OPERATIONAL CONCEPTS DRAFT ALTERNATIVES A - J

The components of each of the 10 draft alternatives could be operated in different ways to provide different mixes of benefits. For instance, a new storage upstream of the Delta could be operated for management of environmental flows, for improving water supply reliability, or jointly for both. Assumptions on how each alternative could operate are important to the overall definition of the alternatives.

Draft descriptions of how each alternative could operate are presented on the following pages. These are intended to illustrate general concepts for potential operation and are not intended to be firm proposals. Each concept requires additional refinement as the draft alternatives are refined. Your input on these concepts will help in this process.

In reviewing these concepts please keep the following in mind:

- These are initial drafts subject to additional refinement
- Many details for the operation of an alternative will not be known until more detailed analysis is conducted in Phase II of the Program
- Priorities for use of water are assumed in several of the descriptions for illustrative purposes only
- Existing criteria for meeting the X2 standard, Delta outflow requirements, and other Bay-Delta water quality standards are assumed to remain unchanged from existing conditions

Operational Concept
Alternative A - Extensive Demand Management

This alternative will implement an extensive program of demand management including water conservation, water reclamation, and land retirement actions in all water service areas dependent on the Bay-Delta watershed. These actions will result in substantial water savings and an overall reduction in withdrawals from the Delta. The water saved will be used to improve water supply flexibility, increase water available for environmental needs such as increased instream flows and Delta outflows, and to reduce water shortages during drought periods.

General Operational Assumptions

The conceptual operational plan for this alternative is founded on the assumption that water conserved through demand management practices will be used jointly for the benefit of the environment and to supply unmet needs of water users. The following general operational assumptions apply to this alternative.

- An average of approximately 3-3.5 MAF could be saved annually through expanded water conservation (water pricing structures, urban "Best Management Practices", and agricultural "Efficient Water Management Practices"), water reclamation investments, and from conservation of the evapotranspiration element of water that was formally applied to marginally productive agricultural lands which will be permanently retired.

- The amount of water saved during dry and critical years will be less than the average shown above due to typical shortages in deliveries. The savings in these years may be only about 0.5 MAF. A long-term water bank and temporary land fallowing program, primarily for non CVP/SWP areas, will be established with the capability of saving an additional 1-2 MAF during dry and critical years.

- The various demand management mechanisms produce water savings at different times of the year. Some water savings occur year round, but the major portion occurs during the late spring, summer, and early fall. Water thus conserved, is available for storage ("banking") or other uses. Water conserved at other times, such as reclaimed water which is available according to the schedule of its use, will be used to offset local increases in demand.

Operation of Water Developed Through Demand Management

Demand management will be implemented at an extensive level (3-3.5 MAF annually) in all areas that use Delta water. Water developed through demand management will contribute to increases in ecosystem water and reductions in spring and summer withdrawals from the Delta. Water developed through demand management will also be stored seasonally in surface water facilities or long-term in groundwater banking or conjunctive use areas.

Average and Wetter Years

- Conserved water remaining in upstream reservoirs by late fall would contribute to carry-over storage for the next year's use if reservoirs were below flood storage levels. Water above flood control limits would be conveyed to groundwater or surface storage south of the Delta or released to augment stream flows and Delta outflow.

- Considering the magnitude of the assumed water savings, the overall reduced export that will occur, and the storage available to re-regulate conserved water, substantial amounts of water will be available to dedicate for ecosystem health and for groundwater storage and conjunctive-use programs south of the Delta. This conserved water would likely exceed 2 MAF annually and Delta withdrawals for non-storage consumptive uses would be reduced by a like amount.

- Operations focused on ecosystem health will strive to make the best use of water developed through demand management according to the following priorities: 1) increase the April 15 through May 15 outflow; 2) increase the outflow from March 1 through June 30; and 3) increase the number of days of X2.

- Water developed through demand management will also be allocated to groundwater banking facilities and conjunctive use areas for use in dry year water supply.

Dry and Critical Years

- The water saved can be allocated for two primary purposes though the volume will be reduced in these year types. A portion can be used to augment Delta outflow for the fishery. The remaining portion can be used to satisfy unmet consumptive demands.

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to offset the reduced export in the spring and to augment water supplies in the summer and fall.

- Temporary land fallowing will provide 1-2 MAF for transfer to water users and the environment.

Operation of Delta Withdrawals

Withdrawals from the Delta will continue to rely on existing facilities. Delta diversions will be reduced to reflect increases in demand management practices to the south of the Delta. New withdrawals will be made from the Delta for in-Delta storage.

Average and Wetter Years

- Delta withdrawals will reduced more during average and wetter years than in dry and critical years. Reduced Delta withdrawals would result from urban BMPs and agricultural EWMPs implemented to the south of the Delta. The water developed through demand management will be retained in upstream reservoirs to contribute to increased ecosystem water availability.

- Delta withdrawals made to fill environmentally dedicated in-Delta storage will be from the receding limb of peak flood hydrographs.

Dry and Critical Years

- Delta withdrawals will be reduced slightly based on groundwater storage withdrawals south of the Delta which would replace the Delta withdrawals. Groundwater withdrawals from north of the Delta will provide additional water for Delta flows and withdrawals through surface water exchange and conjunctive use operations. The net effect will be to have Delta diversion patterns similar to historical patterns during dry and critical years. Delta outflow will be improved, however, from overall conservation efforts and groundwater banking.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be in the most efficient manner possible to enhance fish and wildlife habitats in the Sacramento and San Joaquin Valley and the Bay-Delta estuary.

- Water developed from in-Delta storage will be fully allocated for environmental uses such as: 1) provide a source of water to augment Delta outflows and salinity objectives set forth in the 1995 Bay-Delta Salinity Control Plan; 2) provide flows to flush fish away from south Delta export facilities; and 3) augment Delta withdrawals in manner that will reduce withdrawals during periods critical to Delta fisheries. This storage could be exchanged with upstream water supply storage to provide additional instream flow benefits.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta during periods of low inflows from the San Joaquin River.

Operational Concept
Alternative B - New Storage to Improve Delta Flow

New surface storage upstream and downstream of the Delta will provide greater flexibility in timing inflows to the Delta and withdrawals from the Delta. Upstream storage will be used for water supply, to help manage the timing of inflow to the Delta for environmental benefit, and for Delta outflow. Downstream storage, in conjunction with groundwater/conjunctive use, will be used to better manage the timing of Delta exports. Delta withdrawals for export will be increased in the fall through mid-winter period to offset reduced Delta withdrawals from March through June, in order to reduce withdrawal effects on Delta fisheries.

General Operational Assumptions

The water storage developed as part of this alternative will be allocated jointly for flow releases to benefit the ecosystem and water supply. New storage will be coordinated with existing storage to shift Delta withdrawals for export to periods when the Delta fishery is the least vulnerable and to increase the availability of water for ecosystem uses. Water quality will receive benefit from the dilution effects from water released for the benefit of the ecosystem.

- New storage will be allocated jointly to environmental purposes and water supply purposes. New storage upstream of the Delta will total 0.5 to 1 MAF. A similar amount of storage will located downstream of the Delta.

- New storage, both upstream and downstream of the Delta, will be filled from the receding limb of peak flood hydrographs. This will allow the high flood peaks to continue in the river without significantly altering the channel maintenance benefits of flood flows.

- Real time monitoring will be used to shift diversion timing to better avoid fish entrainment. In general, export withdrawals will be reduced in the March through June period and increase in the fall through winter.

Operation of Storage

New upstream and downstream storage will be operated to fill during the receding limb of peak flood hydrographs, which would be unregulated by existing on-stream storage facilities. Detailed analyses of hydrologic and biological conditions will be required to determine the impacts and criteria for filling storage in this manner.

Average and Wetter Years

- Environmental storage will be conserved to the extent possible in average and wetter years. Water remaining in storage above established carry-over targets will be conveyed to groundwater banking and conjunctive use areas to supplement long-term and drought period supplies or released to augment stream flows and Delta outflow.

- Water supply storage in the new facilities will be used on a seasonal basis to allow a shift in Delta withdrawals from the March through June period to late fall through mid-winter period. Water remain in storage above established carry-over storage targets will be conveyed to groundwater banking and conjunctive use areas to supplement long-term and drought period supplies.

- Existing storage facilities upstream of the Delta will be reoperated to provide a greater portion of the releases for ecosystem benefits, such as in-stream flows, refuge water, and Delta outflow and salinity requirements.

Dry and Critical Years

- There will be significantly reduced opportunity to fill either the upstream or downstream storage, since flood events are generally much smaller and more infrequent during these years.

- The portion of storage allocated to environmental purposes upstream of the Delta will be used to increase Delta outflows during the summer and late fall period and as otherwise needed to improve ecosystem functions in the Delta. Environmental storage to the south of the Delta would primarily be used to offset Delta withdrawals during critical periods. Withdrawals from downstream storage would be provided in exchange for upstream releases of water supply storage.

Operation of Delta Withdrawals

Delta withdrawals will continue to rely on existing facilities. As described above Delta withdrawals will be shifted away from the summer period by utilizing a combination of new upstream and downstream storage.

Average and Wetter Years

- South of Delta storage will be filled with withdrawals from the Delta during the receding limb of peak flood hydrographs. Water stored in this manner will be released during the spring and summer period to reduce Delta withdrawals and related impacts to Delta fisheries.

- Utilizing timing shifts allowed by meeting consumptive demand from storage, Delta withdrawals will be moderately reduced in the March through June period. During average and wetter water years the reduced withdrawals will result in increased Delta outflow by a similar amount during the spring and summer period from water released from upstream storage.

Dry and Critical Years

- Conjunctive use programs and groundwater banking developed in the San Joaquin Valley would be used to offset Delta withdrawals for export and increase Delta outflow in the spring and summer.

Operation of Water Developed Through Demand Management

Demand management (about 1.5-2 MAF average annual) will be implemented at moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water (reductions in spring and summer withdrawals from the Delta) and for water supply.

Average and Wetter Years

- The for water developed through demand management will contribute to increased ecosystem water availability for water supply. These uses include in-stream uses, refuge water, pulse flows, and Delta outflow and salinity control.

- Water developed through demand management practices will be allocated between surface water and groundwater storage or used to augment stream flows and Delta outflow. Water stored in surface water facilities will be done so seasonally to help meet consumptive use needs. Water allocated to groundwater storage will be banked for use during dry and critical years.

- Water developed through reclamation will be utilized primarily within the district it was reclaimed. Reclaimed water will used to offset increases in consumptive use demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily in non CVP/SWP areas, will provide 300-500 TAF for water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used in the most efficient manner possible to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta during periods of low inflows from the San Joaquin River.

Operational Concept
Alternative C - Dual Delta Conveyance

This alternative uses extensive new storage and conveyance facilities to efficiently move water through and around the Delta. New surface storage upstream and downstream of the Delta will provide greater flexibility in timing inflows to the Delta and diversions from the Delta. Downstream storage, in conjunction with groundwater/conjunctive, use will be used to better manage the timing of Delta exports. Improved conveyance through the Delta and isolated conveyance around the Delta further enhance the system flexibility while reducing diversion impacts on the fisheries.

General Operational Assumptions

The combination of new storage, improved through Delta conveyance, and development of an isolated conveyance facility will increase the ability to efficiently and with fewer biological impacts move water south of the Delta. The following general operational assumptions apply to this alternative.

- The isolated conveyance facility will operate for a portion of the March through June Delta export demand and to the extent possible, dependant on biological criteria, for a majority of the remaining export demand (July through February).

- New storage will be allocated jointly for environmental and water supply purposes. New storage upstream of the Delta will total 0.5 to 1 MAF. A similar amount of storage will located downstream of the Delta.

- New storage, both upstream and downstream of the Delta, will be filled from the receding limb of peak flood hydrographs. This will allow the high flood peaks to continue in the river without significantly altering the channel maintenance benefits of flood flows.

Operation of Delta Withdrawals and Conveyance

Delta withdrawals will be moderately shifted from the March through June period to fall through mid-winter. The shift in Delta withdrawals will be facilitated through extensive new storage upstream and downstream of the Delta as well as the isolated conveyance facility. The development of this alternative will require that criteria for meeting the X2 standard, Delta outflow requirements, carrage water, and other Bay-Delta water quality standards will need to be re-evaluated.

Average and Wetter Years

- All Delta export withdrawals less than the capacity (5000 - 7000 cfs) of the isolated conveyance facility will pass through that facility to deliver better quality water to the export pumps and to not interfere with in Delta fisheries. Delta export withdrawals greater than the capacity of the isolated conveyance facility will be conveyed through a screened diversion above Hood and through improved Delta channels.

- Water transfers will be conveyed through the isolated facility during periods of available capacity. Transfers made in average and wetter years would be stored in either surface or groundwater facilities or used to meet consumptive demands.

Dry and Critical Years

- A greater portion of the Delta export demand will be conveyed through the isolated facility to reduce to the maximum extent possible impacts to Delta fisheries.

- Conjunctive use programs and groundwater banking developed in the San Joaquin Valley would be used to reduced exports in the spring and summer.

- Opportunities will increase for transferring water through the isolated facility which would be used to satisfy unmet consumptive use demands.

Operation of Storage

New upstream and downstream storage will be operated to fill during the receding limb of peak flood hydrographs, which would be unregulated by existing on-stream storage facilities. Down stream storage would be filled as much as possible utilizing the isolated facility. Detailed analyses of hydrologic and biological conditions will be required to determine the impacts and criteria for filling storage in this manner.

Average and Wetter Years

- Environmental storage will be conserved to the extent possible in average and wetter years. Water remaining in storage above established carry-over targets will be conveyed to groundwater banking and conjunctive use areas, via the isolated conveyance facility, to supplement long-term and drought period supplies.

- Water supply storage in the new facilities will be used on a seasonal basis to allow a shift in Delta withdrawals from the March through June period to late fall through mid-winter. Water remain in storage above established carry-over storage targets will be conveyed to groundwater banking and conjunctive use areas, via the isolated conveyance facility, to supplement long-term and drought period supplies.

- Excess carry-over storage in upstream reservoirs would be conveyed to groundwater banking and/or conjunctive use areas. Vacating this water from on-stream project reservoirs will enable a greater portion of flood flows to be captured and stored.

Dry and Critical Years

- There will be significantly reduced opportunity to fill either upstream or downstream storage, since flood events are generally much smaller and more infrequent during these years.

- The portion of storage allocated to environmental purposes upstream of the Delta will be used to increase Delta outflows during the late spring and summer period and as otherwise

needed to improve ecosystem functions in the Delta. Environmental storage to the south of the Delta would primarily be used to offset Delta withdrawals. Storage withdrawals for consumptive demands would be provided in exchange for upstream releases from water supply storage which would remain in the Delta.

Operation of Water Developed Through Demand Management

Demand management (about 1.5-2 MAF average annual) will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily in non CVP/SWP areas, will provide 300-500 TAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative D - Through Delta Conveyance

This alternative will increase the through-Delta channel conveyance capacity from the Sacramento River to the south Delta export facilities. A new screened diversion facility on the Sacramento River between Hood and Freeport will supply water for continued through Delta transport of water for export by CVP and SWP pumping facilities. Fish mortality caused by entrainment in the central and south Delta will be reduced through the operation of the screened diversion from the Sacramento River. New storage downstream of the Delta will be used to improve operational flexibility and management of Delta exports.

General Operational Assumptions

The combination of new storage downstream of the Delta and improved through Delta conveyance will increase the ability move water to the south of the Delta. The new storage will allow a portion of the March through June export demand to be shifted to the fall through mid-winter period. The following general operational assumptions apply to this alternative.

- New storage (1 to 1.5 MAF) downstream of the Delta will be allocated jointly for environmental and water supply purposes.

- Storage downstream of the Delta will be filled from the receding limb of peak flood hydrographs. This will allow the high flood peaks to continue in the river without significantly altering the channel maintenance benefits of flood flows.

- Withdrawals from the Sacramento River to the central and south Delta will be made through a new state of the art screened facility with a capacity of 15,000 to 20,000 cfs. The operation of this facility will be monitored for the presence of fish and operations will be modified as needed to minimize impacts to species of special concern.

Operation of Delta Withdrawals and Conveyance

Withdrawals from the Delta will continue to rely on existing facilities. As described above, Delta withdrawals will be shifted away from the March through June period to the extent possible by utilizing new and existing storage downstream of the Delta. The shift in Delta withdrawal timing will reduce impacts associated with Delta exports. Improved channel capacities in the north and south Delta will improve the efficiently water movement across the Delta.

Average and Wetter Years

- South of Delta storage will be filled with withdrawals from the Delta during the receding limb of peak flood hydrographs. Water stored in this manner will be released during the spring and summer period to reduce Delta withdrawals and impacts to Delta fisheries.

- Utilizing timing shifts allowed by meeting consumptive demand from downstream storage, Delta withdrawals will be moderately reduced in the March through June period. During

average and wetter water years the reduced withdrawals will result in increased Delta outflow by a similar amount during the spring and summer period from water released from upstream storage.

Dry and Critical Years

- Conjunctive use programs and groundwater banking developed in the San Joaquin Valley would be used to offset Delta withdrawals for export and increase Delta outflow in the spring and summer.

Operation of Storage

New storage will be developed downstream of the Delta, as indicated above. This storage, in conjunction with existing surface storage and increased utilization of groundwater banking/conjunctive use, will increase the overall flexibility of operations.

Average and Wetter Years

- New storage dedicated for the environmental will be conserved to the extent possible in average and wetter years. Water remaining in storage above established carry-over targets will be transferred to groundwater banking and conjunctive use areas in the San Joaquin Valley and Tulare Lake Basin to supplement long-term and drought period supplies.

- New storage dedicated for consumptive uses will be used on a seasonal basis to allow a shift in Delta withdrawals from the March through June period to late fall through mid-winter period. Water remaining in storage above established carry-over storage targets will be transferred to groundwater banking and conjunctive use areas in the San Joaquin Valley and Tulare Lake Basin to supplement long-term and drought period supplies.

- Existing storage facilities upstream of the Delta will be reoperated to provide a greater portion of the releases for ecosystem benefits, such as in-stream flows, refuge water, and Delta outflow and salinity requirements.

- Excess carry-over storage in upstream reservoirs would be conveyed to groundwater banking and/or conjunctive use areas. Vacating this water from on-stream project reservoirs will enable a greater portion of flood flows to be captured and stored.

Dry and Critical Years

- There will be significantly reduced opportunity to fill either the upstream or downstream storage, since flood events are generally much smaller and more infrequent during these years.

Operation of Water Developed Through Demand Management

Demand management (about 1.5-2 MAF average annual) will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily in non CVP/SWP areas, will provide 300-500 TAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative E - Delta Channel Habitat and Conveyance

The focus of this alternative is to significantly increase the through-Delta channel conveyance capacity from the Sacramento River to the south Delta export facilities through the creation of wide habitat corridors and set back levees. These extensive channel improvements will be made along 50 to 100 miles of Delta channels along Steamboat Slough, North and South Forks of the Mokelumne River, and along the San Joaquin River. Increases in conveyance capacity will be such to significantly reduce velocities and avoid entrainment of fish toward the south Delta export facilities.

General Operational Assumptions

The operation of Delta export facilities and upstream reservoirs will remain similar to historical operations. While this alternative increases the conveyance capacity across the Delta, the lack of new storage does not allow operation to be shifted in time or in magnitude. The following general operational assumptions apply to this alternative.

- Movement of water across the Delta will be from the Sacramento River near Hood through the central portion of the Delta. Movement of water across the western Delta will be minimized. The diversion from the Sacramento River will be unscreened.

- Delta withdrawals will be reduced to the extent that demand management practices to the south of the Delta reduce consumptive use needs.

Operation of Delta Withdrawals and Conveyance

Withdrawals from the Delta will continue to rely on existing facilities. The restoration of extensive amounts of habitat and decreased velocities across the Delta will increase fish populations which would offset export facility take limits and other impacts currently associated export operations.

Average and Wetter Years

- Delta withdrawals will operate much as they have in past. However, the reliability of exports and likelihood of exports being curtained or cut-off due to concerns for anadromous or resident fish species will be significantly reduced.

- Delta withdrawals will continue to be guide by the current Bay-Delta Salinity Control Plan, recognizing limits on exports due to established export ratios. Increases in fish populations and adherence to the Bay-Delta Plan will increase the water supply reliability and predictability.

Dry and Critical Years

- Conjunctive use programs and groundwater banking developed in the San Joaquin Valley would be used to offset Delta withdrawals for export and increase Delta outflow in the spring and summer.

Operation of Storage

No new storage is associated with this alternative. Existing storage upstream of the Delta will be operated in much the same manner as in the past. The utilization of groundwater storage in the Sacramento and San Joaquin Valleys and the Tulare Lake Basin will be increased.

Average and Wetter Years

- During above average flow years, or when south of Delta storage is full, water will be used to recharge groundwater basins in conjunctive use and banking areas in the southern San Joaquin Valley and Tulare Lake Basin. Water stored in these basins will be utilized primarily during below average years to reduce the amount of exports from the Delta. A reduction in export will free up water for environmental flows during these periods of naturally reduced flows.

Dry and Critical Years

- Storage withdrawals will occur much as they have historically during dry and critical periods. Additional water will be available from groundwater banking and conjunctive use operations in the San Joaquin Valley and the Tulare Lake Basin. This groundwater would be exchanged for Delta withdrawals which would remain in the Delta as outflow.

Operation of Water Developed Through Demand Management

Demand management (about 1.5-2 MAF average annual) will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily from non CVP/SWP ares, will provide 300-500 TMAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative F - Extensive Habitat Restoration with Storage

The primary objective of this alternative will be to address conflicts in the Delta through extensive amounts of habitat restoration in the Bay-Delta ecosystem. New storage will be developed in the Delta in this alternative, which will be used primarily for environmental purposes. The existing system of Delta conveyance and export will be relied upon to provide export demands for the CVP and SWP.

General Operational Assumptions

The operation of Delta export facilities will remain similar to historical operations. The reliability of export from the Delta should increase as extensive ecosystem restoration activities increase resident and anadromous fish populations to the point that the impacts from project operations are not critical factors to fish population stability. New environmentally dedicated storage is also provided within the Delta in this alternative. The following general operational assumptions apply to this alternative.

- New Delta storage will be operated to fill during peak flood flows and make releases as needed to provide water for Delta outflow, salinity control, water quality benefits, or for other environmental benefits.

- Delta withdrawals will be reduced to the extent that demand management practices to the south of the Delta reduce consumptive use needs.

Operation of Delta Withdrawals and Conveyance

Withdrawals from the Delta will continue to rely on existing facilities. The restoration of extensive amounts of habitat will increase fish populations which will offset export facility take limits and other impacts currently associated export operations. Diversions to a new in-Delta island storage facility will be made during periods which offer the least impact to Delta aquatic species.

Average and Wetter Years

- Delta withdrawals will operate much as they have in past. However, during certain periods—mainly in the spring—withdrawals may be throttled back or shut down completely to protect important native fish or outmigrating anadromous fish.

- Delta withdrawals will continue to be guided by the current Bay-Delta Salinity Control Plan, recognizing limits on exports due to established export ratios. Increases in fish populations and adherence to the Bay-Delta Plan will increase the water supply reliability and predictability.

- Withdrawals to fill in-Delta storage will occur during the receding limb of a peak flood hydrograph, allowing the high flood peaks to continue as Delta outflow without significantly altering benefits of such flood flows. The in-Delta storage facility will have multiple diversion intakes to minimize impacts to fish.

Dry and Critical Years

- Conjunctive use programs and groundwater banking developed in the San Joaquin Valley would be used to offset Delta withdrawals for export and increase Delta outflow in the spring and summer.

- The opportunities to fill in-Delta storage during this period will be significantly reduced, since flood events are generally much smaller and more infrequent during these years

Operation of Storage

New storage in this alternative is limited to in-Delta island storage of about 300,000 to 400,000 AF. The new in-Delta storage will allow some reoperation of existing storage upstream of the Delta. The utilization of groundwater storage in the Sacramento and San Joaquin Valleys and the Tulare Lake Basin will be increased.

Average and Wetter Years

- Water stored in the new in-Delta island storage facility will be released from March through July, as needed, to: 1) improve fish transport through the Delta, particularly during periods of south Delta exports; 2) improve management of the X2 standard; 3) improve water quality in the south Delta; and 4) to provide water for export at the south Delta pumping facilities. This storage could be exchanged with upstream water supply storage to provide additional instream flow benefits.

- During average or wetter years and when south of Delta storage is full, water from Delta withdrawals will be used to recharge groundwater basins in conjunctive use and banking areas in the southern San Joaquin Valley and Tulare Lake Basin. Water stored in these basins will be utilized primarily during below average years to reduce the amount of exports from the Delta.

Dry and Critical Years

- In-Delta storage will presumably provide little water during dry and critical years due to infrequency and small magnitude of flood flows on which the facility is dependant to fill it storage.

- Storage withdrawals will occur much as they have historically during dry and critical periods. Additional water will be available from groundwater banking and conjunctive use operations in the San Joaquin Valley and the Tulare Lake Basin. This groundwater would be exchanged for Delta withdrawals which would remain in the Delta as outflow.

Operation of Water Developed Through Demand Management

Demand management (about 1.5-2 MAF average annual) will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily for non CVP/SWP areas, will provide 300-500 TAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative G - East Side Foothills Conveyance

The focus of this alternative is to construct a new conveyance facility along the foothills on the eastern edge of the Sacramento and San Joaquin Valleys. The new conveyance facility will originate at a diversion on the Sacramento River upstream of the confluence of the Sacramento and Feather Rivers. The conveyance facility will follow the foothills southward and terminate at the Tuolumne River. A cross valley connection will be made from the conveyance facility to the Delta-Mendota Canal and the California Aqueduct near the south Delta export facilities.

General Operational Assumptions

The general operation of this conveyance facility will be to capture flows from the receding limb of peak flood flow hydrographs and convey them southward along the foothills where the water can be supplied for groundwater recharge and in-lieu of local stream diversions. Water will also be conveyed to the Delta-Mendota Canal and the California Aqueduct. The following general operational assumptions apply to this alternative.

- Water will be conveyed through the east side facility to supply eastern San Joaquin Valley conjunctive use projects and local agricultural water users. This facility will allow for the development of an exchange program where water provided for the above uses is replaced with water from surface or groundwater storage.

- Water developed as part of the exchange program will be used to augment spring and summer flows from the Mokelumne, Stanislaus, and Tuolumne Rivers. Surface water would be used primarily for in-river and in-Delta environmental needs and groundwater would be used primarily for dry and critical years to replace surface water diversion.

- Sacramento River water will be conveyed through the conveyance facility to the Delta Mendota Canal and the California Aqueduct. Water conveyed to these points will be used to offset Delta withdrawals, improve water quality of diversions, and provide high quality flood flow water to fill a portion of San Luis storage.

Operation of Conveyance System

The new conveyance facility will have a capacity of 7,000 to 8,000 cfs. Water for conveyance will be developed from peak flood flow hydrograps and from excess flows in the Sacramento River.

Average and Wetter Years

- A portion of the south Delta export demand will be supplied from withdrawals made through the east side conveyance facility. This high quality water will be delivered to the Delta-Mendota Canal and the California Aqueduct to improve the overall quality of water exported by the CVP and SWP.

- Withdrawals from the Sacramento River via the conveyance facility would take place only when sufficient flows are available above flows required for protection of Sacramento River and Bay-Delta estuary environments.

- Interties will be constructed with existing east side conveyance projects (i.e. Mokelumne and Hetch Hetchy Aqueducts) to provide water during above average years and when water quality is acceptable to these projects. Water will be provided in exchange for like amounts of water for in-river and in-Delta uses.

Dry and Critical Years

- There will be significantly reduced opportunity to convey flood flow water through east side conveyance facility in dry and critical years, since flood events are generally much smaller and more infrequent during these years.

Operation of Storage

New storage is limited to about 100,000 AF of in-Delta storage which will be used primarily for in-Delta environmental purposes. Operations of existing reservoirs on the east side of the Sacramento and San Joaquin Valleys will be modified to increase releases from Mokelumne, Stanislaus, and Tuolumne River reservoirs for in-river uses and central and south Delta uses.

Average and Wetter Years

- Existing south of Delta storage, primarily west side and southern facilities associated with Delta export facilities, will be filled as much as possible from withdrawals via the east side facility during the receding limb of peak flood flow hydrographs on the Sacramento River.

- Excess carry-over storage in upstream reservoirs would be conveyed to groundwater banking and/or conjunctive use areas, via the east side facility. Vacating this water from on-stream reservoirs will enable a greater portion of flood flows to be captured and stored.

- Water developed through exchange, from agricultural deliveries or deliveries to existing east side projects, will be held in local storage facilities on the Mokelumne, Stanislaus, and Tuolumne Rivers. Water will be released as spring outflow augmentation water or pulse flow water to aid the movement anadromous and resident fish species, and for Delta water quality objectives.

Dry and Critical Years

- The opportunities to fill in-Delta storage during this period will be significantly reduced, since flood events are generally much smaller and more infrequent during these years

- Additional water will be available from groundwater banking and conjunctive use operations in the San Joaquin Valley.

Operation of Water Developed Through Demand Management

Demand management (about 1.5-2 MAF average annual) will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and for water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily for non CVP/SWP areas, will provide 300-500 TAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- Water developed from in-Delta storage will be fully allocated for environmental uses such as: 1) provide a source of water to augment Delta outflows and salinity objectives set forth in the 1995 Bay-Delta Salinity Control Plan; 2) provide flows to flush fish away from south Delta export facilities; and 3) augment Delta withdrawals in manner that will reduce withdrawals during periods critical to Delta fisheries. This storage could be exchanged with upstream water supply storage to provide additional instream flow benefits

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative H - Chain of Lakes Conveyance

The focus of this alternative will be the development of a chain of contiguous island storage facilities from the Sacramento River in the north Delta to the existing CVP and SWP export facilities in the south Delta. This Chain of Lakes would serve as an isolated through Delta conveyance and in-Delta storage facility. This alternative will reduce entrainment impacts associated with current export activities and increase the water quality of export supplies. The reliability of export supplies will be substantially increased by removing concerns of export take limits which currently jeopardize export operations. The Chain of Lakes will also develop extensive amounts of habitat directly associated with the facility.

General Operational Assumptions

The general operational assumptions for this alternative are based on the following operational features of the Chain of Lakes storage and conveyance facility.

- A series of multiple, small, diversion facilities equipped with state-of-the art fish screens will facilitate withdrawals from the Delta and the Sacramento River. However, during certain periods—mainly in the spring—withdrawals must be throttled back or shut down completely to protect important native fish or outmigrating anadromous fish.

- The storage/conveyance facility will have a capacity of 15,000 to 20,000 cfs which could be operated to meet all Delta export demands.

- The storage component of the facility will have a total capacity of about 300,000 to 600,000 AF. This storage would be filled first with water from the receding limb of peak flood flow hydrographs and secondly from releases from upstream reservoirs.

- High quality water will be delivered year round to both agricultural and urban users through the Chain of Lakes conveyance facility.

Operation of Conveyance/Storage Facility

The development of this alternative will require that criteria for meeting the X2 standard, Delta outflow requirements, carriage water, and other Bay-Delta water quality standards will need to be re-evaluated.

Average and Wetter Years

- Storage in the Chain of Lakes will be filled, in part, by skimming water from the receding limb of peak flood flow hydrographs. This will allow the high flood peaks to continue to contribute to Delta outflow without significantly altering the benefits of such flows. Detailed analyses of hydrologic and biological conditions will be required to determine the impacts and criteria for filling storage in this manner.

- During the spring months, Sacramento River flows can be augmented by allowing Oroville and Shasta inflows to pass through unregulated to the extent that water skimmed from the hydrographs earlier in the year and stored in the Chain of Lakes or transferred south of the Delta can offset this pass-through flow. The water skimmed from flood hydrograph and stored south of the Delta also makes it possible to throttle back or shut down withdrawals through the fish screens of the Chain of Lakes facilities to protect important native fish or outmigrating anadromous fish.

- To the extent that there is unused capacity in existing aqueducts—water can be transported during the winter months to existing surface storage (San Luis Reservoir, other project reservoirs, groundwater banking, and conjunctive-use programs in the San Joaquin Valley developed as part of this alternative, and other storage within the water district service areas), and groundwater storage south of the Delta.

- Conserved water in Shasta or Oroville at the end of the operational year would be transferred to south of Delta storage to achieve flood storage limitations by about November 1 of each year. Such water could be transferred to such storage more efficiently by a Chain of Lakes isolated facility, since the fall is the highest carriage water cost period to effect the hydraulic barrier to salinity intrusion. It is also possible that by transferring water from Oroville to south of Delta storage in the fall and winter flood control storage space will be increased and flood peaks can be better regulated to reduce spills. If opportunities exist to transfer this storage to south of the Delta during the winter and spring period, this could create more opportunities to increase spring flows or to throttle back diversions at the fish screens during sensitive fish passage periods.

Dry and Critical Years

- The Chain of Lakes storage and isolated conveyance facility does have the capability to increase spring flows for the fishery during dry and critical years. When combined with sufficient south of Delta storage (surface and groundwater) that can take advantage of conserving high flows in average and above years, there is considerable potential to augment river flows—the amount of augmentation is a function of the size of available storage both in the Delta and south of the Delta.

- Conjunctive use in the Sacramento Valley can be tied to the surface storage in the Delta provided by this alternative and the storage provided in existing storage reservoirs in the Sacramento Valley to effectively use this concept to augment river flows or facilitate water transfers of stored groundwater through the isolated facility. Administrative arrangements would need to be made to provide surface water to conjunctive-use basins during average and above years from existing storage reservoirs in the Sacramento Valley and offset that surface delivery with water conserved in the Chain of Lakes facility.

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley as part of this alternative can be drawn on in dry and critical years to offset augmented spring flows for fisheries and to provide water supplies.

- To the extent that stored reservoir water is available north of the Delta to transfer during dry and critical years, the Chain of Lakes facility can effect the transfer more efficiently than the existing system. This efficiency comes from the capability to eliminate the high-carriage water cost typically associated with maintaining a hydraulic barrier to salinity intrusion in the south Delta due to pumping during summer and fall months of dry and critical year types.

Operation of Water Developed Through Demand Management

Demand management will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative I - West Side Conveyance and River Restoration

The objective of this alternative is to eliminate the major diversions out of the Sacramento River below Shasta Dam, the Feather River System below Lake Oroville, and out of the Delta. A new large conveyance facility would transport water along the western edge of the Sacramento Valley and across the Delta to the south Delta export facilities. Large new surface storage would be developed to increase the flexibility of water management and to capture a portion of peak flood flows and spills from Shasta and Oroville. Water stored by this project would serve the major diverters on the Sacramento and Feather River systems and the Delta. Shasta and Oroville would be re-operated in conjunction with the new storage to enhance fisheries and water quality in rivers and the Delta. This alternative will eliminate entrainment impacts associated with current export activities and increase the water quality of export supplies. The reliability of export supplies will be substantially increased by removing concerns of export take limits which currently jeopardize export operations. This alternative will restore significant amounts of habitat and ecosystem function on the upper Sacramento River.

General Operational Assumptions

The major operational feature of this alternative would be the relocation of Sacramento River diversions and Delta diversions to Shasta Lake and Thermalito Afterbay, on the Feather River. The diversion facilities will operate to first divert flows from the receding limb of peak flood flow hydrographs and secondly to divert a portion of the water available above in-river and Delta ecosystem needs. The following operational assumptions apply to this alternative.

- The diversion at Shasta Lake would have a maximum diversion capacity from 5,000 to 10,000 cfs. Diverted flows would flow by tunnels and canals along the west side of the Sacramento valley to a large to new off-stream reservoir(s).

- The diversion on the Feather River would be located in Thermalito Afterbay with a maximum diversion capacity from 2,000 to 7,000 cfs. Diverted water would be be conveyed by pipes from the diversion across the valley to the new off-stream reservoir(s)on the west side.

- Delta export demands would be supplied from storage on the west side and to a smaller extent from direct diversions from Shasta and Oroville. This conveyance facility will provide a high quality water supply to both agricultural and urban water users south of the Delta.

- Entrainment effects will be significantly reduced but not totally eliminated since many smaller diversions (riparian) will remain along the rivers.

Operation of Conveyance

As indicated above water will be conveyed through an isolated conveyance facility along the west side of the Sacramento Valley. The most significant operational feature of this facility is the elimination of Sacramento River diversions and south Delta export withdrawals. Turnouts would be located as appropriate to replace diversions (except for riparian, etc.) from the Sacramento and Feather Rivers and from the Delta.

The development of this alternative will require that criteria for meeting the X2 standard, Delta outflow requirements, carriage water, and other Bay-Delta water quality standards will need to be re-evaluated.

Average and Wetter Years

- Withdrawals from Shasta and Thermalito will be made during the receding limb of peak flood hydrographs. This will allow the high flood peaks to continue in the river without significantly altering the channel maintenance benefits of flood flows.

- Water to meet Delta export demands will be made from storage in new west side reservoirs and conveyed through the west side conveyance facility. Water will be delivered to fill south of Delta storage when capacity exists in the conveyance facilities.

- Agricultural water users in the Sacramento Valley will be supplied water on historical delivery and consumptive use patterns from storage in west side reservoirs.

Dry and Critical Years

- Conjunctive use programs and groundwater banking developed in the San Joaquin Valley would be used to offset deliveries and conveyance from the west side of the Sacramento Valley.

Operation of Storage

An additional 6 to 8 MAF of off-stream storage will be constructed on the west side of the Sacramento Valley. This storage will be filled with high quality water from the diversions described above and will provide water for the major diverters in the Sacramento River system and the Delta. Existing project reservoirs will be operated primarily to release water for ecosystem uses.

Average and Wetter Years

- New storage on the west side will be operated to serve agricultural and urban water users in the Delta and the Sacramento River. It is assumed that the full demands of these users can be served through the west side conveyance and storage facilities.

- If off-stream storage is full the water from the diversions will also be used to recharge groundwater basins in conjunctive use areas such as the Butte Basin and Stoney Creek Fan.

- Shasta and Oroville reservoirs will be operated in conjunction with the new off-stream storage to provide in-river and Delta flows to enhance habitat, fisheries, and water quality. Excess carry-over storage would be conveyed to groundwater banking and/or conjunctive use areas. Vacating this water from on-stream project reservoirs will enable a greater portion of flood flows to be captured and stored.

- Shasta and Oroville will be operated in conjunction with the new storage for water supply and to provide the necessary in stream flows to enhance production of fisheries in the Sacramento and Feather Rivers. They will also be used to makeup the out flow to meet 1995 salinity Control Plain.

Dry and Critical Years

- There will be significantly reduced opportunity to fill storage, since flood events are generally much smaller and more infrequent during these years.

Operation of Water Developed Through Demand Management

Demand management will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily in non CVP/SWP areas, will provide 300-500 TAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will be developed or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.

Operational Concept
Alternative J - East Side Conveyance

The focus of this alternative is to relocate export diversions to the Sacramento River near Hood. A large isolated conveyance facility will convey water from the Sacramento River, around the Delta, to the south Delta export facilities. The conveyance facility will be sized to convey all of the south Delta export demand. This alternative will reduce entrainment impacts associated with current export activities and increase the water quality of export supplies. The reliability of export supplies will be substantially increased by removing concerns of export take limits which currently jeopardize export operations.

General Operational Assumptions

The general operational assumptions for this alternative are based on the following features of a large isolated through Delta conveyance facility.

- Withdrawals from the Sacramento River will be made through state-of-the art fish screens. However, during certain periods—mainly in the spring—withdrawals must be throttled back or shut down completely to protect important native fish or out migrating anadromous fish.

- The isolated conveyance facility will have a capacity of 15,000 to 20,000 cfs which would be operated to meet all Delta export demands.

- High quality water will be delivered year round to both agricultural and urban users through the isolated conveyance facility.

Operation of Conveyance

The development of this alternative will require that criteria for meeting the X2 standard, Delta outflow requirements, carriage water, and other Bay-Delta water quality standards will need to be re-evaluated.

Average and Wetter Years

- The isolated conveyance facility will operate to transport all south Delta demands around the Delta.

- During the spring months, river flows can be augmented by allowing Oroville and Shasta inflows to pass through unregulated to the extent that water skimmed from the hydrographs earlier in the year and stored south of the Delta can offset this pass-through flow. The water skimmed from the flood hydrograph and stored south of the Delta also makes it possible to throttle back or shut down diversions through the fish screens on the Sacramento River during sensitive periods for the fishery.

- Conserved water still parked in Shasta or Oroville at the end of the operational year, which needs to be transferred to south of Delta storage to achieve flood storage limitations by about

November 1 of each year, can be transferred to such storage—and more efficiently by an isolated facility since the fall is the highest carriage water cost period to effect the hydraulic barrier to salinity intrusion. It is also possible that by transferring water from Oroville to south of Delta storage in the fall and winter—increasing the flood control storage space—flood peaks can be regulated and spills reduced. If there are opportunities to transfer this storage to south of Delta during the winter and spring period, this could create more opportunities to increase spring flows or to throttle back diversions at the fish screens during sensitive fish passage periods.

- Opportunities for water transfers will be increased with an isolated through Delta facility. The isolated facility could facilitate movement of transfer water to the south of the Delta in the fall period when the capacity exists in conveyance facilities.

Dry and Critical Years

- The isolated facility does not, acting alone, have the capability to increase spring flows for the fishery during dry and critical years. When combined with sufficient south of Delta storage (surface and groundwater) there is some potential to augment river flows by reducing exports and serving south of Delta water users from storage. This shift in timing and the amount of augmentation is a function of the size of available storage.

- Conjunctive use in the Sacramento Valley needs to be tied to surface storage to effectively use this concept to augment river flows or facilitate water transfers of stored groundwater through the isolated facility.

- To the extent that stored reservoir water is available north of the Delta to transfer during dry and critical years, the isolated facility can effect the transfer efficiently as it can eliminate the high-carriage water cost typically associated with maintaining a hydraulic barrier to salinity intrusion induced by south Delta pumping during summer and fall months of those year types.

Operation of Water Developed Through Demand Management

Demand management will be implemented at a moderate level in all areas that use Delta water. Water developed through demand management will contribute jointly to increases in ecosystem water and water supply.

Average and Wetter Years

- The water developed through demand management will contribute to increased ecosystem water availability and uses. Water will also be allocated between surface water and groundwater storage. Reclaimed water would be utilized primarily within the district it was reclaimed to offset increases in demand growth.

Dry and Critical Years

- Conjunctive-use programs and groundwater banking developed in the San Joaquin Valley would be used to augment water supplies in the summer and fall.

- Temporary land fallowing, primarily in non CVP/SWP areas, will provide 300-500 TAF for transfer to water users and the environment.

Operation of Water Developed or Purchased for Fish and Wildlife Uses

Water developed or purchased for fish and wildlife purposes will be used to enhance the ecosystem of the Sacramento and San Joaquin Valleys and the Bay-Delta estuary.

- About 100,000 acre-feet of water will bedeveloped or purchased from willing sellers in the San Joaquin Valley. This water will used to aid fish transport in conjunction with improvements at the head of Old River and other locations, and to improve water quality in the south Delta.