Greater Harney Valley – Groundwater Study Advisory Committee Meeting
Thursday, April 20, 2017
11:00am – 3:30pm
Harney County Community Center – 484 Broadway St., Burns, OR

April 20, 2017 - Meeting Summary

Participants

Advisory Committee Members
Allison Aldous, The Nature Conservancy
Angie Ketscher, Citizen/Landowner
Brandon Haslick, Burns Paiute Tribe
Brenda Smith, High Desert Partnership
~~Erin Maupin, Citizen/Landowner (not present)~~
Fred Otley, Citizen/Landowner
~~Herb Vloedman, Citizen/Landowner (not present)~~
Gary Ball, US Fish and Wildlife Services
JR Johnson, OWRD
~~Karen Moon, Harney County Watershed Council (not present)~~
Mark Owens, County Commission and Landowner
Steve Rickman, Landowner/Business Owner
Tony Hackett, Downright Drilling
Wayne Evans, Citizen/Landowner

Groundwater Study Team
Darrick Boschmann, OWRD
Jerry Grondin, OWRD
Justin Iverson, OWRD
Steve Gingerich, USGS
~~Terrence Conlon, USGS (not present)~~
Hank Johnson, USGS
~~Esther Pischel, USGS (not present)~~
~~Amanda Garcia, USGS (not present)~~
~~Nick Dosch, USGS (not present)~~

Others
Harmony Burright, OWRD (Facilitator)
Jordan Beamer, OWRD

Meeting Overview, Action Items, Recommendations, and Updates

The purpose of this meeting was to review the principles of hydrogeology and provide an update on data collection efforts. USGS presented the hydrology of closed-basin drainages in general, the beginning components of a Harney Basin water budget, and a demo of a website that will display groundwater level data throughout the basin. During the work session, OWRD and USGS presented groundwater level trends and seasonal changes using available data. OWRD and the local monitoring coordinator from the Watershed Council summarized their field work since October. The Watershed Council provided an update on local monitoring efforts and included a map of wells in that network. OWRD provided an update on the proposed locations of additional drilled observation wells and also talked about how observation well conditions in permits can be met.

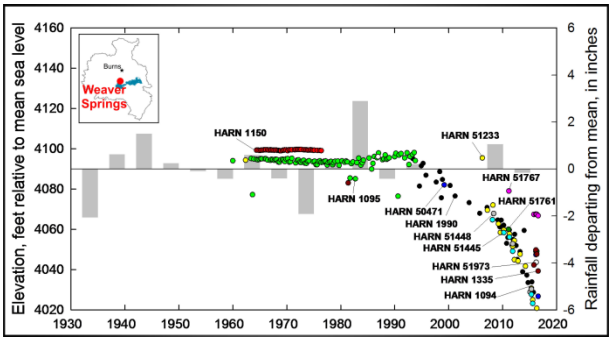

Figure 1. An example graphic showing groundwater level trends in the Weaver Springs area.

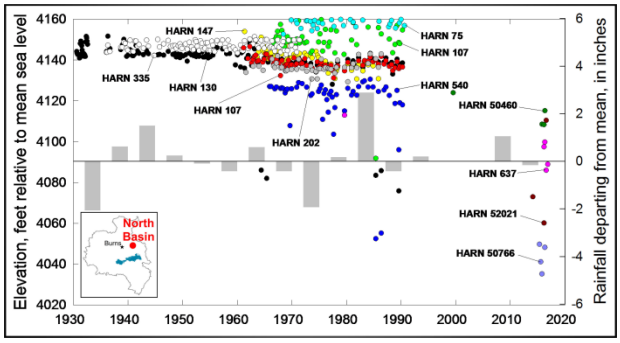

Figure 2. An example graphic showing groundwater level trends in the North Basin.

Action Items

Who	What	When
Harmony B	Upload maps and presentations to the website.	May 15
Justin I and JR J	Leave maps to have available at the watermaster's office.	May 15
Mark O	Make sure the County has maps that can be printed for GWSAC members.	May 15
Mark O	Convene additional meetings of the sub-committee to continue working on local monitoring efforts.	July 15
Harmony B	Notify the GWSAC and interested public about the online groundwater level map when it is made public.	Uncertain
GWSAC	Begin brainstorming communication and outreach activities to report out to the community about how groundwater levels have changed and why they are changing.	July 15

Decisions/Recommendations

- na

Proposed Future Discussions

- How evapotranspiration is measured and estimated
- The impact of sublimation on the overall water budget
- Potential recharge benefits to groundwater from flood irrigation
- Updates to water budgets in major recharge areas (Blue Mountains and Steens) based on new information and creation of water budgets in other portions of the basin
- Interactions between groundwater discharge, the lakes, and groundwater fed plants
- Deeper dive into a specific geographic area – what are we finding and what does it tell us about the system?

Updates

The next meeting is scheduled for Tuesday, July 18th, at the Harney County Community Center, exact time TBA (please note the change in days). The chair (Mark Owens) and facilitator (Harmony Burright) will develop and distribute an agenda for review prior to the next meeting. If you would like to propose discussion topics, email them to: harmony.s.burright@wrd.state.or.us.

Detailed Meeting Notes

PRESENTATION

The meeting began with a 1 hour community presentation, followed by an opportunity for members of the public to make comments for the Advisory Committee to consider during their meeting.

Hank Johnson, a groundwater scientist with the US Geological Survey presented an overview of hydrology in closed basin systems, which included the following:

1. Geography and geology of a closed basin
2. Precipitation trends and topographically related variability within the Harney Basin
3. Basic concepts of groundwater recharge, discharge, and storage
4. Basic components of a hydrologic budget
5. Overview of recharge areas in the Harney Valley
6. Overview of major factors affecting a water budget
7. Relationship between groundwater development and groundwater equilibrium

Key Discussion Topics/Questions:

- Greater precipitation and greater recharge often occur in upland areas such as the Blue Mountain and Steens Mountain areas. Are there other recharge areas? Yes, but we don't fully understand those yet. Often they include stream alluvial fans at the base of uplands where streams leave the upland and enter the adjacent valley. The Silvies fan, where the Silvies River leaves the uplands and enters the valley floor is likely a recharge zone given that there are courser sediments that allow the water to travel downward. There might be other areas that contribute to recharge.
- Will water budgets be developed for areas other than the major recharge zones? Yes. A water budget will be developed for the entire basin composed of identified hydrologic sub-areas. This will be driven by hydrology and how the water moves in the system. The data will show us how the water flows laterally and vertically, and what is connected and what is not.
- There has been significantly more water in Riley this year than in previous years and there is a question about where all of that water is going. In previous years there was 6-12 inches – this year there is 23 inches. Dry Mountain is locally seen as a sponge and appears to be full of water this year. Both Dry Mountain and Steens Mountain are locally observed as good recharge areas where the geology allows the water to seep into the ground relatively easily.
- The initial recharge numbers seem high for the Harney Basin, how will these numbers change? It is likely that we have underestimated water lost to evapotranspiration (the water used by plants or lost through evaporation). This is the largest loss of water in the Harney Valley , and refining the evapotranspiration estimates for the basin a high priority for the study team.
- If there are issues of subsidence or compaction, you can't get that storage space back, right? That is correct. There are instances in which storage potential can be lost – where the pore spaces close up.

- What is the new equilibrium of groundwater in the Harney Basin? We don't know yet. The state may be able to allow a new equilibrium (where the system fluctuates around a new level), but groundwater mining (where water continues to be lost from the system and declines continue) is not allowed by law.
- What are the dynamics between the lakes and phreatophytes? We are looking into this. OWRD is working to get some Agrimet stations into the basin, which will help us understand what groundwater fed plants need and how that might affect the lakes.

Decisions Points/Recommendations: None

Action Items: None

Proposed Future Discussion Topics:

- How evapotranspiration is measured and estimated
- The impact of sublimation on the overall water budget
- Potential recharge benefits to groundwater from flood irrigation
- Updates to water budgets in major recharge areas (Blue and Steens Mountains) based on new information and creation of water budgets in other portions of the basin
- Interactions between groundwater discharge, the lakes, and groundwater fed plants

ROUNDTABLE

We went around the table to hear about what is of interest to the GWSAC and members of the public. The following topics were of interest:

- **GW Level Measurements – Current Updates**
  - What is the data telling us so far?
  - During data collection and analysis, have you encountered any outliers or anomalies? What do you do with those?
  - Appreciation for sharing information as it is being collected.
- **GW Level Measurements – Future Updates**
  - What are groundwater levels going to look like this year in Silver Creek given record amounts of precipitation?
  - Given the good water year, how will that translate to groundwater levels? Will we see a bump in shallow wells? Deep wells?
  - How does the system respond to a wet year?
  - What will the groundwater levels be over the next 4-6 months?
- **Water Budget (Recharge, Discharge, ET)**
  - What happens to the snow in regards to recharge? How much evaporates, runoff to surface water, and/or infiltrate to groundwater.
  - What factors contribute to recharge?
  - How fast does the system respond to recharge? Months? Longer?

  - Is there recharge from irrigation?
  - Does flood irrigation improve recharge? Does it result in higher evaporation?
  - How do different water management options affect recharge? How do they affect evaporation?
  - Are there dedicated recharge areas? Could we do targeted recharge?
  - What is the recharge potential of standing water?
  - Where are the points of discharge in the basin?
  - How much water is used by agriculture? How much water is used by native vegetation?
  - How upside down are we in the water budget?
  - What is a new acceptable equilibrium for the aquifer system?
- **Connectivity/Separations and Geology**
  - Where do hydrologic separations occur? How can you tell?
  - What areas of the system are connected? What are the flow paths? How can you tell?
  - Are there different zones of water (aquifer systems) or is it one aquifer?
  - Is this one basin that is all connected or are there many aquifers/layers?
  - What are the interactions between sub-basins? How does this affect water budgets and water availability?
  - What different layers do wells go through?
- **Community Engagement**
  - What questions are people in the community asking?
  - How are we getting information to the community about the groundwater study?
  - People in the community are asking a lot of the same questions and seem to be confused about a lot of the same things. We should have a set of FAQs for the community.
  - Terminology is very important and the same words are being used differently depending on the context – groundwater study, basin rules, permit conditions, well construction standards. There should be an attempt to be more clear and consistent in using certain terminology to avoid confusion.
  - Appreciation for the opportunity to listen and learn.

USGS Web Demo

The USGS shared a demo of a website that they are developing with OWRD that will allow public access to all the groundwater level data. It will also show groundwater level trends and seasonal change at each well over time. There will be various ways to sort the data. GWSAC members and members of the public will be able to use this website to spend more time looking at and interpreting the data between meetings. The GWSAC members are all very excited about this website and think it will be very valuable. When the website goes live, OWRD will send an announcement to the GWSAC members and the public mailing list.

Decisions Points/Recommendations: None

Action Items:

- When the website goes live, OWRD will send an announcement to the GWSAC members and the public mailing list.

Proposed Future Discussion Topics:

- Walk through of website

OBSERVATION WELL LOCATIONS - UPDATE

At the October 2016 meeting OWRD solicited input from the GWSAC about areas of interest in the basin. OWRD delivered a presentation to the GWSAC with an update on the process, timeframe, proposed locations, and considerations. Proposed well locations need to fulfill a set of criteria and help fill in gaps in coverage in areas of interest. The GWSAC had the following discussion about the observation wells:

- For the proposed observation well near Chickahominy, it should be noted that a well not far from there had to go 850 feet before it hit water that could be used for production. It should also be noted that the commenter was drilling a production well and needed a certain yield. An observation well is different from a production well and does not need a sustained yield. The proposed well might not find water at the expected depth. There are 3-4 stock wells in that area that OWRD may be able to use to provide groundwater level data.
- There are several wells near the proposed Cucamonga site. One well in that area had a 12-25 gpm yield at 350 feet. Another well had a 10 gpm yield at 300 feet. Two wells within 100-150 feet of the creek only had a 3-5 gpm yield. One well was drilled to 920 feet without hitting water. Highly variable in that area. One member wanted to know more about what OWRD was looking for in that particular site. OWRD is hoping to get additional data about geology and groundwater levels where data is limited. Yield is not important for an observation well.
- OWRD estimated depths to water based on available information, but several GWSAC members indicated that the depth to groundwater may be different than what is expected and OWRD should account for this.
- At a future meeting it would be good to compare what OWRD expected to find at observation well sites and what they actually found. What do these observation wells tell us about the system?
- Most members of the committee did not have questions about proposed placement of the observation wells.

Decisions Points/Recommendations: None

Action Items: na

Proposed Future Discussion Topics:

- Comparison of what OWRD expected to find at the observation well locations and what they actually found

PERMIT CONDITIONS AND OBSERVATION WELLS

Prior to the meeting OWRD delivered a presentation on permit conditions, observation wells, and well construction standards. OWRD staff also introduced participants to the Water Rights Information Service database that will allow them to access permits and see permit conditions before they drill wells to make sure they are meeting the permit conditions. This was in response to conversation at the last meeting.

There was concern expressed by permit holders as well as well drillers about the difficulty of meeting permit conditions given variable conditions in the field, the timing of permit reviews, driller availability, and the difficulty in finding water at the right location and depth. Well drillers and permit holders would like greater flexibility to meet the permit conditions and greater certainty that they will be able to meet the conditions and develop their permit. Specific feedback was as follows:

- The timing for permit reviews can be lengthy and out of sync with permit holders needs and expectations
- The timing captured in the Division 512 rules did not account for weather or unforeseen problems, which made it very challenging for landowners and well drillers
- Given that water might not be where you expect to find it, permit holders seek some flexibility in determining the location of a well

OWRD encouraged landowners and well drillers to coordinate early and often with OWRD staff. This will help to alleviate some of the issues identified. OWRD needs to consider potential injury of any groundwater development, which is why the review process is so important and why there is limited flexibility in changing the well location once a driller is in the field. The GWSAC discussed the potential of having a workshop to further discuss these issues.

Decisions Points/Recommendations: None

Action Items: na

Proposed Future Discussion Topics:

- Potential for presentation/workshop with well drillers and permit holders to discuss further

OBSERVATIONS FROM THE FIELD – GROUNDWATER LEVEL MEASUREMENTS

OWRD presented the following materials to the GWSAC:

- An overview of field conditions during the spring synoptic and circumstances that made this particular measurement cycle challenging (snow, accessibility, a car accident).
- A map of wells measured as part of the spring synoptic.
- A map of groundwater level changes from Fall 2016 to Spring 2017.
- A map of groundwater level changes from Spring 2016 to Spring 2017.
- Hydrographs for >130 wells measured by OWRD.

- Hydrographs for OWRDs recorder wells (which take measurements every two hours).
- Updated hydrographs for the wells shown at the 2015 open house.
- Hydrographs for wells measured in the spring to meet permit conditions.
- These materials will be posted online. The maps are available for viewing at the watermaster's office and the county has agreed to print large format paper copies for those that are interested.
- It can be hard to follow-along at the basin scale – it would be beneficial to do a deeper dive into more local areas to make sense of the information together.

Decisions Points/Recommendations: None

Action Items:

- Post materials online
- Make maps available to the watermaster and the county

Proposed Future Discussion Topics:

- Deeper dive into a specific geographic area – what are we finding and what does it tell us about the system?

COMMUNITY MONITORING NETWORK UPDATES

The local monitoring coordinator with the Watershed Council gave an update on groundwater level measurements collected so far. As of the meeting 49 wells had been measured around the county so far and she will be measuring more. The Watershed Council shared a map of the wells included in the local monitoring network.

Decisions Points/Recommendations: None

Action Items:

- The sub-committee will continue to meet to discuss how to bring local knowledge and expertise into the study

Proposed Future Discussion Topics: na