Appendix 2: Notes from fact-finding calls with the DRMS Authors
Review of the Delta Risk Management Strategy Report, Phase 1 (Draft 4)

The IRP held 4 conference calls with the DRMS authors prior to the September 4-5 panel meeting to obtain answers on outstanding questions on the following DRMS topics:

- Economics/valuation models.
- Aquatic resources modeling.
- Levee stability and seismic and flood forcing on levees.
- Transparency and organization of report

Notes were taken during the calls and distributed to the IRP and DRMS authors. Written responses were provided by the DRMS authors to the IRP when additional clarification was needed. The below notes summarize the IRP's impression of the more salient points.

1) Friday, August 22, 2pm (PDT): Economics/Valuation Models
Attendees: Richard Adams (IRP), Deb Niemeier (IRP), Ralph Svetich (DWR), Sean Bagheban (DWR), Richard Kranz (DWR), Said Salah-Mars (URS), Ram Kulkarni (URS), Marty McCann (JBA), Bill Betchart (JBA)

Richard Adams asked the DRMS authors to provide additional explanations and clarifications for estimating the economic costs charts shown in Section 13 given the economic data shown the tables of Section 12. The team agreed to provide a procedure explaining the process by no later then the end of next week. Said indicated that a good place to start would be from the charts of Section 13 showing the probability of island failures since those are clear to the IRP reviewers.

Rich also asked whether the authors have used scenarios in the calculations of the probability of islands flooding. Both Said and Marty indicated that in this round a full simulation of all possible sequences was used as opposed to the six scenarios evaluated in the previous draft. A discussion followed on the description of the sequences in the simulations, and how they were defined and evaluated. Deb Niemeier agreed that the memo explaining the steps leading to the economic charts of Section 13 will be helpful to clarify this particular point (sequences and simulation).

The resulting Action Items consisted of:

1) URS will prepare a memo explaining the implementation steps of the economic curves shown in Section 13. Explanation of how the Economic Exceedance curves in Section 13 were developed from the island failure probabilities and exceedance curves (Sections 4&12). Including a numeric example of the calculations.

2) Any additional specific comments or questions from Rich and Deb will be sent to our economists through Ladd and Sean at a later time.

The following appendix (Appendix A) was provided by the DRMS authors to the IRP to address action item 1 (above).

Appendix A

CALCULATION OF FREQUENCY OF EXCEEDING ECONOMIC CONSEQUENCES

This appendix illustrates the calculation of the frequency of exceeding different thresholds of economic costs and impacts. The exceedance frequency curves are shown in Figures 13-19a and 13-19b for seismic events and Figures 13-21a and 13-21b for hydrological (flood) events in the Risk Report.

An overview of the procedure to calculate the exceedance frequency is presented first. This is followed by a numerical example that shows a step-by-step derivation of the exceedance curves in Figure 13-21a.

Overview of Procedure

There are two basic inputs to the calculation of the frequency of exceeding different economic costs and impacts thresholds. These are the:

- frequency distribution on the number of flooded islands, and
- conditional probability distribution on the economic costs/impacts given the number of flooded islands.

Given the epistemic uncertainty in the frequency distribution on the number of flooded island, the frequency of exceeding economic costs (and impacts) also exhibits epistemic uncertainty and hence needs to be estimated at specified confidence levels. The frequency of exceeding economic costs at a specified confidence level was derived by combining the frequency of occurrence of island failures with the conditional probabilities of exceeding specified economic costs and impacts. The following equation was used:

$$f_P(C > c) = \sum_i f_P(n_i) \times p(C > c | n_i) \qquad \text{(A -1)}$$

in which

$f_P(C > c) =$ frequency of exceeding the cost, c at P% confidence,

$f_P(n_i) =$ frequency of flooding n_i islands at P% confidence, and

$p(C > c | n_i) =$ conditional probability of exceeding cost c given n_i islands are flooded.

The conditional probability, $p(C > c | n_i)$ was calculated by fitting a lognormal distribution to the cost distribution of simulated sequences of n_i flooded islands. (Note the sequences of different flooded islands (n_i) were obtained from the simulations of levee failure sequence as described in Section 4 in the Risk Report.) For example, consider a sequence of 10 flooded islands. Economic costs were calculated for a large number of simulated sequences of 10 flooded islands within the Delta (say there were k such combinations). A

lognormal distribution was fitted to the distribution of these *k* costs. This lognormal distribution, $p(C > c|n_i)$, was used in Equation A-1.

Numerical Example

The lower (16% confidence), median (50% confidence), and upper (84% confidence) estimates of the exceedance frequency for the total economic costs were shown in Figure 13-21a. A step-by-step derivation of these results is presented below.

Step1: Estimate the annual frequency of flooding different number of islands due to hydrological events.

Equation A-1 requires the frequency of flooding different number of islands at specified confidence levels. These frequencies were calculated by discretizing the frequency exceedance curves shown in Figure 13-10 in the Risk Report. This figure shows the annual frequency of exceeding different number of flooded islands due to hydrological events at 16%, 50%, and 84% confidence levels. The number of islands was divided into discrete intervals and the frequency of being in each interval was calculated as the difference in the exceedance frequency at the lower and upper values in the interval. Each interval was represented by its mid-point. Table A-1 shows the calculated annual frequencies of flooding different numbers of islands at the 16%, 50%, and 84% confidence levels.

Table A-1. Annual Frequency of Flooding Different Number of Islands due to Hydrological Events

# of Flooded Islands	Frequency at 16%%	Frequency at 50%	Frequency at 84%
1	0.0199	0.0297	0.0443
3	0.0361	0.0566	0.0888
5	0.0225	0.0372	0.0613
10	0.0173	0.0315	0.0574
20	0.0054	0.0119	0.0265
30	0.0032	0.0086	0.0234

Step 2: Generate simulated levee failure sequences and estimate costs of each sequence.

Levee failure sequences were simulated using the conditional levee failure probability (fragility curve) of each island under a given flood event. Each sequence identified the specific islands that are breached and therefore flooded. For each sequence, the economic

costs associated with the flooded islands was estimated using the models and data described in Section 12 of the Risk Report. The two main components of the cost are the In-Delta Costs and Statewide Costs. The sum of these two cost components is the Total Cost.

The main components of the In-Delta Costs are the levee emergency response and repair costs, infrastructure repair cost, lost use of structures and services, agricultural losses, losses due to the impact to oil and gas wells, loss due to the impact to wastewater facilities, agricultural losses, and the cost of lost recreation. These costs were estimated using the models/procedures described in Section 12 of the Risk Report.

The main components of Statewide Costs were losses due to the disruption to water supplies, lost use of statewide infrastructure, and agricultural losses outside the Delta due to water supply disruption. These costs were estimated using the models described in Section 12 of the Risk Report.

Table A-2 illustrates the estimation of various cost components and the total cost for one particular levee failure sequence. This sequence involved the flooding of 3 islands; namely, S-E Elk Grove (Zone 77), Brannan-Andrus Island, and Sherman Island. The total cost of this sequence was approximately equal to the median total cost among all simulated sequences involving the flooding of 3 islands. Table A-2 shows the main components of the In-Delta Cost and Statewide Cost. Note, in this case the infrastructure repair cost for Brannan-Andrus Island in Table A-2 is $ 91.7 million, which matches the repair cost shown in Table 12-7 in the Risk Report.

Table A-2. Main Cost Components for a Levee Failure Sequence Involving Flooding of 3 Islands

Island/Analysis Zone Flooded	Emergency Response & Repair Cost	Inundation Infrastructure Repair Cost	Lost Use of Structures & Services	Flooded Island Agricultural Loss	Loss due to Impact to Oil & Gas Wells and Wastewater Facilities	Total Flooded Island Cost	Cost of Lost Recreation in the Delta	Total In-Delta Cost	Lost Use of Staewide Highways	Total Statewide Cost	Total Cost for the Failure Sequence
S-E Elk Grove (Zone 77)	23.8	2.0	0.2	0.0	0.0	26.1					
Brannan-Andrus Island	165.2	91.7	75.6	27.2	5.4	365.1					
Sherman Island	125.8	16.4	3.0	8.3	0.2	153.6	27.1	571.8	149	149	720.8

Note: All costs are in millions of dollars.

Step 3. Fit a lognormal distribution to the total cost for each given number of flooded islands.

For each levee failure sequence, the In-Delta Cost, Statewide Cost, and Total Cost were estimated. The sequences were ranked from the lowest to highest total cost for each discrete number of flooded islands shown in Table A-1. A lognormal distribution was fit to the set of the total costs for each given number of flooded islands. Table A-3 shows the median and the logarithmic standard deviation of the total cost for each given number of flooded islands.

Table A-3. Parameters of Lognormal Cost Distribution for a Given Number of Flooded Islands

# of Flooded Islands	Median Total Cost ($ Million)	Logarithmic Standard Deviation
1	123.0	0.66
3	710.6	0.66
5	1,606.3	0.66
10	4,858.1	0.66
20	14,692.7	0.66
30	28,070.9	0.66

Step 4. Calculate the conditional probabilities of exceeding different cost thresholds for each given number of flooded islands.

For each number of flooded islands, the conditional probabilities of exceeding different cost thresholds were calculated for each number of flooded islands using the associated lognormal cost distribution. Table A-4 shows the probabilities of exceeding different cost thresholds for the number of flooded islands considered.

Table A-4. Probabilities of Exceeding Different Cost Thresholds for a Given Number of Flooded Islands				
Number of Flooded Islands	**$ 1 Billion**	**$ 10 Billion**	**$ 50 Billion**	**$ 100 Billion**
1	7.77E-04	1.56E-11	0.00E+00	0.00E+00
3	3.03E-01	3.27E-05	6.69E-11	4.03E-14
5	7.63E-01	2.88E-03	1.04E-07	2.22E-10
10	9.91E-01	1.38E-01	2.16E-04	2.48E-06
20	1.00E+00	7.19E-01	3.22E-02	1.89E-03
30	1.00E+00	9.40E-01	1.92E-01	2.75E-02

Step 5. Apply Equation A-1 to calculate the annual frequencies of exceeding different cost thresholds at specified confidence.

Results shown in Table A-1 and A-4 were combined using Equation A-1 to obtain the annual frequencies of exceeding different cost thresholds at the 16%, 50%, and 84% confidence levels. Table A-5 summarizes the results. Note, the results match those shown in Figure 13-21a.

Table A-5. Annual Frequencies of Exceeding Different Cost Thresholds							
				Conditional Probabilities of Exceeding Cost Thresholds			
# of Flooded Islands	**Frequency at 16%%**	**Frequency at 50%**	**Frequency at 84%**	**$ 1 Billion**	**$ 10 Billion**	**$ 50 Billion**	**$ 100 Billion**
1	0.0199	0.0297	0.0443	7.77E-04	1.56E-11	0.00E+00	0.00E+00
3	0.0361	0.0566	0.0888	3.03E-01	3.27E-05	6.69E-11	4.03E-14
5	0.0225	0.0372	0.0613	7.63E-01	2.88E-03	1.04E-07	2.22E-10
10	0.0173	0.0315	0.0574	9.91E-01	1.38E-01	2.16E-04	2.48E-06
20	0.0054	0.0119	0.0265	1.00E+00	7.19E-01	3.22E-02	1.89E-03
30	0.0032	0.0086	0.0234	1.00E+00	9.40E-01	1.92E-01	2.75E-02
				Annual Frequencies of Exceeding Cost Thresholds			
				$ 1 Billion	**$ 10 Billion**	**$ 50 Billion**	**$ 100 Billion**
			16% Confidence	5.38E-02	9.28E-03	7.83E-04	9.73E-05
			50% Confidence	9.73E-02	2.11E-02	2.04E-03	2.59E-04
			84% Confidence	1.80E-01	4.92E-02	5.35E-03	6.94E-04

Upon receiving Appendix A, the IRP had 7 follow-up questions to which the DRMS authors responded. These questions and answers are as follows:

Question 1. When the monte carlo simulations were conducted for events - were all events within an event type equally likely? Or were events within an event type generated with certain probabilities? For example, the authors state that flood events were simulated between 289k cfs and 2m cfs. First, was any flood event within the range equally likely? That is, was 500k cfs and 505k cfs flood (or, for example, a 500k and a 1m) equally likely to be used in generating the sequence of islands that failed? Or were the flood events discretized into combinations of water levels and then simulations occurred? If the latter, what was the prob distribution used to select floods to then run the sequences from?
Answer: The simulated events are not equally likely. The event probabilities are determined by the probabilistic model that was developed to estimate their likelihood of occurrence. The model for flood events is described in Section 7 of the risk report and the Flood Hazard technical memorandum.

Question 2. PG 13-4: Does each seismic event correspond to a seismic source when you run the Monte Carlo simulation? That is, for a given seismic event sequence from Monte Carlo, will the event correspond to one of the sources listed on Fig 13-3?
Answer: In estimating the frequency distribution on the number of flooded islands, all seismic sources are considered in the simulation.

Question 3. When the flood failure sequences were generated for the simultaneous flooding, did each island have equal chance of flooding? Or were different sets of islands assigned different probabilities.
Answer: The straightforward answer is the islands do not have an equal chance of flooding. For a given flood event, the chance of levees failing is defined by the levee fragility curves. The fragility curves define the conditional probability of failure as a function of water-surface elevation and they vary from 0.0 to 1.0 as water levels increase. The fragility of levees vary, depending on their characteristics and the levee crest elevation.

Question 4. When the MC simulation was run, were all possible permutations generated, or was it a very large sample? If it was a sample (i.e., not all permutations were performed), then did you resample with replacement or not?
Answer: All permutations are not generated, the number of permutations is too large. This is why we did simulations. The simulations are performed with replacement.

Question 5. For the flooding, the text seems to imply but not directly state that MC sequences were generated separately for MHHW and 100y - is this a correct interpretation?
Answer: Simulations were performed for seismic events and separate simulations were performed for flood events. The simulations for seismic events were performed assuming water-surface elevations were at the MHHW. Simulations for flood events were performed for a wide range of flood levels, as described above.

Question 6. When the sequences were generated using MC, were they generated by the bins (i.e., all the possible permutations of 3, then, 4, then 5 ... island failures) or were they generated where any number of islands could fail on any given sequence simulation?
Answer: The simulations were done for the 3, then for the 4, then for 5 etc.., separately.

Question 7. Does the process of calculating flood damages using the 100 year flood as the benchmark introduce an upward bias?
Answer: Estimating all flooding damages, initiated by flood events, likely introduces an upward bias.

2) Wednesday, August 27, 8 am (PDT) - Aquatic Resources Modeling
Confirmed Attendees: Ladd Lougee (CALFED), Terry Roscoe (CDFG), Kenny Rose (IRP), Richard Adams (IRP), Dave Mraz (DWR), Ralph Svetich (DWR), Richard Kranz (DWR), Jon Rosenfeld (Aquatic Restoration Consulting), Said Salah-Mars (URS)

The important information revealed by the call was that the DRMS team does not plan on actually doing the aquatics (fish) impacts analysis that is described in the report and the in the TM. It is not exactly clear the reason(s) but they seem to be related to scheduling problems with the outside set of 4 experts, coupled with DRMS people not wanting to proceed without the input of these outside experts, and perhaps budget issues with DWR. It is very disappointing because the proposed method is much clearer, simpler and is the right way to go than that proposed in the initial Phase 1 draft.

Conference call questions by the IRP and answers by the DRMS authors:
Question 1. When will the aquatic analysis be completed? Is it too late for the IRP to get suggestions incorporated, given the report says the aquatic analysis has not been completed yet.
Answer: Ralph explained that the process of convening the experts for the elicitation was very lengthy and time consuming to the point where it was not possible to meet the schedule of completing the phase 1 work. DWR instructed the DRMS authors to document the work done to date in the phase 1 report, and explain what was not done because of the inability of getting the experts together to participate in completing and testing the model that was developed as part of this process.
Said indicated that 2/3 of the work was done. 1) data collection, interpretation and 2) the development of the various pieces of the model with their uncertainties such as: fish entrainment, breach induced sediment modeling (temporal and special) into the breached islands, export interruption, loss/creation of habitat as a result of island flooding, island pump-out, etc.
Said also indicated the vegetation and terrestrial species models are complete and followed the same procedures outlined in the previous version of the risk report that the IRP reviewed.

Question 2: What will be included in phase 2 as far of the risk reduction on aquatic species?
Said indicated that the answer on the fish impacts and benefits in phase 2 will be qualitative since the phase 1 impacts results will not be available.

Dave indicated that there is a chance to complete the aquatic species impact analysis possibly through other programs (Delta Vision, BDCP, DRIRIP, etc.).

Question 3: How will the different survey data be combined to get a single, consistently-estimated, set of fish density estimates by time and spatial box? Is gear selectivity being taken into account?
Jon indicated that the various datasets provided by the experts were used to develop spatial and temporal fish population distributions throughout the Delta. The approach was based on estimating the percent mortality and hence the population numbers become less sensitive in the analyses. When data were incomplete and inconsistent, an averaging process was used.

Question 4. I will have to read the benefits of reduced pumping several more times. I can see the work of Kimmerer. I did not understand his paper that is the basis of this approach being used and it follows that I have trouble understanding this condensed version of the results of his paper. I also want to know about the expansion factors used to go from salvage and 20-mm data to numbers. But I expect the answer to these is to ask Wim. That is OK if that is the response.
Jon confirmed that this was based on Wim's paper.

Question 5. What data will be used to estimate the baseline Dennis model? Specifically, the characteristics of the time series used to estimate mean and variance parameters. Which time series, how long it is, what historical time period, etc? As you know, fish population abundances are far from in quasi-equilibrium (i.e., not stationary) in the system. How is this being accommodated in the parameter estimation of the Dennis model? Are you just going to use Bennett's estimates?
The model was to update the Bennett model and update mean and uncertainties and the slope of the mean curves based on the impact model results. He considered the Delta Smelt was the only specie covered in Bill Bennett analysis.

Question 6. How about the species besides delta smelt and salmon? You list other species but will you do the analysis on these other species?
We kept the model generalized enough so that we can accommodate the impact analysis to other species given the population statistics.

Disclosure by K. Rose (IRP): You should know that Kimmerer and Bennett and I work closely together on a CALFED-funded delta smelt population modeling project. So I know something about the datasets, and am familiar with many of the analyses by Kimmerer and Bennett; more than you might expect for someone from Louisiana.

3) Thursday, August 28th, 8:00 am (PDT) - Levee Stability and Seismic and Flood Forcing on Levees.
Attendees: Johnnie Moore, Bob Gilbert, Bill Marcuson, Ladd Lougee, Roy Shlemon, Said Salah-Mars, Marty McCann, Richard Kranz, Sean Baghebon and Ralph Svetich.

The IRP asked questions, most of which were given to the DRMS authors in

advance of the conference call. The major take home points by the IRP are encompassed in the following three bullets with details on the questions and answers following those.

Conference call take-home points.

- Concerning seismic risk ---- Their analysis indicates that the risk in the last 50 years should be similar to the risk in the next 50 years, yet their conclusion is that the levee failure rate will be an order of magnitude higher than historic failure rates. The IRP members believe the risk of levee failure from earthquakes is over-stated.

- Concerning permeability --- They have little field data and have relied on lab data to get horizontal permeability (Kh) and modeling and judgment to get Kh/Kv ratios. I think the results lead to unconservative conclusions regarding levee failure by under seepage. That is, more seepage is likely to actually occur than predicted. A key point here is that unlike levee failure by earthquake induced liquefaction, levee failure by under seepage is not sudden and usually gives a preview to the trained eye.

- Regarding failure by levee overtopping they have assumed in their analysis that time is a constant. They have done little analysis but relied on expert elicitation or engineering judgment for this mode of levee failure.

The following is the list of detailed IRP questions and a summary of the DRMS authors response.

1) Floods and overtopping -- How did they include the function of time that overtopping occurs in their analysis? To clarify, is not the probability of failure due to overtopping a also function of how long the water level is at elevation "x" above the crest. For example, if the water were 2' above the crest for 1 hr the levee might fail. Also if the water were 1' above the crest for 4 hours, the levee might fail with a similar probability. How was the time function considered?
Answer --- Time was not considered in this analysis.

2) You say --- "When expert elicitation is used, we will provide a detailed description ---- ." I believe expert elicitation was used for levee failure by overtopping (see Page 7 – 26 of your draft). Is this the case? If so, why was it is not mentioned.
Answer ---- Yes and we will add this.

3) With regard to levee under-seepage -- the issue concerns permeability values used for the peat and anisotropy of the peat permeability; that is, a) why did you ignore the field pumping test data to obtain horizontal permeability (see tables 7 - 12 and 7 - 13); and b) I assume you relied on the field pumping test data to get the vertical permeability to be 0.01 the of the horizontal permeability? (see page 7 - 20, Section 7.7.4.5, at the end

of the discussion of Grand Island of your draft). Near the bottom of this section you say that an anisotropy of the permeability of the peat will be 100 from now on. I'm ok with this; however, this leads to a vertical permeability of 1 x 10 to the minus - 7 cm/s for peat. I think this is too low. A permeability for the peat should be based primarily on your field pumping test data. I my opinion the result of one field pumping test is worth the results of several 10's of lab tests. See your tables 7-12 and 7-13.
Answer ---- Table 7 - 12 covers the permeability of sands and silts not peat. Table 7 - 11 covers permeability of the peats. These data are all lab test data but they are all the data we have. Yes we used expert elicitation and modeling to get the permeability anisotropy of 100 which we used. We worked closely with Ross Boulanger at U. C. Davis to get our peat properties. The DRMS team believes that the liquefaction potential of loose sand under the peat is independent of the overlying peat permeability. This is the case in their report because they use an empirical approach which relies on index parameters (such as, normalized SPT blow counts) and field data. Peat or sand permeability values are not parameters used in their approach/analysis.

4) Do you have data or calculations that show --- "The effects of the levee geometry on under seepage "is" ---- this word should be "are" ---- mostly controlled by levee crest elevation."? What about change in side slope? This will control the horizontal distance the water must travel between the slopes and under the toes. Is this not a significant parameter?
Answer ---- We held the land-side side slope constant but we evaluated 2 water-side side slopes. For the water-side slope of levees we evaluated both 1v/2.5h and 1v/1.5h.

5) With regard to the risk analysis in general, the issue is an absence of a sensitivity analysis. For example, they could hold all variables constant but one and let that one parameter vary and range from a high value to a low value and in this way show how sensitive your results are to variation of that one parameter. You could repeat this process for other significant variables.
Answer ---- The DRMS team indicated that they have run additional sensitivity studies and they promised to provide these to the IRP. These studies include one where time-dependent (that is Poisson) earthquake frequencies were used and one where island levees were modeled with a single reach instead of multiple reaches.

6) With regard to seismicity, the issue is the predicted failure with relatively small peak ground accelerations for fairly frequent earthquakes. See your Figure 6 - 10 then go to the top left hand corner. Is this realistic given we have good earthquake data for the last 30 or 40 years?
Answer --- Much discussion took place with little resolution. The IRP believes the seismic risk is over stated. Marty believes the concept of uniform risk is not well understood. We all agree on this!!! DRMS authors pointed to Figure 13 - 8 of their report showing historic earthquakes grouped between Mag 5 - 5.9; between Mag 6 and 6.5; and greater than Mag 6.5. Bob asked if they could simply run the analysis with and without energy build-up on the faults. They have done this and it shows a few percent difference in the Delta. Bob suggests this makes the case that the next 50 years might resemble the last 50 years according to their model. Their results do not show this but show that island

failures due to earthquakes will be at least 10 times more frequent in the next 50 years. The DRMS team considered the historic record since 1838 including six earthquakes of Mag 6.5 or greater. That is, they decided to use the entire earthquake record. They are concerned about the public communication issues but they think their analysis is correct. We think they understand our concerns and we understand their position. This said, we still don't understand how they use the long time interval for major seismic activity in this region to explain the results of their model (high chance of island failure due to seismic events) --- given that, their model produces the same results whether you predict what will happen in 1907 or 2007.

The DRMS team will discuss this more at our meeting in Sacramento.

7) Please refer to Chapter 14, page 14 - 30 your Section 14.3.3.6 on Potential Loss of Life. The paragraph that follows and the only paragraph in this section says absolutely nothing about this topic. Why not just delete this section or add some "meat" in it?
Answer ---- We agree and will delete.

8) Regarding levee vulnerability classes (see your figure 6-37a) – can they be consolidated (assuming we are okay with answers to the questions above) and better identified on the figure because this will likely be one of your most used figure in the report?
Answer --- All 24 vulnerability classes (VC) were evaluated. Each VC was analyzed separately and its response evaluated. For purposes of discussion they grouped the VC's into 2 broad groups; A VC's that would liquefy, and B VC's that would not liquefy. We asked if they could create an additional figure to better explain their conclusions. They are to expand their discussion and develop another figure.

Roy asked some general questions regarding ----
a) Do you have knowledge of Dick Meehan's blog?
Answer --- Yes.
B) Does DWR have a current drilling and sampling program in the Delta that is geared to understanding engineering properties of the subsurface, is DWR taking continuous cores and to what depth are you drilling.
Answer ---- Yes. DWR has a field investigation in the central valley. I do not have the details about how far it extends into the Delta but we'll find out and get back with you.
C) Are the DRMS authors familiar with the on-going studies and publications of the following; and have you incorporated these into your assessments:

1. Judith Drexler at the USGS in the Sacramento office?
2. Ken Verosub a Professor of Geology at UC at Davis?

Answer ---- We will ask our geomorphology and subsidence teams to verify this. From a geotechnical standpoint, we have worked with Ross Boulanger at U. C. Davis.

4) Thursday, August 28th, 9:30 am (PDT): Transparency and Organization of Report

Attendees: Ladd Lougee, Katharine Hayhoe, Johnnie Moore, Sean Bagheban, Ralph Svetich, Dave Mraz, Said Salah-Mars, Marty McCann, Ram Kulkarni

Katharine and Johnnie provided a set of specific suggestions aimed at increasing the consistency, coherence, and communicative power of the report. These consisted of: a good executive summary that draws directly from the conclusions made by each chapter; a set of summary points at the beginning of each chapter that serve as the basis for a conclusions chapter and the summary report; and improvements to the existing conclusions chapter so that the reader can easily understand the conclusions and findings of the report. They emphasized that no one will read the whole report, therefore it is essential that each chapter be cross-referenced (which would also help to reduce the length of the document by eliminating redundancies) and have its own summary.

Specific IRP Comments/Suggestions

- The scientific basis of the DRMS report has the potential to be a very useful product. However, the communication of the main results, findings, and conclusions can be improved.
- Include at the beginning of each chapter a summary of its purpose, methods of analysis, and main findings.
- Include at the end (or the beginning?) of each chapter a concise list of main conclusions.
- Prepare a summary report for the use of policy makers/ executives (DWR is preparing such a report and its draft will be sent to IRP next week).
- Check the entire report for consistency between different chapters and provide cross references to other chapters where relevant. Where such cross referencing is provided, shorten the current text and eliminate repetitive text, where feasible.
- These suggestions are meant to help DWR make their report as useful as possible by clearly presenting information. It is up to DWR to decide what to do with these suggestions.

Discussion

- DWR believes that the Executive Summary it is preparing should provide a good summary of the entire DRMS study, including main conclusions/ findings. DWR stated that they appreciated the comments, and have been talking about this issue for over a year. They understand the executive summary is key. This summary is specifically aimed at policy makers and executives. A draft will be sent to IRP next week.
- Said noted that Chapter 13 is a summary chapter that brings together the analysis and results from all other chapters for the current risks in the Delta. Similarly, he stated that Chapter 14 is a summary report for future risks. The IRP understands what these chapters are supposed to do but they feel the information could be presented in a manner that is easier to find and understand.

- Additional raw data/ detailed GIS data files etc. that are not included in the technical report will be maintained by DWR and will be available to the public.
- DWR will take the IRP suggestions/comments under consideration in light of time and other constraints.