Approved by CITT

2024 May Water Year Type Categorization – Presented for Informational Purposes

To: Parties to the CSKT-MT Compact

From: CSKT-MT Compact Implementation Technical Team

Date: May 15, 2024

Re: 2024 May Water Year Type Categorization

Background

The Compact Implementation Technical Team (CITT) is tasked with developing or commissioning development of water management planning tools to support Flathead Indian Irrigation Project (FIIP) Water Management and Adaptive Management per Appendix 3.5, 3.e of the CSKT-MT Compact. Appendices referenced in this document are attached to the CSKT-Montana Compact, unless otherwise specified. This document provides a categorization of water year type pursuant to the intent of both the water management coordination schedule in Appendix 3.5 and the procedures outlined in Appendix 3.7 for determination of wet, normal, and dry years.

Because water allocations including minimum enforceable instream flows (MEFs), target instream flows (TIFs), river diversion allowances (RDAs) are not enforceable at this time, this document was prepared for informational purposes and to meet the CITT's responsibility to provide water management planning.

Water Year Type Projection

Water Year Type

Referred to as Hydrological Condition in Appendix 3.7, this is the CITT determination of wet, normal, and dry year for the Jocko, Mission, and Little Bitterroot Areas based on indicator gage data.

This May 2024 water year type categorization was made using data from the National Resources Conservation Service (NRCS) streamflow forecast for May 1, 2024, the NRCS within-month forecast refinement for May 2024, and the exceedance probability tables in Appendix 3.7. Appendix A of this document contains the relevant portion of the NRCS May 1, 2024, forecast a reproduction of the NRCS within-month forecast refinement for May 2024. The water year categorization below includes the five gages listed in Appendix 3.7 that have an associated NRCS forecast. In future years, CITT may expand its forecasting capabilities to include additional gages.

The reference period of 1983-2002 was used to define volumetric wet, normal, and dry year determinations, as outlined in Appendix 3.7. Data from this reference period was used for the five gaging sites to determine the threshold of wet (<20% exceedance level), normal (20%- 80% exceedance) and dry (>80% exceedance) years as shown on the right side of Table 1. The left side of Table 1 shows the NRCS forecast for the 70th, 50th, and 30th percentile exceedance values of the gages listed in Appendix 3.7. The % Median column shows a comparison of the forecast to the 30-year median. In this report, the 50th percentile exceedance value is used to determine water year type.

APRIL 1 Forecast (Observed April Flows + May-July Forecast)					
Geographic Area	Gage Site	70%	50%	30%	% Median
Jocko	South Fork Jocko near Arlee	22,000	25,000	29,000	71%
Mission	Mission Creek near St. Ignatius	23,000	25,000	27,000	96%
	South Crow Creek near Ronan	8,600	9,300	10,500	93%
	Hellroaring Creek	3,200	3,500	4,000	85%
Little Bitterroot	Mill Creek above Bassoo Creek near Niarada	2,100	2,600	3,100	55%

MAY 1 Forecast (Observed April Flows + May-July Forecast)					
Geographic Area	Gage Site	70%	50%	30%	% Median
Jocko	South Fork Jocko near Arlee	22,230	24,130	27,330	69%
Mission	Mission Creek near St. Ignatius	19,930	22,030	25,030	85%
	South Crow Creek near Ronan	7,180	8,580	9,080	86%
	Hellroaring Creek	3,160	3,360	3,660	82%
Little Bitterroot	Mill Creek above Bassoo Creek near Niarada	2,020	2,290	2,670	49%

MAY 14 Forecast (Observed April Flows + May-July Forecast)					
Geographic Area	Gage Site	70%	50%	30%	% Median
Jocko	South Fork Jocko near Arlee	24,790	27,090	29,790	77%
Mission	Mission Creek near St. Ignatius	23,060	24,360	26,060	93%
	South Crow Creek near Ronan	8,280	9,080	9,880	91%
	Hellroaring Creek	3,360	3,660	3,960	89%
Little Bitterroot	Mill Creek above Bassoo Creek near Niarada	2,170	2,570	3,070	55%

Site-Specific Water Year Thresholds		
Dry Year	Normal Year	Wet Year
<24,000	24,000 - 36,000	>36,000
<21,100	21,100 - 29,000	>29,000
<7,700	7,700 - 11,800	>11,800
<3,350	3,350-4,750	>4,750
<2,200	2,200 - 4,900	>4,900

During the April CITT met twice in May 2024 to discuss water year type categorization. The chart above reflects the NRCS projections as of April 1, May 1, and May 14. The discussion below focuses on CITT's categorization of water year in the May 15 meeting.

Jocko Area

The 50% exceedance level (27,090 acre feet) for the South Fork Jocko River forecast is within the range defined as a **Normal Year**. Although the volumetric (acre feet) forecast indicates a normal year, the percent median projection is at 77%. Additionally, the SNOTEL data for the North Fork Jocko station indicates a Snow Water Equivalent (SWE) value of 75% of median as of May 14, 2024. Both the SWE and the NRCS flow forecast for the Jocko Area have increased since May 1, due to recent precipitation. Although conditions have improved, water managers should anticipate conditions in the Jocko Valley that are drier than usual.

Mission Area

The 50% exceedance level for the Mission Creek (24,360 acre feet), South Crow Creek forecast (9,080 acre feet), and Hellroaring Creek (3,660 acre feet) are within the range defined as a **Normal Year**. These projections are indicative of the 93% (Mission Creek), 91% (South Crow), and 89% (Hellroaring) percent median volumetric water supply forecasts across the period of record. Although these forecasts categorize the water supply as normal, SNOTEL data for the Flathead Basin (86% median) suggest that water managers should anticipate conditions that are drier than usual.

Little Bitterroot Area

The 50% exceedance level for the Mill Creek forecast point (2,570 acre feet) is within the low end of the range defined as a Normal Year; however, because the volumetric streamflow projection is representative of 55% of the median streamflow supply, CITT recommends that water managers prepare for a transition to a water supply that falls within the range of a **Dry Year**.

Considerations and Limitations

- This water year type categorization was prepared using individual NRCS Forecast Points and may not be representative of entire geographic areas within the Flathead Reservation. The CITT is currently working with the NRCS to develop two additional forecast points which are anticipated for Water Year 2025 (North Crow Creek; Agency Creek).
- In order to obtain a April-July forecast to compare to the thresholds set for the hydrologic condition in Apprendix 3.7, NRCS's May-July forecast was added to observed flows for April to obtain a April-July forecast. Including the measured flows from April increases forecast precision and allows for direct comparison to the thresholds set for the hydrologic condition in Apprendix 3.7.
- Water supply is highly dynamic and is susceptible to sudden changes triggered by fluctuations in snowpack, temperature, and precipitation. The FIIP Project Operator and other interested parties should continually monitor snowpack, weather, and appropriate forecasts to inform real-time water management activities.
- At this time, this categorization is presented for informational purposes. Specific management decisions should be based on additional information, the most current forecast data, experience, and professional judgement.
- The CITT intends to gradually increase the frequency of these water year type categorizations as we near the full implementation of the MEF, RDA, and other enforceable flow rates.

Appendix A – NRCS Streamflow Forecast and Refinement for May, 2024

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Streamflow Forecast Summary: May 1, 2024
(Medians based On 1991-2020 reference period)

Flathead	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
		Forecast Exceedance Probabilities For Risk Assessment Chance that actual volume will exceed forecast						
Mission Ck nr St. Ignatius								
	MAY-JUL	16.5	17.9	20	80%	23	28	25
	MAY-SEP	19.8	20	24	80%	27	33	30
MF Flathead R nr West Glacier								
	MAY-JUL	820	910	980	75%	1060	1170	1310
	MAY-SEP	945	1050	1120	76%	1210	1350	1470
SF Jocko R nr Arlee								
	MAY-JUL	15.4	17.8	19.8	60%	22	28	33
	MAY-SEP	18.1	21	23	62%	26	32	37
Hellroaring Creek ab Reservoir nr Polson								
	MAY-JUL	2.1	2.5	2.7	75%	3	3.5	3.6
	MAY-SEP	3	3.4	3.7	80%	4	4.6	4.6
South Crow Ck nr Ronan								
	MAY-JUL	5.4	6.2	7.6	78%	8.1	10.4	9.7
	MAY-SEP	6.2	7	8.6	79%	9.7	11.8	10.9
Mill Ck ab Bassoo ck nr Niarada								
	MAY-JUL	0.96	1.45	1.73	54%	2.1	2.8	3.2
	MAY-SEP	1.34	1.78	2	56%	2.4	2.9	3.6

May 2024 NRCS within-Month Streamflow Forecast Refinement

Created 5/14/2024

Forecast	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	Pct Median	30% (KAF)	10% (KAF)	30-yr Med (KAF)
Mill Ck ab Bassoo ck nr Niarada	May-Jul	1.2	1.6	**2.0**	**63**	2.5	3.2	3.2
	Apr-Jul	1.7	2.2	**2.6**	**55**	3.1	3.7	4.7
Hellroaring Creek ab Reservoir nr Polson	May-Jul	2.4	2.7	**3.0**	**83**	3.3	3.8	3.6
	Apr-Jul	3.1	3.4	**3.7**	**90**	4	4.4	4.1
South Crow Ck nr Ronan	May-Jul	6.3	7.3	**8.1**	**84**	8.9	10.5	9.7
	Apr-Jul	7.3	8.3	**9.1**	**91**	9.9	11.5	10
Mission Ck nr St. Ignatius	May-Jul	19.1	21	**22.3**	**89**	24.0	26.8	25
	Apr-Jul	21.1	23	**24.3**	**93**	26	28.9	26
SF Jocko R nr Arlee	May-Jul	17.5	20.5	**22.8**	**69**	25.5	29.8	33
	Apr-Jul	21.8	24.8	**27.1**	**77**	29.7	34.1	35