

Final Independent External Peer Review Report Sacramento River Deep Water Ship Channel, California Limited Reevaluation Study and Supplemental Environmental Impact Statement

Prepared by
Battelle Memorial Institute

Prepared for
Department of the Army
U.S. Army Corps of Engineers
Deep Draft Navigation Planning Center of Expertise
Mobile District

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September 30, 2011



SHORT-TERM ANALYSIS SERVICE (STAS)

on

**Final Independent External Peer Review Report
of the
Sacramento River Deep Water Ship Channel, California Limited Reevaluation Study
and Supplemental Environmental Impact Statement**

by

**Battelle
505 King Avenue
Columbus, OH 43201**

for

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Scientific Services Program

The views, opinions, and/or findings contained in this report are those of the author and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.

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FINAL
INDEPENDENT EXTERNAL PEER REVIEW REPORT
for the

**Sacramento River Deep Water Ship Channel, California Limited Reevaluation
Study and Supplemental Environmental Impact Statement**

EXECUTIVE SUMMARY

Project Background and Purpose

The Sacramento River Deep Water Ship Channel (SRDWSC) is a 46.5-mile-long channel that lies within Contra Costa, Solano, Sacramento, and Yolo Counties and serves the marine terminal facilities at the Port of West Sacramento (POWS). The project was originally authorized by the River and Harbor Act of 1946 (Pub. L. 525, 79th Congress, 2nd Session) and reauthorized in the Water Resources Development Act (WRDA) of 1986. Construction of a 35-foot-deep channel was initiated in 1989, and construction from River Mile 43 to 35 (approximately 8 miles of the channel nearest the POWS) was completed. Work was suspended in 1990 at the request of the POWS, due to the inability to continue financing its share of the project costs. In 1998, Congress directed the U.S. Army Corps of Engineers (USACE) to complete a reevaluation of the incomplete project that would serve as a basis for a possible recommendation to resume construction. USACE San Francisco District has prepared a Project Management Plan (PMP) describing the scope of the Limited Reevaluation Report (LRR), which will primarily involve a review of the project economics, preparation of a Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR), and update of the construction cost estimate. The objective is to increase navigational efficiency, improve safety, and improve the economic benefits in the movement of goods by deeper draft vessels. The SEIS/SEIR will update a 1980 EIS and 1986 SEIS and evaluate changes to the condition of the study area.

Independent External Peer Review Process

USACE is conducting an Independent External Peer Review (IEPR) of the SRDWSC LRR, SEIS/SEIR, appendices, and public comments (hereinafter SRDWSC documents). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, is free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in USACE (2010). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate the IEPR of the SRDWSC documents. Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses. The IEPR was external to the agency and conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2010), USACE (2007), and OMB (2004). This final report describes the IEPR process, describes the panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel (the Panel).

Four panel members were selected for the IEPR from more than 23 identified candidates. Based on the technical content of the SRDWSC documents and the overall scope of the project, the final panel members were selected for their technical expertise in the following key areas: engineering, economics, environmental science, and plan formulation. USACE was given the list of candidate panel members, but Battelle made the final selection of the Panel.

The Panel received electronic versions of the SRDWSC documents, totaling more than 7,400 pages, along with a charge that solicited comments on specific sections of the documents to be reviewed. The charge was prepared by USACE according to guidance provided in USACE (2010) and OMB (2004). Charge questions were provided by USACE and included in the draft and final Work Plans.

The USACE Project Delivery Team briefed the Panel and Battelle during a kick-off meeting held via teleconference at the start of the review. In addition to this teleconference, a teleconference with USACE, the Panel, and Battelle was held halfway through the review period to provide the Panel an opportunity to ask questions of USACE and clarify uncertainties. The Panel produced more than 247 individual comments in response to the 95 charge questions.

IEPR panel members reviewed the SRDWSC documents individually. The panel members then met via teleconference with Battelle to review key technical comments, discuss charge questions for which there were conflicting responses, and reach agreement on the Final Panel Comments to be provided to USACE. Each Final Panel Comment was documented using a four-part format consisting of: (1) a comment statement; (2) the basis for the comment; (3) the significance of the comment (high, medium, or low); and (4) recommendations on how to resolve the comment. Overall, 20 Final Panel Comments were identified and documented. Of these, 1 was identified as having high significance, 14 had medium significance, and 5 had low significance.

Results of the Independent External Peer Review

The Panel agreed among one another on their “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2010; p. D-4) in the SRDWSC documents. The Panel generally agreed that the proposed plan is properly formulated, the range of alternatives is appropriate, and the approach used to evaluate the alternatives is sound. Panel members were concerned, however, about the lack of data provided to justify some of the conclusions. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A of this report. The following statements summarize the Panel’s findings.

Plan Formulation: The Panel found overall plan formulation to be sound, although several general concerns are identified. Some of the market assumptions should be examined more critically:

- The cement analysis assumes no competition between Redwood City (RWC) and the POWS, but Cemex owns both facilities and will allocate market coverage.
- The scrap metal analysis ignores competition from Sims at Richmond and Schnitzer at Oakland.

- The outlook for sugar cane ethanol (biofuels) appears to depend almost entirely on the State of California carbon footprint regulations, which as of 2010 were being challenged in the courts.
- The ethanol outlook depends on the expiration of import tariffs in 2013, which is not certain and could be delayed or reversed.

In most areas, the components of the alternative plans are described in sufficient detail to enable evaluations of potential impacts. Some areas (e.g., widening of the channel, groundwater impacts, air emissions, and dredge return water) deserve a more rigorous treatment.

The conclusion that project-induced movement of the X2 distance was not significant was based on the conclusion that the changes were minor in terms of distance and salinity levels. It did not address environmental and water supply impacts that are sensitive to seasonality of the X2 distance. The impacts of the X2 distance should be described in terms of the water supply and environmental consequences.

Economics: The economic analysis for the project generally provides a solid basis to compare alternatives. However, there are some concerns regarding the market definitions being used, the assumptions regarding vessel utilization, the treatment of risk and uncertainty, and the estimation methodology for transportation cost benefits.

The economic benefit analysis effectively assumes that the reduced transportation cost will be captured by the customer (i.e., the importer if delivered price is reduced, the exporter if additional foreign market share becomes accessible). In reality, the benefits of reduced transportation cost will likely be shared between carriers, their customers, and the ultimate customers for the imported or exported goods. There is no available method to reliably predict the sharing of benefits between parties to negotiated commercial transactions.

Several significant sources of risk and uncertainty need to be addressed at greater length, including reduced ethanol imports, reduced cement imports, lower vessel utilization, and reduced Stockton port fees. The forecasts for scrap metal, cement, and ethanol should be revised to take into account broader domestic and port competition.

The transportation cost saving estimates assume that (1) port fees are the same for all vessels, independent of their size and load, and (2) at-sea cost for a given vessel size is independent of payload. These assumptions may increase the estimated benefits of using larger vessels and of loading vessels to greater drafts, and should be justified.

Engineering: Engineering aspects of the project are well-documented and reasonable except for a few omissions. For example, extensive laboratory testing was conducted to provide data on potential impacts associated with dredging and dredged material (Appendix M). The SEIS/SEIR did not utilize these data to provide any quantitative analysis of these impacts. The purpose and need for the channel widening was not clearly stated. Potential impacts from prop scour and bank erosion due to increased wakes of larger/heavier vessels are not adequately addressed.

Environmental: The Panel agreed that most aquatic biological resources in the project area are well-described, but additional information about benthic and planktonic communities would be beneficial in documenting potential impacts on ecosystem trophics, and thus to aquatic species such as protected salmon, sturgeon, and delta smelt. The document acknowledges that the project could have significant adverse impacts on the endangered delta smelt. The Panel is concerned that a full evaluation of proposed mitigation measures cannot be accomplished until completion of ongoing formal consultation with the U.S. Fish and Wildlife Service (USFWS).

Some predicted outcomes (e.g., the ability to mitigate air emissions from operational equipment) are not documented fully in the information provided. In other cases, such as reduction of methylmercury in dredge return water, assumptions of technologic feasibility are probably unrealistic (i.e., centrifuging return water). In Appendix K, the impact of the project on the X2 boundary is based on the assumption that sea level rise will be 2 feet over the next 50 years, and the upstream movement of X2 would be about 1.2 kilometers (km) with or without the project as a result. It is not clear whether this impact would be the same if sea level rise were much lower than the worst-case scenario of 2 feet.

The cumulative impacts analysis did not include the combined effects of deepening both the SRDWSC and the San Francisco to Stockton Deep Water Ship Channel (DWSC). Based on analyses presented in Appendix L, the deepening of both canals amplifies the individual impacts.

Table ES-1. Overview of 20 Final Panel Comments Identified by the SRDWSC IEPR Panel

| No. | Final Panel Comment |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Significance – High | |
| 1 | It does not appear that actual decision-makers (i.e., shippers, brokers, and consignees) were contacted, in addition to pilots, to verify the assumptions used in the analysis of vessel types and loading practices. |
| Significance – Medium | |
| 2 | Project documentation is not clear with regard to plans for actual construction and operation of new port facilities, and relies too much on secondary sources. |
| 3 | The market assumptions used in the economic analysis for cement, ethanol, and scrap metal do not appear to take into consideration competition from facilities other than those described in the report. |
| 4 | The market assumptions used in the economic analysis for ethanol do not take into consideration possible changes in regulations or continuances of tariffs. |
| 5 | Neither the Limited Reevaluation Report (LRR) nor the SEIS/SEIR quantitatively analyzes the potential for larger vessels, or vessels with larger loads, to increase shoreline erosion under the proposed project. |
| 6 | The potential impacts of a deeper Stockton channel on the economic analysis do not appear to be addressed in the NED analysis or the IHS study. |
| 7 | The analysis of port competition has not addressed the potential impact of reduced fees at the Port of Stockton. |

| No. | Final Panel Comment |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 | The vessel cost and transportation savings analysis appears to assume that (1) port fees are the same for all vessels, independent of their size and load, and (2) at-sea cost for a given vessel size is independent of payload. These assumptions increase the estimated benefits of using larger vessels and of loading vessels to greater drafts. |
| 9 | The NED analysis assumes that cement imports will come from Asia, but sourcing from Mexico could result in fewer net project benefits. |
| 10 | The discussion of beneficial uses of dredged material does not provide a comprehensive range of alternatives for such uses and does not describe how this objective will be met. |
| 11 | The cumulative impacts do not fully address the potential salinity effects of construction of the SRDWSC and the San Francisco Bay to Stockton DWSC. |
| 12 | The assumption underlying the salinity modeling and determination of the X2 distance analysis and the types and levels of impacts does not thoroughly document a determination of no significant adverse impact. |
| 13 | Several environmental mitigation measures are not sufficiently documented and justified to support a conclusion that an identified significant adverse impact would be avoidable. |
| 14 | Methylmercury could be an issue; however, the data presented are not conclusive, thereby resulting in uncertainty about the potential impacts of the proposed project's disposal plan. |
| 15 | The validity of the proposed 6-month construction work window does not support a conclusion that it could be used without causing harm to endangered species. |
| Significance – Low | |
| 16 | The number or locations of pipelines that must be relocated, or the potential environmental impacts of pipeline relocation, have not been described in detail. |
| 17 | The documentation was unclear regarding the need for, and the location and extent of, proposed channel widening. |
| 18 | The document does not clearly state why a LRR was appropriate rather than a General Reevaluation Report (GRR), given the significant changes that have occurred since authorization. |
| 19 | The descriptions of the benthic or planktonic communities do not include enough detail to characterize these aquatic resources in the project area. |
| 20 | The conclusion that groundwater will not be impacted due to the project is not supported by the information presented. |

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Appendix B. Final Charge to the Independent External Peer Review Panel on the SRDWSC Documents

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LIST OF ACRONYMS

| | |
|----------|-----------------------------------------------|
| AFB | Alternative Formulation Briefing |
| ASCE | American Society of Civil Engineers |
| ATR | Agency Technical Review |
| CARB | California Air Resources Board |
| CEQ | Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| COI | Conflict of Interest |
| DrChecks | Design Review and Checking System |
| DWSC | Deep Water Ship Channel |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| ERDC | Engineer Research and Development Center |
| ESA | Endangered Species Act |
| GRR | General Reevaluation Report |
| HABS | Harmful Algal Bloom Species |
| HEP | Habitat Evaluation Procedure |
| HTRW | Hazardous, Toxic, and Radioactive Waste |
| IEPR | Independent External Peer Review |
| ISRI | Institute of Scrap Recycling Industries |
| km | Kilometer |
| LRR | Limited Reevaluation Report |
| LRS | Limited Reevaluation Study |
| LTMS | Long Term Management Strategy |
| NED | National Economic Development |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| NTP | Notice to Proceed |
| OEO | Outside Eligible Organization |
| OMB | Office of Management and Budget |
| P&G | Principles and Guidelines |
| PMP | Project Management Plan |
| POWS | Port of West Sacramento |
| RWC | Redwood City |
| SEIR | Subsequent Environmental Impact Report |
| SEIS | Supplemental Environmental Impact Statement |
| SRDWSC | Sacramento River Deep Water Ship Channel |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| WEDA | Western Dredging Association |
| WRDA | Water Resources Development Act |

1. INTRODUCTION

The Sacramento River Deep Water Ship Channel (SRDWSC) is a 46.5-mile-long channel that lies within Contra Costa, Solano, Sacramento, and Yolo Counties and serves the marine terminal facilities at the Port of West Sacramento (POWS). The project was originally authorized by the River and Harbor Act of 1946 (Pub. L. 525, 79th Congress, 2nd Session) and reauthorized in the Water Resources Development Act (WRDA) of 1986. Construction of a 35-foot-deep channel was initiated in 1989, and construction from River Mile 43 to 35 (approximately 8 miles of the channel nearest the POWS) was completed. Work was suspended in 1990 at the request of the POWS, due to the inability to continue financing its share of the project costs. In 1998, Congress directed the U.S. Army Corps of Engineers (USACE) to complete a reevaluation of the incomplete project that would serve as a basis for a possible recommendation to resume construction. San Francisco District has prepared a Project Management Plan (PMP) describing the scope of the Limited Reevaluation Report (LRR), which will primarily involve a review of the project economics, preparation of a Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR), and update of the construction cost estimate. The objective is to increase navigational efficiency, improve safety, and improve the economic benefits in the movement of goods by deeper draft vessels. The SEIS/SEIR will update a 1980 EIS and 1986 SEIS and evaluate changes to the condition of the study area.

The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the SRDWSC LRR, SEIS/SEIR, appendices, and public comments (hereinafter SRDWSC documents), in accordance with procedures described in the Department of the Army, USACE Engineer Circular *Civil Works Review Policy* (EC No. 1165-2-209) (USACE, 2010), USACE CECW-CP memorandum *Peer Review Process* (USACE, 2007), and Office of Management and Budget (OMB) bulletin *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analyses.

This final report details the IEPR process, describes the IEPR panel members and their selection, and summarizes the Final Panel Comments of the IEPR Panel on the existing environmental, economic, and engineering analyses contained in the SRDWSC documents. The full text of the Final Panel Comments is presented in Appendix A.

2. PURPOSE OF THE IEPR

To ensure that USACE documents are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review (ATR), as described in USACE (2010) and USACE (2007).

In general, the purpose of peer review is to strengthen the quality and credibility of the USACE decision documents in support of its Civil Works program. IEPR provides an independent assessment of the economic, engineering, and environmental analysis of the project study. In

particular, the IEPR addresses the technical soundness of the project study’s assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the SRDWSC documents was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC No. 1165-2-209) under Section 501(c)(3) of the U.S. Internal Revenue Code with experience conducting IEPRs for USACE.

3. METHODS

This section describes the method followed in selecting the members for the IEPR Panel (the Panel) and in planning and conducting the IEPR. The IEPR was conducted following procedures described by USACE (2010) and in accordance with USACE (2007) and OMB (2004) guidance. Supplemental guidance on evaluation for conflicts of interest (COIs) was obtained from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003).

3.1 Planning and Schedule

After receiving the notice to proceed (NTP), Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., clarify expertise areas needed for panel members). Any revisions to the schedule were submitted as part of the final Work Plan.

Table 1 defines the schedule followed in executing the IEPR. Due dates for milestones and deliverables are based on the NTP date of July 12, 2011. Note that the work items listed in Task 6 occur after the submission of this report. Battelle will enter the 20 Final Panel Comments developed by the Panel into USACE’s Design Review and Checking System (DrChecks), a Web-based software system for documenting and sharing comments on reports and design documents, so that USACE can review and respond to them. USACE will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All USACE and Panel responses will be documented by Battelle.

Table 1. SRDWSC IEPR Schedule

| Task | Action | Due Date |
|------|------------------------------------------------------------------------------------|-----------|
| 1 | NTP/review documents available | 7/12/2011 |
| | Battelle prepares and submits draft Work Plan, including draft charge ^a | 7/21/2011 |
| | USACE provides comments on draft Work Plan, including draft charge | 7/28/2011 |
| | Battelle submits final Work Plan, including final charge ^a | 8/3/2011 |
| | USACE confirms receipt of the final Work Plan, including final charge | 8/4/2011 |
| 2 | Battelle requests input from USACE on the COI questionnaire | 7/15/2011 |

| Task | Action | Due Date |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|------------|
| | USACE provides comments on COI questionnaire | 7/18/2011 |
| | Battelle recruits and screens up to 23 potential panel members; prepares and submits summary information ^a | 7/26/2011 |
| | USACE confirms that the Panel has no COI | 7/27/2011 |
| | Battelle completes subcontracts for panel members | 8/10/2011 |
| 3 | USACE provides charge to be included in Work Plan | 7/21/2011 |
| 4 | Battelle convenes kick-off meeting with USACE | 7/19/2011 |
| | Battelle sends review documents and charge to IEPR Panel | 8/10/2011 |
| | USACE/Battelle convene kick-off meeting with IEPR Panel | 8/11/2011 |
| | Battelle convenes mid-review teleconference for IEPR Panel to ask clarifying questions of USACE | 8/24/2011 |
| | IEPR panel members complete their individual reviews | 9/6-9/2011 |
| | Battelle consolidates comments from IEPR Panel | 9/12/2011 |
| | Battelle convenes Panel review teleconference | 9/15/2011 |
| | Panel members provide draft Final Panel Comments to Battelle | 9/21/2011 |
| 5 | Battelle submits Final IEPR Report to USACE ^a | 9/30/2011 |
| 6^b | Battelle convenes teleconference with USACE to review the Comment Response Process ^c | 10/4/2011 |
| | USACE provides draft Evaluator Responses to Battelle | 10/13/2011 |
| | Battelle convenes teleconference with IEPR Panel and USACE to discuss Final Panel Comments and draft responses | 10/21/2011 |
| | USACE inputs final Evaluator Responses to Final Panel Comments in DrChecks | 10/28/2011 |
| | IEPR Panel response to USACE Evaluator Responses (BackCheck Responses) | 11/4/2011 |
| | Battelle inputs the Panel's BackCheck Responses in DrChecks | 11/7/2011 |
| | Battelle submits pdf printout of DrChecks project file ^a | 11/8/2011 |
| | Contract End/Period of Performance End Date | 12/30/2011 |

^a Deliverable.

^b Task 6 occurs after the submission of this report.

^c This teleconference date is subject to change based on USACE availability.

3.2 Identification and Selection of IEPR Panel Members

The candidates for the Panel were evaluated based on their technical expertise in the following key areas: engineering, economics, environmental science, and plan formulation. These areas correspond to the technical content of the SRDWSC documents and overall scope of the SRDWSC project.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle's Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle initially identified more than

23 candidates for the Panel, evaluated their technical expertise, and inquired about potential COIs. Of these, Battelle chose four of the most qualified candidates and confirmed their interest and availability. Of the four candidates, all were proposed for the final Panel. Information about the candidate panel members, including brief biographical information, highest level of education attained, and years of experience, was provided to USACE for feedback. Battelle made the final selection of panel members according to the selection criteria described in the Work Plan.

The four proposed primary reviewers constituted the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

The candidates were screened for the following potential exclusion criteria or COIs.^a These COI questions were intended to serve as a means of disclosure and to better characterize a candidate's employment history and background. Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit.

- Involvement by you or your firm^b in the SRDWSC, California Limited Reevaluation Study (LRS) and SEIS.
- Involvement by you or your firm^b in deep draft navigation and/or dredging studies in the Sacramento River (from New York Slough to approximately 2 miles north of Rio Vista) and the entire length of the 29-mile navigation channel (from approximately 2 miles north of Rio Vista to the Port), the POWS, and Contra Costa, Solano, Sacramento, and Yolo Counties.
- Involvement by you or your firm^b in SRDWSC, California LRS and SEIS related projects.
- Current employment by the USACE.
- Involvement with paid or unpaid expert testimony related to the SRDWSC, California LRS and SEIS.
- Current or previous employment or affiliation with members of the cooperating agencies or local sponsors, including National Marine Fisheries Service, USACE-Headquarters, USACE Sacramento District, USACE San Francisco District, U.S. Coast Guard,

^a Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. See OMB (2004, p. 18), "...when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects."

^b Note: Includes any joint ventures in which your firm is involved and if your firm serves as a prime or as a subcontractor to a prime. Please clarify which relationship exists.

U.S. Department of Agriculture-Natural Resources Conservation Service,
U.S. Department of Interior-Office of Environmental Policy and Compliance,
U.S. Environmental Protection Agency (USEPA)-Headquarters, USEPA-Region IX,
U.S. Federal Railroad Administration, U.S. Fish and Wildlife Service, California
Department of Boating and Waterways, California Department of Fish and Game,
California Department of Parks and Recreation, Office of Historic Preservation,
California Department of Toxic Substances Control, California Department of
Transportation, California Department of Water Resources, California Native American
Heritage Commission, California Public Utilities Commission, California State Lands
Commission, Central Valley Regional Water Quality Control Board, California Waste
Management Board, CALFED Bay-Delta Program, Bay Area Air Quality Management
District, Bay Conservation and Development Commission, City of Rio Vista, City of
Sacramento, City of West Sacramento, Contra Costa County, Delta Long Term
Management Strategy (LTMS), Sacramento County, Sacramento Metro Air Quality
Management District, Contra Costa Water District, Central Valley Regional Water
Quality Control Board, Reclamation District 501, East Bay Regional Park District, San
Francisco Bay Conservation and Development Commission, Solano County, Yolo
County, and Yolo Solano Air Quality Management District (for pay or pro bono).

- Past, current or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to the Sacramento River (from New York Slough to approximately 2 miles north of Rio Vista) and the entire length of the 29-mile navigation channel (from approximately 2 miles north of Rio Vista to the Port), the POWS, and Contra Costa, Solano, Sacramento, and Yolo Counties.
- Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, Engineer Research and Development Center [ERDC], etc.), and position/role. Please highlight and discuss in greater detail any projects that are *specifically* with the San Francisco District.
- Current firm^b involvement with other USACE projects, *specifically* those projects/contracts that are with the San Francisco District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role.
- Previous employment by USACE as a direct employee or contractor (either as an individual or through your firm^b) within the last 10 years, *notably* if those projects/contracts are with the San Francisco District. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
- Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning deep draft navigation and dredging studies; include the client/agency and duration of review (approximate dates).
- Pending, current or future financial interests in SRDWSC, California LRS and SEIS related contracts/awards from USACE.
- A significant portion (i.e., greater than 50%) of personal or firm^b revenues within the last 3 years came from USACE contracts.

- Any publicly documented statement (including, for example, advocating for or discouraging against) related to the SRDWSC, California LRS and SEIS.
- Participation in relevant prior Federal studies relevant to the SRDWSC, California LRS and SEIS, including the Bay-Delta Conservation Plan, San Francisco Bay to Stockton Deep Water Ship Channel Plan, CALFED Delta Dredging and Reuse Strategy, and Delta LTMS.
- Participation in prior non-Federal studies relevant to the SRDWSC, California LRS and SEIS, including the Port of Sacramento Maritime Demand Analysis, Delta Stewardship Council, Delta Risk Management Strategy, Levee System Integrity Program, and Delta Vision.
- Is there any past, present or future activity, relationship or interest (financial or otherwise) that could make it appear that you would be unable to provide unbiased services on this project? If so, please describe.
- Participation in previous USACE technical review panels.
- Other technical review panel experience.

In selecting the final members of the Panel from the list of candidates, Battelle chose experts who best fit the expertise areas and had no COIs. The four final reviewers were either affiliated with consulting companies or were independent engineering consultants. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. USACE was given the list of candidate panel members, but Battelle made the final selections of the Panel. Section 4 of this report provides names and biographical information on the panel members.

Prior to beginning their review and within 3 days of their subcontracts being finalized, all members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel.

3.3 Preparation of the Charge and Conduct of the IEPR

Charge questions were provided by USACE and included in the draft and final Work Plans. In addition to a list of 95 charge questions/discussion points, the final charge included general guidance for the Panel on the conduct of the peer review (provided in Appendix B of this final report).

Battelle planned and facilitated a final kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meeting, the IEPR Panel received an electronic version of the final charge and the SRDWSC documents and reference materials listed below. The documents and files listed in Table 2 were provided for review. An “X” within a row indicates that the document was to be reviewed by that panel member. Other documents provided for reference or supplemental information only are in the bulleted list below.

Table 2. SRDWSC Documents for Review

| Document Title | No. of Pages | Required Disciplines | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|-----------|---------------|------------------|
| | | Engineer | Economics | Environmental | Plan Formulation |
| Draft SEIS/SEIR | 566 | X | X | X | X |
| Sacramento River Deep Water Ship Channel – Draft Limited Reevaluation Report (LRR) Alternative Formulation Briefing Report | 109 | X | X | X | X |
| Appendix A. Records of Decision from past EIS and SEIS | 9 | X | X | X | X |
| Appendix B. 404(b)(1) Alternative Analysis | 45 | | | X | |
| Appendix C. Fish and Wildlife HEP | 82 | | | X | |
| Appendix D. Draft Fish and Wildlife Coordination Act Report | 59 | | | X | |
| Sacramento River Deep Water Ship Channel Limited Reevaluation Report (LRR) National Economic Development (NED) Analysis of a Channel Deepening Project [DRAFT] July 11, 2011 | 98 | X | X | | X |
| Appendix F. Navigation Study for Channel Improvement Report | 129 | X | | | |
| Appendix F Supplemental – Ship Simulation Report | 38 | X | | | |
| Appendix G. Utility Investigation | 52 | X | | | |
| Appendix H. Beneficial Use of Dredged Material Report | 202 | X | | X | |
| Appendix I. Dredged Material Placement Site Table | 4 | X | | X | |
| Appendix J. Hydraulics and Hydrology Report | 61 | X | | X | |
| Appendix K. Channel Modeling | 72 | X | | X | |
| Appendix L. Alternatives Modeling Report | 836 | | | X | X |
| Appendix M. Sediment Quality | 2947 | X | | X | X |

| Document Title | No. of Pages | Required Disciplines | | | |
|------------------------------------------------------------|--------------|----------------------|------------|---------------|------------------|
| | | Engineer | Economics | Environmental | Plan Formulation |
| Appendix N. Water Quality Monitoring Reports | 55 | | | X | |
| Appendix O. Vegetation Report | 191 | | | X | |
| Appendix P. Air Quality Analysis | 101 | | | X | |
| Appendix Q. Hazardous, Toxic, and Radioactive Waste Report | 1775 | | | X | |
| Public Comments | <50 | X | X | X | X |
| Total Review Pages | 7,481 | 4,337 | 832 | 7,164 | 4,615 |

- USACE guidance *Civil Works Review Policy* (EC 1165-2-209) dated January 31, 2010
- CECW-CP Memorandum dated March 30, 2007
- OMB's *Final Information Quality Bulletin for Peer Review* released December 16, 2004

About halfway through the review of the SRDWSC documents, a teleconference was held with USACE, the Panel, and Battelle so that USACE could answer any questions the Panel had concerning either the review documents or the project. In addition, throughout the review period, USACE provided additional documents at the request of panel members. These additional documents were provided to Battelle and then sent to the Panel as supplemental information only and were not part of the official review. During the review process, the Panel requested the following supplemental information from USACE:

- IHS Global Insight cargo forecast and competition analysis
- Notes and records from interviews with shippers, receivers, carriers, importers, as well as from discussions with the pilots
- *Port of Sacramento Maritime Demand Analysis*, Draft report, Parsons Brinckerhoff, September 2004
- IHS cost analysis
- Documents provided by Shane Betz regarding scrap metal
- Data or reports that provide documentation of air emission mitigation measure efficiency, for dredges and/or off-road trucks/tractors
- Back-up information regarding the practicability of centrifuging dredging return water to remove methylmercury
- Additional details regarding how stockpiled sediment may be used for beneficial purposes such as wetland creation
- Field studies conducted for benthic or demersal organisms in the project area for the original assessment

3.4 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a comment-response form provided by Battelle. At the end of the review period, the Panel produced approximately 247 individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring themes, areas of potential conflict, and other overall impressions. As a result of the review, Battelle summarized the 247 comments in a preliminary list of 17 overall comments and discussion points. Each panel member's individual comments were shared with the full Panel in a merged individual comments table.

3.5 IEPR Panel Teleconference

Battelle facilitated a 2.5-hour teleconference with the Panel so that the panel members, many of whom are from diverse scientific backgrounds, could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the Final IEPR Report and decide which panel member would serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of high-level importance to the findings, and merged any related individual comments. In addition, Battelle confirmed each Final Panel Comment's level of significance to the Panel.

The Panel also discussed responses to two specific charge questions where there appeared to be disagreement among panel members. The conflicting comments were resolved based on the professional judgment of the Panel, and all sets of comments were determined not to be conflicting. Each comment was either incorporated into a Final Panel Comment, determined to be consistent with other Final Panel Comments already developed, or determined to be a non-significant issue.

At the end of these discussions, the Panel identified 20 comments and discussion points that should be brought forward as Final Panel Comments.

3.6 Preparation of Final Panel Comments

Following the teleconference, Battelle prepared a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum provided the following detailed guidance on the approach and format to be used to develop the Final Panel Comments for the SRDWSC documents:

- **Lead Responsibility:** For each Final Panel Comment, one panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed the merged individual comments table, a summary detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.

- Directive to the Lead: Each lead was encouraged to communicate directly with other IEPR panel members as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.
- Format for Final Panel Comments: Each Final Panel Comment was presented as part of a four-part structure:
 1. Comment Statement (succinct summary statement of concern)
 2. Basis for Comment (details regarding the concern)
 3. Significance (high, medium, low; see description below)
 4. Recommendation(s) for Resolution (see description below).
- Criteria for Significance: The following were used as criteria for assigning a significance level to each Final Panel Comment:
 1. High: Describes a fundamental problem with the project that could affect the recommendation, success, or justification of the project. Comments rated as high indicate that the Panel analyzed or assessed the methods, models, and/or analyses and determined that there is a “showstopper” issue.
 2. Medium: Affects the completeness of the report in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium indicate that the Panel does not have sufficient information to analyze or assess the methods, models, or analyses.
 3. Low: Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information (tables, figures, equations, discussions) that was mislabeled or incorrect or data or report sections that were not clearly described or presented.
- Guidance for Developing Recommendations: The recommendation section was to include specific actions that USACE should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).

At the end of this process, 20 Final Panel Comments were prepared. Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel’s overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Final Panel Comments are presented in Appendix A of this report.

4. PANEL DESCRIPTION

Candidates for the Panel were identified using Battelle’s Peer Reviewer Database, targeted Internet searches using key words (e.g., technical area, geographic region), searches of websites of universities or other compiled expert sites, and referrals. Battelle prepared a draft list of primary and backup candidate panel members (who were screened for availability, technical

background, and COIs), and provided it to USACE for feedback. Battelle made the final selection of panel members.

An overview of the credentials of the final four primary members of the Panel and their qualifications in relation to the technical evaluation criteria is presented in Table 3. More detailed biographical information regarding each panel member and his or her area of technical expertise is presented in the text that follows the table.

Table 3. SRDWSC IEPR Panel: Technical Criteria and Areas of Expertise

| Technical Criteria | Hayes | Hornung | Vittor | Smith |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|--------|-------|
| Engineering (one expert needed) | | | | |
| Registered professional engineer with a minimum 10 years of experience in either hydraulic or civil engineering | X | | | |
| Demonstrated experience in deep draft navigation channels, dredged material disposal, erosion, coastal currents, channel modifications | X | | | |
| M.S. degree or higher in civil, hydraulic, or related engineering field | X | | | |
| Plan Formulation (one expert needed) | | | | |
| Minimum 10 years of experience in deep draft navigation analysis, with project experience in evaluating and comparing alternative plans for USACE, and evaluating and conducting National Economic Development (NED) analyses of deep draft navigation or inland navigation transportation-related projects | | X | | |
| Experience directly working for or with USACE in applying Principles and Guidelines (P&G) to Civil Works project evaluations | | X | | |
| M.A./M.S. degree or higher in appropriate field of study | | X | | |
| Environmental (one expert needed) | | | | |
| Minimum 10 years of demonstrated experience in environmental, estuarine, and coastal and estuarine processes and an understanding of ecological responses to navigation channel improvements | | | X | |
| An understanding of environmental impacts associated with dredging and preparation of National Environmental Policy Act (NEPA) compliance documents | | | X | |
| M.S. degree or higher in appropriate field of study | | | X | |
| Economics (one expert needed) | | | | |
| Minimum 10 years of experience in deep draft navigation economic analysis, with project experience in evaluating and comparing alternative plans for USACE, and evaluating and conducting NED analyses of deep draft navigation | | | | X |

| Technical Criteria | Hayes | Hornung | Vittor | Smith |
|--------------------------------------------------------------------------------------------------|-------|---------|--------|-------|
| or inland navigation transportation-related projects | | | | |
| Experience directly working for or with USACE in applying P&G to Civil Works project evaluations | | | | X |
| M.A./M.S./MBA degree or higher in appropriate field of study | | | | X |

Donald Hayes, P.E.

Role: This panel member was chosen primarily for his engineering experience and expertise.

Affiliation: Independent Consultant

Dr. Donald Hayes is Co-Director of the Institute for Coastal Ecology and Engineering and is an Endowed Professor of Civil Engineering at the University of Louisiana at Lafayette. He received his M.S. in civil engineering from Mississippi State University and a Ph.D. in civil engineering from Colorado State University. Dr. Hayes is a registered Professional Engineer in Louisiana and Mississippi and has more than 25 years of experience in both academia and consulting.

Dr. Hayes has delivered presentations to the international community and is recognized as an expert in the remediation of contaminated sediments and dredged material management as indicated by his consulting work and testimony for industry and government. He has experience in deep draft navigation channel design in many large U.S. ports, including Houston, Texas; Port of New York/New Jersey; Norfolk, Virginia; Oakland, California; and San Francisco, California. Additionally, Dr. Hayes has extensive experience with dredged material management and beneficial uses of dredge sediments and extensive use of SedFlume and model results for estimating erosion due to prop wash and vessel movement. He has knowledge of coastal hydraulics and wave processes and familiarity with coastal currents, tides, extreme events, and channel modifications for traffic safety and increased vessel size.

Dr. Hayes has authored more than 50 technical reports and journal publications in addition to several books, book chapters, and conference papers. Additionally, he has refereed conference proceedings and is a member of several engineering committees and societies, including the American Society of Civil Engineers (ASCE), Western Dredging Association (WEDA), and Coastal Oceans, Ports, Rivers Institute. In 2010, Dr. Hayes received the Best Paper Award at the 41st Annual Dredging Conference and Outstanding Educator, ASCE Acadiana Branch. Dr. Hayes is also the author of several Automated Dredging and Disposal Alternatives Management System modules – software distributed by the USACE to manage dredging projects and dredged material placement. Finally, he serves on the editorial board of the *Journal of Dredging Engineering* and the Board of Directors for WEDA.

Lewis Hornung

Role: This panel member was chosen primarily for his plan formulation experience and expertise.

Affiliation: L. Hornung Consulting, Inc.

Mr. Lewis Hornung is the Principal of L. Hornung Consulting, Inc. and has over 31 years of experience in project management and plan formulation for deep draft navigation and water resource projects. He earned his B.S. in civil engineering from the University of Houston in 1977. He spent 20 years with USACE, 6 years with the South Florida Water Management District, and 5 years with HDR Engineering before becoming a private consultant. His experience includes hydrology and hydraulics, planning, project management, program management, and operations for projects related to environmental restoration, flood control, water supply, and navigation.

Mr. Hornung has extensive experience with USACE planning projects and is familiar with current USACE planning regulations and procedures. He has led efforts to formulate and evaluate alternative plans for navigation studies using a variety of approaches, including risk analyses, multiple criteria decision modeling, and other decision support tools. He has served as the lead planner for the Lake Okeechobee Watershed Feasibility Study, Indian River County Water Resources Feasibility Study, Everglades Agricultural Area Storage Reservoir Feasibility Study, Alexandria to the Gulf Feasibility Study, and Comprehensive Everglades Restoration Plan projects. Additionally, Mr. Hornung has conducted NED analyses for many studies, including deep draft navigation studies, and has direct experience in the application of P&G to Civil Works.

Most of Mr. Hornung's experience has been with multi-purpose studies, and he has extensive experience in establishing existing and future conditions, developing goals and objectives, and defining evaluation criteria to measure potential impacts. He has used multiple techniques to organize alternative plan evaluation criteria in a hierarchical manner that aids in interpretation of results, and he has applied these techniques on many projects. Mr. Hornung has also performed trade-off analyses for many studies, including using multi-criteria decision modeling for trade-off analyses, and cost effectiveness and incremental cost analyses.

Barry Vittor

Role: This panel member was chosen primarily for his environmental experience and expertise.

Affiliation: Barry A. Vittor & Associates, Inc.

Dr. Barry Vittor is President and Senior Scientist at Barry A. Vittor and Associates, Inc. He received his Ph.D. from the University of Oregon in 1971 and has been involved with the planning and coordination of a wide range of environmental programs, including wetlands impact analyses and mitigation, ecological restoration, toxicity studies, water quality monitoring, resource characterization and management, and long-range planning for dredged material disposal.

He has extensive experience studying the effects of channel dredging on estuarine benthos, water quality, and sediments, as well as the potential beneficial uses and environmental impacts

associated with dredging. He also has over 38 years of experience studying the environmental effects and ecological responses to navigation channel construction and maintenance, including a concept plan for tidal marsh creation as a beneficial use of dredge material in Mobile Bay. This also included conducting assessments of navigation project impacts on water quality, marine fisheries, benthos, submerged aquatic vegetation, and terrestrial habitats. He has monitored deep-draft channel construction impacts on benthic ecology and fisheries, as well as water quality effects of open-water thin-layer disposal, open-water side-casting, and use of confined disposal facilities. Most recently, he has been studying navigation channel and ship berth construction impacts on endangered species, benthos, and fisheries in coastal Mississippi. He also has 25 years of experience in toxicity testing of dredged material and sediments. He has evaluated estuarine benthic ecology in coastal estuaries on the Pacific coast, Gulf coast, and Atlantic coast, for USEPA, USACE, and the National Oceanic and Atmospheric Administration.

Dr. Vittor is familiar with USACE's guidance for EIS and environmental assessment (EA) preparation to comply with NEPA. He has prepared several EISs, including navigation channel and/or ship basin construction and maintenance-related projects for USACE in coastal Alabama and in New York Harbor, and has coordinated staff preparation of EAs for several navigation channel expansion projects for the USACE New York District. He has over 30 years of experience working with the Endangered Species Act, including preparation of biological assessments and habitat conservation plans. He has conducted several assessments of essential fish habitat related to dredged material disposal, navigation projects, and other coastal construction projects. Dr. Vittor has also conducted reviews of offshore project impacts for compliance with the Marine Mammal Protection Act, including oil/gas production noise and collision effects on whales and dolphins in the Gulf of Mexico. He has managed numerous wetland mitigation design and implementation projects, including supervision and monitoring of wetland mitigation banks in Mississippi and Alabama. Dr. Vittor has previously been an active member of the Society of Wetland Scientists, Gulf Estuarine Research Society, Ecological Society of America, and Society of Sigma Xi.

Daniel Smith

Role: This panel member was chosen primarily for his economics experience and expertise.

Affiliation: The Tioga Group, Inc.

Mr. Daniel Smith has an M.S. in Public Policy from University of California-Berkeley and a B.A. in mathematics (degree requirements fulfilled in economics) from University of California-Berkeley. He is founder and Principal of The Tioga Group, Inc., a consulting firm specializing in freight transportation and logistics whose clients include ports, railroads, shippers, leasing companies, industry organizations, and government agencies.

Mr. Smith has over 30 years of consulting experience in freight transportation operations, economics, policy, and planning, with special emphasis on truck, rail, and marine intermodal transportation. He has been a frequent contributor to industry conferences and publications and has testified before Congress on the economic conditions in the world shipping industry. In addition to his masters degree in Public Policy, Mr. Smith did further postgraduate work in transportation economics and policy. He has experience evaluating and conducting NED analyses of deep-draft navigation and inland navigation transportation projects.

He has served on peer review panels between 2002 and 2011, most recently as the Plan Formulation reviewer for the IEPRs of the Sabine-Neches Waterway Channel Improvement Project and the Economics reviewer for the Freeport Channel Deepening Project. Additionally, Mr. Smith has experience working with USACE in applying P&G to Civil Works projects through his participation on previous reviews, notably Port Iberia, Delaware River, and Columbia River.

5. SUMMARY OF FINAL PANEL COMMENTS

The panel members agreed among one another on their “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2010; p. D-4) in the SRDWSC documents. Table 4 lists the 20 Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Appendix A. The following statements summarize the Panel’s findings.

Plan Formulation: The Panel found overall plan formulation to be sound, although several general concerns are identified. Some of the market assumptions should be examined more critically:

- The cement analysis assumes no competition between Redwood City (RWC) and the POWS, but Cemex owns both facilities and will allocate market coverage.
- The scrap metal analysis ignores competition from Sims at Richmond and Schnitzer at Oakland.
- The outlook for sugar cane ethanol (biofuels) appears to depend almost entirely on the State of California carbon footprint regulations, which as of 2010 were being challenged in the courts.
- The ethanol outlook depends on the expiration of import tariffs in 2013, which is not certain and could be delayed or reversed.

In most areas, the components of the alternative plans are described in sufficient detail to enable evaluations of potential impacts. Some areas (e.g., widening of the channel, groundwater impacts, air emissions, and dredge return water) deserve a more rigorous treatment.

The conclusion that project-induced movement of the X2 distance was not significant was based on the conclusion that the changes were minor in terms of distance and salinity levels. It did not address environmental and water supply impacts that are sensitive to seasonality of the X2 distance. The impacts of the X2 distance should be described in terms of the water supply and environmental consequences.

Economics: The economic analysis for the project generally provides a solid basis to compare alternatives. However, there are some concerns regarding the market definitions being used, the assumptions regarding vessel utilization, the treatment of risk and uncertainty, and the estimation methodology for transportation cost benefits.

The economic benefit analysis effectively assumes that the reduced transportation cost will be captured by the customer (i.e., the importer if delivered price is reduced, the exporter if

additional foreign market share becomes accessible). In reality, the benefits of reduced transportation cost will likely be shared between carriers, their customers, and the ultimate customers for the imported or exported goods. There is no available method to reliably predict the sharing of benefits between parties to negotiated commercial transactions.

Several significant sources of risk and uncertainty need to be addressed at greater length, including reduced ethanol imports, reduced cement imports, lower vessel utilization, and reduced Stockton port fees. The forecasts for scrap metal, cement, and ethanol should be revised to take into account broader domestic and port competition.

The transportation cost saving estimates assume that (1) port fees are the same for all vessels, independent of their size and load, and (2) at-sea cost for a given vessel size is independent of payload. These assumptions may increase the estimated benefits of using larger vessels and of loading vessels to greater drafts, and should be justified.

Engineering: Engineering aspects of the project are well-documented and reasonable except for a few omissions. For example, extensive laboratory testing was conducted to provide data on potential impacts associated with dredging and dredged material (Appendix M). The SEIS/SEIR did not utilize these data to provide any quantitative analysis of these impacts. The purpose and need for the channel widening was not clearly stated. Potential impacts from prop scour and bank erosion due to increased wakes of larger/heavier vessels are not adequately addressed.

Environmental: The Panel agreed that most aquatic biological resources in the project area are well-described, but additional information about benthic and planktonic communities would be beneficial in documenting potential impacts on ecosystem trophics, and thus to aquatic species such as protected salmon, sturgeon, and delta smelt. The document acknowledges that the project could have significant adverse impacts on the endangered delta smelt. The Panel is concerned that a full evaluation of proposed mitigation measures cannot be accomplished until completion of ongoing formal consultation with the U.S. Fish and Wildlife Service (USFWS).

Some predicted outcomes (e.g., the ability to mitigate air emissions from operational equipment) are not documented fully in the information provided. In other cases, such as reduction of methylmercury in dredge return water, assumptions of technologic feasibility are probably unrealistic (i.e., centrifuging return water). In Appendix K, the impact of the project on the X2 boundary is based on the assumption that sea level rise will be 2 feet over the next 50 years, and the upstream movement of X2 would be about 1.2 kilometers (km) with or without the project as a result. It is not clear whether this impact would be the same if sea level rise were much lower than the worst-case scenario of 2 feet.

The cumulative impacts analysis did not include the combined effects of deepening both the SRDWSC and the San Francisco to Stockton Deep Water Ship Channel (DWSC). Based on analyses presented in Appendix L, the deepening of both canals amplifies the individual impacts.

Table 4. Overview of 20 Final Panel Comments Identified by the SRDWSC IEPR Panel

| No. | Final Panel Comment |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Significance – High | |
| 1 | It does not appear that actual decision-makers (i.e., shippers, brokers, and consignees) were contacted, in addition to pilots, to verify the assumptions used in the analysis of vessel types and loading practices. |
| Significance – Medium | |
| 2 | Project documentation is not clear with regard to plans for actual construction and operation of new port facilities, and relies too much on secondary sources. |
| 3 | The market assumptions used in the economic analysis for cement, ethanol, and scrap metal do not appear to take into consideration competition from facilities other than those described in the report. |
| 4 | The market assumptions used in the economic analysis for ethanol do not take into consideration possible changes in regulations or continuances of tariffs. |
| 5 | Neither the Limited Reevaluation Report (LRR) nor the SEIS/SEIR quantitatively analyzes the potential for larger vessels, or vessels with larger loads, to increase shoreline erosion under the proposed project. |
| 6 | The potential impacts of a deeper Stockton channel on the economic analysis do not appear to be addressed in the NED analysis or the IHS study. |
| 7 | The analysis of port competition has not addressed the potential impact of reduced fees at the Port of Stockton. |
| 8 | The vessel cost and transportation savings analysis appears to assume that (1) port fees are the same for all vessels, independent of their size and load, and (2) at-sea cost for a given vessel size is independent of payload. These assumptions increase the estimated benefits of using larger vessels and of loading vessels to greater drafts. |
| 9 | The NED analysis assumes that cement imports will come from Asia, but sourcing from Mexico could result in fewer net project benefits. |
| 10 | The discussion of beneficial uses of dredged material does not provide a comprehensive range of alternatives for such uses and does not describe how this objective will be met. |
| 11 | The cumulative impacts do not fully address the potential salinity effects of construction of the SRDWSC and the San Francisco Bay to Stockton DWSC. |
| 12 | The assumption underlying the salinity modeling and determination of the X2 distance analysis and the types and levels of impacts does not thoroughly document a determination of no significant adverse impact. |
| 13 | Several environmental mitigation measures are not sufficiently documented and justified to support a conclusion that an identified significant adverse impact would be avoidable. |
| 14 | Methylmercury could be an issue; however, the data presented are not conclusive, thereby resulting in uncertainty about the potential impacts of the proposed project's disposal plan. |
| 15 | The validity of the proposed 6-month construction work window does not support a conclusion that it could be used without causing harm to endangered species. |

| No. | Final Panel Comment |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Significance – Low | |
| 16 | The number or locations of pipelines that must be relocated, or the potential environmental impacts of pipeline relocation, have not been described in detail. |
| 17 | The documentation was unclear regarding the need for, and the location and extent of, proposed channel widening. |
| 18 | The document does not clearly state why a LRR was appropriate rather than a General Reevaluation Report (GRR), given the significant changes that have occurred since authorization. |
| 19 | The descriptions of the benthic or planktonic communities do not include enough detail to characterize these aquatic resources in the project area. |
| 20 | The conclusion that groundwater will not be impacted due to the project is not supported by the information presented. |

6. REFERENCES

CARB (2011). Cement Plants in California, California Air Resources Board website, http://www.arb.ca.gov/cc/ceci/presentations/cementmap_4_3_07.pdf, accessed September 20, 2011.

IHS (2011). Commodity Forecasts and Competitive Market Analysis for the Ports of West Sacramento, Stockton, and Redwood City, IHS Global Insight, 2011.

ISRI (2011). The Scrap Metal Recycling Industry in the United States. Presentation by J. Pickard, Institute of Scrap Recycling Industries. May 2011.

OMB (2004). Final Information Quality Bulletin for Peer Review. Executive Office of the President, Office of Management and Budget, Washington, D.C. Memorandum M-05-03. December 16.

Port of Redwood City (2005). Port of Redwood City Dredging Issues and Impacts, Han-Padron Associates/The Tioga Group, June.

The National Academies (2003). Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports. The National Academies (National Academy of Science, National Academy of Engineering, Institute of Medicine, National Research Council). May 12.

USACE (2007). Peer Review Process. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. CECW-CP Memorandum. March 30.

USACE (2010). Water Resources Policies and Authorities: Civil Works Review Policy. Department of the Army, US Army Corps of Engineers, Washington, D.C. Engineer Circular (EC) No. 1165-2-209. January 31.

APPENDIX A

Final Panel Comments

on the

SRDWSC Documents

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Comment 1

It does not appear that actual decision-makers (i.e., shippers, brokers, and consignees) were contacted, in addition to pilots, to verify the assumptions used in the analysis of vessel types and loading practices.

Basis for Comment:

It is logical to anticipate, as the National Economic Development [NED] Analysis of a Channel Deepening Project, 2011 (NED analysis) does (p. 56 and elsewhere), that shippers and receivers will make maximum use of vessel capacity and channel draft to minimize transportation costs. However, other factors such as foreign port limitations or the capacity of onshore storage may restrict vessel sizes or loads. The NED analysis (p. 53) notes such conditions for ammonia. If shippers and consignees do not take full advantage of the greater channel depth for other commodities, there will be fewer benefits.

The NED analysis provides a “general rule” for vessel utilization (p. 54), but the applicability of that general rule to the cargo flows at issue has yet to be verified.

Pilots are familiar with existing practices, but they do not choose vessel types or control vessel loads and are not a definitive information source. The analysis would be stronger and confidence in the utilization projections increased if USACE expectations were confirmed by actual decision-makers, which are typically the shippers, receivers, or ship brokers involved.

Topping off outgoing vessels or partially unloading inbound vessels is an alternative potential means of maximizing vessel utilization and obtaining some of the same vessel utilization benefits without channel deepening. The assumption regarding the lack of deeper ports within the Bay Area for scrap metal (NED analysis, p. 53) is incorrect. Richmond has deeper water, and scrap metal vessels from Redwood City (RWC) have previously topped off there. In the past, incoming vessels bringing aggregates to RWC have unloaded part of the cargo to barges (lightering) at anchor in the Bay to cope with insufficient draft at RWC (Port of Redwood City, 2005). Lightering would appear to be an option for some Port of West Sacramento (POWS) imports (particularly for Cemex, which also has a cement terminal at RWC).

Significance – High:

All project benefits depend on vessel utilization increases.

Recommendation(s) for Resolution:

1. Directly contact those who make vessel size and loading decisions (e.g., shippers, receivers, ship brokers) to verify the report assumption that they will maximize use of vessel capacity and draft as anticipated.
2. If possible, obtain written confirmation of the decision-makers’ intent to maximize vessel size and loading and of the lack of other restrictions.
3. Expand the sensitivity analysis to include a scenario in which shippers and receivers do not take full advantage of vessel capacity and channel depth

4. Confirm statements regarding the availability of other ports for topping off or unloading, and correct the report as required.
5. Investigate the option of lightering for inbound cargoes.
6. If topping off or partial unloading (lightering) are found to be feasible alternatives, address the potential for either or both in an expanded sensitivity analysis.

Literature Cited:

Port of Redwood City (2005). Port of Redwood City Dredging Issues and Impacts, Han-Padron Associates/The Tioga Group, June.

Comment 2

Project documentation is not clear with regard to plans for actual construction and operation of new port facilities, and relies too much on secondary sources.

Basis for Comment:

The net project benefits are contingent on operation of the dormant cement terminal and on construction and operation of terminals for export scrap metal and import biofuels (ethanol). The Sacramento River Deep Water Ship Channel report appears to rely heavily on secondary sources throughout (e.g., the Port Authority) for information on the construction and operation of these port facilities. The status of those terminals is not entirely clear. In particular, it is not clearly stated whether the scrap metal and biofuels facilities will be built and operated in the absence of the overall project, or whether the terminal facility owners would consider other plans or locations for those facilities (e.g., Stockton).

The owner of the dormant cement facility, Cemex, also owns the RWC facility. The planned activation date of the POWS facility and the market coverage and import tonnage split between POWS and RWC are all under Cemex's control. Information on expected cement tonnage through the POWS facility should therefore have been obtained directly from Cemex wherever possible.

Significance – Medium:

Project benefits are contingent on the opening and operation of the scrap metal, biofuels, and cement facilities, and the report needs to be as clear and definitive as possible on those issues.

Recommendation(s) for Resolution:

1. Contact cement, ethanol, and scrap metal projects sponsors directly to clarify the nature and status of their facility and operations plans.
2. Obtain information confirming or correcting report statements regarding plans, timelines, and tonnage, and make any necessary report changes.
3. Determine the planned split of business between the Cemex POWS cement terminal and the RWC terminal owned by the same firm.

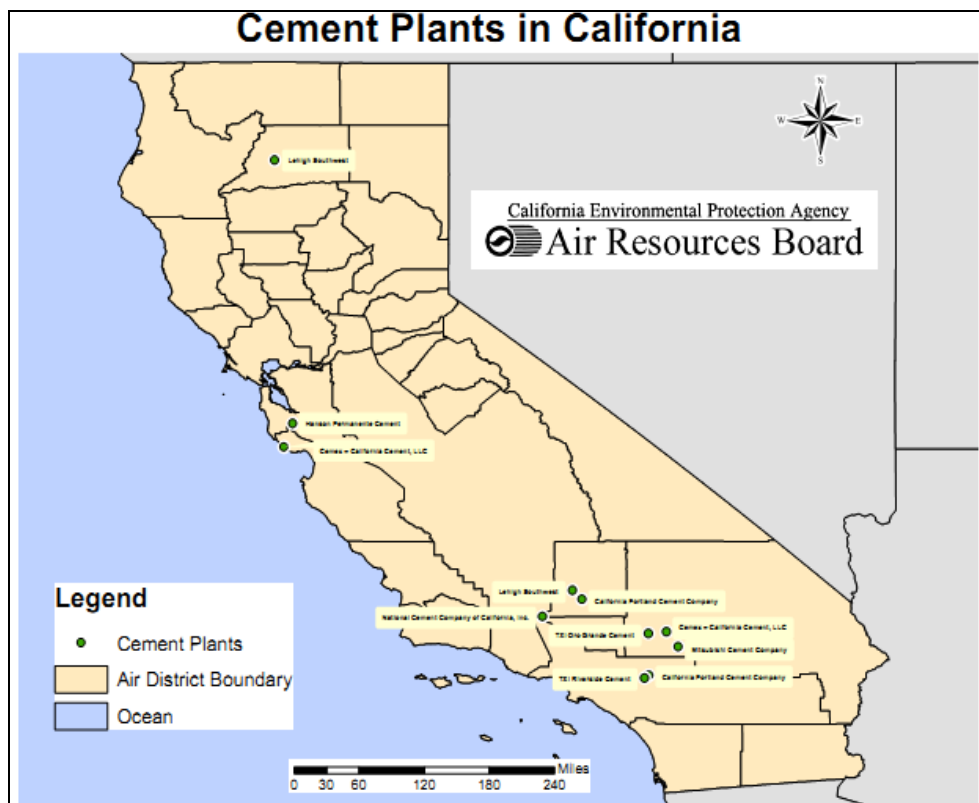
Comment 3

The market assumptions used in the economic analysis for cement, ethanol, and scrap metal do not appear to take into consideration competition from facilities other than those described in the report.

Basis for Comment:

The NED analysis and the IHS report (IHS, 2011) focus on competition between the ports at Stockton, RWC, and Sacramento. For the critical commodities – cement, ethanol, and scrap metal – the analysis should be broadened to account for potential competition from other existing facilities.

For cement, California Air Resources Board (CARB) information shows that there have been three active cement plants in Northern California (Lehigh Southwest, Hanson Permanente, and Cemex-California) and eight in Southern California.



Source: CARB, 2011.

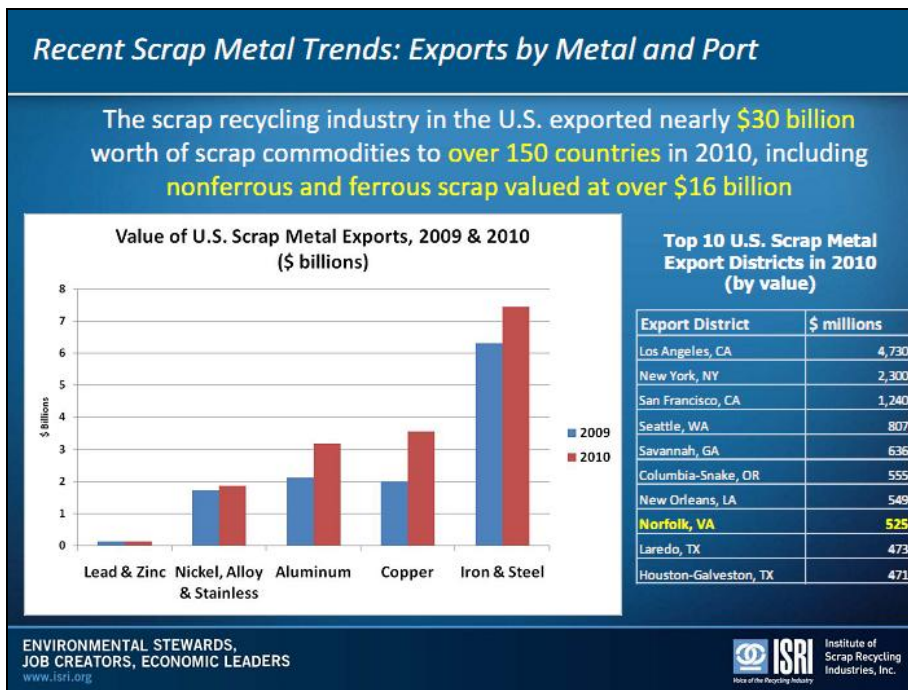
Figure is for illustration purposes only to show the locations.

The POWS facilities appear to be served by rail (based on aerial photos on Google Earth), indicating a capability to compete for markets beyond trucking distance or to receive bulk dry cement from North American sources. This observation suggests that the markets the facility owners expect to serve may be broader than the report indicates. The IHS report (IHS, 2011, p. 25) postulates an initial Cemex cement volume of 100,000

metric tons, without establishing demand or considering diversions from other ports (i.e., RWC), facilities (i.e., the other POWS terminal), or domestic sources.

For ethanol, the study relies on regulatory restrictions on domestic corn ethanol without examining the basic economic competitiveness of domestic sources. The Pacific Ethanol plants in Stockton and Madera have roughly 100 million annual tons of combined under-used capacity, and might be a serious competitive force if California regulations eventually permit corn ethanol or if corn ethanol processing is improved to qualify.

The IHS analysis (IHS, 2011, p. 46) is incorrect in stating that only two metal shredding facilities serve Northern California; in fact, there are three: Sims at RWC, Sims at Richmond, and Schnitzer at Oakland. The IHS comparison of California and Texas (p. 46) appears to be irrelevant since, according to data from the Institute of Scrap Recycling Industries (ISRI), the San Francisco Customs District exports substantially more scrap metals than Texas districts (see below).



Source: ISRI, 2011.

The discussion of scrap metal export competition is therefore too narrow.

Significance – Medium:

Additional analysis of critical commodities to account for potential competition may or may not affect the estimates of net benefits, but broadening the analysis will increase confidence and reduce uncertainty.

Recommendation(s) for Resolution:

1. Determine the status and potential competition from other cement plants and the actual anticipated markets to be served from POWS, and revise the report accordingly.

2. Revise the projections for cement imports to address the competitive implications of the assumed 100,000 metric tons at start-up.
3. For ethanol, address the competitive economics of the Pacific Ethanol plants in Stockton and Madera in the event that domestic corn ethanol is permitted in California.
4. For scrap metal, analyze competition from Sims in Richmond, Schnitzer in Oakland, and Sims at RWC.
5. Expand the sensitivity analysis as needed to reflect any additional contingencies, including:
 - a) A scenario in which cement imports are significantly reduced (e.g., due to reduced demand, greater utilization of RWC, or domestic competition).
 - b) A scenario in which biofuel (ethanol) imports are absent or are significantly reduced (e.g., due to renewed tariffs, changed California regulations, lower demand, or domestic competition).

Literature Cited:

CARB (2011). Cement Plants in California, California Air Resources Board website, http://www.arb.ca.gov/cc/ccei/presentations/cementmap_4_3_07.pdf, accessed September 20, 2011.

IHS (2011). Commodity Forecasts and Competitive Market Analysis for the Ports of West Sacramento, Stockton, and Redwood City, IHS Global Insight, 2011.

ISRI (2011). The Scrap Metal Recycling Industry in the United States. Presentation by J. Pickard, Institute of Scrap Recycling Industries. May 2011.

Comment 4

The market assumptions used in the economic analysis for ethanol do not take into consideration possible changes in regulations or continuances of tariffs.

Basis for Comment:

The IHS forecasts for sugar cane ethanol imports (IHS, 2011) assume that existing tariffs will be allowed to expire, that domestic corn ethanol will be eliminated or greatly restricted in California due to greenhouse gas regulations, and that enough E15 blend-compatible pumps will be installed and demand will rise in California to support E15 use (IHS, 2011, p. 60). The study does not appear to consider the impact of renewed tariffs, of delayed or altered implementation of California's greenhouse gas standards, or of improvements in corn ethanol production to meet those standards. The California standards have been challenged in the courts. The outlook for ethanol at POWS is therefore less certain than if these issues had been addressed.

Significance – Medium:

Although biofuel imports account for 50% of the project benefits, the comment addresses the certainty of outcomes rather than the outcomes themselves.

Recommendation(s) for Resolution:

1. Verify the current status of the California greenhouse gas regulations and of the legal challenge.
2. Investigate efforts made by the domestic corn ethanol industry to meet the California greenhouse gas standards.
3. Verify the current status of ethanol import tariffs and of efforts to either renew those tariffs or allow them to expire.
4. Address the results of Recommendations 1 through 3 in an expanded sensitivity analysis of the ethanol forecast.

Literature Cited:

IHS (2011). Commodity Forecasts and Competitive Market Analysis for the Ports of West Sacramento, Stockton, and Redwood City, IHS Global Insight, 2011.

Comment 5

Neither the Limited Reevaluation Report (LRR) nor the SEIS/SEIR quantitatively analyzes the potential for larger vessels, or vessels with larger loads, to increase shoreline erosion under the proposed project.

Basis for Comment:

Vessel-induced erosion is noted in the SEIS/SEIR as a concern associated with the project due to the larger vessels that will be used. However, project documentation does not address the potential that larger wakes created by larger vessels and vessels with larger loads could increase shoreline erosion under the proposed project. This potential impact warrants a quantitative analysis that should be included as part of the project documentation.

Significance – Medium:

Shoreline erosion could potentially be a significant issue, affecting project costs, sustainability, and water quality impacts.

Recommendation(s) for Resolution:

1. Estimate the size and frequency of wakes generated by the vessels that are expected to be used under the proposed project, and compare those estimates to current project data.
2. Translate the size and frequency of these wakes into potential erosion rates for all alternatives. Use historical data to ground-truth the erosion rates under the current project.
3. Provide a narrative description of the results for all alternatives.

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| Comment 6 |
| The potential impacts of a deeper Stockton channel on the economic analysis do not appear to be addressed in the NED analysis or the IHS study. |
| Basis for Comment: |
| Parallel efforts to deepen the Stockton ship channel could alter the relative competitive positions of the Ports of Stockton and West Sacramento from those indicated in the NED analysis and IHS report (IHS, 2011). This altered competitive position could affect the outlook for fertilizer (anhydrous ammonia and urea) and cement commodities. |
| Significance – Medium: |
| Additional details on potential competitive impacts of deepening the Stockton channel would address sources of uncertainty rather than the benefits estimates themselves. |
| Recommendation for Resolution: |
| 1. Determine how deepening of the Stockton channel would affect the analysis of relative costs for the two ports and the forecasts for affected commodities. |

Literature Cited:

IHS (2011). Commodity Forecasts and Competitive Market Analysis for the Ports of West Sacramento, Stockton, and Redwood City, IHS Global Insight, 2011.

Comment 7

The analysis of port competition has not addressed the potential impact of reduced fees at the Port of Stockton.

Basis for Comment:

The discussion of competition between the Port of Stockton and the POWS (p. 25) notes the significance of higher port fees at Stockton and acknowledges that such fees are sometimes negotiated, but does not address the potential impact of lower fees. Port fees are frequently negotiated and are a major tool in port competition. The Port of Stockton is likely to negotiate lower fees rather than lose the business to POWS.

Significance – Medium:

The assessment of port competition and the forecasts of commodity flows are incomplete without an analysis of the effects of reduced Stockton port fees.

Recommendation(s) for Resolution:

1. At a minimum, examine the sensitivity of the commodity forecasts to assumptions regarding Stockton port fees and incorporate the results in an expanded sensitivity analysis section.
2. Depending on the outcome of the sensitivity analysis, revise the commodity forecast to assume that the Port of Stockton will protect its own best interests with regard to Port fees and cargo volumes.

Comment 8

The vessel cost and transportation savings analysis appears to assume that (1) port fees are the same for all vessels, independent of their size and load, and (2) at-sea cost for a given vessel size is independent of payload. These assumptions increase the estimated benefits of using larger vessels and of loading vessels to greater drafts.

Basis for Comment:

Addendum 2 (Table 49) of the NED analysis displays sample calculations for vessel costs. The entries for port fees are the same for all vessel sizes. Port fees traditionally include “dockage,” which is assessed on the basis of vessel length, and “wharfage,” which is assessed based on the tonnage or volume of cargo. Port fees would thus ordinarily increase with the size of the vessel and its payload. Using the same port fees for all vessels and payloads reduces the average port fee per ton for larger vessels and loads, thereby increasing the estimates of transportation cost savings of deeper drafts.

Addendum 3 (Table 50) of the NED analysis gives sample calculations of the transportation cost savings from deeper drafts and greater payloads (e.g., less light-loading). Those calculations use the at-sea cost (and the port fees) of the fully loaded vessel from Table 49 and divide those costs by the lower light-loaded payloads to get a higher cost per ton. The calculations implicitly assume that the at-sea cost (and the port fees) of the light-loaded vessel is the same as the fully loaded vessel. However, to the extent that at-sea cost (e.g., fuel consumption) is affected by loaded vessel displacement, the cost of the light-loaded vessel should be less.

Significance – Medium:

Vessel cost assumptions directly affect the net benefits estimates.

Recommendation(s) for Resolution:

1. Verify the basis and amount of port fees for POWS, competing ports, and origin ports for the range of vessel sizes and payloads in the analysis, and make appropriate adjustments to the cost estimates.
2. Justify the assumption that the at-sea costs will be the same for a light-loaded vessel as for a fully loaded vessel, or make appropriate adjustments to the cost estimates.

Comment 9

The NED analysis assumes that cement imports will come from Asia, but sourcing from Mexico could result in fewer net project benefits.

Basis for Comment:

The estimated transportation cost savings for cement are a function of voyage length. While past cement imports have come primarily from Asia as indicated in the NED analysis (Table 32, p. 58), port developments on the west coast of Mexico have reportedly enabled (or will shortly enable) competitive cement exports from Mexico. Cemex, the operator of the new POWS cement import facility, is a Mexican firm with production capacity in Mexico. If Cemex or the other POWS importer chooses to source cement from Mexico rather than from Asia, voyage lengths and transportation costs would be significantly reduced from those anticipated in the analysis, and project transportation cost savings that depend on long voyages would be less.

Significance – Medium:

The assumption that cement imports will come from Asia rather than Mexico or other sources directly affects the estimate of net benefits.

Recommendation(s) for Resolution:

1. Contact cement importer representatives to verify the expected origins of cement imports to POWS.
2. Correct transportation cost savings estimates as required.

Comment 10

The discussion of beneficial uses of dredged material does not provide a comprehensive range of alternatives for such uses and does not describe how this objective will be met.

Basis for Comment:

The Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR) (Appendix H) provides a good description of potential construction uses of dredged material and states that a large number of construction and materials companies in the area were surveyed to determine which might use this sediment. However, this discussion does not extend beyond consideration of uses such as levee-building and structural fill, although construction uses are predicted to account for only half of the materials to be dredged. Alternative uses such as habitat restoration or creation are not addressed, but could produce environmental benefits in the project area.

Beneficial use screening criteria are generally comprehensive, but alternative disposal site evaluations are not accurate in some cases. Alternative stockpiling disposal sites are well-described, but screening of all sites should consider input from end users, whether these are construction companies or organizations engaged in habitat restoration. For example, the Montezuma Wetlands, LLC restoration site was excluded from consideration due to an incorrect assumption that hydraulic dredged material could not be accommodated at that site.

Significance – Medium:

Additional assessment of alternative uses will provide a more defensible basis for the determination that beneficial uses have been incorporated in the project to the fullest practicable extent.

Recommendation(s) for Resolution:

1. Expand Appendix H to incorporate additional alternative uses, including a more thorough discussion of alternative habitat restoration or creation sites.
2. Provide a more comprehensive review of entities that are potential non-construction users of dredged material.

Comment 11

The cumulative impacts do not fully address the potential salinity effects of construction of the Sacramento River Deep Water Ship Channel (SRDWSC) and the San Francisco Bay to Stockton Deep Water Ship Channel (DWSC).

Basis for Comment:

The combined salinity effects of deepening both DWSCs meet the National Environmental Policy Act (NEPA) (40 CFR § 1508.7) and California Environmental Quality Act (CEQA) (CCR Section 15355) definitions of cumulative effects. However, the cumulative impacts of deepening both DWSCs are not addressed in SEIS/SEIR Section 4.5.2, Summary of Cumulative Effects Identified.

Appendix L demonstrates that the salinity effects on the X2 distance and environmental and water supply metrics caused by deepening the SRDWSC are increased when the San Francisco Bay to Stockton DWSC is also deepened. The water quality objectives for municipal and industrial, agricultural, and fish and wildlife habitat beneficial water supply uses are violated (or are more frequently or more severely violated) when both DWSCs are deepened relative to deepening only the SRDWSC or implementing the no action alternative. These impacts are described in Sections 5.7.1, 5.7.2, and 5.7.3 of Appendix L. As an example, Figure 5.7-25 (p. 610) of Appendix L shows that a water quality objective (EC levels during the period from October through April) for agricultural water supply beneficial use is not met to a greater extent by deepening both DWSCs.

Significance – Medium:

Because the cumulative impacts of deepening both DWSCs are not described, the SEIS/SEIR does not satisfy NEPA or CEQA requirements for addressing cumulative impacts.

Recommendation for Resolution:

1. Utilize the information contained in Appendix L to provide a comprehensive description of the cumulative impacts of deepening the Sacramento River and San Francisco Bay to Stockton DWSCs in terms of environmental and water supply metrics.

Comment 12

The assumption underlying the salinity modeling and determination of the X2 distance analysis and the types and levels of impacts does not thoroughly document a determination of no significant adverse impact.

Basis for Comment:

The SEIS/SEIR concludes there is no significant impact of project induced changes in the X2 distance based on the minimal change in the median increase in the X2 distance based on the worst-case scenario of sea level rise. The Panel believes that two aspects of the evaluation of impacts to the X2 distance should be addressed more thoroughly: the impacts on the X2 distance if future sea level rise is less than 2 feet and the impacts on changes in the X2 distance in terms of water supply and environmental impacts.

It is not clear how the impact on the X2 distance would change if the rise in sea level was less than the assumed 2 feet. Comparison of the graphs in Appendix L showing the cumulative numbers of days with changes in the X2 distance for year 0 (representing no sea level rise) and year 50 (representing a 2-foot sea level rise) indicates that higher sea levels reduce the impact of channel deepening for the SRDWSC deepening alone and for deepening of both the SRDWSC and the San Francisco Bay to Stockton DWSC. Once the channel is deepened, salinity increases should be immediate and uninfluenced by sea level rise, while the significance of the worst-case sea level rise on X2 would not be experienced until year 50. The SEIS/SEIR lacks descriptions of the relative impacts of channel deepening vs. sea level rise on the X2 distance.

Section 3.1.2.4 concludes that there is no significant impact to the X2 distance because the median change in X2 is only 0.11 kilometer (km) in year 0 and 0.17 km in year 50. However, Figure 5.3-16 in Appendix L shows that with deepening of the SRDWSC alone, there are 100 days in the year when the shift in the X2 distance is about 0.3 km and 10 days when the X2 shift is about 0.8 km. These shifts are more than doubled as a result of deepening both the SRDWSC and the San Francisco Bay to Stockton DWSC.

Appendix L describes how channel deepening would impact environmental and water supply objectives. Many of the environmental objectives are seasonal. The SEIS/SEIR does not address the impacts of temporal changes in the X2 distance or salinity levels. The significance of environmental impacts cannot be determined simply on the basis of the change in X2 distance; the seasonality of changes in relation to habitat requirements of affected species must also be considered.

The UnTRIM modeling was based on the assumption that the water agencies operate in accordance with guidelines in the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) biological opinions and the Water Rights Decision 1641. As described in Appendix L, these guidelines require the water agencies to mitigate undesirable shifts in the X2 distance. The water agencies are required to either reduce withdrawals or increase discharges to push the X2 distance back. The SEIS/SEIR does not describe the impacts on the water agencies that result from the increased

requirement to mitigate X2 distances that would occur with channel deepening. These impacts should be described to indicate whether they cause financial impacts, water supply shortages, etc. In its comments on the SEIS/SEIR, the California Department of Water Resources indicated that movement of the X2 distance by only 0.1 km could result in additional discharges of water that could result in up to a \$5 million annual cost.

Significance – Medium:

The conclusion in the SEIS/SEIR of no significant impact of changes in the X2 distance cannot be supported without addressing the impacts in terms of environmental and water supply impacts.

Recommendation(s) for Resolution:

1. Evaluate how the alternatives would impact X2 distances based on the assumption of a 2-foot sea level rise vs. a smaller sea level rise.
2. Present the results of an evaluation of temporal changes in the X2 distance on the delta smelt and other potentially impacted aquatic species.
3. Present the results of an evaluation of impacts of changes in the X2 distance on water supply availability and/or additional costs incurred by water agencies.

Comment 13

Several environmental mitigation measures are not sufficiently documented and justified to support a conclusion that an identified significant adverse impact would be avoidable.

Basis for Comment:

Measures that have the potential to mitigate for various adverse environmental impacts are identified throughout the document. However, additional documentation is needed to support the conclusion that impacts would be less than significant as a result of mitigation in the following cases:

- Water quality impacts from release of methylmercury in dredge disposal site return water are proposed to be mitigated through measures such as centrifuging return water or impounding dredge water to preclude discharge, but the practicability of these approaches is not documented.
- Avoidance of mechanical damage to special-status or protected bottom-feeding fish such as green sturgeon includes maneuvering of the dredge cutterhead, but no information is provided to show that this mitigative measure is practicable.
- Compensatory mitigation for loss of 1.33 acres of high-quality wetlands is proposed to consist of preservation of 1.33 acres of existing wetlands, although this level of mitigation is not shown to balance the loss of wetland functional value. The USFWS Region 8 has a goal of no net loss of acreage, but Table 6 in Appendix D cites “no net loss of in-kind habitat value or acreage.”
- Air emissions from construction equipment are described as a potentially significant adverse impact. Proposed mitigation includes mechanical modifications to off-road equipment, to arrive at a conclusion of a less than significant impact; however, no description of the effectiveness of such modifications is provided.
- Approval has been sought for a 6-month construction period, but such an extension could interfere with nesting of certain bird species in disposal sites. Mitigation for this impact is described as including surveys of nesting activity to avoid nesting birds, but mitigation may also need to include delay of disposal site use.

Significance – Medium:

Conclusion statements regarding potentially significant adverse impacts must be documented, in compliance with Council on Environmental Quality (CEQ) guidelines. Data or other supporting information are necessary to support statements that proposed mitigation measures would be practicable and would mitigate adequately for acknowledged impacts.

Recommendation(s) for Resolution:

1. Provide results of any studies or observations of dredge water centrifugation or other techniques for removing methylmercury from return water
2. Provide documentation that dredge cutterhead maneuvering is effective in avoiding physical damage to bottom-feeding fish such as the threatened green sturgeon.
3. Provide habitat quality comparisons of wetlands that would be impacted vs. proposed preservation wetlands, to support the conclusion that acre-for-acre preservation adequately satisfies the federal government's goal of no net loss of habitat value.
4. Provide documentation of demonstrated effectiveness of mechanical modifications to off-road construction equipment, to reduce air emissions to a degree that air emissions would not violate air quality criteria.
5. Clarify the extent to which a 6-month construction period would overlap with nesting of protected bird species in proposed disposal sites.

Comment 14

Methylmercury could be an issue; however, the data presented are not conclusive, thereby resulting in uncertainty about the potential impacts of the proposed project's disposal plan.

Basis for Comment:

Mercury concentration in dredged material elutriates studied in 2009 exceeded the Waste Discharge Requirement at 12 of 44 sites in the existing channel (Table 35). As described in Section 3.1.3.1, exceedances in elutriates and bulk sediments were also reported during sediment testing in 2001 through 2003 and 2005 through 2007 (Table 26), but specific concentrations were not cited in the discussion of water quality impacts in Section 3.1.4.1.7. Because the maximum concentration observed in 2009 was below earlier sediment elutriate analyses (2001 through 2003 and 2005 through 2007), it was concluded that exceedances observed in 2009 would not have a significant adverse effect on water quality. However, the potential for methylation of mercury in dredged material resuspensions (in disposal sites) is not well-understood and results of ongoing studies of this process are not yet available. A 2009 study of methylation of mercury during maintenance dredging in the existing channel showed increased levels of methylmercury in disposal site waters, but results could not be compared to background conditions. Methylmercury is readily bioaccumulated and can be toxic to aquatic organisms. Bulk sediment analyses are described in Section 3.1.3.1.1 and included methylmercury; however, Table 27 does not include those data.

Significance – Medium:

Pending an evaluation of the results of ongoing methylmercury studies, it is difficult to assess the level of impact associated with mercury concentrations observed in sediment elutriates.

Recommendation(s) for Resolution:

1. Incorporate results of ongoing studies of methylation of mercury in the assessment of dredged material disposal effects on water quality.
2. Clarify the discussion of mercury exceedances in 2001 through 2003, 2005 through 2007, and 2009 channel sediment and elutriate chemistry studies.

Comment 15

The validity of the proposed 6-month construction work window does not support a conclusion that it could be used without causing harm to endangered species.

Basis for Comment:

Department of Interior stated in the public comments section of the SEIS/SEIR a concern regarding the acceptability of a 6-month work window. The SEIS/SEIR states that the proposed 6-month work window will be evaluated during Endangered Species Act (ESA) Section 7 consultation. Additionally, in its public comments on the SEIS/SEIR, the Coalition for a Sustainable Delta indicated that “The most recent report of the Interagency Ecological Program that addresses the pelagic organism decline in the Delta documents that delta smelt are consistently caught in the SRDWSC during the period proposed for dredging activities (IEP 2010).”

Historically, a 4-month work window has been deemed protective of endangered species through ESA coordination required for maintenance dredging of the SRDWSC. This indicates that a 4-month work window for channel deepening might also be appropriate. The SEIS/SEIR only describes impacts on the duration of construction associated with a 6-month work window vs. the 4-month window. There is no explanation of why a 6-month work window could be utilized without causing harm to endangered species.

Significance – Medium:

If a 6-month work window is not adequately protective of endangered species and a 4-month work window is required, the total construction duration of the project will increase from 4 to 6 years.

Recommendation for Resolution:

1. Initiate Section 7 consultation with the USFWS and NMFS to arrive at an acceptable work window.

Comment 16

The number or locations of pipelines that must be relocated, or the potential environmental impacts of pipeline relocation, have not been described in detail.

Basis for Comment:

The SEIS/SEIR describes a relocation plan (p. 436 and Figure 36a) for pipelines that cross under the existing channel at depths too shallow to provide a margin of safety for dredging (apparently less than 6 feet below the proposed channel depth). The SEIS/SEIR identifies two such pipelines that may need to be relocated. However, more recent assessment of project area pipelines indicates that as many as five pipelines would be moved (generally, relocated at greater depths below the channel bottom). Without a full and accurate assessment of this issue, it is not possible to address fully the potential for environmental impacts of pipeline relocation. Section 3.3.11 discusses the results of hazardous, toxic, and radioactive waste (HTRW) surveys of the channel area, and concludes that no HTRW sites would be affected by relocating pipelines. However, no evaluation is presented on the relocation sites or methods of relocation, or the effects of the relocation on sediment quality, water quality, or terrestrial habitats.

Significance – Low:

Updating information regarding required pipeline relocations would enhance the credibility of the document. Clarification of relocation methods would allow a more-thorough assessment of environmental impacts.

Recommendation(s) for Resolution:

1. Provide a final determination of the number and locations of pipelines to be relocated.
2. Evaluate aquatic and terrestrial resources at relocation sites and describe potential impacts of relocation methods on those resources.

Comment 17

The documentation was unclear regarding the need for, and the location and extent of, proposed channel widening.

Basis for Comment:

The documentation does not clearly explain why channel widening is being considered in the Alternative Formulation Briefing (AFB) read-ahead report or the SEIS/SEIR. A compelling explanation of the need for and the extent of widening should be included in both documents. The general location of widening is described in the report graphics, but there is no text explaining the extent of the proposed selective widening.

The AFB report includes channel-widening as a management measure, but it is included in all the channel-deepening alternatives. There is no discussion explaining why channel widening is not considered as a stand-alone alternative or why channel widening is a component of all alternatives.

Significance – Low:

Without a description of the need for channel widening, it is not clear how the plan formulation process arrived at the set of alternative plans that were evaluated.

Recommendation(s) for Resolution:

1. Describe why channel widening is necessary.
2. Explain why channel widening is a management measure but is not considered as a stand-alone alternative.
3. Explain why channel widening is included in all deepening alternatives.
4. Provide a narrative description of the extent of the selective channel widening included in the alternatives.

Comment 18

The document does not clearly state why a LRR was appropriate rather than a General Reevaluation Report (GRR), given the significant changes that have occurred since authorization.

Basis for Comment:

Deepening the SRDWSC to 35 feet was authorized in 1985. The SEIS/SEIR states that in 1998, Congress directed preparation of a LRR. However, as stated in the LRR AFB Report, Congress directed USACE to "...complete a reevaluation report ...". Such a reevaluation could be documented in either a LRR or a GRR. A GRR is appropriate when conditions and/or assumptions have changed since authorization.

Since the 1985 authorization of the SRCWSC deepening, several events have occurred that could change conditions and assumptions for planning. Critical habitat has been designated for at least five fish species that include all or parts of the SRDWSC, including the delta smelt. The 1995 Bay Delta Agreement stipulates operations by the water agencies based on the X2 line, which is impacted by the proposed project. Because of these substantial changes in factors that must be considered in plan formulation, it is not clear why an LRR is an appropriate document rather than a GRR.

Significance – Low:

The AFB Report does not clearly make a compelling case for why a LRR is an appropriate document for this reevaluation.

Recommendation(s) for Resolution:

1. Provide a chronology of authorizations, planning and engineering documentation, and construction for the SRDWSC to provide the reader with a better understanding of conditions that led to the 1998 authorization of a reevaluation. Note: all the required information is currently in the report, but it needs to be integrated into a concise chronology.
2. Describe changes that have occurred that affect the "planning environment" since the 1985 authorization.
3. Explain why the changes in the planning environment can be addressed in a LRR.

Comment 19

The descriptions of the benthic or planktonic communities do not include enough detail to characterize these aquatic resources in the project area.

Basis for Comment:

The document cites two previous studies or reports (2009 and 2010) concerning invasive benthic communities in the project area but provides no details of background species composition of benthic assemblages or pollution tolerance of benthos in the existing channel. Comparisons of benthic communities in the previously deepened channel segment, the channel to be deepened, and appropriate reference habitats would provide documentation needed to conclude that deepening would not have a significant adverse impact on benthic organisms.

The discussion of planktonic organisms is based on a study of plankton in the channel area, but does not describe species composition of either phyto- or zooplankton in the existing shipping channel. As a result, there are no data to describe the presence/absence of harmful algal bloom species (HABS) or potential effects of modest salinity increases on planktonic community composition (although such impacts are expected to be minor).

Significance – Low:

Site-specific information on benthic and planktonic organisms would enhance the description of the existing environment, although this information is not considered to be essential in identifying aquatic biology impacts of the project.

Recommendation(s) for Resolution:

1. Present species-level benthic and planktonic community information in Section 3.2.1.1.2 (Aquatic organisms).
2. Provide documentation of pollution-tolerant species occurrences and/or abundance in benthic and water column habitats.
3. Identify and summarize additional studies and publications that describe benthic and planktonic habitats and communities in the existing channel or in the immediate vicinity (if any).

Comment 20

The conclusion that groundwater will not be impacted due to the project is not supported by the information presented.

Basis for Comment:

The justification for concluding that groundwater will not be impacted is based upon the fact that groundwater wells for potable water are “on the order of hundreds of feet deep due to the thickness of the overburden.” This is not adequate evidence that there would be no impact to groundwater as a result of channel deepening. Without additional information about the geology of the area and existing groundwater conditions, it is not possible to make definitive assessments about the ability of the overburden to prevent encroachment of additional saltwater.

Significance – Low:

While the Panel believes that the likelihood of groundwater contamination is minimal, the issue is sufficiently important to merit a more thorough technical examination.

Recommendation(s) for Resolution:

1. Provide basic geological and groundwater information for the area.
2. Complete a qualitative assessment of the potential for project-induced groundwater contamination for all alternatives.
3. Provide a narrative description of the potential for each alternative to impact groundwater quality.

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APPENDIX B

Final Charge to the Independent External Peer Review Panel

as

Submitted to USACE on August 3, 2011

on the

SRDWSC Documents

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**Charge Questions and Guidance to the Peer Reviewers
for the
Independent External Peer Review of the Independent External Peer Review of the
Sacramento River Deep Water Ship Channel, California Limited Reevaluation Study and
Supplemental Environmental Impact Statement**

BACKGROUND

The Sacramento River Deep Water Ship Channel is a 46.5-mile long channel that lies within Contra Costa, Solano, Sacramento, and Yolo Counties and serves the marine terminal facilities at the Port of West Sacramento. The project was originally authorized by the River and Harbor Act of 1946 (Pub. L. 525, 79th Congress, 2nd Session) and reauthorized in the Water Resources and Development Act of 1986. Construction of a 30-foot deep channel was completed in 1963. The project was previously analyzed in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) in a Feasibility Report and Final Environmental Impact Statement (FEIS) in 1980 and a General Design Memorandum (GDM) and Supplemental Environmental Impact Statement (SEIS) prepared in March 1986.

Construction of a 35-foot deep channel was initiated in 1989, and construction from River Mile 43 to 35 (approximately 8 miles of the channel nearest the Port of West Sacramento) was completed. Work was suspended in 1990 at the request of the Port of West Sacramento, due to the inability to continue financing its share of the project costs. Two of the six construction contracts, from River Mile 43 to 35 (approximately 8 miles of the channel nearest to the Port), have been completed. In 1998, Congress directed the U.S. Army Corps of Engineers (USACE) to complete a reevaluation of the incomplete project that would serve as a basis for a possible recommendation to resume construction. The San Francisco District has prepared a Project Management Plan (PMP) describing the scope of that Limited Reevaluation Study (LRS), which will primarily include a review of the project economics, the preparation of environmental documentation (Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report), and providing an updated construction cost estimate.

The purpose of the Supplement Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR) is to resume construction of navigational improvements in the Sacramento River Deep Water Ship Channel. The objective is to increase navigational efficiency, improve safety, and improve the economic benefits in the movement of goods by deeper draft vessels. The SEIS/SEIR will update the 1980 FEIS and the 1986 SEIS and evaluate changes to the condition of the study area.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Sacramento River Deep Water Ship Channel, California Limited Reevaluation Study and Supplemental Environmental Impact Statement (hereinafter: Sacramento River Ship Channel LRS IEPR) in accordance with the Department of the Army, USACE, Water Resources Policies and Authorities' *Civil Works Review Policy* (EC 1165-2-209) dated January 31, 2010, and the

Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* released December 16, 2004.

Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

The purpose of the IEPR is to assess the “adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (EC 1165-2-209; p. D-4) for the Sacramento River Ship Channel LRS documents. The IEPR will be limited to technical review and will not involve policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) with extensive experience in engineering, economics, environmental, and plan formulation issues relevant to the project. They will also have experience applying their subject matter expertise to deep draft navigation.

The Panel will be “charged” with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-209, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The panel members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Documents for Review

The following documents are to be reviewed by designated discipline:

| Document Title | No. of Pages | Required Disciplines | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|-----------|---------------|------------------|
| | | Engineer | Economics | Environmental | Plan Formulation |
| Draft SEIS/SEIR | 566 | X | X | X | X |
| Sacramento River Deep Water Ship Channel – Draft Limited Reevaluation Report (LRR) Alternative Formulation Briefing Report | 109 | X | X | X | X |
| Appendix A. Records of Decision from past EIS and SEIS | 9 | X | X | X | X |
| Appendix B. 404(b)(1) Alternative Analysis | 45 | | | X | |
| Appendix C. Fish and Wildlife HEP | 82 | | | X | |
| Appendix D. Draft Fish and Wildlife Coordination Act Report | 59 | | | X | |
| Sacramento River Deep Water Ship Channel Limited Reevaluation Report (LRR) National Economic Development (NED) Analysis of a Channel Deepening Project [DRAFT] July 11, 2011 | 98 | X | X | | X |
| Appendix F. Navigation Study for Channel Improvement Report | 129 | X | | | |
| Appendix F Supplemental – Ship Simulation Report | 38 | X | | | |
| Appendix G. Utility Investigation | 52 | X | | | |
| Appendix H. Beneficial Use of Dredged Material Report | 202 | X | | X | |
| Appendix I. Dredged Material Placement Site Table | 4 | X | | X | |
| Appendix J. Hydraulics and Hydrology Report | 61 | X | | X | |
| Appendix K. Channel Modeling | 72 | X | | X | |
| Appendix L. Alternatives Modeling Report ^a | 836 | | | X | X |

| Document Title | No. of Pages | Required Disciplines | | | |
|------------------------------------------------------------|--------------|----------------------|------------|---------------|------------------|
| | | Engineer | Economics | Environmental | Plan Formulation |
| Appendix M. Sediment Quality | 2947 | X | | X | X |
| Appendix N. Water Quality Monitoring Reports | 55 | | | X | |
| Appendix O. Vegetation Report | 191 | | | X | |
| Appendix P. Air Quality Analysis | 101 | | | X | |
| Appendix Q. Hazardous, Toxic, and Radioactive Waste Report | 1775 | | | X | |
| Public Comments | <50 | X | X | X | X |
| Total Review Pages | 7,481 | 4,337 | 832 | 7,164 | 4,615 |

^a Decreased by 93 pages, as the first 93 pages are the cover and Table of Contents

Documents for Reference

- USACE guidance Civil Works Review Policy (EC 1165-2-209) dated January 31, 2010
- CECW-CP Memorandum dated March 31, 2007
- Office of Management and Budget's Final Information Quality Bulletin for Peer Review released December 16, 2004.

SACRAMENTO RIVER SHIP CHANNEL LRS IEPR FINAL SCHEDULE

| TASK | ACTION | DUE DATE |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------|
| Conduct Peer Review | Battelle sends review documents to Panel | 8/10/2011 |
| | Battelle convenes kickoff meeting with Panel | 8/11/2011 |
| | USACE/Battelle convenes kickoff meeting with Panel | 8/11/2011 |
| | Battelle convenes mid-review teleconference for Panel to ask clarifying questions of USACE | 8/24/2011 |
| | Panel members complete their individual reviews | 9/2/2011 |
| Prepare Final Panel Comments and Final IEPR Report | Battelle provides Panel merged individual comments and talking points for Panel Review Teleconference | 9/7/2011 |
| | Battelle convenes Panel Review Teleconference | 9/8/2011 |
| | Final Panel Comments finalized | 9/26/2011 |
| | Battelle provides Final IEPR Report to Panel for review | 9/27/2011 |
| | Panel provides comments on Final IEPR Report | 9/28/2011 |
| | Battelle submits Final IEPR Report to USACE | 9/30/2011 |

| TASK | ACTION | DUE DATE |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------|
| Comment/ Response Process | Battelle convenes teleconference with Panel to review the Comment Response Process (if necessary) | 10/3/2011 |
| | USACE provides draft Evaluator Responses to Battelle | 10/13/2011 |
| | Battelle provides the Panel the draft Evaluator Responses | 10/14/2011 |
| | Panel members provide Battelle with draft comments on draft Evaluator Responses (i.e., draft BackCheck Responses) | 10/19/2011 |
| | Battelle convenes teleconference with Panel to discuss draft BackCheck Responses | 10/20/2011 |
| | Battelle convenes teleconference with Panel and USACE to discuss Final Panel Comments and draft responses | 10/21/2011 |
| | USACE inputs final Evaluator Responses in DrChecks | 10/28/2011 |
| | Battelle provides Evaluator Responses to Panel | 11/1/2011 |
| | Panel members provide Battelle with final BackCheck Responses | 11/4/2011 |
| | Battelle inputs the Panel's BackCheck Responses in DrChecks | 11/7/2011 |
| | Battelle submits pdf printout of DrChecks project file | 11/8/2011 |

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the Sacramento River Ship Channel LRS IEPR documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, properly documented, satisfies established quality requirements, and yields scientifically credible conclusions. The Panel is being asked to provide feedback on the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (by report section or Appendix) are included in the general charge guidance, which is provided below.

General Charge Guidance

Please answer the scientific and technical questions listed below and conduct a broad overview of the Sacramento River Ship Channel LRS IEPR documents. Please focus your review on the review materials assigned to your discipline/area of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note the following guidance. Note that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-209; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.

2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.
3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluating economic or environmental impacts of the proposed project.
4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.
5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.
6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable
7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also please **do not** comment on or make recommendations on policy issues and decision making. Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Independent Technical Review.
2. Please contact the Battelle Project Manager (Lynn McLeod, mcleod@battelle.org; 781-952-5381) or Program Manager (Karen Johnson-Young (johnsonyoungk@battelle.org)) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager, Karen Johnson-Young (johnsonyoungk@battelle.org) immediately.
4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

Please submit your comments in electronic form to Lynn McLeod mcleod@battelle.org; 781-952-5381 no later than September 2, 2011, 10 pm ET.

**Independent External Peer Review
of the
Sacramento River Deep Water Ship Channel,
California Limited Reevaluation Study and
Supplemental Environmental Impact Statement**

Final Charge Questions³

1. Are cumulative impacts of deepening of the Stockton Deep Water Ship Channel sufficiently addressed?
2. Is the pattern of water flow, especially the potential for saltwater intrusion as a result of the proposed project (secn 3.1.2.1.6 – 3.1.2.4) adequately explained (both text and figures)? If not what could be done to enhance the explanations?
3. Are CEQA issues differentiated from NEPA issues and handled adequately throughout the document?
4. Are the assumptions that underlie the economic, engineering, environmental, hydrologic, real estate, and plan formulation analyses sound?
5. Comment on the adequacy and acceptability of the economic, engineering, and environmental methods, models and analyses used.
6. In general terms, are the planning methods sound?
7. Are the interpretations of analysis and conclusions based on the analysis reasonable?
8. Comment on the comprehensiveness of the discussion of the project's purpose and scope.
9. What other information, if any, should be included?
10. Comment on the descriptions of the existing navigation project. Has sufficient information been included to fully understand the present navigation-related conditions at the project site?
11. Comment on whether the problems with the Federal navigation channel are accurately and comprehensively described.
12. Has adequate public, stakeholder, and agency involvement occurred to determine all issues of interest and to ensure that the issues have been adequately addressed?

³ USACE sent an email on July 28, 2011 that organized and clarified the list of charge questions by section(s) in the review documents in order for the Panel to focus their review. These charge question assignments will be provided to the Panel in the comment response form at the beginning of their review.

13. Have the prior studies, reports, and existing projects been accurately and comprehensively described?
14. Is the information presented regarding vessel size sufficient for evaluating the requirements for the port expansion? Please explain.
15. Does the information presented support the problem identified?
16. Comment on the extent to which the existing conditions are clearly and adequately described.
17. Comment on the completeness of the sediments discussion, focusing on how the geology of the area could affect channel depth increases.
18. Comment on whether the water resources in the project area have been accurately described.
19. Comment on the thoroughness and accuracy of the marine and estuarine resource information presented.
20. Comment on the conclusion that the various fish communities present tolerate wide ranges of salinities.
21. Based upon the documented historical adverse impacts of channel deepening on terrestrial resources, are the discussions presented sufficient to support channel modification?
22. Is the information provided adequate to characterize wetland resources within the study area.
23. Comment on whether the special status species and resource areas in the project area have been accurately described.
24. Discuss whether the models used to determine the without-project condition projections are sufficient and accurate, including the assumptions on market size.
25. Are the forecast of future changes to the world fleet sufficient?
26. Does the information presented supports the problem identified under the without-project condition?
27. Comment on the adequacy of the socio-economic, environmental, and cultural without-project condition summaries in terms of data quality, timeliness of the data, and breadth of information covered.
28. Are there any additional problems that should be considered when deepening this project? If so, what and why?

29. Can you identify any other opportunities that may arise from the execution of the project? What and why?
30. Are there any other constraints or objectives that should be considered as part of the project that will be important to reaching the projects final goals?
31. Do the management measures adhere to the Plan Formulation Criteria? Do they appropriately address the needs and objectives of the project?
32. Comment on the completeness and reasonableness of the project-specific criteria used in the comparison of alternatives.
33. Are the components of the final channel deepening plans sufficient for a comprehensive analysis?
34. Based on your experience, is the incremental approach for evaluating channel depth consistent with other similar evaluations?
35. Comment on the assessment of salinity intrusion in the Delta.
36. Comment on whether enough information exists to make an assessment about the impacts to groundwater from the subject project.
37. In your professional opinion was sufficient credence given to the current and future shoreline erosion issues?
38. Comment on the assessment that no significant adverse impacts to air quality would result from the implementation of the proposed deepening alternatives.
39. In general, are the aquatic habitat impacts anticipated under the various harbor deepening alternatives reasonable and adequately described? If not, explain.
40. Comment on whether the cumulative effects of the project and other previous and future projects in the area have been accurately described. What, if any, additional information should be included?
41. Comment on the ability of the proposed mitigation plans to address adverse impacts from the project.
42. Comment on the appropriateness and comprehensiveness of the identified mitigation plans considered for addressing predicted impacts arising from the project.
43. Do the mitigation plans appear to be reasonable and fully account for the likely functional losses?
44. Comment on the clarity of the common features of the alternative plans and the incremental alternatives.
45. Is the economic benefit calculating process consistent with industry-wide practice?

46. Comment on the thoroughness and accuracy of the un-mitigated project impacts.
47. Are the conclusions regarding the type and projected magnitude of adverse impacts to wetland resources within the study area reasonable?
48. Comment on the assumptions and forecast methods used to calculate economic benefits.
49. Comment on the reasonableness of the scenarios used to calculate economic benefits.
50. Comment on the method used to calculate the National Economic Development (NED) benefits. Comment on whether including benefits accruing to foreign carriers as NED benefits is adequately justified.
51. Using the information provided, comment on whether the benefits are adequately shown to be NED, rather than Regional Economic Development (RED) benefits (shifting freight volume from other US harbors capable of handling deeper draft ships).
52. Comment on the assumptions and methods used to project fleet sizes at alternative project depths.
53. Comment on the assumptions used in the calculation of present value of benefits.
54. Comment on whether the range of growth scenarios is adequate to account for uncertainty in the estimates.
55. Comment on the extent to which the NED benefits summary is consistent with and justified by the economic analysis.
56. Are the channel widths, including passing lanes and turns, adequate for the design vessel? If not, explain.
57. Comment on the adequacy and accuracy of the assumptions, models, and data used in the hydrodynamic modeling.
58. Discuss whether all reasonable nonstructural and structural management measures to address the problem were identified and adequately considered.
59. Are risks and uncertainties of benefits, costs, and impacts adequately addressed and described? If not, what is missing?
60. Comment on the completeness of the no-action, non-structural and structural plans.
61. Comment on the method used to determine which alternatives would be moved forward for detailed screening.

62. Comment on the need for and objective of the action described. Is it adequately described? What additional information, if any, should be discussed?
63. Are the planning objectives reasonable and complete? If not, why?
64. Comment on the applicability, accuracy, and completeness of the hydrodynamic model with regard to predictions of any significant changes in impacts based on the alternatives and mitigation measures.
65. Does the proposed alternative meet the stated needs and objectives of the project to develop an implementable plan that is engineering, economically, and environmentally sound? Please describe.
66. Comment on the accuracy and comprehensiveness of the discussion of the project area's geology.
67. Comment on the accuracy and comprehensiveness of the sediment quality information and data provided.
68. Comment on the accuracy and comprehensiveness of the discussion of the project area's air resources.
69. Is the discussion regarding indicators of potential project-induced impacts to fishery resources in the channel adequate and accurate?
70. Comment on the thoroughness of the studies characterizing the planktonic and benthic communities located within the project area.
71. Comment on the accuracy of the Essential Fish Habitat (EFH) information for the project area.
72. Comment on the accuracy of the information presented related to the potential presence and potential impact to EFH located within the project area.
73. Comment on the accuracy and comprehensiveness of the discussion of the invasive species currently present in the project area.
74. Based on your experience on other projects, are the conclusions regarding the type and projected magnitude of adverse impacts reasonable? What additional information, if any, should be included?
75. Comment on the whether the notations of no adverse impact have been adequately justified.
76. Comment on the adequacy of the assessment that no significant adverse impacts to the project area's sediments are anticipated from implementation of the project alternatives.

77. Comment on the assessment that the proposed harbor deepening would have minimal adverse impacts to groundwater.
78. Comment on the assessment that minimal impacts are expected to water supply from the proposed deepening alternatives.
79. Discuss whether the summary of potential impacts to the marine and estuarine resources adequately and accurately portrays these impacts.
80. Comment on the relevance and detail of information regarding the potential impacts of the various types of dredging operations on marine resources.
81. Discuss whether the conclusion that the proposed deepening is not expected to impact fish or shellfish through direct entrainment or impacts to their feeding areas is accurate.
82. Comment on the conclusion that the impact of dredging operations on benthic communities located within the project area will be temporary.
83. Discuss the adequacy of the discussion regarding the differences between the estimated impacts to the fisheries with and without mitigation.
84. Comment on the suitability of USACE proposed wetland mitigation actions.
85. Discuss the adequacy of the assumptions used to determine that water quality impacts are not significant.
86. Are the conclusions regarding the type and projected magnitude of adverse impacts reasonable?
87. Comment on whether the threats and impacts to the threatened and endangered species in the areas are accurately and comprehensively described. What, if any, additional information should be included?
88. Comment on the adequacy of the approach used to identify cultural resources, evaluate potential impacts of the project on such resources, and avoid potential impacts.
89. Comment on the extent to which the summary conclusion is justified by the evidence presented.
90. Comment on the adequacy of the approach used to identify and screen the proposed beneficial use opportunities.
91. Has sufficient information been presented to support the identification of the beneficial uses?

92. Comment on the adequacy of the assumptions used to determine that no significant adverse impacts to the project area are expected from noise.
93. Comment on the adequacy of the assessment that dredging in the navigation channel is not expected to cause significant adverse impacts to community and regional growth.
94. Comment on the adequacy of the assessment that the proposed channel deepening is not expected to increase risk from invasive species through ballast water.
95. Is the determination that the proposed action would not result in adverse impacts from hazardous or toxic wastes adequately described?