

at the eastern dead-end terminus of the ship channel and is subject to reduced tidal activity, restricted water circulation, and increased water residence times compared to the rest of the channel. As a result, water quality and biological conditions in the turning basin have historically differed from those in the main downstream channel, and have led to extensive summer algal blooms and

dieoffs. Early August 1997 was no exception, and an intense algal bloom composed primarily of Cryptomonads and green flagellated algae was detected. The bloom appears to have produced the highly stratified dissolved oxygen conditions in the water column of the turning basin. The high dissolved oxygen levels at the surface are caused by the extensive algal productivity present, and

the low dissolved oxygen conditions at or near the bottom of the turning basin are caused, in part, by dead or dying algae settling out of the water column and sinking to the bottom. Bottom dissolved oxygen levels in the basin are further degraded by high BOD loadings in the area due to regulated discharges into the San Joaquin River and recreational activity adjacent to the basin.

## Adaptive Management of Emigrating San Joaquin Salmon Smolts

Bruce Herbold (EPA)

San Joaquin River flows and SWP/CVP exports are commonly believed to affect survival of juvenile fall-run chinook salmon emigrating from the San Joaquin River Basin. Mark/recapture studies have not been performed at the intermediate flow and export rates specified in the 1995 Water Quality Control Plan, so the exact nature of the response of smolt survival to moderate flow levels are a subject of contention. The data generally show that survival rates through the delta for emigrating chinook salmon have been low in recent years.

Experiments are necessary to determine if exports and flows can be manipulated to provide an adequate level of smolt protection; an effort to achieve this has come to be known as the Vernalis Adaptive Management Program (VAMP). The 1995 WQCP and the FWS Biological Opinion for delta smelt require that exports be kept a constant function of San Joaquin flow, so it would be impossible to identify the separate impacts of either. VAMP attempts to ensure that flows, on average, are consistent with the WQCP and that export levels satisfy the intent of the Biological Opinion. An essential component of VAMP is a coordinated release strategy of tagged fish and additional intensive sampling downstream.

The design of this investigation has been based on earlier investigations and on expected opportunities for providing increased fish protection during the spring. Because a permit for constructing a barrier at the head of Old River has been approved for the next 5 years, such a barrier is assumed to be in place in all years when flows are low enough. The value of the barrier will be assessed via release of tagged fish above and below the head of Old River and their subsequent recapture at Jersey Point, Chipps Island, and the salvage facilities.

Table 1 shows the combinations of flow and export rates specified in VAMP for years when the barrier at the head of Old River can be installed. In years of higher flow, exports will be at one of the three specified levels to permit evaluation of the protection provided by the barrier.

Flows at Vernalis are largely a function of upstream regulatory requirements and streamside accretions and depletions. VAMP specifies that flows from April 15 to May 15 will be increased to the next greater flow level in VAMP from that during April 7-14. In addition, a "double step" to the second higher flow level is required when unimpaired flows are high enough.

Efforts were made in 1997 to meet VAMP conditions. Water was pur-

chased by Interior to achieve the 5,700 cfs Vernalis flow rate, and exports were coordinated with the SWP to a total of 2,250 cfs. Preliminary results suggest sampling is not needed at night and that careful selection of the sampling location can minimize the incidental capture of delta smelt. Recapture rates were good, and survival estimates of the new sampling regime generally reflect results of the traditional Chipps Island recaptures. Agreements with tributary water users are coming to a conclusion and will be submitted to SWRCB for review in December. These agreements represent contributions of all involved parties toward making VAMP succeed.

Conditions specified in VAMP will likely need to be in place for the next 10 to 12 years before conclusions can be reached. In that time it may also be possible to determine the role of flows and exports on many other aspects of the southern delta.

Exports	Vernalis Flow Rate (cfs)			
	7000	5700	4450	3200/2000
1500	A (4.5:1)		B (2.9:1)	C (2.1:1)
2250		D (2.6:1)		
3000	E (2.3:1)			

## Enhancing the Role of the Management Team

Pat Coulston

Many of the issues addressed during the July 30-31 Coordinators' retreat relate to the role and responsibilities of the Management Team. Creation of the Management Team was one of the important recommendations resulting from the 1993 review of the Interagency Program (Herrgesell *et al* 1993.). The intended role of the new Management Team was to translate agency and stakeholder information needs into program actions (monitoring, special studies, workshops, reports), principally through the creation and oversight of project work teams. Responsibilities specifically given to the Management Team included:

- Developing and tracking budgets.
- Overseeing development of an annual work plan.
- Reviewing products.
- Overseeing and administering data management.
- Coordinating the field program.
- Planning and implementing the annual workshop.

Many of these tasks had been within the purview of the Coordinators. The Management Team was created and given these tasks because competing demands on the Coordinators' time made it impossible for them to also manage the Interagency Program.

The role and responsibilities of the Management Team was a central topic of the July Coordinators' retreat, because it was clear that the Management Team was not fully functioning as envisioned by the 1993 program revision. Although the Management Team has been effective in coordinating the complex interagency implementation of program activities, the Coordinators agreed that the management team should take more re-

sponsibility in truly managing the program. A secondary aspect of this responsibility was to further emphasize some housekeeping issues. As a result of the retreat, the Management Team will focus on the following actions during the next 4 months:

- Hold more frequent Management Team meetings and provide members and the Coordinators with meeting summaries within 3 days.
- Review the composition of the Management Team and recommend changes in membership and levels of member involvement.
- Conduct a thorough review of all project work teams, including the appropriateness of their missions, their individual effectiveness, and Management Team representation on the project work teams.
- Prepare and distribute written guidelines for the roles and responsibilities of project work teams and their members and leaders.
- Delegate Management Team tasks more evenly among team members.
- Develop agendas for Coordinators' meetings that are generally limited to significant policy issues and provide background information and related recommendations so the Coordinators can effectively and efficiently play their policy-level oversight role.

Also in response to suggestions at the Coordinator's retreat, the Management Team has played a larger and more active role in developing the 1998 Interagency Program Work Plan. The Management Team has worked closely with the project work teams in development of individual proposed work plans. It has also met several times to review project work team plans and formulate an overall work plan that is consistent with program objectives, priori-

ties, and budget. This recommended plan was submitted to the Coordinators on October 20.

The Management Team has nine formal members, who supervise most of the agency resources (staff, boats, and equipment) involved in Interagency Program monitoring and special studies. All are senior biologists or engineers deeply involved in bay/delta ecological issues. Members are:

Pat Coulston, IEP Program Manager  
Chuck Armor, Senior Biologist, DFG Bay-Delta Division

Patricia Brandes, Supervisory Fishery Biologist, FWS Sacramento-San Joaquin Estuary Fisheries Resource Office

Larry Brown, Fisheries Biologist, USBR

Darryl Hayes, Senior Engineer, DWR Environmental Services Office

Zachary Hymanson, Environmental Specialist IV, DWR Environmental Services Office

Don Stevens, Supervising Biologist, DFG Bay-Delta Division

Kevan Urquhart, Senior Biologist, DFG Bay-Delta Division

Leo Winternitz, Environmental Program Manager, DWR Environmental Services Office

To promote coordination with the San Francisco Estuary Institute, the Management Team meetings are routinely attended by *ex officio* member Dr. Bruce Thompson, a senior scientist at San Francisco Estuarine Institute.

### Reference

Herrgesell, P.L., M.A. Kjelson, J. Arthur, L. Winternitz, and P. Coulston. 1993. *A Review of the Interagency Ecological Study Program and Recommendations for its Revision*. Report to the IESP Coordinators, August 1993. 72 pp.