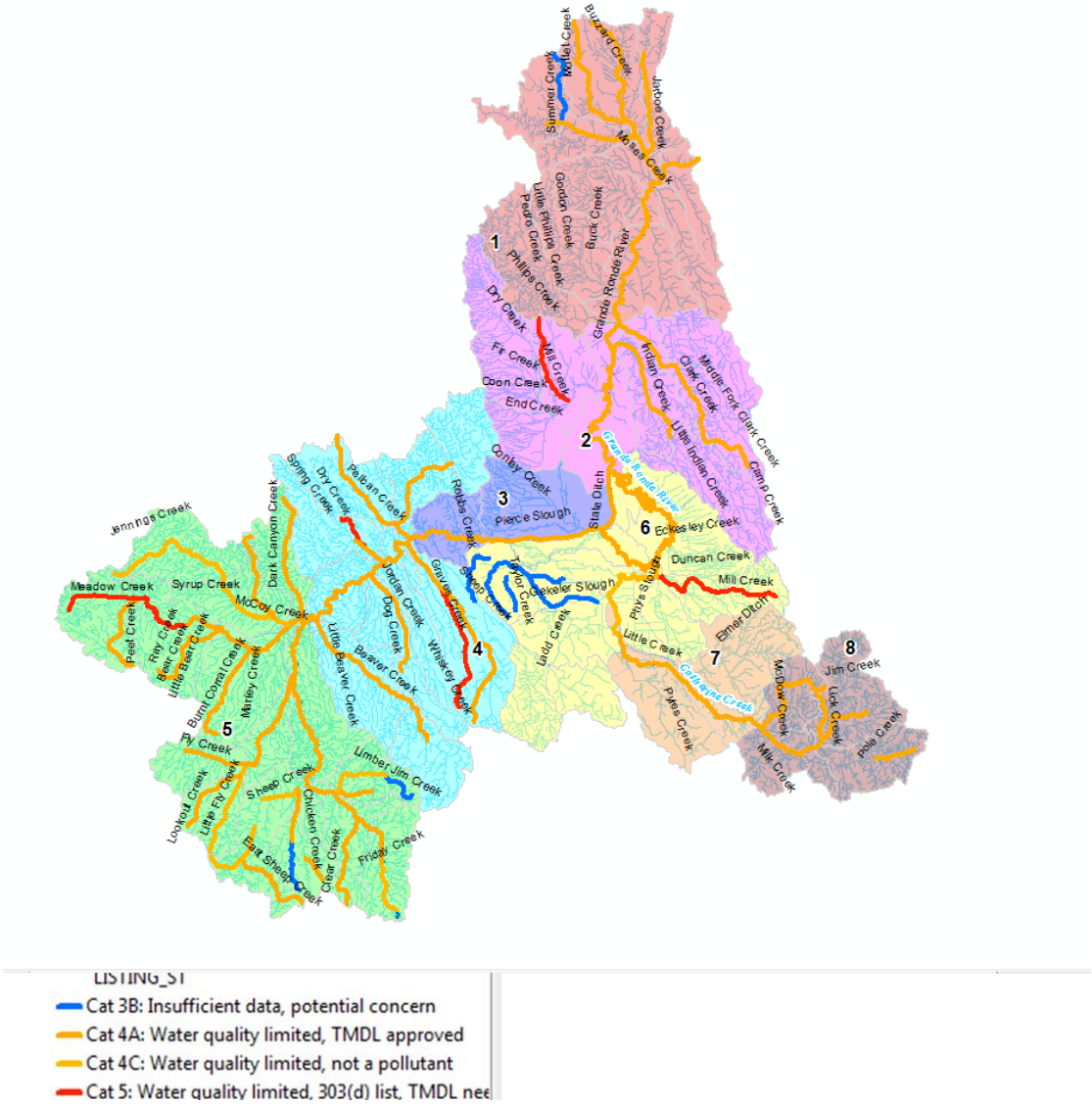
Comments from 4/12 - Draft Responses

Introduction

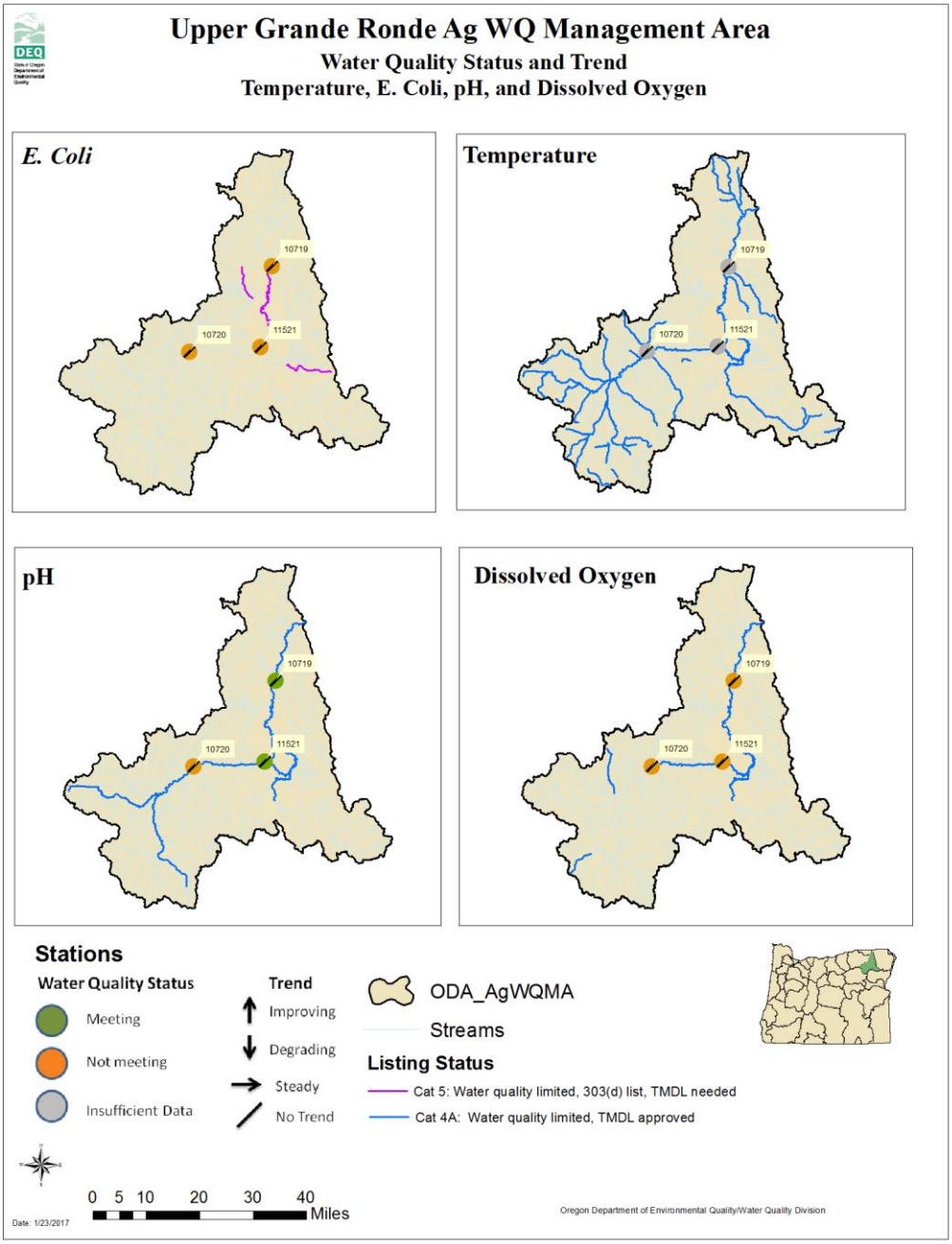
The following document covers the proposed path forward and responds to questions and comments from the April 12, 2017, Stakeholder Meeting. Please review this document prior to the June 21, 2017, Stakeholder Meeting. Questions regarding any topics on this list that you feel need to be addressed further are welcomed. Also, please provide ideas on how you would like to see them better addressed.

Water Quality Comments

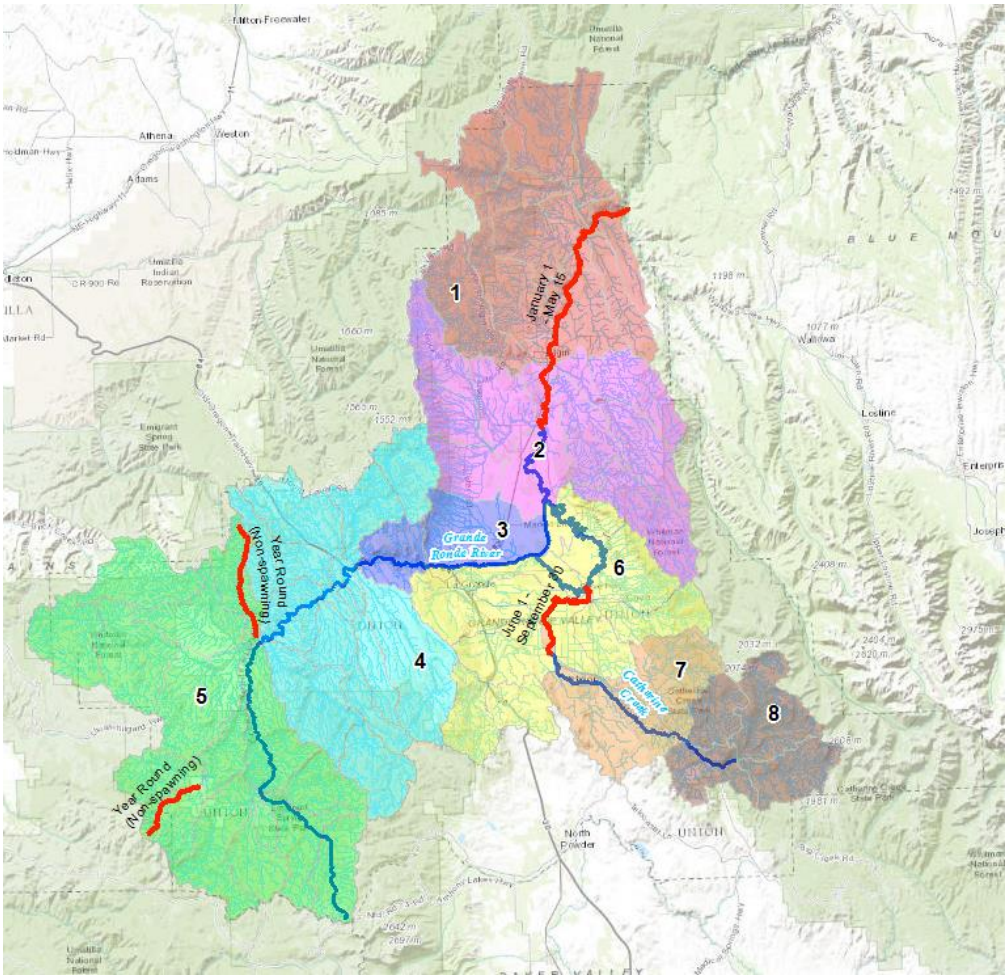
- ***Comment: Provide 303(d) water quality information on a map***
  Response: The following maps show water quality information. The map below shows waterbodies listed for any parameter, any time of the year.



The following maps (from Ag WQ report, 2017) show where individual paramters are listed (no time frame information).



The map below shows that dissolved oxygen (DO) levels were present that impaired a beneficial use in each of the locations on the map during at least one measuring period (greater than 10 percent of samples exceeded the standard) during the date range shown on the map. The Oregon Department of Environmental Quality (DEQ) measures DO throughout the year. This data is sourced from data collected from the DEQ for their water quality assessment reports. Maps will be made for each parameter.



In addition, to further address the timing questions, charts like the one below from the Ag Water Quality Management Area Plan Review, will be developed. This chart shows timing of E. coli exceedances over a 16 year period.

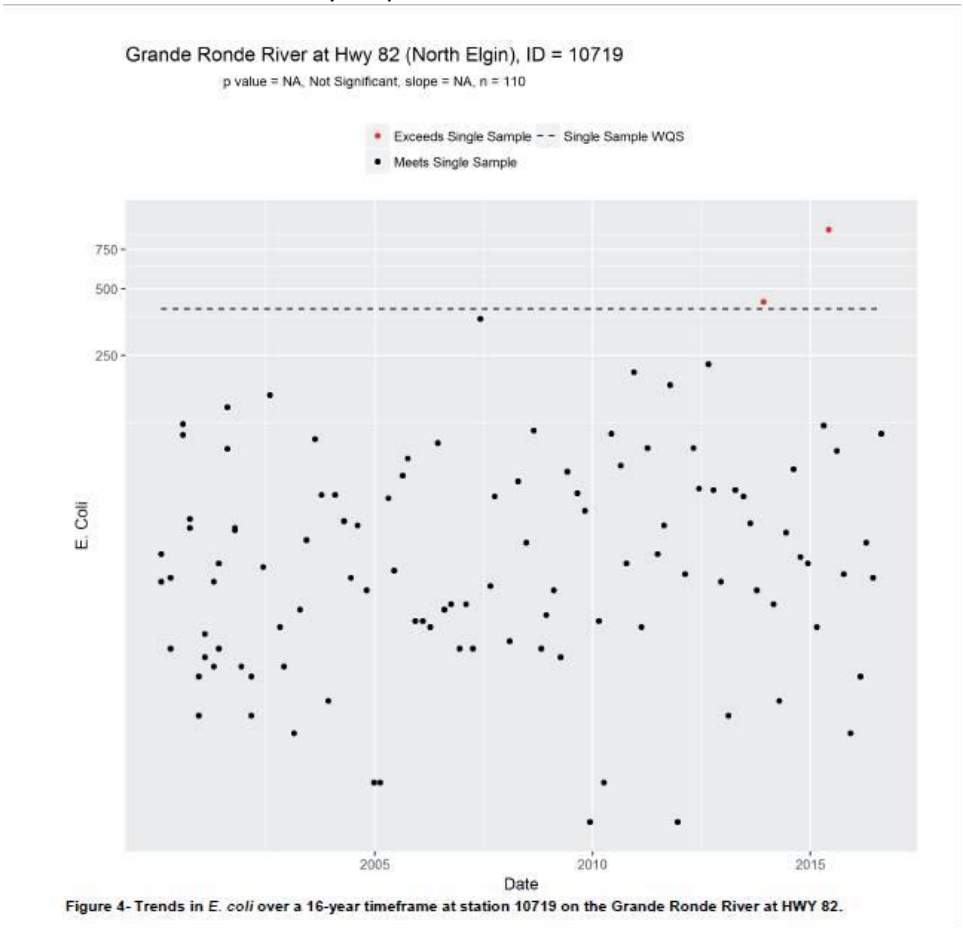


Figure 4- Trends in *E. coli* over a 16-year timeframe at station 10719 on the Grande Ronde River at HWY 82.

- ***Comment: Beneficial use is demand - move demand to Step 3.***
  Response: Beneficial use is specifically listed in Step 2 report requirements by Oregon Water Resources Department (OWRD)**.** We plan to include it, but will try to use it only in terms of describing the quality of water and, as described below, can consider not showing some of the uses without criteria.

  Beneficial use is a term from an administrative rule, "Water quality standards are established to protect beneficial uses of the State's waters. Beneficial uses are designated for each water of the state, many for all waters in a basin, in the Oregon Administrative Rules for water quality standards. When a water quality standard is established, the first step is to identify the beneficial uses sensitive to the parameter. Then criteria are established based on the levels needed to protect the sensitive beneficial uses. For example, the uses typically most sensitive to dissolved oxygen are fish and aquatic life. Fish and other aquatic organisms need an adequate supply of oxygen in the water to be healthy and productive. In this case, the criteria identify minimal amounts of dissolved oxygen that need to be in the water to protect the fish. In other cases, as with many of the toxic pollutants, the criteria may identify the maximum amount that may be in the water without risk to the aquatic biota or to human health.

For other parameters, such as bacteria or some toxic compounds, human health is the most sensitive beneficial use." (https://www.oregon.gov/deq/wq/Pages/WQ-Standards-Uses.aspx)

These are the required elements of Step 2 from the place-based planning guidelines:

Step 2: Characterize Water Resources, Water Quality, & Ecological Issues

Describe the Place

- Economic, social, cultural characteristics
- Unique features or attributes
- Physical and landscape characteristics:
  - Major rivers & tributaries
  - Aquifer systems and springs
  - Estuaries and bays
  - Reservoirs and lakes
  - Conveyance systems
  - Hydrology (rain, snow or spring fed systems)

Surface & Groundwater Quality/Quantity

- Availability
- Existing protections
- OWRD basin programs
- Beneficial uses (water quality)
- Impaired water bodies
- Groundwater management areas (water quality)
- Total maximum daily loads
- Permitted discharges

Ecological Health of the Watershed

- Key species & habitats
- Historical and current fish species
- ESA STE species; ODFW sensitive species
- Limiting factors

- ***Comment: What causes sediment impairment? Sources of data need to be labeled.***
  Response: Description in report from the DEQ. Data sources are labeled in report.
  "Sedimentation - While sediment is an essential part of healthy functioning stream systems, excessive sediment loads can have severe negative impacts on a stream ecosystem. Many fish species are adapted to high suspended sediment levels that occur for short periods of time, but longer exposure to high levels of suspended sediment can interfere with feeding behavior, damage gills, reduce available food, and reduce growth rates. Deposition and sedimentation (when sediment falls out of the water column and deposits on the streambed) can smother eggs and fry in the substrate and fill in pools within the stream channel (reducing or eliminating cold water refugia important to cold water aquatic life during periods of high water temperature). Because bacteria, nutrients and other chemical substances are often attached to sediment particles, excessive sediment loading can also increase nutrient and toxics concentrations and contribute to decreased dissolved oxygen in both the water column and the spawning gravels. A reduction in streamflow will lead to locally increased deposition and sedimentation. It will also result in an increased rate of evaporation in warm weather, which in turn can increase nutrient

and toxic concentrations in the stream. This would result in the diminution of water quality for the habitat of sensitive, threatened, or endangered fish species."

- ***Comment: Why are there flow concerns (water quality) listed in basin 7 (and others) during spring time?***
  Response: flow concerns for the DEQ are blocked areas; areas with fish passage barriers; restricted channels that occur year-round. There is no differentiation between when there is more water in the stream because the physical features of that basin are always restricted. Flow is listed for certain times because a species is using it at that time, the obstruction is always there, but the need to pass is only periodic.

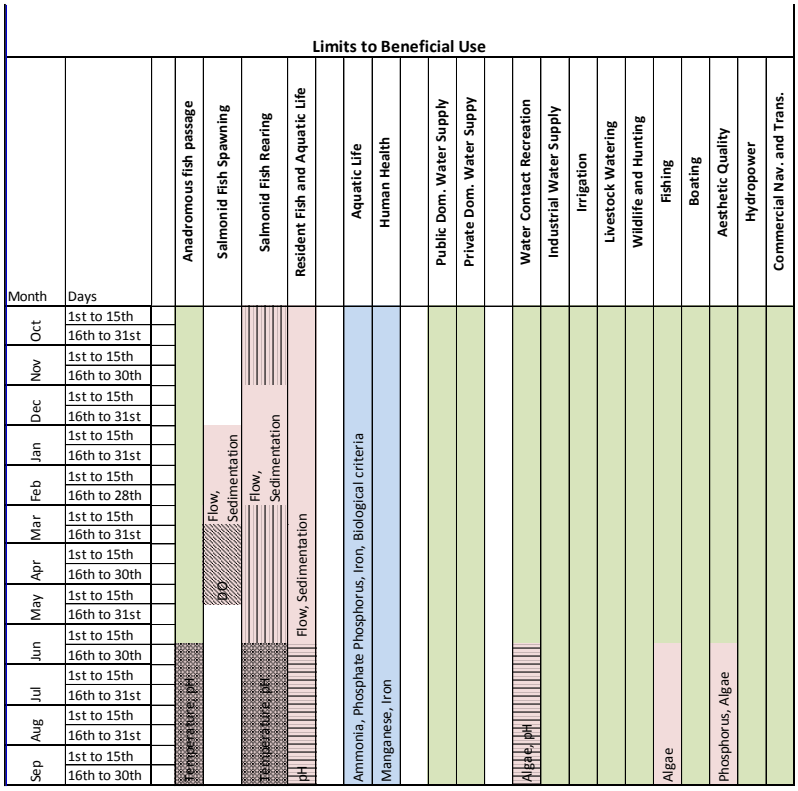
  For our report - This will be moved to the physical characteristics section. It will only be shown in the Water Quality Tables as it relates to fish passage and obstructions.

- ***Comment: What will water quality data be used for?***
  Response: This is discussed in the report - water quality data will be used to characterize watershed at a high level and understand if issues should be addressed in Step 4.

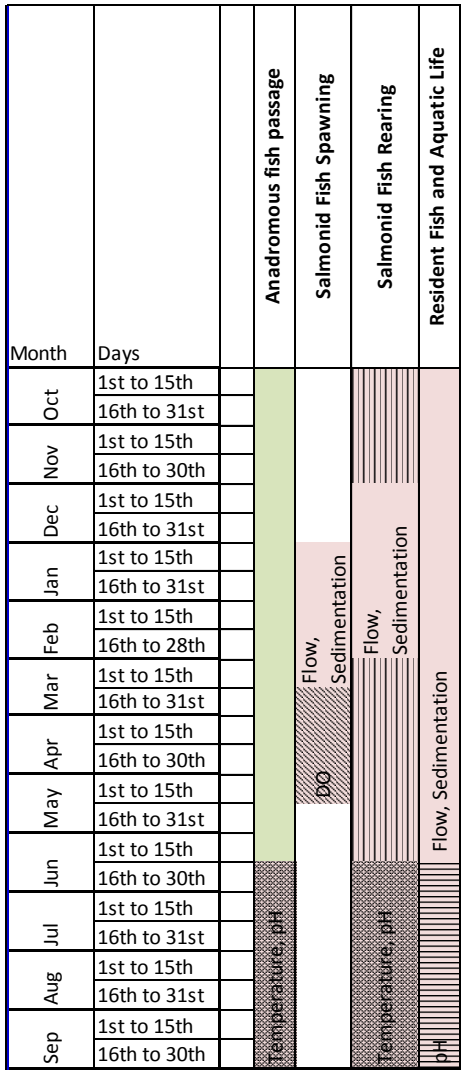
- ***Comment: There is no water quality data saying when we are unable to use water for irrigation.***
  Response: Correct, the DEQ does not have information on this in terms of quality. This water would always be able to be used for irrigation in terms of water quality. We have not received any information that shows the water quality is limited for irrigation. The description of "flow" for water quality does not describe a volume, it describes when flow is blocked by fish passage barriers, etc. This does not restrict agriculture use as a beneficial use of water. A table showing irrigation seasons under water rights law will be prepared.

- ***Comment: Most of the beneficial use data criteria seems focused on fish (what are standards for other listed uses such as boating?) Maybe only include the uses for which there are criteria. Flow should potentially be removed from the chart. Chart seems limited.***
  Response: See revised chart below. The charts focus on the most restrictive criteria for beneficial use, which is aquatic life use. The charts show other uses when the information is available. The report will describe what flow is as related to water quality in the general ecology/physical characteristics section of the report. Flow shown in the beneficial use table is only as applies to fish passage barriers (not water volume).

ORIGINAL

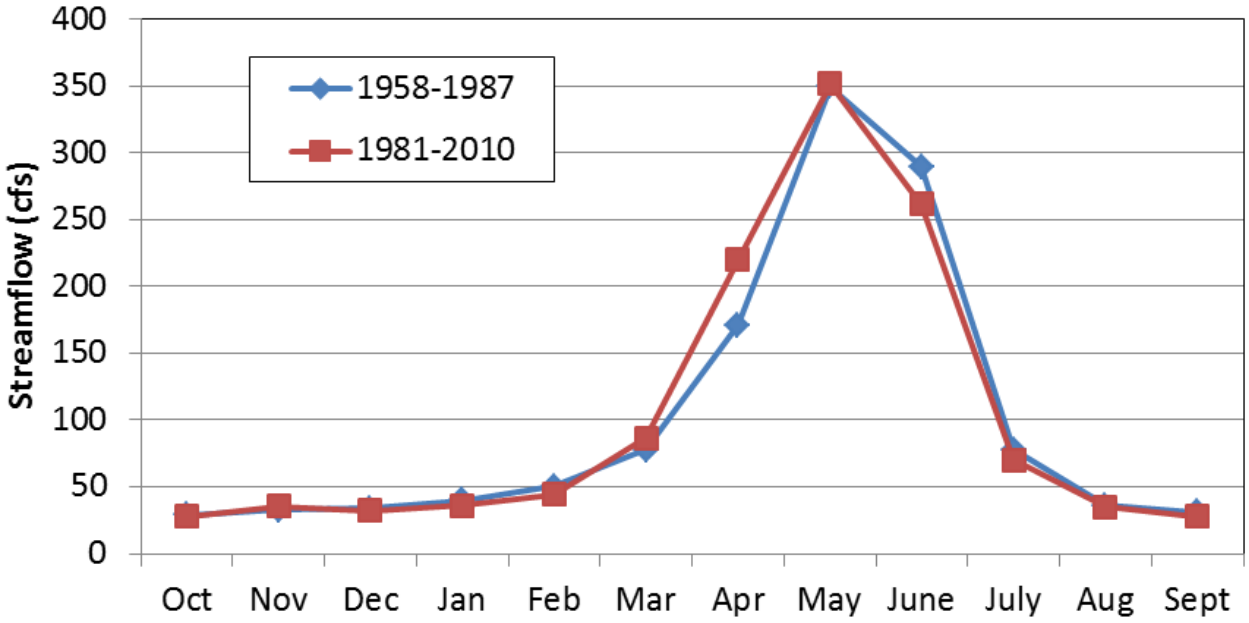


REVISED

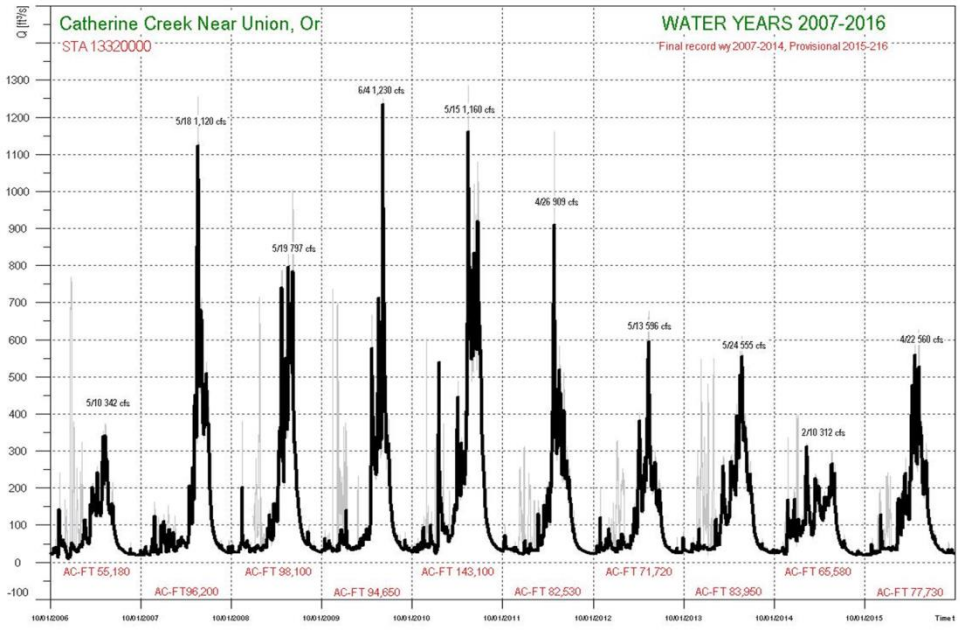


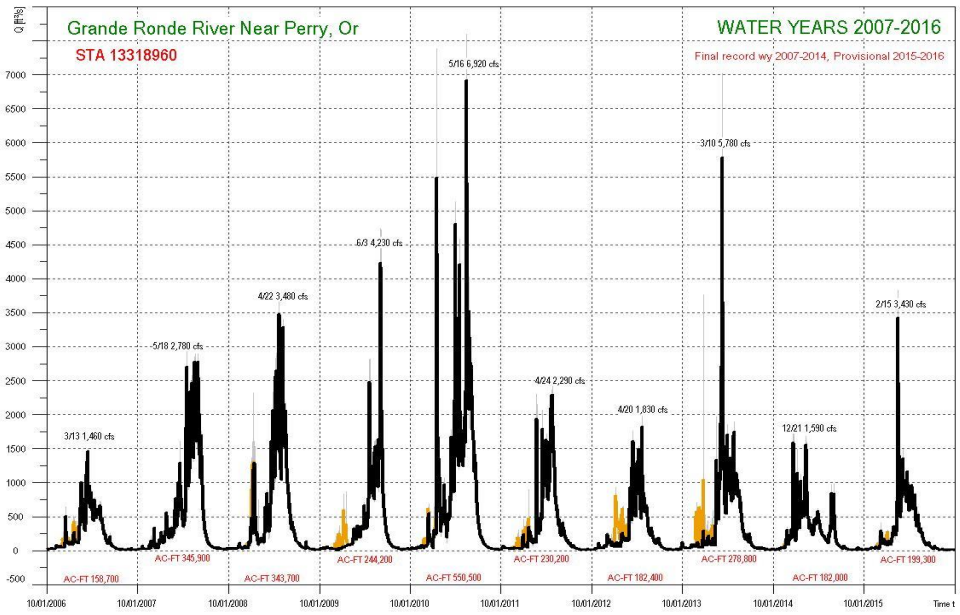
Water Quantity Comments

- ***Comment: Flow data from the 1980s coincides with the period of heaviest logging. Is there a possibility this could make the flows in our system look flashier than they really are? Consider how land use at different periods of time affects flow.***
  Response: This is a complicated question. It is addressed in report, below a temporal comparison of two, 30-year periods in Catherine Creek shows no statistical difference. We will also review this question with non-stationarity evaluation.



- ***Comment: Consider just showing gauged data (without consumptive use added in).***
  Response: The following are two graphs of gauged data for Catherine Creek and UGR. We have data similar to this from a few other gauges in the basin. We are not planning to show this information in the report, because it does not serve our ultimate purpose to complete the water balance.

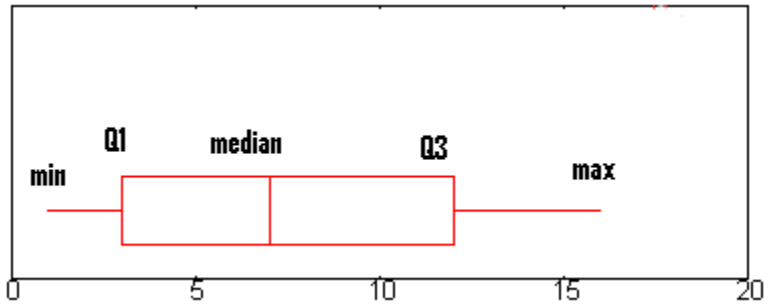




- **Comment: Why did we use medians and not means for flow? Add in average, box, and whiskers plots with median and means for more information.**
  Response: We used exceedances of the median. OWRD methods state "typically the median (50% exceedance) annual volume is less than the mean annual value, in some cases 10-20% less." Using the mean would overestimate the amount of water that would normally be available for use in any given year.

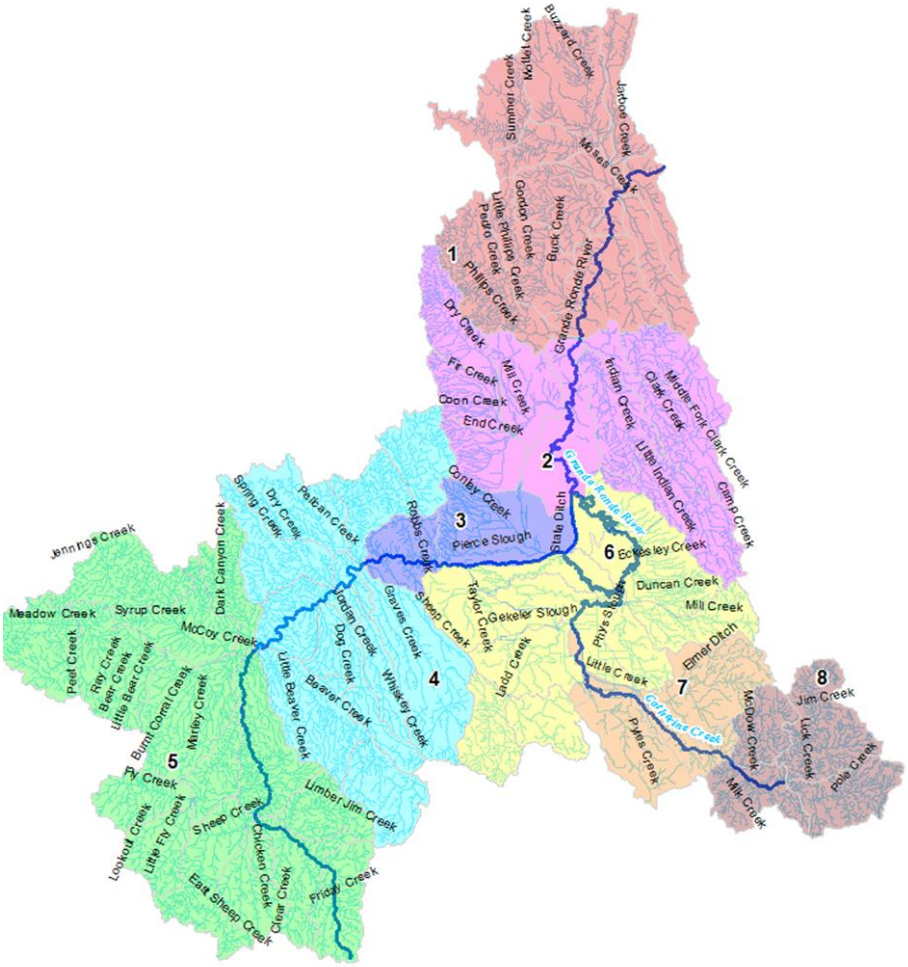
  We could work with OWRD to make these box plots, however this information is generally shown in the graphs. We have not moved forward with this yet, but may review this option again in Step 3, if we find this data gap is impacting our analysis.

Example:



Miscellaneous Comments

- ***Comment: The old river channel is shown on the map. We need to label it as the old channel to avoid confusion. Include more land marks on the large map and label tributaries.***
- Response: Map is being revised. Review base map below (in addition one part will be marked at "historic channel"):



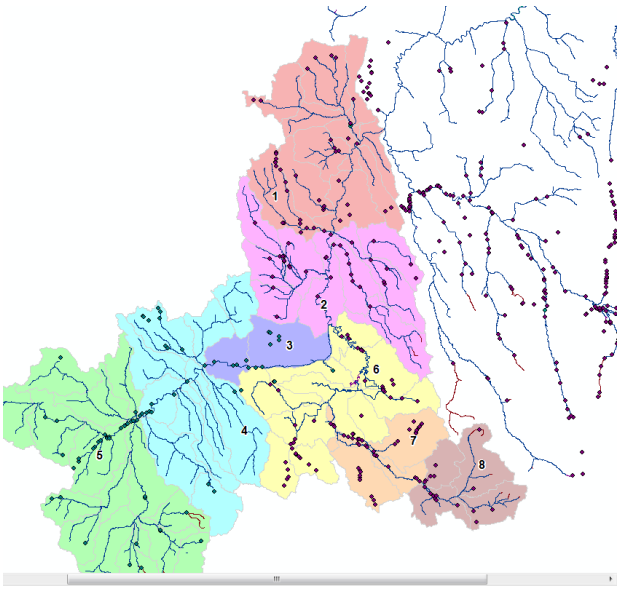
- ***Comment: Consider grouping subbasins differently (Cove, Union, La Grande together). Different groupings can answer different questions (i.e.: Basin 8 contains two very different areas - north fork vs south fork).***
  Response: The basins were developed to provide consistency with available data while not providing too much detail that is beyond the scope of this planning effort. Different subbasin groupings may be used to answer different questions. Unless there is a concern with the surface water basins, we will leave them as is for Step 2 and then can return to this question if we need to later (Step 3).

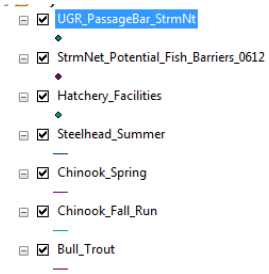
- ***Comment: Clarify how different elements were measured (flow, consumptive use, explain units)***
  Response: Unit measurements will be included in the report. Flow is listed in cubic feet per second (cfs) and acre-feet (ac-ft). Flow is normalized for the expected water found in stream (not raw numbers from the gage) Consumptive use is estimated by water rights only. We will look into if we need to (if we can) modify this calculation in Step 3.

- ***Comment: Basin 8 & 5 are likely affected by terrain***
  Response: This description was added to report.

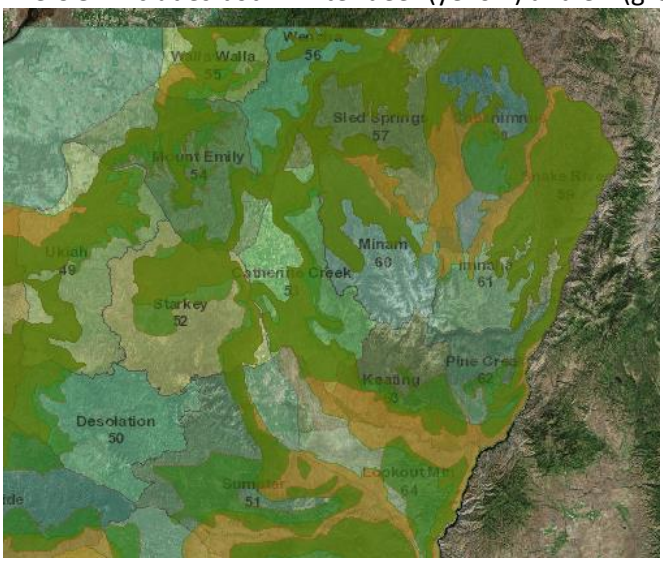
- ***Comment: Basin 7 & 8 lack information***
  Response: This is a data gap and can be listed in the report, but also may be addressed below.

- ***Comment: Use Atlas for biological characteristics***
  Response: ATLAS and COMPASS will be used, some graphics are included, specific feedback is needed on which datasets will be obtained from ODFW and GRMW. Currently, we are planning to use ATLAS for fish species distribution and COMPASS for wildlife distribution (barrier is an artificial obstruction, does not mean everything is blocked).

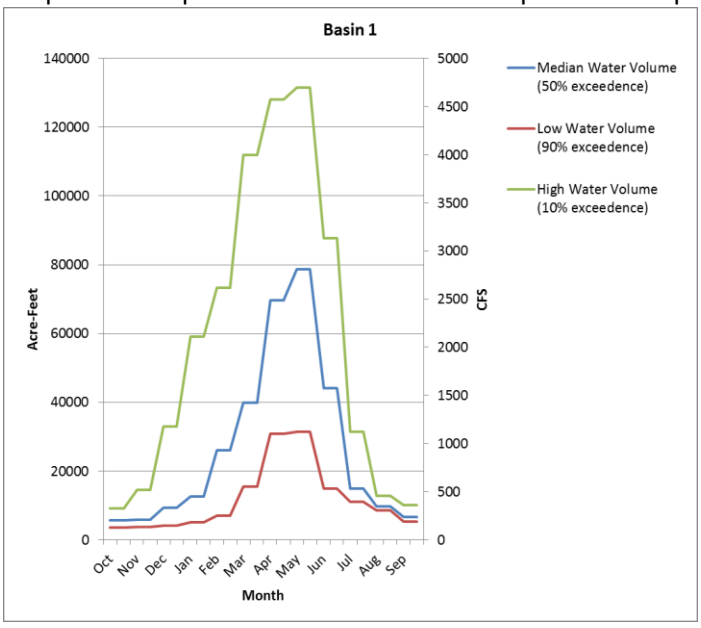




The UGR includes both winter deer (yellow) and elk (green) habitat.



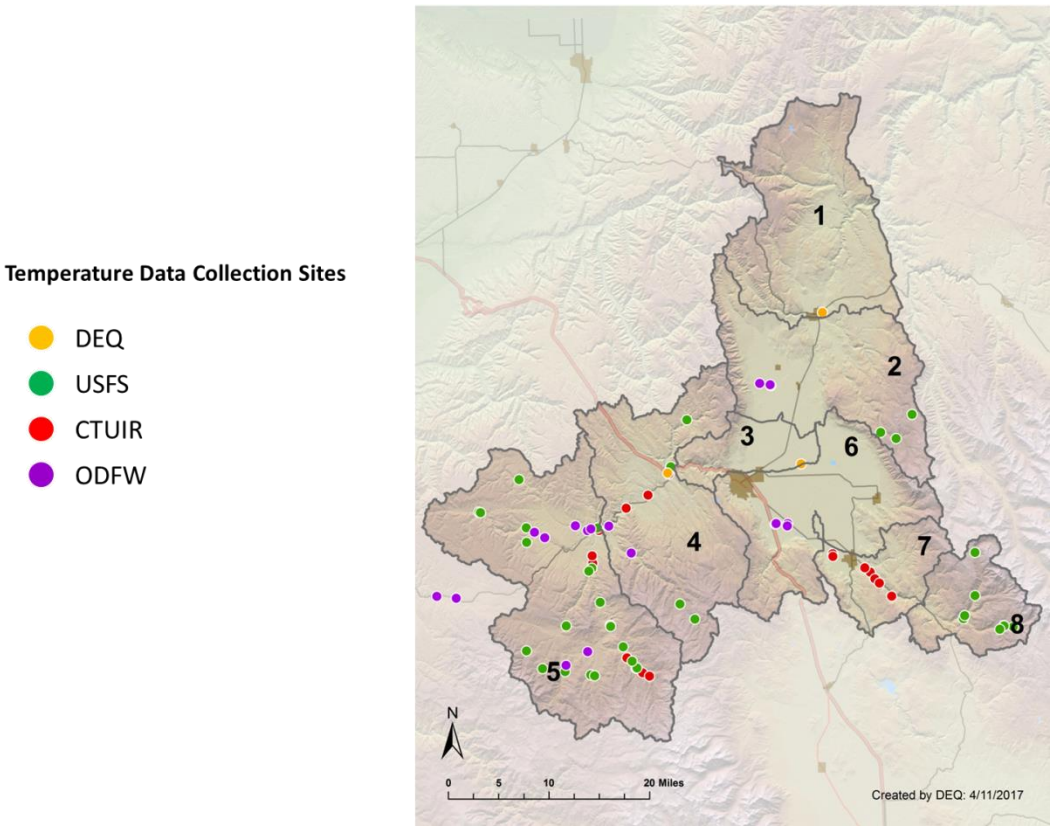
- ***Comment: Ac-ft vs cfs need to explain how information is shown on the chart.***
  Response: Graphs will be refined for the report. Ac-ft is per 2 weeks on this graph.

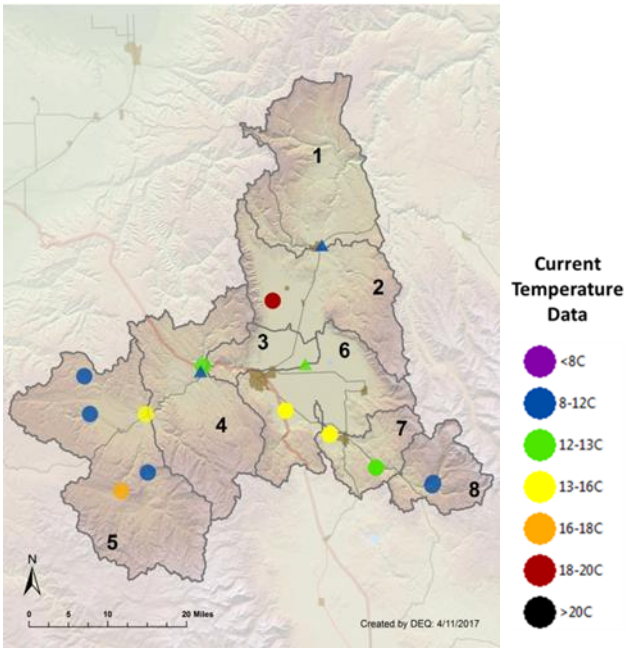


- **Comment: How does volume vary with precipitation? What volume of water enters and exits the watershed?**
  ORWD is using PRISM precipitation data and USGS stream gauge data to show mean annual stream flow, mean annual precipitation, and percent of precipitation leaving the basin. Preliminary work indicates that for Basin 8 approximately 40 percent of precipitation could be leaving the basin as stream flow.

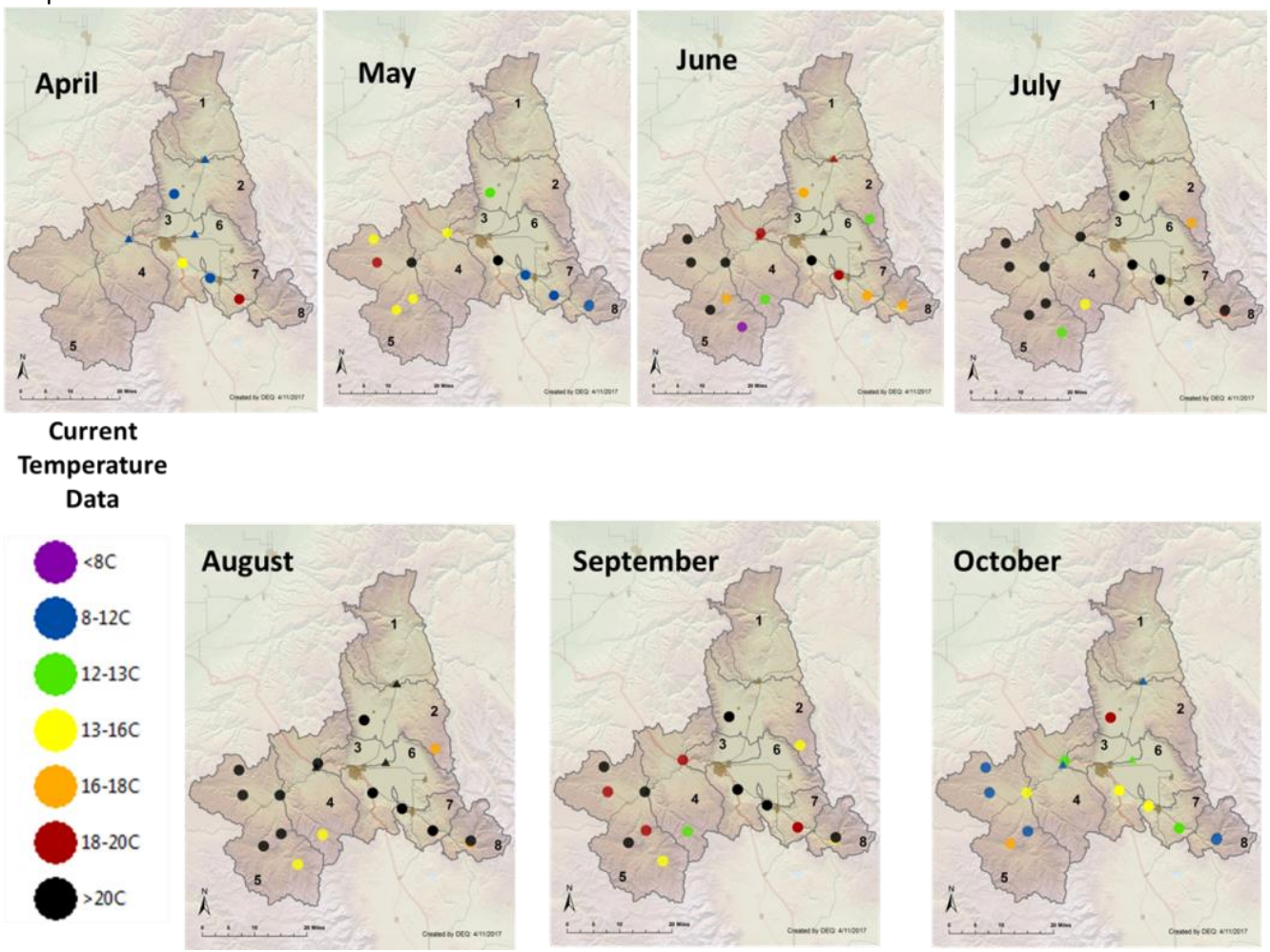
Temperature Comments

- ***Comment: USFS has much more temperature data - use this to address data gaps.***
  Response: Data was used from the following areas and simplified the map by using a single dot to represent multiple sources. I think that we just did not explain this clearly at the meeting and can work to clarify at the next stakeholder meeting. No additional work recommended here.





- ***Comment: Temperature trends in bottom chart need to be explained***
  Response: Unit measurements will be included in the report. Trends are that June to September most locations are temperature limited. October through May most locations are not temperature limited.



- **Comment: Limit Step 2 to hydrology, vegetation, geology, precipitation trends "what fills the water bucket?" inputs to the water system.**
  Response: We agree that some of the information provided is too detailed and may not completely apply, so we will try to limit Step 2, we will work to focus the report more on those characteristics. OWRD guidance document includes water quantity and quality so we will still need to include the other information (quality and quantity).

- **Comment: Step 2 - review average temperature in the river, exclude uses, just show temperature, etc., with graph. Make Step 2 a pure hydrology exercise.**
  Response: temperature work is a large part of Step 2, but as defined in OWRD requirements, it cannot just be a pure hydrology exercise. See below:

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etc.

Surface & Groundwater Quality/Quantity

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- OWRD basin programs
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Comments to be Addressed in Step 3 - Demand

- ***Comment: To determine how accurate consumptive use estimates are - compare the gauge at the top of the watershed and bottom of the watershed to see how that matches up to the flow estimates provided on the posters.***
  Response: For Step 2 we are planning to use water data available from OWRD. This includes the consumptive use information, which we realize might need improvement. We will look into this in Step 3, and come back and modify Step 2 report/analysis if we find changes.

- ***Comment: Natural flow chart (show summary of demands that way we can see when each are met). Could show summary of demands for industrial, agricultural, municipal, ecological.***
  Response: This is something that could be produced during Step 3. Will save this comment for that step.

Comments Received After the Meeting

A suggestion for the way forward.

The message I heard last night is that most <u>members need to know baseline information about the amount and timing of water generated in the planning area.</u> The information at that level will be coarse and is not suitable for project planning. Project planning and regulatory constraints come later.

The current assignment should be confined to the physical characteristics that describe water yield from each basin.

The <u>information should be described as an approximation</u> so that you acknowledge the inequality of data accuracy that is being used at this scale.

I would suggest that the technical group do a small pilot project for one of the basins and see if the following approach doesn't get you closer to the larger goal. If so then do the whole planning area.

The larger goal for our project is a high level overview of the system. The level of detail that is proposed could be accomplished, however, see an alternative higher level analysis in the sections below.

Baseline information objectives:

> ***We need to know the size of the drainage area creating the flow (acres) and elevation range***
>
> ***We need to know precipitation inputs to the drainage.***
>
> ***We need to know some basic parameters of the thermal environment.***
>
> ***We need to know the kind of flow (pattern and amount) that is basin generated.***

The pilot project poster would contain:

Basin acreage and the maximum, mid-range and minimal elevation of the basin.

The study area includes the Grande Ronde River and tributaries above the confluence with Wallowa River. The valley floor is generally about 2,700 feet elevation with some mountain areas over 6,000 feet.

Over half of the watershed lies above 4000 feet. The study area is approximately 1640 square miles, with a mean elevation of 4,170 feet above sea level (asl), a maximum elevation of 6350 feet asl, and a mean slope of 10.5 degrees (OWRD, 2017).

We have acreage for each subbasin:

Basin number	**Drainage area (acres)**
1	1047040
2	878080
3	468480

4	427520
5	259840
6	117120
7	62080
8	249600

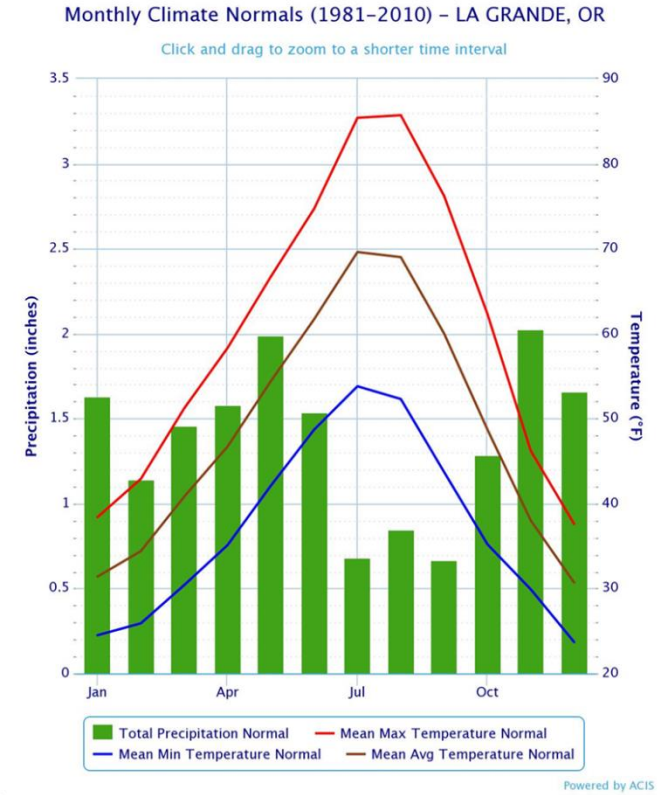
Approximate Precipitation in the form of mean monthly values and yearly total. This could be obtained from sno-tel and agrimet sites or state climate services. This is an approximation and would not need to go through a detailed analysis.

We have the mean annual precipitation for each basin:

Basin number	**Drainage area (acres)**	**Mean annual precip (feet)**
1	1047040	2.3567
2	878080	2.2817
3	468480	2.2458
4	427520	2.3108
5	259840	2.2650
6	117120	2.8433
7	62080	3.3042
8	249600	2.3458

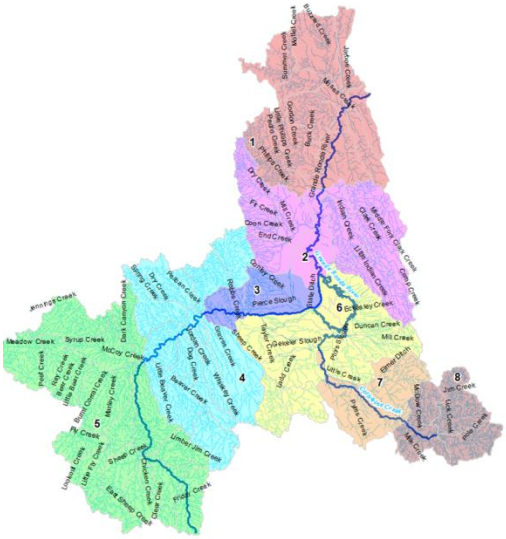
[monthly in chart below (Source- OWRD, 2017)]

Approximate temperature pattern – again this is an approximation at this stage of the analysis and would contain mean monthly air temperature values.



This is the level of detail that we plan to present in the report. 8 subbasin level data for air temperature is more detailed than the actual data we have.

The number of perennial streams located in the drainage and some expression of their water contribution. We have the streams (labeled map below), calculating each stream's contribution to water quantity, is beyond the level of detail we are planning to pursue for this project.



Water generation – I assume the median values presented last night are calculated for the mouth of each drainage – these are fine. I would also suggest that you take the monthly values from the 30 year data set and calculate an average monthly discharge and standard deviation.

We do not have this, however we could possibly go through this process with OWRD assistance. It is not planned at this time, because median values seem to present a good general picture of the watershed, but may be revisited in a later draft of the step 2 report, or in step 3 if needed.

From this information the group can make some coarse assessments about where the water is coming from and where the potential for improvements in water flow are greatest.

This appears to be a project level analysis, we will likely not get to this level of detail in our 5 step process. In this step, we are just looking at how much water there is and how it is being used.

The next step is to gather the information on water diversion by basin so that a picture can be developed on the timing and amount of demand being placed on the basin. I assume from what I heard in a previous meeting that water resources can give an approximation for both gross water rights and actual water use being diverted from each basin.

This is my suggestion. I believe it will establish objective side boards for future discussions.