

ENVIRONMENTAL WATER ACCOUNT  
DRAFT ENVIRONMENTAL IMPACT STATEMENT/  
ENVIRONMENTAL IMPACT REPORT

---

**APPENDIX E**

**2003 EWA Acquisition Strategy**



# EWA Acquisition Strategy For 2003

## I. Executive Summary

The Environmental Water Account (EWA) will enter its third year of operation in 2003. The Management Agencies and Project Agencies, which jointly administer the EWA, are developing a formal strategy for the acquisition of assets for the program for 2003. This paper sets forth the proposed strategy.

The EWA will begin 2003 with 68 TAF of carryover assets from 2002 acquisitions. Of the total, there is 57 TAF in relatively assured storage for cross-Delta transfer (20 TAF in Oroville Reservoir, subject to Delta carriage losses) and direct pump-out (37 TAF in Kern Water Bank). An additional 11 TAF is currently stored in San Luis Reservoir in anticipation of early-2003 fish actions. These in-hand assets will help offset budget challenges and the potential need for additional amounts of water to offset reductions in CVPIA Section 3406 (b)(2) assets originally anticipated under Tier 1.

The EWA Project Agencies will continue a strategy of acquiring maximum water supplies and related assets at minimum cost. To implement this strategy, the concept of functional equivalency, as established in the CALFED Record of Decision (ROD), will be applied to help the EWA reduce its costs.

The concept of functional equivalency as applied to water acquisitions would be applied by maximizing water purchases upstream of the Delta consistent with the Projects' capability to convey EWA water across the Delta prior to the low point in San Luis Reservoir. Options would be employed for the upstream purchases with spring call dates, and the amount of the lower cost upstream-of-Delta purchases would reflect the approximate cross-Delta transfer capacity.

The balance of the water assets would be acquired south of the Delta (in the export service areas). Source shift agreements totaling at least 100 TAF would be negotiated and activated only as needed in 2003. Other services, including storage capability and predelivery arrangements to protect EWA assets in San Luis Reservoir at year-end would be negotiated as the budget permits.

Water needs for 2003 are developed from assumed fish actions (pumping curtailments) that will be implemented by the EWA agencies. Placeholders of 230-450 TAF have been assumed for potential fish actions in 2003, depending on hydrology. These placeholders have been increased to help offset, at least partially, the perceived loss of Delta export reduction capability available to the Fishery Agencies due to recent federal court decisions. The fish actions would be supported by purchases (Table 1, below);

variable assets (about 50 TAF or more expected); activation of the source shift agreements (up to 100 TAF); and borrowing from the CVP and SWP, if required.

Table 1 summarizes the proposed 2003 EWA acquisition program. The purchased water component of the EWA (Total Delivery Goal in Table 1) is higher than that established in the CALFED Record of Decision (ROD) to help offset the perceived loss of Delta export reduction capability available to the Management Agencies due to recent federal court decisions. The 2003 total purchase targets in the table are adjusted downward to account for 20 TAF of EWA 2002 carryover water in Oroville Reservoir and 37 TAF of EWA 2002 water in Kern Water Bank storage, which together will provide 53 TAF of available assets, adjusted for Delta carriage losses. Both quantities, plus an additional 11 TAF in San Luis, are available for 2003 fish actions.

**Table 1  
Summary of EWA 2003 Purchase Goals**

Year Type	Approximate SWP Allocation	Total Delivery Goal <sup>(1)</sup>	UOD Pumped X-Delta	Usual UOD Purchases	Usual SOD Purchases	Minus Carryover From 2002	Total 2003 Purchase Target
Dry and Critical	< 50%	210	210	260	0	52	200
Below Normal	50-75%	240	115	145	125	52	215
Above Normal	75-90%	240	60	75	180	52	200
Wet	90-100%	240	60	75	180	52	200

(1) Goal for delivering purchased water assets to the projects to compensate for operational curtailments.

In addition to acquisitions, it is estimated that the EWA can rely on approximately 50 TAF of water under the Variable Assets provided in the ROD. The EWA may be able to gain additional variable assets in wetter years if San Luis Reservoir fills and spills EWA water debts, assuming relatively aggressive management of such debt. Also, the availability of additional capacity included in the ROD as part of the Variable Assets would be used to benefit the EWA.

The EWA Agencies would continue to coordinate acquisition activities with the USBR water acquisition programs for (b)(3) uses, instream purchases, and refuges. The program would also continue to be integrated with the DWR Dry Year Program and begin coordination with the Colorado River Contingency Program and Drought Risk Reduction Investment Program.

The EWA Agencies will use source-shifting arrangements to carry EWA debt above the delivery goals into the following year if it is needed. This 100 TAF of debt carryover capability is an important aspect of achieving the EWA flexibility envisioned in the

CALFED ROD because it can increase asset availability in some years and increase the potential for debt erasure in very wet years after San Luis Reservoir fills.

In 2003, the EWA will begin to work on longer-term agreements for assets and services as the EIS/EIR is completed. Longer-term arrangements are anticipated to provide the EWA with greater certainty, lower long-term costs, and enhanced flexibility and reliability.

The EWA is interested in diversifying its sources of assets to lessen its impact on the water market; provide opportunities for using multiple sources; minimize cost; coordinate with other transfer programs, including refuge programs; and maximize the effectiveness of CALFED Program investments. This diversification includes both SWP and CVP sources of replacement water south of the Delta. The EWA in 2002 made reductions in exports at both the CVP and SWP export facilities and will do so in the future. Partnerships between EWA and both CVP and SWP users south of the Delta ease the administrative tasks of replacing these water supplies for each project, respectively.

## **II. Introduction**

The Environmental Water Account (EWA) is a cooperative management program whose purpose is to provide protection to the fish of the Bay/Delta Estuary through environmentally beneficial changes in the operations of the Central Valley Project (CVP) and the State Water Project (SWP) at no uncompensated water cost to the CVP and SWP project users. The EWA is a key component of CALFED's Water Management Strategy, funded through State and federal public funds to address declining fish populations and unreliable water supplies.

The EWA, when taken together with the other aspects of the CALFED Bay/Delta Program, provides part of the resources required for the protection and recovery of critical fish species of the Bay Delta Estuary and provides assurances that the water supplies of the CVP and SWP will not be reduced to provide that protection.

The Management Agencies, which are the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Game; and the Project Agencies, which are the U.S. Bureau of Reclamation and the California Department of Water Resources are jointly responsible for implementation of EWA. This document focuses on the acquisition of the EWA assets necessary to achieve its purpose and objectives.

## **III. Asset Acquisition Strategy: Goals and Objectives**

This section of the document sets forth the proposed goals and objectives for the acquisition of assets for the EWA in 2003. It is intended as an overview of the

framework for the EWA acquisition program for 2003 and future years. It provides information on how the program expects to mature and develop long-term stability. Pursuit of some of these goals must await completion of the long-term EIS/EIR on the EWA Program. Implementation of other goals may require additional CEQA and NEPA coverage, including separate CEQA and NEPA actions by The Project Agencies, although the planning activities necessary to bring the goals forward to a decision may be initiated in the coming year. The asset acquisition program strategy for 2003 incorporates the following goals and objectives:

- Define the purchase strategy
  - Define clearly the placeholders necessary to meet the EWA's needs
  - Define clearly the asset purchase targets for 2003 by fall 2002 in conjunction with estimated needs for future years
  - Define clearly the concept of functional equivalency for EWA assets and adjust purchase targets appropriately
  - Identify participants, constraints, opportunities, and funding needs and sources
  - Define clearly the asset management strategy for various potential operational scenarios
- Acquire water at the most effective unit cost
  - Approach prospective sellers with clearly defined needs and clear understanding of adjusted targets that reflect functional equivalency
  - Purchase upstream-of-Delta water to the extent cross-Delta conveyance is assured in any hydrology
  - Negotiate options for additional amounts of lower-cost upstream-of-Delta water that can be exercised when additional cross-Delta conveyance is available in drier years
  - Negotiate SWP allocation triggers into south of the Delta (export service areas) purchases to provide the required balance of EWA assets when the EWA's cross-Delta transfer capacity is constrained in wet years
  - Coordinate the option and purchase agreements to maximize upstream-of-Delta purchases when Delta conveyance capacity will be available (in drier years), supplementing with south of the Delta purchases only to the degree necessary when transfer capacity is restricted, with decision dates late enough to assure meeting asset acquisition targets
  - Negotiate 2003 asset purchases in the fall of 2002 and executing contracts before 2002-2003 hydrology can become an issue
  - Structure agreements over longer terms, subject to funding commitment constraints and environmental coverage, to lock in pricing and simplify future negotiations
  - Negotiate a flexible option agreement for the source shift and exercise only when needed
  - Continue to pursue actively all opportunities to acquire variable assets

- Expand the asset base
  - Prepare and distribute formal notification of anticipated water needs to a larger audience of EWA interests
  - Request additional funding or modifications to “encumbrance” requirements to pursue more option agreements, and increase the ability to have numerous options without encumbering funds until required
  - Initiate negotiations with additional agencies to increase the competition for inclusion as a seller to the EWA program
  - Pursue acquisitions that can also provide flow increases, temperature modification, and other beneficial actions
  
- Improve flexibility
  - Pursue longer-term arrangements as soon as the EIS/EIR is completed and a decision is made regarding the future of the EWA Program beyond the four-year initial phase
  - Pursue the planning activities leading to an approval for the direct purchase of SWP and CVP entitlement water that would otherwise be put to beneficial use by the contracting agency, including carryover water, recognizing that additional CEQA and NEPA documentation will be required
  - Pursue participation in SWP programs such as Turn-Back Pools, recognizing that this will require SWP CEQA action
  - Negotiate purchases in both CVP and SWP service areas
  - Make the negotiation and contracting process as smooth and swift as possible
  - Increase borrowing from the SWP and CVP when prudent and appropriate
  
- Protect assets
  - Negotiate groundwater banking arrangements and south-of-Delta storage agreements, including pre-delivery and short term carryover, to protect EWA assets
  - Negotiate carryover clauses where appropriate to allow an asset to remain in place and be transferred in a future year
  
- Continue coordination with other water purchase programs
  - Coordinate with CVPIA Level 4 refuge purchases and in-stream flow purchases to ensure the priority accomplishment of both each year
  - Coordinate purchases for the EWA and dry year programs to mitigate competition between the programs and allow shifting of assets as needed
  - Coordinate purchases with other CALFED water purchase programs
  
- Maximize the effectiveness of CALFED Program investments
  - Enhance water bond grant selection criteria to encourage infrastructure that will support future EWA success
  - Propose EWA participation as potential partner with other applicants (combine existing funds with grant funding)

- Propose EWA as independent applicant (enhance purchasing power of existing funds with additional grant funds)

## **IV. Supporting Analysis for the EWA Acquisition Strategy**

This section provides the supporting analysis to define the rationale behind the acquisition strategy and provide background information on the EWA. A summary of 2001 and 2002 operations is presented in Section VI.

### **A. EWA Context**

The EWA operates within the water right permits and operational aspects of the SWP and CVP. This special arrangement and the EWA's purchased and variable assets are specifically set forth in the EWA Operating Principles and the CALFED ROD signed by, among others, the Secretary of Interior and the Director of Water Resources who oversee the operation of these projects.

Even with EWA, the CVP and SWP continue to be operated fully within the constraints defined by D-1641, the applicable biological opinions, and all other regulatory requirements. Although an independent CALFED program, the EWA can be viewed as the reoperation of the CVP and SWP to provide protection and enhancement to sensitive fish species of the Bay/Delta estuary. As explicitly provided in the ROD, the SWP and CVP use their water rights as necessary to acquire EWA assets. These assets are to be stored and delivered through the SWP and CVP facilities. The ROD specifically allows EWA assets to be stored in project reservoirs to the extent that space is available, even though such services are unavailable to non-project entities. These provisions provide a special status to the EWA.

Currently, EWA water that is stored in facilities of the CVP and SWP is considered Project water with an EWA label. It cannot be viewed or treated in the same manner as water held by third parties that requires the use of project facilities or other project use benefits. Normal fees do not apply as they would to other third party users nor do third party users have free access to the operational flexibility afforded to the management of EWA assets. However, the EWA is subject to power and facility costs for the use of these facilities.

No CVP or SWP contractor or independent third party has this flexibility. External users cannot use the aspects of this strategy, the EWA Operating Principles, or the 2003 Interim Protocols for the Operation of the EWA as precedent for treatment similar to that of EWA.

Both SWP and CVP contractors and the environment benefit from the operation of EWA. A fully functional EWA provides commitments that there will be no additional reductions in project deliveries relative to the regulatory baseline as a result of the

needs to recover critical fish species. The water supply reliability afforded by EWA should be considered in overall costs for using such facilities. In addition, the contractors benefiting from such reliability should consider these benefits in their water supply and service arrangements with the EWA and should offer the EWA market arrangements that reflect the multiple benefits they receive.

Over the next year and a half several actions will affect the future direction of the EWA. These actions include:

- The review of the EWA prior to its scheduled expiration on September 30, 2004 as required in the CALFED Record of Decision (ROD);
- Expansion of permitted pumping capacity at the Banks Delta pumping plant from 6,680 cfs to 8,500 cfs;
- Availability of additional water to the projects due to the pending water right settlement of Phase 8 of the SWRCB's water right proceedings;
- Determination by the Department of Interior of its new policy for the appropriate accounting for CVPIA 3406 (b)(2) expenditures for fishery protection as directed by the courts;
- Completion of the EWA EIR/EIS in 2003
- Increased cross-Delta transfer activity related to Colorado River supply issues

## **B. EWA Strategy: Tie Water Purchases to Hydrologic Conditions to Minimize Costs**

The CALFED Record of Decision establishes EWA purchased asset targets at 185 TAF with 35 TAF coming from sources upstream of the Delta and 150 TAF coming from sources south of the Delta or the functional equivalent of these assets. In contrast, there is more water available for transfer from areas upstream of the Delta, and at a lower cost, than from areas south of the Delta. Strict adherence to the 35/150 TAF ROD requirements has the potential to place an avoidable cost burden on the EWA. The EWA has taken advantage of the functional equivalence criteria to purchase a greater portion of the water from upstream sources and thereby acquire the purchased assets within the limitations of available EWA funding.

The amount of water available for transfer is typically greater from areas upstream of the Delta than areas south of the Delta, especially in dry years. This difference is reflected in the market rates received by willing sellers in these two areas. The differences in water prices upstream and south of the Delta are greater than simply the costs of transporting water across the delta. The differences reflect a structural difference in the water economies of these two areas.

One reason for the higher south-of-Delta cost is that the EWA's 2001 and 2002 water purchases in SWP service areas south of the Delta have been restricted to the relatively limited supply of previously banked groundwater. Banked groundwater has been purchased, transported, banked, and must then be pumped out to be delivered, and is

therefore more expensive than upstream sources. In addition, water prices south of the Delta reflect an economy that depends in a substantial part on water supplies imported into the region. These imported water supplies are more expensive than locally developed water supplies.

Initial EWA water purchases during 2001, the first year of operation, followed the general split of EWA purchases established in the CALFED ROD, although upstream-of-Delta purchases exceeded 35 TAF. However, in 2002 water purchases from upstream of Delta sources were increased beyond that established in the CALFED ROD to reduce the amount of south of the Delta purchases. The purchases provided the “functional equivalent” of the 150 TAF of EWA assets south of the Delta to offset EWA export reductions.

The EWA can become much more efficient and minimize its costs if it expands the concept of functional equivalency referenced in the ROD. The concept can be effectively applied to a water purchase strategy that maximizes water purchases upstream of the Delta consistent with the Project’s capability to convey EWA water across the Delta. Water supplies need to be acquired and moved across the Delta prior to the low point in San Luis Reservoir, which typically occurs in August or September.

From a financial point of view EWA purchases should be focused on upstream of Delta areas to minimize costs. However, the EWA does not have secure pumping capacity available to convey all its water supply purchases across the Delta in all hydrologic conditions. Therefore, the EWA should pursue a strategy where it maximizes upstream of Delta purchases to the extent that it can convey water across the Delta.

Table 2 shows the cross-Delta conveyance capacity that the EWA Team will use to develop its water purchase and management strategy for 2003. The available capacity estimates include the 500 cfs summer capacity dedicated to the EWA. The EWA priority for pumping is set forth in the ROD and detailed in the 2003 Interim Protocols for the Operation of the EWA. An unknown factor is the extent that other SWP contractor water transfers will affect the EWA’s access to SWP conveyance. An assumption has been made regarding the volume of SWP contractor transfers with a priority higher than the EWA that are likely in various SWP allocations based on recent experience.

If the amount of water being transferred for SWP contractors from upstream of the Delta increases, then the SWP’s capacity to convey EWA water will decrease. In addition, the conveyance of the Phase 8 settlement water supplies for SWP contractors will also decrease the SWP’s conveyance capacity for EWA water. Table 2 reflects these estimated Phase 8 settlement supplies in 2003 (50 TAF) and will be adjusted each year to reflect the best projection of the SWP’s capacity to convey EWA water.

Table 2 shows that the EWA’s capability to convey water through the SWP facilities decreases in normal and wet years, and is least when SWP allocations are 75% of requests and above. A marked transition occurs in dry to below normal years (SWP allocations between 35% and 70%). The EWA agencies will purchase water upstream

of the Delta consistent with this table up to the amount deemed necessary, allowing for carriage water losses.

Since it cannot be projected with certainty what the projected SWP allocation will be when contracts are negotiated, EWA contracts will use options for part of the purchases upstream of the Delta or contract provisions tied to SWP allocations to accommodate uncertainty over conveyance capacity. Water purchases south of the Delta can be tied directly to SWP allocations in many instances.

**Table 2**  
**Anticipated EWA Cross Delta Conveyance**  
**as a Function Of SWP Allocations in 2003**

SWP Annual Allocation Percentage	EWA Cross-Delta Capacity TAF <sup>(1)</sup>
100	60
95	60
90	60
85	60
80	60
75	60
70	60
65	99
60	138
55	190
50	242
45	330
40	418
35	459
30	500
25	501
20	503

(1) Capacity computations assume use of the EWA's 500 cfs capacity in wetter years. Additional capacity becomes available in drier years, reduced by a modest Dry Year Water Acquisition Program and assumed SWP contractor transfers of 200 TAF

## **C. Coordination of EWA With CVPIA Section 3406 (b)(2) Assets**

CVPIA Section 3406 (b)(2) provides that 800 TAF of CVP yield be dedicated to fishery benefits. The USBR has been operating the (b)(2) program for several years, and the Project Agencies have been coordinating its operation with the EWA. However, recent court decisions have found that the accounting mechanisms used to calculate (b)(2) expenditures needed modification. The court has ordered that new accounting methods be employed.

A new (b)(2) policy is under development and is expected to be completed in early 2003. This new policy will reflect the findings of the court and is expected to result in less flexibility for the use of (b)(2) assets and fewer fish actions. The potential for there to be less (b)(2) water available for use in the Delta was addressed last year by increasing EWA water purchases to partially offset the perceived reduction in the (b)(2) baseline.

Regardless of the policy decision on whether to offset (b)(2) losses with EWA assets, the EWA will continue to be coordinated with (b)(2). It will be critical to continue to coordinate the management of EWA assets with (b)(2) actions, as those actions will affect EWA water purchase needs and use of EWA funds. The EWA "gaming" that has been done for the EWA assumes that the two programs would be coordinated.

The EWA agencies will need to make a policy decision in 2003 on the extent that the EWA can and should be used to help offset the perceived losses of (b)(2) assets. This offset may require some EWA expenditures for in-stream actions upstream of the Delta.

In the past two years EWA assets have been used in limited ways upstream of the Delta. Actions have included bypassing the power plant with a portion of Folsom Reservoir releases in the late fall to draw upon the cold water pool deep in the reservoir. The cold releases help achieve improved temperature conditions for salmon spawning and outmigrating steelhead in the Lower American River. This action used EWA power credits; no EWA water was used. On the Yuba and Merced Rivers, releases of EWA assets were scheduled to support instream fishery benefits of the EWA water transfer.

The EWA budget is currently reserving about \$1 million for federal power purposes. Some of this money may be used to purchase power lost by the Folsom bypass next fall and some may be used to offset the costs associated with pumping EWA water in the Delta in the summer to replace water forgone earlier at the Delta export facilities when those costs are greater than the power savings from the reduced pumping in the spring.

#### **D. Continued Coordination of EWA Water Acquisitions with DWR Dry Year Program, USBR CVPIA Level 4 Wildlife Purchases and Instream Flow Purchases, and Other CALFED Water Purchase Programs**

One of the major challenges of the EWA is to coordinate its water purchase actions with those of other CALFED programs. In 2002, DWR agreed to coordinate water purchases for the State's Dry Year Program with the EWA purchases. In extremely dry years, EWA water purchase needs will decrease while the needs of water users will likely increase. These somewhat offsetting demands and the general benefit that the EWA provides to all the contractors of both the SWP and CVP argue for this continued coordination. Where there is conflict between these two programs, EWA purchase needs should take priority so as to not jeopardize ESA commitments. However, conveyance of dry year water for SWP contractors takes priority over EWA conveyance under the established protocols.

The CVPIA also purchases water for instream uses for both the Vernalis Adaptive Management Program (VAMP) and for Level 4 wildlife refuge supplies. The VAMP needs do not compete with or conflict with the EWA. Also, most of the refuge supply needs occur in the fall at a time that does not directly conflict with the EWA's need for export capacity. There may be opportunities for mutual benefits among these programs.

As discussed below, federal partners south of the Delta could be beneficial to the EWA. CVP contractors south of the Delta who have in the past partnered only with the refuge program have expressed some interest in selling water to the EWA. In 2002, actions have already begun to coordinate the refuge purchases with those of the EWA. Due to the offset in timing of needs and variable funding for the CVPIA refuge program, both programs could benefit from joint purchase contracts. The EWA would benefit by having additional markets south of the Delta to purchase water. The coordinated use of water between these two programs would be resolved during the contract process in a manner acceptable to both programs.

Other water purchase programs by CALFED agencies include the EWP, CVP's coordination of dry year purchases by its contractors, the Drought Risk Reduction Investment Program (DRIPP) currently under development by DWR, and the purchase of water made available by the Phase 8 water right settlement process. The EWP program is charged with purchasing up to 100 TAF of water per year to improve salmon spawning and juvenile survival in tributary streams upstream of the Delta by the end of CALFED Stage 1. Some of the ERP flows may contribute to EWA. The ERP does not currently target streams that would conflict with EWA purchases. However, as the EWP program develops there may be opportunities for joint EWP/EWA purchases where water is purchased specifically for upstream actions that will also augment Delta supplies at a time valuable to the EWA.

The DRIPP would only initiate water purchases in the event a drought occurs and buyers request supplemental supplies. Purchases will be made to satisfy those orders for water only. These purchases are likely to be initiated long after the EWA has identified its supply sources and negotiated purchase contracts. The coordination of this developing program with the EWA has not yet been addressed, and coordination will depend on how and when the water purchase aspects of the program are implemented.

The coordination of the Phase 8 settlement water purchases may take the form of joint contracts where part of the water will be made available for SWP and CVP contractors and if extra water supplies exist, water could be made available for the EWA and DWR's Dry Year Program. The price provisions of the Phase 8 water have already been negotiated and will likely be different from the market rates at which the EWA and the Dry Year Program will be able to purchase water.

## **E. EWA Acquisition Strategy: The Need to Set Water Purchase Targets**

The CALFED Record of Decision establishes annual EWA water acquisition targets of at least 185 TAF. The EWA Team has interpreted the concept of functional equivalent as the ability to deliver an equal quantity of water south of the Delta to that which was used to protect fish at the time of an operational curtailment. Under this interpretation, EWA purchases of water upstream of the Delta need to include allowance for additional water to offset the carriage water and other system losses that are experienced moving this water to the pumping facilities in the Southern Delta. Conveyance losses in the San Joaquin River and its tributaries are estimated at 10%, while carriage water losses in the Sacramento River and its tributaries are estimated at 20% for planning purposes. Actual Delta carriage losses in 2001 were 15%, and in 2002 were 20%.

The EWA proposes to use this functional equivalent concept as a key aspect of its strategy to maximize upstream of Delta purchases consistent with cross-Delta conveyance capacity.

As discussed earlier, the flexibility to use (b)(2) assets in the Delta as part of the baseline level of protection was modified by the courts. A policy decision needed for 2003 is the extent the EWA water purchase targets should be increased above the 185 TAF to account for the changes in (b)(2) assets. The EWA purchased water in excess of the 185 TAF in 2002 that was used to support a CVP operational curtailment at a time when (b)(2) assets were exhausted (Section VI summarizes 2001 and 2002 EWA operations). Purchase targets are higher than the 185 TAF established in the ROD to help support similar actions in 2003 and to ensure that the EWA can provide the assets required to meet operational needs considering carriage losses and other variables.

Based on the use of this EWA purchase strategy, the EWA's expected budget, the prices for water and services that may be possible for the EWA in 2003, and the gaming

that has recently been completed, the recommended EWA delivery targets for purchased assets would increase from 185 TAF to 210 TAF in dry and critical years and 240 TAF in below normal and wetter years. This increase of EWA purchased assets should ensure that the ROD commitments are achieved and continue the trajectory toward recovery for fish species of the Bay/Delta estuary.

## **F. EWA Acquisition Strategy: Purchase Partners**

The EWA needs to broaden its base of potential partners from which to purchase water. For the EWA to be an effective partner, it needs to understand the needs of the sellers, develop a clear understanding of the types of water it wishes to purchase, and communicate the conditions that will apply to transfers that require the use of project facilities to complete.

In 2002, the DWR developed a set of water transfer papers that explain current water transfer laws and the DWR's compliance with these laws related to the purchase of water for the EWA and other programs. These papers provide water sellers a set of tools they can use to develop mitigation measures that protect other legal users of water and fish and wildlife as they develop their water transfer proposals. These papers can be found at: <http://www.watertransfers.water.ca.gov>.

In addition, DWR and USBR will work with prospective sellers on issues related to compliance with CEQA and NEPA and the State and federal endangered species acts.

## **G. EWA Water Purchases Upstream of the Delta**

As discussed above, water purchases upstream of the Delta are typically less expensive to the EWA than those south of the Delta. Table 2 shows the expected EWA cross-Delta capacity to move water from upstream to south of the Delta in the summer months. The EWA should maximize its purchases upstream of the Delta to the extent it needs the water and can effectively move this water through the Delta. The EWA could base these contracts on SWP capacity to convey this water for the EWA under its pumping priority. However, upstream of Delta sellers may be reluctant to base purchases on these allocations. If this proves to be the case the EWA could set up options to purchase water, as it has in the last two years. A small non-refundable option payment would be made and dates set for the call of the option. Once called, the water would be delivered and the strike price (remainder of payment) made to the seller.

Upstream-of-Delta purchase targets are determined by using the cross-Delta transfer capacity values in Table 2, allowing for 20% carriage losses. For SWP allocations of 65-100%, for example, the EWA would purchase 75 TAF and transfer 60 TAF, with 15 TAF comprising the carriage losses. The EWA would plan to purchase 75 TAF in all year types. As SWP allocations decrease below 60%, upstream-of-Delta options would be exercised to increase upstream-of-Delta purchases up to the expected cross-Delta

transfer capacity or the annual purchase target, whichever governs, allowing for the carriage losses.

Aggressive use of options upstream of the Delta would provide the EWA flexibility to deal with changing hydrologic conditions. One concern related to options is that in many cases the call dates needed by the sellers occur early in the year before much is known about the hydrologic conditions. The EWA will seek option call dates as late into the year as possible consistent with the needs of the sellers.

The EWA would take a small risk of stranding water upstream of the Delta if, after exercising its options, there are late storms and hydrology improves, and the EWA loses some of its projected transfer capacity. This situation could leave assets stranded upstream and subject to loss. The risk can be minimized with options that can be exercised late in the spring after the chance of significant additional rainfall is minimal. Also the EWA will likely not call on all the options if the year turns wet. Thus in some years the small option fee will be paid on water that will not be delivered from some contracts. These options are similar to insurance costs, and are part of the cost of obtaining lower cost water overall.

## **1. Transfer Types Upstream of the Delta**

There are three basic ways in which water can be made available for transfer: from previously stored flows, through use of alternative supplies that would not otherwise be used, and from reductions in use. In any case, it must be demonstrated that the water is being made available from a legitimate alternative source and that there is no unreasonable harm to fish and wildlife.

Certain types of water transfers are easier to implement and manage than others, and are preferable to the EWA. Experience has shown that transfers of previously stored flows are the most flexible. If a willing seller owns a storage reservoir, they often have the flexibility to manage their facilities to make water available from supplies excess to their needs. To complete the transfer, they must demonstrate how they intend to make the water available, agree to a release pattern that at a minimum causes no harm to fish and wildlife resources, and enter into a re-fill agreement to prevent harm to other legal users of water.

Where applicable, option call dates are often in late spring, which provides the seller a better idea of the amount of water available to transfer. Reservoir storage transfers work to the EWA's advantage because the later call dates allow the scheduling of the releases with greater certainty that the EWA will have access to transport capacity in the Delta.

Groundwater substitution transfers are the next type of transfer used by the EWA. Such transfers involve the substitution of groundwater supplies for surface water diversions. The greatest flexibility is offered by willing sellers that have

flexibility to hold their surface diversions in an upstream reservoir for later release to the EWA. When this is not possible, the groundwater substitution pattern must coincide with the availability of export capacity in the Delta. Groundwater substitution transfers require a demonstration that the wells being used are not pumping surface water and if the transfer requires the use of Project facilities, monitoring and mitigation programs must be in place (see DWR's water transfer papers).

The third and least flexible type of transfer involves the idling of cropland to make water available for transfer. Crop idling transfers have been done historically in the Sacramento Valley in extremely dry years. The volume of water available for transfer is limited to that quantity that would have otherwise been consumed or lost to a saline sink. In locations where water deliveries are made directly from a reservoir to the water users (like the Feather River contractors) water not used for irrigation can be held in storage and released for the EWA at a time when it can be moved through the Delta and exported with less impact on fish of the Delta.

However, in cases where the willing seller has direct diversion rights from a river, forgone consumptive use in April, May, and parts of June may not be effectively captured and exported by the Projects for the EWA. For this water to be captured, the Projects must have the capacity to convey water for the EWA when it is made available, or the Projects must have the ability to back these supplies into a CVP or SWP upstream storage reservoir. The increased flow due to the decrease in river depletions may not be able to be captured by the Projects for the EWA in the Delta due to export restrictions to protect fish at the Delta pumping plants during these months.

Backing the water into upstream reservoirs is rarely possible because of operational constraints or flow, temperature, or other regulatory requirements downstream from the reservoirs. Therefore, only the water supply that can be effectively captured by the Projects for the EWA as a result of idling accrues during part of June, July, and August, even though irrigators have not planted crops earlier in the year. Because the EWA could not capture the full amount of water potentially made available, the net costs could make this water more expensive and less desirable than other types for the EWA to purchase. In addition, the decision to exercise options for crop idling transfers must be made very early in the year (around February) to provide farmers enough time to plant crops if the option is not called. Crop idling transfers will likely only be used in extremely dry years for those areas not served directly from reservoirs.

## **2. Upstream of Delta Transfer Sources**

Potential EWA partners for upstream of the Delta transfers include:

## Yuba-Feather River

- Yuba County Water Agency (YCWA): Reservoir storage
- Member agencies of YCWA: Groundwater substitution with re-regulation by YCWA
- Browns Valley Irrigation District: Reservoir storage from Collins Lake and groundwater substitution with re-regulation by YCWA
- Oroville-Wyandotte Irrigation District: Reservoir storage
- Western Canal Water District: Crop substitution, crop idling
- Joint Water District Board: Crop substitution, crop idling

## Sacramento River

- Glenn-Colusa Irrigation District, RD 108 and other sellers to the 2001 forbearance agreement: Groundwater substitution, crop idling

## American River

- Placer County Water Agency: Reservoir releases
- Sacramento Groundwater Authority: Sale of banked groundwater by exchange, groundwater banking services

## San Joaquin River

- Merced Irrigation District: Groundwater substitution with reservoir re-regulation, crop idling
- Other east side San Joaquin Reservoirs (specifics to be provided by EWA Team)

## **H. EWA Water Purchases South of the Delta**

The amount of water needed from areas south of the Delta increases in normal and wet years and is less in dry years when there is capacity available to move water from areas upstream of the Delta. The amount of water needed south of the Delta can be

determined by subtracting the upstream-of-Delta deliveries from the delivery target. The remainder is the south-of-Delta purchases. Table 1 provides a general illustration of this calculation for the proposed 2003 water purchases. Table 3 provides greater detail of the estimate of south-of-Delta purchases for 2003, based on cross-Delta transfer capacity available to the EWA in 2003. These capacity estimates assume a modest DWR Dry Year Water Purchase Program and cross-Delta transfers by SWP contractors of up to 200 TAF using their conveyance priority.

**Table 3**  
**Estimated South-of-Delta Water Purchases for 2003**

SWP Allocation	Approximate Quantity, AF
50%	5,000
55%	30,000
60%	120,000
65%	145,000
70%	145,000
75%	145,000
80-100%	145,000

South-of-Delta purchases in the SWP service area can be tied directly to SWP allocations as was done in 2002 in the Kern County Water Agency contract. This provision has an advantage because the price of the water often decreases with the increase in the SWP allocation. Therefore, as the need for water for the EWA increases the price per acre-foot decreases. Contracts can be written to reflect this dynamic if the quantity and price are both tied to SWP allocations. If the contractor is a CVP contractor the same types of contracts might be possible.

South-of-Delta purchases will be sought from willing sellers in both the SWP and CVP service areas. It is administratively easier and often locally preferable to repay reductions in exports with water that was purchased from the respective service areas of these two projects. In dry years this is not so critical but in normal and wet years when most purchases are forced to be south of the Delta, a realistic split of purchases in these two service areas is desirable. In 2002 and in the future the EWA will take export reductions at both the CVP and SWP export facilities in the Delta. In 2002 the split of export reductions between the CVP and SWP was about 1/3 CVP to 2/3 SWP. This preliminary ratio will be used as a guide in conjunction with projected placeholders developed through coordination with implementation of (b)(2) in developing contracts for south of the Delta between water users in these two service areas in 2003.

## **1. Transfer Types South of the Delta**

To date the EWA has pursued only the purchase of previously banked groundwater south of the Delta for the EWA from south of Delta sources. It is possible that the EWA will pursue crop idling transfers in this region, if environmental impacts and other issues can be successfully resolved.

Due to contract language in the SWP Long Term Water Supply Contracts, only previously banked groundwater or water that would otherwise be banked can be sold to others. This restriction limits the EWA's capability to purchase water south of the Delta. As explained above, south of Delta banked groundwater is more expensive than upstream of Delta purchases. In addition, there is a limited quantity of banked groundwater that can be purchased.

DWR staff is working with its contractors to determine ways this limitation might be resolved in the future. To the extent that the EWA purchases previously banked groundwater south of the Delta, negotiating a provision that allows the EWA to maintain this water in the bank for another year or more if it is not needed as initially anticipated would provide needed flexibility. Prior experience indicates that negotiating these terms can be complicated and would have an associated cost. However, this cost needs to be balanced against the potential consequences of extracting the water and then needing to protect it from loss if it is not needed for a fish action before San Luis Reservoir fills and this water is displaced.

## **2. South of Delta Transfer Sources**

Potential partners in areas south of the Delta include:

### **East Bay Region**

- Santa Clara Valley Water District (SCVWD): Local storage to provide flexibility for EWA: pre-delivery; source-shifting (deferred delivery); groundwater banking services (Semitropic Water Service District banking program); sale of CVP contract supply in wet periods

### **San Joaquin Valley**

- SWP contractors including: Kern County Water Agency (KCWA), its member agencies, and regional banking agencies, including Semitropic Water Service District, Cawelo Water District, Tulare Irrigation District, Rosedale-Rio Bravo, Westside Mutual Water

Company, Tejon-Castac, Dudley Ridge: Sale of banked groundwater, by exchange or direct pump-in to aqueduct; groundwater banking services; surface water destined for recharge, by exchange; crop substitution, following

- CVP contractors including users in the San Luis Unit, San Joaquin River exchange contractors and Cross Valley contractors
- Other San Joaquin Valley agencies: groundwater banking services; surface water destined for recharge, by exchange; crop substitution, following
- Other agencies outside of the San Joaquin Valley that bank in the San Joaquin Valley, including SCVWD, Metropolitan Water District of Southern California (MWDSC), Mojave Water Agency
- Friant interests: Surface water by exchange

## Southern California

- Mojave Water Agency: Sale of banked groundwater, by exchange; groundwater banking services

## I. Variable Assets and Tools Needed

The ROD indicates an average of the purchased and variable assets for the EWA could be 380 TAF. This average includes 185 TAF in purchased assets, 70 TAF from relaxation of the E/I ratio and (b)(2) releases that reach the Delta, 500 cfs of dedicated capacity at Banks pumping plant (estimated at 50 TAF), and use of one-half of the excess capacity at Banks (estimated at 75 TAF).

The 380 TAF number contained in the ROD is potentially misleading because it includes both capacity and real water assets. These two categories cannot be added to provide a meaningful estimate of the average water budget. A more accurate reflection of the average quantity of water available would be to add only those assets that provide water. Table 4 shows the variable assets as defined in the ROD, highlights those that actually provide water, and quantifies the amount of water that has been obtained in 2001 and 2002.

The combination of purchased and variable assets was intended, on average, to provide sufficient assets to meet fish protection needs without reducing deliveries to the contractors. Under certain hydrological conditions, such as these past two dry years, some of the variable assets would not produce any water. In addition, variable tools

such as E/I relaxation produce water in relation to the management of this particular asset.

**Table 4**  
**Variable Assets in the CALFED ROD Compared to**  
**Actual EWA Benefits in 2001 and 2002**

Variable Asset	CALFED ROD Average in TAF	2001 Actual in TAF	2002 Actual in TAF
Variation of E/I ratio	40	2	79
Half of (b)(2) releases that reach the Delta	30	46	3
500 CFS dedicated capacity at SWP Banks PP	55 <sup>1</sup>	0 (Capacity only)	0 (Capacity only)
Joint Point Of Diversion (use of excess capacity at SWP Banks PP)	75 <sup>2</sup>	0 (Capacity only)	0 (Capacity only)
ROD Total	195		
Actual expected Water Total on Average	70	48	82 (20 was retained past San Luis High Point)

Based on this analysis of variable assets and the management of the variable tools during the last two dry years, the EWA can reliably expect to get limited utility from variable assets in years with hydrologic conditions similar to 2001 and 2002. More assets would be possible from the Joint Point of Diversion in wetter years or if the EWA (1) carried debt into the winter in San Luis Reservoir, or (2) had a reliable location south of the Delta where water could be temporarily stored and economically retrieved in the same or subsequent years. More assets could also be obtained as demonstrated with increased management of the E/I relaxation by the Management Agencies in 2002.

---

<sup>1</sup> Capacity - Represents a quantity expected to be moved using dedicated 500 cfs at Banks from the summer time capability above the 6,680 cfs that was provided in the COE permit until late 2003. A request to extend this capacity has been submitted to the COE by DWR.

<sup>2</sup> Capacity - Represents one half of the available excess capacity at the SWP Banks pumping plant. Under balanced conditions, this asset is only capacity and the EWA must supply water it has purchased or stored upstream to take advantage of this EWA asset. In normal and wet years this asset can result in water during excess conditions for EWA provided that EWA has an existing debt in San Luis or EWA has a location other than San Luis to store this water.

In the near future, acquisition of rights to additional short-term surface storage should be considered by the EWA to achieve this storage capability and protect assets from loss in wet periods. Groundwater storage costs are estimated at about \$140 to place and retrieve water in addition to any costs of acquiring the water to be placed in storage and current offers do not allow the EWA to retrieve this stored water in years drier than 60 % SWP allocation years.

Another method to preserve a portion of variable assets is an unbalanced exchange as was done in 2002. In this case a 2 for 1 exchange was made where 2 units of EWA water were provided to SWP contractors prior to high point in San Luis and these users returned 1 unit of water to the EWA after high point. There was no out-of-pocket dollar cost to the EWA for this action, yet it provided “temporary storage” for 20,000 acre-feet, half the assets in San Luis at the time.

The Management Agencies are requesting “place holders” for about 150-300 TAF of fish actions before high point in San Luis Reservoir in most years. If these actions are taken and San Luis Reservoir fills and additional pumping capacity beyond SWP Article 21 demand is available, EWA debt would be extinguished in San Luis Reservoir to the extent of the additional pumping. In such an event, the EWA could gain additional assets at the rather modest cost of pumping the water from the Delta.

However, if San Luis Reservoir does not fill or there is no extra pumping capacity to extinguish the debt, as is most likely in the drier years, then the debt would not be extinguished and the EWA would not have gained any assets. However, experience over the past two years indicates that large placeholders in dry years may not be needed due to lower export rates in these years. For planning purposes, the estimation of variable assets needs to be keyed to the filling of San Luis Reservoir and the availability of pumping beyond the demand for Article 21 water by the SWP contractors in the wetter years. At present, it is unknown how much EWA can accrue.

Thus for the purposes of evaluating the EWA’s ability to provide the assets that will be required to satisfy the assumed placeholders for fish actions, it is assumed that some benefits would accrue to the EWA from the extinguishment of debt in San Luis Reservoir in wetter years. In drier years, pumping is less, and therefore EWA placeholders are reduced, the need for large variable assets is less, and the ability to extinguish EWA water debt in San Luis Reservoir is also less (see section V).

## **J. The EWA Source Shift**

Source shift arrangements are EWA assets that are required by the CALFED ROD. Source shifting is a way for the EWA to temporarily borrow water from a water user, while they draw on an alternative (often local) source of water and temporarily reduce their SWP or CVP deliveries. Source shifting is initiated in the spring and summer before San Luis low point, and completed by paying back the water after low point is no longer a concern.

The source shift is a valuable tool for EWA in some years. The largest use of the source shift is to allow the EWA to avoid aggravating water quality or water supply around the low point in San Luis that might otherwise occur if the EWA owed water to the projects at that time.

The source shift allows the EWA to shift demand around low point issues and to carry debt into the fall and winter. By avoiding the need to pay back previous operational curtailments prior to low point, source shifting allows the return of water to the SWP and CVP after August, allowing more efficient use of export capacity and providing extended instream fishery benefits. The source shift can be viewed as a “bridge loan” of water because it must be paid back within a specified period of time.

One issue with the source shift is that it has proven to be just as expensive as purchasing water upstream of the Delta. It cost as much to “rent” this water for four months in 2001 as it did to purchase an equivalent volume upstream of the Delta, but it had a separate purpose and in essence provided a different value to the EWA. Although the EWA will obtain the required contract each year and pay the option fee, the EWA will activate the source shift only when reasonable forecasts of the EWA’s impact on San Luis Reservoir storage indicates storage levels of concern, or when the use of water for fishery actions has been unusually high and the EWA needs to carry debt into the following winter.

## **K. Borrowing and Long-Term Storage**

The EWA may borrow water from the SWP or CVP to achieve fishery protections, provided that such borrowing will not result in any reduction in CVP or SWP deliveries. Borrowing is allowed if it will not cause a reduction in deliveries in the year of borrowing or in the subsequent water year. The EWA operating principles anticipate that an EWA asset will be in place as collateral to allow the borrowing of water both within and between years. The ROD specifies that a one-time asset of 200 TAF of stored water or its functional equivalent be provided from south-of Delta sources.

During the EWA “gaming” as much as 100 TAF of this collateral was used to pay back borrowing because there were not sufficient assets in the following year to pay back the EWA debt. Also, the water projects are allowed to borrow water from the EWA when it is agreeable to all parties. In both cases the same principles apply: A proposal is made that includes:(1) the quantity of water to be borrowed, (2) the term of the loan, and (3) specific criteria for repaying the water to the lender.

As stated above, the EWA Operating Principles provided that 200 TAF of stored water (or its functional equivalent) would be provided for the EWA. During the first year of EWA operation, insufficient funds were available to acquire both the 200 TAF of storage space and water. A decision was made in 2001 for the EWA to purchase more than 100 TAF of water above the 185 TAF target in the ROD. This additional water served as the functional equivalent of the 200 TAF of storage that year.

This use of functional equivalency in the first year of the EWA allowed the program to provide sufficient assets to obtain ESA commitments in the absence of long-term environmental documentation covering the acquisition and operation of stored assets, and to remain within the budget constraints of the EWA. In 2002, the EWA purchased approximately 242 TAF of water.

In 2002, the Project Agencies allowed borrowing that is functionally equivalent to this EWA asset and its prudent repayment under the following conditions. These conditions were established in the EWA protocols for 2002 and continue in subsequent years. These protocols provide that in any given year, up to 100 TAF may be borrowed against the subsequent year EWA assets provided the following:

1. The borrowed assets are paid back to the Projects. This occurs when:
  - (1) variable assets are used to pay back the debt as they accrue during the next year, or
  - (2) hydrology is sufficient to allow San Luis Reservoir to be filled to the level it would have been absent EWA actions that required borrowing.
2. The borrowed assets may be carried over into a subsequent year beyond 2003 if the Project Agencies determine such action:
  - (1) will not impact CVP/SWP allocations in 2003 or
  - (2) the EWA can provide sufficient source shifting to avoid impacting storage in San Luis Reservoir at its low point in 2003.
3. Sufficient funding must be provided to acquire the necessary purchased assets for 2003 (185 TAF) plus additional water to repay the amount borrowed. If funding is insufficient to acquire the necessary assets and repay debt, and it is not possible to carryover the debt to 2004, the Project Agencies and Management Agencies will meet to consider alternative repayment options. The objective for both the Project and Management Agencies is to ensure continued EWA operations.

This arrangement of functional equivalence for the 200 TAF of storage will be sought for 2003.

## **V. EWA Fish Actions: Placeholders for EWA Expenditures**

Along with the targets for EWA purchased assets, a set of placeholders is necessary for expected expenditure of EWA assets on a monthly basis during the year. The schedule of expected expenditures allows the fishery agencies to assess their water spending during the year and to make decisions to conserve water for later periods based on expected needs.

The Management Agencies have developed placeholders for 2003 that recognize hydrologic variability, the uncertainty of the quantity of variable assets, and current

budget uncertainties. For a dry hydrology scenario, namely a 90 percent exceedance hydrology (that is a year that would be among the 10 percent of the driest years, where stream runoff would be equaled or exceeded 90 percent of the time), placeholders of 230 TAF have been assumed.

In wetter hydrologies, namely a 50 percent exceedance hydrology, placeholders of 450 TAF are identified. This level of assets can be provided by the EWA if San Luis Reservoir fills and spills EWA debt, as previously described.

This water acquisition strategy incorporates assumed placeholders for water expenditures based on the recommended increase in asset purchases, the recognition that variable assets do not in all cases provide water, and the use of the source shift agreements to carry debt from one year to the next. The placeholders are assumed to reflect the coordination with (b)(2) assets. The annual total placeholders for EWA in 2003 based on these assumptions are shown in Table 5. In addition to the placeholders shown, the projects may agree to allow the EWA to carry indebtedness to the projects into the following year with the expectation that the debt would be repaid without affecting project water supplies.

**Table 5  
EWA Place Holders for 2003 (in TAF)**

Year Type	Purchased EWA Assets Delivered	Estimated Variable Assets	Source shift to carry Debt if needed	Total EWA Place Holders
Critical and Dry	210	50	100	230
Normal and Wet	240	50-150 <sup>(1)</sup>	100	450

(1) Based on extinguishing EWA debt in San Luis Reservoir in wetter years

## VI. Recap of EWA in 2001 and 2002

In the first two years the concept of the EWA presented in the CALFED ROD has become a reality in providing additional protection to sensitive Bay/Delta fish species and obtaining the ESA commitments to stabilize the water supplies of the SWP and CVP. Even though 2002 was a dry year (almost a below normal year) both SWP and CVP allocations by late summer to their users south and west of the Delta were at least 70% of contractor requests. Although the EWA has faced many challenges over these past two years, it has been a success.

Table 6 summarizes the level of EWA purchases and variable assets that were obtained in 2001 and 2002 respectively. Table 7 is a summary of the EWA budget each year and the actual costs of implementing the EWA. In the first two years the EWA has achieved over 530 TAF of fishery actions to better protect fish and purchased over 550 TAF of water to replace the water lost from these actions at a cost of about \$90 Million.

The average cost of water was about \$179 per acre-foot in 2001, which was a dry year resulting in a 39% allocation by the SWP and a 49% allocation for CVP agricultural users south of Delta. In 2002, a wetter but still a dry-to-below-normal year when allocations of 70% were made by both the SWP and CVP, the average price paid for water was about \$118 per acre-foot. The decrease in average price from 2001 to 2002 was likely a result of the wetter hydrologic conditions in 2002, more aggressive negotiations by water acquisition staff, and the fact that first year prices were higher simply because of the short timeline to implement the EWA and purchase large amounts of water. Future prices will reflect hydrologic conditions and competition for limited supplies of water as new buyers enter the market.

During 2002, the water purchase strategy reflected in this document was being developed which refocused the water-buying pattern from that established in the ROD in an effort to decrease costs. While costs for purchasing assets for the EWA has been within projections prepared in spring and summer of 2000, the approved EWA budget has not been what was requested. Nevertheless, the EWA has been able to stay within its budget each year and has achieved a window of peace in the constant conflict between increased protection of fish in the Bay/Delta Estuary and the reliability of supply of water for uses south and west of the Delta.

**Table 6 - EWA in 2001 and 2002**

<b>ASSETS ACQUIRED</b>	<b>2001 (TAF)</b>	<b>2002 (TAF)</b>
--Purchase UOD	105	145
• Conveyance and Carriage Costs	- 17	- 31
--Purchased SOD		
• State	+159	+ 37
• Federal (in kind in 2001)	+ 72	+ 60
<b>SUB TOTAL</b>	<b>=319</b>	<b>=211</b>
--Operational	<b>+ 55</b>	<b>+ 20 (Net)</b>
<b>TOTAL</b>	<b>=374</b>	<b>=231</b>
Fish Actions	- <u>290</u>	- <u>248</u> <i>(176 State/72 Fed)</i>
Carryover from 2001		+ 84
Carryover to 2002	= 84	
Carryover to 2003		= 66
Source Shift Activation	50 of 100	0 of 100

**Table 7**  
**EWA BUDGET 2001 and 2002**

<b>Budgeted</b>	<b>2001</b>	<b>2002</b>
• State	\$ 57.5 M	\$ 28.3 M
• Federal (01 in kind)	\$ 10 M	\$ 12.5 M
• Total	\$ 67.5 M	\$ 40.8 M
<b>Actual</b>		
• Fixed and Forward	\$ 6.6 M	\$1.0 M
• Water Purchase	\$ 60.1 M	\$28.5 M
• Acquisitions	336 TAF	242 TAF
• Average Price	\$179/AF	\$118/AF