

APPENDIX H 2017-2020 SHORTAGE SHARING RECOMMENDATIONS

**Recommendations for San Juan River Operations
and Administration for 2017 through 2020
June 1, 2018**

The endorsing parties make the following Recommendations for Navajo Dam operations and San Juan River administration for calendar years 2017 through 2020 (Term), with certain limitations on the time period as described herein, to the Bureau of Reclamation (Reclamation) and the New Mexico State Engineer for the purpose of establishing a cooperative distribution of water supplies during the time these Recommendations are in effect among users of water from the San Juan River in New Mexico. The agreement of the endorsing parties to make the Recommendations, their commitment to abide by the Recommendations if accepted and implemented by Reclamation and the State Engineer, and any results from the implementation of the Recommendations shall not be construed to: (1) be a determination or evidence of, or to establish, any party's water rights or consumptive use of water; (2) be a precedent for Navajo Dam operations or water administration in the San Juan River Basin in New Mexico in succeeding years; (3) be an agreement as to the validity or applicability of, or to imply an accepted modification to, the San Juan River Basin Recovery Implementation Program's flow recommendations for endangered fish habitat in the San Juan River or any interpretation thereof; (4) establish any cause and effect relationships between any water uses, including water uses described in Section 1 of the Recommendations below and water uses not included in Section 1, and streamflow impacts, water supplies or shortages; (5) establish any priorities between a given use of water from the San Juan River and other uses of water from either the San Juan River or its tributaries; (6) establish any entitlements to water, including any entitlements of fish to specific instream flows; or (7) alter or amend any pre-existing agreements between parties unless otherwise expressly agreed to by parties to said agreements. The endorsing parties further understand that Reclamation's acceptance of the Recommendations is contingent upon Reclamation's opinion that the operating criteria presented herein are not inconsistent with Section 11 of Public Law 87-483, as amended by Public Law 111-11, Section 10402, and the Navajo Reservoir Operations Environmental Impact Statement Record of Decision, dated July 31, 2006, and that the New Mexico State Engineer's acceptance of the Recommendations is subject to the Upper Colorado River Commission making no determination, pursuant to Article IV of the Upper Colorado River Basin Compact, that uses in the Upper Basin need to be curtailed during the time these Recommendations are in effect in order that the flow at Lee Ferry shall not be depleted below that required by Article III of the Colorado River Compact. In the event there is a determination under Article IV, the parties to these Recommendations agree to meet to within thirty days of the determination to make any necessary adjustments to the Recommendations.

1. Water Use Demands

The water diversion demands for specified projects or uses shown in Table 1 shall be recognized for the Term, subject to certain limitations on the time period. The diversion demand amounts listed for the Hammond Irrigation Project, the San Juan Generating

Station, the Four Corners Power Plant, BHP New Mexico Coal Company, and the City of Farmington may include amounts to be diverted under contract with the Secretary of the Interior, direct flow rights, and/or subcontracts or agreements with other parties. The diversion amounts listed in Table 1 for the San Juan Generating Station and the Four Corners Power Plant include diversions by BHP New Mexico Coal Company made at the power plants' diversion works for uses at the San Juan/La Plata Mines and Navajo Mines, respectively.

Table 1. Negotiated limits on diversion demand by project or use for purposes of implementation of this agreement.

Project	Diversion Amount (acre-feet)				Rate (cfs)	Period
	2017	2018	2019	2020		
Navajo Indian Irrigation Project	246,000	251,000	254,000	256,000	--	3/15 – 11/15
Hammond Irrigation Project	26,700	26,700	26,700	26,700	90	4/01 – 10/31
San Juan Generating Station	32,985	32,985	32,985	32,985	--	1/01 – 12/31
Four Corners Power Plant	31,000	31,000	31,000	31,000	--	1/01 – 12/31
Minor Jicarilla subcontracts	1,700	1,700	1,700	1,700	--	1/01-12/31
City of Farmington	16,000	16,500	17,000	17,500	--	1/01 – 12/31
Citizens Ditch	--	--	--	--	160	4/01 – 10/31
Farmers Mutual Ditch	--	--	--	--	110	4/01 – 10/31
Fruitland Irrigation Project	--	--	--	--	100	4/01 – 10/31
Jewett Valley Ditch	--	--	--	--	32	4/01 – 10/31
Hogback Irrigation Project	--	--	--	--	170	4/01 – 10/31

The diversion demand amounts and rates in Table 1 are negotiated values that take into consideration differing opinions of the parties as to the demands and rights to divert water under existing conditions, facilities, rights, permits, contracts and applicable law; however, the diversion demand amounts and rates shown in Table 1 and recognized for implementation only during the Term, subject to certain limitations on the time period, shall not be construed to be an agreement by the endorsing parties on, a determination of, or evidence of, or to establish, the specific and definitive rights of the parties to divert water for any purpose or project during any particular year or at any particular time. Nevertheless, to put aside differences and cooperate in the administration of the San Juan River during the Term for the overall benefit of the San Juan River Basin in New Mexico, the endorsing parties agree to limit their diversion of water during the Term, subject to certain time limitations, from the San Juan River and/or its tributaries for the specified projects or uses to the quantities or the rates, and to the time periods, specified in Table 1. In the event that a water supply shortage is determined to exist on the San Juan River during the Term, using the shortage determination procedure set forth in Section 3 below, the endorsing parties agree to further limitations on their diversion of water for the specified projects or uses in accordance with the provisions of Sections 3 and 4. If a shortage is deemed to exist when applying these provisions, the San Juan Generating Station and Four Corners Power Plant diversions will be voluntarily reduced by 5% from the amounts shown in Table 1 prior to computing the shortage amount.

The Navajo Nation agrees for the purposes of this recommendation to limit the NIIP diversion in any year in which a shortage is declared pursuant to the provisions of Section 3 to the level shown in Table 1 for the respective year of shortage, less any computed amount of shortage allocated to the NIIP under this recommendation. In the event that there is no shortage in a given year, either forecasted or actual for any particular forecast period, the Navajo Nation agrees to limit the NIIP diversion to the level shown in Table 1 for the respective year; except, that the Navajo Nation, at its discretion, may increase the NIIP diversion during the given year by up to an additional 5,000 acre-feet as long as such increase does not induce a shortage. This allowed increase is in recognition of the continuing development of NIIP whereby acreage is increased each year as construction progresses.

In recognition of the difficulties some irrigation ditches have had in providing water to all users within their respective ditch systems, the endorsing parties agree to allow those ditches to increase their diversion rates from those shown in Table 1 by up to 12.5% for the months of July and August only. It is understood that this provision to increase diversions is further subject to the following conditions: 1) The entity has implemented reasonable good faith efforts to enhance the efficiency of their system and improve the overall water management of their system, and difficulties in getting water down the entire reach of the ditch still exist during July and August; and 2) When applying the provisions of Section 3, no shortage is determined to exist. If a shortage is determined to exist, the ditch shall adhere to the diversion rates in Table 1 and shortages shall be applied as described in Section 3.

The endorsing parties agree during the Term to only exempt from any use reduction requirement projects or uses in the San Juan River Basin that are not included in the tabulation above and that are not otherwise contrary to adjudicated, permitted or licensed diversion rights; except, that the parties recommend that Reclamation's San Juan-Chama Project and Navajo-Gallup Water Supply Project diversions continue to be limited in accordance with the provisions of Section 11 of Public Law 87-483, as amended by Public Law 111-11, Section 10402.

Amounts diverted by Farmington that shall not be charged against the diversion demand amount listed for the City of Farmington include amounts: (1) diverted for delivery to local water users associations or to the Navajo Tribal Utility Authority-Shiprock or (2) diverted for non-consumptive use at either of the Farmington hydro-electric power plants. Also, the amount of diversion by the Hammond Irrigation Project that is chargeable or accountable against its diversion demand amount shall be computed for the Term as the measured diversion amount by the project less the measured returns to the San Juan River on the Armenta wasteway. Diversions by ditches for delivery to municipalities, industrial users, domestic water user associations and stock uses may continue outside the specified irrigation season.

The endorsing parties agree that during each November and December of the Term, the San Juan Generating Station, the Four Corners Power Plant, the City of Farmington and

the minor Jicarilla Apache Nation subcontractors may divert water under existing permits or licenses from the direct flow of the San Juan River system in excess of their respective annual diversion amount limitations described in this section if the target base flow in the San Juan River from its confluence with the Animas River downstream to Lake Powell is being met and will continue to be met without increasing Navajo Dam releases if the additional diversions are made.

2. Determining Navajo Reservoir Release to Meet Downstream Demands

Reclamation shall determine the quantity of water anticipated to be released from Navajo Reservoir during each day during the Term, in consideration of: (1) the water diversion demands specified in Section 1 above and the diversion demands for water uses not included in the demands tabulated in Section 1 that are to be met from diversions from Navajo Reservoir or the San Juan River below Navajo Dam; and (2) a target minimum base flow of 500 cfs in the San Juan River below its confluence with the Animas River downstream to Lake Powellⁱ. Reclamation shall utilize the following computational procedure in making said determination:

- (a) Determine the minimum probable (90% exceedance) forecasted flow for the Animas River at Farmington using raw Ensemble Streamflow Prediction (ESP) model traces provided from the Colorado Basin River Forecast Center. These daily values will model the contribution of the Animas River at Farmington under minimum probable conditions.
- (b) Adjust the daily flows in the San Juan River below its confluence with the Animas River downstream to Lake Powell by using the maximum probable (10% exceedance) net loss flow between USGS gages determined from historic streamflow records for the thirty-year period 1981-2010ⁱⁱ. The net loss for each river reach includes channel evaporation and evapotranspiration losses plus diversions, less side inflows from tributary runoff and return flows. The resultant daily flows shall be assumed to approximate the flow through the reach of endangered fish critical habitat under the combination of minimum probable flow conditions on the Animas River, as determined in paragraph (a) above and maximum probable net loss conditions for the San Juan River.
- (c) Adjust the daily Navajo Reservoir release so that the daily releases that might be made under minimum probable runoff conditions and maximum probable net loss conditions would result in the target minimum base flow for the San Juan River below its confluence with the Animas River to Lake Powell being met. The base flow for the San Juan River below Farmington shall be determined by the minimum of: (1) the average of the flows in the San Juan River measured at the Shiprock, Four Corners and Bluff gages; and (2) the average of the flows in the river measured at the Farmington, Shiprock and Four Corners gages. If a daily gage record is missing, use the remaining

gages in the set. Also, for purposes of this calculation, add 20 cfs to the Shiprock gage flows for the period April 1 through October 31 to account for anticipated changes in return flows from the Hogback Irrigation Project that reenter the river below the gage, as compared to average water use conditions for the period 1981-2010. In addition, adjust the daily reservoir release rates for any significant differences in the daily diversion demand amounts for the Hammond Irrigation Project, the San Juan Generating Station, the Four Corners Power Plant and the minor Jicarilla Apache Nation subcontracts as compared to historical demand distributions for the period 1981-2010.

- (d) Adjust the computed daily Navajo Reservoir release rates so that changes in the release account for real-time dam operation practices. Also, adjust dam release rates as necessary or possible to maintain a minimum release of 250 cfs.

The determination of Navajo Reservoir release demands shall be updated if a change in the forecasted runoff, actual runoff for the Animas River, or in forecasted or observed net losses between gages suggests that tributary inflow to the San Juan River or net losses will be significantly different than what was originally modeled.

3. Shortage Determination and Sharing

Reclamation shall make calculations of any water supply shortage on the San Juan River during the Term, using operations studies for Navajo Reservoir that evaluate daily reservoir operations. The operations studies shall consider: (1) the amount of water physically stored in Navajo Reservoir above elevation 5990 feet; (2) daily evaporation from Navajo Reservoir to be estimated based on actual and projected storage levels and Navajo Reservoir evaporation rates; (3) anticipated daily reservoir inflows estimated by Reclamation; (4) anticipated daily Navajo Reservoir releases to meet all demands on the San Juan River below the dam as determined pursuant to Section 2 above; and (5) anticipated daily diversions to the Navajo Indian Irrigation Project.

The anticipated daily reservoir inflows shall be estimated using the National Weather Service's forecasts for minimum probable, modified unregulated inflows to Navajo Reservoir, and then adjusted by Reclamation for anticipated operations of Vallecito Reservoir and the San Juan-Chama Project, under minimum probable forecasted inflow (90% exceedance forecast). For periods for which reservoir inflow forecasts are not available, the anticipated monthly inflows shall be estimated as the 90-percent exceedance inflow to the reservoir as determined from the hydrologic record for the 30-year period 1981-2010.

If the operational studies indicate that the reservoir water surface level would fall below elevation 5990 feet at any time during the Term should the diversion demands at and below Navajo Dam and Reservoir be fully satisfied, then Reclamation shall calculate the amount of shortage to the diversion demands that must occur to prevent the projected water surface level in the reservoir from falling below elevation 5990 feet.

Reclamation shall use iterative procedures to determine the percentage shortage, that if applied uniformly to the following demands on an annual basis, would result in reductions in water uses on the San Juan River in a total amount equal to that of the calculated amount of shortage: (1) the annual diversion demand amounts for the Navajo Indian Irrigation Project, the San Juan Generating Station, the Four Corners Power Plant and the minor Jicarilla Apache Nation subcontracts as listed in Section 1 above for the year of the shortage; (2) an annual irrigation depletion demand of 41,500 acre-feet in the aggregate for the Citizens Ditch, the Hammond Irrigation Project, the Farmers Mutual Ditch, the Fruitland Irrigation Project, the Jewett Valley Ditch and the Hogback Irrigation Project; and (3) the target minimum base flow in the San Juan River below its confluence with the Animas River for the period March 1 through October 31, in the subject year. Reclamation shall provide the results of its reservoir operations studies and calculations of any shortage to the State Engineer and the parties for their review.

The endorsing parties agree that the annual diversion amount limitations during the Term for the Navajo Indian Irrigation Project, the San Juan Generating Station, the Four Corners Power Plant, the minor Jicarilla Apache Nation subcontracts and the City of Farmington shall be reduced from the diversion amounts identified in Section 1 above by the same percentage shortage, if any, as calculated by Reclamation; except, that the annual diversion amount limitation for the City of Farmington shall not be reduced below 15,000 acre-feet in 2017 with increments of 500 acre-feet annually through 2020. The water users will determine the time schedules for bearing their share of any shortage during the Term. If the amount of water already diverted by any user during the Term exceeds its resultant diversion limitation, then the user shall cease diverting water for the remainder of the current year; alternatively, the user may continue diverting water if it transfers water that may become available within other users' diversion amount limitations, or if it acquires and transfers water under valid water rights that currently are in use.

The endorsing parties further agree that the diversions for the Citizens Ditch, the Hammond Irrigation Project, the Farmers Mutual Ditch, the Fruitland Irrigation Project, the Jewett Valley Ditch and the Hogback Irrigation Project shall be reduced to effectively short the annual irrigation depletion demand under each ditch or project by the same percentage shortage, if any, as calculated by Reclamation. In the event of shortage, each ditch or project shall shorten its irrigation season in order to meet its commitment to reduce irrigation depletions during the Term. The end date for the period during which the ditch or project may divert water for irrigation uses during the Term shall be moved forward in time from October 31 until the percentage reduction in irrigation depletion matches the same percentage shortage as calculated by Reclamation. To determine a revised end date to the irrigation season, the following percentages indicating the distribution of the annual irrigation depletion by month shall be used: 5 percent for October; 12 percent for September; 19 percent for August; 22 percent for July; 19 percent for June; 13 percent for May; and 10 percent for April. The revised end date shall be adjusted further to provide credit for any irrigation depletion demand forgone as a result of delaying the start date of the irrigation season past April 1 or as a result of ceasing diversions during the irrigation season. In order for a ditch to receive credit for irrigation

depletion demand foregone, as a result of ceasing diversions for a period of time after starting irrigation deliveries, but prior to ending irrigation deliveries, the ditch must: (1) provide Reclamation and the State Engineer with one-week advance notice of the number of days and the dates during which diversions will cease; and (2) cease all diversions for agricultural purposes during the dates specified, for a period of not less than seven consecutive days. Irrigation depletion reductions for partial months shall be estimated assuming a constant daily irrigation depletion rate within each month. Diversions by ditches for delivery to municipalities, industrial users, domestic water user associations and stock uses may continue whether the irrigation season is shorted or not.

The endorsing parties recommend that Reclamation not make any spring peak flow release from Navajo Dam for endangered fish habitat purposes during the Term, unless Reclamation indicates that such a release could be made without causing a shortage to water users. Reclamation, in consultation with the Fish & Wildlife Service (FWS), shall operate the reservoir to maintain a target minimum base flow rate of 500 cfs in the San Juan River from its confluence with the Animas River downstream to Lake Powell, unless the Minimum Probable Inflow Forecast projects a shortage. In that event, Reclamation and the FWS will cooperate to identify how and when minimum target baseflows could be reduced to minimize negative impacts to endangered species while considering water for other users. However, the FWS retains the ultimate authority and responsibility for determining if any proposed action will result in jeopardy to endangered species or adverse modification to critical habitat and will identify reasonable and prudent alternatives and measures for that action.

The endorsing parties also agree that during the months of November and December during the Term, the San Juan Generating Station, the Four Corners Power Plant, the City of Farmington and the minor Jicarilla Apache Nation subcontractors may divert water in priority from the direct flow of the San Juan River system in excess of any shorted diversion amount limitation if: (1) the current release from Navajo Reservoir is being maintained at the minimum release rate consistent with the then-current Navajo Reservoir operating criteria; and (2) the target minimum base flow in the San Juan River from its confluence with the Animas River downstream to Lake Powell is being met and will continue to be met without increasing Navajo Reservoir releases if the additional diversions are made.

The occurrence and amount of any shortage shall be determined or revised twice a month as runoff forecasts become available from the Colorado Basin River Forecast Center and in consideration also of actual runoff and water supply conditions. The computational procedure set forth above may be adjusted for changed water supply conditions upon agreement of the signatory parties. Reclamation's initial calculation of any shortage shall be made on or prior to March 15 and after the March coordinated inflow forecasts for the San Juan River Basin become available; and a percentage shortage will be applied if the State Engineer concurs in Reclamation's calculations of any shortage. The last determination of any shortage shall be made on or before October 15 based on the October coordinated inflow forecast for the remainder of the year.

4. Agreements to Transfer or Broker Water between Parties

Agreements to transfer or broker water between endorsing parties within the water allocations made pursuant to the Recommendations provided herein may be negotiated.

5. Dispute Resolution

The endorsing parties agree to cooperate fully in the implementation of the above Recommendations and to abide by the diversion limitations for the Term, provided herein to the extent of their authority and ability. In the event that a dispute should arise regarding the implementation of the Recommendations or the performance of an endorsing party under the Recommendations, the endorsing parties commit to resolve such dispute in a cooperative, timely and effective manner. If a dispute involves only endorsing parties and cannot be resolved among themselves, Reclamation and the New Mexico State Engineer may be requested to hear and facilitate resolution of the dispute. The endorsing parties further request that, in order to result in an orderly distribution of water supplies on the San Juan River during the Term, in accordance with the Recommendations contained herein, Reclamation and the State Engineer commit to: (1) assist in the measurement, monitoring and administration of streamflows and diversions on the San Juan River and its tributaries, in cooperation also with the Bureau of Indian Affairs; (2) work with the endorsing parties in a coordinated manner on water management and administration issues that may arise during the Term as a result of implementing the Recommendations; (3) assist as may be requested, and to the extent of their authority and ability, in the implementation of any feasible water transfer agreements that may be negotiated between the endorsing parties for the Term; and (4) resolve any disputes in a timely and effective manner, including any disputes between endorsing parties and Reclamation or the State Engineer. The endorsement of the Recommendations provided herein by any and all parties shall not be construed to: (1) waive the sovereign immunity of any Indian tribe; or (2) constitute a consent to tribal jurisdiction by any party.

6. Cooperative Activities

The parties request the assistance and cooperation of Reclamation to improve their ability to manage diversions as flow conditions change in the San Juan River. Specifically, Reclamation should: (1) establish and maintain a direct contact list for operations representatives for each water use or project listed in Section 1; and (2) notify in a timely manner each contact representative directly as to planned or actual changes to the release rate from Navajo Dam and other information that may be pertinent to improving coordination between Reclamation operations and water user operations. Similarly, the endorsing parties shall provide Reclamation with any information on their planned or actual water operations that might create opportunities for reducing Navajo Dam releases or otherwise improving water operations to help conserve water.

Further, the parties agree to provide, if requested, to Reclamation and the State Engineer, measurements of actual diversions bi-weekly, unless such information is available through an alternate source. Reclamation is requested to submit a report of all water diversions subject to this agreement to all signatories monthly unless such information is available through publicly accessible means.

7. Endorsement and Term

The endorsing parties agree to present the Recommendations provided herein to Reclamation and the New Mexico State Engineer as their Recommendations, collectively and individually, regarding procedures for operating Navajo Dam and administering diversions in the San Juan River Basin in New Mexico during calendar years 2017 through 2020. Any of the parties listed in Section 9 as endorsing parties may choose not to endorse these Recommendations. In the event one or more parties choose not to endorse the Recommendations, the parties endorsing the Recommendations retain the right to submit the Recommendations to Reclamation and the State Engineer for acceptance and adoption pursuant to this section with less endorsing parties than listed in paragraph 9. The Recommendations shall be effective upon written notice to the endorsing parties that Reclamation and the State Engineer accept and adopt the Recommendations for implementation; provided that all parties choosing to endorse the Recommendations have provided original signed copies of such endorsement to Reclamation and the State Engineer. The Recommendations are valid for calendar years 2017 through 2020, unless a shortage is declared in any of those years, in which case, the term of these Recommendations shall end on January 1st of the year following the shortage year. If no shortage is declared during the term, these Recommendations shall terminate on December 31, 2020, unless written notice is given by July 31st of the current year by any endorsing party to this agreement to terminate the agreement for the remaining term of this agreement, beginning on January 1st of the following calendar year. The agreement can also be extended by agreement of the endorsing parties.

8. Waiver of Liability

No party endorsing the Recommendations shall hold another endorsing party responsible or liable for any damages or claims that may occur or arise as a result of implementing the Recommendations presented herein, including as a result of analyses, decisions or operations made under the Recommendations; provided that the other endorsing party fulfills its commitments and obligations as expressed herein. In the event that an endorsing party does not fulfill its commitments and obligations as expressed herein to the detriment of other endorsing parties and the matter cannot be resolved through dispute resolution as provided in Section 5 above, the endorsing parties reserve the right to seek appropriate remedies, if any, under applicable law in state or federal court. An endorsing party's remedies shall not be limited to the enforcement of any commitment or obligation as expressed in the Recommendations provided herein and may include remedies that would be available to any party that has not endorsed the Recommendations. This provision shall not be construed to: (1) waive the sovereign immunity of any Indian tribe; or (2) constitute a consent to tribal jurisdiction by any

party. The endorsing parties waive no rights with regard to non-endorsing water users in 2017 or thereafter.

9. Endorsing Parties

The following entities are endorsing parties to the Recommendations herein:

- The Navajo Nation
- The Jicarilla Apache Nation
- The City of Farmington
- Public Service Company of New Mexico
- Arizona Public Service Company
- Hammond Conservancy District
- Bloomfield Irrigation District
- Farmers Mutual Ditch
- Jewett Valley Ditch

ⁱ If the Minimum Probable Inflow Forecast projected or actual Navajo Reservoir content falls below 1,000,000 acre-feet on July 31 in any year during the Term, then: (1) the summer (April 1 through October 31) target flow for the corresponding year shall be 400 cfs; and (2) the winter (November 1 through March 31) target flow following the corresponding year may be reduced below 500 cfs, but not lower than 400 cfs, for a total of 8 weeks.

ⁱⁱ The 30-year historic record used is the 1981-2010 period, consistent with the Colorado Basin River Forecast Center.