To: Erin Foresman/R9/USEPA/US@EPA[]
From: Michelle K Shouse
Sent: Fri 10/28/2011 11:25:55 PM
Subject: Re: BDCP - toxins appendix
http://www.epa.gov/region9/water/watershed/sfbay-delta/index.html
http://ca.water.usgs.gov/mercury/riceFields.html
http://www.epa.gov/region9/water/watershed/sfbay-delta/index.html
foresman.erin@epamail.epa.gov
http://www.epa.gov/region9/water/watershed/sfbay-delta/index.html
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Foresman.Erin@epamail.epa.gov
mkshouse@usgs.gov
Schwinn.Karen@epamail.epa.gov
egreich@usgs.gov
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arstewar@usgs.gov
http://wwwrcamnl.wr.usgs.gov/tracel/

Hi Erin,

Thank you so much for sending the draft along. I will leave the details to the researchers, but you obviously put a ton of work into this. I am so glad we were able to help! Thanks also for the context memo. I tried to give them some background... but your message was much more thorough.

I hope you do something really fun this weekend!
Michelle
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mkshouse@usgs.gov

From: Foresman.Erin@epamail.epa.gov
To: lwindham-myers@usgs.gov
Cc: arstewar@usgs.gov, krprince@usgs.gov, mhornber@usgs.gov, mkshouse@usgs.gov, mmarvin@usgs.gov, bbergama@usgs.gov, bpeller@usgs.gov, jafleck@usgs.gov, kkuivila@usgs.gov, egreich@usgs.gov, rfujii@usgs.gov
Date: 10/28/2011 12:39 PM
Subject: Re: BDCP - toxins appendix
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Hi Everyone,

All of you have been contacted in one email or another about helping EPA put together comments on the Toxins Appendix D from the BDCP Chapter 5 Effects Analysis. Thank you for being so helpful and responsive. I appreciate the input I've received; it's been very helpful. Attached is a draft of the comments I have consolidated so far for anyone who is interested. They're not complete but thought I'd provide it. If you do take a look at it, please let me know if you see errors.

Thanks so much!
Erin

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http://www.epa.gov/region9/water/watershed/sfbay-delta/index.html

-----Lisamarie Windham-Myers <lwindham-myers@usgs.gov> wrote: -----
To: Erin Foresman/R9/USEPA/US@EPA
From: Lisamarie Windham-Myers <lwindham-myers@usgs.gov>
Date: 10/26/2011 07:46AM
Cc: Robin Stewart <arstewar@usgs.gov>, Prince Keith <krprince@usgs.gov>, Michelle Hornberger I <mhornber@usgs.gov>, Shouse Michelle <mkshouse@usgs.gov>, Mark Marvin-DiPasquale C <mmarvin@usgs.gov>
Subject: Re: BDCP - toxins appendix

Hi Erin, I appreciate your efforts to try and resolve these questions, and Robin's efforts to put you in touch with both and Mark Marvin-DiPasquale. As I am currently working on a literature review in suppport of the Bay-Delta MeHg TMDL process, I have two main thoughts that might help:

1) IMPORT/EXPORT dynamics - Most work that I am aware of that worked on filter-passing MeHg has shown that MeHg is generally exported from tidal marshes (Browns Island, Florida, Chesapeake Bay, Crissy Marsh). The only I cases I have seen where MeHg is imported to the marsh is when unfiltered samples are used (Suisun sites), and that may be due to settling of particles rather than consumption or binding of dissolved-phase MeHg. It is not clear what processes are occuring there.

Regarding the Crissy Field tidal MeHg budget, one of the benefits of working in an engineered wetland near the mouth of the estuary was the very easy water budget we were able to document, in a straightforward manner (single inlet/outlet, no groundwater flow, validated hydrologic model, and being near the Golden Gate, the incoming water was fairly clean and well mixed). With such clear boundaries and tight hydrologic control, we were able to show that undoubtedly filter-passing and particulate-bound MeHg was exported over a 24 hour tidal cycle, and particulate THg (total) was imported to the marsh. This is the first dataset that shows this unambiguously, and with multiple colleagues, we're working on a draft for publication by the end of the year.

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2) METHYLATION rates - Hydrology is undoubtedly important, and with its myriad effects, difficult to quantify net impacts (for example, the net effect of residence time: perhaps more methylation but also perhaps more photodemethylation). Two things we learned from the multi-investigator 2007-2008 Yolo Bypass study (http://ca.water.usgs.gov/mercury/riceFields.html, pubs forthcoming in STOTEN special issue 2012) are that 1) hydrology was seasonally and spatially the biggest driver of MeHg production, driving biogeochemical and organic inputs to the process and 2) surface water MeHg concentrations were not a direct function of MeHg production rates in soils - to understand how MeHg production influenced loads, it was critical to follow all water pathways over diel and seasonal scales (evaporation, transpiration, seepage, outflow) as well. Also, as you may know there were huge tradeoffs from water management on the rice fields for MeHg impacts - holding water on fields prevented MeHg loading downstream but increased the MeHg concentrationson field and thus increased MeHg consumption by on-site fish (see Ackerman and Eagles-Smith 2010 on the aforementioned website).

If theres any more specific question you are intersted in, or citations, just drop me a line. Also Mark MD would certainly have thoughts on this as well. Good luck with your review,

Lisa

Lisamarie Windham-Myers, Ph.D.
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From: Foresman.Erin@epamail.epa.gov
To: Robin Stewart <arstewar@usgs.gov>
Cc: Prince Keith <krprince@usgs.gov>, Lisamarie Windham-Myers <lwindham-myers@usgs.gov>, Michelle Hornberger I <mhornber@usgs.gov>, Shouse Michelle <mkshouse@usgs.gov>, Mark Marvin-DiPasquale C <mmarvin@usgs.gov>
Date: 10/25/2011 08:34 AM
Subject: Re: BDCP - toxins appendix

Hi Robin,
Thank you so much for your response. I appreciate the information, contacts, and quick reply!! It is also very exciting to know about your 3D water quality model for the Delta. Is there a document that describes the 3D model and its development just for my background education?

I'll look for replies from Mark and Lisa and follow up with them. Thank you for your help!!

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Erin

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From: Robin Stewart <arstewar@usgs.gov>
To: Erin Foresman/R9/USEPA/US@EPA
Cc: Shouse Michelle <mkshouse@usgs.gov>, Prince Keith <krprince@usgs.gov>, Michelle Hornberger I <mhornber@usgs.gov>, Mark Marvin-DiPasquale C <mmarvin@usgs.gov>, Lisamarie Windham-Myers <lwindham-myers@usgs.gov>
Date: 10/25/2011 07:16 AM
Subject: Re: BDCP - toxins appendix

Hi Erin,
It is true that there are no coupled hydrodynamic - methylmercury models developed for the Yolo. However, there have been a few targeted process studies on parts of the Yolo and other regions of the Delta (Twitchell, Suisun Marsh) that might provide some perspective on how flows and residence times impact methylmercury production and transport. I would contact Mark Marvin DiPasquale on these. Another person to talk to is Lisa Windham who conducted a coupled hydrodynamic/methymercury transport study at Crissy Field (yes, far away, but offers information about transport mechanisms in tidal marsh habitat) that showed how there was net transport of methylmercury out of the marsh into the Bay over a tidal cycle.

I've copied Mark and Lisa on this email and I'm sure they will also respond.

We are currently developing a 3D transport model for in the Delta that will hopefully be available in the next year or so to test hypotheses about how flows impact concentrations and fate of dissolved constituents in the Delta. A 3D model is required due to the complex bathymetry of the Delta and how it impacts net flows and residence times. This model would not address methylmercury production rates. For those you need to speak to Mark to get an update from him.

Best regards,
Robin

On Oct 24, 2011, at 2:13 PM, foresman.erin@epamail.epa.gov wrote:

Hi Michelle,
Thank you so much for sending out this email. I've read through the toxins appendix/'evaluation' and I'm very interested in your and/or your colleagues opinions about the level of water quality analysis provided and what types of analyses are reasonable to conduct. For example, there are a few sections with statements similar to this

one,

"Quantification of this effect [increased flows in Yolo Bypass and decreased assimilation capacity from operations] on methylmercury in the aqueous system is not possible given the lack of information on current concentrations and distribution of mercury throughout the Yolo Bypass system, residence times of preliminary proposal–related inundation of Yolo Bypass, the rate of methylmercury production, and transport out of the Yolo Bypass and into the Sacramento River." p. D-17.
I'm interested in understanding if there are models capable of providing a more robust analysis with available inputs/information.

Thanks in advance for any guidance you have and please don't hesitate to get in touch if you have questions.
Thanks!
Erin

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http://www.epa.gov/region9/water/watershed/sfbay-delta/index.html

-----Michelle K Shouse <mkshouse@usgs.gov> wrote: -----
To: Theresa S Presser <tpresser@usgs.gov>, "Robin Stewart" <arstewar@usgs.gov>, Michelle I Hornberger <mhornber@usgs.gov>, snluoma@ucdavis.edu
From: Michelle K Shouse <mkshouse@usgs.gov>
Date: 10/24/2011 12:53PM
Cc: Keith R Prince <krprince@usgs.gov>, Erin Foresman/R9/USEPA/US@EPA
Subject: Fw: BDCP - toxins appendix

Hi Ladies,

I received the e-mail below from Karen Schwinn at EPA. She is concerned the BDCP Effects Analysis document attached is not as detailed as it should be. If possible, could you take a look at the document and perhaps send along some suggestions to Erin Foresman at EPA? If there are others that you think could provide some guidance, please let me know and I will forward the request to them. If you can, please send Erin your suggestions by the end of this week (Oct. 28) as she needs to send them on early next week.

If you have any questions, you can reach Erin at Foresman.Erin@epamail.epa.gov.

Thanks!
Michelle
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mkshouse@usgs.gov
----- Forwarded by Michelle K Shouse/DO/USGS/DOI on 10/24/2011 12:41 PM -----
From: Schwinn.Karen@epamail.epa.gov
To: Eric Reichard <egreich@usgs.gov>, rfujii@usgs.gov, "Shouse, Michelle K" <mkshouse@usgs.gov>
Cc: Foresman.Erin@epamail.epa.gov
Date: 10/21/2011 03:48 PM
Subject: Fw: BDCP - toxins appendix

Eric, Roger, and Michelle -

We just got this document (attached) from DOI. Its an appendix to the BDCP Effects Analysis prepared by the new consultant, ICF. This one is supposed to evaluate the contaminant effects on T&E species from the proposed BDCP actions (considering only the most extreme conveyance option, plus some range of habitat restoration). The constituents discussed in the document include selenium, mercury, ammonia, copper and pesticides.

From my non-scientific read, it seems pretty darn superficial - it basically says there will be less dilution but likely won't matter to fish. We are writing comments, pointing out some obvious things and questions we need addressed in the NEPA and/or 404 process. What's more difficult is advising them on how they might approach a deeper analysis. Do your folks have any time to look at this? Federico wants comments by noon on November 1 - though after that there may be an opportunity to interact with ICF directly. I checked with David Nawi on USGS involvement and he welcomes it, though I guess hasn't sought it in this particular case, given your resource constraints.

Erin Foresman, on our staff (located in Sacramento) is working on our comments. Feel free to contact have your folks contact her directly if they are able to assist. Thanks! - Karen

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[attachment "App D_Toxins_101411.pdf" removed by Erin Foresman/R9/USEPA/US]

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http://wwwrcamnl.wr.usgs.gov/tracel/
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[attachment "DRAFT EPA comments on Appendix D Toxins of BDCP.docx" deleted by Michelle K Shouse/DO/USGS/DOI]

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