Joint Data Collection and Livestock/CAFO Meeting

Charge from Groundwater Management Area Advisory Committee

Working Group Members

See working group memberships for Data Collection and Livestock/CAFO

Meetings/Calls Dates

Meeting: Yakima County Facilities First Street Conference Center, 223 N. 1st St., Yakima

When: June 25, 2015 from 1:00 pm to 3:00 pm.

Call: (509) 574-2353 Pin 2353#

Participants

Kirk Cook* (Chair, Data Collection), Charlie McKinney (Chair, Livestock/CAFO), Andy Cervantes* (GWAC), Dan McCarty (AGR), Jason Sheehan (GWAC), Ginny Stern* (GWAC), Jean Mendoza (GWAC), Kevin Lindsey* (interested party), Larry Fendell (interested party), Laurie Crowe* (GWAC), Melanie Redding (Ecology), Patricia Newhouse (GWAC), Steve George (GWAC), Sue Wedam (GWAC), Vern Redifer, Jim Davenport, Lee Murdock, and Lisa Freund (Yakima County)

*via telephone

Key Discussion Points

Nitrogen Loading Assessment – Evaluation of Proposals and Recommendations – Presentation by Melanie Redding, Washington State Department of Ecology

Lagoon Leakage Equations for the Nitrogen Loading Assessment. Melanie stated that her presentation was a follow-up to Kirk Cook's and Jaclyn Hancock's introduction of three methodologies at the June 11 meeting. Kirk and Jaclyn had broadly described the methodologies under consideration: UC Davis Study, USGS/Ecology Study and Darcy's Law. Today Melanie will review the equation used by all three methodologies –with the values and variables removed—so the group can become comfortable with the equation. This will provide the group with an "apples to apples" comparison of the various methodologies so they can come to a decision on which one they want to use. Following that decision, they can then determine the appropriate input values followed by a sensitivity analysis.

Melanie explained Darcy's Law, which describes fluid movement through porous media, and how it can be used to calculate the leakage (discharge) from a lagoon (see presentation). A broad discussion ensued.

UC Davis

A member asked if the UC Davis study measured permeability below the lagoon. Melanie responded no, it relied on assumptions, not actual data. She explained that only a handful of studies (e.g., Dennis Erickson, Ecology) had measured it through well monitoring. She noted that based on information at the last meeting – that lagoon practices have dramatically changed since Erickson's 1990's work – the group will need to identify which method would give them the best assumptions.

She observed that Kirk and Jaclyn's presentation was also based on Darcy's Law. It provides the most complete picture. Kirk had included denitrification and mineralization below the liner. When asked if "Area" includes lateral (sides) as well as the bottom of the lagoon, Melanie responded that again, this is another variable. The group needs to determine how detailed they want to be. The most precise measurements will also require the largest investment of time and money.

Jim Davenport asked what the most convenient "unit" scientists use for the area cross-section. Charlie responded that the unit should probably be in acres.

Melanie stated that deciding the variables is another process. She added that David Erickson's testimony (Cow Palace litigation) was also based on Darcy's Law – all methodologies under consideration are based on Darcy's Law.

A member asked how anyone knows if there is more leaching from the sides of the lagoon. Melanie responded nothing has been found yet – it needs more research.

A variables discussion ensued. A lagoon liner's intake, the slope of the lagoon, etc. are all variables.

Melanie recommended that the group start with Darcy's Law. Then identify the input values (how much do you want to drill down? How much do you want to spend?) Then identify sensitivity of input parameters: look at minimum, maximum and median values, then determine how much detail you want to pursue.

She reminded the group that they will have to reach a decision on what is good enough: for example, detailed measurements will require more resources, time and money than a less detailed approach.

A member asked if the premise is that all lagoons leak based on head, shouldn't they go directly to fixing the problem?

Charlie responded that the WAC requires the group to characterize the problem – in order to do that, we need to identify how much is leaking [from the lagoons].

Evaluation of Leakage from Lagoons & Ponds in Yakima County- Presentation by Jean Mendoza, Friends of Toppenish Creek

Jean provided a broad critique of the three methodologies, pointed out errors in each, and compared the values of the three studies against Dennis Erickson's methodology and values from the recent Cow Palace Dairy litigation. She described Friends of Toppenish Creek's proposal: to use the three different methodologies described by WSDA and four different concentrations of nitrogen in the liquid (see presentation).

Jim Davenport observed that he thought the objective of the exercise is to determine how much nitrogen makes it to groundwater: we need to be specific about our objective. He asked if Ecology would be comfortable if the group doesn't come back with an estimate of how much Nitrogen is making it to groundwater.

Charlie replied that how and when the nitrate makes it to groundwater will be considered, but that is a long process. The group will have to add the dimensions of time and depth to groundwater.

In response to a statement that Darcy's Law as applied does not account for denitrification below the [lagoon] liner, Kirk observed that he will account for this [in his approach]. Kirk added that Jim Davenport raised a good point: what do we want calculations based on—nitrogen loading to groundwater, or an estimate. Kirk concluded that he was comfortable with either approach, provided it is consistently applied and a consistent measure point is used for lagoons, Irrigated AG, RCIM, etc.

Charlie suggested that denitrification [below the liner] be added to the list of variables.

A lengthy discussion ensued regarding the dairy lawsuit data, with a member recommending that we use good science rather than biased court case data. [Note: at the end of the meeting, Jim Davenport explained that litigation data is not any more or less reliable than any other data. "*Don't throw it out, but don't over-rely on it*." He further explained that "facts" as the judge considers them in litigation (elements in his application of the law) is different than the general public's definition of facts.]

The group agreed that Darcy's Law can result in a large range of numbers depending upon the variables.

Melanie reminded the group that unrealistic input values can give unrealistic numbers. It's not the methodology itself, it's the variables (input).

Charlie concluded that the group had talked a lot about equations and methodologies. He asked if the group was generally comfortable with the method as presented by Melanie. The group agreed they were.

It was a further agreed to add denitrification. Still on the table: do we want to talk about depth to groundwater. Again, it was stated that today's purpose was to agree on the methodology.

Charlie asked if the group agrees to use Darcy's Law. Most of the group agreed.

Meeting was adjourned at 3:15 pm.

Resources Requested

- N/A

Recommendations for GWAC

- N/A

Deliverables/Products Status

Proposed Next Steps

Next Joint Data/Livestock Meeting: Thursday, July 9, 2015 from 5:00 PM-7:00 PM Location: Department of Ecology Main Conference Room, 1250 West Alder St., Union Gap 98903

Proposed agenda:

Variables

Sources of Data