East Waterway OU

Anthropogenic Background Meeting #3 Meeting Notes

September 24, 2020

Participants: EPA, East Waterway Group (Port of Seattle, City of Seattle, and King County), Ecology, Muckleshoot Tribe, Suquamish Tribe

Meeting Materials

Anthropogenic Background Meeting #3 presentation
Table 8-3 from Lower Duwamish Waterway Data Evaluation Report (2020)
Email with links to studies (provided on September 16, 2020)

Attendees

EPA

- Ravi Sanga
- Kira Lynch
- Elizabeth Allen
- Erika Hoffman
- Sean Sheldrake
- Shawn Blocker
- Elly Hale
- Karl Gustavson
- Silvina Fonseca

USACE (on behalf of EPA)

- Bill Gardiner
- Kayla Patten

Ecology

- Jessica Huybregts
- Jing Liu
- Rick Thomas

Suquamish

- Alison O'Sullivan
- Denise Taylor

Muckleshoot

- Glen St. Amant

East Waterway Group (EWG)

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- Brick Spangler (Port of Seattle)
- Joanna Florer (Port of Seattle)
- Kathy Bahnick (Port of Seattle)
- Jeff Stern (King County)
- Debra Williston (King County)
- Pete Rude (City of Seattle)
- Allison Crowley (City of Seattle)
- Merv Coover (ERM on behalf of the City)
- Dan Berlin (Anchor QEA on behalf of EWG)
- Greg Brunkhorst (Anchor QEA on behalf of EWG)

Meeting Notes

Dan Berlin: [Roll call]. In Meeting #1 we talked about the EW conceptual site model and inputs to the EW. Today we are discussing the Green River datasets so that EPA can know what data exists, and find out what questions you might have about the data. We do not expect decisions to be made today.

Ravi Sanga: I agree there will be no decisions made today.

Dan: [Slide 2: review the agenda; Slide 3: review the meeting series]. Note Meeting #2 was cancelled as further discussion about the site conceptual site model was not necessary.

[Slide 5] The Green River watershed is divided into the upper, lower, and middle sections. LDW and EW are the downstream estuaries. RM 10.4 is where sampling occurred for several studies we are discussing today. Howard Hanson Dam controls flow to the Green River.

[Slide 6: review Green River Watershed statistics written on the slide]

~~**Allison O'Sullivan:** please go back to Slide 6 so we can read it.~~

Dan: [Slide 7: review land use statistics written on the slide]

Debra Williston: clarify this is the cumulative land use above RM10.4.

Dan: [Slide 8: review Green River characteristics written on the slide] Dam releases are important for both flow and solids concentrations in the Green River.

[Slide 9] Slide 9 shows how the USGS categorized flow for their loading study. Based on the pie charts, baseflow occurs 71% of the time but contributes 10% of the load. Storm events occur 21% of the time (including with significant dam releases) but contributes 54% of the sediment load. 90% of the sediment load comes from storm and significant dam releases.

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Debra: this sediment transport information is for RM 10.4

Bill Gardner: thinking forward, sediment load is related to storm and dam releases and it would be interesting to know if this translates to accumulation to the East Waterway.

Dan: That's a good question. Only the fine-grained fraction moves into the EW. But geochron cores, which were used to estimate net deposition rate, do not provide information on the timing of deposition.

Debra: Part of the story is the turning basin. The turning basin has the majority of sand drop out so that less dredging occurs in navigation channel further downstream.

Jeff: We would need to look at the modeling results to give more feedback on Bill's question. Based on modeling, storm events contribute >90% of sediment to the EW.

Elly: Does the USGS study differentiate suspended sediment by fine grainsize fraction?

Jeff: Yes the USGS study does.

Jing Liu: for the Ecology 2009 sediment tracer study, tracers were released at RM 4.7 and found that 50% of silt flows through the LDW.

Debra: from modeling, 25% of the material entering the EW settles [which is fine-grained material].

Jing: this is from the tracer study.

Debra: seems like they are shaking hands [tracer study and modeling for EW].

Jeff: yes more than 50% moves through the LDW

Dan: [flips back to the map on Slide 5 to show the location of the turning basin]

[Slide 10: review the Green River CSM take-aways on the slide; Slides 12 and 13: review the sample types on the slides; Slides 14 and 15: review studies on the slide; Slide 16: review locations of the studies; Slides 17 and 18: review facts on the USGS study]

Bill: did they get continuous chemistry?

Jeff: no, they got the continuous solids load from TSS, and sampled for chemistry.

Debra: they calculated an instantaneous chemical load, but not annual average.

Debra: [Slide 20: review slide]. The King County study also sampled at the 4 main tributaries, but it isn't relevant to the topic being discussed.

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[Slide 21] King County placed two types of sediment traps, baffle and jar style trap to compare to each other. Baffle is 11 inches from the river bottom. Jar style is 9 inches from the river bottom. Targeted wet season and dry season periods. July-Sept 2013 included one large storm event so repeated dry season in July to Sept 2015.

Dan: [Slide 22: review facts on the Ecology loading study, Slide 23: review Ecology Source Control samples]

Elly: where is River Mile 6.5 on the figure?

Debra: LDWG during the LDW RI did some upstream bedded sediment sampling – there is a little bit more data.

Dan: [Slide 24]. The turning basin cores are reflective of what is settling out, and contains more coarse sand fractions. [Slide 25]

Bill: are these vertically integrating the cores? Are they composited?

Dan: Yes, and they composite DMMUs.

Bill: are they sampled to the maintenance depth? Do they include underlying material?

Dan: yes, it is the same depth every time. They only include what would be dredged.

Jeff: clarify that we only used DMMU 03 and DMMU 01 for this analysis - not DMMUs further downstream

Dan: [Slides 26 – 28: reviewed slides on whole water datasets] whole water has not been compiled into a single dataset but all data has been compiled by others.

Dan: [Slide 30] there are 4 suspended solids data sources and three bedded sediment.

Debra: the sample counts are lower for the Ecology data because of the 30 percent fines cut-off applied to the data.

Dan: [Slide 31] We are not presuming that these are the numbers that would be used prior to doing more analysis, but it is helpful to know the summaries that have been performed by others.

[Slide 32]

Karl Gustavson: what would we see for PCBs in the middle of the LDW site or at the sill, or do you not know that?

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Debra: we do not have suspended solids with chemistry in the LDW or just upstream of the EW. We have bedded sediment and we have surface water.

Jeff: whole water PCB concentrations are higher in the LDW and the EW compared to the Green River, likely due to PCB flux from contaminated bedded sediment into the water

Debra: based on modeling, higher water concentrations are from sediment contamination. This is from PCBs fluxing from the sediment within the LDW. We don't have dioxin data.

Elly: contaminated sediment is affecting water, but laterals are also affecting – do not leave that out.

Debra: that is true, but on a mass-volume basis, the contaminated sediment is the primary driver to water column. Lateral inputs are a small volume of water compared to the Green River water volume. We looked at this with LDW water sampling recently completed.

Bill: what do the symbols mean [on the box-and-whisker plots]?

Debra: mean and UCL.

Bill: is there a sense of the bed load – is bed being picked up, or is it from the tributaries.

Jeff: that is a difficult question to answer. Dam releases with storms have finer grained sediments.

Karl: is there a time series for suspended solids?

Jeff: you could develop a time series for water but not suspended sediment. We could compare Ecology data to USGS, but we have not done the analysis. We have a longer time series of water data, but the organics are all non-detect. We have a longer time series of metal concentrations, and have seen reductions over time, but not in arsenic.

Debra: we don't have congener data for the older data; using aroclors, the data are all non-detect. [In the 2000s switched to congeners, now getting detects.]

Jing: if you look at the data – the turning basin is higher than upstream – is there a source in the 5 miles between RM 10.4 and the turning basin?

Debra: the turning basin is closer to the storm suspended solids data

Jing: some of the data are from 2008 and 2009 - is the data still relevant? Have there been changes to stormwater permit discharge requirements?

Debra: in source control work in the LDW or in general?

Jing: general

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Debra: I don't know – changes in permitting are what would change concentrations. I would look to Ecology.

Jeff: the Phase II stormwater permits were not requiring source tracing until recently, so maybe not significant reductions compared to Phase 1 permittees further downstream, like Seattle - there are not Phase I permittees higher up in the watershed – not sure that there was a lot of source control work being performed.

Bill: so you are saying that source control could affect in the future but we are not seeing that yet. Upper green you would not see a change over time. Is that correct?

Jeff: it is hard to separate; we do have a more recent land use dataset, but we likely wouldn't see a significant change over the last 10 years.

Elly: the PLA will have updated land use mapping in the watershed model.

Jeff: they have not done that yet. The 2007 is still being used.

Elly: I feel they have updated the land use in the Pollution Loading Assessment.

Debra: back to Bill's question - there is hope that there will be improvements in water quality over time

Dan: Slide 33 is another view of the data. Slide 35 shows where the data are summarized in LDW and EW documents. Slide 36 shows the EW FS model inputs. We selected the best estimate, low or high – we don't presume that these are the concentrations that would be used in AB determination; these are presented for reference for everyone. One important difference is that the EW FS used the mean of centrifuged and the whole water data for PCBs to account for more fines moving into the EW in comparison to the LDW FS (which used the LDW turning basin data).

[Slide 37: next steps follow up meetings on the slide]

Ravi: back on the summary statistics – UCLs are influenced by outliers – we will need to look at the distribution of data to make sure UCLs and percentiles are not under-conservative.

Bill: for some aspects of slide 36 – glad to see that we have explored different statistics and data types. UCLs are influenced by high values, and we use that for risk assessment because it's conservative. We don't want to be under-conservative. We will want to discuss means, medians, and UCLs. We will want to look through the data in more detail and potentially look at sources to determine the best estimate.

There may be some additional data collected by NewFields and Ecology in a Data Compilation Report. I will send a request for the data.

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Elizabeth Allen: I don't think anyone should be wrapped around the axle on the summary statistics. They are general comparison and they may or may not be representative. For dioxin/furan, TEQ does not exist in the environment and I would like to look at congeners. For the King County study are the data available?

Debra: all of the data is in the appendices.

Erika Hoffman: is the next meeting going to discuss the LDW lateral inputs?

Dan: yes. The plan is to discuss the existing EW and LDW lateral data and LDW bed sediment in the next meeting, per the meeting schedule.

Erika: my understanding has been that EPA's position that the data would not be relevant to the AB determination.

Ravi: that's a good point.

Kira Lynch: is a good point that we might not need a whole meeting on that, but it's a balance of being aware of the data that's available before we go into the data sufficiency meeting.

Sean Sheldrake: that data might be relevant as people start to look at decay rates – but it might not be essential to discuss for AB determination

Brick Spangler: I heard on-site contaminants are not part of AB, but laterals are from off-site. We also want to understand and document what factors affect the long-term site concentrations.

Ravi: a whole meeting that may not be needed; we should reevaluate what we will be discussing for next meeting.

Kira: it is a balance. I see where Erika is coming from, the discussion of this data will not have a big impact on anthropogenic background (AB), but I think there is value to the discussion, particularly to understand what data is available and for long-term performance.

Debra: we will not be ready for data sufficiency on the 7th due to the practicality of getting it done. We are already working on the presentation for the next meeting. We request that the group be patient and allow us to present. General urban inputs are part of AB, and the question is how do you acknowledge it in AB?

Kira: I'm fine with that. I appreciate the work that you have done, and it makes sense that you are already working towards the presentation.

Erika: I'm OK with that, but I wanted to get the discussion going. EPA is open to and wants to understand all of the considerations – there may be a push from the EWG that laterals are acceptable

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sources of data for calculating AB. I'm open to arguments, but I don't agree that laterals should go into AB. But there is more than one person at EPA who doesn't believe laterals can be included in AB.

Sean: that would be two.

Jeff: we want to know, can we get a measure of urban inputs to the site with existing datasets?

Elizabeth: I appreciate Erika's frustration – I'm Ok listening to the presentation of the data – I don't want to presuppose how the data will get used. For AB, we generally don't considered specific contaminant inputs into the site. Urban inputs channeled into a discharge may be viewed as a specific contaminant source. There may need to be some internal discussion about what may or may not be a source. AB is the general urban input that in any way shape or form can't be easily controlled.

Merv: is that documented anywhere?

Elizabeth: it is the definition of AB and in general EPA's interpretation of AB. General sources that aren't a specific contaminant source. A specific contaminant source, such as a PCB spill wouldn't be included.

Ravi: In response to Jeff – there is some anticipation from EPA that the urban inputs will be improved by source control.

Debra: Yes – there will be improvements, but you don't expect to get it to zero, regardless of best efforts. It's just pervasive in the environment.

Elizabeth: those are good points, Debra – going back to the first meeting – from the conceptual model, the actual effect of lateral inputs may not be significant and the time spent discussing the laterals is inversely proportional to its significance.

Elly: I'm curious whether the County has data for other non-industrial urban areas – can this be seen as a regional input, or a regional smoosh rather than LDW-specific smoosh?

Debra: we have been looking at something like that. I appreciate hearing these viewpoints.

Rick: everyone is focused on LDW and EW lateral inputs – what about above river mile 5 – you'll find that there are no data sets.

Merv: the Green River inputs include impacts from Green River lateral loads.

Rick: what you didn't show is the plume of stormwater that affects RM10.4 - you need to look at all the inputs.

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Kira: we don't need to understand all the lateral inputs that affect RM 10.4. Before we jump to conclusions, we want to take a step back to make sure all of us look at the data.

Rick: is there lateral data from the Green River? I think that is a big missing piece if we are going to include laterals.

Debra: no

Jeff: the concept is if the Green is an adequate characterization in and of itself. We don't need to decide how much urban is influencing the Green River, but is the Green with urban inputs adequate coverage for urban AB.

Ravi: Green has a range values – not just a mean statistic.

Alison: why are we talking about this. Erika had a good point, now we are in a death spiral.

Elizabeth: it is ok looking at all available data.

Alison: there need to be clear boundaries so the tribes know where you're working so the tribes know you aren't violating water quality standards or any other regulatory consideration

Ravi: idea of boundaries is a good point

Glen: I appreciate what Erika and Rick and Shawn brought up, and I feel like we jumped ahead 2 meetings. We would like to confer with EPA before responding further but glad points were brought up.

Debra: in the next meeting, I would also like to carve out time to discuss what information would be useful to present to evaluate data sufficiency to prepare for the meeting on 21st

Ravi: sure, that is a good idea.

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