the problem is.

Sonia: Here is a handout on Salt Tolerance of Tree Species.

Damian: Additional request before the meeting if you will be sharing something can you send it out a day before so we can review it?

Lisa: If you have specific information you would like to share please get it to the steering committee first to review. We don't want you sending stuff out directly to the group. Thanks Bahman for coming today.

The meeting is adjourned.