Methods to replace or recover the bypass flow including the YDP

Public Consultation Process
Agenda

- Introductions
- Purpose of Public Process
- Background
- Bypass Flow Recovery or Replacement Methods
- Additional Input & Follow-Up Activities
Welcome

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Purpose of the public consultation process

• To solicit information about potential methods to recover or replace the bypass flow.
  ➢ Additional information and viewpoints about methods that have already been suggested.
  ➢ New methods not yet proposed.

• Analyze and evaluate potential methods.

• Information will be used in formulating future decisions. No federal action has been proposed.
Requirements for water deliveries to Mexico

- Treaty of 1944 with Mexico requires delivery of 1.5 million acre-feet annually, but originally contained no water quality requirements.

- In the 1960’s agricultural return flows from Wellton-Mohawk reaching the Colorado River substantially increased the salinity of U.S. water deliveries to Mexico.

- Treaty Minute 218 in 1965 and Minute 242 in 1973 addressed Mexico’s water quality concerns.
Federal actions to meet salinity requirements

• To meet the water quality requirements several federal actions were taken including construction of the MOD, MODE and bypass drain.

• Collectively these conveyances take saline irrigation return flows from Wellton Mohawk, bypass the River and deliver it to the Cienega de Santa Clara in Mexico.

• The bypass flow is not counted towards the 1.5 million acre-feet annual water delivery requirement. The bypass flow averages about 108,000 acre-feet annually.
Bypass flow requires like releases from system storage

• With completion of the bypass drain in 1977 water began flowing to the Cienega.

• Since then water quality requirements for Mexico have been met primarily by continuing to bypass Wellton-Mohawk flows to the Cienega.

  ➢ This requires releases of a like amount of water from Colorado River system storage.

  ➢ Current drought and projected long term water demand in the basin heightens concern about this demand on the system storage.
Methods for recovering or replacing the bypass flow

- Various types of methods have been proposed to address this concern by recovering or replacing the bypass flow.
  - Operation of the YDP
  - Forbearance program
  - Capturing excess flows to Mexico
  - Advanced irrigation techniques
  - Snowpack enhancement
  - Vegetation management
  - Institutional framework changes
  - Combination approach - Quality for quantity
  - Combination approach - YDP / Cienega Workgroup alternative
Operation of the YDP

• The YDP was constructed to recover (desalinate) the majority of bypass flow.
  ➢ YDP sits adjacent to the MODE. It is designed to receive some of the bypass flow and remove the dissolved salts.
  ➢ Clean product water is returned to the River and makes up part of the annual delivery requirement to Mexico.
  ➢ Removed salts are mixed with remaining water in the bypass drain and travels to the Cienega.

• Quantity and quality of flow to the Cienega would depend on how the YDP is operated.
Forbearance program

• Establish agreements with entities holding Colorado River contracts to forego the exercise of water rights.
  ➢ Participation would be solicited and entirely voluntary.
  ➢ Agreements for a set period of time (e.g. one year). No long terms purchase of water or water entitlements would occur.
  ➢ Limitations on amount any contractor could forbear.
  ➢ Price would be negotiated.
  ➢ Protection provided lower priority water rights through first right of purchase.

• Result is additional water left in storage in Lake Mead
• Regulatory water storage on the lower Colorado River is constrained.
  - Additional storage capacity would reduce excess flows to Mexico when they exceed 1.5 million acre-feet annually.
  - Could take the form of expanding the capacity of existing reservoirs or establishing small new reservoirs.

• Groundwater in the vicinity of the Mexican border has a natural hydraulic gradient sloping towards Mexico. Added groundwater recovery could serve as replacement water for the bypass flow.
Advanced irrigation techniques

• Farmers or districts could be paid to implement irrigation techniques that result in water savings to offset the bypass flow.

• Such techniques are not widely used in this region due to their expense. Examples include:
  - Automated control equipment
  - Bubbler, drip or spray irrigation
  - In district or farm regulatory storage
  - Additional ditch lining
  - Spill interception system
Snowpack Enhancement

- Some parties have suggested cloud seeding be considered as a potential method of increasing water supply on the Colorado River system.

- Seeding nuclei are dispersed by ground based equipment or aircraft.

- Colorado River basin has over 20 million acres above 8,000 feet in elevation.
Vegetation management

- The Colorado River Basin Act of 1968 authorized the study and implementation of measures to augment and salvage Colorado River flows.

- There is significant non-native vegetation, primarily salt cedar along the lower reaches of the River.

- It has been suggested that large scale and systematic removal of non-native vegetation may increase the availability of River water for other uses.
Institutional changes

- Possible institutional changes include Treaty modification and inter-basin water exchanges.

- Negotiations with Mexico might be opened with the goal of including water provided to the Cienega in the 1.5 million acre-foot annual water delivery requirement.

- Inter-basin water exchanges to facilitate water transfers between areas experiencing high water supply years and those areas with supply short falls.
Quality for quantity

• The YDP could be used to produce potable water. Northern Mexico has a critical need for additional potable water.

• Three major components to this combination approach are:
  - Abundant Yuma area ground water to supplement or replace bypass flow feed water for the YDP.
  - Part of the bypass flow returns to the River.
  - Potable water provided to Mexico and the U.S. Mexico trades potable water for a reduction in quantity of water the U.S. must deliver.
YDP / Cienega Workgroup alternative

• Central Arizona Water Conservation District organized a workgroup with the goal of reaching consensus about operating the YDP and preserving the Cienega. Group consisted of major Arizona water users and environmental advocacy groups.

• Consensus report published in April 2005.
  - Report suggests a combination of 11 specific recommendations.
  - Chief spokespersons indicate workgroup found common ground – a path forward to operate the YDP and preserve the Cienega.
Providing additional input and staying informed

• Additional information about potential methods to recover or replace the bypass flow can be submitted in writing to Reclamation:

  Bureau of Reclamation
  Attention: Mr. John Johnson
  P.O. Box 61470
  Boulder City, Nevada  89006
  E-mail: bypass@lc.usbr.gov

• Website has been established for this public consultation process:

  ➢ www.usbr.gov/lc/region/programs/bypass.html