

Battelle After Action Review of Independent External Peer Reviews – Type I and Model Reviews

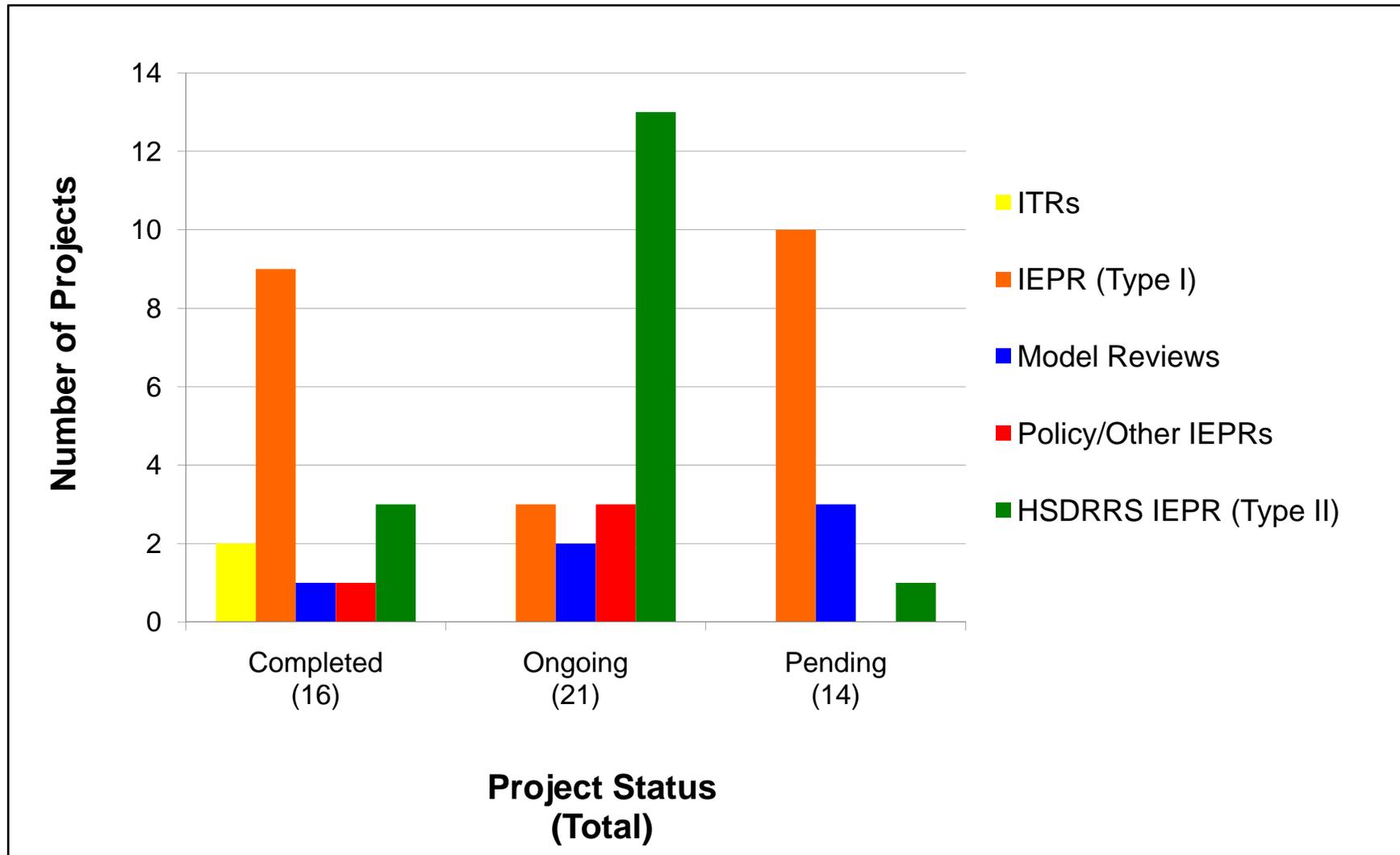
Briefing to Planning Chiefs'
Workshop – July 29, 2009
Ft. Worth, TX

Karen Johnson-Young, PMP

Agenda

- Independent External Peer Review (IEPR) Experience
- Costs
- Keys to Success
- IEPR Process
- After Action Review (AAR) Summary
- Panel Member Survey and Feedback
- Questions

IEPR Experience Summary



Cost for Conducting IEPRs

- The cost is dependent on several factors which are unique to each project
 - Panel
 - Number of panel members (3-8)
 - Average charge out rate for panel members (\$200/hr)
 - Hours for each panel member (not including site visits)
 - IEPR 80-85 hours
 - Model certification review 70-85 hours
 - Site visits
 - Comment/Response Process
 - Review documents
- Battelle costs are typically 40-45% of total IEPR project costs
 - Comment/response process has increase Battelle costs as compared to IEPRs conducted prior to this process
 - Each project has it's own unique challenges that could affect the total cost
 - In most cases Battelle's proposal is an estimate based on experience, but without having the review documents in hand

Summary Details of Selected IEPRs

Title	PCX	District	Number of Reviewers	Contract Cost (000s)
Mississippi Coastal Improvement Plan (MsCIP) External Peer Review for the Comprehensive Plan (recently completed)	CSDR	SAM	7	\$ 162
External Peer Review of the Sabine-Neches Waterway (SNWW) Channel Improvement Project (CIP) Draft Feasibility Report and Draft Environmental Impact Statement	DDN	SWG	8	\$ 282 *
External Peer Review Mid-Chesapeake Islands (Mid-Bay) Ecosystem Restoration	ECO	NAB	4	\$ 121 *
Boston Harbor Navigation Improvement Project, Massachusetts, Feasibility Study	DDN	NAD	4	\$ 160*
EPR and Model Certification, Tamiami Trail Limited Re-Evaluation Report	ECO	SAJ	4	\$ 171*
External Peer Review for Freeport Harbor Texas Feasibility Report	DDN	SWG	5	\$ 142
External Peer Review for the Calcasieu River and Pass, Louisiana Dredged Material Management Plan and Supplemental Environmental Impact Statement	DDN	MVN	4	\$ 135
External Peer Review for Savannah Harbor Expansion Project General Reevaluation Report (ongoing)	DDN	SAS	7	\$ 267
L-31N Seepage Management Pilot Project, Draft Integrated Pilot Project Design Report Environmental Assessment (recently completed)	ECO	SAJ	3	\$ 102
Clear Creek, TX IEPR and model certification (ongoing)	FRM	SWG	6 (IEPR), 4 (model)	\$ 293 ** (\$176; \$117)
Common Features General Re-Evaluation Report (ongoing)	FRM	SPK	5	\$ 187 **
WVA Model Certification (ongoing)	ECO	MVN	6	\$ 131**
Jacksonville (Mile Point) Harbor (just starting)	DDN	SAJ	4	\$ 160

*Pre-comment/response process
 **average charge out rate <\$200

Keys to Success

- Understanding the purpose and need
 - Use national experts who can provide expert opinions, which are the critical components of each review
 - Familiarity with history of external peer review pre-WRDA as well as WRDA 2007, and EC 1105-2-410
 - Produce a final report that provides implementable, reasonable, and timely comments and recommendations, and that is consistent with how USACE conducts projects
- Experienced Management and Technical Team
 - Managed as a program with an experienced program/project manager (Johnson-Young) and deputy project managers
 - Excellent relationship and good communication with PCX PM
 - Experienced and well-trained staff assigned to lead recruiting, subcontracting, charge question development, report development, DrChecks input
 - Scientists and engineers from diverse backgrounds of relevant technical expertise

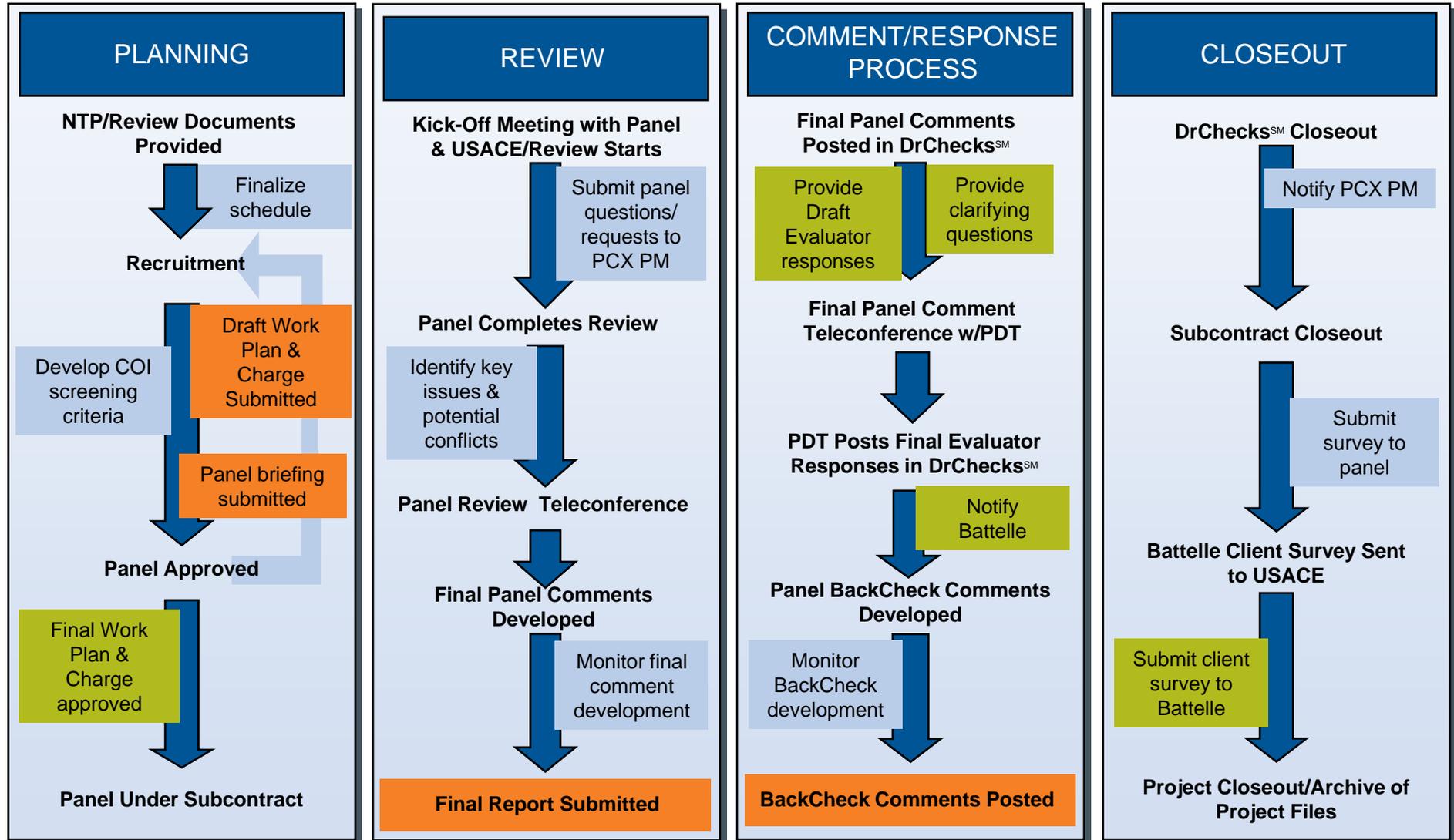
Keys to Success (continued)

- **Familiarity with DrChecks**
 - Developed training program for DrChecks
 - Trained Type II IEPR panel members to directly input comments
 - Developed format for input of Type I IEPR final comments
- **Battelle Senior Management Commitment**
 - Senior Management understands the importance and priority of these projects
 - Dedicated contracting staff to ensure rapid turnaround on panel member contracts
 - Commitment by resource managers to provide staff

Keys to Success (continued)

- Well-Established Process to Meet an Aggressive Schedule
 - Multiple projects conducted simultaneously using established protocols, templates, regular communications
 - Backup plan always ready to implement
 - Reliable sources to quickly identify and screen candidate panel members
 - Detailed written briefing from Battelle provides panel members with guidance throughout the process
 - Work plan, charge questions, and panel member recruitment prepared/conducted concurrently
 - Conflict resolution/consensus-building/facilitation skills required. For example, the 3-hour panel review teleconferences to discuss and develop final panel comments include 3 to 10 panel members from diverse backgrounds
 - Quality Control incorporated through all phases of the review to ensure that no critical input from panel is missed or misrepresented
 - Continued improvement of process through After Action Reviews with team

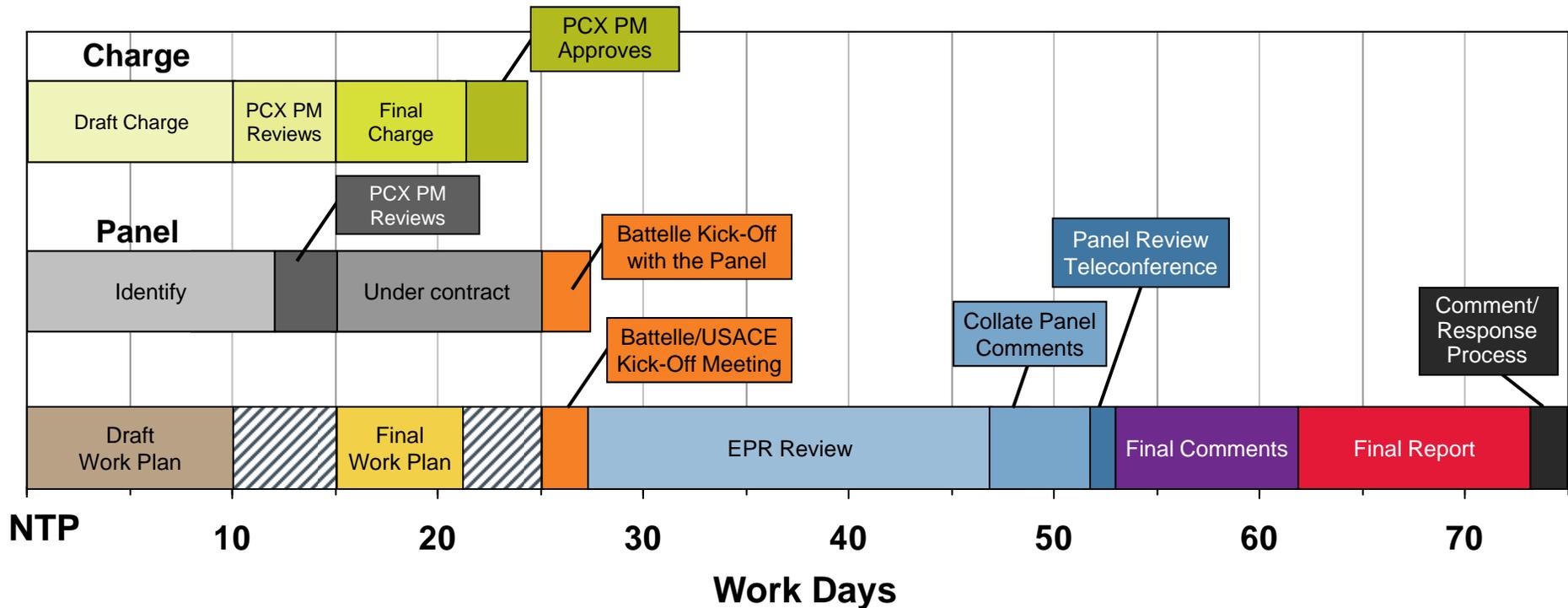
Type I IEPR Process



Key to Graphic Colors: Deliverable USACE Activity Battelle Activity

Type I IEPR Process – Ideal Timeline

- 15 weeks/75 working days (not including comment/response process using DrChecks)



After Action Review (AAR) Summary Topics

- Communication
- Scope of Work
- Schedule
- IEPR Panel
- Conflict of Interest
- Charge Questions
- Final Panel Comments
- Final Report
- Comment/Response Process using DrChecks
- Model Review

AAR Summary – Communication

- Communications with the PCX PM have been very good
- Critical times when Battelle may need to reach the PCX PM for a very quick response include – throughout the IEPR process!
- We recommend that the PCX PM assign the PDT PM as a back up POC to get an issue resolved if the PCX PM is not available. The PDT PM will only provide information and not guidance on conducting the IEPR

AAR Summary – IEPR Scope of Work (SOW)

- Version control (i.e., date and/or version number) is critical
- Draft Schedule should include critical dates. Note: schedule is revised after NTP
- SOW Content
 - General Information/Background
 - Project Details – include specific challenges, issues associated with the project
 - Review Documents – a specific list of review documents to be provided for the IEPR should be included; Public Comments should be included, if available
 - Supporting Documents – clearly distinguished from review documents
 - Document Descriptions – generally describe the purpose of each of the documents provided
 - Task 1: Work Plan – should indicate that the final schedule, including the actual NTP, is to be included

AAR Summary – IEPR SOW (continued)

- SOW Content (continued)

- Task 2: Expert Peer Review Panel and Panel Contracts

- Should clearly state how many panel members will be selected versus how many candidates will be identified
- Candidates identified are usually 1.5-2X the number selected
- Need consistency in details on qualifications of panel members. For example:
 - *Hydraulic/Civil Engineer: The panelist should be an Engineer from academia, a public agency whose primary mission is centered on flood damage reduction, or an Architect-Engineer or Consulting Firm with a minimum 10 years demonstrated experience in flood risk management projects, particularly levee systems in an urban environment. Panelist should have a thorough understanding of the dynamics of open channel flow systems and floodplain hydraulics. Knowledge of the following models is required: HEC-FDA, MCACES, HEC-HMS, HEC-ResSim, HEC-RAS, HEC-2, FLO-2D, Groundwater Modeling System (GMS), and Utaxas4*
- Years of experience should be a range, such as 15-20 years rather than 15 years experience
- Indicate if it is acceptable for one panel member to cover more than one discipline
- Specific COI screening criteria
- Prepare SOW and subcontracts for panel members. Also includes modifications to subcontracts to extend period of performance or add additional hours

AAR Summary – IEPR SOW (continued)

- SOW Content (continued)
 - Task 3: Prepare and Finalize Charge to Panel
 - Provide any specific questions or focus areas included in the Project Review Plan
 - Task 4: Meetings
 - Project Kick-Off Meetings
 - USACE (PCX, PDT) and Battelle – Teleconference conducted within 1 week (ideally) of NTP to review and discuss the schedule, process, status of panel members, milestone dates, and other critical information necessary for the successful completion of the IEPR (1 hour)
 - Battelle and Panel – Teleconference is conducted within 5 days of the panel being under subcontract. The panel is introduced to each other, a brief description of the project is provided based on the SOW, and the peer review process, schedule and other critical information is reviewed
 - USACE (PCX, PDT), Battelle and Panel:
 - » Teleconference – PDT provides the panel a detailed project briefing and allows the panel to ask questions prior to starting the review. The PDT should provide a short PowerPoint presentation on the project or model prepared by the PDT (1 hour)
 - » In-Person – for two projects, the panel and Battelle will meet with the PCX and PDT in person for the Kick-Off Meeting and site visit

AAR Summary – IEPR SOW (continued)

- SOW Content (continued)
 - Task 4: Meetings (continued)
 - Civil Works Review Board – may be included as an optional meeting. To be initiated upon USACE notification and acceptability of Battelle proposed costs
 - Teleconference - includes Battelle and all panel members
 - In Person – includes Battelle and 1 panel member participating in D.C
 - Task 5: Independent External Peer Review Conducted
 - Panel member comments are referred to as individual not “verbatim”
 - Battelle identifies key issues and themes
 - Panel review teleconference is held to discuss common and conflicting opinions and not necessarily to reach “consensus”
 - Panel members are provided a directive to develop 4-part final comments

AAR Summary – IEPR SOW (continued)

- SOW Content (continued)

- Task 6: Final Independent External Peer Review Report

- Description of content should be consistent with requirements in EC 1105-2-410 (e.g., pages D6-D7)
- Panel's assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analysis used will be submitted to USACE
- Panel's opinion as to whether there are sufficient analyses upon which to base a recommendation for construction, authorization, or funding
- The report is submitted prior to the comment/response process to ensure independence of the panel's comments and objectivity of the process

AAR Summary – IEPR SOW (continued)

- SOW Content (continued)
 - Task 7: Comment/Response Process
 - Note this Task was previously named “Response to USACE Clarifying Questions”
 - DrChecks will be used to document the exchange of comments and responses by the PDT and the panel in response to the final panel comments
 - Comment/Response Teleconference –
 - PCX, PDT, Battelle, and the panel convene for a teleconference after submission of the Final IEPR Report and posting of final panel comments on DrChecks
 - Focus on PDT and panel reaching consensus (i.e., concurrence) on as many final panel comments as possible or agreeing to disagree
 - Discussion ensures that the PDT understands the intent of the comment and the panel understands the PDT’s draft Evaluator responses
 - Allows for panel to respond to clarifying questions
 - Evaluator (PDT) and BackCheck (panel) responses are to be entered into DrChecks indicating “concurrence” or “non-concurrence” after the teleconference

AAR Summary – Schedule

- Development of Final Schedule
 - The schedule in the scope is always revised to reflect the actual NTP and availability of review documents
- Average Schedule
 - 14-18 weeks from NTP to delivery of the Final IEPR report (not including comment/response process)
- Comment/Response Process
 - Adds 4-6 weeks to the schedule after submission of the Final IEPR report
 - The critical element is time for the PDT to post the Evaluator responses to the final comments and the panel to respond

AAR Summary – Schedule (continued)

- Critical Schedule Elements
 - 2-3 weeks to recruit panel members
 - 2 weeks to get panel members under contract
 - 3-4 weeks for panel to conduct review
 - 10 work days to develop final comments
 - 15 work days to prepare the final IEPR report
- Period of Performance
 - Extend 2-3 months beyond projected closeout date for DrChecks
 - Accommodate delays in review document delivery
 - Avoid contract modifications (Battelle and panel members) to extend the period of performance
- No Cost Extensions
 - Modifications to extend the period of performance have been necessary for many projects
 - Additional administrative costs to the project and disrupt the peer reviewers' work

AAR Summary – Schedule (continued)

- Examples of Impacts to the Schedule (after NTP):
 - Delay in receipt of review documents
 - Revisions to review documents
 - Feedback on recommended panel
 - Rejection of peer reviewer due to additional COI identified by USACE
 - Natural disasters
 - Panel request for additional information
 - Unable to reach the PCX or PDT to get a response to an urgent question
 - Coordination of panel and USACE schedules for teleconferences
 - Delay in PDT response (input to DrChecks) to final comments
 - Panel member conflict with revised schedule
 - Need for additional teleconferences

AAR Summary – Review Documents

- Types of Review documents
 - Draft Environmental Impact Statements
 - Draft Feasibility Studies
 - General Re-Evaluation Report
 - Limited Re-Evaluation Reports
 - Dredged Material Management Plans
 - Other reports, including technical appendices including without project conditions, with project conditions, existing conditions
- Document Transfer to Battelle
 - USACE ftp site – a challenge for Battelle due to Battelle IM security
 - Battelle file transfer site (recommended) – allows 3 files to be transferred at once <https://fx.battelle.org/>
 - SharePoint sites (also recommended) provide a secure web environment for downloading documents with multiple files including, appendices, maps, tables, and additional attachments

AAR Summary – Review Documents (continued)

- Submit all of the most up-to-date and complete documents; best to submit at the same time
- Provide a “road map” of the documents
 - “Road map” allows Battelle to cross-reference the individual files with the documents to be reviewed
 - Allows a quality control check that all documents/files have been received
- Indicate which documents are for review and which are supporting documents
- Provide a brief description of the purpose of each of the documents provided (if not included in SOW)

AAR Summary – Peer Review Panel

- Initiation of Recruitment
 - Having the documents available at NTP allows for most efficient recruitment process
 - Efficiently coordinate actual review schedule with panel member availability
 - Refine technical qualifications based on review documents
 - Develop COI screening criteria based on review documents
 - If recruitment begins before documents received (most common)
 - Projected dates used to estimate schedule may change
 - May need to replace panel member due to conflicts with actual versus projected schedule
 - May need to revisit potential COI scenarios after reviewing documents
- Panel Size – generally 3 to 7 panel members, but up to 10, depending on technical needs for the project. 3-5 members is optimal for coordination
- Panel Disciplines – economists and plan formulators with USACE experience are very limited and expensive; may require using “repeats” on projects
- Panel Education – usually a mix of PhD and MS, but some projects have requested PhDs only. Note: PhDs in some disciplines (e.g., economics, engineering) are very difficult to identify

AAR Summary – Peer Review Panel (continued)

- Panel participation
 - Beneficial to have one “repeat” panel member who serves to help educate the other panel members on the process
- Screening and COI
 - Need input from the USACE and/or approval of COI within days of NTP to avoid delays at time of panel review
 - COI information could be included in the SOW
- Technical qualifications
 - Beneficial to review the documents and make further suggestions technical qualifications
- Peer Review Panel Schedule
 - Panel members have been very flexible with their schedules and overcome major obstacles
 - Participation in Kick-Off from the hospital prior to having heart surgery
 - Hurricanes

AAR Summary – Peer Review Panel (continued)

- Peer Reviewer Performance
 - Panel members have been well qualified
 - Panels have worked together as a team
 - Some challenges initially getting a couple of panel members to understand the process
 - Developed standard materials with detailed guidance for Battelle Kick-Off meeting
- Sources of Peer Reviewers
 - Battelle expertise database (>600 technical experts in 27 disciplines)
 - Recommendations from business colleagues and previous peer reviewers
 - Advertisement (e.g., ASCE)
 - Targeted internet searches (e.g., professional society websites)

AAR Summary – Conflict of Interest (COI)

- General COI – we continue to use general screening information that includes the following:
 - Current USACE employee
 - Involvement in any *project name*-related projects
 - Current or future financial interests in *project name*-related contracts/awards from USACE
 - Other possible perceived conflict of interest for consideration (e.g., advocacy for or against *project name*)
- Specific COI – project-specific screening questions developed from the SOW, review documents, and input from the PCX PM
- The evaluation of COI screening responses and selection of panel members is the ultimate responsibility of Battelle
- The panel is required to sign a COI statement as part of their subcontract

AAR Summary – Charge Questions

- Development of Charge Questions – multi-disciplinary Battelle team with expertise similar to the panelists is used to develop the charge questions
- Types of Questions – Charge questions are focused on the engineering, economics and environmental analyses, methods, and models, as appropriate to the project study and review documents
- General Charge Question per EC 1105-2-410 (Appendix D, bottom D-6 (c (5))) - The panel is asked to provide an overall statement that addresses ***the panels' assessment of the adequacy and acceptability of the economic, engineering and environmental methods, models and analyses***
- Requested Charge Questions – per the request of PDT and/or Headquarters
- Revisions to Charge Questions due to changes in review documents
 - New charge questions sometimes needed if review documents are not in final form
 - To minimize the impacts of changes on the schedule and budget, PCX PM should provide a comparison of the original and revised review documents to identify if and where changes to the charge questions are needed
- Review and refinement – We examine the panel responses to charge questions on previous projects to continually fine-tune the questions

AAR Summary – Final Panel Comments

1. Individual comments in response to charge questions provided to Battelle in table format
2. Battelle reviews individual comments and prepares briefing of talking points on key issues, potential conflicts, positive feedback
3. Panel review teleconference convened
4. Final panel comment development directive provided to panel
5. Panel develops final panel comments with Battelle oversight
6. Four-part comments are developed that include the comment statement, the basis for the comment, the significance level of the comment, and recommendations for resolution.
7. Final panel comments are presented and summarized in Final IEPR Report

Final Panel Comment - Example

Comment 4:

The alternatives analysis ignores major non-structural alternatives.

Basis for Comment:

The DFR provides only a cursory discussion of non-structural alternatives. Management and non-structural measures are dismissed in a few cursory sentences on DFR page 35. The lack of serious analysis of management and non-structural measures is a significant report shortcoming.

The fact that the River Pilots do waive some ships requires investigation as to the future usage of such waivers or modification of the river rules, as does other relaxation of the river operation rules. The extent of lightening and lightening of ships, with attendant cost analysis, as a future non-structural alternative should receive attention. Can these be expanded and at what cost?

At a minimum, the DFR should analyze the following non-structural alternatives.

Relaxation of the Pilots' Rules. The pilots' rules restrict vessel operations but are not explained in any detail. On the surface, these rules appear more restrictive than elsewhere (e.g., on the Sabine-Neches Water Way), and their necessity is not justified in the report. The report notes that Freeport receives fewer large vessels than comparable channels. The role of the pilots' rules in this phenomenon must be analyzed.

Expanded "per job" deep draft vessel transits. The practice of allowing deeper-draft vessel transits on a "per job basis" indicates that such operations can be conducted safely. The DFR needs to explain and document this practice and analyze the potential for expanding this practice as non-structural alternative to channel deepening and widening, or as a means of accommodating larger vessels with less deepening and widening.

Increased lightening/lightening. The DFR does not explore the potential for increased lightening/lightening as a non-structural alternative to deepening and widening. The cost comparisons on pages 97 through 101 are difficult to comprehend and not sufficiently documented, leaving the relative cost-effectiveness of the various practices open to question. While lightening and lightening are in use already, *expansion* of those practices should be evaluated as an alternative to deepening and widening.

Final Panel Comment – Example

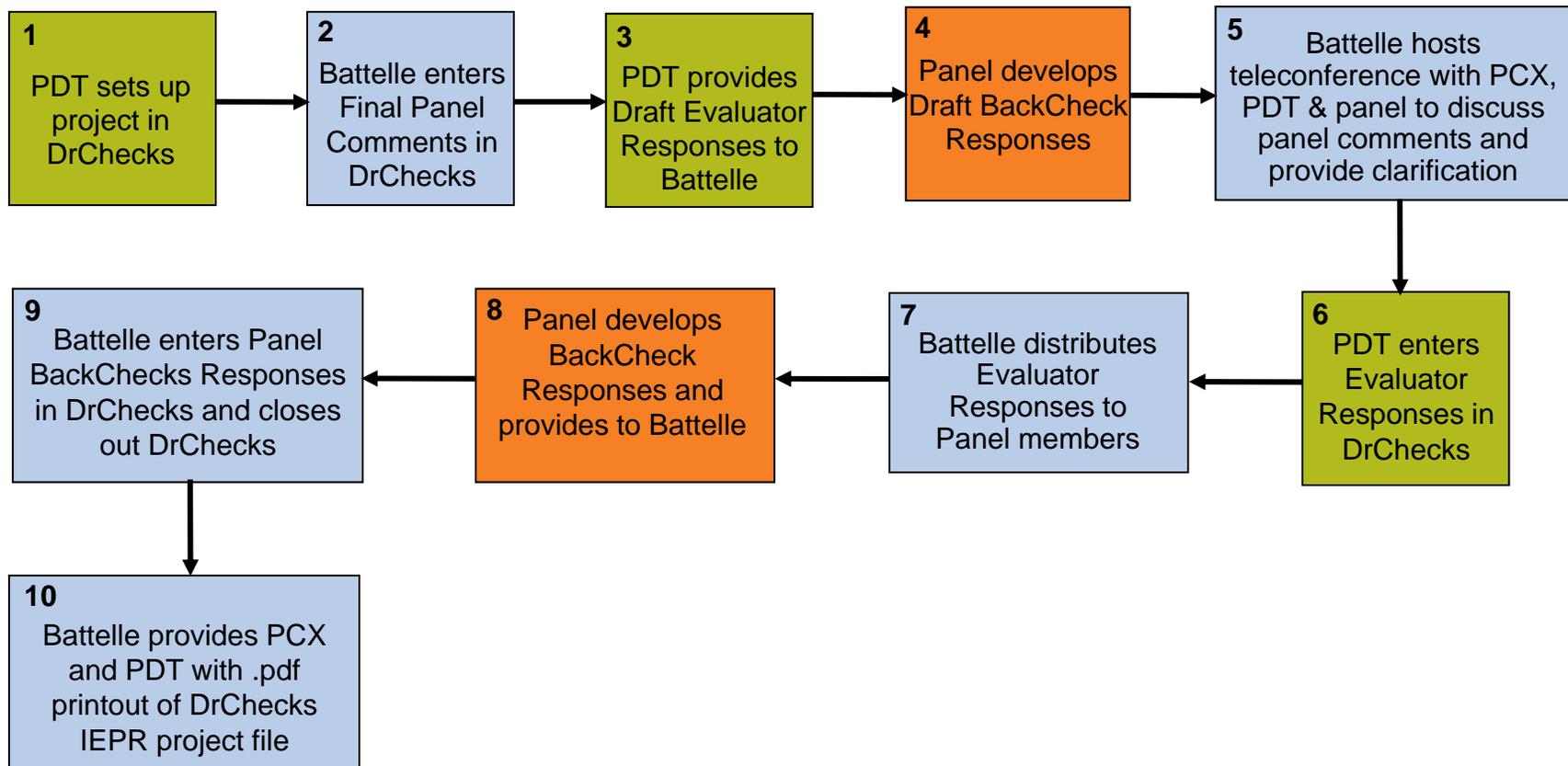
(continued)

Comment 4 (continued)
Significance – High:
USACE guidelines require careful consideration of non-structural alternatives before concluding that the project is justified or selecting a recommended plan.
Recommendations for Resolution:
To resolve these concerns, the report would need to be expanded to: <ul style="list-style-type: none">• Replace the cursory discussion of non-structural alternatives with a serious investigation of at least the three alternatives listed above. The non-structural alternatives must be carried through the same screening process as the deepening and widening plans.

AAR Summary – Final Report

- Executive Summary
- Introduction – Project summary from SOW and Work Plan
- Methods
 - Detailed description of process
 - Selection of peer reviewers for panel
 - Charge question summary (# questions/# responses)
- Panel Description
 - Brief biography of panel members, including role on project
 - Table illustrating technical criteria versus panel member expertise
- Results (without attribution)
 - Table listing final panel comment statements with level of significance
 - Overall summary of panel comments, including positive feedback
- Appendix
 - 4-part final panel comments. Note: this has been revised from a 5-part comment which included comment cross-referencing, which was determined to be of little value
 - Charge Questions

AAR Summary - Comment/ Response Process Flowchart



- USACE Activity
- Battelle Activity
- Panel Member Activity

AAR Summary – Comment/Response Process Details

- PDT (Evaluator) and Panel (BackCheck) Responses
 - Development of draft Evaluator and draft BackChecks responses prior to the teleconference allows for a more focused discussion and improves the probability of reaching concurrence on panel comments
 - Includes one round (or more if necessary and budget allows) of Evaluator (PDT) and BackCheck (panel) responses
 - Evaluator responses are to be in response to the Final Comment Statement and Basis of Comment, not necessarily the Recommendations for Resolution
 - Panel BackCheck response may include correction of factual information or clarification of the comment
 - Teleconference length is about 3 hours
- Two Battelle POCs for DrChecks
- Access to DrChecks should be provided at the start of the project to avoid delays in posting comments
- Posting of Comments
 - Comment statement number, comment statement, discipline and significance level are posted
 - Full comment is provided as an attachment

AAR Summary – Comment/Response Process Challenges

- DrChecks is character limited
 - It is very important that the PDT review the attached full 4-part Final Comment before responding as the Evaluator
 - PDT may have to limit Evaluator response or add attachment
- Delay in getting access to project and not properly opened for BackCheck input
- Must review PDT comments to make sure that the response is consistent with “concurrency” or “non-concurrency”
- Final Panel Comment discipline must be assigned based on subject of comment and could relate to more than one discipline
- Delay in PDT responding to comments; panel members may not be immediately available or have good recall when the PDT comments are posted
- Follow-up teleconference with between PDT and a panel member may be necessary to resolve questions and misunderstandings related to the Evaluator response

AAR Summary – Comment/ Response Process: Example Final Panel Comment Posting in DrChecks

Comment Report: All Comments
Project: L31N Seepage Mgmt Pilot Project (SMPP)
Review: Independent External Peer Review for the PPDR
Displaying 19 comments for the criteria specified in this report.

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Id ▲	Discipline	Section/Figure	Page Number	Line Number
2365247	HydroGeologist	n/a	Comment 1	n/a
<p>(Document Reference: Significance – High)</p> <p>There are uncertainties in the model and it is unclear how these are carried through in the design elements and costing.</p> <p>(Attachment: Comment 1.doc)</p> <p>Submitted By: Monica Malhotra (410-306-8852). Submitted On: 11-Mar-09</p>				
1-0	<p>Evaluation Concurred</p> <p>The following text was added to Section C.1.5.6 Assumptions and Limitations (page C-10): "A rigorous quantification of the "model uncertainty" has not been performed for the pilot project. In a groundwater model, the uncertainties arise mostly in the description of the parameters. In particular, the hydraulic conductivity is an important parameter that describes the transmitting capacity of the medium for groundwater. The hydraulic conductivity influences the velocity field and the injection/withdrawal rates for the injection wells that are used to retard the flow through the window. Due to the uncertainty involved in the hydraulic conductivity, the test runs were done initially by varying the values to investigate the effects on the flow rates. Through proper investigation and input from hydro-geologists at different water resources agencies, a relatively conservative (i.e. high) value for hydraulic conductivity was used in the model to account for uncertainty in the predicted groundwater flow rates." and "In addition to the visual observation, FEMWATER results were compared with the calibrated MODBRANCH results at a few selected points. A reasonable agreement was observed between the results of the two models." The following text was added to Section C.1.6.1 Simulation of Existing Condition (page C-12): "The FEMWATER model is a subset of the calibrated MODBRANCH (linkage of MODFLOW + BRANCH computer codes) sub-regional model. The hydrogeologic data including boundary conditions were used from the calibrated MODBRANCH model. A point-wise calibration of the FEMWATER model was not performed because it is based on the calibrated MODBRANCH model. To gain confidence, the wet condition FEMWATER results were compared at selected points with those of MODBRANCH. The results were found to agree in a reasonable fashion."</p> <p>Submitted By: Shabbir Ahmed (904-232-1116) Submitted On: 01-Apr-09 (Attachment: response comment number one.doc)</p>			

AAR Summary – Comment/Response Process: Example Final Panel Comment Evaluator and BackCheck Responses

2365262	HydroGeologist	n/a'	Comment 8	n/a
<p>(Document Reference: Significance – High)</p> <p>Further clarification is needed on how velocities were determined.</p> <p>(Attachment: Comment 8.doc)</p> <p>Submitted By: Monica Malhotra (410-306-8852). Submitted On: 11-Mar-09</p>				
1-0	<p>Evaluation Concurred</p> <p>In a groundwater system, there are two types of velocities. These are: Darcy (average) velocity and seepage or pore velocity. The FEMWATER model produces Darcy velocities, an average velocity considering the total cross-section area of flow, versus a seepage or pore velocity, that considers only the interstitial area between the porous media particles. All the velocities reported in the model documentation are Darcy velocities. For a given media and common set of conditions, the seepage/pore velocity is greater in value than the corresponding Darcy velocity. Since the FEMWATER model is applied in a steady state condition and Darcy velocities are simulated, porosity is not used in the simulation. It is relevant to note that the flow rate remains the same whether Darcy or seepage velocity is used. The flow rate is the product of the Darcy velocity and total area of cross section or the product of the seepage velocity, area, and effective porosity. It is written as: $Q = (A)(v) = (A)(n)(v_s)$, where Q = groundwater flow rate, A = area of cross-section for flow, v = Darcy velocity, n = effective porosity, and v_s = seepage velocity. In the present FEMWATER modeling analysis, the flow rates were obtained from the velocity vectors at the nodes of the elements and an average Darcy velocity is obtained by dividing the flow rates by the area of cross section. Future investigation includes monitoring for groundwater hydraulic heads and seepage velocities. Through field investigation, hydraulic conductivity, porosity, and seepage and Darcy velocities will be established. Finally, the model results will be re-evaluated and compared with the field monitoring data. Seepage velocities were added to Tables C-2, C-4. Darcy velocities were specified on pages 5-5, C-21, C-25, C-27, C-28, C-29, C-32, C-33, C-34, and C-35.</p> <p>Submitted By: Shabbir Ahmed (904-232-1116) Submitted On: 01-Apr-09</p>			
1-1	<p>Backcheck Recommendation Close Comment</p> <p>Concur: Please see comments under IEPR Panel's BackCheck for Comment 1 regarding the use of the term 'Darcy velocity.'</p> <p>Submitted By: Monica Malhotra (410-306-8852) Submitted On: 16-Apr-09</p>			
<p>Current Comment Status: Comment Closed</p>				

AAR – Model Review

- Models are reviewed for certification (e.g., tool box) or one-time application
- Types of review documents
 - Model documentation
 - Model spreadsheets
 - Case studies
- Charge questions focus on technical quality, system quality, and usability of the models and include questions based on:
 - Model assessment criteria defined in the USACE Protocols for Model Certification
 - Additional questions developed by USACE
 - For the first model reviews, these also included specific technical questions that focus on sections of the model documentation; however, this has proven to be unnecessary, as responses to charge questions designed to address the assessment criteria generally capture the key issues
- Report
 - Outline of report is determined by USACE
 - Draft and final reports are prepared
 - 4-part final comments are prepared and included in the appendix. No comment/response process takes place

AAR Summary – Model Review Scope of Work (SOW)

- General Information/Background
 - Project Details – include specific challenges, issues associated with the project
 - Review Documents – a specific list of review documents to be provided for the model review should be included; Public Comments should be included, if available
 - Supporting Documents – clearly distinguished from review documents
 - Document Descriptions – generally describe the purpose of each of the documents provided

AAR Summary - Model Review SOW (continued)

- Task 1: Kick-Off Meetings
 - Initial Teleconference – A Kick-Off meeting with USACE and the Battelle team should be held to discuss the details of the review and provide an opportunity for questions prior to developing the Work Plan and charge to the peer reviewers. Meeting length: 1 hour
 - Review Panel Kick-Off Teleconference – this Kick-Off (convened by Battelle) should include a model training session for the peer reviewers delivered by the HEP panel expert on the type of model being reviewed. Additional meeting length: 2 hours (total 3 hours)
 - Teleconference with USACE – Battelle and the panel members meet with USACE CECW representatives, representatives from the ECO-PCX, and the model proponents to review the Scope of Work and the approach for certification of the model
 - In-Person – It was also recommended by one panel that a site visit should be incorporated into model certification reviews

AAR Summary - Model Review SOW (continued)

- Task 2: Work Plan to Assess Quality and Usability of the Ecosystem Model(s) for Model Certification – this includes the charge to peer reviewers
- Task 3: Prepare and Finalize Charge to Reviewers
 - Charge questions should be limited to general questions regarding the technical quality, system quality and usability of the models being evaluated; any key issues addressed by answering model-specific questions are generally captured by these general questions
 - During the Kick-Off teleconference with USACE and Battelle the following should be discussed: any general charge questions that are not applicable; identify any additional information that is needed to address the general charge questions (e.g., Does/do the model(s) effectively incorporate USACE policy?); and identify any additional charge questions that may be specific to the model(s) being reviewed

AAR Summary – Model Review SOW (continued)

- Task 4: Identify Candidate Reviewers, and Select and Finalize Contracts with Reviewers
 - For projects with combined IEPR and Model Reviews, we recommend
 - Separating the reviews into two projects (if possible)
 - Staggering the reviews (if possible), with the model review being conducted prior to the IEPR
 - Using peer reviewers from the model review to fill positions on the review panel for the IEPR because they will be intimately familiar with the models used for the project and will save \$\$
- Task 5: Conduct Assessment of Models
- Task 6: Meeting to discuss findings – we recommend changing this to an optional meeting for the panel members to ask USACE any clarifying questions

AAR Summary – Model Review SOW (continued)

- Task 7: Prepare Draft Model Review Report – a specific outline for the report is provided by USACE
 - The section “Review of Theory and External Model Components” should be revised to “Review of Theory”; it was determined that a review of external model components is not relevant to ecosystem model reviews
 - Report requirements have been revised to include an appendix with final panel comments similar to those developed for IEPRs; these comments are for information only and are not entered into DrChecks
- Task 8: Meeting to discuss Draft Model Review Report
- Task 9: Prepare Final Model Review Report

AAR Summary – Model Review: Report

- **Executive Summary**
- **Introduction** – Provides a statement of the model purpose, a description and rationale for model assessment, and the contribution of models to planning efforts
- **Model Description** – Describes the intended application for the models, a summary what the models are designed to do, and a description of model components
- **Model Evaluation** – Describes the methods and results for model evaluation including
 - Assessment Criteria – Describes the criteria for evaluating technical quality, system quality, and model usability
 - Model Testing – Approach for testing the models
 - Results of the Technical Quality Assessment
 - Results of the System Quality Assessment
 - Results of the Model Usability Assessment
- **Conclusions** – Summarizes the conclusions of the assessment and recommendations
- **Appendices and Attachments**
 - Peer review panel short biographies
 - Project work plan, including charge guidance and questions

AAR Summary – Model Review: Lessons Learned

- The same IEPR lessons learned also apply to model certification reviews
- A Kick-Off teleconference with Battelle and USACE should be held prior to the development of the charge guidance and questions to:
 - Clarify what documents and models are going to be reviewed
 - Determine how the models are to be reviewed (e.g., Will model testing be included?)
 - Discuss the purpose of the models and review
 - Decide which general charge questions are relevant to the model review
 - Clarify which USACE policies and procedures are related to the models.

AAR Summary – Model Review: Lessons Learned (continued)

- Changes in schedule are subject to peer review panel availability, and lack of availability may lead to milestones and deliverable dates being pushed back
- The LOE for reviews can not be determined until all review documents have been received
- All models based on USFWS Habitat Evaluation Procedures (HEP) will have an additional 2 hours for a HEP 101 class (an additional 4 hours for the class instructor)
- USACE finds panel comment form similar to those used for IEPRs to be useful for addressing issues identified during the review in addition to the model certification review report
- May be most effective to have peer reviewers write the assessment sections of the report (testing on WVA)

Peer Reviewer Survey

IEPR Panel Survey

Your input has been critical to us during many aspects of this peer review project. We are constantly striving to improve the peer review process for future panels. As part the closeout process, we invite you to take a moment to answer the following 11 questions. Please email responses directly to Karen Johnson-Young at johnson-youngk@battelle.org, thank you.

1. Were the objectives/your role clearly stated when you were initially contacted? How could they be improved?
2. Were the charge questions appropriate to focus your review on potential issues associated with the project?
3. Were your opinion and/or comments valued and accurately reflected in the deliverables or in the final comments?
4. Do you believe that your contribution was equally valued and added to the improvement of the project?
5. Comment on Battelle's process for conducting the IEPR. What areas can be improved?
6. Was the SharePoint website user friendly and easy to access for uploading your completed response forms and final comments?
7. Are there any ways this SharePoint website could be improved or better organized?
8. Did you have a sufficient number hours and calendar time to complete your review?
9. Would you be willing to serve on future IEPR panels managed by Battelle?
10. Overall how would you rate your experience serving as a peer review panel member? – *Excellent, Good, or Poor* (Or add other comment)
11. Based on your experience would you recommend others to serve on an IEPR panel? If yes, please recommend a couple of colleagues that may be interested in participating in future USACE peer reviews; please list those recommendations (i.e., name, phone, email).

Peer Reviewer Feedback

- All indicated their willingness to serve on future peer review panels managed by Battelle; one participant stated they “enjoyed the experience of contributing in a meaningful way to a project of national significance”
- In general, panel members found Battelle’s process for conducting peer reviews to be efficient and effective. “Battelle’s supervisory team kept the process on track through effective communications and they were professional in their interactions”
- In general, panel members felt their opinions and comments were valued and their input accurately reflected in the deliverables, while adding to the improvement of the project
- Panel members have commented that they like the “personal touch” of looking people in the eye that you are talking to. They preferred a “face-to-face meeting rather than the conference call which is impersonal and sometimes difficult to follow. This would allow more meaningful dialogue and many of the questions could well be resolved more swiftly”

Peer Reviewer Feedback (continued)

- Panel members noted they had sufficient calendar time to complete their review
- “Process was good, personnel were great”
- “All of my answers to your survey are positive. You and your team did an excellent job, allowing me to spend my time efficiently and effectively. Keep doing what you are doing and thanks for asking me to participate. I look forward to working with you again”
- “Battelle staff did an excellent job in managing the process, keeping the review panel informed and being accommodating to reviewer’s time-constraints to the extent possible. I also really appreciated the humor, courteous demeanor and well prepared materials of the Battelle staff that aided the reviewers and resulted in a cohesive product”
- “You all did a great job. You could tell this was not the first time through the process.”
- “At the end I felt that the USACE prematurely dismissed the review team and allowed no input, even though there were issues that remained important to resolve. This was not the fault of the Battelle group.”

Peer Reviewer Feedback (continued)

- “The entire review was conducted in a very professional manner. Communications were exemplary – concise and clear. The conference calls and web page were well organized, materials were distributed in a timely fashion and expectations and rules articulated well.”
- “The panel is very cognizant of the incredible pressures on the USACE staff in this type of project. The nation is watching, the project schedules are almost impossible, the technical problems are very significant (in some cases the solutions are highly innovative) and the socio-political environment are challenging. I believe that most professionals understand this and do not step into the review to ‘bash’ the Corps of Engineers but rather to assist solving the tough issues facing society and to help the transparency of the documents that will receive intense public scrutiny. Rather than be viewed as a ‘necessary evil’ and box to be checked off, the process could be more effective by:”
 - “Engaging the Panel and key Corps personnel in a face-to-face meeting rather than the conference call which is impersonal and sometimes difficult to follow.”
 - “Engaging the Panel earlier in the process would give more time for the engineers/scientists to respond to reviewer’s comments and could be included in the methodology if these are good suggestions.”

Guidance to Panel Members

- NDA – all panel subcontracts include a NDA clause
 - *This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It has not been formally disseminated by USACE. It does not represent and should not be construed to represent any agency determination of policy”*
 - *Subcontractor further agrees not to disclose, without Battelle’s prior written approval, any such information or data. Such data and information shall be the sole property of Battelle”*
- Resumes – Battelle has recommended that the panel include text similar to the following in their resumes:
 - *was selected to participate in the independent external peer review panel to review the L-31N Seepage Management Pilot Project for the USACE Ecosystem Restoration Planning Center of Expertise as a subcontractor to Battelle*
- Media Inquiries – Panel members have been instructed to contact Battelle immediately if they are contacted by the media. Battelle will immediately notify the PCX PM via email and follow up with a telephone call

Discussion/Questions



Contact Information

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