



Greater Harney Valley – Groundwater Study Advisory Committee Meeting
Tuesday, July 18, 2017
10:00am – 3:00pm
Harney County Community Center – 484 Broadway St., Burns, OR



July 18, 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
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
Mark Owens, County Commission and Landowner
Steve Rickman, Landowner/Business Owner
Tony Hackett, Downright Drilling
~~Wayne Evans, Citizen/Landowner (not present)~~

Groundwater Study Team

Darrick Boschmann, OWRD
Jerry Grondin, OWRD
~~Justin Iverson, OWRD (not present)~~
Halley Barnett, OWRD
Steve Gingerich, USGS
Hank Johnson, USGS
~~Esther Pischel, USGS (not present)~~
~~Amanda Garcia, USGS (not present)~~
~~Nick Dosch, USGS (not present)~~

Others

Harmony Burrigh, OWRD (Facilitator)

Meeting Overview, Action Items, Recommendations, and Updates

The purpose of this meeting was to review some of the past studies conducted in the Harney Basin that inform the current groundwater study, give updates on activities since the last Advisory Committee meeting, and brief the Committee on upcoming activities. USGS delivered a presentation on past groundwater studies and discussed topics that arose during the presentation. During the work session, OWRD and USGS updated the Committee on activities since April as well as upcoming activities. OWRD and USGS indicated that we are currently in the data collection phase with many parallel efforts going on. The Committee also discussed other data collection efforts in the basin. We are not yet in the data analysis/interpretation phase. The Committee discussed key takeaways and outstanding questions that they have based on materials presented to-date. The Committee looked at a proposal for future meetings and discussion topics and started to think about ways to indicate where we are starting to achieve a shared understanding and where we need further discussion. The Committee also started to brainstorm options to engage the broader community on the groundwater study.



Figure 1. Presentation by the USGS on past studies in the Harney Basin

Action Items

Who	What	When
Harmony B, Karen M, Angie K, and Halley Barnett	Work on a brief handout describing the groundwater study.	September 30
Harmony B and Karen M	Update the Harney County Watershed Council website with Groundwater Study information.	September 30
Harmony B, Karen M and Angie K	Develop a draft outreach strategy for the Advisory Committee to consider at the next meeting.	September 30
Mark O	Convene additional meetings of the sub-committee to continue working on local monitoring efforts.	October 17
Harmony B	Notify the GWSAC and interested public about the online groundwater level map when it is made public.	Uncertain
Harmony B	Contact GWSAC members to do a “process check” and get feedback on proposed future meeting topics.	October 1
GWSAC	Advisory Committee members will send feedback to Harmony on the proposed meetings as well as the list of questions/discussion topics.	October 1

Decisions/Recommendations

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Proposed Future Discussions

- Relationship between shallow and deep wells – geology, pressure, seasonal vs. cumulative impacts, well construction.
- Static water level measurements – definition and methods.
- How basin studies and models affect water management/regulation in other basins.
- Linkages/connections with other monitoring/data collection efforts in the basin.
- Deeper dive into a specific geographic area – what are we finding and what does it tell us about the system?
- Process check and proposed adjustments.

Updates

The next meeting is scheduled for Tuesday, October 17th, at the Harney County Community Center, exact time TBA (please note the change in days). The chair (Mark Owens) and facilitator (Harmony Burrigh) 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.

Stephen Gingerich, a groundwater scientist with the US Geological Survey presented an overview of past groundwater studies conducted in the Harney Basin, with a particular focus on Hubbard, Leonard, Piper, and Waring. The presentation can be accessed online at: <http://bit.ly/malheurlakebasin>.

Key Discussion Topics/Questions:

- Relationship between deep wells and shallow wells varies by place. There will be more information to share on this topic once we get to the data analysis/interpretation phase of the study – right now we are in the data collection phase The Advisory Committee would like to know more about how the Study Team understands the relationship between wells – what information are they looking for? How does it vary by place? More specifically, they would like to understand:
 - the vertical versus horizontal relationship between different groundwater units and wells sealed in those units;
 - the seasonal effects between wells versus the long-term, cumulative effects – understanding immediate versus delayed responses;
 - the role of pressure and how pressure affects the movement of water both vertically and horizontally;
 - the role of geology and how different geologic materials affect the movement of water both vertically and horizontally (flow paths of water);
 - overall context, such as location/proximity to other wells, well construction, etc.
- The role of past data and studies in the current investigation. There was an acknowledgement that knowledge should improve with more data. Science advances through refinements, improvements, and may result in new findings or may confirm earlier findings. Earlier studies (and their data) provide a foundation on which to build – scientists stand on the shoulders of those who came before. The current study builds upon previous investigations through new data collection, the use of new analytical methods, and by incorporating refined ancillary data, such as the distribution of geologic units and the use of satellite-based land use and climate data. The Groundwater Study Team will fill gaps that Hubbard, Leonard, Piper, and Waring could not, and use data collection technologies they probably never imagined. Nevertheless, our fundamental understanding of the physics of water movement through the Harney Basin will not be greatly different from those earlier investigators: groundwater flows from areas of high head to areas of low head and evapotranspiration is the primary mechanism by which water leaves the system. It is important to recognize that each study is different, and was designed to answer a unique set of questions posed at the time it was conducted. Some of those questions may be similar to our questions today. Differences between studies can include:

- Geographic area;
- Amount of new data collected over time;
- Refined ancillary information, e.g. geologic mapping;
- Advances in data collection technologies;
- Advances in analytical methods.

The scientific goal is to be objective in the analysis and let all the available data (past and newly collected) direct the interpretations. Currently, the study is in data collection phase and past studies are an important for data and for hypotheses to be tested. The ongoing data collection efforts (see discussion below) will be important for the data analysis effort phase next year.

Decisions Points/Recommendations: None

Action Items: None

Proposed Future Discussion Topics:

- Relationship between shallow and deep wells – geology, head gradients, seasonal vs. cumulative impacts, well construction.

ROUNDTABLE

We went around the table to hear about what is of interest to the GWSAC and members of the public – including key takeaways or outstanding questions. The following topics were noted:

- **Overall Process**
 - Beginning to understand and appreciate all the different pieces of the puzzle.
 - The process requires time and patience.
 - Realization that things might get fuzzy before they get clearer.
 - Desire to remain objective in looking at all the available data (past, present and future) and let the data tell the story about what's happening in the basin.
 - Concern about outcomes and how this data and information will be used.
 - Desire to analyze/understand deviations and anomalies that emerge through the study.
 - Acknowledgement that there are a lot of investigations going on in the basin and a desire to find the linkages between them – also an offer to help make connections.
 - Concern that constraints or delays may affect the overall project and a desire to understand potential project impacts.
 - Gratitude for historical context and overview of past studies.
- **GW Level Measurements**
 - Desire to hear good news - any rebound, recharge, or recovery after a wet winter?
- **SW/GW Interactions**
 - Desire to understand how surface water and groundwater interact – realizing that surface water can be tricky (but not impossible) to measure as it disappears and reappears along streams (hyporheic zones).
- **Connectivity/Separations and Geology**

- Appreciation for the discussion of different geologic units and how the understanding has evolved over time.
- **Ecological Impacts/Needs**
 - Desire to understand the ecological impacts to plant and animal communities that rely on groundwater – acknowledgement that this may be an important knowledge gap that is not addressed through the study.
- **Communication/Outreach**
 - Need to share the knowledge that is emerging from this process and avoid the echo chamber – how do we accomplish that?
 - Acknowledgement that we likely won't reach everyone and we may need to tailor the format of our meetings to reach a broader audience.

Decisions Points/Recommendations: None

Action Items: None

Proposed Future Discussion Topics:

- Relationship between shallow and deep wells – geology, pressure, seasonal vs. cumulative impacts, well construction.

USGS UPDATES

The USGS updated the group on the data collection activities/tasks they are currently working on, including:

- Mapping out native vegetation across the landscape – this will inform the estimates of evapotranspiration. Advisory Committee members recommended looking into juniper, which they think is a big water user in the basin. They specifically recommended reaching out to Chad Boyd with the Agricultural Resource Service and Tim Deboodt with OSU Extension in Crook County. It was also noted that USFWS, NRCS, and BLM have already done some vegetation mapping in the basin.
- Taking tissue samples of vegetation to understand the source of water.
- Gathering data/information to estimate evapotranspiration for native vegetation and cropland – working with OWRD and Desert Research Institute on this.
- Taking water chemistry samples at various locations to understand how water moves across the landscape. For example, stable isotopes may help us to understand the source of the water and other chemistry can help us understand groundwater flow paths (local vs long distance, shallow vs deep circulation).
- Scoping out seepage runs to better understand groundwater/surface water interactions in parts of the basin – working with OWRD on this.
- Working to refine the interactive groundwater level map to allow users to see water level changes over time.

Decisions Points/Recommendations: None

Action Items: None

Proposed Future Discussion Topics: None

OWRD UPDATES

OWRD updated the group on overall project management as well as the data collection activities/tasks they are currently working on, including:

- The legislative session is over – no changes to current groundwater study budget. There is a budget for additional observation wells that may go towards additional observation wells in the Harney basin, but the budget is for the statewide network and is not dedicated to the study.
- Gathering location data for springs, taking flow measurements, sampling water chemistry, and entering data into a database.
- Gathered groundwater level measurements from synoptic network in spring and preparing for quarterly measurements in summer. The hydrographs for each of the wells was made available to the Advisory Study. Jerry shared some preliminary observations, but pointed out that the Study Team is in data collection mode and hasn't conducted a detailed analysis of the data.
- Increasing synoptic network – identifying additional wells to include in the network. Priority areas are: Harney Valley in the Silvies River fan above Burns, between Burns and Crane, in the Princeton area, Silver Creek above Moon Reservoir.
- Data from well logs is being "lith-coded" to allow for future analysis. Lith-coding is the process of assigning codes to the geologic material reported on drillers' logs and storing that information in a database. That information can then be used to develop spatial maps and vertical cross-sections. Significant progress has been made.
- Working with surface water staff and field staff from OWRD as well as USGS to scope out surface water "seepage run" flow measurement sites and spring discharge sites along the three main stream systems in Harney Basin to better understand surface water and groundwater interactions. This basin is challenging given the significant engineering, diversions, stream channel complexities, vegetation, and snowmelt runoff dominated hydrographs. Consequently, the scoping effort includes identifying suitable measurement sites and reaches, measurement date, measurement methods.
- OWRD was only able to drill one of the four proposed observation wells due to on-the-ground conditions, timing and funding constraints. The well was drilled in the Chain Lakes area between Palomino Butte and Wright's Point. There are very few wells in this area. There was much more basalt at the well than expected (only 40-50 feet of basalt above the Harney Formation sediments was anticipated). Reconnaissance of nearby buttes identified unmapped volcanic vents. The well was completed in basalt and silt at 623 feet. The static water level measurement was 260 feet below land surface. This site will help us understand groundwater in this portion of the basin. Unfortunately drilling began without an OWRD hydrogeologist on-site. The driller lost circulation part way through, but continued to drill without consulting OWRD. This resulted in

no drill cutting returns for that portion which is unfortunate because of the lack of other geologic information in this area of the basin.

- OWRD contracted to have four problematic groundwater level measurement wells rehabilitated. Obstacles were removed from one well, a significant thickness of oil was removed from another well, and measuring tubes were installed in all four wells to make the groundwater level measurements less challenging. An obstacle will be removed and a measuring tube will be installed at a fifth well by the well owner and his contractor without the state's involvement.

The Advisory Committee offered the following questions and comments:

- Advisory Committee members wanted to better understand how data collection and preliminary analyses/observations inform future data gathering efforts. Do OWRD and USGS adjust their approach/methods based on what they are finding? How?
- It was noted that different springs respond differently to dry and wet years and that local observations/knowledge would help understand these responses and the differences.
- The Advisory Committee suggested developing a glossary of terms to aid in future discussions. There is confusion over what is meant by synoptic wells and static water levels, for instance.
- There was desire expressed by the group to revisit what is meant by static water levels and whether the capacity of different wells affects water level measurements and the ability to get a static measurement. This will be revisited at a future meeting.
- One Advisory Committee member noted that the Bear Valley Study could be an important source of information.
- There was significant conversation about the assessments looking at surface water and groundwater interactions. Advisory Committee members noted that the timing and location of those measurements will be very important. OWRD and USGS are scoping this out right now and welcomed any knowledge or input from Advisory Committee members to inform their efforts.
- Another Advisory Committee member inquired about whether the information/data presented at the Town Hall meeting by Tim Miller had been retrieved by USGS and OWRD. USGS followed up with Tim to get what information and data he had available. The amount of data was not extensive.
- A few Advisory Committee members continue to be concerned about the outcomes of this study and share this concern with other members of the community. How will it affect water management in the basin? How are models used in other basins? This worries members of the community. Discussions about this could be beneficial in the near-term – don't wait until the study is over.

Decisions Points/Recommendations: None

Action Items:

- OWRD will develop and maintain a glossary of terms and the Advisory Committee will help identify what terms need to be defined so that we can build a shared understanding.

- Fred Otley will retrieve the Bear Valley Study and send it to the Groundwater Study Team.

Proposed Future Discussion Topics:

- Static water level measurements – definition and methods.
- How basin studies and models affect water management/regulation in other basins.

OTHER MONITORING/DATA COLLECTION EFFORTS

Updates about the following monitoring/data collections were provided:

- Harney County Watershed Council (HCWC) Local Monitoring– HCWC has received two grants from OWEB to monitor groundwater levels. Angie is working on this and currently has 107 wells on the list – 29 of which couldn't be measured or didn't have a well log. She measured 29 wells over the past two weeks and there was not a significant change since the last measurement. She is working with OWRD to coordinate the timing of measurements. HCWC will have an updated map with well locations at the October meeting. OWRD informed the HCWC that they are making updates to their groundwater database to allow the HCWC to enter the data directly into the database rather than filling out spreadsheets and sending them to the Department.
- The Nature Conservancy – The Nature Conservancy is interested in doing work on springs, rivers and wetlands in the basin. They don't currently have funding, but there is potential for future work.
- US Fish and Wildlife Service (USFWS) – The USFWS plans to install a gage at the lake. This was originally planned for spring/summer, but there has been a delay. They also took measurements at the Warm Springs in the spring, which they can share.
- Other efforts – There are a lot of monitoring and data collection efforts for the different collaborative efforts going on around the basin, including the Wetlands Initiative, SageCON, the Forest Collaborative, the Restoration Collaborative, etc. For instance, the Wetlands Initiative will be flying LiDar in the Silver Creek drainage, which might be beneficial. Brenda Smith with the High Desert Partnership offered to identify linkages between the different efforts.

Decisions Points/Recommendations: None

Action Items:

- The HCWC will update the map displaying wells in the local groundwater monitoring network.
- USFWS will send data from the Warm Springs to OWRD and USGS.

Proposed Future Discussion Topics:

- Linkages/connections with other monitoring/data collection efforts in the basin.

COMMUNICATION AND OUTREACH

The Advisory Committee brainstormed strategies to improve community understanding of and engagement with the Groundwater Study. The list of ideas includes:

- Hold a meeting or a presentation in a more informal environment – perhaps an open house at a local restaurant with food?
- Provide semi-regular updates at the County Commission meeting.
- Prep for fall/winter, which is the “slow time” – people are more likely to engage.
- Develop a handout with a high-level overview of the process.
- Have information on display and available at the Courthouse, OWRD, HCWC, NRCS, SWCD, FSA, Extension.
- One-on-one outreach by Advisory Committee members.
- Make sure to keep Angie and JR in the loop and equip them with materials (Plan of Study, handout, list of meetings, etc) since they are out in the field talking to people – these are our “water ambassadors.”
- Provide handouts for the fair the 2nd week of September.
- Start collecting questions to develop a list of FAQs.
- Reconvene meetings of the GWSAC sub-committee (they are specifically interested at looking at anomalies and outliers).
- Update the HCWC website with information about the groundwater study.

Decisions Points/Recommendations: None

Action Items:

- Harmony, Karen, and Angie will develop a draft outreach strategy.
- Harmony, Karen, Angie, and Halley will work to develop a draft handout.
- Harmony and Karen will work to update the HCWC website.

Proposed Future Discussion Topics:

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

PROCESS CHECK AND FUTURE MEETINGS

The Groundwater Study Advisory Committee is celebrating its one year anniversary. Over the past year the Advisory Committee has developed and adopted a charter, reviewed and provided feedback on the Groundwater Study Plan of Study, learned about hydrogeology in the basin and past studies that have been completed, provided local knowledge about water in the basin, and made progress on coordinating different monitoring efforts. Harmony distributed a summary of the questions/discussion topics that have come up in past meetings and is thinking of indicators that demonstrate progress and indicate that we have a shared understanding. Harmony also distributed a list of proposed future

meeting topics. This was developed by looking at the list of questions from the Advisory Committee as well as the Plan of Study. She will be following up with individual Advisory Committee members to do a process check (how is the process going? what is going well? where can we improve?) and get feedback on the proposed meeting topics.

Advisory Committee members recommended the following adjustments:

- Add a discussion topic about groundwater dependent ecosystems – TNC, USFWS, and others can share methods and findings.
- Schedule field tours before October 2018 because they are very helpful.

Decisions Points/Recommendations: None

Action Items:

- Harmony B. will contact members of the Advisory Committee to do a “process check” and get feedback on proposed future meeting topics.
- Advisory Committee members will send feedback to Harmony on the proposed meetings as well as the list of questions/discussion topics.

Proposed Future Discussion Topics:

- Process check and proposed adjustments.