

AGENDA ITEM 17 - Consideration of Adoption of Proposed Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to Provide Estimates of Total Costs and Sources of Financing for the Long-Term Irrigated Lands Program

Late Revisions (11 October 2011)

STAFF REPORT - Non-Regulatory Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin to Provide a Cost Estimate and Potential Sources of Funding for a Long-Term Irrigated Lands Program

Revisions to section 3.2 “Estimated Total Costs,” are shown below in underline.

3.2 Estimated Total Costs

The Final PEIR was supported by a *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program* (Economics Report; ICF International 2010). An extensive economic analysis was presented in this report to estimate the cost and broader economic impact on irrigated agricultural operations associated with the five alternatives developed by the Stakeholder Advisory Workgroup. Staff was also able to use that analysis to estimate costs of the recommended program alternative (Alternative 6), since the recommended program alternative fell within the range of the five alternatives. This cost estimate is found in Appendix A of the Draft PEIR.

The Final PEIR and Economics Report assume that the effective implementation of typical source control conservation farming practices (management practices) will reduce waste discharge to surface and groundwater sufficiently to protect applicable beneficial uses. Such an analytical approach is fully consistent with State nonpoint source policies and federal law that describe a management practice-based approach to addressing nonpoint sources of pollution. The Final PEIR and Economics Report did not evaluate atypical farming practices, such as technology used for wastewater treatment, since broad use of such technology is likely unnecessary and contrary to other goals of the program⁶. If atypical farming practices are required under a future regulatory program, the costs of compliance will be greater than the costs described in the Economics Report.

As with all other nonpoint source programs, the Board anticipates that an iterative process will be used to improve management practices until water quality goals are reached. If the iterative process of improvement is not successful in some instances, then the ILRP will need to be re-evaluated to determine whether additional regulatory requirements are needed or whether the beneficial uses need to be re-evaluated. Should any additional water quality control measures or other program changes be proposed as part of this reevaluation, additional cost estimates and environmental analysis would be necessary. Alternatively, the Board may choose to regulate irrigated lands discharges not amenable to a management practice based approach through separate, individual WDRs, which would fall outside the scope of the ILRP.

⁶ For example, Goal 3 of the ILRP (maintain the economic viability of agriculture) would not be met if requirements were structured in a manner requiring the broad use of wastewater treatment technology.

An example of another Board program that will address irrigated lands issues to support meeting water quality goals is the CV-SALTS (Central Valley Salinity Alternatives for Long-Term Sustainability) effort to address salt and nitrates. As described in the Appendix A of the Final PEIR, the “ILRP is relying on CV-SALTS to identify the actions that need to be taken by irrigated agriculture and others to provide a long-term solution for discharge of [salts and nitrates]...”

For salts and nitrates, the CV-SALTS process will result in identification of those areas in which beneficial uses cannot be attained through current regulatory efforts and what the appropriate regulatory response will be – re-evaluation of uses or additional regulatory requirements. It would be speculative to try to anticipate the outcome of that process and associate a cost to irrigated lands discharges at this time. Consequently, the cost estimates given in this report do not include potential additional costs associated with achieving water quality objectives in all areas of the Central Valley for salts and nitrates. Additional cost estimates and environmental analysis will need to be conducted under the CV-SALTS program, should additional water quality control measures be necessary for these constituents.

Information on the extent of management practice implementation is limited, and much of the available data are approximately 10 years old. The estimated cost of management practice implementation represents the largest cost, with the greatest uncertainty. However, a number of comments received on the Draft PEIR from growers and agricultural representatives indicated that many of the improved practices are being implemented already, suggesting that the cost estimates are likely too high.

Cost estimates were drawn from a number of sources, described in the Economics Report. As described above, the largest components of the costs were associated with management practices undertaken by growers to comply with the program. In particular, the costs of irrigation system modifications and tailwater recycling dominated the estimates. These specific management practices are not required for compliance, but are representative of the kinds of practices that growers could implement in order to comply with the program alternatives. Correspondingly, the total annualized costs (Table 1) and associated initial capital costs (Table 2) displayed below are representative, and should not be viewed as required for compliance. The largest single component of the estimated cost is tailwater recycling, a system whereby water flowing to the lower end of an irrigated field is collected and pumped back to the head of the same or an adjacent field for reuse.

Capital costs were converted to annual costs by amortizing the cost of each capital item of the system over its expected life at a real interest rate of 4 percent⁷. In the determination of annual costs, a program lifetime was not considered, rather it was assumed that when a management practice reaches the end of its expected life, it would be replaced or overhauled in order to continue the practice. Annual operation costs (primarily pumping energy and labor) and annual maintenance costs were also included and considered. Other components that had initial capital costs were: pressurized irrigation systems, hedgerows, and, for the high-end es-

⁷ This interest rate has been estimated given current information. It is expected that this rate will vary by individual and over time. Estimated amortized costs will increase/decrease along with interest rates.

timate, monitoring wells and farm plans. Calculations of capital costs for these other components were similar to that described for tailwater recycling.

Staff received many comments on the Draft PEIR from agricultural representatives suggesting that additional groundwater monitoring is not necessary because sufficient data are available to characterize groundwater quality conditions. Should this be the case, additional costs associated with groundwater quality monitoring should be minimal. If, in fact, data are limited and it is not possible to determine groundwater quality conditions or the effectiveness of irrigated agricultural efforts to reduce groundwater quality impacts, additional monitoring will be needed.

The estimated total annual costs presented in Table 1 below were estimated for administration of the Long-Term Program alternatives (e.g., Board oversight and third-party activities), monitoring (for groundwater and surface water quality), and implementation of management practices. Annualized cost is the constant annual equivalent payment needed to cover all program costs including interest. For individual program components, the annualized cost includes the amortized initial cost of each capital item, plus annual operation and maintenance (O&M) costs. The costs that dominated the estimates are associated with the category for which data are most sparse – management practice implementation. In addition, the management practices evaluated generally result in multiple benefits, not only protection of water quality (e.g., more efficient irrigation reduces water costs and generally increases yields).

Table 1: Estimates of Total Annualized Costs⁸ for the Long-Term Program Alternatives

	Low-End Estimate	High-End Estimate
Total administration	\$6.5 million	\$67 million
Monitoring	\$10.6 million	\$302 million
Management practices	\$199 million	\$952 million
Total	\$216 million	\$1,321 million

The estimates of total annualized costs for the Long-Term Program alternatives provided above are based on the cost estimates provided in the Economics Report and specific management practice estimates for the Long-Term Program alternatives provided by a member of the economics consulting team (Roberson 2011a & 2011b). The total estimated cost was found to range from \$216 and \$1,321 million per year as expressed in 2007 dollars.

The table below (Table 2) summarizes the initial capital cost corresponding to the total annualized costs displayed in Table 1 above (Hatchett & Roberson, 2011). (Note that the table below is **not** simply the capital component of the annualized cost, which would necessarily be less than the total annualized cost.)

⁸ Total annualized cost is the constant annual equivalent payment needed to cover all Long-Term Program costs, including interest.

Table 2: Estimated Initial Capital Costs for the Long-Term Program Alternatives

	Low-End Estimate	High-End Estimate
Total administration	\$0	\$59 million
Monitoring	\$0	\$12 million
Management practices*	\$552 million	\$1,929 million
Total	\$552 million	\$2,000 million

* Capital cost estimates are based on the assumed mix of management practices used for the Economics Report. Actual practices could be different, so capital costs would be different.

The need for capital expenditure could be spread over a period of time depending on Long-Term Program implementation. The estimate of capital cost for administration represents the initial cost of preparing individual farm plans; the estimate of capital cost for monitoring represents installation of monitoring wells. Other parts of those two Long-Term Program components may also include expenditures for capital items such as equipment, but these would be small relative to the capital cost estimates shown in the table above.

Costs at the low end of the range (similar to Alternative 2 of the PEIR in terms of the regulatory structure) assumed that (1) the third-party coalition structure will be successful in addressing identified water quality problems; (2) existing groundwater monitoring networks will be adequate; (3) irrigated pasture will not require “hardware” management practices (e.g., tail water recovery systems) to address any pasture-related issues; (4) the existing use of improved management practices on field crops in areas with constituents of concern is greater than assumed in the Final PEIR; and (5) for constituents identified as Tier 2, with an unknown contribution by irrigated lands, irrigated lands will be found not to cause or contribute to the identified water quality problem.

Costs at the high end of the range (similar to Alternative 5 of the PEIR in terms of the regulatory structure) assumed that (1) direct regulatory oversight by the Board will be required due to widespread failure of the third-party framework; (2) individual groundwater monitoring and surface water monitoring will be required; (3) irrigated pasture will require hardware management practices; (4) the estimates of management practice implementation reflect current conditions; and (5) for all constituents identified as Tier 2, with an unknown irrigated lands contribution, irrigated lands will be found to cause or contribute to the identified water quality problem (necessitating additional water quality management practices).

In terms of staff’s current approach to developing the Long-Term Program, the approach would primarily rely on third-party groups (similar to the Program EIR’s Alternative 2), but has a backstop of direct Board regulation (similar to the Program EIR’s Alternative 5), if the third-party coalition structure is not successful. Staff cannot reliably predict whether growers will successfully address water quality issues within the third-party framework or whether more direct regulation will be required. The administrative and monitoring costs of the current approach would therefore fall within the range of those two analyzed alternatives. Accordingly, the range of costs for staff’s current approach is included in Table 1’s range of Long-Term Program alternatives.

In summary, the range of alternatives presented represents a reasonable assessment of potential costs based on available information and the management practice-based regulatory

approach that will be used to implement the Long-term Irrigated Lands Regulatory Program. The actual costs could be lower if growers effectively address water quality problems with less expensive practices or fewer growers need to implement improved practices to protect water quality; or costs could be offset if improved practices result in yield increases or greater reductions in farm material or labor inputs. Costs could be higher if more expensive practices are required to address water quality problems or additional problems are identified that require more extensive implementation of practices. However, trying to estimate such potentially higher or lower costs at this time would be unduly speculative given the information available.