Flood Risk Management Analysis of the Anderson 4,174-foot Pool Restriction during 6-foot or 3-foot Dam Raise Construction

Technical Memorandum

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1. Introduction

A 6-foot raise and a 3-foot raise at Anderson Ranch Dam (Anderson) are currently being investigated by the Bureau of Reclamation (Reclamation) as part of the Boise River Basin Feasibility Study. At completion, the 6-foot dam raise would increase the total active capacity of the reservoir from 413,074 acre-feet (ac-ft) to approximately 442,074 ac-ft, an increase of approximately 29,000 ac-ft. The 3-foot dam raise would increase the total active capacity of the reservoir from 413,074 ac-ft to approximately 427,474 ac-ft, an increase of approximately 14,400 ac-ft. The construction period for the 6-foot raise is 42 months (3.5 years), while for the 3-foot raise it is 30 months (2.5 years). During the construction period, the active capacity of the reservoir would be restricted to 316,519 ac-ft (maximum water surface elevation of 4,174 feet (Anderson Ranch Feasibility Design Report, May 2019)).

The analysis presented below is applicable to the restriction elevation and durations described above. If, during final design, a lower restriction elevation is found to be required, the conclusions of this analysis are no longer valid and impacts to Flood Risk Management (FRM) would need to be reassessed.

Anderson is operated in conjunction with two downstream Boise River Reservoir System (Reservoir System) dams, Arrowrock Dam (Arrowrock) and Lucky Peak Dam (Lucky Peak), to provide FRM protection to the city of Boise. A reduction to the Anderson active space during the construction of the dam raise and could result in impacts to the existing FRM operations of the Boise River.

2. Purpose

The purpose of this Technical Memorandum (TM) is to identify potential impacts to FRM operations caused by the pool restriction during the construction period of the Anderson dam raise. The TM will be an attachment to the Boise River Basin Feasibility Study Environmental Impact Statement (EIS) for the proposed project.

3. Background

Anderson is located approximately 124 river miles upstream of the confluence of the Boise River with the Snake River and is the most upstream reservoir within the Reservoir System. The reservoir has a live capacity of approximately 450,030 ac-ft, consisting of 36,956 ac-ft of inactive capacity and 413,074 ac-ft of active capacity. The reservoir also includes dead storage capacity of 24,912 ac-ft (elevation 3,866 feet (ft) to 3,992 ft). The facility is a multipurpose project that stores and releases water from the 980-square-mile drainage area above the dam. The authorized purposes of the project include irrigation, flood control, power generation, and recreation.

Total discharge capacity from Anderson at full pool elevation 4,196 ft is approximately 30,000 cubic feet per second (cfs) and consists of the following:

- Outlet Tube capacity of 10,000 cfs from:
  - Two 20-megawatt Francis generating units owned and operated by Reclamation - total capacity of approximately 1,600 cfs (800 cfs per unit); and
  - Five hollow jet valves.
- Spillway capacity of 20,000 cfs.

Anderson is operated in conjunction with two downstream Reservoir System dams, Arrowrock and Lucky Peak. The total active capacity of the Reservoir System is 949,700 ac-ft.

3.1. Flood Risk Management Operations

Beginning in January each water year and generally continuing each month through July, the United States Army Corps of Engineers Walla Walla District and Reclamation Water Management groups generate and coordinate seasonal runoff volume forecasts for the Boise River basin. These forecasts are used to determine the reservoir space requirements needed to meet the FRM objective in the basin of not exceeding a flow rate of 6,500 cfs at the Boise River at Glenwood Bridge (Glenwood) gage.

The runoff volume forecast prescribes a total system FRM space requirement and a lower system FRM space requirement. Total system FRM requirements can be met solely with space in Lucky Peak and Arrowrock (Lower System) for forecasts of less than approximately 140 percent of average, but in practice, space in Anderson Ranch is generally provided to balance the reservoir system for operational flexibility. Discharges from Anderson, Arrowrock, and Lucky Peak are adjusted as necessary during the winter and spring to meet the FRM space requirements and the FRM objective as possible. It should be noted that it is not always possible to meet the FRM space requirements or objective, particularly in large water years when forecasts increase rapidly.

There is no specific FRM objective immediately downstream of Anderson. Discharge from Anderson varies during the spring as the reservoir is operated for FRM and reservoir refill. Spillway use at Anderson is limited to emergencies or if required during FRM operations. In general, discharge from Anderson is targeted to remain lower than 9,500 cfs to limit localized flood damages downstream of the dam (based on minimal impacts experienced in 2017 at a discharge of 9,500 cfs).

4. Analysis Method

A multi-stepped approach was taken to determine the magnitude, duration, and likelihood of impacts to Boise River FRM operations as a result of the Anderson pool restriction during the dam raise construction period. Screening criteria were developed to focus the analysis on historical hydrologic conditions likely to cause impacts. Historical runoff volume hindcasts developed for this analysis along with the Boise River RiverWare® Planning Model (Model) were both used to identify historical water years falling within the screening criteria. Finally, the screened historical water years were analyzed in depth using Reclamation's real-time operations spreadsheet model (Spreadsheet). Simulations of FRM operations under the existing condition (baseline) and the Anderson pool restriction (restriction) were completed, allowing for a comparison of the two operations. Any difference between the two simulations could be attributed to impacts from the pool restriction.

4.1. FRM Impact Analysis Criteria

FRM impact analysis criteria (Criteria) were used in this analysis to screen historical water years requiring additional in-depth analysis. The Criteria were as listed below.

1. Impact to Static System Space Requirement.
    a. November 1st – Dec 31st space requirement of 300,000 ac-ft (165,000 ac-ft in Lower System).
    b. January 1st – March 30th minimum space requirement of 300,000 to 50,000 acre-feet depending on forecast.
2. Impact to Dynamic Forecast Based System Space Requirement (January 1st-July 15th).
    a. Total System FRM Space Requirement greater than available due to restriction.
    b. Total System FRM Space Requirement requiring space to be provided by Anderson Ranch.
3. Change in flow below Lucky Peak Dam that increased flows to 6,500 cfs or more.
4. Change in flow below Anderson Ranch Dam that increased flows to greater than 4,000 cfs.

4.2. Boise River Planning Model

The Model was developed by Reclamation's Columbia Pacific Northwest Region (Region) Water Management group and was most recently updated in 2019 to be utilized in the EIS. The Model is derived from the larger Upper Snake RiverWare® ver. 7.5 model. RiverWare® is a river basin modeling tool that can be used to simulate detailed, site-specific river and reservoir operations. The Model includes logic to simulate competing water demands in the system while adhering to legal water right and physical constraints. Competing water demands include irrigation, flood control, minimum-flow requirements, ecological flow releases, and ecological storage constraints.

Unlike real-time operations where future weather and hydrologic conditions are unknown, the Model uses a perfect forecast, wherein the runoff volume is known and thus the FRM operation is optimized. Keeping this in mind, the Model provides a method to identify historical water years (WY) (period of record WY1959-WY2008) where impacts to FRM may occur and should be further investigated using the real-time operations Spreadsheet. The historical period of 1959-2008 related to the period of record for diversion data on the Boise River. The Model was used to compare the baseline and restriction scenarios, and the Criteria were then used to identify historical water years requiring further analysis.

4.3. Hindcast Development

A hindcast is a forecast produced for a historical period using current methods. Whereas historical simulations are driven by observed conditions (perfect data) and can be used to assess the performance of a hydrologic model, hindcasts are driven by forecasted, or imperfect data, and can thus be used to assess the performance of a hydrologic forecast model.

Hindcasting for this analysis was completed using the Region's Multiple Linear Regression (MLR) forecast methodology. Hindcasts were generated monthly through the January-July period for the WY1950-WY2019 historical period (70 water years) and were used to determine water years when: 1) total system FRM space required was greater than available due to the Anderson pool restriction, and 2) the total system FRM space requirement would require space in Anderson Ranch. The Criteria were then used to identify historical water years requiring further analysis.

4.4. Spreadsheet Model

The Spreadsheet is a Microsoft Excel™ based mass balance model utilized by Reclamation's Water Management group to perform real-time reservoir operations. The Spreadsheet allows for fine tuning the operation of an individual historical water year as would be completed in a real-time scenario. To make the operation as realistic as possible, first of the month hindcasts were utilized to inform the operation, similar to what would be done in an actual real-time operation. Using the Spreadsheet also allows determination of water years where FRM space required would or would not be able to be met due to real-time FRM target constraints (i.e., 6,500 cfs flow at Glenwood). Irrigation demands from 2017, a historically low early season demand due to saturated soil conditions, were used in order to provide a conservative allowable discharge range for Lucky Peak. The Spreadsheet modeling of each water year identified through the Model and Hindcast process above was completed for both the baseline and restriction scenarios. For purposes of this FRM analysis, Anderson Ranch outflows were conservatively limited to approximately 7,200 cfs to represent the hydraulic capacity at 0 acre-feet active storage. Doing this limited the outflows of Anderson Ranch when evacuating or holding FRM space when the reservoir was near empty even though hydraulic capacities greater than this would be available as the reservoir refills.

Figure 1 provides an example of model results for the baseline condition showing the Reservoir System storage (SYS AF), FRM space requirement which changes monthly as hydrologic conditions change (FRM Target), and discharge at Glenwood (BIGI QD).

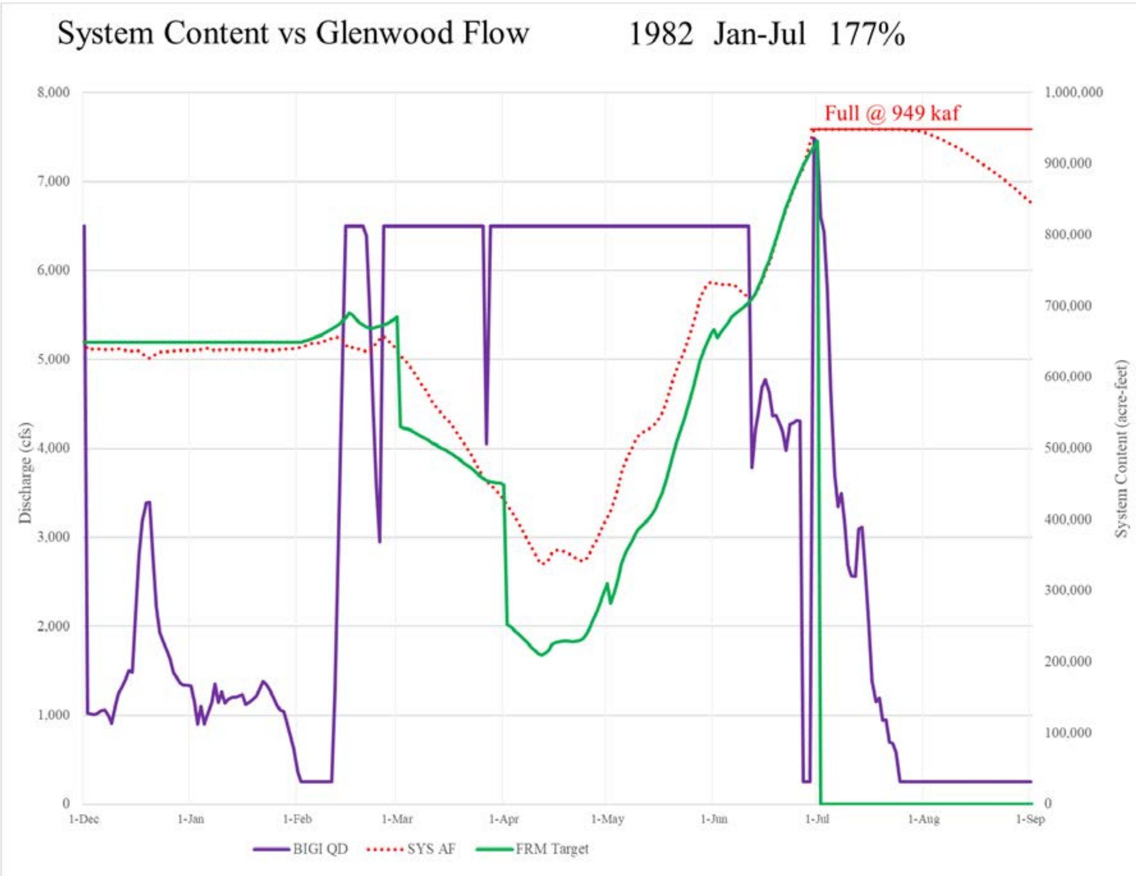


Figure 1. Example of real-time operations Spreadsheet model summary plot showing Reservoir System storage (SYS AF – red dotted line), FRM space requirement which changes monthly as hydrologic conditions change (FRM Target – green solid line), and discharge at Glenwood (BIGI QD – purple solid line).

5. Results

The following section summarizes the analysis of the FRM impacts during the Anderson dam raise construction period.

5.1. Boise River Planning Model Analysis

The Model was run in concurrent simulation mode (multiple runs of which the time horizons are identical) for the 1959-2008 time period. Unlike the hindcast procedure, the Model only included the 1959-2008 time period due to this being the current simulation period that the Model can analyze. For years after 2008, refer to the hindcasting and Spreadsheet modeling sections. Figure 2 shows reservoir content and discharge at Anderson for both the baseline and restriction scenarios. In the Anderson "reservoir content" figure (upper figure), the restriction scenarios limit the maximum content of Anderson to 316,519 ac-ft (elevation 4,174 feet). For some water years, the restriction drafts Anderson deeper than the baseline, indicating that the restriction caused the reservoir to draft deeper to meet system FRM space requirements. For other water years, content is the same in both scenarios, indicating the reservoir was drafted deeper than required by FRM due to the previous water year's irrigation demand. For water years where both the baseline and restriction scenarios are drafted near empty, the restriction scenario was not able to meet total system space requirements and the resulting outflows below Anderson were higher for the restriction scenario (bottom figure). For the period analyzed (1959-2008), water years that met the Criteria included: 1952, 1956, 1958, 1971, 1972, 1975, 1982, 1983, and 1997.

The modeled flow at Glenwood, the flow control point for FRM operations on the Boise River, was also investigated to determine impacts to FRM operations from the restriction. The flow rate is limited to 6,500 cfs at Glenwood bridge due to channel capacity issues leading to flood impacts at higher flows. Figure 3 shows the modeled discharge at this location for the period of 1959-2008. Water years in which the restriction caused flows to increase higher than the baseline and higher than 6,500 cfs included: 1952, 1956, 1958, 1960, 1965, 1969, 1971, 1972, 1974, 1982, 1983, 1993, 1997, 2006, and 2008.

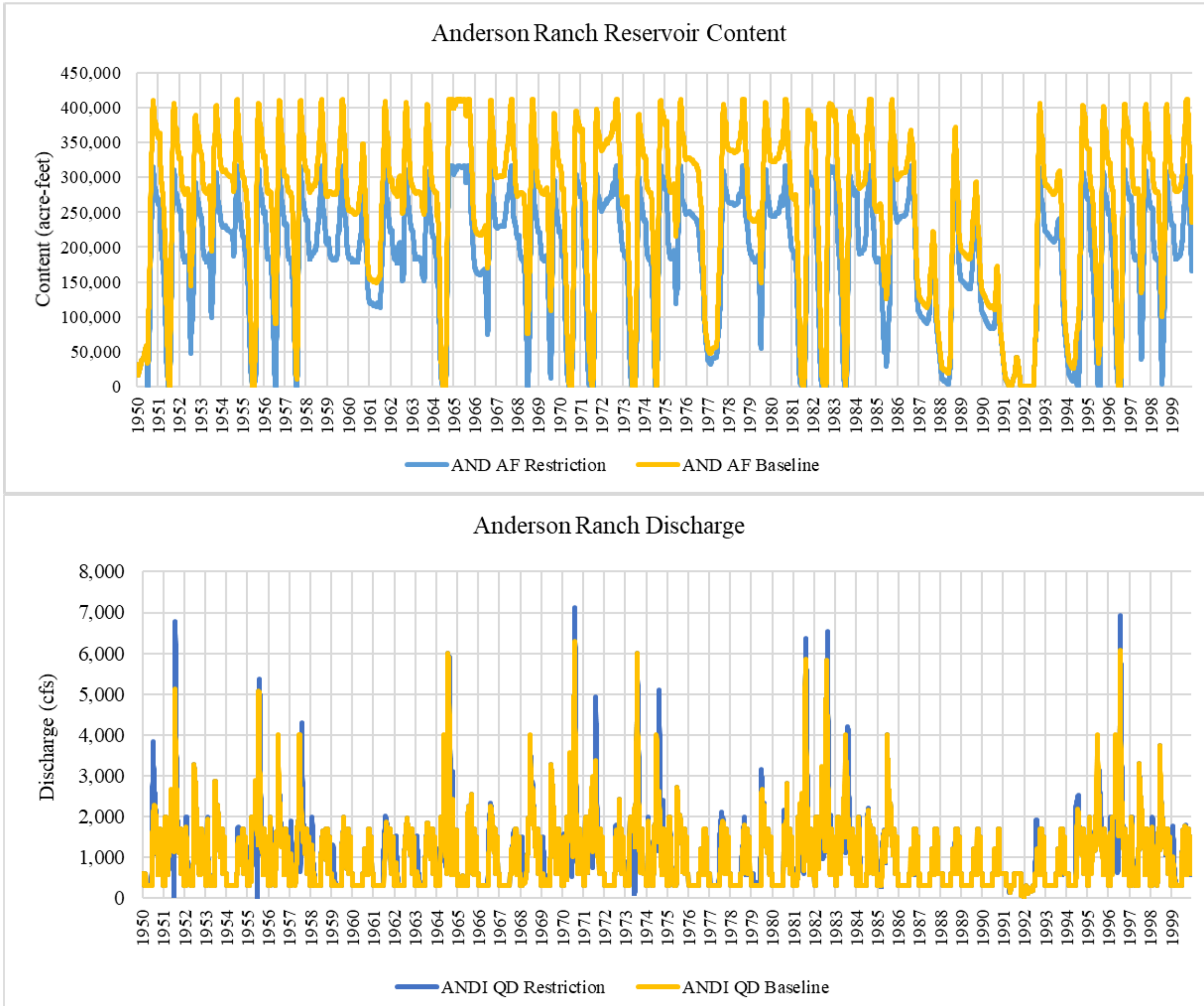


Figure 2. Anderson reservoir content (AND AF) and discharge (ANDI QD) for baseline (yellow) and restriction (blue) scenarios.

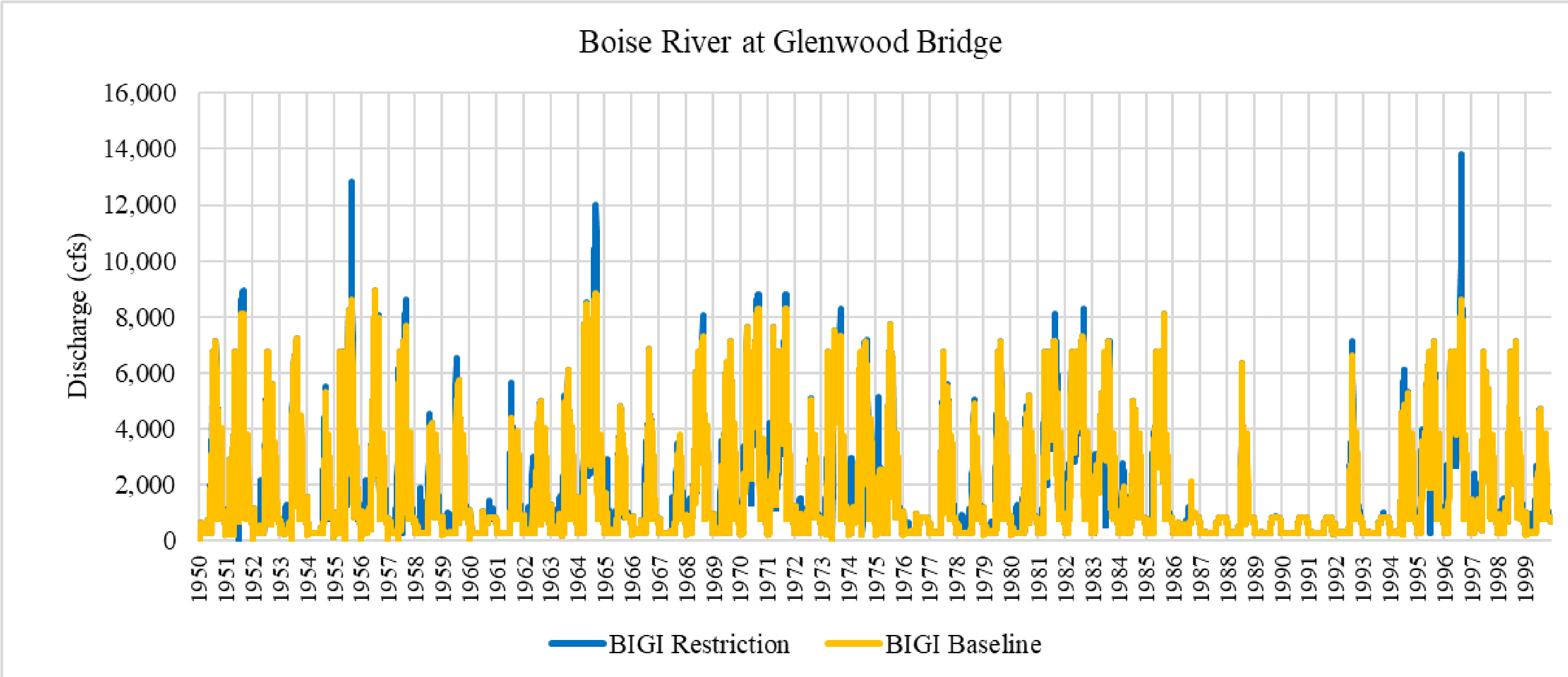


Figure 3. Discharge at Boise River at Glenwood Bridge for the baseline (gray) and restriction (orange) scenarios.

5.2. Hindcast Analysis

Date through July hindcasts were developed for the 1950-2019 period for January through June of each year and were then used to determine total System FRM space requirements for each month in the historical period. This total System FRM space requirement would be the same for both the baseline and restriction scenarios. Figure 4 shows the results of the hindcasting process on total System FRM space for the months of January, February, March, April, May, and June. The blue box encompasses all water years where the hindcast runoff volume would require some space to be provided by Anderson, while the red box encompasses water years where the total system FRM space requirement was greater than what would be available in the restriction scenario.

For example, referring to Figure 4, for the month of April (yellow line) for the 1950-2019 period, approximately 27 percent of the water years would require some FRM space in Anderson while approximately 10 percent of water years required total system space more than would be available during the pool restriction. The percent of water years in which a May hindcast would require more total system FRM space than available reduces to approximately 3 percent. Table 1 provides a summary of the percent of water years for various months in which the hindcast of runoff volume would require either space in Anderson or had a total system FRM space requirement greater than what would be available during the pool restriction.

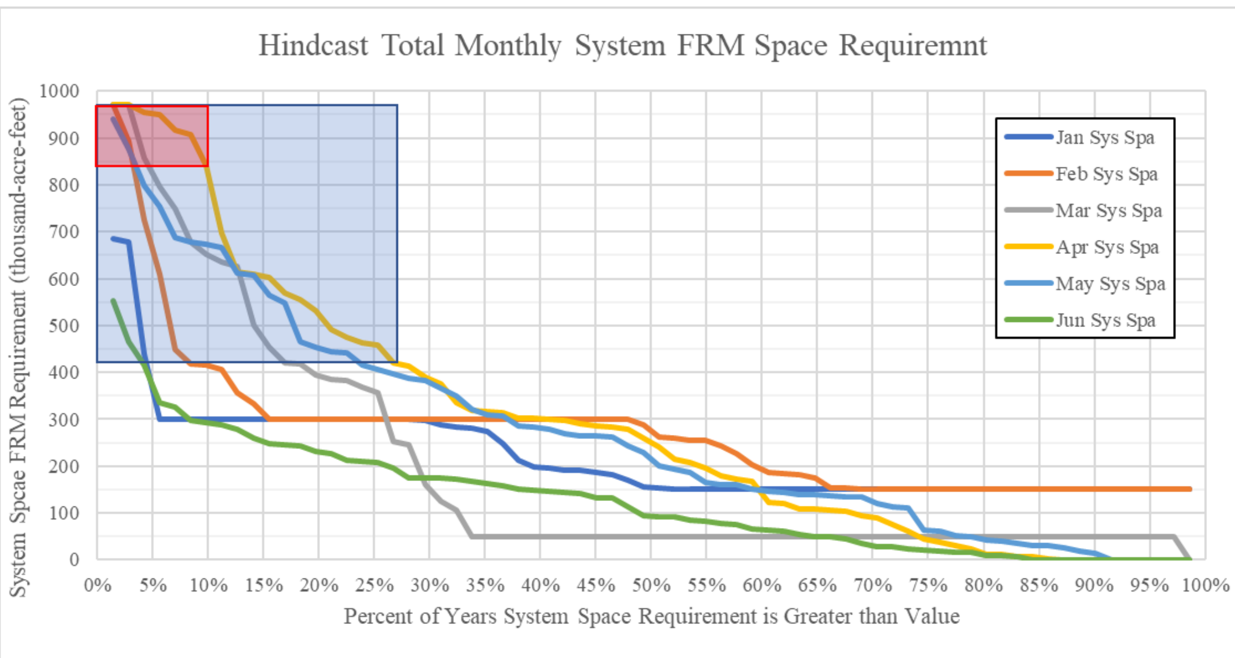


Figure 4. Monthly System FRM Space requirements for the 1950-2019 period. The blue box represents water years in which space from Anderson would be required. The red box represents water years in which the total system FRM space requirement was greater than available for the restriction scenario.

Table 1. Percent of water years for each month that the hindcast of runoff volume would require either space in Anderson or had a total system FRM space requirement greater than what would be available during the pool restriction.

Month	Percent of Water Years FRM Space Required is Greater than Available	Percent Water Years FRM Space Requires AND Space
Jan	0%	4%
Feb	3%	7%
Mar	4%	15%
Apr	8%	25%
May	3%	23%
Jun	0%	3%

Table 2 shows the water years falling into each of the categories described in Table 1. The water years in blue font correspond to the water years in which the hindcast runoff volume would require some space to be provided by Anderson. The water years in red font are water years in which the total system FRM space requirement was greater than what would be available during the pool restriction.

Table 2. Water years ranked by largest FRM space required. Years in blue font are years when total system FRM space required space to be provided by Anderson. Years in red font are water years where the total system FRM space requirement was greater than what would be available during the pool restriction with space deficit in parenthesis (thousand acre-feet).

Jan	Feb	Mar	Apr	May	Jun
1997	1965 (117)	1965 (117)	1956 (117)	1965 (87)	1965
1965	1997 (40)	1956 (117)	1965 (117)	1982 (24)	1956
1956	1956	1997 (5)	1952 (101)	1956	
	1971	1952	1971 (97)	1971	
	1952	1982	1982 (63)	1974	
		1972	1974 (55)	1952	
		1971	1997	1997	
		1974	1983	1983	
		1969	2017	2017	
		2017	2006	1975	
		1978	1972	1958	
			1969	1972	
			1951	1957	
			1975	1978	

Jan	Feb	Mar	Apr	May	Jun
			1984	1996	
			1958	1984	
			1957		
			1996		

5.3. Spreadsheet Analysis

Results from the Model and Hindcast analyses screened a list of historical water years to be further analyzed using the Spreadsheet. Table 3 summaries the 21 water years (ranked by the January-through-July historical runoff volume) that were identified for this analysis. Water years that were identified had historical runoff volumes that ranged from 92 percent to 198 percent of average.

Table 3. Summary of water years that were analyzed using the Spreadsheet.

Year	Jan-Jul (thousand ac-ft)	Jan-Jul (percent of average)
2017	3,146	198%
1997	3,127	197%
1965	3,111	195%
1971	3,013	189%
1983	2,893	182%
1974	2,841	178%
1982	2,811	177%
1972	2,787	175%
1956	2,703	170%
1952	2,505	157%
1996	2,487	156%
2006	2,439	153%
1984	2,413	152%
1969	2,290	144%
1958	2,205	139%
1951	2,180	137%
1975	2,116	133%
1957	2,111	133%
1978	1,979	124%
1993	1,857	117%
2008	1,501	94%
1960	1,472	92%

The Spreadsheet was run for both the baseline and restriction scenarios for each of the screened water years. The difference between the two runs is attributed to the pool restriction at Anderson. Initial conditions for this analysis started with the assumption that carryover storage from the previous water year was above average and the initial space provided was the 300,000 ac-ft static space requirement from November 1st through December 31st. This assumption provides the worst-case carryover scenario for FRM purposes. The 300,000 ac-ft of space was distributed among Anderson, Arrowrock, and Lucky Peak based on current operational practices. This resulted in a space distribution of approximately 50,000 ac-ft (17 percent) in Anderson, 50,000 ac-ft (17 percent) in Arrowrock, and 200,000 ac-ft (66 percent) in Lucky Peak. This operation meets the soft operational target of being below the elevation 2,960 feet at Lucky Peak to provide for elk crossing on the Mores Creek arm.

Figure 5 provides an example of the summary plot produced for each modeled water year. This example is for the modeled scenario of 1997, which had a January through July runoff volume of approximately 197 percent of average. The red dotted and solid lines are for the baseline scenario, while the blue dotted and solid lines are for the restriction scenario. The dotted lines represent the total system content with the difference between the two being the amount that the pool restriction limits storage at Anderson. The solid lines represent the flow at Glenwood. As can be seen in the figure, there is very little difference in the flow at Glenwood between the two scenarios, with both keeping flows to the 6,500 cfs target FRM discharge. While the flow at Glenwood is the same between the two scenarios, the system content is different. Due to the historical hindcasts informing the operation, the pool restriction scenario was still able to meet the total system space requirements by drafting deeper than the baseline scenario. Based on the results of this analysis, it was found that there was no impact to the FRM operations for the 1997 water year.

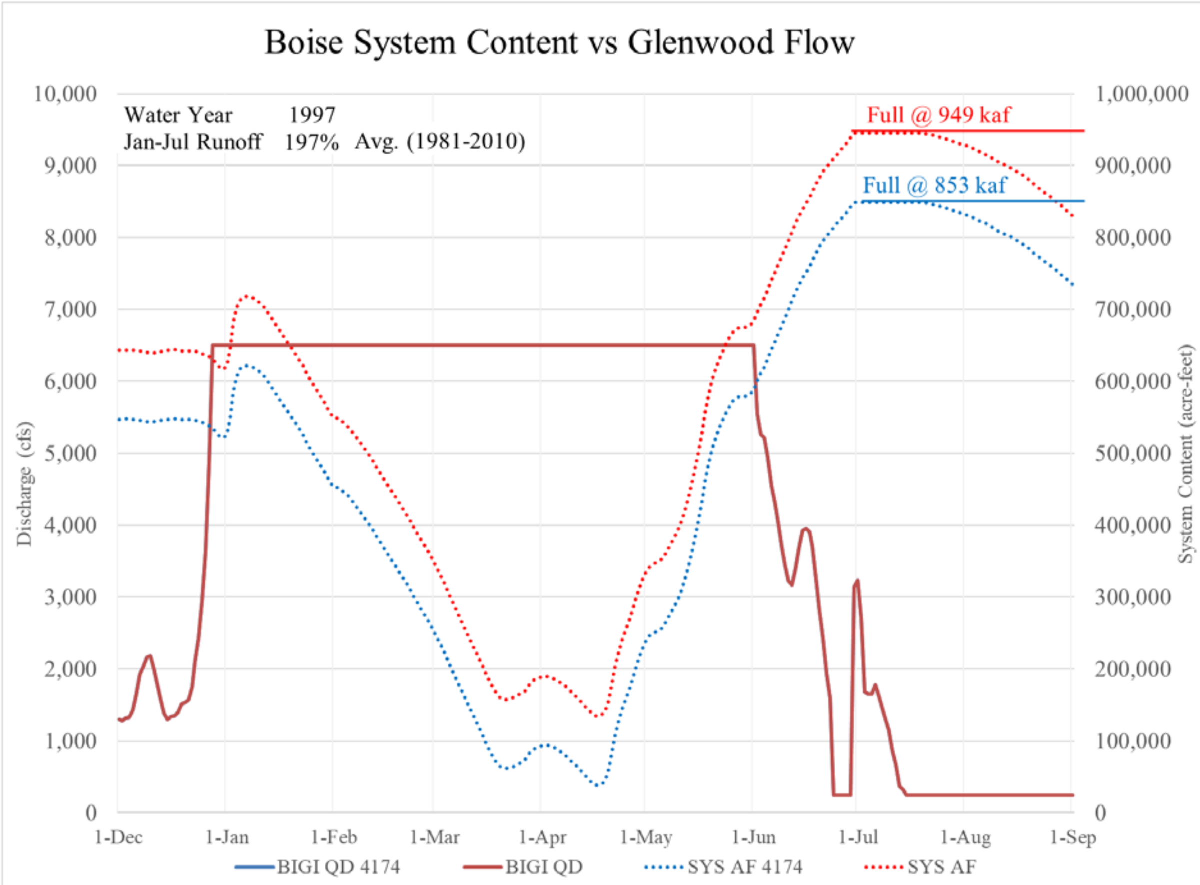


Figure 5. Comparison of system content (SYS AF) and flow at Glenwood (BIGI QD) for the baseline (red) and restriction (blue) scenarios for water year 1997.

In general, for all water years listed in Table 3, FRM operation did not significantly change between the baseline and restriction scenarios. When differences were found, it was a result of flows at Glenwood increasing to 6,500 cfs earlier in the water year during the evacuation of storage in order to meet FRM space requirements or flows enduring at 6,500 cfs at Glenwood for a longer period during refill. An example of this is shown in Figure 6 for the water year of 1965.

All water years (except for 2017 and 1983) were able to limit flows at Glenwood to 6,500 cfs. For 2017, due to the rapidly increasing snowpack that occurred starting in February and extended through April, both the baseline and restriction scenarios were unable to draft to the required system FRM space dictated by the hindcast. As a result, the flows at Glenwood needed to increase to 9,500 cfs for both the baseline and restriction scenarios from March 1st through June 15th in order to control refill. For 1983, the June hindcast under-forecast the runoff volume. The under-forecast was a result of a late season precipitation event that caused inflows to spike to approximately 11,300 cfs when the system was near full, resulting in flows having to increase to approximately 8,500 cfs at Glenwood.

The Spreadsheet limited flows below Anderson to approximately 7,200 cfs (outlet capacity at dead pool) as a conservative method to limit the amount of space that could be made available in Anderson for the restriction scenario. The space required to store flow when Anderson inflows were greater than 7,200 cfs was also calculated and ranged from approximately 0 ac-ft to approximately 60,000 ac-ft. This analysis was completed to provide preliminary guidance on a possible forecast-based Anderson space requirement during the construction period based on a target maximum discharge from Anderson. In general, the restriction scenario had similar flows to the baseline, with most differences occurring when flows reduced earlier during the evacuation period but remaining higher during refill.

Optimizing complete reservoir refill during the end of the runoff period was not completed for this analysis as this is accomplished in real-time, taking into consideration the remaining snowpack, short to mid-term temperature and precipitation forecasts (1-10 days), and current runoff conditions in the system. Due to these factors, some of the modeled water years failed to completely refill in this analysis (for example, see Figure 6); this was due to solely operating to the hindcast, which may have over-forecast the runoff volume and thus required more system space that in hindsight was not needed.

Attachment A provides summary plots for all 22 screened water years that were modeled with the Spreadsheet.

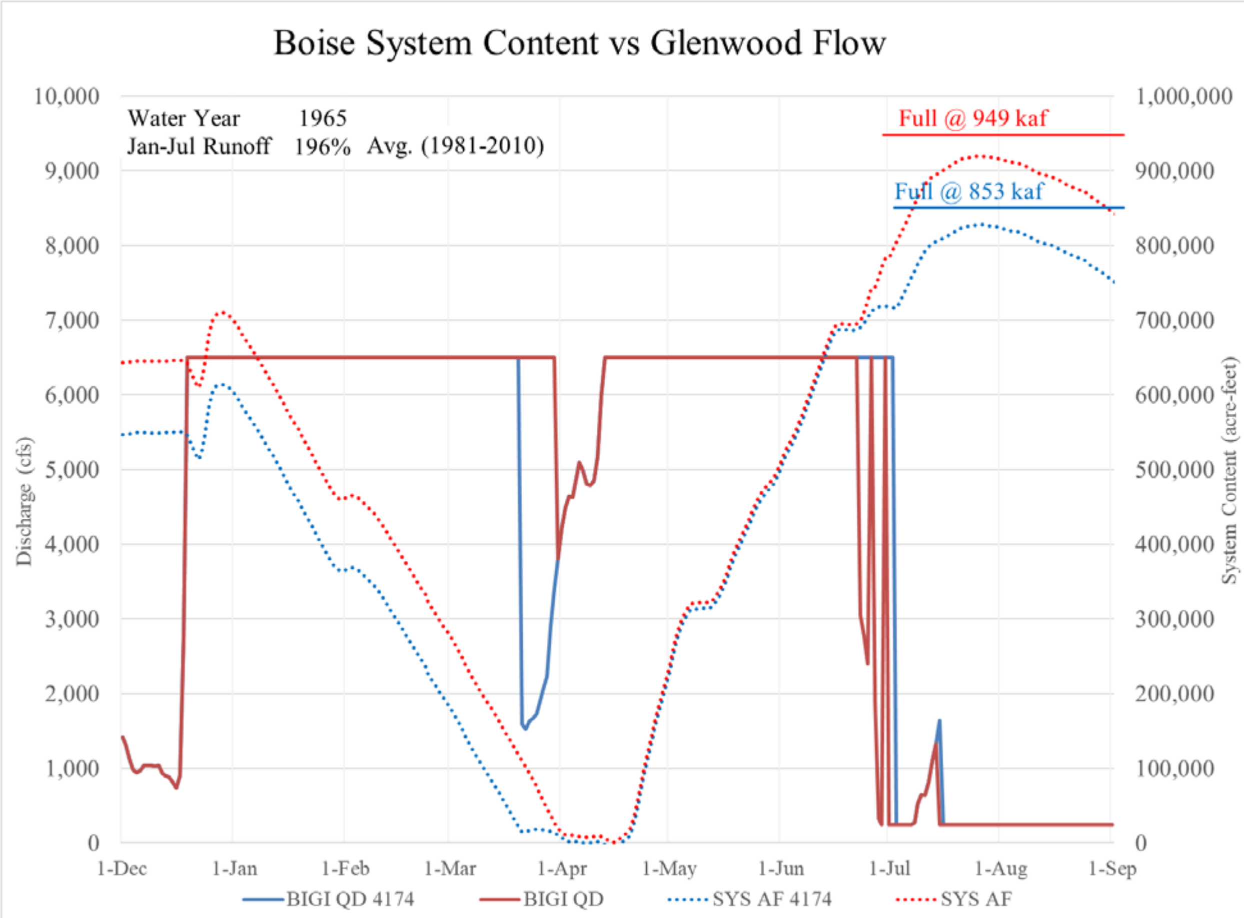


Figure 6. Comparison of system content (SYS AF) and flow at Glenwood (BIGI QD) for the baseline (red) and restriction (blue) scenarios for water year 1965. Note that flow for the restriction scenario remains at 6,500 cfs for a longer duration in late-June as compared to the baseline scenario.

To determine if there was an impact to the peak flow frequency caused by the restriction, spreadsheet modeling was completed for all years in the 1950-2019 period. Figure 7 is the annual peak flow exceedance curve for the Boise River at Glenwood Bridge and below Anderson Ranch Dam for the baseline and restriction scenarios. It is important to note that this analysis utilized the 1950-2019 period and the Spreadsheet, while other peak frequency curves contained in the Water Control Manual used a different analysis method and different period of record and resulted in different flood frequency values. For this analysis, peak flows at the Glenwood location were similar between the two scenarios. There is a slight increase in peak flows in the 85-72 percent exceedance range but this did not result in increasing flows over 6,500 cfs. The highest peak flow occurred for the 1986 historical year. The 1986 June hindcast under-forecasted the runoff volume by approximately 150,000 acre-feet and resulted in the Spreadsheet model passing inflow during the final fill of the system resulting in a peak flow of approximately 13,500 cfs. In actual operations, the final fill operation is regulated by a combination of real-time basin conditions as well as the Final Fill table provided in the Water Control Manual. The Final Fill table would have called for an increase in flows prior to what resulted in the Spreadsheet. There was no difference in the peak flow for 1986 between the two scenarios, leading to the conclusion that restriction was not the cause of the peak flow; rather, it was a under-forecast of runoff volume.

Peak flows below Anderson Ranch Dam were similar between the baseline and restriction scenarios except for flows above approximately 7,200 cfs. The peak flow for the restriction was limited to 7,200 cfs in the Spreadsheet model to match the outlet capacity at the dead pool elevation. All other peak flows were similar, showing that the restriction did not change the peak flow frequency from the baseline.

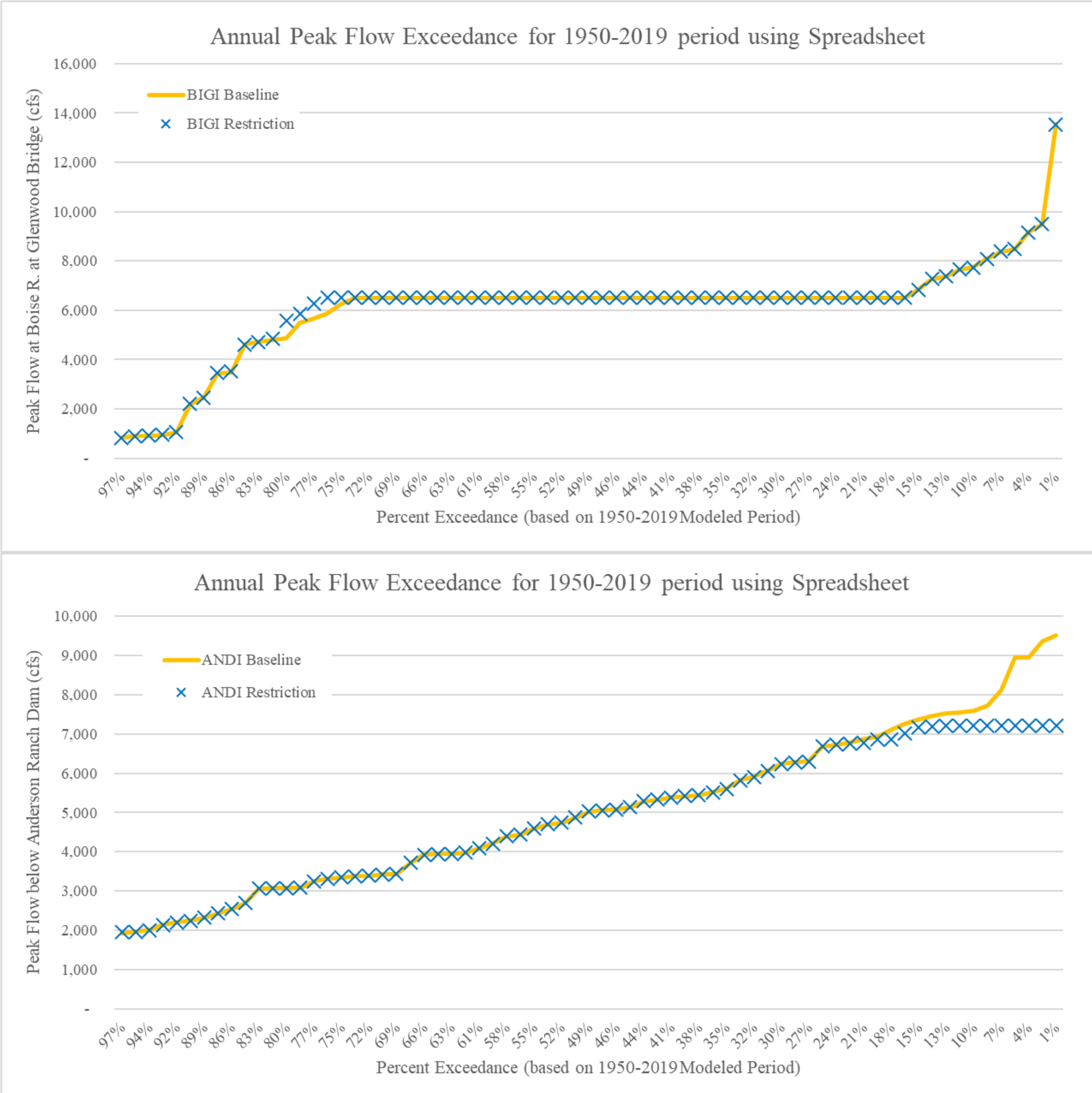


Figure 7. Annual Peak flow exceedance plot (for the 1950-2019 modeled period) for the Baseline and Restriction at the Boise River at Glenwood Bridge and below Anderson Ranch Dam.

6. Summary of FRM Impacts due to Pool Restriction Scenario

The following is a summary of the FRM impacts due to the restriction scenario.

- The restriction scenario did not increase the annual peak flow frequency at the Boise River at Glenwood Bridge for the 1950-2019 period.
- For all water years that would require more System FRM space than available or would require space in Anderson, the following results were observed:
  - The restriction scenario was able to keep flows at Glenwood to 6,500 cfs or less (except for 1983 and 2017).
  - When the baseline and restriction did not draft empty, there were minimal, if any, changes in flow below Anderson and at Glenwood.
  - When the baseline did draft empty, the restriction scenario was not able to provide the total system FRM space required and resulted in flows decreasing sooner during the evacuation period (due to System being empty earlier) and staying at 6,500 cfs for longer during refill.
  - For large water years, some space would need to be reserved to limit flows to the 7,200 cfs target (for example, 2006). This would need to be further investigated if the project moves forward and may be a designated percent of total system space that would be required to be held in Anderson.
- This analysis used a target flow of 6,500 cfs at Glenwood, while historically, higher flows than this have been required. For instance, over the last 10 water years, peak flows at Glenwood have exceeded 6,500 cfs for four of the water years. Utilizing 6,500 cfs in this analysis provides a conservative method to determine the FRM risk.
- Below Anderson, the restriction scenario had similar flows to the baseline, with most differences occurring when flows reduced earlier during the evacuation period but remaining higher during refill.

7. FRM Mitigation Strategy and Next Steps

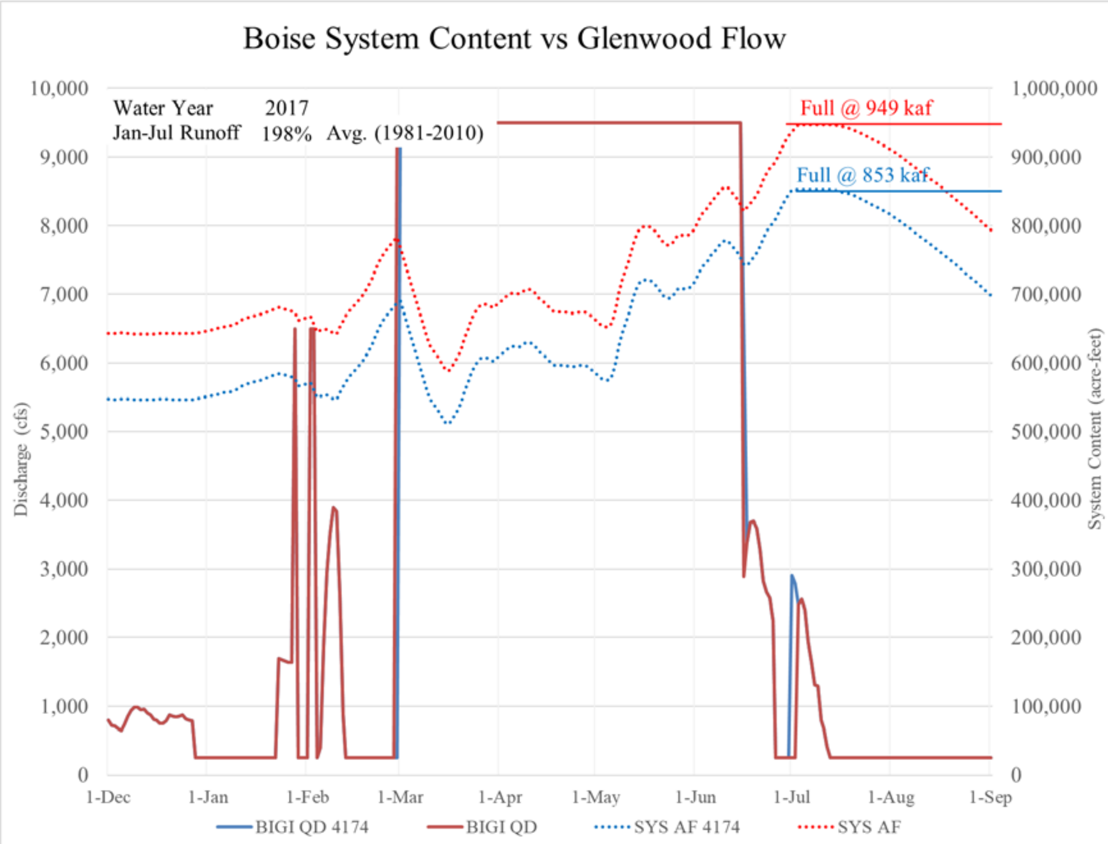
Based on the analysis, it appears the risk to FRM operations is low during the potential restriction. Having said that, FRM mitigation measures during the pool restriction will be necessary. The following is a list of preliminary FRM mitigation measures that would need to be adhered to during the restriction.

1. Provide the November 1st – Dec 31st space requirement of 300,000 ac-ft (165,000 ac-ft in Lower System).
2. Provide the January 1st – March 30th minimum space requirement of 300,000 to 50,000 ac-ft, depending on forecast.
3. Provide the Dynamic Forecast Based System Space Requirement (January 1st-July 15th) or draft system to empty, whichever is less.

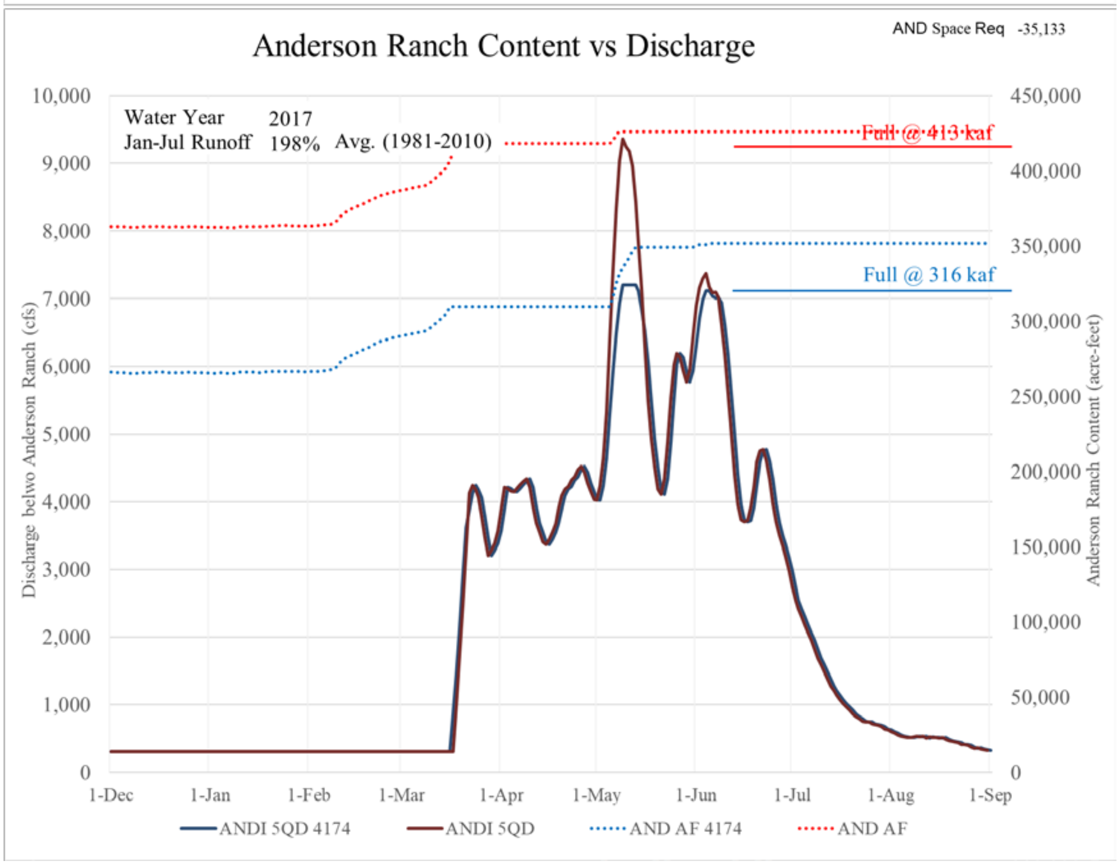
4. In the event the project moves forward, develop guidance for the percent of total system space that would be required to be held in Anderson based on a local Anderson Ranch runoff volume forecast and maximum target discharge.
5. Identify operational triggers where construction would need to be delayed due to severe hydrologic conditions; develop lead times required to demobilize equipment.

Attachment A

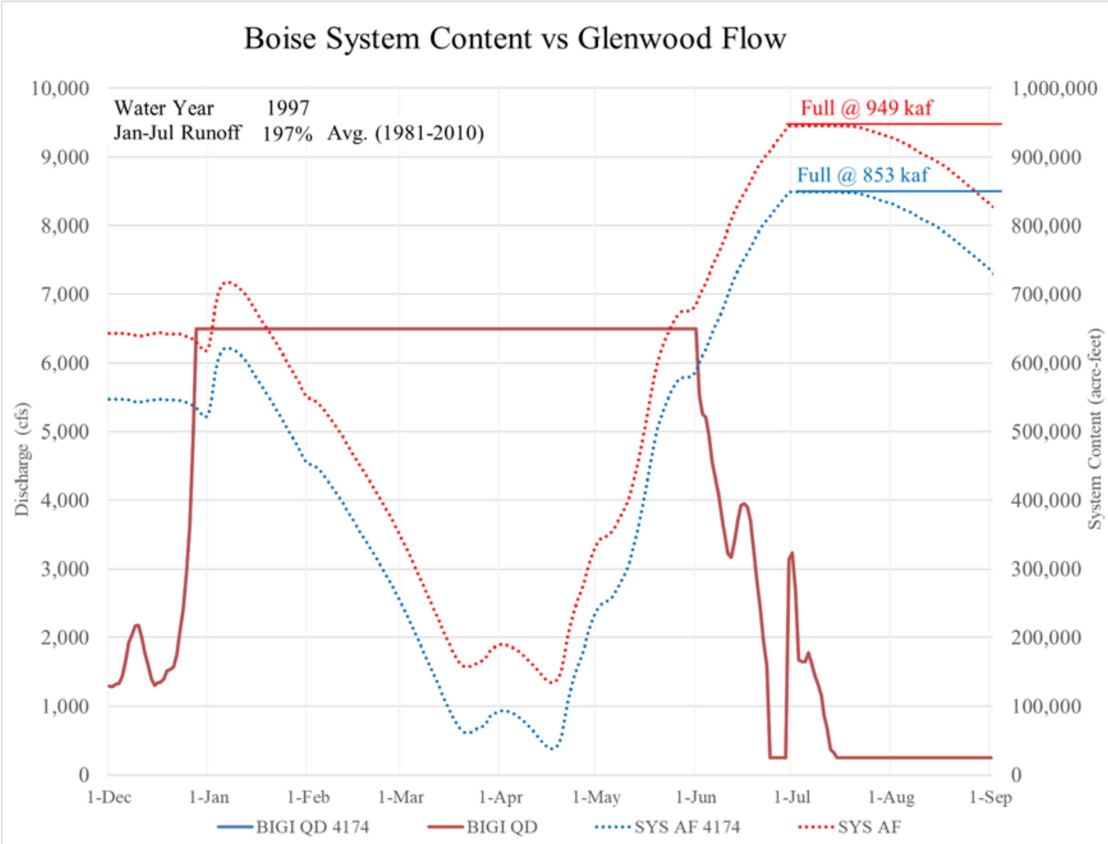
Real-Time Operations Model Summary Plots



Boise System Content vs Glenwood Flow
Water Year 2017
Jan-Jul Runoff 198% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF



AND Space Req -35,133
Anderson Ranch Content vs Discharge
Water Year 2017
Jan-Jul Runoff 198% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1997
Jan-Jul Runoff 197% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
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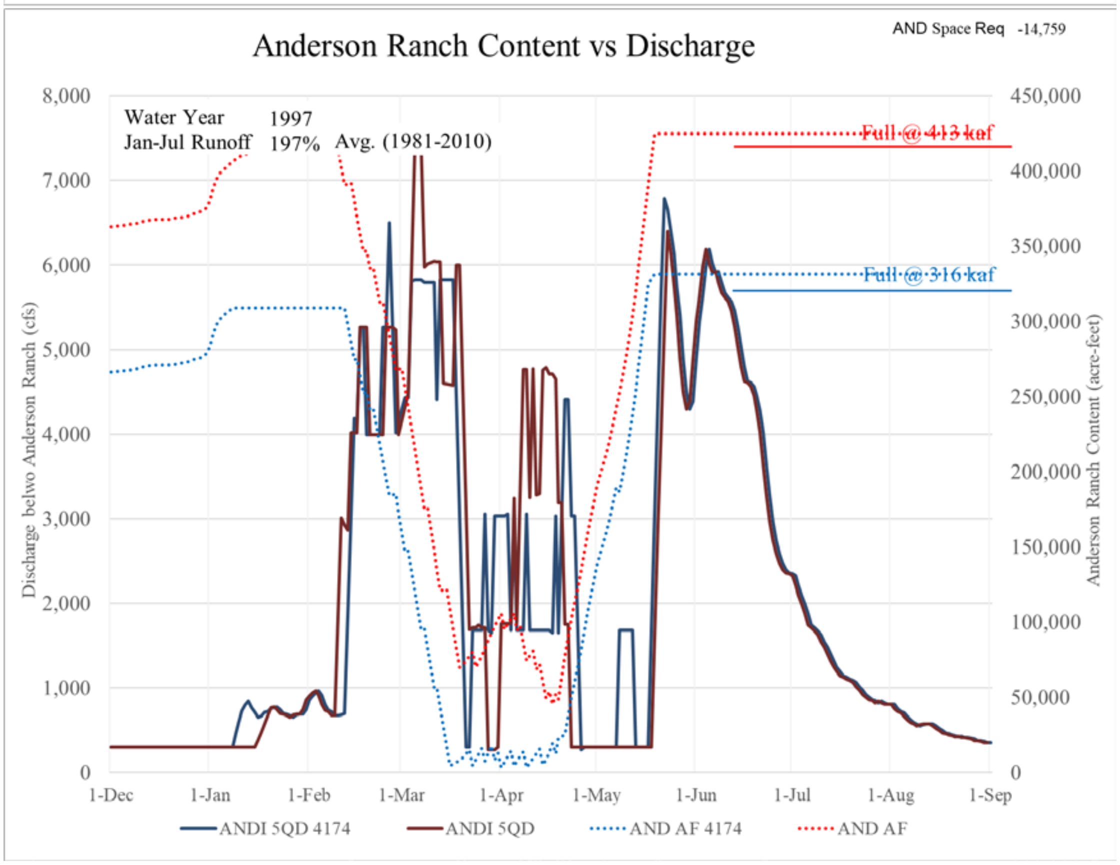
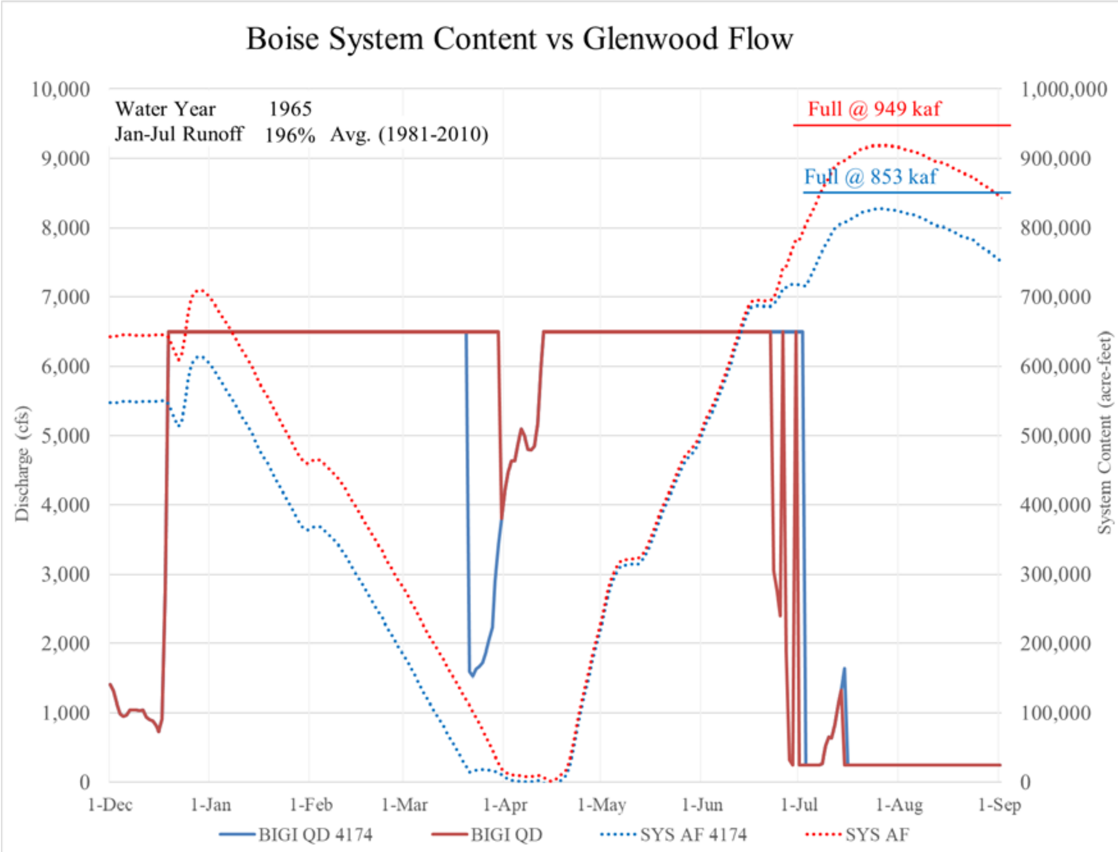
BIGI QD
SYS AF 4174
SYS AF


Anderson Ranch Content vs Discharge
AND Space Req -14,759
Water Year 1997
Jan-Jul Runoff 197% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1965
Jan-Jul Runoff 196% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
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1-Jun
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1-Aug
1-Sep
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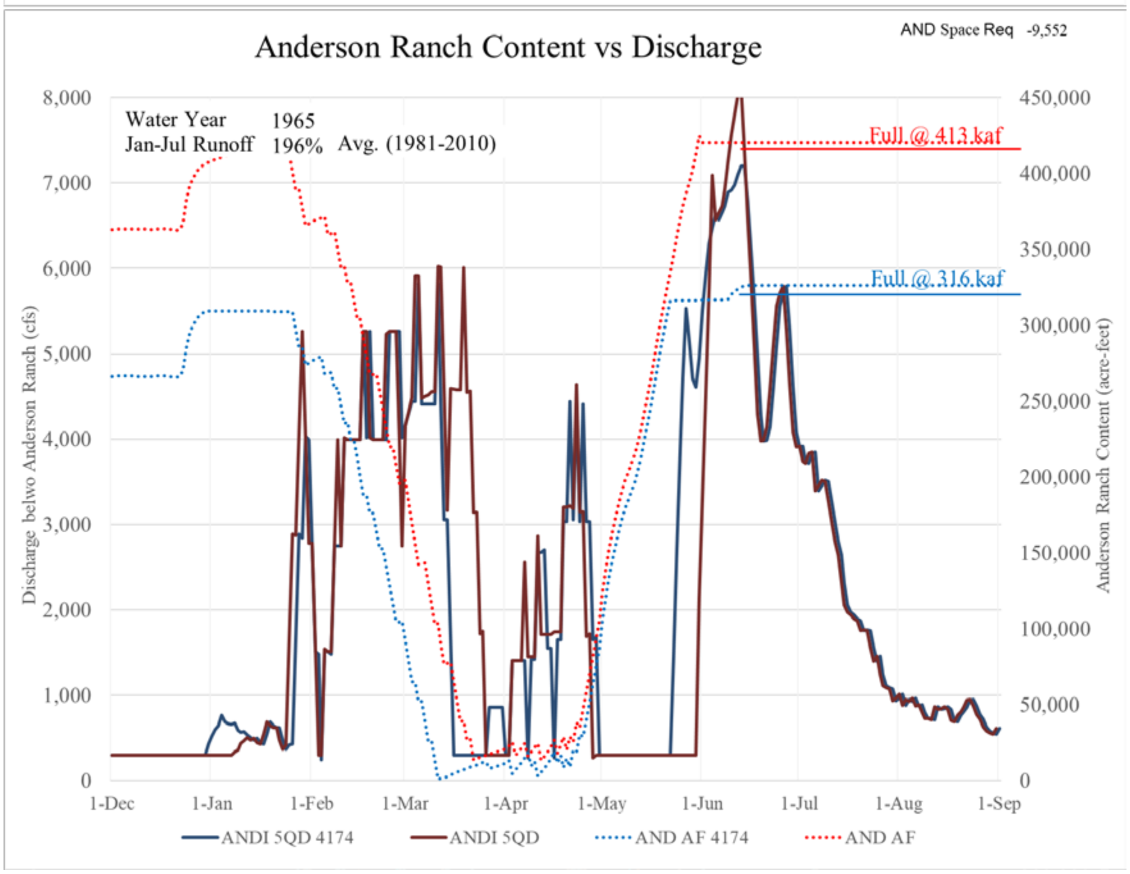
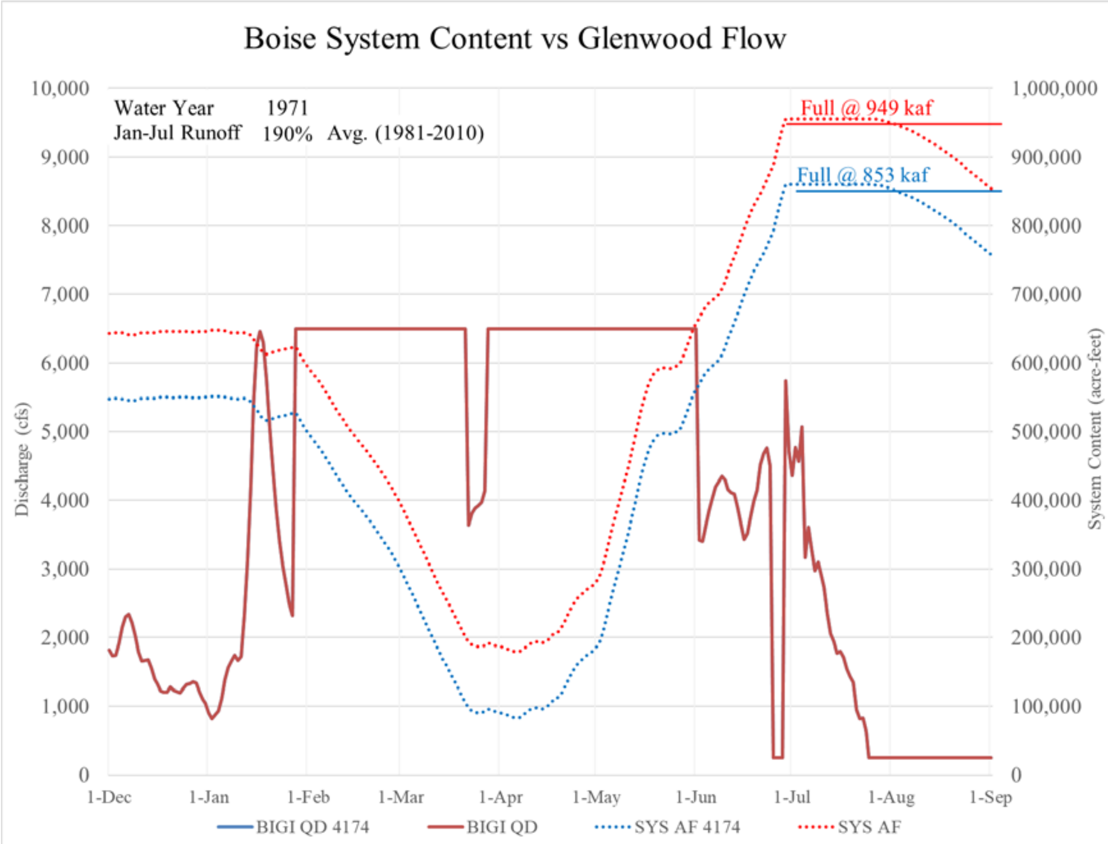
BIGI QD
SYS AF 4174
SYS AF


AND Space Req -9,552
Anderson Ranch Content vs Discharge
Water Year 1965
Jan-Jul Runoff 196% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF



Boise System Content vs Glenwood Flow
Water Year 1971
Jan-Jul Runoff 190% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
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1-Jun
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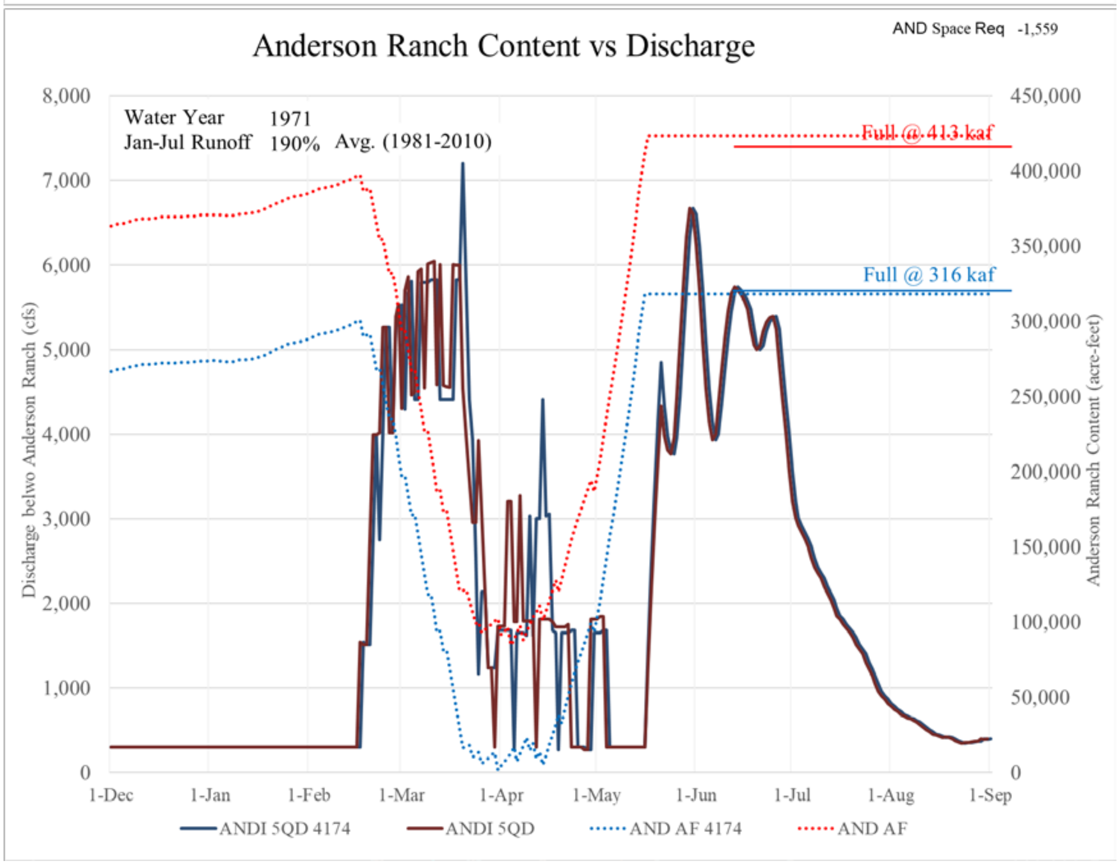
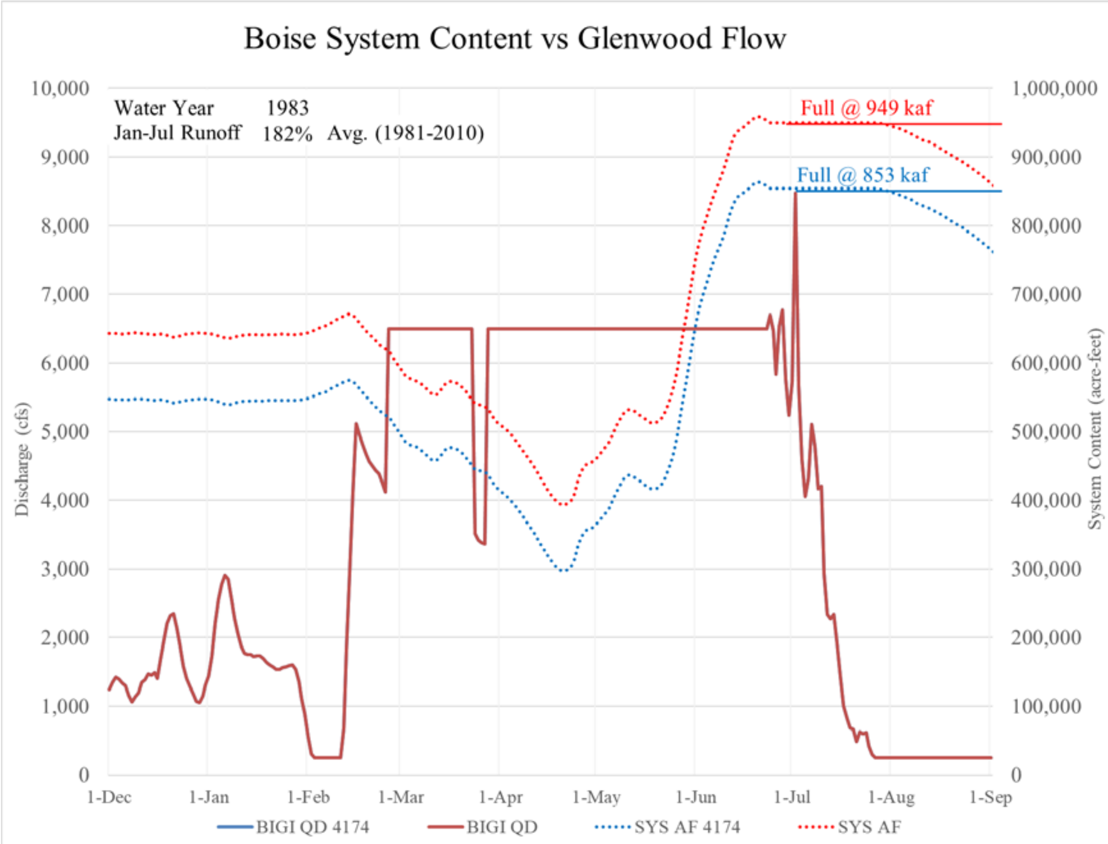
SYS AF 4174
SYS AF



Anderson Ranch Content vs Discharge
AND Space Req -1,559
Water Year 1971
Jan-Jul Runoff 190% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1983
Jan-Jul Runoff 182% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec 1-Jan 1-Feb 1-Mar 1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep
BIGI QD 4174
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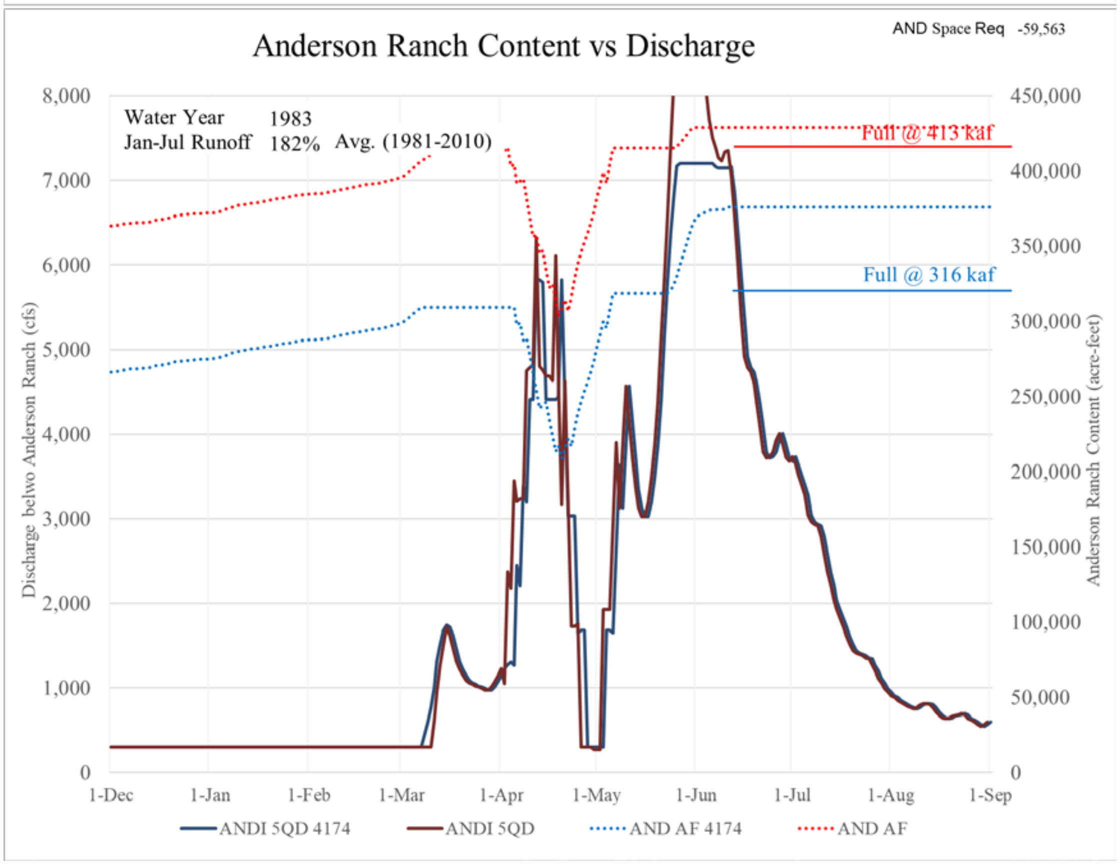
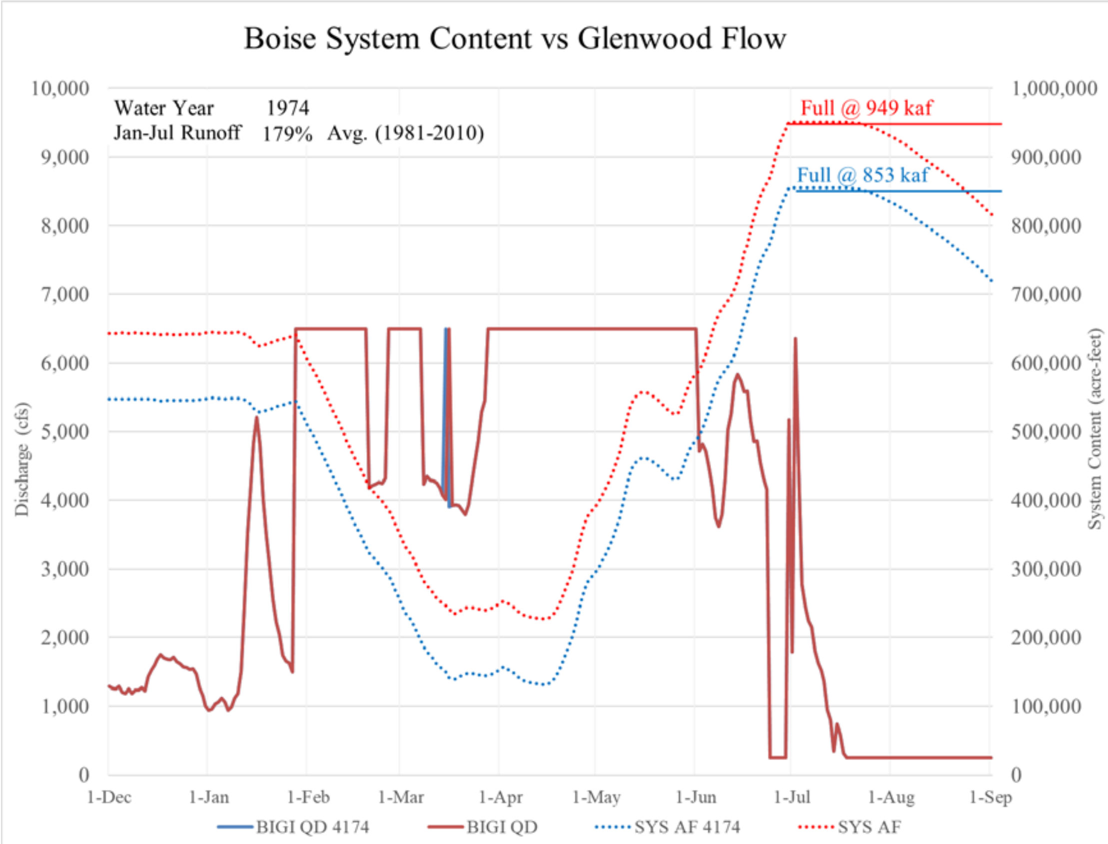
SYS AF 4174
SYS AF


Anderson Ranch Content vs Discharge
AND Space Req -59,563
Water Year 1983
Jan-Jul Runoff 182% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec 1-Jan 1-Feb 1-Mar 1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1974
Jan-Jul Runoff 179% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
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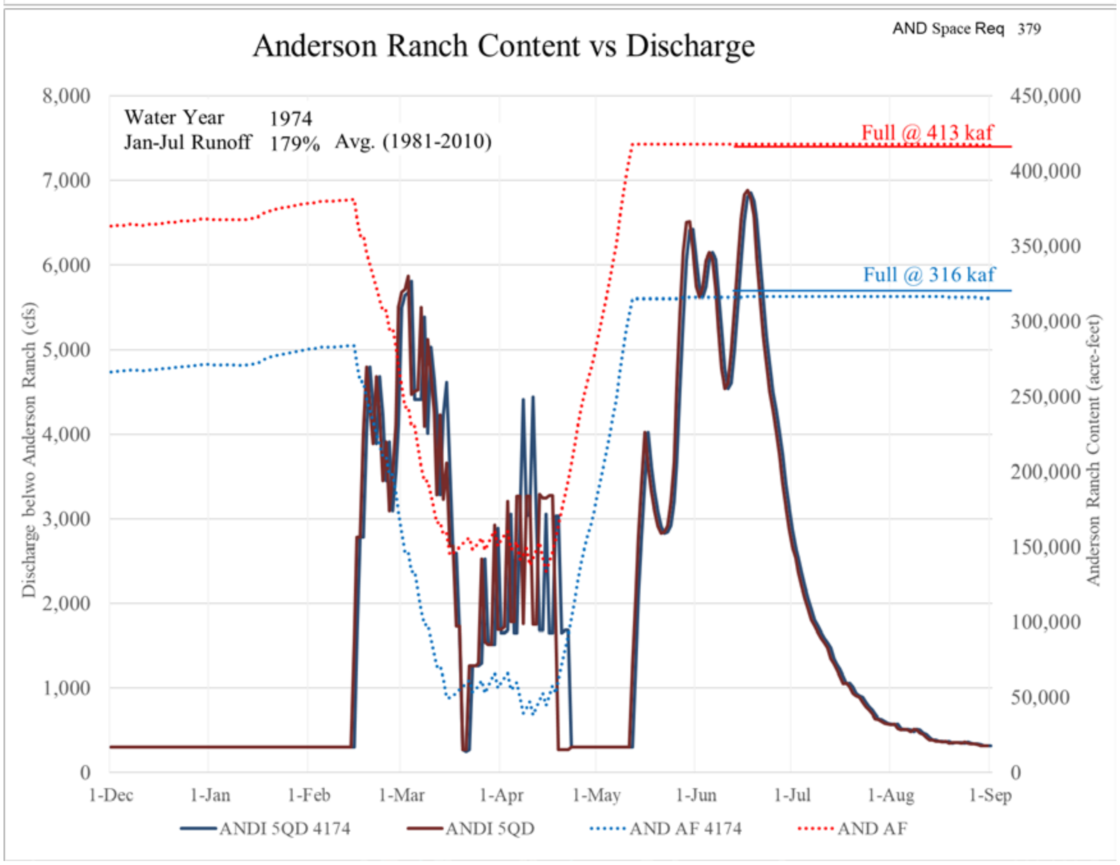
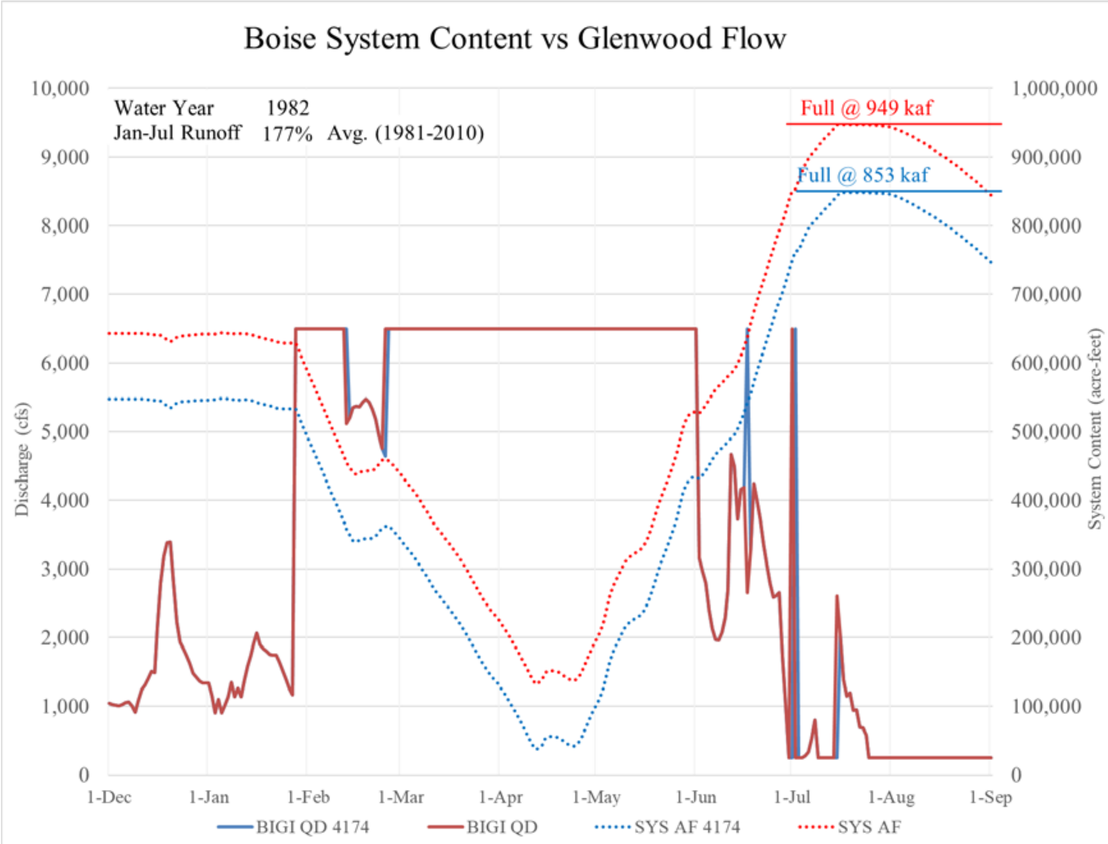
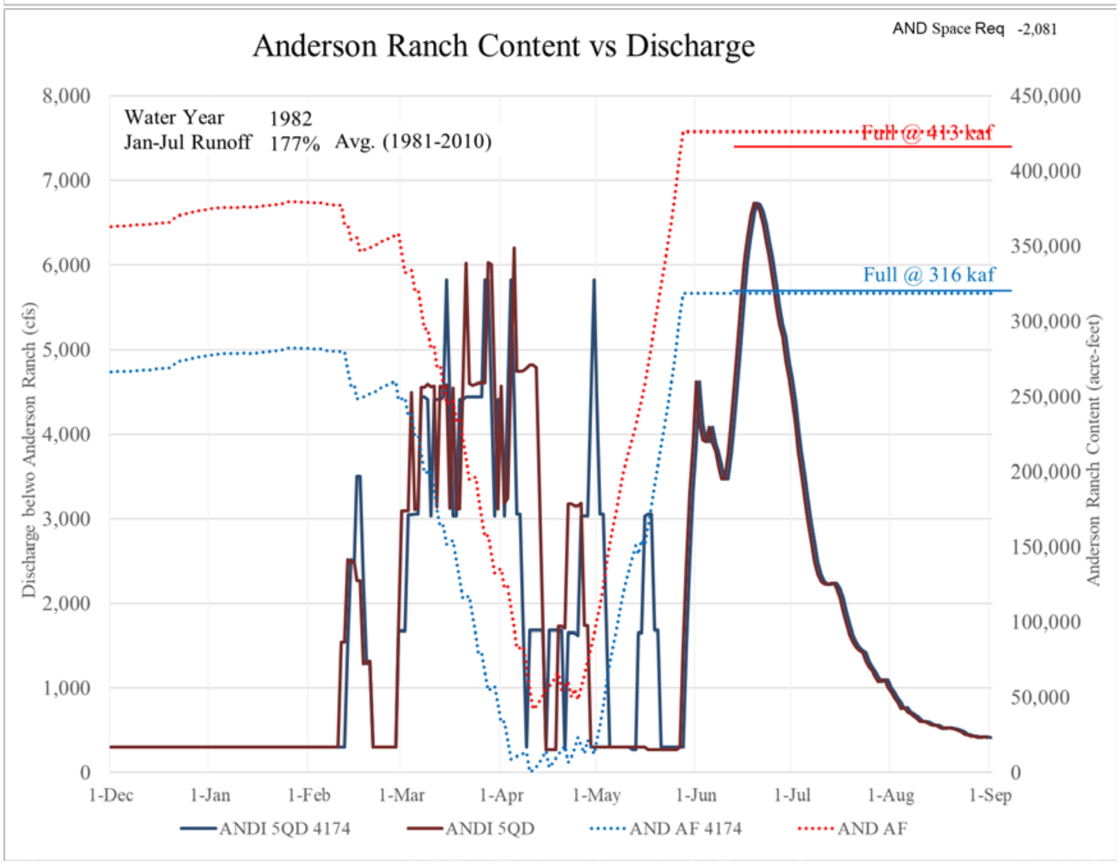
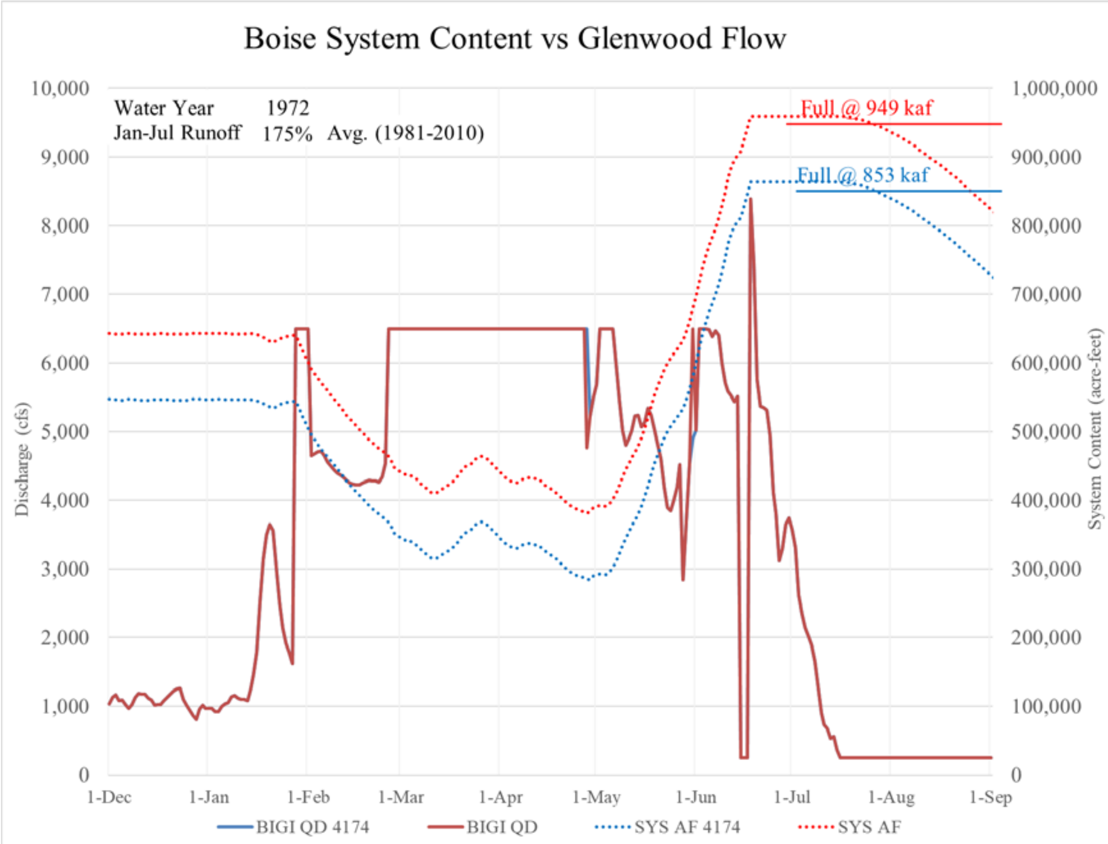
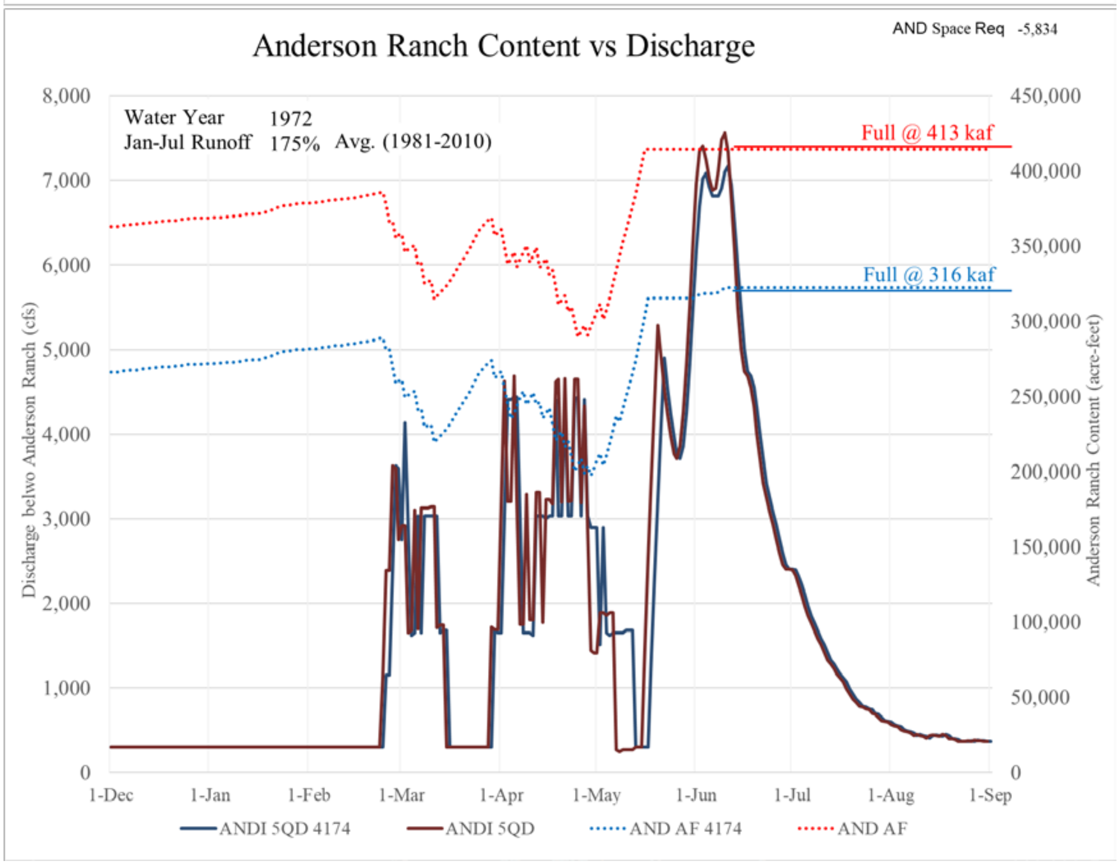
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

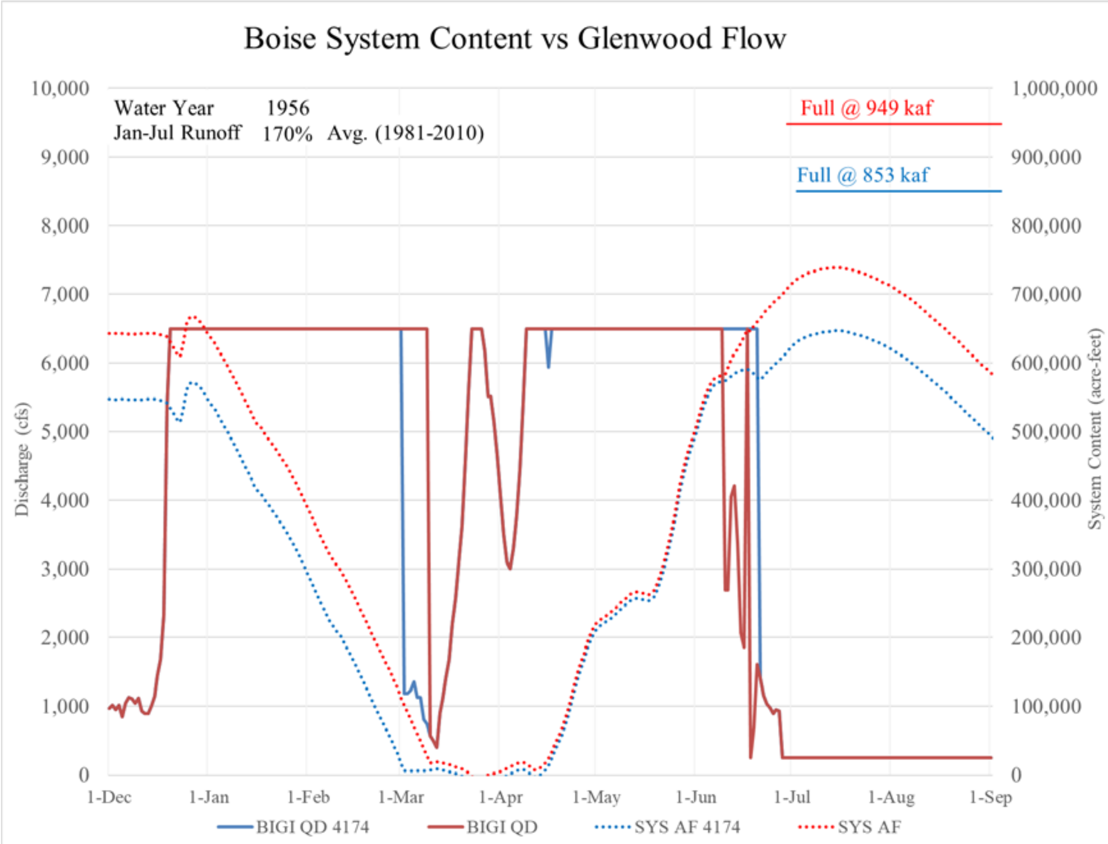

Anderson Ranch Content vs Discharge
AND Space Req 379
Water Year 1974
Jan-Jul Runoff 179% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1982
Jan-Jul Runoff 177% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF


Anderson Ranch Content vs Discharge
AND Space Req -2,081
Water Year 1982
Jan-Jul Runoff 177% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1972
Jan-Jul Runoff 175% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF


AND Space Req -5,834
Anderson Ranch Content vs Discharge
Water Year 1972
Jan-Jul Runoff 175% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1956
Jan-Jul Runoff 170% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
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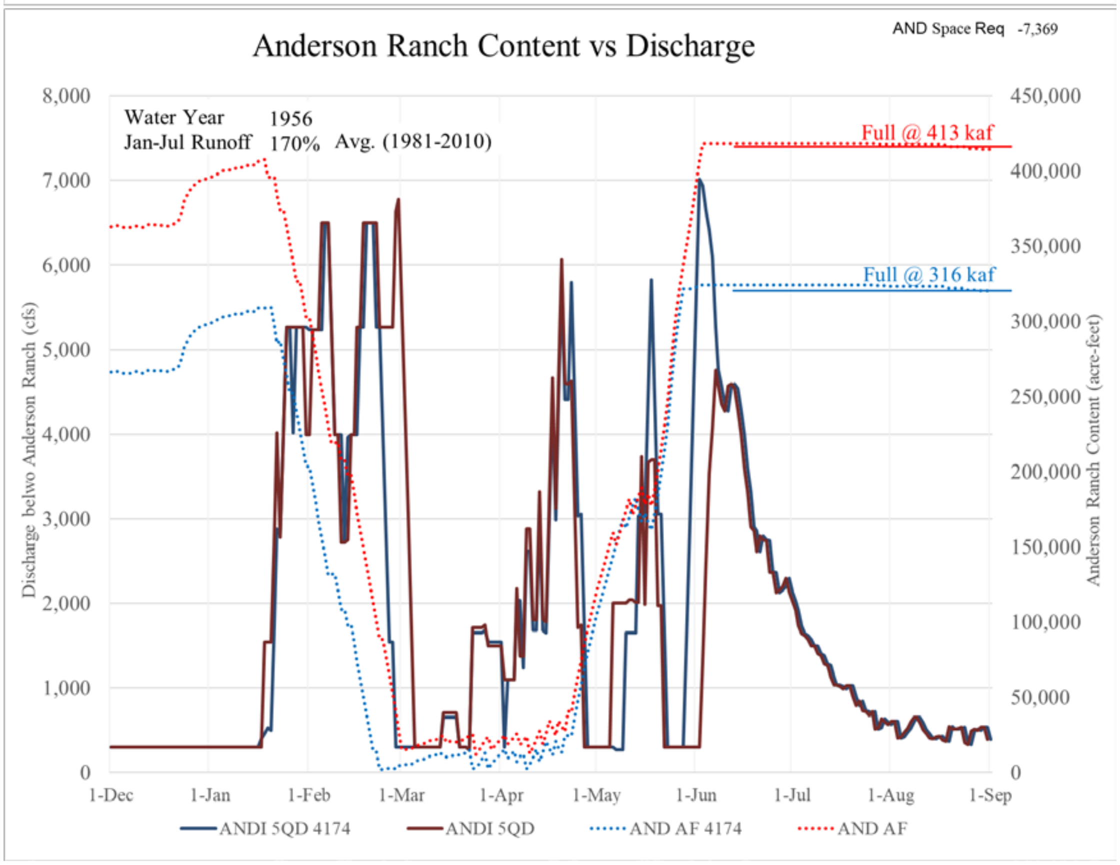
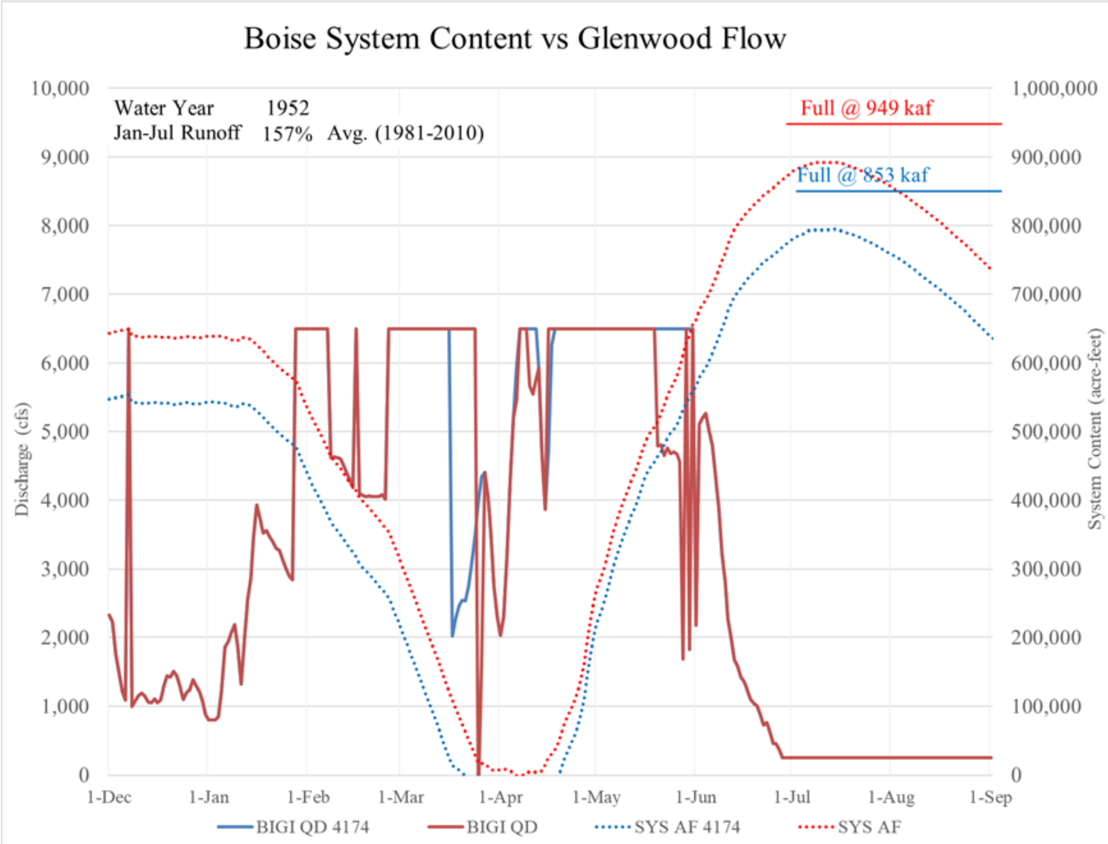
BIGI QD
SYS AF 4174
SYS AF


AND Space Req -7,369
Anderson Ranch Content vs Discharge
Water Year 1956
Jan-Jul Runoff 170% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF



Boise System Content vs Glenwood Flow
Water Year 1952
Jan-Jul Runoff 157% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
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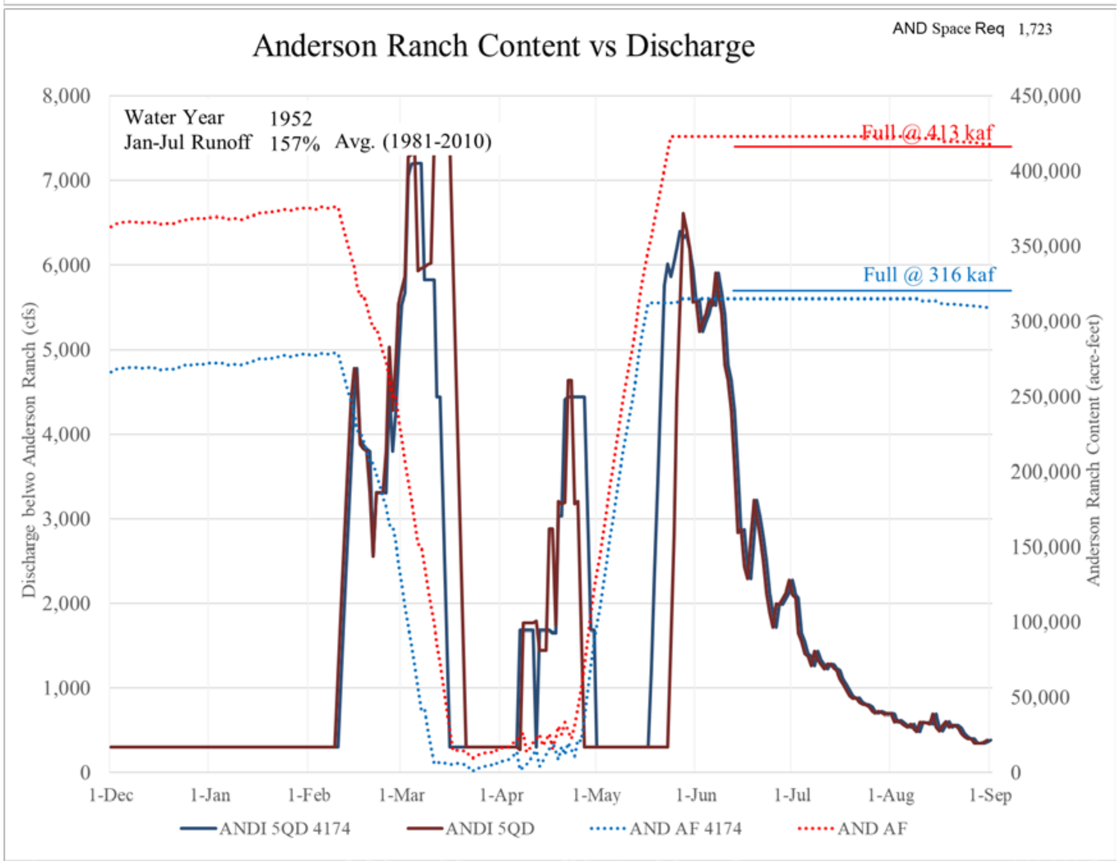
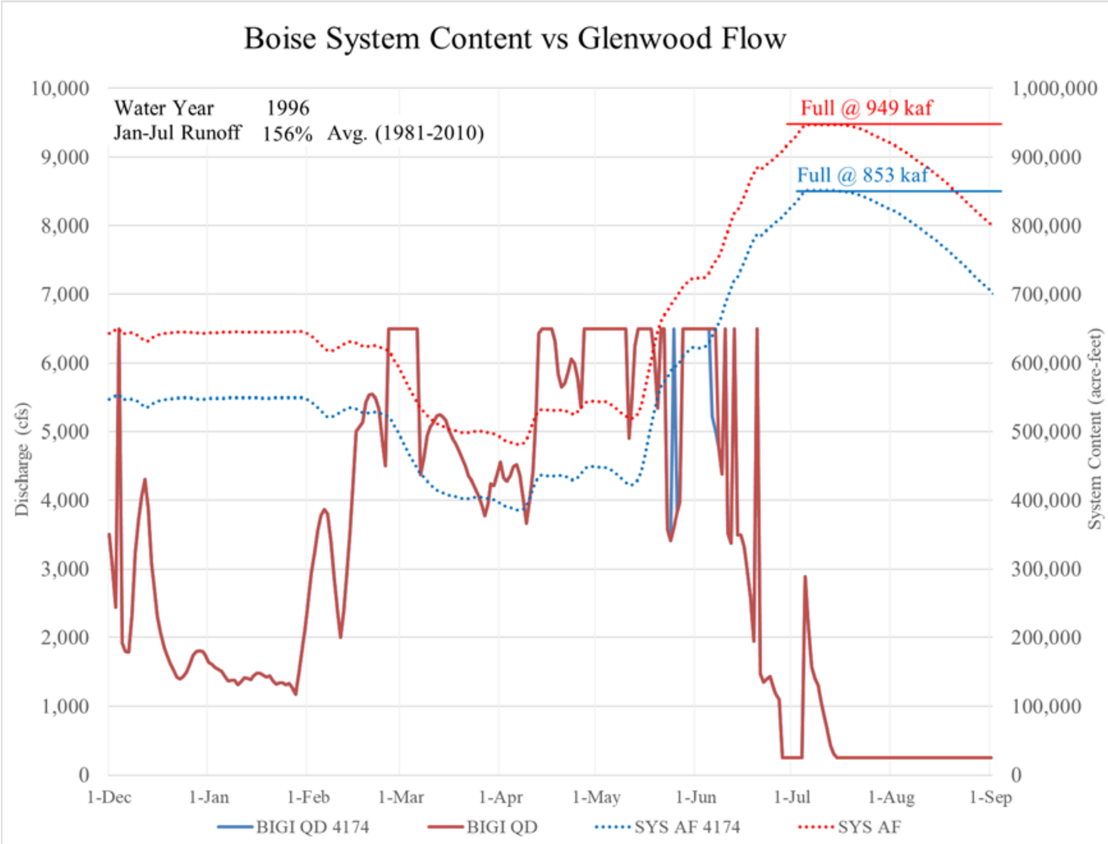
BIGI QD
SYS AF 4174
SYS AF



Anderson Ranch Content vs Discharge
AND Space Req 1,723
Water Year 1952
Jan-Jul Runoff 157% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1996
Jan-Jul Runoff 156% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
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1-Jun
1-Jul
1-Aug
1-Sep
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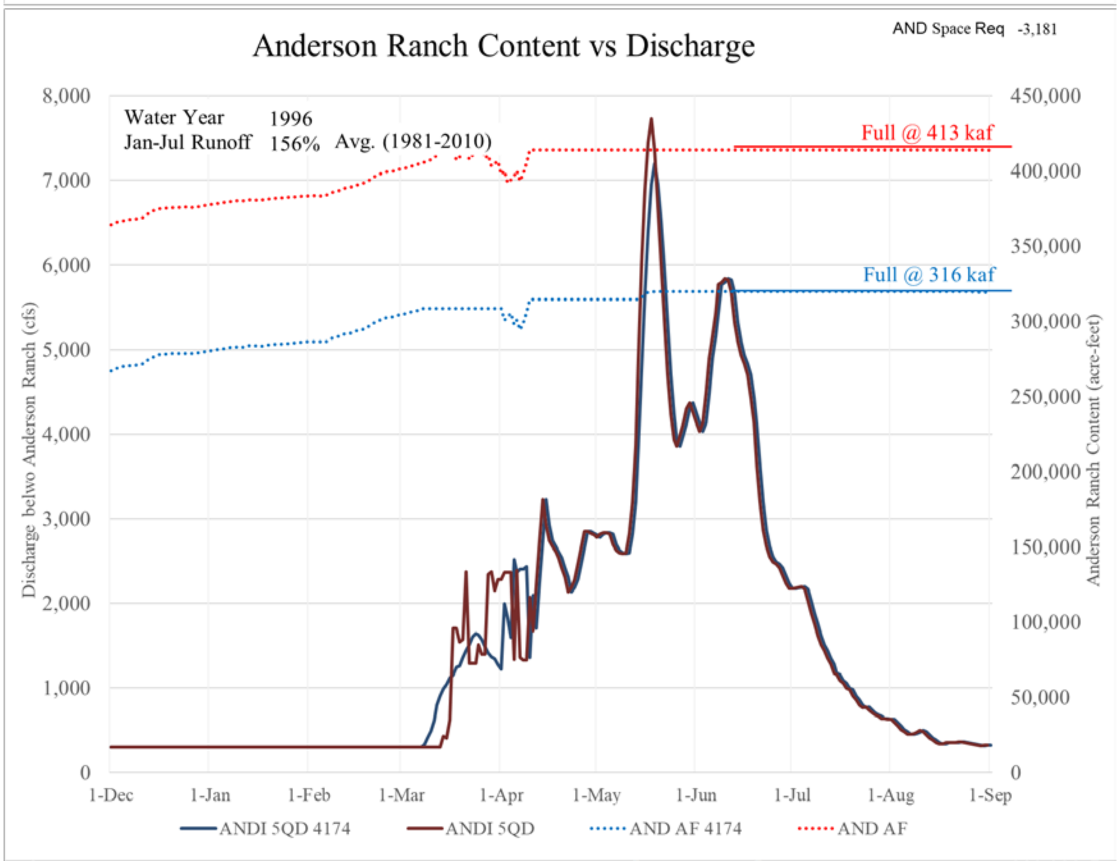
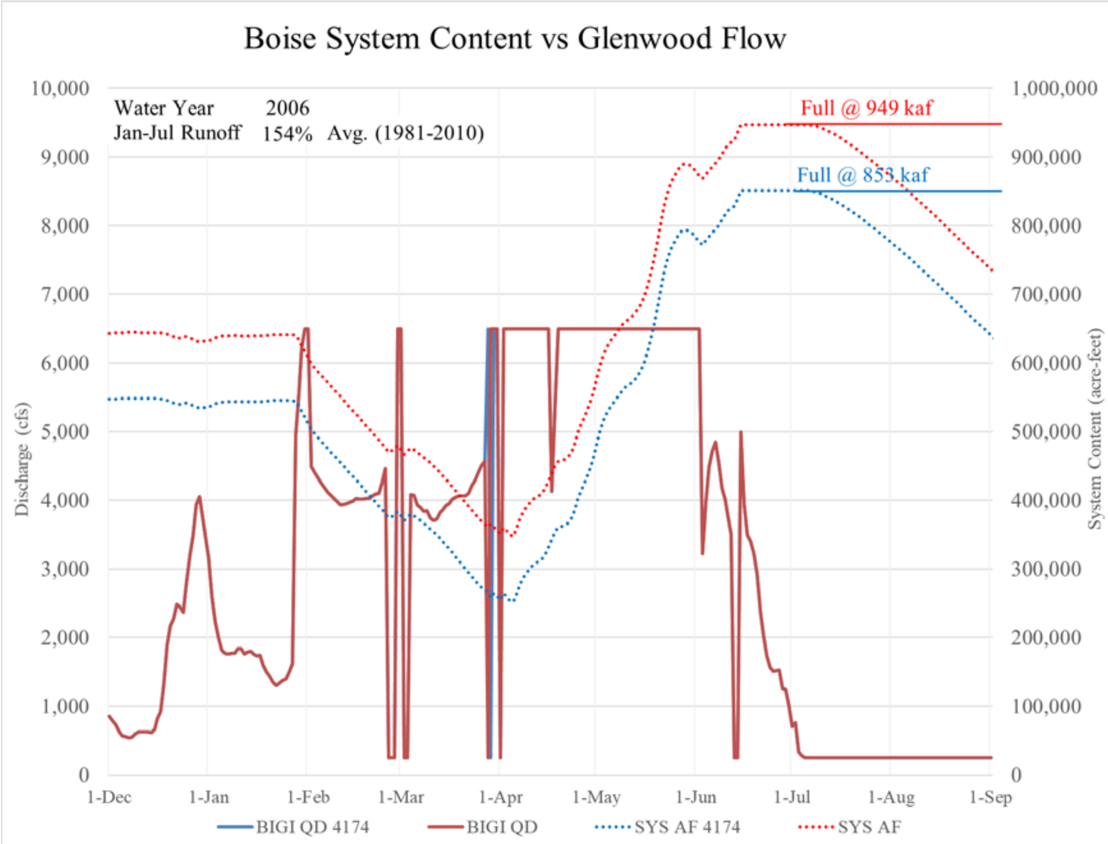
BIGI QD
SYS AF 4174
SYS AF


Anderson Ranch Content vs Discharge
AND Space Req -3,181
Water Year 1996
Jan-Jul Runoff 156% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 2006
Jan-Jul Runoff 154% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
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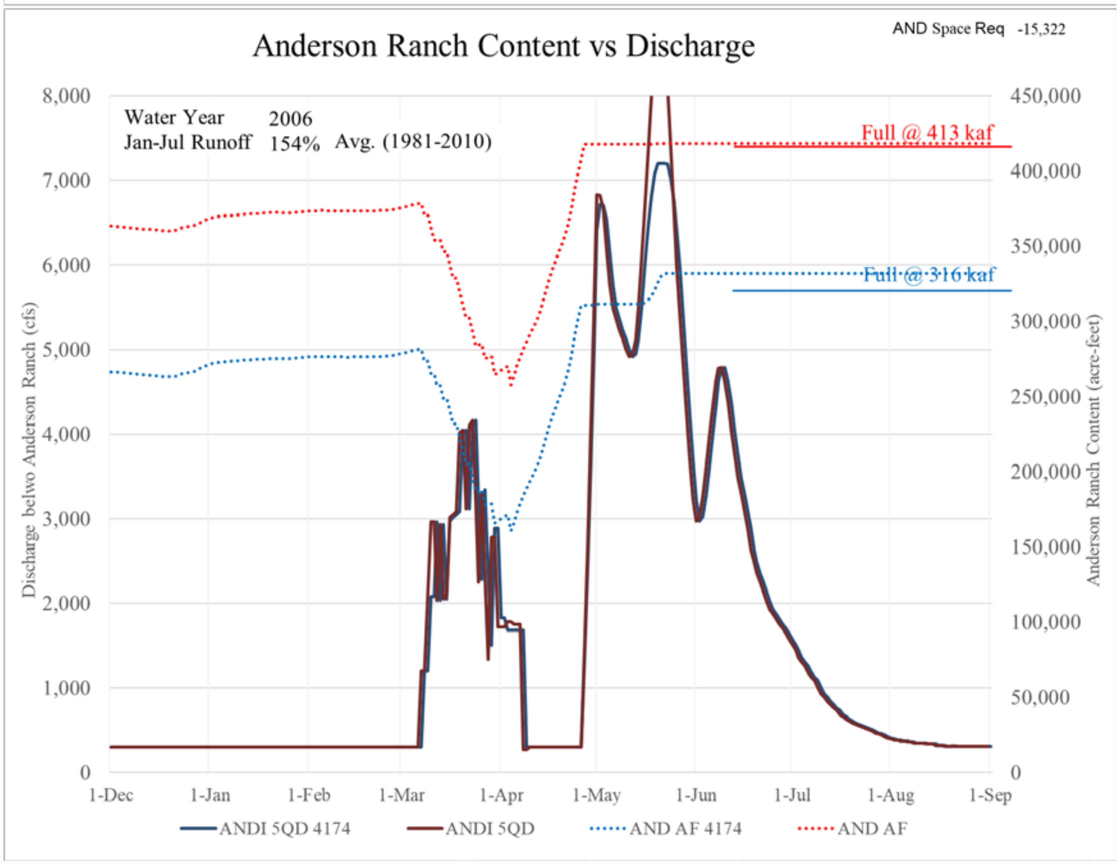
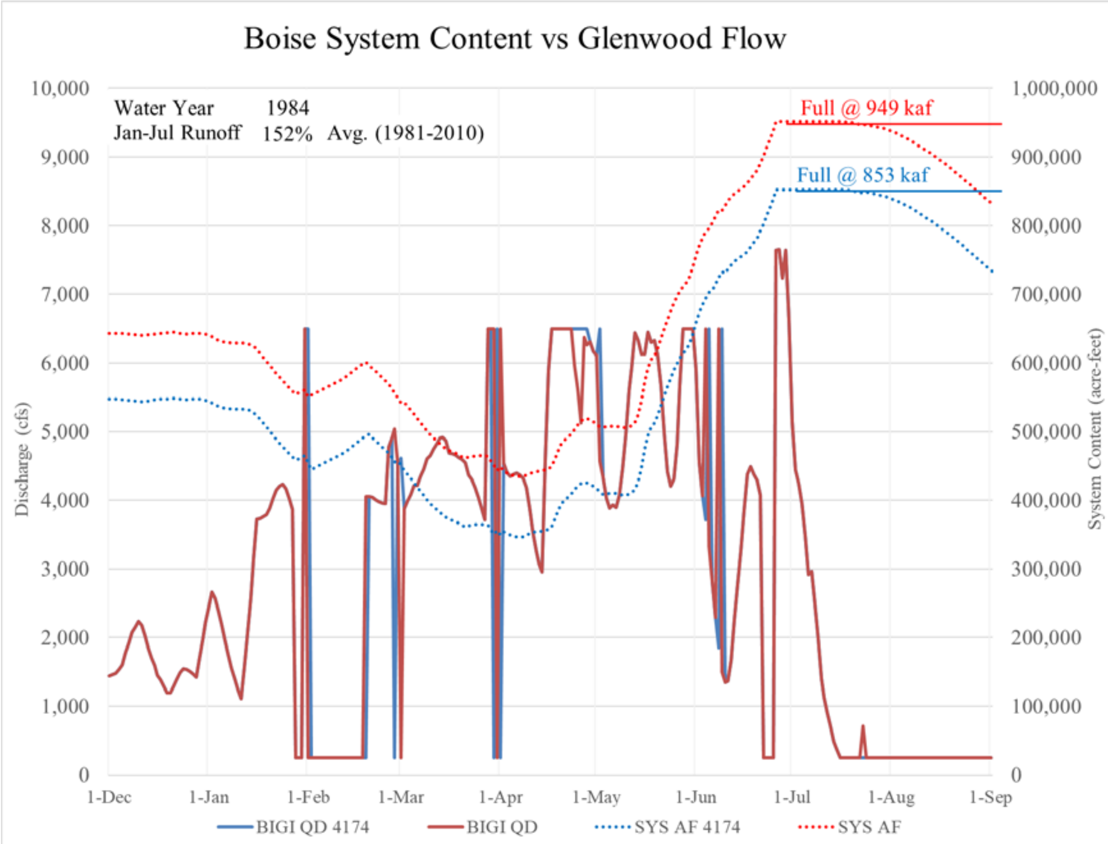
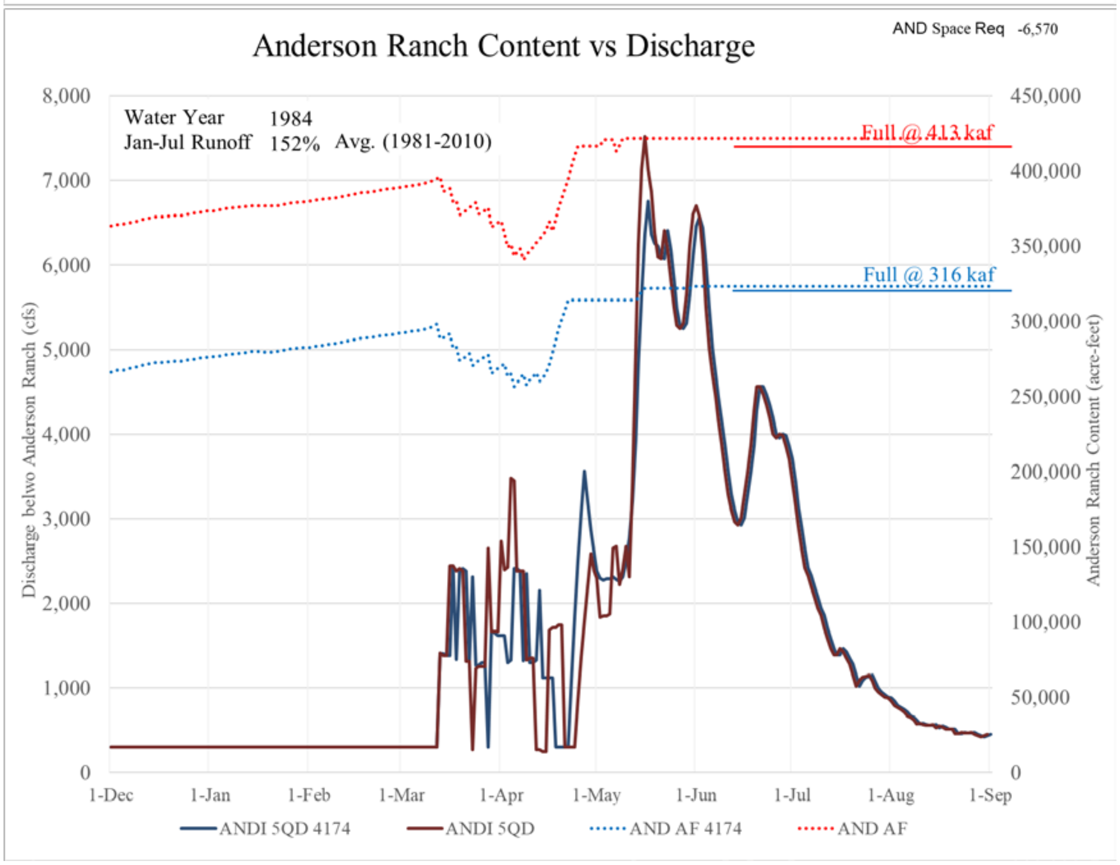
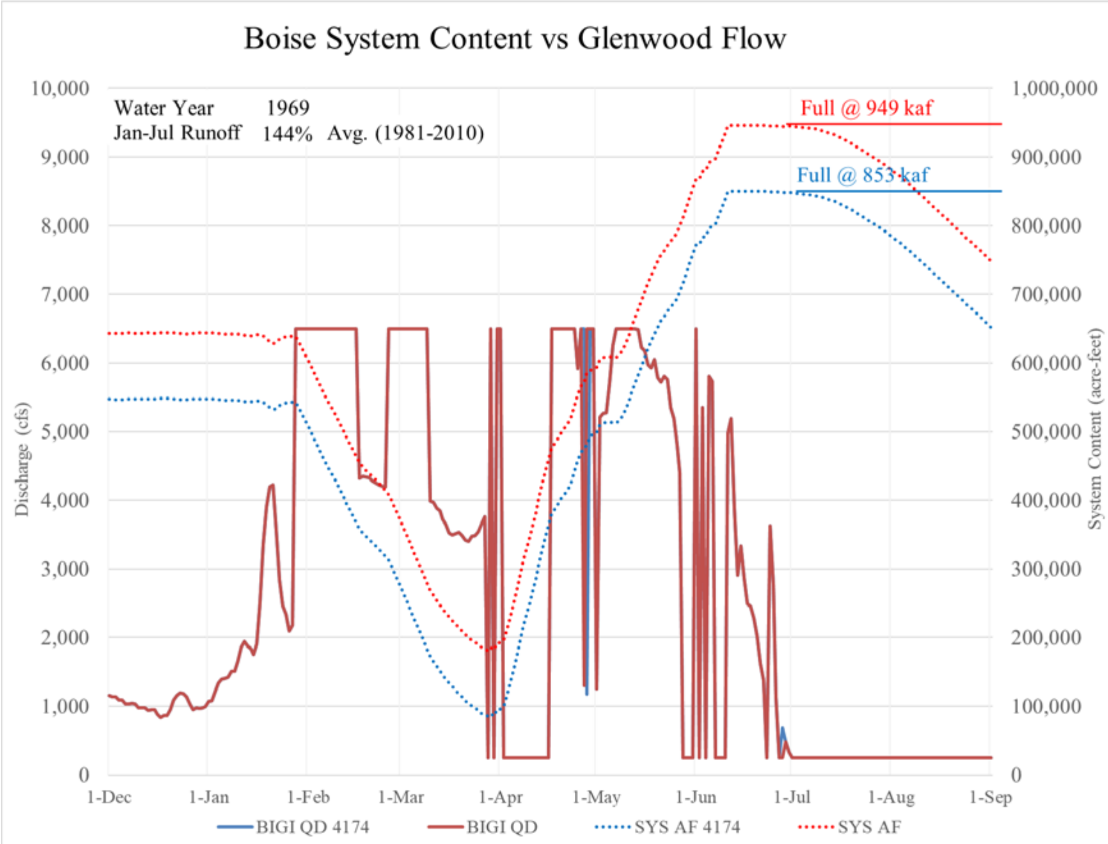
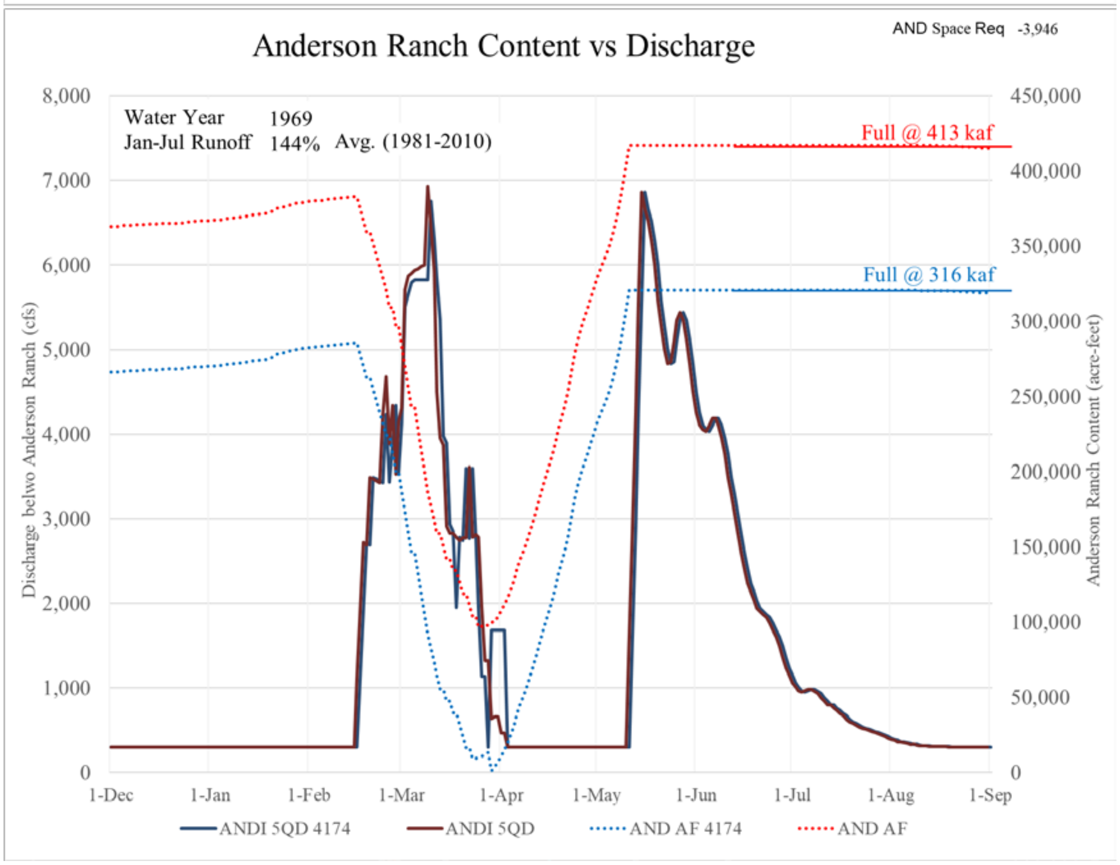
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

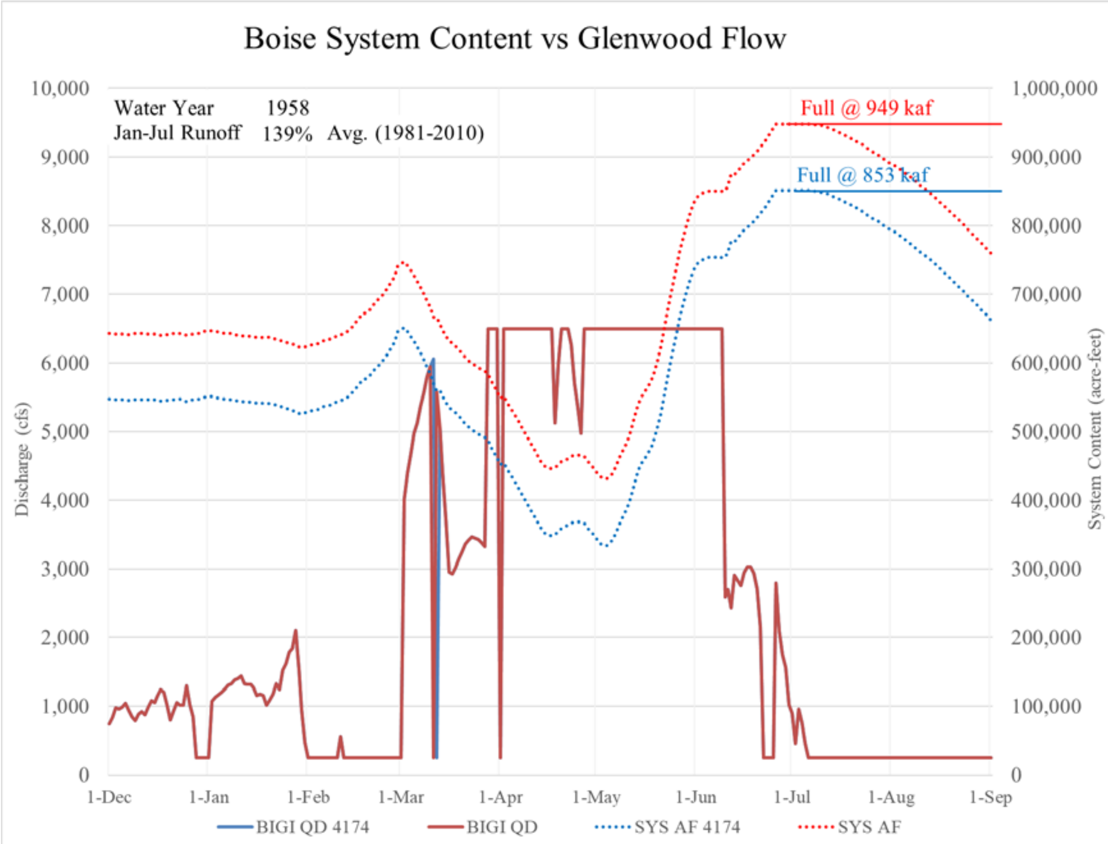

Anderson Ranch Content vs Discharge
AND Space Req -15,322
Water Year 2006
Jan-Jul Runoff 154% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

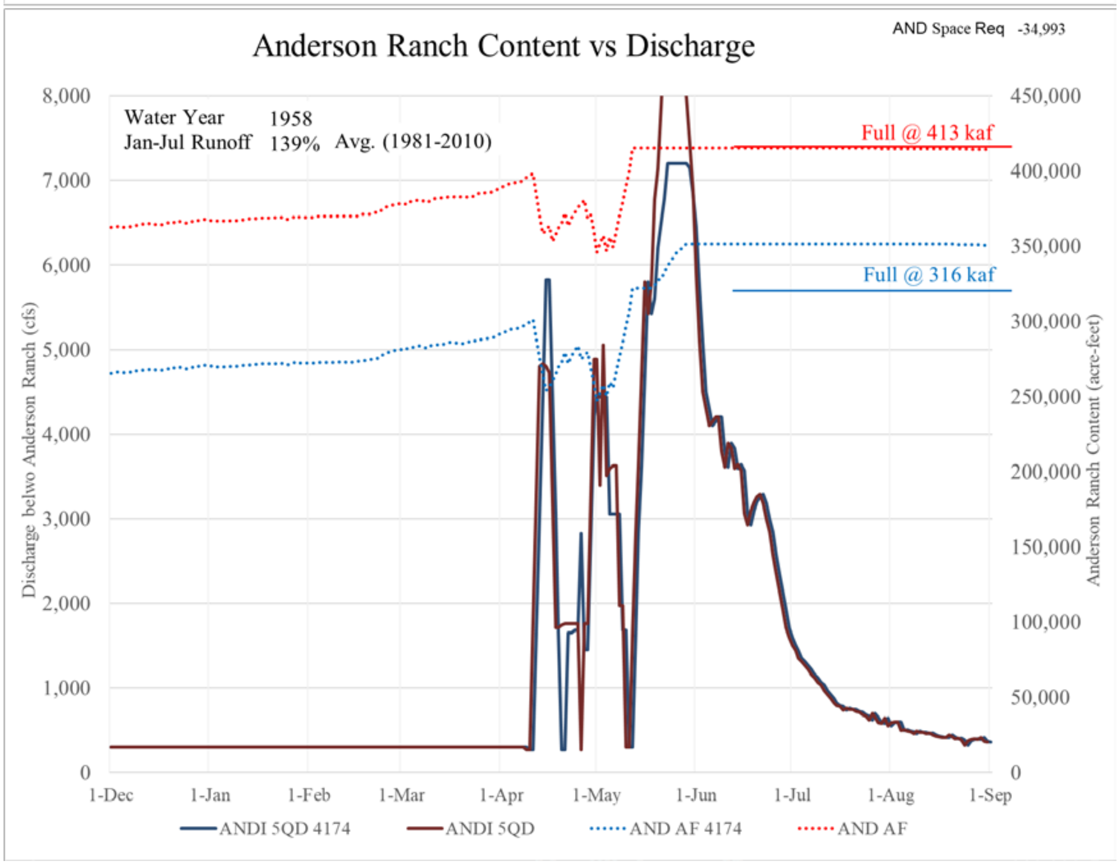

Boise System Content vs Glenwood Flow
Water Year 1984
Jan-Jul Runoff 152% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
1-Dec 1-Jan 1-Feb 1-Mar 1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

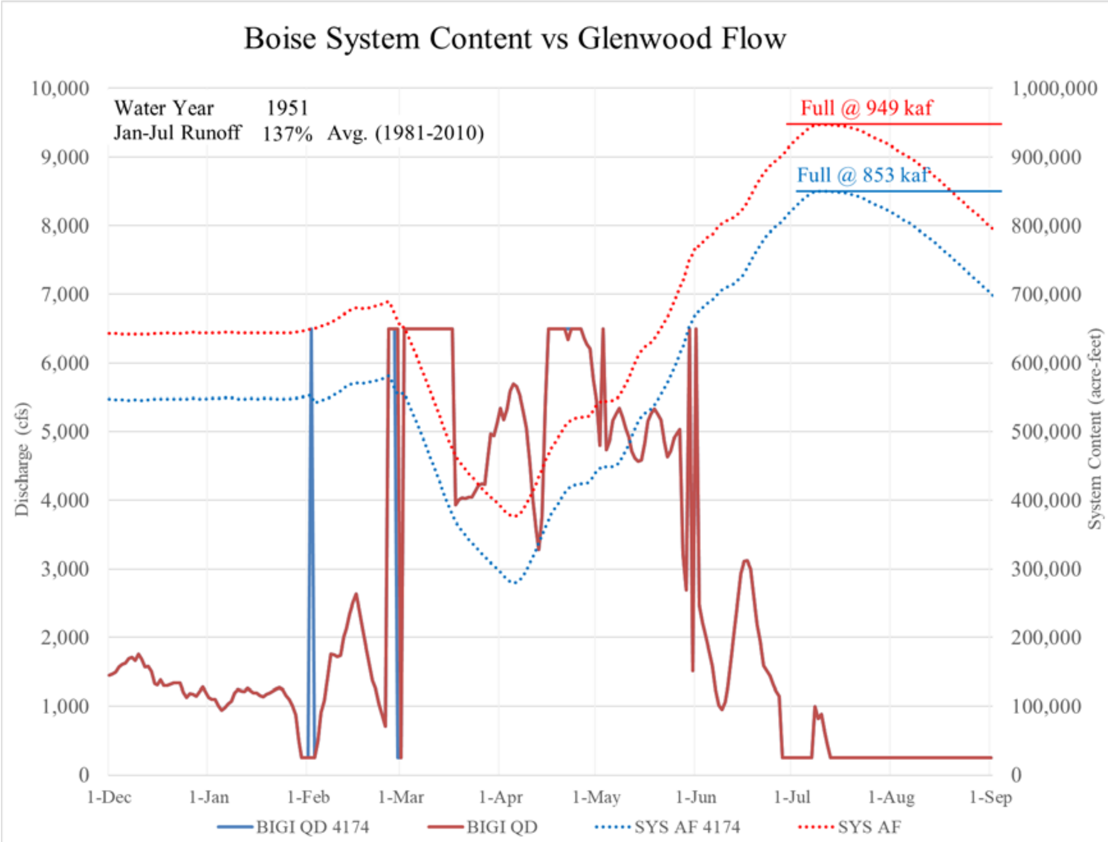

Anderson Ranch Content vs Discharge
AND Space Req -6,570
Water Year 1984
Jan-Jul Runoff 152% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
1-Dec 1-Jan 1-Feb 1-Mar 1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

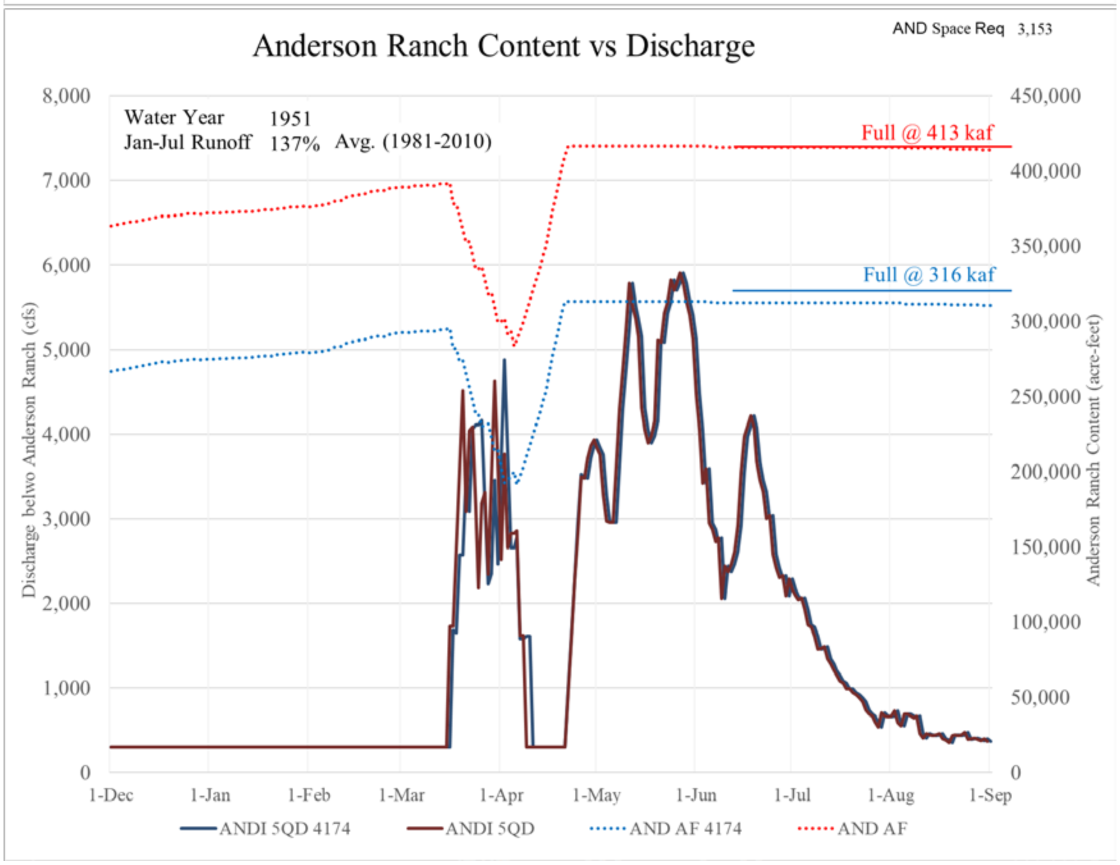

Boise System Content vs Glenwood Flow
Water Year 1969
Jan-Jul Runoff 144% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

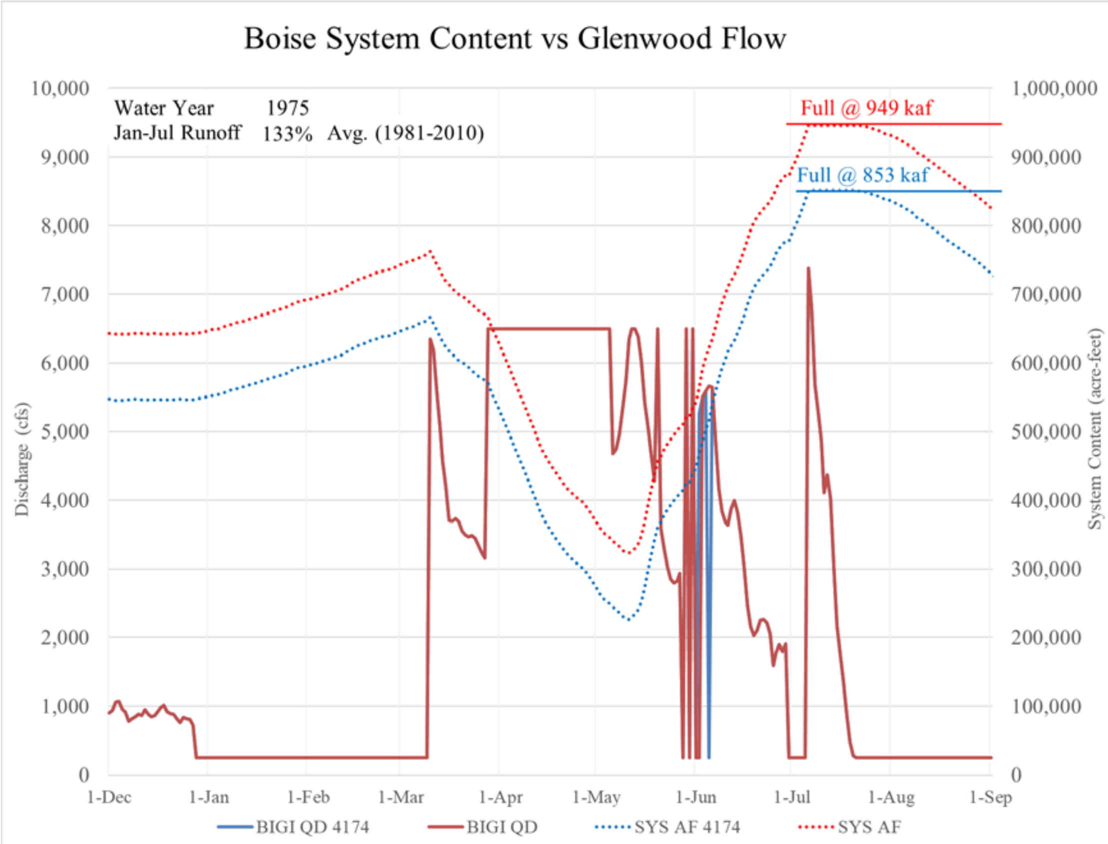

AND Space Req -3,946
Anderson Ranch Content vs Discharge
Water Year 1969
Jan-Jul Runoff 144% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

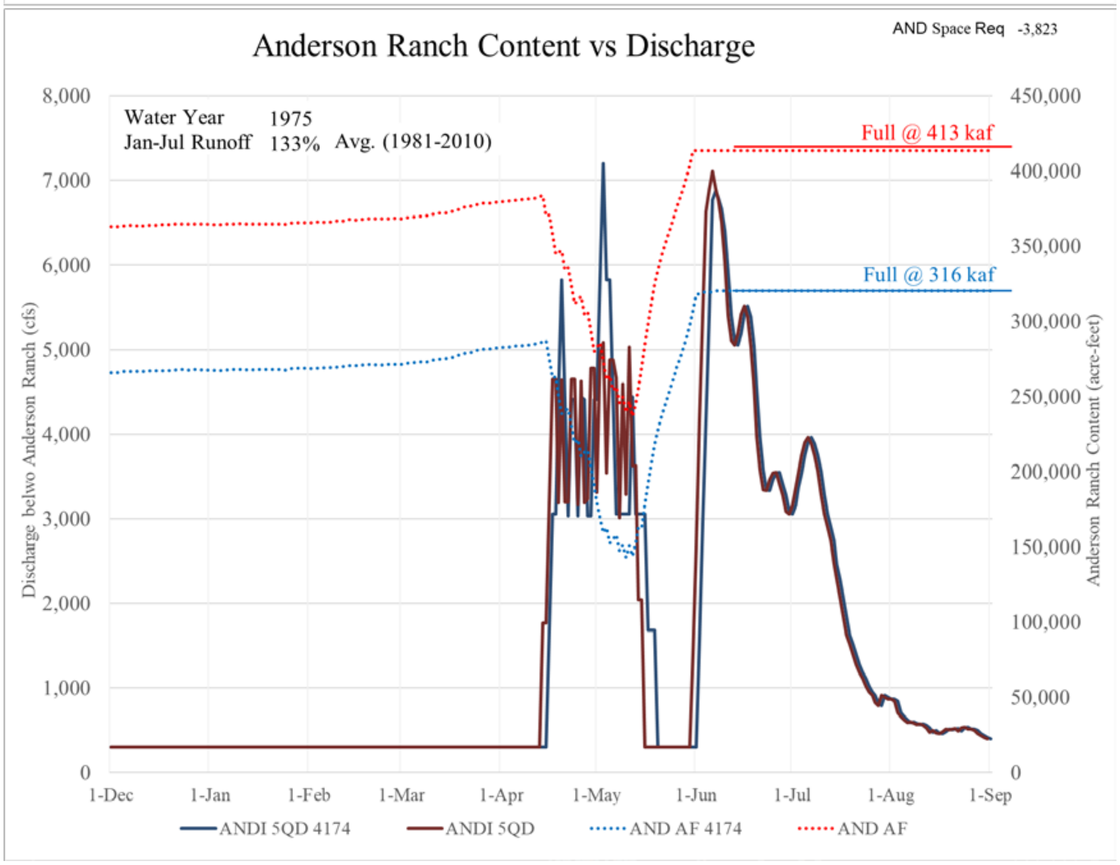

Boise System Content vs Glenwood Flow
Water Year 1958
Jan-Jul Runoff 139% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

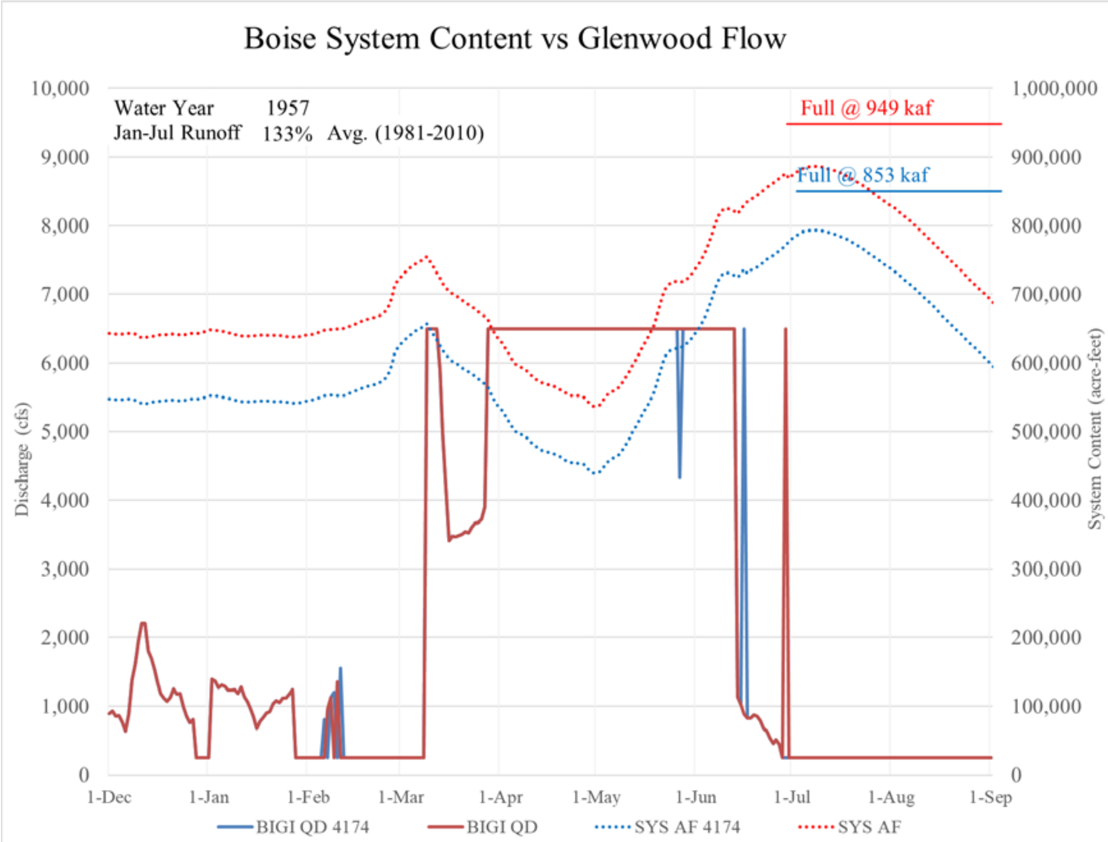

Anderson Ranch Content vs Discharge
AND Space Req -34,993
Water Year 1958
Jan-Jul Runoff 139% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

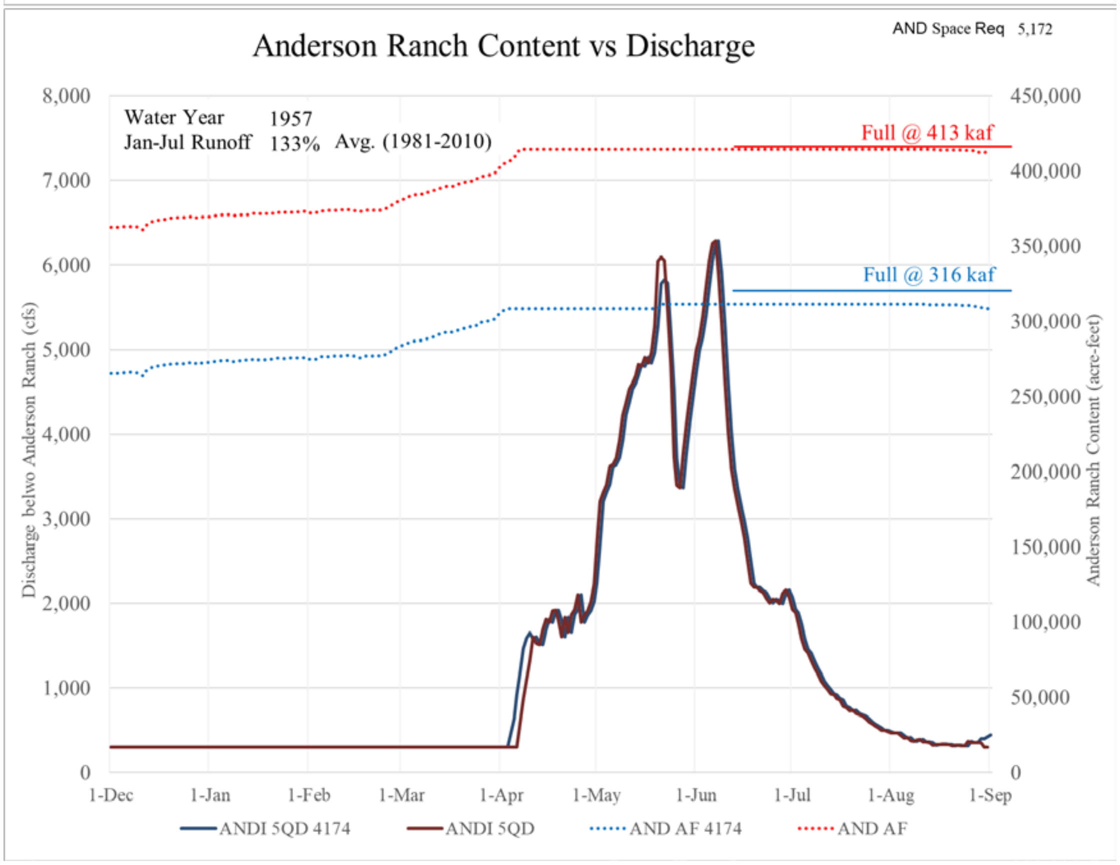

Boise System Content vs Glenwood Flow
Water Year 1951
Jan-Jul Runoff 137% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

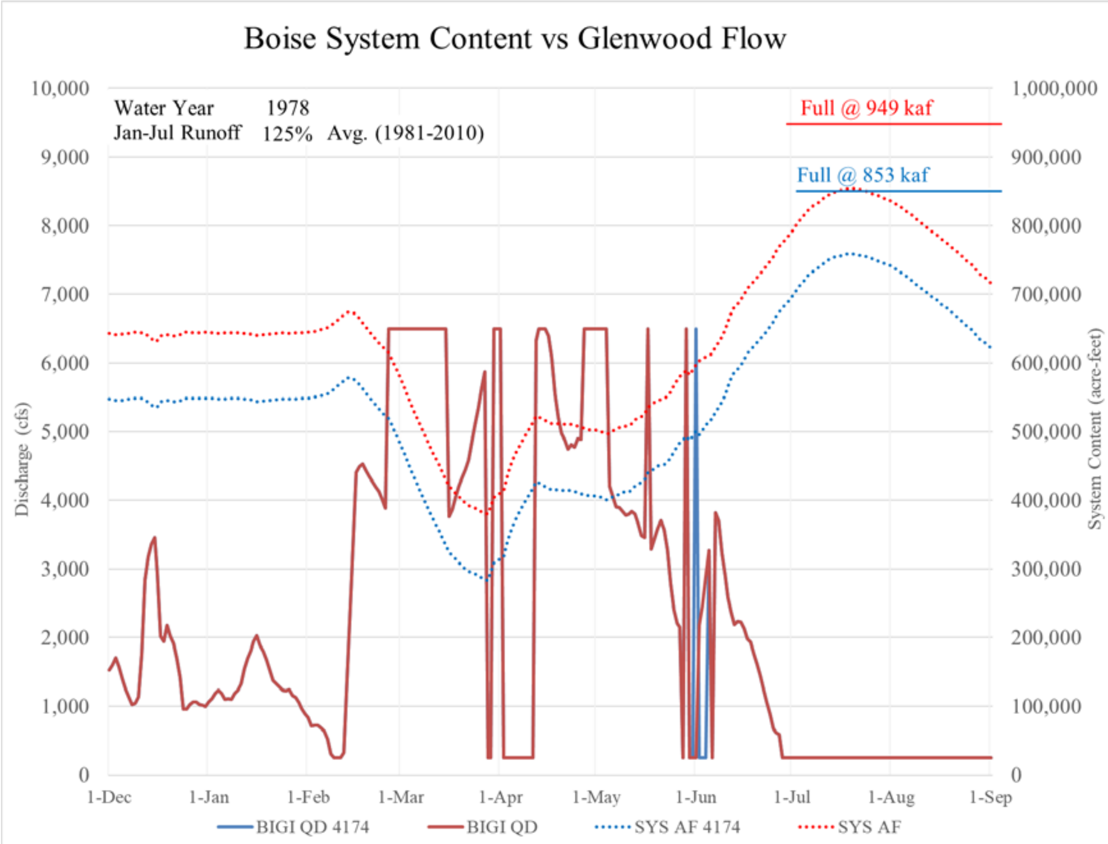

AND Space Req 3,153
Anderson Ranch Content vs Discharge
Water Year 1951
Jan-Jul Runoff 137% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

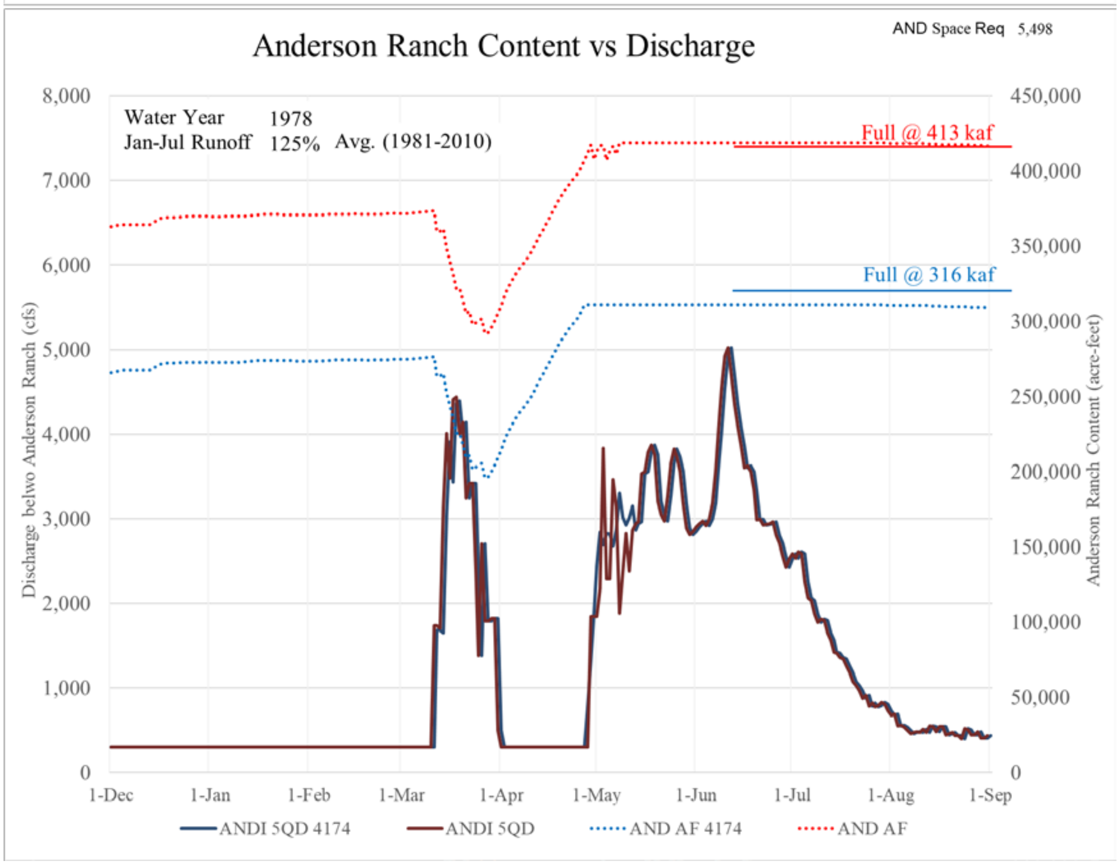

Boise System Content vs Glenwood Flow
Water Year 1975
Jan-Jul Runoff 133% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

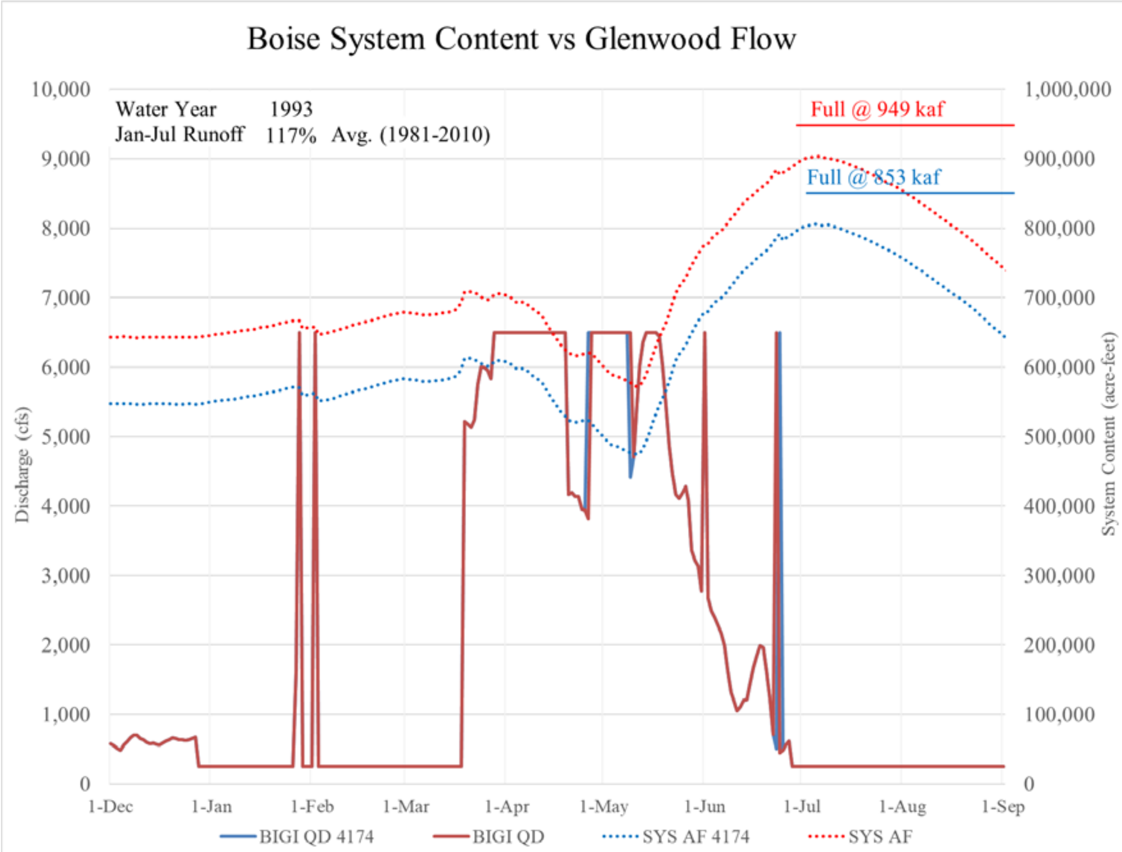

Anderson Ranch Content vs Discharge
AND Space Req -3,823
Water Year 1975
Jan-Jul Runoff 133% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

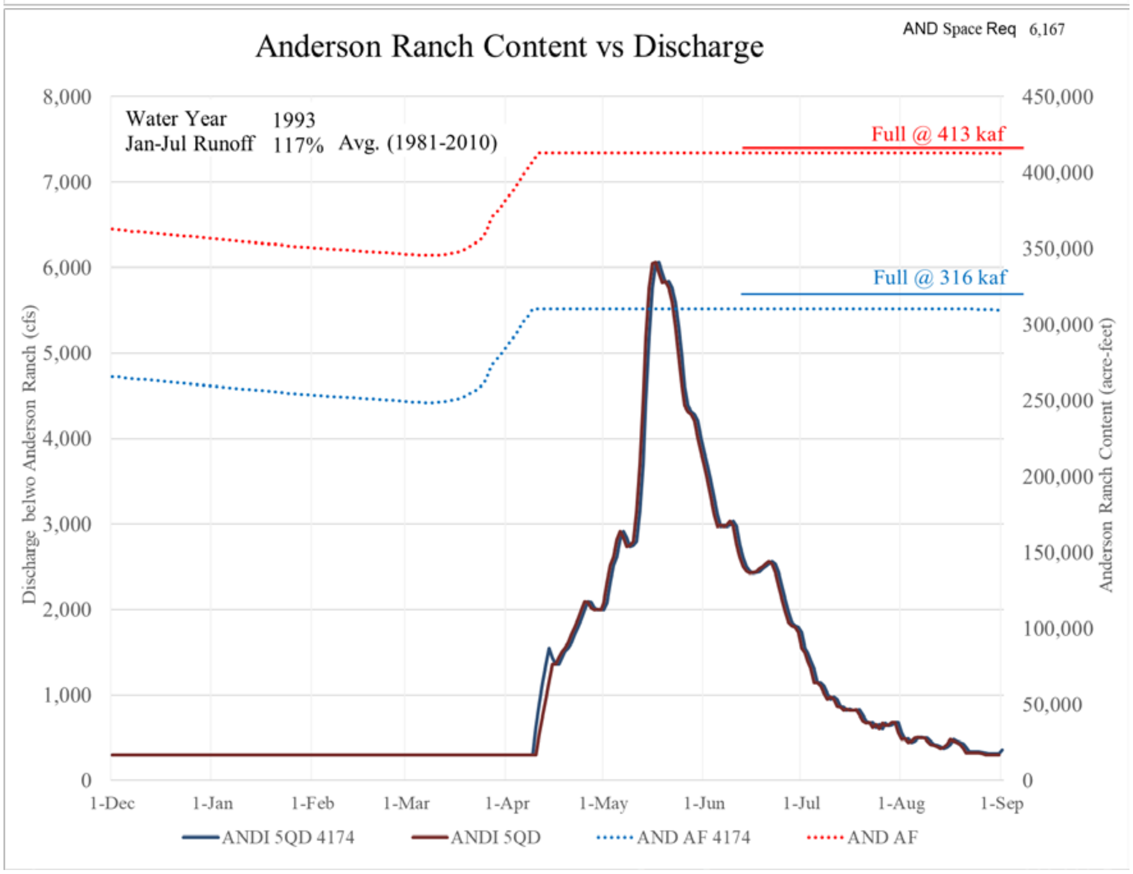

Boise System Content vs Glenwood Flow
Water Year 1957
Jan-Jul Runoff 133% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

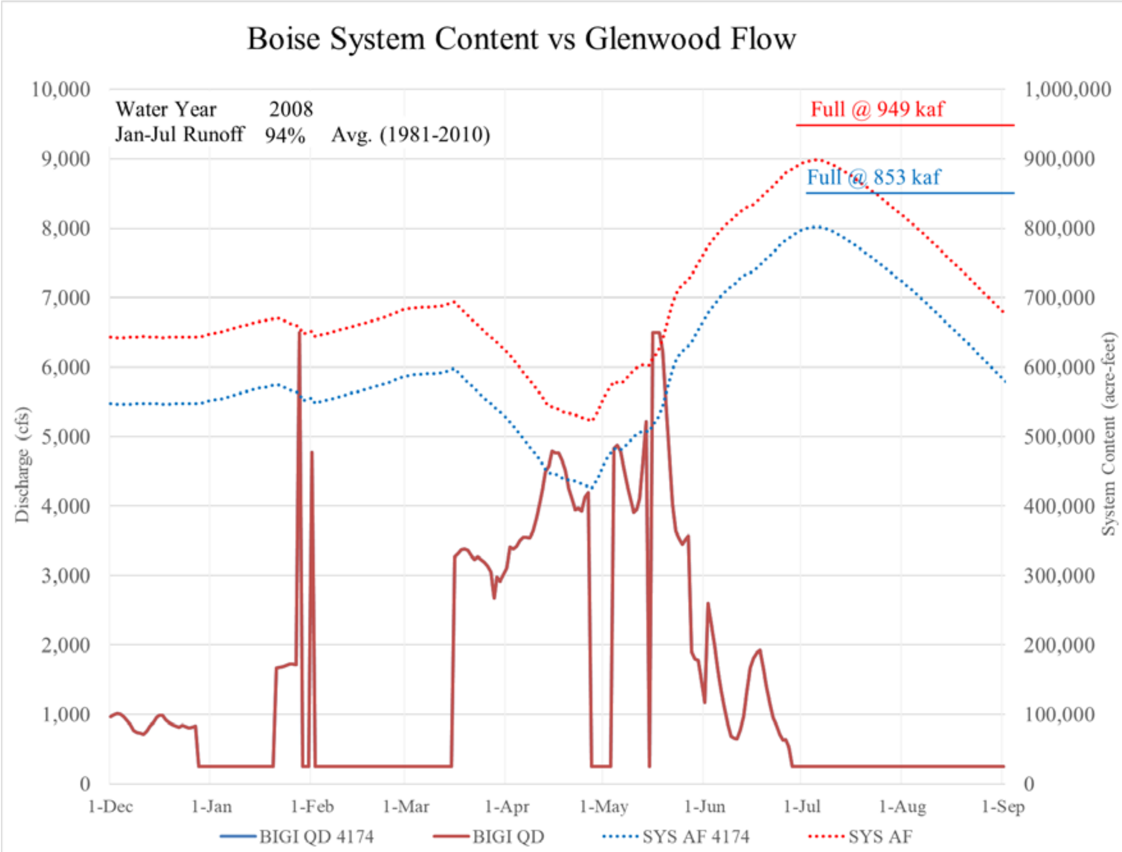

Anderson Ranch Content vs Discharge
AND Space Req 5,172
Water Year 1957
Jan-Jul Runoff 133% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

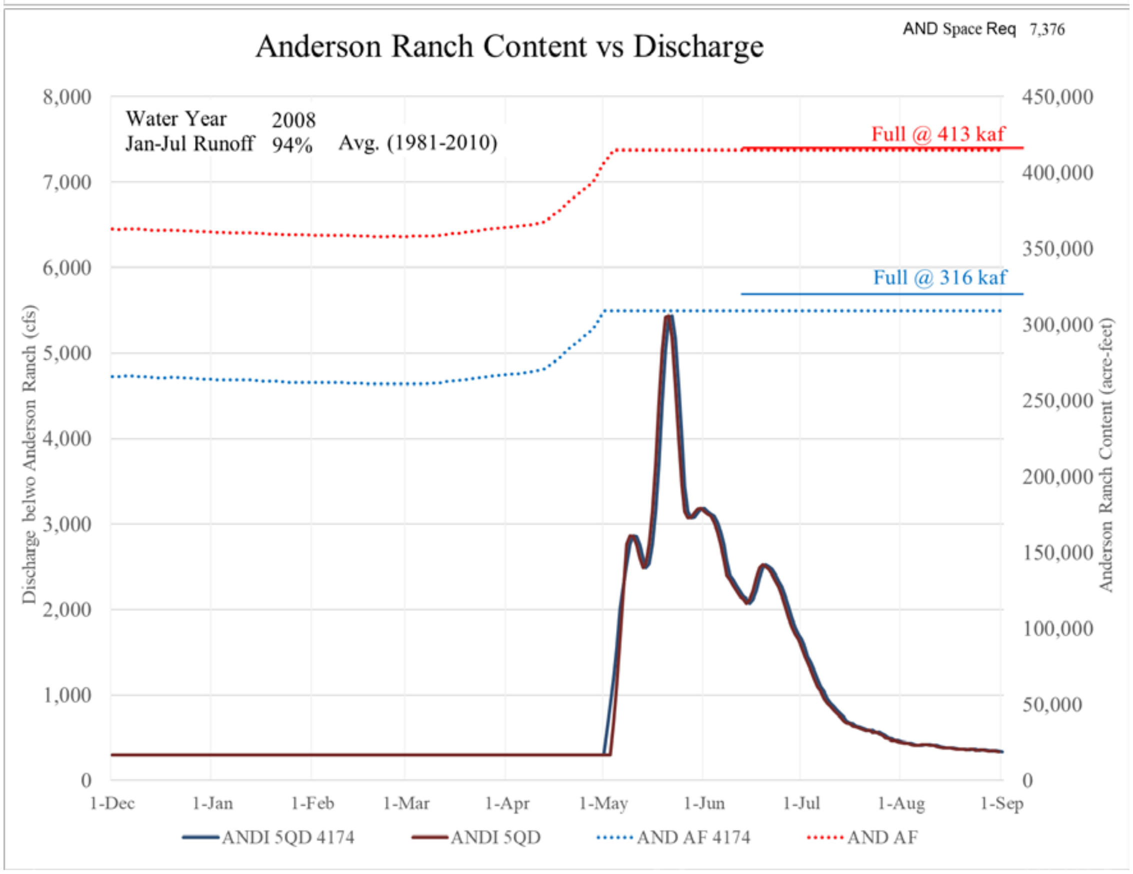

Boise System Content vs Glenwood Flow
Water Year 1978
Jan-Jul Runoff 125% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF

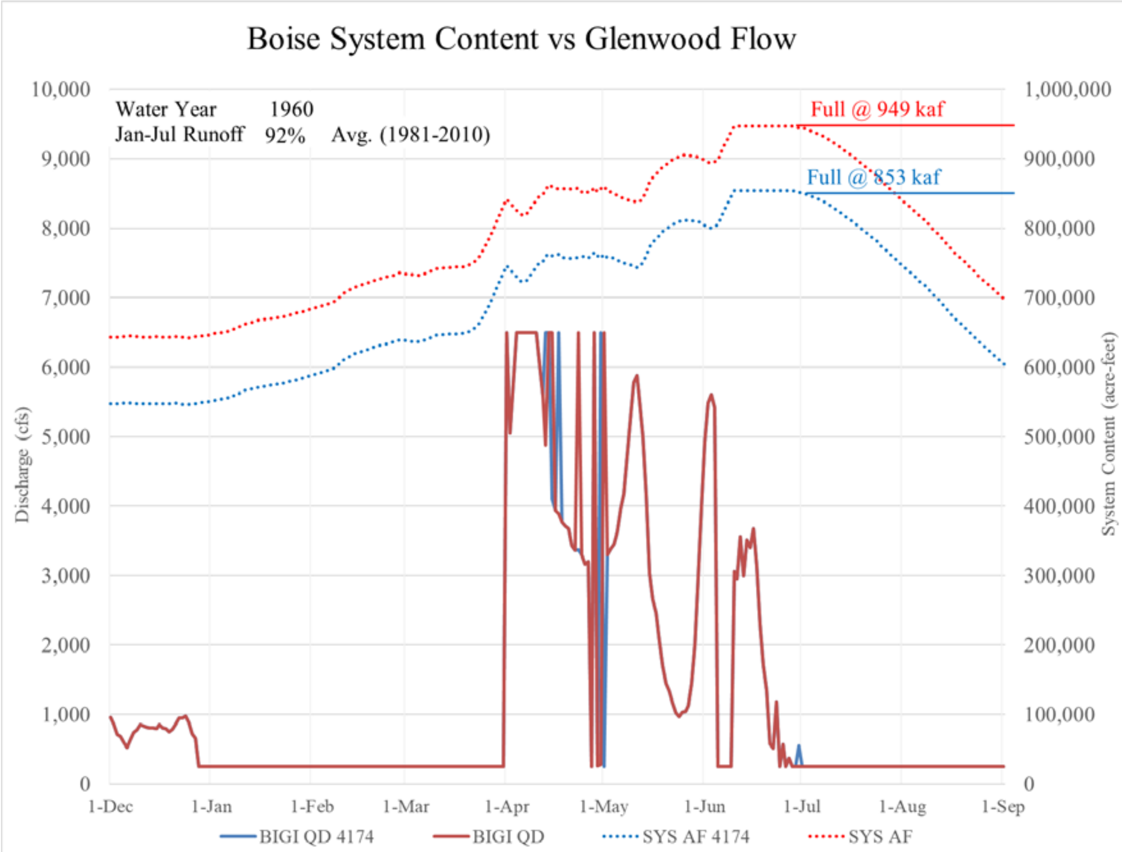

Anderson Ranch Content vs Discharge
AND Space Req 5,498
Water Year 1978
Jan-Jul Runoff 125% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF

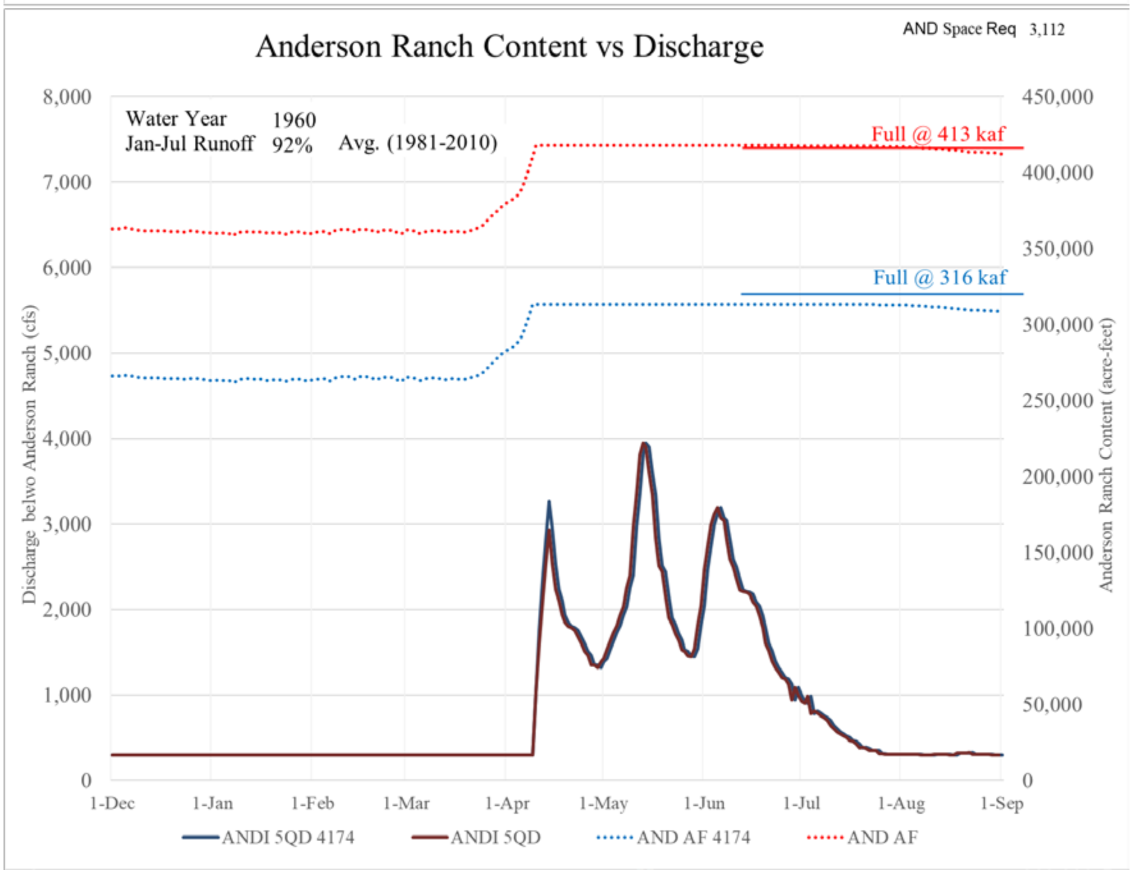

Boise System Content vs Glenwood Flow
Water Year 1993
Jan-Jul Runoff 117% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF


AND Space Req 6,167
Anderson Ranch Content vs Discharge
Water Year 1993
Jan-Jul Runoff 117% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 2008
Jan-Jul Runoff 94% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF


AND Space Req 7,376
Anderson Ranch Content vs Discharge
Water Year 2008
Jan-Jul Runoff 94% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF


Boise System Content vs Glenwood Flow
Water Year 1960
Jan-Jul Runoff 92% Avg. (1981-2010)
Full @ 949 kaf
Full @ 853 kaf
Discharge (cfs)
System Content (acre-feet)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
BIGI QD 4174
BIGI QD
SYS AF 4174
SYS AF


AND Space Req 3,112
Anderson Ranch Content vs Discharge
Water Year 1960
Jan-Jul Runoff 92% Avg. (1981-2010)
Full @ 413 kaf
Full @ 316 kaf
Discharge belwo Anderson Ranch (cfs)
Anderson Ranch Content (acre-feet)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
ANDI 5QD 4174
ANDI 5QD
AND AF 4174
AND AF