Priority Regulation

1. *How will the State Engineer determine the priority date at which water rights will be cut back? [Cedar City]*

The priority date will be set such that depletion from actual well withdrawals and use do not exceed safe yield. Groundwater levels will be monitored, and as in the Beryl-Enterprise area, the priority cut will be determined based on the reductions necessary to get the water levels to stabilize on an incremental basis.

2. *Will the priority date be cut down all the way to safe yield, or will additional water rights be "left on the books" to account for water rights not being used? [Cedar City]*
3. *If water rights are left on the books, how can it be assured that safe yield will be protected in the future when water rights are put back into use? [Cedar City]*

Priority distribution is not forfeiture. No rights will be removed from the records of the state engineer as a result of priority distribution.

If rights are regulated by priority, water will be distributed first to the senior priority rights. To ensure the maximum amount of available water is put to beneficial use, if any of these senior priority rights are not used, the next rights in priority will be allowed to divert the unused water.

Water use will need to be reported and verified. If unused rights that have not been declared forfeited by the judiciary come back into use, the priority date at which water rights will be cut back will have to be adjusted so average annual well withdrawals stay within safe yield.

Managing on the basis of safe yield is an ongoing monitoring and management activity rather than a one-time action.

4. *How many rights are currently being held in non-use? [Cedar City]*

77 applications for nonuse were active as of 5/4/2016. The diversion and depletion estimates for these rights sum to about 2,800 diversion and 2,200 acre-feet depletion (including 1,400 acre-feet for mining diversion).

The fact that a nonuse application has been approved does not necessarily mean the water right is in fact not being used. Many nonuse applications are filed as contingency plans in case all or a portion of the water isn't used in the future. These is no requirement water not be used when a nonuse application is approved.

Regulating North and South Sub-Basins Separately

5. *What is the safe yield of the sub-basins south of SR-56 and north of SR-56? Will there be an attempt made to define the safe yield of each sub-basin? [Cedar City]*

6. *What is the amount of authorized diversions and depletion in the sub-basins south of SR-56 and north of SR-56? [Cedar City]*
7. *Will there be a separate list of water rights generated for the south side and the north side of SR-56? [Cedar City]*
8. *If it is determined that the priority date needs to be cut back, will there be different cutback dates for the north and south sides of SR-56? [Cedar City]*

It has not yet been determined whether the management plan will divide the basin into a northern and southern sub-basin and if that boundary would remain along SR-56. If the sub-basins are regulated separately, then yes, the safe yield and water rights in each sub-basin would be determined and a different priority cut would be used. This data is being compiled and analyzed and will be made available when it is completed.

9. *Would the State Engineer look at the possibility of relaxing the requirement of keeping water rights on one side of the SR-56 divide – i.e., allow rights to be moved from north to south as part of the groundwater management plan? [Cedar City]*

If the basin was to be regulated as one (undivided), yes, it's possible that the restriction could be removed or modified in some way to allow water rights to be moved out of (but not necessarily into) localized areas of declines.

Regulating Localized Areas of Decline

10. *How will the localized critical areas (i.e. Quichapa and Enoch) be considered in the groundwater management plan? [Cedar City]*
11. *What is the safe yield in the localized critical areas of Quichapa and Enoch? Will there be an attempt to define a boundary for these critical areas and determine a safe yield in these critical areas? [Cedar City]*

This has not yet been determined. Boundary lines simplify administrative processes, but are difficult to define. We will be analyzing in greater detail these critical areas.

Gradual Implementation / Economic Impacts

12. *The potential for significant economic loss from surface fissuring to both public infrastructure and private property touches a much broader class then merely water right owners. Therefore, the Groundwater Management Plan (GMP) process for the Aquifer must carefully consider adopting a much shorter implementation timeframe than the neighboring Beryl Junction Ground Water Management Plan. [R. Scott Wilson]*

13. Will there be an overall economic analysis done to show the impacts of the proposed implementation strategies? [Cedar City]

73-5-15 (4)(b) states: "When adopting a groundwater management plan for a critical management area, the state engineer shall, based on economic and other impacts to an individual water user or a local community caused by the implementation of safe yield limits on withdrawals, allow gradual implementation of the groundwater management plan."

We may allow a gradual implementation of the plan. We don't expect potential economic impacts to be the only factor determining the proper timeframe for this gradual implementation. Other issues, perhaps including how long it would take to complete artificial recharge and other water projects, will also be considered.

Earth fissures and subsidence might be greater the longer the full implementation of the management plan is delayed. The management plan may implement policies related to the Enoch earth fissures immediately and allow for gradual implementation of policies that address the basin as a whole.

14. Will there be an analysis done on tax revenue generated from municipal water rights and the effects of a groundwater management plan on tax revenue (property, income, and sales tax revenues)? [Cedar City]

The Division is not planning to complete a rigorous economic analysis related to specific uses of water.

15. Will there be an economic analysis done to determine the economic benefit of water in Cedar Valley – i.e., economic benefit of municipal vs. agricultural use? [Cedar City]

No decisions have been made regarding an economic analysis. However, if an economic analysis is performed the purpose would not be to evaluate one water use against another, but to decide based on economics how quickly the plan should be adopted.

Irrigation vs. Municipal Use

16. Will there be any consideration of the nature of use when determining the water rights needed to be cut back to meet the safe yield? If not, what recourse is there for municipalities to maintain a level of service necessary to meet public health requirements, supply fire protection, and maintain economic stability? [Cedar City]

A water right's priority date is the only criteria the State Engineer is authorized to consider when regulating diversions under a groundwater management plan. We hope a gradual implementation of the management plan will allow the municipalities to make the necessary arrangements to meet their water needs. Additionally, water users can agree to a voluntary arrangement for managing withdrawals.

17. What incentives are there for agriculture users to improve their irrigation practices and reduce their water use? [Cedar City]

Irrigators with efficient irrigation systems can maximize the yield of their crops and minimize the cost of pumping. Concerns regarding irrigation inefficiencies often don't take into account excess irrigation water that returns to the aquifer is not truly wasted.

18. What consideration will be made as part of the groundwater management plan to account for conversion from agricultural to municipal use over time? [Cedar City]

Water users will continue to be allowed to buy and sell water rights and apply to change their nature of use. When changing from irrigation to municipal use, the historic depletion will be maintained. An accounting of these changes in use is part of the State Engineer's record.

Accuracy of Current Estimates

19. What is the safe yield of the overall basin? What methodology will be used to determine safe yield? Will an independent consulting engineer (non-biased) be retained to review the safe yield calculations to ensure accuracy? [Cedar City]

As presented in the public meeting, we currently believe safe yield is between 21,000 and 24,000 acre-feet. The estimates were made using the USGS flow budget, USGS groundwater model, USGS chemical mass balance analysis, and our own storage change analysis.

No, we are not planning to contract with an independent consulting engineer. The recent USGS study represents independent professional work. As additional information becomes available – including how the aquifer responds to any future regulation, or results from independent analyses or studies brought about by any interested parties – the safe yield estimate may be revised.

20. What is the total amount of authorized diversions and depletions under currently valid appropriations in the overall basin? [Cedar City]

About 76,000 acre-feet of diversion and 50,000 acre-feet of depletion have been approved or perfected.

These figures exceed estimates of use actually occurring because:

- Some rights have not been fully developed, esp. municipal rights
- Some groundwater rights are supplemental to surface rights
- Some rights may be fully used some years but not each year
- Some rights may not have been fully used for a long time
- The actual use figures are also estimates that are not exact

21. Can the estimate of current depletion be defined more accurately? [Cedar City]

22. What can be done to get a more accurate measure of diversion and depletion uses in the basin? [Cedar City]

Yes, we are considering requiring some form of reporting for all water users who divert appreciable quantities.

Surface Rights

23. Does the calculation of the safe yield for the aquifer include surface rights that are being used? What if more surface rights start to be used and begin to have an effect on the recharge of the aquifer? [Cedar City]

The safe yield includes the amount of surface water that seeps into the aquifer along streams, canals, and fields irrigated with surface water. If the manner in which this surface water is used or conveyed changes and impacts the recharge to the aquifer, the safe yield will need to be updated.

The safe yield does not include the total amount of surface water available in the basin because we are not planning to manage surface and groundwater rights conjunctively.

24. How many underground water rights in the basin are supplemental to surface water rights? What effect would stricter enforcement of existing rules on supplemental water rights have on the groundwater management plan? [Cedar City]

About 5,000 acres have both surface and groundwater irrigation rights. A large portion of these rights were originally approved to be irrigated with surface water but subsequently approved to be supplemented with groundwater during years when surface flows were unavailable or constrained by prior rights. It is our understanding that many water users with supplemental groundwater have an incentive to divert groundwater regardless of whether surface water is available to them. This probably leads to inefficient use of surface water. More clarity of these supplemental water rights is needed before an analysis of stricter rules can be determined.

25. Will the State Engineer look at making cuts in surface or spring water rights? [Cedar City]

Surface and mountain spring water rights are currently regulated by the Coal Creek Commissioner under the direction of the State Engineer. It is anticipated that these surface and spring rights will continue to be regulated separately from the groundwater rights.

Import Water

26. If additional outside water is introduced into Cedar Valley, how will this affect the Groundwater Management Plan? Will the safe yield be increased to account for the additional water coming into the valley? [Cedar City]

If water is imported into the valley in the future then the importer has the right to fully deplete the imported water. The use of this imported water would be allowed independent of any priority regulation or voluntary agreement because the source of import water, by definition, is completely separate.

Potential Development of Bedrock Aquifers in Nearby Mountain Areas

27. *Exploration of bedrock aquifers in the mountains of Iron County could result in the identification of more renewable water than is currently pumped ("over drafted") from the sand and gravel aquifers under Cedar Valley. Average annual precipitation records show that water production from the bedrock aquifers in the mountainous areas of the county can be sustained without damaging existing flows from the springs and creeks now tapped for use. [Gary Player]*
28. *Is there a possibility that the State would consider appropriating new water rights if it was found that water contained in bedrock aquifers does not contribute to the valley aquifer? [Cedar City]*

The State Engineer wants to encourage new groundwater development so long as it does not take away water from existing users. Mr. Player's exploration proposals and his previous reports to Cedar City have been reviewed and compared with findings from other hydrogeologic studies. Two regions have been proposed for exploration: the mountains west of Cedar City and the mountains east of Cedar City. At this time, the State Engineer believes the western mountain bedrock aquifers are hydrologically connected to the valley aquifer and water in the eastern mountain bedrock discharges to Coal Creek or flows southeast and to the Virgin River. Since each of these sources is considered to be fully appropriated, further development would cause impairment to other water rights. To alleviate overdrafts in the basin water rights would need to be purchased and transferred to these locations prior to diverting from these sources.