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# Harney Basin Groundwater Management Interim Implementation Plan

Harney Basin Integrated Water Resource Collaborative

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March 2020 DRAFT

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# Introduction

The Harney Basin Community-Based Integrated Water Planning Collaborative (Collaborative) has been working on the development of information about groundwater declines and management strategies to address those declines for nearly 2 years. The Collaborative was developed to take advantage of the opportunity provided by the Oregon Water Resource Department (OWRD) and Oregon Legislature to conduct a place-base integrated water resource plan. The 2015 legislation (SB 266) authorized OWRD to provide grants for pilot efforts in Oregon to address water resource issues at the local level.

In 2016 the Greater Harney Valley Groundwater Area of Concern (OAR 690-512-0020) was designated due to noticeable declines in groundwater in the basin. The Harney County community opted to use a community-based planning approach to address the water resource issues in the basin with early focus on groundwater conditions and issues. The Harney County Watershed Council and Harney County Court were successful in applying for funding as a pilot effort with OWRD to initiate a community-based integrated water resource planning effort.

OWRD has developed guidance for Place-Based Planning (see sidebar). While an integrated plan has not been completed for the Harney Basin, initial discussions and recommendations on strategies to address the critical issues associated with groundwater declines have been held and initial strategies have been developed for consideration. The general Collaborative planning process is illustrated in Figure 1.

This Interim Implementation Plan is an effort to document the early recommended actions and strategies to address the critical concerns related to groundwater declines. The Interim Implementation Plan does not identify all the options for groundwater management and does not address surface water or surface-groundwater integration issues.

The Plan identifies the critical groundwater issues facing all who live, work, and recreate in the Harney Basin and proposes ways in which those issues can be addressed, thereby

## Place-Based Planning Principles

- Locally-initiated and led collaborative effort
- Voluntary, non-regulatory process
- Includes a balanced representation of water interests
- Conducted in partnership with the state
- Addresses instream and out-of-stream needs
- Looks at water quantity, quality and ecosystem needs in an integrated approach
- Creates an open and transparent process that fosters public participation
- Builds on and integrates existing studies and plans
- Does not infringe on existing water rights
- Adheres to Oregon's Integrated Water Resource Strategy principles and state laws

advancing the statewide mission to ensure a productive economy that supports our community, provides for a viable and productive agriculture, maintains healthy ecosystems that provide for the recreation and tourism industry and sustains the diversity of the basin natural resources.



*Figure 1: Harney Basin Community-Based Integrated Water Planning Program*

The Harney Basin has a rich history, which has been shaped by its water resources in an arid region. As the community faces complex challenges and an increasingly scarce groundwater supply, managing the use of this essential resource will be key to the future. The Basin's groundwater-related challenges are formidable. The Collaborative identified the following critical groundwater resource issues:

- Declining groundwater levels in the Greater Harney Valley Groundwater Area of Concern (GHVGAC)
- Lack of broad scale measurement and recording of water use by irrigation
- Effects of declining groundwater levels on domestic wells with lack of information on how large an area is affected
- Arsenic and other contaminants in groundwater with unknown distribution

- Lack of information on springs and other groundwater dependent ecosystems affected by groundwater declines
- Potential loss of groundwater from the basin
- Incomplete knowledge of groundwater system
- Legal allocation of groundwater beyond annual recharge
- Legal uncertainty around groundwater rights for allotted lands
- Need to protect culturally significant groundwater dependent resources
- Need to protect the social, economic and ecological structure of the basin as we implement recommended strategies

Working within these challenges will require cooperation of the entire community. As part of the Plan development process, the Collaboration used Work Groups focusing on Agricultural Use, Ecological Resources, Domestic and Municipal Uses, and Vegetation Management to examine and explore the various interests in the Basin. The Collaborative used a process of issue identification and convened a “summit” inviting all interested parties to develop potential strategies to address the critical water resource issues in the Basin.

*This Interim Implementation Plan identifies the early stage efforts to address the use of groundwater resulting in aquifer declines. This is not a final plan but an attempt to compile in one document the early results of the planning process focused only on groundwater with recognition that surface water resources and surface-groundwater resource interaction have not been addressed.*

# The Harney Basin

The Harney Basin is a closed basin entirely within the State of Oregon. This watershed, a portion of the Oregon Closed Basin, lies almost wholly within Harney County, one of the largest in the West. It includes three major tributary systems. The Silvies River, heading in the Blue Mountains, drains about 1,350 square miles and flows into Malheur Lake from the north. The Donner und Blitzen "River, rising in Steens Mountain, drains a 1,000-square-mile watershed and flows into Malheur Lake from the south. Flood overflows from Malheur Lake run into Harney Lake. Silver Creek, a 900-square-mile drainage, flows directly into Harney Lake (Figure 2). The basin is a remnant of Pleistocene Lake Malheur and the valley floor is composed of a mixture of lacustrine and alluvial deposits.

Surface hydrology is dominated by snowmelt runoff that occurs rapidly in the spring and floods the lower floodplains of the Silvies and Donner und Blitzen Rivers and to a lesser degree the Silver Creek floodplain.

Groundwater is dominantly older water stored in the deeper portions of the aquifer with a limited amount of shallow more rapidly recharged surficial portion of the aquifer.

Since the Harney Basin is entirely located in the State of Oregon the water resources are managed by Oregon Water Resources Department and Oregon Water Laws. The basin has no surface outflow and, if any, only limited subsurface outflow to the east towards the Malheur River basin.

A more detailed groundwater study is being completed by OWRD and the U.S. Geological Survey at this time. Completed, peer-reviewed reports on the Groundwater System and the Groundwater Budget will be available in 2020. While this information is very important it is clear that reducing the use of groundwater is a critical need for the basin and this interim implementation report is documentation of the actions being considered and taken to address the known need.

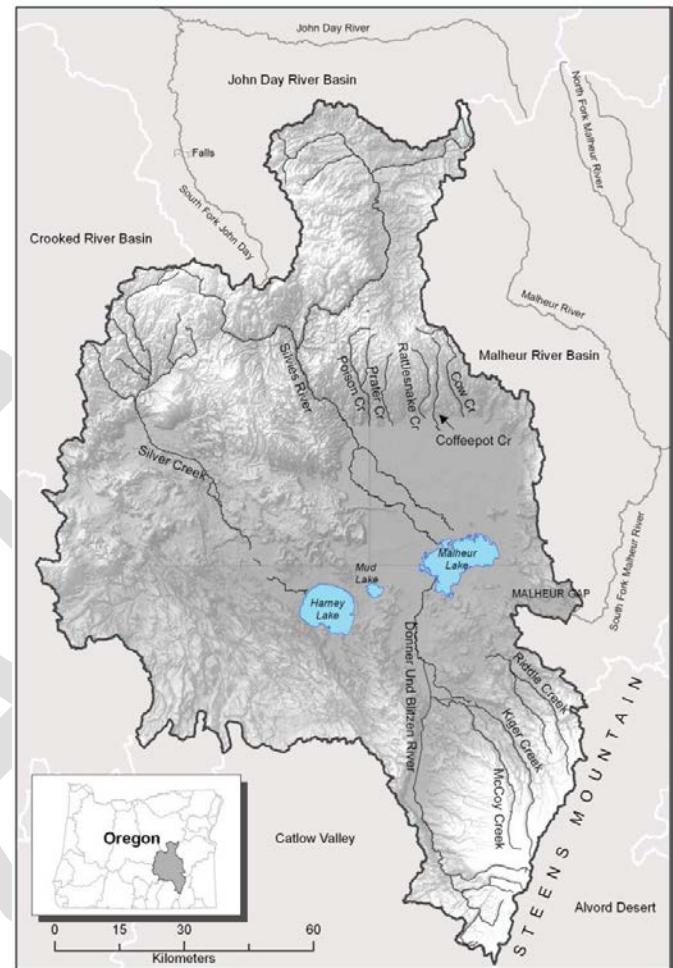


Figure 2: Harney Basin, Oregon

# Basin Groundwater Needs

Groundwater is used for domestic use, livestock, municipal use, and agricultural production. Groundwater dependent ecosystems are less well known but are being investigated at this time. The groundwater needs are based on what is now known and from work conducted by Work Groups of the Collaborative, technical information provided by OWRD, and incomplete information from the groundwater study. Needs will be identified in both qualitative and quantitative terms as currently known. It is recognized that agricultural groundwater use currently exceeds recharge so the need is to reduce agricultural groundwater use. The need for domestic water is primarily an effort to ensure a stable long-term supply of potable water. Our understanding of groundwater dependent ecosystem needs is growing and while there is limited information on the quantity of groundwater needed, it is clear that there are areas of the basin where changes in groundwater use could benefit groundwater dependent ecosystems.

## Agricultural Use and Needs

Groundwater irrigation has developed in recent years. The development of groundwater irrigated agriculture spiked in the 1970's and grew rapidly in the 1990's through the 2000's (Figure 3).

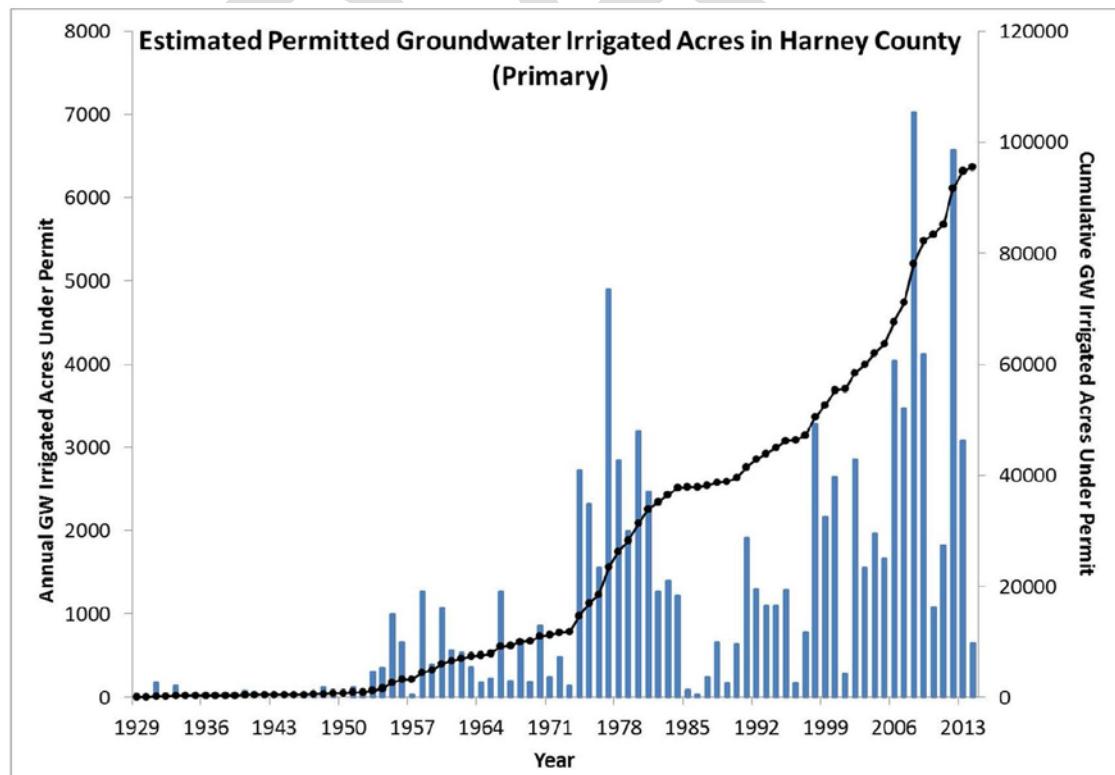


Figure 3: Groundwater Development in the Harney Basin (source OWRD, 2016)

While the area permitted is not the same as the area irrigated, it is clear that there is a significant amount of groundwater irrigated agricultural lands permitted in the basin.

The designation of the Greater Harney Valley Groundwater Area of Concern (GHVGAC) used available information to identify an over allocation of groundwater by some 100,000 acre feet/year. As a more detailed groundwater budget is developed it is clear that over allocation is greater than the early estimate. Rough estimates of 120,000-130,000 acre feet/year have been identified as the current deficit of use over recharge. The need to reduce agricultural groundwater use is a clear priority for the Harney basin.

The need to reduce the area of groundwater irrigated lands in the basin is becoming a recognized need. The exact area of reduction is less certain; however, some 30,000 -40,000 acres or more would be necessary to bring the use towards the recharge amount as estimated during the designation of the GHVGAC. Creating incentives for current producers is a priority for the community to reduce the disruption to the community economy and social network. Early exploration on ways to use groundwater more efficiently have been identified and developed.

## Domestic and Municipal Use and Needs

Nearly every household in the basin is dependent on groundwater for domestic use. Groundwater declines have adversely affected a number of domestic well users. The Collaborative has sponsored a survey to get a better idea of where and how widespread the issues with domestic wells are. The survey had a strong response (more than 40% returns) and found that while some 30% of the basin domestic well users have had some changes over the last decade less than 10% of survey respondents do not have adequate water supply or quality for domestic use. In the interim, Harney County has obtained funding to conduct an evaluation of the feasibility to develop community water supplies to assure domestic well users have access to a safe and secure water supply. The feasibility evaluation identifies opportunities, costs and potential funding sources for different approaches.

Projections of future domestic and municipal groundwater need by the Work Group and by OWRD are based on limited county residential growth and do not anticipate a significant increase in the groundwater demand for domestic and municipal uses.

Discussions with the municipal water suppliers for Burns and Hines indicate that there is sufficient supply; however, improved delivery for more efficient use is important for both communities. Neither community has identified issues associated with groundwater supply for municipal needs.

The Burns Paiute Reservation indicates that they have sufficient water supply for the reservation into the future.

## Groundwater Dependent Ecosystems and Water Needs

The most well-known groundwater dependent ecosystems are springs. The Ecological Work Group has detailed what is known about the groundwater dependent ecosystems of the Harney Basin and identified the water resource needs. While it is recognized that there is little known about the water resource needs for these systems it can be generalized that well interference with groundwater flow paths that feed springs can affect spring flow. Reduced spring flow or dry springs have been documented in the Silver Creek drainage tributary to Harney Lake.

## Groundwater Information Needs

Lack of information on numerous aspects of groundwater conditions in the basin were identified as a critical issue. Limited information on groundwater quality, aquifer structure, groundwater age, groundwater dependent ecosystems, and the actual amount of groundwater use all affect the ability to manage groundwater. As the joint OWRD/USGS groundwater study is completed it will help to provide additional information about the physical aquifer system, the age of groundwater, the amount of groundwater and an early model of the groundwater system of the Harney Basin. There will remain uncertainty around the groundwater dependent ecosystem conditions and groundwater quality. While much of the early planning has depended on preliminary information, the interaction of the OWRD/USGS study with the Groundwater Study Advisory Committee has helped to adjust the planning to the growing body of information about the Harney Basin groundwater conditions.

Oregon Department of Environmental Quality has monitored a significant number of wells in the basin. While individual landowners have been provided well water quality information, a summary report is not yet available. A summary report is likely to be produced in midyear 2020. This information will help in identifying the sources and management needs to maintain water quality for domestic and livestock uses.

Continued monitoring of groundwater levels will be critical to evaluate the effectiveness of management activities. Additional efforts to fill other information gaps will continue to be important to build understanding of the groundwater system and management effects on that system.

# Basin Goals and Objectives

The vision of the Harney County Place Based Water Planning Collaborative: “A sustainably managed supply of quality water for people, the economy, and the environment”. The vision anticipates the goals to:

1. Protect, preserve, and/or restore the sustainability of the Harney Basin focusing on groundwater management and ecosystem function.
2. Manage groundwater use to sustain optimal agricultural economy of the Basin.
3. Promote groundwater management and administrative practices that are adaptive, flexible, and responsive to optimize multiple benefits.
4. Protect and provide safe and reliable domestic water for the people of the basin.
5. Improve information and understanding of groundwater conditions and management in the basin.

## Constraints and Challenges

The planning process has been both helped and hindered by occurring concurrently with the OWRD/USGS groundwater study. The effort to add information and build understanding at the same time as developing strategies to cope with major constraints to sustainability has been a challenge.

### Over Allocation

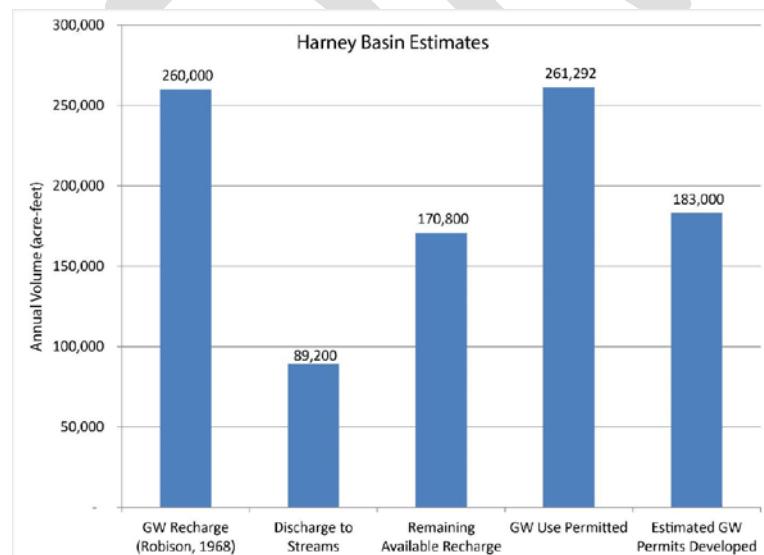


Figure 4: Harney Basin Groundwater Budget Estimate (source OWRD, 2016)

Groundwater permitting by OWRD has resulted in allocation of more than 100,000 acre feet/year for agricultural use than is recharged to the aquifer (Figure 4). It is estimated that there are some 78,000 acres of land that are irrigated by groundwater in the Harney Basin. A total of approximately 240,000 acre feet of permitted groundwater use has been authorized for the Harney Basin. The result of the development of

groundwater beyond recharge will require adjustment through regulation or other means to reduce the level of agricultural groundwater uses. The primary tool available to regulate use is to reduce or eliminate use by junior water right holders. This could have significant unintended consequences so the community is exploring alternative means of reducing use to move towards a more sustainable future.

## Sustainability of the Aquifer

Although irrigators pump the greatest percentage of groundwater for agriculture, pumping for domestic use, municipal, and environmental uses is important to the Basin. Burns and Hines rely on wells for their municipal supply. Additionally, the U.S. Fish and Wildlife Service (USFWS) Malheur National Wildlife Refuge and BLM utilize wells for local and migrating wildlife. Finally, aquifer sustainability is important to many surface and subsurface hydrologic features of the Basin, such as springs. The interaction between surface and groundwater affect the health of wetland complexes, and the ability of ranchers to harvest hay and graze livestock in historically sub-irrigated pastures.

## Water Management

There is no local management authority for surface or groundwater in the Basin. All water rights are held by individuals or corporate entities. This arrangement makes

### Voluntary agreements among ground water users from same reservoir

(1) In the administration of ORS 537.505 to 537.795 and 537.992, the Water Resources Commission may encourage, promote and recognize voluntary agreements among ground water users from the same ground water reservoir. When the commission finds that any such agreement, executed in writing and filed with the commission, is consistent with the intent, purposes and requirements of ORS 537.505 to 537.795 and 537.992, and in particular ORS 537.525, 537.730 to 537.740 and 537.780, the commission shall approve the agreement. Thereafter the agreement, until terminated as provided in this subsection, shall control in lieu of a formal order or rule of the commission under ORS 537.505 to 537.795 and 537.992. Any agreement approved by the commission may be terminated by the lapse of time as provided in the agreement, by consent of the parties to the agreement or by order of the commission if the commission finds, after investigation and a public hearing upon adequate notice, that the agreement is not being substantially complied with by the parties thereto or that changed conditions have made the continuance of the agreement a detriment to the public welfare, safety and health or contrary in any particular to the intent, purposes and requirements of ORS 537.505 to 537.795 and 537.992.

(2) When any irrigation district, drainage district, other district organized for public purposes or other public corporation or political subdivision of this state is authorized by law to enter into agreements of the kind referred to in subsection (1) of this section, the commission may approve such agreements as provided in subsection (1) of this section. Any such agreement approved by the commission shall have the same effect and shall be subject to termination in the same manner and for the same reasons set forth in subsection (1) of this section.

each owner directly responsible to OWRD for their water right. The regulation of individual water rights does not allow for community use of water resources in a manner different than priority date. Alternative approaches are being considered to assist the community for groundwater management that can help move towards a more sustainable future.

The Collaborative is exploring the development of a voluntary agreement as authorized in Oregon water law (ORS 537.745). While this provision of Oregon water law (see sidebar) has not been used before, it appears to hold promise as a tool to implement a local approach to managing groundwater different from priority date alone.

A number of the irrigators in the basin are exploring the formation of a local district of some kind to coordinate groundwater management and maintain a local voice in how it is conducted.

One provision of the designation of the GHVGAC is a requirement to reconsider the basin rules (OAR 690-512-0020) Section 12 of the rule states: *” Within 1 year after the Groundwater Study discussed in subsection 11 has been published by the Department, the Department will convene a Rules Advisory Committee to explore whether there is a need for updates or changes to these rules. Members of the Groundwater Study Advisory Committee will be invited to participate on the Rules Advisory Committee.”* This rulemaking will consider the results of the groundwater study and develop regulatory actions to fit the circumstances. Since there is a measurable decline in the groundwater levels in a number of areas, actions will likely be taken to address the declines. The early results of the Collaborative will be considered in the rule making process. This document is an effort to summarize current activities and identify ongoing efforts to address known groundwater concerns.

## Groundwater Information and Local Knowledge

The most recent published groundwater data is from the 1960's and early 1970's. The ongoing groundwater study will significantly advance the understanding of the Harney Basin groundwater resources and groundwater budget. The peer reviewed study results will not be publicly available until fall of 2020. While the joint study has used a “study advisory committee” to discuss progress and preliminary information with the community, there remains significant misunderstanding and lack of clear communication about how the groundwater conditions will affect the management of the resource.

A significant effort to provide information for lay audience understanding is critical to make sure the scientific information is as effective as it can be. Peer reviewed research is not the best way to communicate with the broad public that is dependent on groundwater.

While the joint USGS/OWRD groundwater study will provide information about groundwater quantity, there is limited information about groundwater quality. Extensive sampling of groundwater for water quality analysis has been conducted by the Oregon Department of Environmental Quality. The data has been compiled and a summary report will be completed in 2020.

A study of groundwater dependent ecosystems of the Harney Basin is being conducted by the Nature Conservancy. The final report will be completed in the spring of 2020.

As all these research and evaluation studies are completed it will be important to make recent findings available to the public in a digestible form. Funding to prepare public information with illustrations and management implications will be important for public support of management proposals.

**The OWRD/USGS final Groundwater Reports (Groundwater Resources of the Harney Basin, Oregon and Hydrologic Budget of the Harney Basin Aquifer System, Oregon) will be publicly available in fall of 2020. The Oregon Department of Environmental Quality will have a completed Harney County Groundwater Summary Report in 2020. The Nature Conservancy will have a report on the Groundwater Dependent Ecosystems of the Harney Basin in the spring of 2020 as well. This information will enable adjustment of strategies as the information indicates may be necessary and appropriate.**

## Strategies and Current Actions

The Collaborative has used extensive citizen engagement to develop proposed strategies to address surface and groundwater critical issues. The following are strategies identified to address the agricultural use of groundwater as discussed by the Collaborative. They do not include all the strategies identified, but do include the major activities identified to address the over allocation of groundwater for agricultural irrigation.

### Strategies to Reduce Groundwater Use with Technology

In 2010, NRCS prepared a Natural Resources Long Range Strategy for Harney County with significant input from conservation partners. The Long-Range Strategy identified ground water availability as a high priority resource problem to be addressed during the 5-year term of the strategy (2011-2015). In 2015, NRCS held a special Local Work Group meeting to gather input on priorities to be addressed in a revised, updated Long Range Strategy covering 2016-2020. At that time, the Local Work Group indicated that there was an increased urgency to begin offering

assistance for irrigation efficiency improvements to conserve groundwater, because of impending regulatory changes.

With recognition of the groundwater declines from agricultural irrigation, the 2017 and 2018 Local Work Group meetings, participants encouraged NRCS to develop a Conservation Implementation Strategy (CIS) related to encouraging and assisting with the adoption of irrigation technologies that are designed for low flow rates that ensure not only greater irrigation efficiency, but actual water savings.

The Burns office of NRCS developed a Conservation Implementation Strategy for Saving Groundwater in the Harney Basin Using Efficient Irrigation Technologies. This initiative proposed using \$660,000 of USDA EQIP funds to meet the objectives in Table 1.

*Table 1: Outputs and Outcomes from Improved Irrigation Technology (from NRCS, 2015)*

Conservation Implementation Strategy	Saving Groundwater in the Harney Basin Using Efficient Irrigation Technologies
<b>Expected Output</b>	6,243 groundwater irrigated acres converted from MESA systems to LESA systems
<b>Expected Outcome</b>	Reduce groundwater use on currently developed permits by 2% each year, for a total of 10% within 5 years. This equates to a savings of 3,746 ac-ft per year by 2023

**The program was funded in 2019 and is being implemented. The strategy could result in a savings of up to 3,750 acre feet/year when fully implemented.**

## Strategies to Develop Incentives to Reduce Agricultural Groundwater Use

After hearing from irrigators in the East Snake River Plains where they have a mandate to reduce groundwater use, the potential of using USDA Conservation Reserve Enhancement Program to develop incentives for reducing groundwater use was identified. The Collaborative explored the



*Figure 5: Low elevation spray application (LESA) Irrigation Installation (photo from Mark Owens)*

potential and found the program being used in Kansas, Colorado, and Nebraska as well as Idaho to help reduce agricultural use of groundwater. The Collaborative reached consensus to support the convening of an interdisciplinary team by the Oregon Watershed Enhancement Board (OWEB), to develop a proposal for a groundwater CREP in the Harney basin and to consider input from the Collaborative, local irrigators, and other affected interests and parties.

OWEB has led the technical team process to develop a proposal for USDA consideration. The goal that has been set for the program is to enroll 30,000 acres of groundwater irrigated land. The program elements being considered are annual payments for non-use of irrigation for 15 year contracts, incentive payments for benefits to groundwater dependent ecosystems, payment for voluntary cancellation of water rights and other incentives. The technical team is developing a proposal and expects to have a final proposal for consideration in 2020.

**If successful, the Harney Valley Groundwater CREP program could reduce groundwater irrigated land by some 30,000 acres with a reduction of up to 75,000 acre feet/year of groundwater use.**

### Strategies to Manage Groundwater More Efficiently

The Collaborative has heard from Eureka County, Nevada officials of a market-based approach to managing groundwater in a closed basin (Diamond Valley). The Collaborative has agreed by consensus to work with the Nature Conservancy to apply for funds to explore the use of a market approach in the Harney Valley. The grant application to the Bureau of Reclamation has been successful and a market approach will be explored in 2020. A matching grant application to the Oregon Water Resources Department has been submitted and expected response should come in the spring of 2020.

**If a shares approach is determined to be feasible, the approach could be used to target a reduction in agricultural groundwater use to meet a recommended target over a specified time frame.**

### Strategies to Improve Information on Groundwater Use

Two strategies to develop better information on groundwater use and to inform users of how to manage more effectively were identified; 1) to encourage on-farm weather stations, and 2) to develop uniform measuring and reporting devices.

Discussion of on-farm weather information devices led to a conversation about the efforts of OWRD to establish an AgriMet station in the basin. OWRD has been working with the Bureau of Reclamation (BOR) to establish a station in the Harney Basin. AgriMet is an automatic agricultural weather station that connects to a regional satellite telemetry network. The network is a series of automated data collection platforms that provide information necessary for near-real-time management of water operations. As a subset of the overall network, this agricultural network, dedicated to crop water use modeling and other agricultural applications, has been identified as AgriMet. It was announced that a station was established in the Harney Basin in 2019. An additional recommendation was to install on-farm weather stations to provide irrigators with real-time weather data that could help to minimize irrigation water use.

Lack of uniform measurement of groundwater use has made management of groundwater difficult. Any efforts to increase efficiency of management will require measurement of use. If a market approach (shares) is determined to be appropriate for the Harney Basin, uniform measurement information will be critical for such a process to work. Uniform measurement of groundwater use will help both the state and local irrigators manage the use of groundwater for irrigation.

The Collaborative has supported exploring funding sources to help offset the cost of establishing uniform measurement devices. The lack of the ability to transmit data throughout the basin has raised questions about how best to implement a real-time measurement and reporting system. There is significant additional information needed before a conclusion and action can be taken to develop a recommended approach. The need is clear but the means is not.

**Measurement and reporting alone will not result in decreased groundwater use, however it will provide information that can be used for management and regulation.**

## Strategies for Improved Groundwater Management

The Collaborative has explored ideas of protecting groundwater in-situ and has explored the legal complexities of the issue with information from the Nature Conservancy and the University of Oregon Law School.

The consideration of a water management organization has been raised by irrigators in the basin. While these discussions have been outside the Collaborative, the issue is of interest and related to the idea of voluntary agreements (see above), water markets or other groundwater management actions. The role of an organization and considerations of what it could be and what it's authorities could or should be have not been discussed.

The focus on management tools outside of regulation by priority date are important to many of the people of the basin but will depend on the development of the tools to be used.

**The Collaborative has not reviewed the strategies for improved groundwater management; however, it is clear that improved data management by the Oregon Water Resources Department could help with both public understanding and groundwater management.**

## Strategies for Protecting Domestic Well Users

The Harney County Watershed Council has successfully acquired a grant to complete a basin wide survey of domestic water users to evaluate the nature and distribution of domestic well water issues. The survey has been taken and draft results are available. The information from the survey indicate that nearly 90% of domestic wells provide sufficient water for users needs yet some 30% have experienced declines, mostly seasonally. Nearly 40% of domestic well owners responding have made some adjustment to their wells in the last 10 years. Nearly half of the respondents have tested their wells for water quality concerns and more than a quarter of respondents have taken some action to treat their domestic water for use. Domestic well users in the Harney-Malheur Lakes basin are more likely to have both water availability (problems with well declines) or water quality issues than in the other subbasins. This information will help to identify areas of focus to assist in the assurance of domestic water availability.

In an effort to find alternatives for domestic well users, Harney County Court has obtained funding to complete an engineering evaluation of the opportunities and relative costs for different ways to provide assured domestic water supplies in the County. Preliminary results have identified a limited number of alternatives and limits to those options due to the dispersed nature of residences in the basin. Further exploration of the potential for a community well for the Crane area is ongoing.

Municipal water providers for Burns and Hines have not expressed concern about water supply. Hines is currently embarking on a program to provide a new 800,000 gallon reservoir, repair to the existing reservoir and repair some distribution lines.

## Developing a Domestic Well remediation Fund

Following the example of an effort in Wasco County to address comingling of aquifers and decline in water levels of more than 150 feet, a strategy to develop a domestic well remediation fund was proposed and discussed. The Wasco County (Mosier area) fund came from a one-time legislative appropriation of \$1,000,000 to Oregon Water Resources Department to develop an assessment and

administer a program that was structured to pay up to 90% of the costs of remediating problem wells. A similar approach could be established to provide short-term remediation for domestic wells affected by over allocation of groundwater. There was general support for the strategy, however a concern was voiced about asking for public funds to solve a local problem.

**Development of a domestic well remediation fund could provide short-term assistance to the relatively small number of people facing loss of usable domestic water and potential loss of property value.**

## Ongoing Planning

The Collaborative has focused on strategies that would reduce agricultural groundwater use through 2019. Continuing evaluation of strategies to address water management, domestic well issues, improving standards and ensuring compliance, and collecting additional information will be conducted in early 2020. Following the completion of exploration of strategies to address groundwater conditions, the Collaborative will take up the consideration of strategies to address surface and surface-groundwater critical water resource issues.

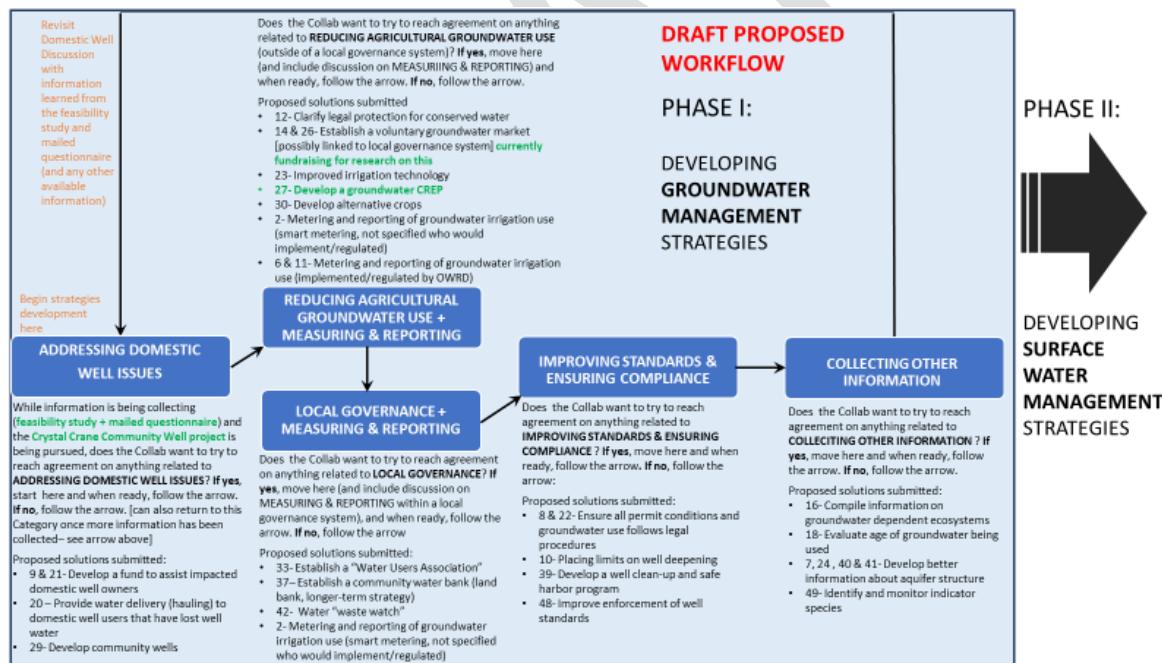


Figure 6: Workflow Diagram for Harney Basin Community-Based Integrated Water Resource Plan

## State Regulation

In 2016 the Oregon Water Resource Commission adopted administrative rules (OAR 690-512-0020 (Attachment A) that designated the Greater Harney Valley Groundwater Area of Concern and

defined the procedures for the Oregon Water Resource Department to follow in administering groundwater permits in that area. The rules in section 12 specify that a Rules Advisory Committee will be convened within a year following publication of the joint OWRD/USGS groundwater study. Since that study is being prepared at this time and should be published in the fall of 2020, the administrative rules governing groundwater in the Harney basin are likely to change in the coming years. The Process and schedule for ongoing activities as seen by the Oregon Water Resources Department are shown in Attachment B.

With the documented rapid decline of the groundwater table in Weaver Springs, Crane and Highway 20 areas, there will likely be additional effort on the part of the state to ensure these declines are addressed in the revised rules.

## The Role of the Community-Based Planning in Harney County

The question arises that if OWRD is going to regulate groundwater use, what is the role of the community-based planning. The Collaborative has identified tools such as the potential for a Conservation Reserve Enhancement program, Conservation Implementation Strategy, and is exploring market approaches that can be used to reduce groundwater use by applying incentives rather than through regulation alone. The community is hopeful that through voluntary agreements, incentive programs and other means the critical groundwater issues can be addressed in a manner that has the least disruption to all groundwater dependent communities (ecological, human, and economic). Finding a balance that can provide safe and assured domestic water supply, minimize the disruption to the agricultural economy of the County, and maintain or enhance groundwater dependent ecosystems is the challenge for the Collaborative. The strategies identified to date will help to address the complex challenge. The work to date has promise to achieve results that can balance the needs of the community better than through regulation alone.

## Next Steps: The Way Forward

Identifying critical challenges and developing clear solutions for managing water resources is a vital step in the Basin's path forward. The ongoing economic prosperity of this unique region, the health of its environment and wildlife habitat all depend upon implementation of the Plan's recommended strategies to protect and optimize the use of the Basin's groundwater.

Benefits from successful implementation of this Plan also extend beyond the Basin. Agriculture in the Basin is a dominant economic and cultural value, while the ecological resources of the Basin have national, and international importance. Financial support from the State of Oregon, federal

agencies, and private and public sources will be necessary to implement the action items outlined in the Plan.

As the Harney Valley community address the obstacles to protecting and enhancing the Basin's water values, new challenges will arise. For this reason, the Plan is dynamic and will adapt as future opportunities and constraints present themselves. The Plan will be updated periodically as additional information is collected, new focus areas are identified and new issues emerge. The primary goal of the Collaborative is to create a sustainable water future. The actions identified in this Plan for responsible stewardship of the Basin's water resources will help achieve that future and aim to preserve a balance of water uses and needs that will benefit generations to come.

The Harney Basin has faced economic disruption in the past. With the closure of the lumber mill in 1980 and the loss of rail connection in the floods of the mid 1980's that foreclosed reopening of the mill, the community felt the acute and severe loss of economic support. The community is facing a similar situation with the potential for severe effects of large-scale reduction in groundwater irrigation through regulation. The opportunity for the Harney Basin community to participate more fully in the development of a transition to use less groundwater irrigation is one goal of place-based integrated water resource planning. Exploring ways to engage the community fully in the effort to transform the agricultural economy to a more sustainable way to use groundwater is the challenge ahead.

## Chapter 690

### Division 512

#### MALHEUR LAKE BASIN PROGRAM

**690-512-0020****Groundwater use in the Greater Harney Valley Groundwater Area of Concern**

(1) The Greater Harney Valley Groundwater Area of Concern (GHVGAC) is established to ensure that groundwater in the GHVGAC is appropriated within the capacity of the resource and that new appropriations of groundwater assure the maintenance of reasonably stable groundwater levels and prevent depletion of the groundwater resource. Current data, comprising substantial evidence, indicate that groundwater levels are declining in areas of the GHVGAC. Additional allocation of groundwater within the GHVGAC may exacerbate these declines. A comparison between estimated annual recharge and previously allocated groundwater volumes indicates that groundwater is fully allocated in some areas of the basin. Subject to further study, the Department will not allocate additional groundwater permits unless the permit is issued consistent with OAR 690-512 rules. For the purpose of this rule, the GHVGAC is as described and shown in Exhibit 1.

(2) Except as provided in subsections (4), (5), (6), and (7) of this section, groundwater in the GHVGAC is classified only for exempt groundwater uses as specified in ORS 537.545.

(3) In processing applications to appropriate and use groundwater within the GHVGAC, the Department may not find that the proposed use will ensure the preservation of the public welfare, safety and health unless the use is classified, and unless water is available for the proposed new use as described in subsections (4), (5), (6), and (7) of this section.

(4) Voluntary Cancellations for Groundwater Availability. Notwithstanding OAR 690-300-0010(57) and except for exempt groundwater uses, for the purposes of processing applications pursuant to ORS 537.621 and OAR 690-310-0130, an applicant who agrees to application of these rules to a completed pending application may request the Department find that groundwater is available for the proposed use(s) in the GHVGAC consistent with this subsection. In reviewing an application for a permit to appropriate groundwater, the Department may find that groundwater is available if:

(a) The proposed use does not have the potential for substantial interference as determined pursuant to OAR 690-009; and,

(b) The total rate and duty of the proposed groundwater use is offset by the contemporaneous and voluntary cancellation or partial cancellation of an existing primary groundwater certificate or primary permit within the GHVGAC as provided in subsection (c) of this section; and,

(c) The primary groundwater certificate or primary groundwater permit that is voluntarily cancelled or partially cancelled is not subject to forfeiture or cancellation for non-use and is equal or greater in rate, duty and acreage as compared to the rate, duty and acreage of the new appropriation sought; and,

(d) The application was pending and the groundwater right being cancelled was subject to transfer, permit amendment, or has a pending application for an extension of time that is subsequently approved, as of April 15, 2016; and the applicant has provided confirmed offset water to the Department by April 15, 2019.

(e) Notwithstanding subsection (2) of this section, if groundwater is available for a proposed new use consistent with this subsection and if the use is the type of use described in OAR 690-512-0010(1), the proposed use will be considered a classified use.

(5) Any primary permits or primary certificates that are voluntarily cancelled or partially cancelled within the GHVGAC that have not been specifically identified as offset for an application pending before the Department under section (4) will be made available for offset for pending applications under section (4) on the basis of priority determined by the tentative priority date.

(6) **Groundwater Availability Where Voluntary Cancellation is not Sought.** If an applicant does not elect to pursue processing of a pending groundwater application under subsection (4) of this section, and the well or wells associated with the pending application are located in the Northwest or South sub-areas of the GHVGAC, the applicant may request the Department to process a pending application pursuant to this subsection. These two sub-area locations are shown on Exhibit 1, and are designated based on limited groundwater level trend information. For the purposes of this subsection and processing applications pursuant to ORS 537.621 and OAR 690-310-0130, and notwithstanding OAR 690-300-0010(57), groundwater is available for appropriation to new proposed uses on pending applications in these sub-areas in the GHVGAC, if:

(a) The proposed use does not have the potential for substantial interference pursuant to OAR 690-009;

(b) Since April 15, 2016, there has not been a total of 7,600 acre feet of irrigation permits issued in the Northwest sub-area, and 1,660 acre feet of irrigation permits in the South sub-area. For the purposes of allocating water under this subsection, applications will be processed in the order they are received by the Department.

(c) Permits issued according to this subsection shall be conditioned to prohibit use of water if, based on the Department's Harney Basin groundwater study, the Department cannot make a finding that the groundwater use is within the capacity of the resource, is not over appropriated, or will not cause injury to senior water users. The permit holder may provide offset water in the manner described in subsection (4) within three years of the final report being issued. The Department shall make the findings described in this subsection for each permit issued under Section 6 within one year of completing the Harney Basin groundwater study. The Department's findings described in this subsection shall include site-specific substantial evidence.

(d) The application was pending as of April 15, 2016, and the applicant confirms to the Department in writing, within 6 months of April 15, 2016, that they wish for their permit to be issued under section (6) of these rules.

(e) If groundwater is available for a proposed new use consistent with this subsection and if the use is the type of use described in OAR 690-512-0010(1), the proposed use will be considered a classified use.

(7) Each permit issued according to subsections (4) and (6) must be conditioned as follows:

(a) Include a requirement for construction of a dedicated observation well at a location determined by the Department, to the same depth as the production well, within 6 months of permit issuance, or the permit may be cancelled. This 6 month deadline shall not be extended. Failure to construct a dedicated observation well within 6 months of permit issuance shall cause the watermaster to regulate off any future use under the permit.

(b) All groundwater pumping authorized by this permit is prohibited if March groundwater levels indicate 18 feet or more of decline has occurred, as measured in the observation well or any authorized irrigation well, when compared to the first March measurement. Subsequent groundwater pumping may occur with Department approval during the year(s) a subsequent March groundwater level measurement indicates the groundwater level at the observation well has recovered to less than 18 feet of decline when compared to the first March measurement.

(c) Notwithstanding OAR 690-008-0001(8b and 8c), all permits issued in the GHVGAC must include the following condition: Any well authorized under this permit shall be located more than 1,320 feet from any existing senior exempt, permitted or certificated well(s) not owned by the permit holder. Any well authorized

on this permit, when located between 1,320 feet and 2,640 feet of any senior exempt, permitted or certificated well not owned by the permit holder, shall immediately cease pumping groundwater if Department staff, during investigation of a complaint, determine 10 feet or more of measured groundwater level interference related to the authorized well use has occurred in the complainant's senior exempt, permitted or certificated well.

(8) The Department shall keep an accounting, and track the status of, existing groundwater permits, certificates and groundwater applications pending within the GHVGAC as of April 15, 2016. This information shall be provided to any person upon request. Updated information shall also be kept and made available at the Watermaster's office in Burns.

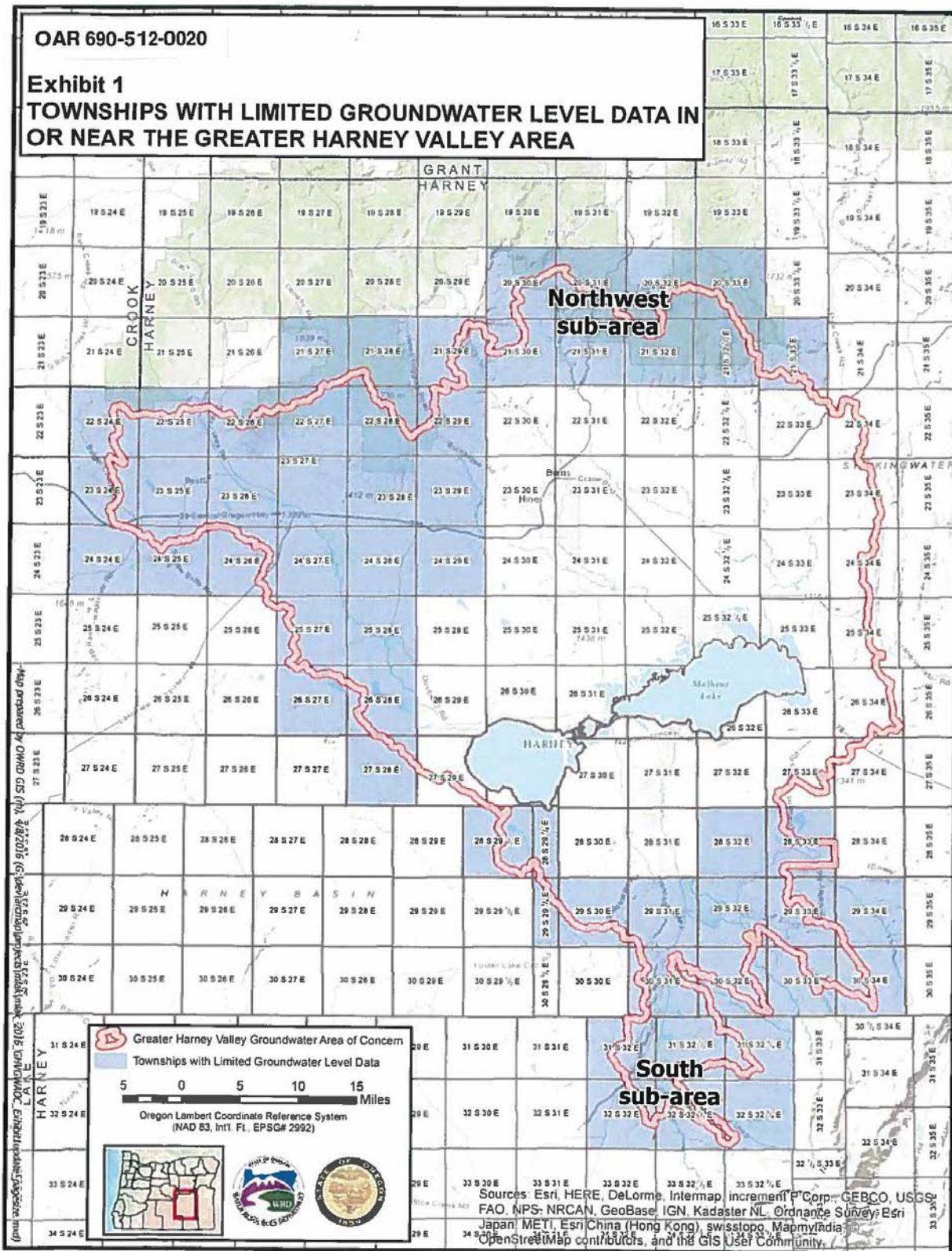
(9) The Department shall report annually on the implementation of these rules to the Water Resources Commission early each calendar year beginning in 2017. The Commission may amend these rules to adjust the boundaries of the GHVGAC, or amend or repeal these rules. The Department's report to the Commission shall include at least the following information:

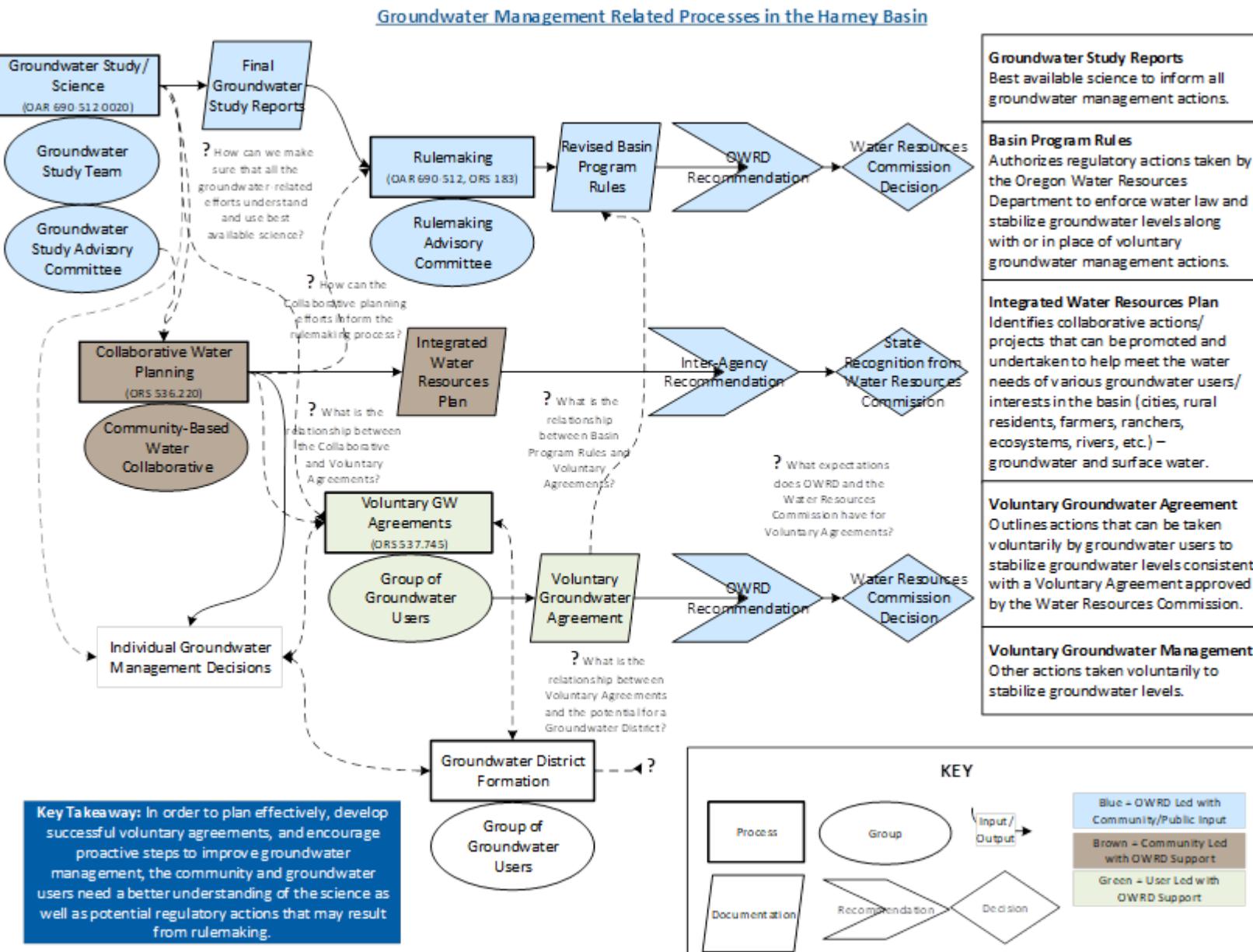
- (a) New groundwater permits issued within the GHVGAC after April 15, 2016;
- (b) An update on groundwater level data, and the groundwater study to assist the Department and Commission in understanding the aquifer system in the study area, and;
- (c) Staff recommendations, if any, regarding whether this section of rules should be amended or repealed.

(10) The Department study referenced in 690-512-0020(1) shall be designed to collect substantial data on the groundwater flow system in the GHVGAC. The final report containing study findings shall be scientifically peer-reviewed. The study is planned to be completed by the end of the year 2020.

(11) The Department shall plan and conduct the study in coordination with a local Groundwater Study Advisory Committee (SAC) to be jointly appointed by the Department and the Harney County Court. The committee may include, but not be limited to: local irrigators, well drillers, irrigation/pump contractors, members of the scientific community, a representative of the Harney County Court, conservation and instream interests, and interested members of the public. The Department will work with the SAC and individual water users to encourage the collection and use of hydrogeologic data. As part of the study process, the Department shall review and consider relevant data provided by or through the Groundwater SAC. The Department shall report quarterly to the Groundwater SAC to provide updates on the study status, data analyses and preliminary findings, and shall collaborate with the SAC with regard to actions and decisions that may result from the study. The Department shall provide the SAC a draft of the groundwater study report for review and comment prior to publishing the final report. The final groundwater study report shall be peer-reviewed.

(12) Within 1 year after the Groundwater Study discussed in subsection 11 has been published by the Department, the Department will convene a Rules Advisory Committee to explore whether there is a need for updates or changes to these rules. Members of the Groundwater Study Advisory Committee will be invited to participate on the Rules Advisory Committee.





Pre-2020	2020	2021	2022	2023
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">Groundwater Study/ Science</div> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;">Groundwater Study Advisory Committee</div> </div>	<div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;">Final Groundwater Study Reports</div>			Ongoing data collection→
		<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">Rulemaking</div> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;">Rulemaking Advisory Committee</div> </div>	Revised Basin Program Rules	Additional rulemaking (as needed and as resources are available)→
		<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;">Collaborative Water Planning</div> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;">Community-Based Water Collaborative</div> </div>		<div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;">Integrated Water Resources Plan</div>
	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;">Voluntary Groundwater Agreements</div> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;">Group of Groundwater Users</div> </div>		<div style="border: 1px solid black; border-radius: 10px; padding: 5px; text-align: center;">Voluntary Groundwater Agreement</div>	→?