

TRRP-15E Meeting
January 14, 2009; 9:30 – 12:00
Minutes

Attendees

(In person and on the phone) Tammy Ash (U.S. Fish and Wildlife Service), Keith Bradley (KBA EnviroScience, Ltd.), Krista Butler (URS Corporation), Larry Champagne (TCEQ), Alicia Fogg (Malcolm Pirnie, Inc.), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Johanna Gregory (Texas Parks and Wildlife Department), Kathleen Kerr (RPS JDC, Inc.), Jeff Lane (C-K Associates), Paul Lewis (TCEQ), Keith Linton (URS Corporation), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Jeff Patterson (TCEQ), Andrew Pawlisz (Conestoga-Rovers & Associates), Damian Preziosi (Integral Consulting Inc.), Vickie Reat (TCEQ), Richard Seiler (TCEQ), Mike Smith (TCEQ), Ralph Stahl (DuPont Corp. Remediation Group), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), Jessica White (NOAA), John Wilder (TCEQ), and Chip Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting

There were no changes to the minutes that Vickie Reat provided prior to this meeting.

II. Discussion of Introduction Section for Sediment (III) and Data for Assessment (III.A)

- Damian Preziosi gave an overview of the text he, Carolyn Fordham, and Keith Bradley had collaborated on prior to the meeting. This text was a handout at the meeting.
- Vickie reminded everyone that these 2 sections would include text for sediment in general and not just the benthic exposure pathways. We could populate it with benthic specific text/ideas for now and add other pathways as those sections are developed. She also indicated that some of today's discussions are not unique to benthos (or sediment for that matter).

Discussion of Sediment Introduction Text

- (Damian) What should persons think about in formulating an ERA for benthos, particularly from a big picture perspective? This would include the overall objectives of the ERA, objectives specific to evaluation, and risk management objectives. A clearly articulated problem formulation would be needed.
- Damian acknowledged that a prescriptive approach would not be appropriate because of the variability from site to site.

Discussion of Data for Assessment

- Initially there was discussion that the topics proposed were already covered in detail elsewhere and it would be better to refer the reader to these standard references (EPA data quality objectives, TCEQ guidance) rather than re-invent the wheel.
- Vickie explained that the idea behind this section was that we would highlight potential problem areas in risk assessments that we often see. In development of the concept paper, TCEQ and the trustees thought this would be a valuable discussion. Vickie explained that TCEQ did not necessarily intend to limit the discussion to the topics in the concept paper; these were intended to be suggestions as a start and the list could be shortened or expanded. Damian described this as "things you need to watch out for."

- Damian suggested that a discussion of biologically relevant depth for risk assessment guidance would be helpful. Andrew Pawlisz concurred.
- Andrew suggested that it would be helpful to discuss key information rather than universally refer the reader to other guidance documents. Some topics could be highlighted in a text box.
- In conclusion, Damian, Keith and Carolyn agreed to go back and flesh out “hot button” examples for sediment exposure pathways globally. This could include adequate nature/extent determination. All agreed that this section should be revisited as we work on other pathways.

III. Discussion of Exposure Areas for Benthos (III.B.1)

- Here again, Damian gave an overview of the text he, Carolyn, and Keith had collaborated on prior to the meeting. This text was a handout at the meeting.
- Do you divide an area or not? Damian emphasized that the area for evaluation would be based upon the types of organisms present and types of conditions present in an aquatic system. This would be predicated on a good conceptual model and adequate nature/extent determination up front. It would be up to the assessor to put up a credible argument.
- The benthic exposure area could be all of the affected property, as defined in TRRP, or a subset. This goes to the necessity for adequate nature and extent determination in the first place.
- What are potential reasons for dividing the affected property into separate exposure areas for benthos? Consider contaminant distribution (elevated concentrations, etc.), homogeneity/ heterogeneity of the water body, a priori risk management decisions, and community composition (specific or general knowledge).
- Larry reflected that when TCEQ reviews a sediment risk assessment, the size of the benthic exposure area and the make-up of the benthic community (if known) are not the first questions. More “big ticket” questions include: Did they sample the sediment? What are they doing to account for that pathway? Were samples collected with human health pathways in mind predominantly? Have they proven nature and extent? Have they sampled depositional areas? Are they using empirical data versus modeled data? All agreed these might be some things that could be discussed in the “data for assessment” section.
- Along the same lines, Richard Seiler added that much of this is a chicken/egg situation. Often sites are “stuck” with inadequate data (sample number and locations) due to an inadequate level of effort up-front. As such the data doesn’t support any realistic consideration of the size of the benthic exposure area.
- Andrew liked the idea that the text suggested considering risk management questions as well as habitat and benthic community (not just an ecological consideration). For example, there may be reasons to remediate up-front so this would decrease the amount of affected property to consider within the benthic exposure area.
- John Wilder supported the first paragraph particularly because it tied the assessment methodology and the risk management considerations to the decision to subdivide an area.

IV. Discussion of Benthic Hot Spots (III.B.3)

Hot Spot Definition and Goals/Advantages of the Hot Spot Determination

- Vickie and Larry gave an overview of the text that they collaborated on with Keith prior to the meeting. This text was a handout at the meeting.

- Vickie indicated that at the last meeting the understanding was that the group was uncomfortable with tying the hot spot definition with a risk management decision, and that the group liked the generic definition in the ERAG.
- As reflected in the comment, Larry explained that there is concern that moving back to this definition is so broad and encompassing that any one site could have numerous hot spots, by definition. Larry stressed that we don't want to quantify hot spots and we don't want to infer that the hot spot evaluation would be based on/or require a statistical comparison of a potential hot spot with the sample locations surrounding it.
- This said, Larry explained that we are proposing to retain the definition from ERAG as a starting point only and that the end result would be "actionable" hot spots based on the evaluative process laid out in the text. Hence we would start the hot spot evaluation with a broad definition and then work through a weight of evidence approach (fine tuning) to arrive at those locations that are actionable.
- David Parmer asked how we could define hot spots without considering statistical outliers. David indicated that a statistical outlier test may very well be part of the initial (hot spot) screening, but that persons would need to look at the individual data points and their geographical distribution and not automatically exclude data points based on the statistical evaluation alone. Vickie explained that people may want to make the argument that a potential hot spot was a statistical outlier but this would have a lot of qualifiers; persons couldn't just use statistics to put sampling data aside.
- There was a subsequent discussion of outliers in general. Andrew suggested that (and Carolyn agreed) a location should not be called an outlier until re-sampling confirmed some type of error. Chip Wood suggested that an outlier determination would be based on multiple lines of evidence, not just statistics. Vickie acknowledged that the "factors" discussion may need to include outliers but that this should be limited and should refer the reader to a more global outlier discussion elsewhere in TRRP-15. All agreed that hot spots and outliers cross media and pathways.
- Chip asked what might be unique to benthos in terms of outliers. Richard suggested there are unique considerations for sediments (dynamic transport and physical characteristics).
- Andrew suggested that a potential outlier location should be re-sampled to confirm. Carolyn agrees with Andrew. Is it truly an outlier because of error? Does the data make sense?
- Keith Linton suggested that the definition of hot spots should be tied to acute versus chronic effects. The group stressed that this generally would not apply to the benthic community (compared to humans and wildlife).
- Keith Bradley suggested that our definition of hot spots not only addresses a spike in concentration but also a spike in exposure.
- The group generally supported the draft text.
- Ralph Stahl suggested that the text doesn't say anything about the potential for a receptor to be present in the first place. Vickie suggested this might be something to discuss with habitat quality. Larry suggested that the assessor should have a general idea of what should be there under normal circumstances.

IV. Discussion of Factors for the Evaluation of Potential Benthic Hot Spots (III.B.3)

Vickie reminded everyone that these are suggested factors for evaluation of hot spots. The work group may determine that other factors should be added. Further, for any one site, Vickie explained that a risk assessor may not necessarily need to evaluate all of the factors.

Spatial relationship of the elevated data points:

- TCEQ stressed that persons should begin the evaluation with a map that demonstrates the midpoint PCL exceedances. This could be used to evaluate the adequacy of the sample density and well as any apparent patterns. Jeff Lane suggested that it would be appropriate to display all the data and highlight the midpoint exceedances.
- David suggested that there could be a discussion of the factors that cause the highest concentrations at particular locales (sources, deposition).
- Andrew asked if we should define the depth of a benthic hot spot. Vickie didn't think that the depth should necessarily be greater than the biotic zone unless there was a reason to evaluate deeper. Persons would need to consider any possibility that deeper more contaminated sediments may become benthic habitat due to scouring, dredging, or sediment removal for other reasons.

Magnitude of exceedance:

- Richard suggested that the acute versus chronic discussion may have some bearing here.
- Vickie pointed out that the text suggests that particular emphasis should be placed on locales with concentrations that are an order of magnitude greater (or more) than the midpoint PCL. She explained that the whole evaluation should be based on multiple factors and that persons should not simply say that a particular location did or did not represent a hot spot based on this threshold. This brought about an extended discussion.
- The regulators suggested that two orders of magnitude would be too much as this would be above the second effects level for many COCs. Carolyn suggested this could go both ways depending on the toxicity of a COC. The group suggested the text could bring up the order of magnitude exceedance and/or relationship to second effects levels; bring back multiple lines of evidence here. Some supported and some opposed any quantitative discussion.

Discussion of "the factors" will resume in February. The group only discussed these two.

IV. Action Items and Next Meetings

- Damian, Carolyn and Keith will continue word-smithing the Section III introduction and the "Data for Assessment" section.
- Everyone e-mail Damian with any ideas on benthic exposure areas in the next week or week and a half so he can capture your thoughts. He will compile these ideas and use them to continue work on the text with Carolyn and Keith. Vickie Reat and Larry Champagne agreed to help with this effort.
- The group will continue discussing the benthic hot spot "factors" in February. Everyone should send Vickie any comments on the factors as proposed thus far.
- Everyone should be prepared to continue discussing "Data for Assessment", benthic exposure areas, and the hot spot factors at the next meeting, including any back-up materials provided prior to the meeting.
- Everyone should also be prepared to discuss B.2 (Exposure point concentrations for benthics) at the next meeting assuming we have time to begin discussing this also.
- The next meeting is scheduled for February 11 from 9:30 – 12. Persons may attend in person or call in.
- The following meeting is scheduled for March 11 from 9:30-12. During the February meeting, we will decide if the March meeting should be a face-to-face (in Austin) meeting, and if the length of the meeting should be extended.

TRRP-15E Meeting
February 11, 2009; 9:30 – 12:00
Minutes

Attendees

(In person and on the phone) Tammy Ash (U.S. Fish and Wildlife Service), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Alicia Fogg (Malcolm Pirnie, Inc.), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Curtis Franklin (Dougherty Sprague Environmental, Inc.), Johanna Gregory (Texas Parks and Wildlife Department), Michael Jones (High Prairie Environmental, LLC), Kathleen Kerr (RPS JDC, Inc.), Jeff Lane (C-K Associates), Paul Lewis (TCEQ Remediation Division), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Don Pitts (Texas Parks and Wildlife Department), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), and John Wilder (TCEQ Remediation Division).

I. Minutes from the Last Meeting/ Discussion of Agenda

- David Parmer provided comments on the minutes regarding his discussion of outliers as they relate to hot spots for benthos. Vickie Reat indicated she would revise the bullets based on this discussion and get text back to David for clarification. This is the revised text for the January minutes: *David Parmer asked how we could define hot spots without considering statistical outliers. David indicated that a statistical outlier test may very well be part of the initial (hot spot) screening, but that persons would need to look at the individual data points and their geographical distribution and not automatically exclude data points based on the statistical evaluation alone. Vickie explained that people may want to make the argument that a potential hot spot was a statistical outlier but this would have a lot of qualifiers; persons couldn't just use statistics to put sampling data aside.*
- Vickie Reat indicated the discussion of exposure areas for benthos (Section III.B.1) will be postponed until March.
- Vickie also indicated we will discuss the dates for the March, April, and May meetings at the close of this meeting along with the possibility of a face-to-face meeting during one of these months.

II. Discussion of Factors for the Evaluation of Potential Benthic Hot Spots (III.B.3)

- Vickie reminded everyone that the idea is that persons preparing an Ecological Risk Assessment would use these factors to evaluate why a particular sediment location is/is not a hot spot. Persons would not necessarily need to evaluate every factor. Further, the group may want to propose additional factors that are not contemplated in the concept paper.
- Vickie distributed the comments she received from Michael Jones regarding the hot spots factors. These were integrated into the discussion.
- Although we discussed the “spatial relationship” and “magnitude of exceedance” in January, we re-visited these factors.

Spatial relationship of the elevated data points

- Regarding the text that the area of elevated concentrations “should not preclude movement” of benthos, Michael Jones (written comment) asked if the assumption was that exceedances would always preclude movement. Answer: always no; sometimes yes

- Regarding the presentation of a map, Jeff asked if a cross section should be provided. Answer: Generally no but all agreed the text should reference or repeat (somewhat) that in the ERAG regarding the definition of the biotic zone and the appropriate sample depth for benthos.

Magnitude of exceedance

- Michael Jones (written comment) had asked if the toxicity endpoint is in question. Answer: Not really; the intent was to simply reflect that an exceedance of a PCL is more worrisome if the chemical is particularly toxic to benthic organisms generally.
- Jeff Lane asked if NAPL in sediment would be problematic. Answer: Yes, this is something we might discuss in the “source area” discussion and refer the reader to the NAPL guidance.
- Vickie reminded everyone (from last time) that the magnitude text would remain although it would be de-emphasized somehow to make persons aware that the factor evaluation would be a weight of evidence exercise; persons should not use this as the ultimate threshold to conclude that a locale is/is not a hot spot.
- The group came back to this factor late in the discussion. Some are concerned that persons will put too much weight on this factor and use it as a bright line to argue that a locale is not a hot spot. All agreed that perhaps we should re-think this particular issue after all the text is drafted.

Chemical and Physical Persistence of the COC(s)

- Vickie opened the discussion with the thought that we want to know how long the COCs will be around given the presumption that benthos may re-colonize an area.
- David asked where this discussion was going. David suggested that there be a sentence that indicates the hot spot persistence information should be discussed relative to everything else around it.
- Larry Champagne stressed that this information will be useful in terms of risk management. Should a potential hot spot be removed or remain in place?
- Jeff suggested that the text (physico-chemical conditions) should be specific to the potential hot spot relative to the surrounding areas.
- There was a general discussion of the persistence relative to the timing of the release. Richard Seiler suggested this is relevant to potential transport; the longer it stays around the longer it can be moved around.
- Vickie suggested that this aspect ties directly into the “source area” discussion (next factor).

Significant Source Area

- Vickie indicated that the idea behind this factor was rooted in hot spot guidance from the State of Oregon.
- Kirby Tyndall agreed that this is a relevant factor.
- Jeff Lane suggested that the significant descriptor is too vague. The group agreed to title this factor as “significant ongoing source area.”
- David suggested that the text, “or be maintained,” be added to the first sentence. All agreed.

Habitat Quality

- Vickie discussed the footnote in the concept paper. All agreed that some version of the footnote should be added to the text itself.
- Curtis Franklin suggested that the guidance emphasize when a potential hot spot should not be written off and when this should not be used as an excuse. Would the potential hot spot hurt or help the existing habitat? More explanation is needed.
- David reminded everyone that habitat could improve following remediation.
- Larry and Johanna Gregory noted (see Michael Jones comment) that a hot spot could be an attractive nuisance.
- Carolyn Fordham suggested a discussion of habitat relative to background or ambient conditions.
- The group suggested adding invasive vegetation as a possible discussion topic for this factor.

Multiple COCs

- The work group agreed that there should be some text that persons consider possible antagonistic or synergistic toxicity effects (Michael Jones comment).
- The group also agreed that the last sentence should end with multiple COCs and/or their daughter products.

Outliers

- Although not a “factor” now, Vickie asked the question whether we want to include a statistical outlier as a possible factor to evaluate.
- The group agreed that we should put a placeholder here for an outlier discussion. We can revisit this after the outlier section of the guidance is completed.

Possible Other Factors

- Vickie asked if there were other factors that the group felt should be added to the discussion that were not represented in the concept paper.
- Krista Butler asked if reproducibility should be added, especially in flowing systems. Is it really there? If you sample again, can you reuse those results?
- Then there was a discussion that this goes to how well the assessment was done in the first place; it's a statistical issue.
- Vickie suggested that part of the question (if the site was re-sampled and the data was different) would be if the nature and extent determination was adequate and if the “hot spot” had moved elsewhere.
- Vickie acknowledged that we could look at new data. Richard said we would need to be cautious about sample methods, locations, number, etc recognizing the variability.
- Then there was a discussion whether any factor should be weighted more than another. Vickie indicated that the intent in the concept paper was that all should be judged in a weight of evidence fashion. Some factors could go either way. The trustees and the TCEQ did not envision giving any one factor more or less weight when they drafted the concept paper. The group suggested that we add text along these lines.

III. Discussion of Exposure Point Concentrations for Benthic Invertebrates (III.B.2)

- Vickie gave an overview of this section. She reminded everyone that per TCEQ guidance, most risk assessments have been using a 95% UCL as the exposure point concentration for benthos after benchmark screening. The idea is that we do not want to dilute out hot spots.

- There was a general discussion that the use of the 95% UCL needs to be accompanied with adequate sample size and appropriate statistical assumptions and methodologies, including the use of U.S. EPA's ProUCL software. Vickie agreed but stated that this should be part of a larger discussion on 95% UCL somewhere else in TRRP-15 (E, H, or both).
- Richard commented that since some benthos are fairly mobile, it would be inappropriate to remove data points from a 95% UCL calculation if those sample locations are not remediated and an ecological services analysis (ESA) is performed.
- In reply, Vickie suggested that the text should be clear here and on page 13 that if hot spot sample locations are not removed or remediated, they should be included in the UCL calculation.
- Vickie also suggested that we not discuss ESAs at great length here. That said the conversation indicates perhaps there needs to be some discussion of this somewhere else.
- Michael commented that the presumption there would not be any remediation associated with an ESA is not necessarily true.
- Vickie asked if it is confusing that we are asking for a hot spot evaluation and possible remediation as a follow-up, in addition to an evaluation based on the 95% UCL.
- David asked if we are drifting towards the position that a hot spot is a threshold where we would not accept natural attenuation. David suggested that the next step may be re-sampling rather than remediation.
- Vickie indicated that the text box describes a possible order of evaluation. The key is when and if the trustees would get to see a hot spot evaluation. This was not discussed at any length and there was no resolution on the text box.

IV. Discussion of Future Meetings

- The March meeting (March 11; 9:30-12) will not be face-to-face as proposed initially since we need to make more headway on the benthic text. This will be a conference call with an option to participate at the TCEQ offices.
- The April meeting will be a face-to-face meeting in Austin. Vickie will poll everyone on their preferred date as April 8 is problematic for the trustees. This will be a longer meeting.
- The May meeting/conference call for May 13 needs to be re-scheduled since that date conflicts with the TCEQ trade fair. Vickie will poll everyone on their preferred date. This will be the usual 2-3 hour call.
- Vickie noted that no rooms or phone lines are reserved for meetings after May. We will need to decide if we want to continue (after May) with the default (second Wednesday of every month) meetings/calls with occasional face-to-face meetings.

V. Action Items

- Everyone (particularly workgroup members not on the call) should send comments to Vickie if they have thoughts on the hot spot "factors" as proposed. Based on this input and today's discussions, Vickie will revise the factor text for the next meeting in March. **Please send your comments on the text by COB February 27.**
- Everyone (particularly workgroup members not on the call) should send comments to Vickie if they have thoughts on the exposure point concentration text (for benthos) and Vickie will revise the text for the next meeting in March. **Please send your comments on the text by COB February 27.**

- Vickie will poll everyone on their availability for April and May meetings. **Everyone needs to respond to this poll by COB February 20.** Vickie will let everyone know what days are selected taking into account the poll and room availability.
- Damian, Carolyn and Keith will continue word-smithing the Section III introduction, the “Data for Assessment” section, and more importantly – the exposure area for benthos discussion. Damian will provide this text prior to the March meeting for discussion during the meeting.
- At the March meeting, everyone should be prepared to discuss the above text along with revisions to the hot spot factor text and the exposure point concentration text for benthos.

TRRP-15E Meeting
March 11, 2009; 9:30 – 12:00
Minutes

Attendees

(In person and on the phone) Lila Beckley (GSI Environmental, Inc.), Keith Bradley (KBA EnviroScience, Ltd), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Michael Jones (High Prairie Environmental, LLC), Paul Lewis (TCEQ Remediation Division), Chris McCarthy (CH2M Hill), Andrew Pawlisz (Conestoga-Rovers & Associates), Damian Preziosi (Integral Consulting, Inc.), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Jessica White (NOAA), and John Wilder (TCEQ Remediation Division).

I. Minutes from the Last Meeting/ Discussion of Agenda

- Paul Lewis reported that the TRRP-15 H group will be meeting next week with the intent of nailing down a position on UTL vs. UPL for background.
- Regarding the minutes from last month, there was just one change in the discussion of the “spatial relationship of the elevated data points” (hot spot factors). Vickie Reat indicated the text had been revised to reflect Michael Jones’ written comment based on an e-mail exchange with Michael.

II. Discussion of Sediment Exposure Pathways (III)

- Damian Preziosi led a discussion of the proposed text for this section. Damian indicated he tried to reflect the spirit of past discussions/comments.
- 1st section – sediment exposure pathways – purpose of introduction section should identify the main objectives: 1) area of exposure, 2) statistics for exposure point concentration, and 3) how to deal with hot spots.
- Damian indicated that these exposure pathways are not just for benthics, but also aquatic plants and wildlife that are dependent on the ecosystem (direct and indirect contact).
- Vickie Reat stated that rooted aquatic plants were not receptors evaluated in ERAs except as food.
- Andrew Pawlisz asked about the meaning of the “fully or in part” text in the last sentence of the first paragraph. Damian explained that the idea was that 100% of a receptor’s exposure may not be at the site in question – he was trying to present the concept that exposure pathways are often considered complete, but that doesn’t mean they are constant. Vickie indicated that we would consider the exposure pathway complete and that exposure could be adjusted with other factors such as area use factors. Damian indicated he could remove this text but that he feels this is an important concept and the idea of an AUF is frowned upon for a number of reasons. Damian agreed this text may be too vague.
- The discussion of the 3rd paragraph regarding the benthic PCL exclusion was lengthy. Vickie suggested that this be shortened with a reference to the TCEQ ERAG for details. Jessica White reminded everyone that the benthic exclusion for Segments 1006 and 1007 doesn’t apply to the tidal tributaries of these segments – this is decided on a case-by-case basis. There was also discussion about the “Special exceptions” text in the last sentence. Special exceptions to what?
- There was also an extended discussion about the need to present a problem formulation discussion (last paragraph on first page). Damian felt this (and the conceptual site model) were critical to any kind of risk assessment in terms of exposure evaluation: management

- Vickie reminded everyone that since this is introduction text for the entire sediment section, we would need to come back and review this once the section is complete. We may have a better idea what needs to be emphasized/summarized once the whole thing is pulled together.
- As a general comment Andrew suggested that we use simpler language and that he would provide suggestions.

III. Discussion of Data for Assessment (III.A)

- Vickie reflected that this section is to give folks a heads up on lessons learned so to avoid garbage in/garbage out.
- Damian indicated that this was presented as bulleted topics to be fleshed out into text. He believes we have the general ideas down now.
- Damian reminded everyone that often data is forced fit into an ecological evaluation, and the sampling design was not intended necessarily for an ecological assessment.
- John Wilder suggested we visualize the issue as if the data has to pass through a gate. Do we use all the assessment data when calculating a UCL or do we attempt to control the content of the data set to make more relevant data groupings? We don't want to dilute the data set.
- Vickie suggested you would include sample locations above an ecological PCL and above background. For the "edges" you would hope to show a trend but not include too much below a PCL.
- Keith Bradley stated this often is not a deliberate dilution of the data set; it is just a byproduct of the initial sampling effort over a large area. This may be worth mention in the text (to avoid).
- Chris McCarthy suggested that rather than focus on concentrations, risk assessors should put more emphasis on habitat and appropriate number of samples based on habitat.
- Richard Seiler suggested that the data should be correlated with habitat especially for depositional/quiescent areas.
- Keith suggested that risk assessors should explain what the data set is and why it is being used (or not).
- Andrew asked how often TCEQ sees sampling work plans. Vickie indicated that TRRP doesn't require work plans although we do recommend them for Tier 3 risk assessments. TCEQ staff do routinely review sampling work plans associated with superfund sites. A common problem is that too much time passes (and consultants and science and policy change) between when the work plan is reviewed and when the actual sampling effort begins. There was general consensus that we could state a work plan, or communication of some type, would be encouraged for large, complex, or controversial sites. Work plans may save time for all down the road.
- Paul Lewis indicated that similar issues have come up with other TRRP guidance documents and those contain a text box with words to that effect (work plans are helpful but not required).
- Andrew asked if we need to discuss the minimum data requirements for sampling for coverage. Vickie suggested we generally state that there should be enough data for

IV. Discussion of Exposure Areas for Benthics (III.B.1)

- Damian suggested that features of the environment, both biotic and abiotic, should play a role in determining the benthic exposure area. How do you define the edge? Physical features may have a management context.
- Vickie asked why an area would be divided up based on differences in chemical distribution. Damian explained this may be due to a management objective so that it makes sense from a practical remediation strategy.
- Margaret Roy suggested that the chemical distribution ties to source areas.
- Jessica suggested you may want to divide up a site when analyzing for tissue residue for benthos. Here there would be a desire to get co-located sediment and tissue data.
- Carolyn Fordham suggested that statistics could be used to define different populations. Where is the forensic analysis? Site versus anthropogenic impacts?
- Keith suggested that we highlight the concept that subdividing is an exception in a text box.

V. Discussion of Exposure Point Concentrations for Benthic Invertebrates (III.B.2)

- Vickie indicated that she removed the text box with recommendations for placement of the hot spot analysis in the 10-Step SLERA. Why? Because it really doesn't matter (in Vickie's opinion) as to the order this is presented because the risk assessor can do the exercise in any order they want to and simply fit it to our format for the SLERA final report. The idea of where this goes in the 10-Step process goes back to TCEQ's MOU with the trustees and at what point they would be invited to participate in a review of a SLERA. This was never resolved in our (TCEQ and trustee) initial discussions of the concept paper. If the hot spot analysis was tied somehow to Step 7 (less conservative evaluation), then the trustees would always have the option of participating in the review if the risk assessment included less conservative hazard quotient calculations. There was no particular discussion initially on this item in response to Vickie's statements.
- We came back to "where this would be in the 10 step process" when discussing the hot spot factors.
- Vickie reiterated that the hot spot analysis is not tied to any one of the 10 steps for now and TCEQ would welcome feedback on this if it needs to be in a certain place.
- Krista Butler suggested that if you determine there is a hot spot and you plan to remediate, then it impacts the whole evaluation. Based on this she suggested you would want to do this earlier in the 10 step process.
- Most agreed the hot spot analysis doesn't belong at step 1.
- Damian asked why TCEQ had selected the 95% UCL as the statistic for benthos. He believes that the guidance should provide a statistical reason for this and not "just do it." Why does this make sense for benthic organisms? Why this statistic over others?
- There was an extended discussion of the same.
- Damian suggested there should be a similar discussion for wildlife. He said that we don't often see the 95% UCL as the selected statistic for benthos and that there is no consistency in the selected EPC for benthos across the country.
- Damian suggested that the common practices include the use of arithmetic averages, surface weighted averages, and boot strap estimates.

- Andrew asked if TCEQ's intent is for the UCL to replace use of an average. Answer: Yes. TCEQ does not believe that the use of an arithmetic average is conservative enough.
- Vickie noted that Tom McHugh's e-mailed comments also asked for more discussion explaining why a UCL was appropriate for stationary organisms. Part of the answer is that this is what we have always used (per guidance), and now we are adding the hot spot analysis to address the fact that these are largely immobile organisms.
- Chris asked if there is there flexibility. Would the TCEQ accept other statistical approaches? Answer: Maybe, as this is guidance after all. However the guidance will not be helpful if we do not state our preference.
- Keith suggested this could possibly be addressed in the uncertainty analysis.
- Chris asked if the guidance could state that persons could try something else if adequate justification is presented.
- Jessica and Vickie stated we prefer not to invite that sort of discussion routinely. The trustees may have concern with this.
- Damian argued that this is a big issue as other states/entities will look to our guidance. Damian stressed that we should leave some flexibility absent any good justification for the UCL requirement.
- Vickie acknowledged that when TCEQ and the trustees wrote the concept paper we didn't write that kind of text as none of us are statisticians.
- Michael Jones asked if there is a suggested alternative to 95% UCL. Damian suggested that it depends on a number of site-specific factors and that a point-to-point analysis may make a lot of sense in certain cases.
- Michael Jones opined that the 95% UCL is still the best estimate in most cases.
- Damian reflected that a big problem is the blind acceptance of UCLs or other methods in software packages so that the evaluation is a black box.
- Vickie reminded everyone there will be additional discussion of this sort of thing – using UCL programs as a black box without complying with the assumptions and limitations of those tools – in the global UCL discussion in this document, TRRP-15 H, or both.
- Vickie acknowledged that some “why” discussion is merited. She suggested that we put a place holder here for now as to “why” as TCEQ and the trustees do not have a ready answer presently. This may need to wait until we see what is in the more global discussion of UCLs.
- Vickie also suggested that everyone read and comment on the RAD discussion (page 13). This talks about point to point comparisons versus comparisons with an averaging statistic or background. The RAD discussion echoes the map laid out in the TRRP-15H for the first 4 RAD options.

VI. Discussion of Addressing Hot Spots (III.B.3)

- Note – The group spent perhaps 5-10 minutes on this (factors for hot spots) as we ran out of time. More feedback comments via e-mail are needed and welcome!
- Larry Champagne suggested discussion of the changes to the “magnitude of exceedance factor.” The original text had emphasized an order of magnitude exceedance; the revised text suggests using an exceedance of a second effects level.
- Larry stated that the second effects level has some basis in guidance already. Larry said he is also exploring the idea of persons identifying multiplication factors up to the 2nd effects level – like 2x, 5x up to the 2nd effects level. Persons could put display this on a map to look for patterns.
- As the text reflects, Larry stated that we would not want persons to use this factor alone. Since it states a threshold we are concerned that persons will automatically use this factor above everything else. Larry stated that the order of magnitude is arbitrary whereas we

- Chris suggested we craft a hot spot analysis example and prepare it so that it does not rely on the magnitude of exceedance factor solely. Response: good idea.

VII. Future Meetings

- Our April 9th meeting is set to be a face-to-face meeting in Austin. We will have a working lunch and order lunch in. Vickie indicated phone lines will be available but would ask those who can to try to attend the meeting in person.
- The main goal of the **April 9th** meeting will be to get the benthic text as far along as possible. Vickie will set up a computer/projector so we can edit as we discuss the document (if desired).
- If we have extra time, we can move on to wildlife exposure areas and hot spots for sediment. The idea would be to set the stage for the next push in terms of work group organization. Paul Lewis suggested it was too early to discuss coordination with TRRP-15H.
- The May meeting is set for **May 21** from 9:30-12. This will be a regular conference call type meeting with the option to attend.
- The group agreed to continue our standard meeting time after May as the 2nd Wednesday of every month. Most thought a monthly schedule was appropriate to keep making progress without being a particularly onerous demand on our time.
- Mark your calendars. The meetings/phone calls after May will be **June 10, July 8, August 12, September 9, October 14, November 12, and December 9**. Note that the November meeting is set on a Thursday as the normal Wednesday time is Veteran's Day.
- The normal times for our May – December meetings will be 9:30-12:30.
- The meeting dates can be modified if need be based on need. Also we can schedule another face-to-face as need be.

VIII. Action Items

- Get feedback to Damian on text for the Sediment introduction, data for assessment, and benthic exposure area text. The deadline is March 18th. (Note, this date had passed when the minutes were prepared. Please get comments to Damian ASAP and cc the work group so that Damian can turn this around and get another draft back to the work group on April 1st.)
- The idea is for us to have another, more refined, version of the text to review at our face-to-face meeting in April.
- Get feedback to Vickie (and cc group) by COB March 24th on the exposure point concentration for benthos and the hot spot factor text. Vickie will also revise text and get it back to the work group on April 1st for discussion at the April meeting.

TRRP-15E Meeting
April 9, 2009; 9:30 – 3:30
Minutes

Attendees

(In person and on the phone) Tammy Ash (U.S. FWS), Keith Bradley (KBA EnviroScience, Ltd), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Deborah Edwards (ExxonMobil Global Remediation), Alicia Fogg (Malcolm Pirnie, Inc.), Curtis Franklin (Dougherty Sprague Environmental Services), Jeff Lane (C-K Associates), Paul Lewis (TCEQ Remediation Division), Chris McCarthy (CH2M Hill), Tom McHugh (GSI Environmental), Tommy Mobley (Texas General Land Office), Andrew Pawlisz (Conestoga-Rovers & Associates), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), Jessica White (NOAA), and John Wilder (TCEQ Remediation Division).

I. Minutes from the Last Meeting/ Discussion of Agenda

There were no changes to the draft minutes from the March 11 meeting.

II. Discussion of Exposure Point Concentrations for Benthic Invertebrates (II.B.2)

- We continued our discussions of the 95% UCL as the preferred exposure point concentration for benthos. This was an extended discussion. Tom McHugh opined that this is an inappropriate exposure point concentration given the sessile nature of the benthic community. Tom's points are generally summarized below:
 - Benthic organisms aren't mobile and so they can be exposed to a localized higher concentration.
 - The statistical evaluation is meaningless; a percentage (impact that is acceptable/unacceptable) of the benthic community should be more relevant. Larry Champagne suggested that this percentage would be very site specific.
 - We should eliminate the UCL step and move directly into the hot spot analysis since the organism doesn't move.
- Feedback in response to Tom's opinion or in favor of the 95% UCL included the following:
 - Vickie Reat indicated that from a regulatory standpoint, requiring a point by point comparison when trying to protect a whole benthic community would likely meet extensive resistance. Certainly anything we put in the guidance is always an option as it is guidance and not rule.
 - Vickie stated that our general point of view is that using a 95% UCL is going to be protective of the community, coupled with the hot spot evaluation. Benthos can drift and re-colonize elsewhere. Vickie added that the use of the 95% is the standard approach now after benchmark comparisons. Hot spots can be overlooked.
 - Chris McCarthy stated that if the community is uniform over an entire area, it seems reasonable that an average is appropriate.
 - Larry Champagne suggested that the hot spot analysis catches what is considered a hot spot, makes the decision to remove the hot spot from the UCL calculation, and is a middle of the road approach to placate both sides.
- Vickie asked Kirby Tyndall and Michael Jones to collaborate and write some text regarding our selection of the 95% UCL as the exposure point concentration for benthos.

- The discussion then moved on to the question of the placement of the hot spot analysis in the prescribed 10-step process for a Tier 2 SLERA.
 - Keith Bradley asked if an ecological services assessment can be considered a remediation strategy for a hot spot. Yes, and this should be reflected in the text.
 - Vickie suggested this could be placed into the uncertainty section.
 - Most agreed that Step 1 is not an appropriate placement.
 - We discussed the relationship between the Step 7 trigger and the trustees' potential review of a SLERA per the MOU between the trustees and the TCEQ. Jessica White suggested that the trustees are generally only alerted when there is a true concern that there a true risk.
 - John Wilder acknowledged there is a lack of clarity in the benthic evaluation in the ERAG (order and relationship to the 10-step process). He believes that these should be fixed but not necessarily in TRRP-15E.
 - Keith suggested that a text box would be helpful to provide options for where the hot spot analysis could go. TCEQ staff and trustees will talk about it some more and will try to develop this text box.
- Andrew Pawlisz provided some text edits during the group discussion. A footnote will be added to indicate that if the maximum sediment concentration is above a benchmark and background, the COC should be retained. Background always trumps and this is implicit in the rule. If this comes up earlier in the document the footnote should be moved to the earliest occurrence.

II. Discussion of Benthic Hot Spot Text (II.B.3)

- John suggested that the discussion related to community vs. individuals is too vague and doesn't understand what the intent is with this section. Vickie indicated this is simply to re-state that the evaluation is protective of the community and not individuals (per ERAG). John suggested this be moved to the introduction to not confuse it with the factor discussion.
- Upon consideration of Andrew's question of the meaning of the "individually and collectively" part of the sentence in item number 2 (4th main paragraph), the group agreed to strike that sentence and insert a parenthetical in the previous sentence.
- "Spatial relationship of the elevated data points" – There was no particular discussion.
- "Magnitude of exceedance" – There was discussion related to the second sentence that indicates that the second effects level should have particular emphasis. Vickie revised the text to draw the emphasis away from this one particular factor. Text was also added to suggest a contour map of sorts to show the sediment concentrations relative to the sediment benchmarks/PCLs.
- "Chemical and Physical Persistence of the COC" – There was no particular discussion.
- "Significant ongoing source area" – Regarding the NAPL management response issue, Vickie will have Chuck Stone to weigh in on the paragraph (done).
- "Habitat quality" – There was an earlier comment (via e-mail) to add some habitat assessment text. Chris McCarthy will send Vickie some specific comments on the text (done). Keith acknowledged that this factor is "different" from all the others in that it is less quantitative. Vickie agreed and remarked that degraded habitat is often the reason given in current SLERAs to dismiss the appropriateness of a sediment PCL protective of benthos.

- “Multiple COCs” – Chris brought up a question later about evaluating a group of multiple compounds or classes of COCs. Vickie indicated she will evaluate whether additional text is needed along these lines.
- “Statistical outliers” – Some had expressed the desire to use a statistical outlier test to help determine whether an area is a hot spot. The text as it currently stands is just a placeholder and will undergo some word-smithing.
- Closing paragraph – Tom suggested adding a discussion to address the scenario where retention of a sample location above the mid-point PCL that is not determined to be a hot spot causes the 95% UCL to exceed the mid-point PCL.

III. Discussion of Exposure Area for Benthos (III.B.1)

- Keith noted that all of this text falls under original section of guidance (B.1) rather than B.
- Vickie suggested that the introduction needs to restate the purpose and why you might/might not subdivide. This would be the exception rather than the rule, as the text states. Larry suggested that the first couple of paragraphs apply to all organisms; the text should be specific to benthos. Some more “global” text can be retained for other parts of the guidance. The group agreed that this section needs to be revised to be made specific for benthos.
- There was consensus that the “one or multiple communities section” could be deleted.
- “Physical and temporal features” – The group agreed there were many good points but the text should be shortened with bullets. Keith had a suggestion for the third paragraph which Vickie added but acknowledged that the text may change in the end.
- “Spatial distribution of COCs” – Tom asked if anything as it is written relates to exposure area. Vickie said she was not clear what the recommendations in the last two paragraphs are. Vickie suggested that for most SLERAs we don’t know what the community area is since there is no benthic community evaluation per se. Tom stated that the default exposure area is your investigative area unless there is a physical feature that would break up your site/exposure area. The group suggested that targeting too small of an area generally doesn’t underestimate risk as opposed to too big of an area. There was a discussion of spatial distributions up and downstream of an outfall, for example that may not be related to the site in question.

IV. Discussion of Data for Assessment (III.A)

- Vickie had some specific comments to shorten, look at depositional exposure areas, focus on nature and extent and ecologically relevant exposure pathways, emphasize the problems with using data intended for human health pathway, and shorten composite sampling text because it is intended that another section currently in the concept paper will address this.
- Tom commented that this reads like site assessment guidance. This is true; some of this text is not unique to sediment so may be lifted to a more generic discussion somewhere else in the document.
- Chris asked if we are going to address the exposure point concentration for pore water. Vickie stated that we have seen very few risk assessments with pore water data at all so it’s not likely we will make a specific recommendation about the exposure point concentration. That said, there will certainly be some discussion in this section about the relevance of this type of data. Chris suggested that bulk sediment is not the appropriate indicator for some metals and Vickie added that pore water is important to evaluate for groundwater to surface water releases. Some EPA references may be appropriate as well.
- “Sediment vs. soil” – Andrew inquired about the definition of surface water. The group thought it would be a good idea to include a reference to the TSWQS for definition of surface water.

- “Analytical Considerations” – Andrew suggested that we might add ‘appropriate detection limits’ to be included with accuracy and precision in first paragraph. It was suggested that we take another look at the sampling portion of the ERAG to see how much of this is already covered.
- “High and Low Biased” – The group pointed out that TRRP specifically allows for data to be biased high. Citation here? Richard asked how this relates to background.
- “Existing Information” and “Types of Sediment Data” – There was discussion that this needs a caveat that analytical data would need to meet NELAC requirements and TRPP-13 requirements.

V. Action Items

1. Workgroup - Send in comments on hot spots and exposure areas you may have by email (by **COB May 12**). Vickie will re-work this text for hopefully 1 last discussion in May.
2. Kirby Tyndall will work with Michael Jones to write text explaining/justifying the use of the 95% UCL as the EPC for benthos.
3. Workgroup – Provide general comments by **COB May 12** on the sediment introduction, data for assessment, and exposure areas for benthos. Do not word-smith. Comment on general ideas and note concepts unique to sediment/benthos or concepts more universal to other exposure pathways/media.
4. Vickie – Will rewrite these 3 sections (sediment introduction, data for assessment, and exposure areas for benthos) based on today’s discussions and e-mail input. The text will be written in guidance style as much as possible. She will provide Damian, Carolyn and Keith an opportunity to review this and then will provide the draft to the work group prior to May meeting.
5. Vickie – Prior to the next meeting, will send out a clean version of text (including text added in latest meeting) with line #'s added to the text.

Next Meeting/Conference Call: Thursday May 21, 2009/9:30 – 12:30/Bldg A/Rm 328.

TRRP-15E Meeting
May 21, 2009; 9:30 – 12:30
Minutes

Attendees

(In person and on the phone) Curtis Franklin (Dougherty Sprague Environmental, Inc.), Michael Jones (High Prairie Environmental LLC), Jeff Lane (C-K Associates), Chris McCarthy (CH2M Hill), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Ralph Stahl (DuPont Corp. Remediation Group), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), John Wilder (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting/ Discussion of Agenda

There were no changes to the draft minutes from the April 9 meeting.

II. Discussion of the Sediment Introduction (III. Sediment Exposure Pathways)

- The group was satisfied with the text. The group suggested adding a link or reference for U.S. EPA Guidance on ecological risk assessment (line 19).

III. Discussion of Data for Assessment (III.A)

- Vickie Reat stated that for some of these topics, the discussion is not unique to sediment. Therefore we may want to fold some of this text into a universal discussion down the road (or determine that the topics are worth repeating with each medium).
- Looking at Carolyn Fordham's suggestions on lines 24 – 26 (page 1), the group agreed that we could add a reference to the TRRP web site and suggestions (in parenthetical) for "other guidance."
- Jeff Lane suggested using something other than "not of focus," in line 30 (page 1).
- There was little discussion of "adequacy and appropriateness of sediment data," "sediment vs. soil," and "sediment depth." Only minor editorial revisions were discussed.
- For the sections titled, "use of existing data" and "analytical considerations," the group suggested combining these discussions together with a discussion of analytical considerations first, followed by considerations of historical data.
- The group indicated that lines 17 through 21 (page 3) are confusing. The detectability check sample needs to be defined (or a reference given) and the special exception is unclear. Vickie will re-work this text and run it by Ann Strahl (TCEQ).
- The group agreed that NELAC would apply to existing data also.
- There was a lengthy discussion of the "Bulk Sediment and Sediment Pore Water Data" text (lines 3 – 21, page 4). Richard Seiler did not agree with the statement (line 10) that pore water analysis provides a direct measure of the bioavailability of sediment-associated pollutants. Richard suggested that this particular line be struck or qualified because the sediment ingestion pathway is not addressed. Most suggested that this discussion make it clear that pore water analysis should usually be used in addition to standard bulk sediment analyses.
- Vickie indicated that some had suggested that we not discuss pore water analyses unless we were willing to specify a preferred exposure point concentration. Richard Seiler

this guidance) since the way TCEQ does it for the 303 (d) listing uses long term data which is atypical for TRRP sites. Also for surface water we are evaluating mobile aquatic life compared with more sessile benthic organisms that are exposed to sediment pore water.

- Vickie suggested that pore water data is an additional analysis that we rarely see. As such Vickie suggested it would be premature to suggest an exposure point concentration or averaging approach at this time. Ralph Stahl agreed.
- Chris McCarthy will be sending suggested text for reasons why pore water analysis may be appropriate at a site.
- There was a lengthy discussion about the “high-biased and low biased data distribution” (lines 23-35, page 4). Before the meeting, Tom McHugh had provided some suggested text to replace lines 28-30 (Sediment sample locations ... exposure point concentration). Tom had suggested the following text: *Sediment sample locations outside of the sediment exposure area should not be included in the calculation of the sediment exposure point concentration. In cases where the sediment exposure area is larger than the area of affected sediments, the TCEQ will more closely review whether the exposure area has been appropriately defined and whether inclusion of clean sediment sample locations (e.g., below background, below sediment benchmarks) in the calculation of the exposure point concentration results in an inappropriate low bias.*
- The group suggested that there needs to be a distinction between nature/extent determination and exposure area data.
- Vickie indicated that the main purpose of this text was for people not to include perimeter (fringe) data that is outside the exposure area (or affected property). This dilutes the data set.
- Vickie indicated that there is a do-loop since the definition of the assessment level for ecological exposure pathways is the ecological PCL, yet you perform an ecological risk assessment to arrive at ecological PCLs.
- What is affected property versus affected sediment?
- Since there was a lengthy discussion, work group members are encouraged to send suggestions regarding this paragraph.

IV. Discussion of Exposure Areas for Benthos (III.B.1)

- Lines 11-15 and lines 25 – 32, page 5, – populations vs. communities were discussed. The group suggested using what is in the ERAG. Vickie will check. Chip Wood and Ralph Stahl will send suggested text (done).
- Richard Seiler pointed out (line 30) that the TRRP rule doesn’t really speak to protection at the population level; we probably should make this clear that it is in guidance.
- Regarding the “Physical Features example” text box on page 6, Vickie indicated that some bullets were added. There were no comments from the group.
- Regarding “Spatial Distribution of COCs...” on page 7, Margaret Roy suggested adding some examples for a freshwater stream and tidal scenario. She will draft some examples.
- Regarding the “Management of Risk” paragraph on page 7, Jeff Lane suggested that lines 27-28 be modified so that it is clear there is an approved plan for removals or actions. Otherwise, this could be and indefinite maybe with impacted sediments that are never addressed.
- The group suggested the text should make it clear that there should be a risk management discussion in the event the dredging does not occur.

- Based on the discussions, Vickie will also research whether the “reasoned justification” provision of TRRP would apply here.

V. Discussion of Exposure Point Concentrations for Benthos (III.B.2)

- Looking at lines 36-38 (page 8), Chris McCarthy suggested adding something about small data sets or data sets dominated by “non-detects.” The group also suggested adding a suggestion that the appropriateness of the data set be evaluated rather than always implying that additional data is needed.
- Regarding lines 2-16 (page 9), Michael Jones pointed out that he considered Tom McHugh’s comments to be interesting. Michael was referring to the April meeting minutes summarizing Tom McHugh’s thoughts on the exposure point concentration for benthos. Michael suggested that considering a maximum percentage area of an affected property as acceptable for chemical impacts to benthic invertebrates is similar to choosing a water quality criterion that is expected to cause adverse affects to a certain percentage of aquatic organisms of different species in an aquatic community (e.g., EC20). Michael suggested that we could choose an acceptable benchmark for areal extent of adverse impact to benthic organisms within an affected property (e.g., 20%) as an alternative to the 95% UCL.
- Looking at lines 23-25 (page 9), Richard suggested adding a parenthetical after average concentration to indicate that we mean 95% UCL.
- There was discussion about the footnote 3 about where there will be a specific 95% UCL discussion. Would this be in TRRP-15E or H? Who would write it? Vickie indicated that her presumption was that we would likely be referring to an appendix in the TRRP-15 H document. Since this section discusses the 95% UCL and there is later text (e.g., italicized text, lines 9-31, page 10) that will be likely deferred to that discussion, the work group was concerned about relinquishing the statistical discussion to the human health work group. Vickie acknowledged these concerns but reflected that the draft human health paper that was available when the stakeholder groups commenced already had an appendix along these lines. Vickie suggested that we defer this until later; she would rather see progress on many other issues before we delve into a lengthy discussion about statistics. Vickie agreed to send the original UCL appendix to the work group. The group was concerned that our text would need to address minimum sample size, exposure area, variability, and software, to name a few.
- Regarding lines 35 – 37 (page 9); Vickie will evaluate the text and make sure it is consistent with the previous text about maximum concentrations as the default.

VI. Discussion of Hot Spots for Benthos (III.B.3)

- Regarding lines 26-29 (page 11); Vickie indicated that the footnote was added to capture ERA vs. ESA discussions. In response to a previous comment from Ralph Stahl, Vickie explained that persons would not be precluded from using monitored natural attenuation as a sediment remedy, but this would be within the realm of ESA.
- Jeff Lane suggested that number 2 (lines 4-7, page 12) be modified so that all 3 numbered statements are in the same voice.
- Regarding lines 12-14 (page 12); Vickie asked if the group thought we should work on an appendix now. There was no particular feedback so this was interpreted as, no.
- Regarding lines 27 – 32, page 14 (Multiple COCs), Vickie stated that text was added to address classes of COCs. Does this text help the discussion? The group suggested adding “additive” to line 29 before the word synergistic, and deleting the last line.
- Regarding lines 34 – 2, pages 14 and 15 (Statistical Outliers); there was concern that outlier tests will be used to eliminate data points. Michael Jones suggested that there is no additional value to doing outlier test once you know data has been validated; the process

- Regarding the last (new paragraph), page 15, lines 13-22, there was general confusion. For one, the group thought the discussion perhaps should be placed with the 95% UCL discussion instead of following the factor text. Most did not understand the text, particularly lines 19 – 22. Some suggested this text may contradict previous text. Action Item: Vickie to discuss with Tom McHugh and all provide feedback comments.

VII. Discussion of the Next Meeting

- Vickie indicated that for the next meeting/call, she would like to finish the benthic text (for sediment) and move on to wildlife. As far as the text we have been working on, any discussions next time should be limited to the 4 noted subjects in the Action Items (See action item 5). Beyond this, continued word-smithing discussions will be discouraged (although e-mail comments in the mean time are certainly welcome).
- In preparation for the next meeting, work group members should review what was drafted for exposure areas, exposure point concentrations, and hot spots for wildlife for sediment. These are all on page 14 of the original concept paper (III.C). Although we will start with wildlife exposure to sediment, work group members should also read the similar text that was prepared (in more detail) for soil. This is on pages 5-7 of the original concept paper (II.D).
- The goal will be to begin discussions so we can outline agreed upon concepts so that TCEQ can begin writing these sections.

VIII. Action Items

1. Chris McCarthy will send suggestions for the pore water text.
2. Margaret Roy will draft some example scenario text (freshwater stream and tidal site) for the “Spatial Distribution of COCs and Significant Differences in Sediment Chemistry” paragraph in the benthic exposure area section. This could be a text box, appendix, or text in the section (TBD later).
3. Vickie will provide the work group with the original draft statistics appendix that was provided at the kick off meeting for TRRP-15 H. This related to our discussion of an appendix for the 95% UCL.
4. Vickie will discuss the last paragraph with Tom McHugh regarding when the 95% UCL is exceeded yet there is a determination of “no hot spots.”
5. Specific, detailed feedback is requested for the following text:
 - Pore water text, lines 4-21, page 4.
 - Individual/population/community text on lines 11 – 32, page 5.
 - Suggestions regarding the “high-biased and low biased data distribution” (lines 23-35, page 4). Everyone should be aware of Tom McHugh’s previous comments on this section.
 - Clarity/suggestions on the very last paragraph, lines 13-22, page 15.
 Please provide feedback by **COB June 4** so Vickie has time to send revised text out prior to the next meeting.
6. Vickie will re-work the text discussed during the May meeting (based on feedback during the meeting). She will also incorporate many of Carolyn Fordham’s editorial comments.

Next Meeting/Conference Call: Wednesday, June 10, 2009 (9:30 – 12:30).
Room 200-33 TCEQ Building D.

TRRP-15E Meeting
June 10, 2009; 9:30 – 12:30
Minutes

Attendees

(In person and on the phone) Tammy Ash (U.S. Fish and Wildlife Service), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Alicia Fogg (Malcolm Pirnie, Inc.), Johanna Gregory (Texas Parks and Wildlife Department), Michael Jones (High Prairie Environmental LLC), Jeff Lane (C-K Associates), Chris McCarthy (CH2M Hill), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Don Pitts (Texas Parks and Wildlife Department), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), Jessica White (NOAA), John Wilder (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting/ Discussion of Agenda

- In response to a June 10, 2009 e-mail from Michael Jones, Vickie Reat indicated the minutes would be corrected to summarize Michael's discussion of Tom McHugh's previous discussion (see April minutes) of the exposure point concentration for benthos.
- Vickie reminded everyone that as people in the work group miss our meetings/calls for months at a time, they will need to live with the decisions that are made by the group and not backtrack when these topics come up later.

II. Discussion of Various Portions of the Benthic (Exposure Area, Hot Spot) Text

A. Pore Water Text (Data for Assessment) Page 4, Lines 14-36¹:

- Richard indicated his previous concerns have been addressed.
- Vickie indicated she would like a citation for line 21.
- Regarding the new text in lines 33-36, Jessica White suggested that persons should provide a justification for selection of one approach over another for evaluating pore water data. Richard Seiler suggested there was ambiguity on what was being averaged. Chip Wood suggested that the text simply state that persons need to provide justification and rationale for the approach used. Chris McCarthy suggested replacing 'may' with 'should.'

B. High/Low Biased Data Set (Data for Assessment) Pages 4-5, Lines 38-40 & 1-21:

- Regarding lines 2-3, page 5, Keith Bradley had commented (e-mail comment) that the "depositional areas" text should be replaced with a statement that sediment sampling should be representative of all sediment types within the assessment area. The work group disagreed.
- There was an extended conversation regarding lines 8-18, page 5. Vickie indicated that the general concern at the last meeting was that the text would require data to be biased too high.

¹ All page and line number references are based on the non red-line/strike out version of the draft text available for this meeting.

- There was confusion regarding the distinction between exposure area and affected sediment. Vickie suggested we could retain old text then strike everything else and jump to the “primary point text” on Line 14. There was no resolution on this so Chris, Vickie, and Richard will revisit this text and make a recommendation to the group for the next meeting.

C. General Discussion of Communities (Exp Area for Benthos) Pages 5-6, Lines 28-40 & Lines 1-6:

- Vickie used text suggestions from Chip Wood and Ralph Stahl on communities and populations. The work group was satisfied with the text.
- Vickie indicated that the text boxes have been taken out due to accessibility formatting requirements.

D. Last Paragraph/95% UCL > Midpoint PCL, Page 15, Lines 30-40:

- Vickie referred to the 6/9/09 e-mail from Tom McHugh regarding his thinking on this text.
- After much discussion, the work group recommended deletion of this paragraph. Work group members felt the text was confusing and that it attempted to address a specific scenario what would be more appropriately addressed on a case-by-case basis.

E. Other Text Suggestions

- Vickie walked through each section of the document seeking any comments.
- The group discussed the example scenario provided for a freshwater creek and estuarine bay (Spatial Distribution of COCs and Significant Differences in Sediment Chemistry). These examples were drafted by Margaret Roy and Krista Butler of URS with additional editing by Vickie.
- Larry had a number of suggestions for the examples. He suggested that the examples be clear on the source/mechanism of the release, whether the discharges are permitted discharges, the nature of the drainage ditches (i.e., intermittent or perennial) and the source of COCs there. Larry also suggested more text to expand on the bullet regarding the unchanneled stretch of the creek. Larry suggested that the discussion explain data groupings in the bay more clearly. Margaret and Krista agreed to modify the text. Vickie asked that the work group send any general comments on the text by e-mail.
- The group agreed that excepting the action items discussed today, the benthos text is largely “done” for now.

III. Initial Discussion of the Wildlife Text (Exposure Areas, Hot Spots)

- Vickie provided a general discussion of the text and gave a history of the thinking in development of the concept paper. Part of this discussion reflected how most of the text was initially written for soil. Therefore the same topics in the sediment part of the concept paper were brief, with a recommendation to “see the soil discussion and add sediment examples.”
- With this in mind, Larry suggested that the work group address the soil text first. Larry suggested that the soil exposure areas will be of more concern on these topics since the home range issue is more prevalent here (there are generally more soil wildlife receptors with smaller home ranges than sediment-based wildlife receptors) and because the 95% UCL for receptors in soil will be controversial.

- Vickie indicated that she was just keeping with the sediment theme and was not tied to the idea that we work on sediment/wildlife exposure pathways first. With this, the work group agreed to address the soil/wildlife exposure pathways first.
- Vickie provided a background summary on the wildlife text and stressed that there are two particular scenarios that we think should be addressed for wildlife hot spots: 1) the home range of a receptor is small relative to size of property and 2) measurement receptor may have foraging/habitat preferences that may be a subset of the affected property. In both cases, the 95% UCL for the entire soil affected property may not be protective. The idea is that persons would be required to determine if either of these scenarios are of concern at the site in question, given the exposure pathways/habitat available. If so, then the risk assessment should provide a hot spot analysis to address this. The guidance will hopefully provide text on suggested ways/tools to do the hot spot analysis with these two scenarios in mind.
- Larry led a lengthy discussion regarding circumstances of concern. He stressed that switching from sediment to soil takes us from an ecological (pathway) dominated medium to a human health dominated medium. The majority of soil sample locations will Tier 1 out. As a result, Larry suggested that it is rare to have a sufficient number of samples in the ecological habitat. Larry stressed that we think about our approach to writing this text.
- Chip Wood suggested that if persons use biased high data they should live with that or take relevant samples. Both Richard and Chip opined that Larry's concerns should be addressed by an adequate assessment with clear nature and extent delineation. Much of this could be discussed in the "data for assessment" discussion for soil.
- Vickie asked Larry to summarize his concerns/ideas in writing so this could be shared with the work group for discussion and comments at the next meeting.
- Michael Jones suggested that we could borrow relevant sediment language from the benthos hot spot/exposure point concentration text to go into the soil discussion as a start. Although Vickie indicated that the hot spot discussion for soil (for wildlife receptors) will be different than that for sediment benthos, Michael felt that some of the hot spot factors would apply.

IV. Coordination with the TRRP-15 H Work Group

- Richard Seiler expressed concern that we are unaware of the TRRP-15 H group's progress/decisions and that the "bridgers" should advise us on the TRRP-15H progress to determine if we are drifting apart.
- Jeff Lane suggested that the bridgers to make a presentation every other meeting or so to make sure we're all on track.
- Vickie indicated she would invite Jeff Patterson (or someone else from that work group if Jeff isn't available) to the next meeting to update the group on human health issues (particularly soil background). She will also visit with Jeff to ensure that the "bridgers" are receiving all e-mail, minutes, drafts, etc., that persons in the human health work group are receiving.

V. Action Items

1. Provide Vickie with a suggested citation(s) to support the following statement in the “Use of Sediment Pore Water Data” section: *Pore water analysis, in conjunction with bulk sediment analysis, may provide an additional measure of COC bioavailability for some receptors and sediment-associated pollutants (needs US EPA cite or other).*
2. Regarding the text in the “High/Low Biased Data Set (Data for Assessment)” section, Chris McCarthy, Vickie, and Richard will revisit this text (lines 8-18, page 5 of the document provided for the June meeting) and make a recommendation to the group for the next meeting.
3. Provide Margaret Roy and Krista Butler suggestions/questions on the Freshwater Creek and Estuarine Bay examples (in the “Spatial Distribution of COCs and Significant Differences in Sediment Chemistry” section). Margaret and Krista will revise the text for discussion at the July meeting.
4. Regarding the Wildlife Exposure Area/Hot Spot concept paper text, Larry will write a summary of his concerns that were discussed during the meeting. This will be provided to the work group prior to the next meeting to afford an effective conversation in July.
5. Vickie will populate the existing soil wildlife text with similar text from the sediment section for discussion in July.
6. Everyone should come to the next meeting with ideas on ways hot spots for wildlife can be evaluated such as those provided in the following bullets (from the concept paper):
 - Use of the maximum sample concentration as the exposure point concentration;
 - Use of biased sampling data in areas of expected impact;
 - Calculation of an area-weighted UCL such that it is weighted for the habitats used by the measurement receptor;
 - Positioning of the exposure area footprint for smaller ranging receptors to correspond with the highest concentrations of COCs;
 - Specific evaluation of all data points greater than the UCL relative to the foraging range of the receptor in question;
 - Demonstration that the COC distribution is homogeneous across the AP;
 - Use of geostatistical tools and models
7. Vickie will ask Jeff Patterson to attend the next meeting to update the group on human health issues (particularly soil background). She will also visit with Jeff to ensure that the “bridgers” are receiving all e-mail, minutes, drafts, etc.

Next Meeting/Conference Call: Wednesday, July 8, 2009 (9:30 – 12:30).
Room 200-33 TCEQ Building D.

TRRP-15E Meeting
July 8, 2009; 9:30 – 12:30
Minutes

Attendees

(In person and on the phone) Tammy Ash (U.S. Fish and Wildlife Service), Joe Bell (TCEQ Remediation Division), Keith Bradley (KBA EnviroScience, Ltd), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Deborah Edwards (ExxonMobil Global Remediation), Alicia Fogg (Malcolm Pirnie, Inc.), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Johanna Gregory (Texas Parks and Wildlife Department), Michael Jones (High Prairie Environmental LLC), Paul Lewis (TCEQ Remediation Division), Tom McHugh (GSI Environmental), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Damian Preziosi (Integral Consulting, Inc.), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), Jessica White (NOAA), John Wilder (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting/ Discussion of Agenda

- The minutes from the June 10 meeting were accepted.
- There was a mix-up on the materials provided for the sediment text. Margaret Roy e-mailed everyone the latest text for the Freshwater Creek and Estuarine Bay examples (Benthic Exposure Areas/Spatial Distribution of COCs and Significant Differences in Sediment Chemistry) at the start of the meeting. Vickie will ensure that this text is inserted in the final document.

II. Update from Joe Bell (TCEQ) on the Status/Recent Developments in the TRRP-15 H Work Group

- Early on, the human health work group had been discussing what upper interval estimator they would prescribe for background for soil. Initially they decided to use the 95% UPL.
- The workgroup recently met with stakeholders and adjusted their position to use of the UTL, but adjusting confidence level and coverage of the tolerance limit to provide numbers that would be similar to the UPL. TCEQ staff subsequently decided to leave it at the 95% UPL as it seemed awkward to use the non-standard confidence and coverage parameters. The human health work group was informed of this decision in an e-mail.
- Richard Seiler asked if there had been any discussion regarding minimum sample numbers (to use a UPL). Joe indicated that the TRRP rule sets the minimum at 8. Richard cautioned that there could be concern if the calculated UPL exceeds the maximum concentration in the background data set. Joe said that the human health work group (including outside stakeholders) has not discussed the issue of capping the background data with the maximum concentration of the background data set. Joe added that internally, staff within TRRP-15 H are opposed to this and feel that it would cause a surficial awkwardness to do so in TRRP-15E. Joe added that if sufficient justification was provided for this approach, this may be overcome.
- To lessen the likelihood of the UPL exceeding the maximum, Richard suggested that the guidance prescribe an acceptable level of variation and sample size.
- Joe agreed that they might still look at outliers as well. He cautioned that TCEQ's migration from the UTL to the UPL is a conservative move. He added that this alone may

- Vickie asked if text would be written regarding the use of the US EPA's Pro-UCL software. Joe anticipates that Jeff Patterson plans to do this.
- Damian Preziosi asked if the human health group had thought about moving toward what is being done at national level. He suggested a variety of approaches such as quantile plots, parametric tests and other lines of evidence rather than a bright line value. Joe indicated there is no prohibition on someone submitting that sort of approach to the TCEQ if it is done using sound methods.
- Richard asked if there is concern (within the human health group) that the eco group may resist the approach and attempt to set a different soil background standard. Joe wasn't sure how this would be received by that group but expected that the group would be resistant without an acceptable rationale.
- Richard asked if the human health group discussed different approaches for anthropogenic vs natural background. Joe did not recall that this had been discussed.
- Vickie said she didn't think that the regulated community would accept different soil background thresholds for eco and human health exposure pathways and expressed hope we could resolve this. Richard agreed.
- Joe indicated that the human health group had just started looking at the soil-to-groundwater cross media pathway and whether they want to allow the use of a representative concentration (averaging) here. They haven't reached a decision.
- Joe indicated that the group has not contemplated looking at the groundwater-to-sediment/surface water human health pathways and whether averaging is contemplated here.
- Joe indicated that the plans are to reconvene the stakeholder group after TCEQ staff finalize a unified internal position on the groundwater-to-soil pathway. Joe said he could raise the issue of the different upper estimator for the soil background data set at a future meeting.

III. Discussion of the Draft Sediment Text

A. Changes to pore water data text – No comments or changes to the proposed text.

B. Changes to High-biased and Low-biased Data Distribution text - Vickie added a footnote that gives the reader a heads up that there are exceptions. Johanna asked if there is a prescribed minimum number of samples for a wildlife exposure area/UCL. Vickie said there has never been a minimum.

C. Example Scenarios (Spatial Distribution of COCs and Significant Differences in Sediment Chemistry) –

- Margaret Roy and Krista Butler reformatted the freshwater and estuarine example scenarios. Margaret spoke with Larry by phone to tweak the examples. The estuarine bay example was expanded with bulleted text to explain the rationale for the data groupings.
- Carolyn Fordham suggested changing the mining language (in Spatial Distribution above examples) by adding industrial and municipal wastewater discharge categories per Vickie's suggested language.

IV. Discussion of Larry Champagne's Comments on the Soil Wildlife Hot Spot/Exposure Area Concept Paper

- At our June meeting, Larry Champagne led a lengthy discussion regarding his concerns particularly relevant to the use of exposure areas for wildlife. At the conclusion of the

- Larry indicated he wasn't talking about NPL/high profile sites; rather his point of reference was smaller sites (some 80% of the risk assessments TCEQ reviews in Larry's opinion) where there has been no interaction with ecological-risk staff until TCEQ receives the APAR.
- Larry is very concerned about our initial text that says "soil/sediment sample locations outside of the boundaries of the affected property or the habitat/foraging area for a particular receptor/guild/community should generally not be included in the calculation of the soil exposure point concentration."
- As human health exposure pathways are of focus for soil impacted sites (unlike sediment impacted sites), Larry stressed that we must be cognizant that we are often dealing with mixed soil data sets with few samples collected in ecologically relevant habitat. Often the 95% UCL is derived using this data set regardless of the exposure pathway.
- Larry is concerned that if we use the "no samples outside of the exposure area" language cited above, there will not be enough data to calculate a UCL. Larry also indicated that a request for more samples late in the game is often viewed as a deterrent in expeditiously getting a site to closure. Adequate nature and extent determination would be expected as a rule.
- Dave Parmer asked about minimum sample requirements. Although there is no rule requirement, Larry indicated that the normal minimum was 10 data points to calculate a UCL.
- Keith Bradley agreed that for most "soil only" sites, samples are collected with human health pathways in mind with little/no input from ecological risk assessors. Keith suggested that we caution the reader that if they concentrate on areas of impact with minimal sampling in areas of habitat, that the approach may be overly conservative. Larry indicated this has been fine historically except where persons argue that a high hazard quotient should be dismissed due to a data set that is biased high.
- Damian asked if we were envisioning this discussion in text box or in text proper? Larry suggested we need to state our position clearly on this. Damian opined that the bigger topic is to ensure appropriate data is included and this should be restated throughout the document.
- Keith suggested adding the EPA reference regarding the minimum number of samples to calculate a UCL. Michael Jones indicated that the EPA's guidance associated with the ProUCL software suggested 8-10 detections minimum. Although some may disagree on this bright line, Keith suggested that a citation may be helpful.
- Kirby Tyndall thought it may be useful to transfer ideas to the "adequacy and appropriateness" portion of the guidance in the Data for Assessment section. The group agreed that this point needs to be reinforced in document.
- Michael Jones suggested putting a detailed discussion of these issues in the text. Vickie suggested a hybrid discussion of Larry's thoughts and our "real world" experience.

V. Discussion of the draft Soil "Data for Assessment" Text

- Vickie indicated that she largely lifted the sediment portion of the "data for assessment" discussion into the soil text. The work group discussed this text.
- Larry asked that we revisit the assessment section of ERAG to incorporate this into this text. Vickie agreed to look at that and to also see what we said about this in TRRP-24 for the next meeting. This relates to the conundrum of ecological assessment levels and the lack of up-front ecological PCLs.
- Regarding the "Adequacy and Appropriateness of Soil Data" paragraph, Kirby volunteered to flesh out this paragraph with Larry's comments in mind.

- Regarding the “Soil vs. Sediment” paragraph, Michael Jones suggested a clearer explanation of intermittent stream, and agreed to write this text.
- Regarding the last sentence of the “Analytical Considerations” text Tom suggested language to clarify that we can still use older data from the portion of the site unaffected by the physical disturbance.
- Regarding the “High-Biased and Low-biased Data Distribution,” Kirby will evaluate this text as it relates to Larry’s comments and put some ideas together.
- Regarding “Sample Processing,” which is a possible last paragraph, Krista Butler will send Vickie an e-mail explaining lab analysis 8270 where the soil samples are sieved. Vickie will ask Alicia Fogg and/or Chris McCarthy to write something about the appropriateness of sieving soil samples, particularly for shooting ranges. Vickie will also ask the TCEQ human health work group staff if they have any position/policy on this.
- All work group members are invited to make comments (via e-mail) if we need other topics for discussion in the “Data for Assessment” text.

VI. General Discussion – See Wildlife Hot Spot Skeleton.

- Michael Jones wasn’t comfortable with the hot spot discussion as proposed in the skeleton; Michael felt that the hotspot evaluation is relevant for wildlife receptors, but that hot spots don’t necessarily need to be evaluated relative to receptor home ranges or foraging areas. Damien agreed with Michael in concept and suggested that there should be guidance about getting back to population levels with the caveat that we only have so much tox data.
- Carolyn suggested defining the size for a wildlife hot spot and using acute values rather than chronic.
- There was much discussion on what constitutes a hot spot for soil. Deborah Edwards suggested using a threshold concentration to define a hot spot. Vickie reminded the group that the hazard quotient of 50 that was proposed in an early TRRP draft, met much criticism.
- Given the wide range of opinions, Vickie proposed that a small breakout group form to come up with ideas, write a bulleted/detailed outline, and come back to the work group for discussion.
- The work group agreed to cancel the August meeting to allow time for this break out group to work on this. The smaller group will have a series of conference calls to complete this effort. The work group also suggested e-mailing a rough outline in August so people can give comments prior to meeting in September. Keith, Damien, Ralph Stahl, Carolyn, Larry, Michael Jones, Deborah Edwards (and Vickie) will participate in this smaller group.

VII. Action Items

1. Vickie to add a US EPA reference regarding the recommended minimum sample number for calculating a 95% UCL. (August 21)
2. Vickie to write a placeholder/bullets for a future example that highlights Larry’s concerns. Editorial note from Vickie: I will not complete this task until we see the results of Action Item 4.
3. Vickie will review the appropriate text in the ERAG and TRRP-24 related to assessment levels and affected property. This discussion will be imported into the “Data for Assessment” text. (August 21)
4. Kirby Tyndall will modify the “Adequacy and Appropriateness of Soil Data” and the “High-Biased and Low-biased Data Distribution” text to reflect Larry’s comments/suggestions. (August 21)

5. Vickie will ask Chris McCarthy and Alicia Fogg for suggestions regarding the issue of soil sieving particularly at shooting ranges. (done; CM and AF to complete by August 28)
6. Krista Butler will send Vickie an e-mail explaining lab analysis 8270 where the soil samples are sieved. (August 21)
7. All work group members should provide comments/suggestions regarding the “Data for Assessment” text. (August 28)
8. Michael Jones will clarify the intermittent stream discussion in the “Soil vs. Sediment” paragraph. (August 21)
9. A smaller group will work on a detailed outline for the wildlife hot spot/wildlife exposure area text for discussion at the September 9, 2009 meeting. An early draft of that outline will be distributed for feedback on or around August 12. (Keith, Damien, Ralph Stahl, Carolyn, Larry, Michael Jones, Deborah Edwards, Vickie) (ongoing)

Next Meeting/Conference Call: Wednesday, September 9, 2009 (9:30 – 12:30). Room 200-33 TCEQ Building D.

★ The August 12, 2009 meeting has been cancelled to allow time to work on the wildlife (soil hot spots/exposure areas) outline. ★

TRRP-15E Meeting
September 9, 2009; 9:30 – 12:30
Minutes

Attendees

(In person and on the phone) Keith Bradley (KBA EnviroScience, Ltd.), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Deborah Edwards (ExxonMobil Global Remediation), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Johanna Gregory (Texas Parks and Wildlife Department), Michael Jones (High Prairie Environmental LLC), Jeff Lane (C-K Associates), Paul Lewis (TCEQ Remediation Division), Chris McCarthy (CH2M Hill), Tom McHugh (GSI Environmental Inc.), Tommy Mobley (Texas General Land Office), Andrew Pawlisz (Conestoga-Rovers & Associates), Damian Preziosi (Integral Consulting Inc.), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Ralph Stahl (DuPont Corp. Remediation Group), Kirby Tyndall (Pastor, Behling & Wheeler, LLC), John Wilder (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Discussion of the Minutes from the Last Meeting/ Update from TRRP-15H

- There were suggested changes to the minutes from the July 8 meeting based on feedback from Joe Bell of TCEQ. Joe Bell had comments/clarifications on the 3rd, 9th, and 13th bullets of the minutes that summarized his discussions at our meeting. Vickie committed to forwarding Joe's comments to the work group and will revise the minutes accordingly.
- Since this brought up coordination with the TRRP-15H group, Richard asked if the entire human health work group had reviewed these minutes; if not he viewed this as a breakdown in coordination. Vickie noted that the "bridgers," Paul Lewis, and Jeff Patterson have all had the opportunity to review the notes.
- According to Paul, the human health group has only had internal (staff only) meetings since Joe's status report in July and that they are planning to have a meeting of the entire work group in October. Paul said that there were a few internal meetings, and staff has been working internally on some of the text. Other staff members have been working on the soil-to-groundwater pathway statistical issues.
- The TRRP-15 E work group re-iterated that background is a big issue and will most likely be our next subject, after completing the soil wildlife section. The work group feels this will be an important topic to coordinate with the TRRP-15 H work group.

II. Discussion of the Soil "Data for Assessment" Text

We worked through the text, especially where there were changes. The greatest numbers of changes were within the "Adequacy and Appropriateness of Soil Data" section that Kirby revised based on Larry's comments discussed at the July meeting.

A. Adequacy and Appropriateness of Soil Data

- Kirby asked Larry if this was an adequate reflection of his comments.
- Larry suggested that if the text is going state that there needs to be enough data collected from areas of ecological habitat to calculate a separate and distinct 95% UCL for the various receptors, we need to state this stronger and change the tone to require this rather than saying the alternative may not be appropriate. Chris agreed; the right data is needed

- Larry reminded everyone that if a person uses data from a highly impacted area to represent the exposure concentration from a less impacted area, they shouldn't be able to dismiss the risk in the uncertainty analysis. Overall feedback from the group was that they felt it is appropriate to write the text to indicate that there are strings attached if you choose to go with "lesser" data.
- Tom indicated that we need to make a distinction between the delineation and the response action determination. For response action determination, Tom agreed that only data from ecological habitat should be used to calculate a 95% UCL for ecological exposures and that the maximum should be used where there is not enough data to calculate a 95% UCL. Tom suggested that the text not imply that any specific minimum numbers of samples are required for purposes of either delineation or response action determination.
- Richard asked if we really want to recommend using human health PCLs as the assessment level, as reflected in the current ERAG. Larry suggested this is often necessary as there are not many ecological benchmarks for soil.
- Margaret suggested that this is one of those issues that relates to the timing of the APAR development and the investigation design. She added that it behooves the user to have preliminary eco PCLs available as soon as possible in the APAR development, and this can mitigate the "do-loop" by knowing what your COCs are and understanding whether your nature and extent is characterized adequately. This will also minimize the need for multiple APAR revisions if the critical PCL is known from the beginning.
- Larry suggested that our mindset was different when the ERAG was written. He agrees that it isn't that advisable to use human health PCLs as the assessment level. The group agreed that the first line of the second paragraph sets the tone, but could play this up a little more and modify the second paragraph (to emphasize the use of benchmarks and MQLs). Tom felt like the paragraph was adequate as it and that it lays out the range of options clearly.
- Vickie indicated the text would be revised to reflect this discussion.
- Jeff questioned the "downward adjustment" phrase (lines 10-11, page 2 of the red-line version). Vickie indicated that this text was directly out of the ERAG. The group suggested adding a parenthetical after this phrase (i.e., the eco benchmark may be lower than the human health PCL and, as such, the lower value would become the assessment level or critical PCL).
- Regarding line 21, page 2, of the red-line version, Jeff suggested adding "previously assumed" before assessment level for clarity. Vickie indicated she would evaluate this.
- Regarding line 33, page 2, of the red-line version, Damian asked about the use of the parenthetical, "biased high." Although he understands the intent, Damian was uncomfortable with text and advocated deletion. Vickie encouraged feedback on this issue and will look at it further.

B. Soil vs. Sediment

- Vickie indicated that Michael had added some text to better explain what we might want.
- Andrew asked if this means streams should be sampled when dry and wet. Vickie indicated no, that one exposure scenario can be evaluated with a justification for selecting one over the other.
- For clarity, Andrew suggested deleting the language starting on line 22 and continuing through line 26 ("Persons should evaluate ... if such information is known.")
- Andrew asked how a floodplain would fit in the distinction between soils vs. sediment. Where does soil end and sediment begin? To avoid remobilization, Andrew was concerned

C. Analytical Considerations

There were no comments or questions here.

D. Sample Sieving

- Vickie received a number of suggestions on this section while she was drafting it expressed appreciation for the e-mails and input.
- Vickie indicated she used a 2003 U.S. EPA document as a point of reference. She requested feedback particularly since the draft discussion addresses shooting ranges primarily.
- As the discussion as drafted appears to focus on metals, Krista indicated that sieving may be appropriate for explosives as well. This may require some research.
- Larry indicated that firing ranges are the most important type of site for ecological risk where sieving is an issue.
- Jeff asked if it was appropriate to have the discussion of multiple metals in lines 31 through 35. Lead is the typical risk driver at firing ranges. TCEQ may omit some of this text to avoid confusion.
- Carolyn indicated that soil sieving is performed at some sites to minimize variability and to focus on the finer, more bioavailable fractions. Carolyn will send Vickie text to reflect this issue.
- Andrew indicated that some sites have solidified petroleum products (“like chunks of asphalt”). This dictates the need for more selective sampling. Andrew will provide Vickie with text suggestions on this issue.
- Vickie also asked for text suggestions related to slag in soil.

E. Other

Larry suggested re-ordering of the text overall for a more logical flow. He suggested that the “High/Low Biased Data” subsection should follow the “Adequacy and Appropriateness of Soil Data”, followed by “soil depth,” “Analytical Considerations,” Sample Sieving, and “Soil vs. Sediment.” All agreed.

III. General Reports on the Progress of the Wildlife Hot Spot Subgroup’s Efforts

- Vickie thanked everyone for the hard work that the group put into this effort. The group developed a fleshed out outline but didn’t feel like the work product was complete yet.
- The subgroup will keep working with the goal of having an outline for the larger group in October.

IV. Discussion of Agreements (from Wildlife Group)

(Notes indicated by number)

- 2- Need for small ranging receptor evaluation for $HQ > 1$ or $HQ < 1$ - Richard asked for clarification. Vickie indicated the subgroup was trying to tease out how an HQ greater or less than 1 could help guide when a hotspot evaluation is necessary. Both situations could warrant further evaluation for small ranging receptors, AND the degree of the analysis has not been decided. Richard asked if there is value in making a distinction between the HQ

- 5- Hot spots = risk + elevated concentrations - Andrew asked what does “elevated concentration” mean? Vickie indicated that this hasn’t been decided; it may not be necessarily a bright line. She said that the hot spot concept shouldn’t simply be reliant on one data point being high without also evaluating some elements of risk.
- 7- Outlier test – Richard was concerned about the proposal to use outlier tests. Vickie clarified that this should be used as a tool to identify what needs to be considered for further evaluation. This is intended to be a screening step. Richard was fine with this as explained.
- 8 – Guidance for shrews and robins as small ranging receptors – This garnered much discussion. Vickie reviewed the issue of ecological PCLs for small ranging receptors given the definition of ecological PCLs in the TRRP rule. Vickie indicated that TCEQ has never written policy on this but they often evaluate risk assessments that exclude the shrew or robin (from final PCL development) because of this definition. The group concluded that we might want to address this in this guidance since this issue comes up repeatedly. It was agreed that this shouldn’t be written in absolutes. The group seemed to lean towards having policy on the shrew and robin but leaving the general discussion of the ecological PCL to the ERAG. Michael indicated he would rather that the issue is addressed at some level. Most agreed that any type of evaluation for these organisms should consider their biology. Andrew asked if the risk range, weight of evidence, and “average” receptor be included in this discussion to prevent only worst-case scenarios from being evaluated. No clear answer. Tom suggested that the text should take a clear position on the eco PCL for the shrew and the robin. He added that if the TCEQ chooses not to take a position, the text should indicate this. Richard and Keith suggested we could craft an example for the shrew.
- 9 – Flow chart - Vickie prepared a “straw man” 4 page flow chart. The subgroup has not agreed on this. Conceptually some version of the flow chart could be included in the guidance. For now the subgroup was using it for a discussion tool. The subgroup did work through what needs to be done first, middle, and later, with an underlying theme being “Do you have good data?” Keith suggested that the flow chart should be informative and not prescriptive.

V. Discussion of Agreements (from Wildlife Group) (Notes indicated by number)

- 1 - Hot spot (quantifiable) threshold – The subgroup has not agreed on a quantifiable way (bright line) for identifying a hot spot for wildlife. TCEQ doesn’t presently endorse one way to identify a hot spot. The guidance could be very prescriptive. Jeff indicated that flexibility is the best way to go. Andrew opined that it should be definable and if it can’t be, it should be dropped. Vickie indicated that an early version of TRRP rule proposed a hot spot as a location with an HQ>50. As this was widely opposed, TCEQ has been reticent to prescribe an alternative. Kirby mentioned that EPA might have a guidance document that indicated that only HQs greater than 10 were problematic. Michael Jones indicated that hot spots as defined in Massachusetts are 10 times higher than other samples (for soil). Andrew liked Damian’s ideas on possibilities (e.g., +/- 2 standard deviations).
- 2 – Small ranging receptors and population resilience – Vickie indicated the subgroup has not been able to suggest ways a person could make an argument how a population is or isn’t still okay. This will be a difficult topic to develop text for down the road.
- 3 – Where to put hot spot in 10-step SLERA – The group hasn’t agreed on anything. Vickie advocates the uncertainty section.

- 4 – Geo-spatial tools – The subgroup did agree that geospatial analysis could be used as a tool to define hotspots, but did not agree on a specific tool. The group will need to research what tools could be used.
- 6 – Hot spot analysis for wide-ranging receptors – The subgroup didn't agree on when and why a hot spot analysis is needed for wide ranging receptors. Chip and Johanna suggested that this is more of an issue of at sites where the area is a nuisance because that's "all that's there" for foraging and movement at a site.
- 7 – Hot spot analysis for T/E species – The subgroup didn't agree on how a hot spot analysis would differ for T/E species or surrogate species but the group did agree that a different type of analysis would be merited. Chip and Johanna are available and willing to help further with this topic. They indicated that species of concern are of interest but don't receive the same level of concern as T/E species.

VII. Action Items

1. Vickie to revise the July minutes to reflect Joe Bell's (TCEQ, TRRP-15H work group) clarifications.
2. Larry will revise the "Adequacy and Appropriateness of Soil Data" Section based on today's discussions. This revised text will be provided to the work group prior to the October meeting. Everyone send comments to Vickie or Larry regarding the draft "Soil Data for Assessment" Section. (ASAP)
3. TCEQ will consider removing text from the Soil vs. Sediment paragraph per discussion.
4. Regarding the soil sieving discussion, Andrew will send comments to Vickie for text suggestions on the appropriateness of soil sieving for solidified petroleum material. (September 25)
5. Regarding the soil sieving discussion, Krista Butler will send Vickie comments/text related to soil sieving for explosives. (September 25)
6. Carolyn Fordham to send Vickie information about sieving to evaluate the more bioavailable fraction and to reduce the overall data variability. (September 25)
7. Everyone send Vickie text suggestions for soil sieving where there is slag.
8. All of the "Data for Assessment" section will be re-ordered based on Larry's recommendations.
9. Send ideas and comments on the agreements/ no agreements related to the wildlife hot spot discussion to Vickie so that this input can be considered by the subgroup. (ASAP)
10. The wildlife subgroup will continue working on the detailed outline for the wildlife hot spot/wildlife exposure area text for discussion at the October general meeting. If there isn't a clear decision on an issue by the subgroup, the issue can be presented to the larger group as an "undecided" for input from everyone. (ongoing)

Next Meeting/Conference Call: Wednesday, October 14, 2009 (9:30 – 12:30). Room 200-33 TCEQ Building D. Subsequent meetings are set for November 12th and December 9th.

TRRP-15E Meeting
October 14, 2009; 9:30 – 12:45
Minutes

Attendees

(In person and on the phone) Keith Bradley (KBA EnviroScience, Ltd), Larry Champagne (TCEQ Remediation Division), Chris Day (Arcadis), Deborah Edwards (ExxonMobil Global Remediation), Alicia Fogg (Malcolm Pirnie, Inc.), Curtis Franklin (Dougherty Sprague Environmental, Inc.), Michael Jones (High Prairie Environmental LLC), Jeff Lane (C-K Associates), Paul Lewis (TCEQ Remediation Division), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Andrew Pawlisz (Conestoga-Rovers & Associates), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting/ News/ Discussion of Agenda

- The minutes from the September 9 meeting were accepted.
- Paul Lewis indicated that the next meeting of the TRRP-15 H group is set Tuesday October 10 at 9 am. They plan to discuss what has transpired since the last meeting. They will be primarily discussing the soil-to-groundwater pathway. Paul indicated that the TRRP-15H group is targeting March 2010 for a complete draft from the workgroup. Vickie stated that anyone from the TRRP-15E group could participate if desired. Paul indicated that he has added the TRRP-15E bridgers to his e-mail group.

II. Discussion of the Soil “Data for Assessment” Text Revisions

A. Changes to “Adequacy and Appropriateness of Soil Data”

- Larry’s revisions here were intended to reflect the discussions in September.
- There was very little discussion of this section.
- Jeff Lane asked that “arbitrarily” be removed from the first line of the second paragraph on page 2. He indicated that this language doesn’t reflect his decision-making process as it is commonly more of an issue of landowner and site access. **Vickie agreed to strike “arbitrary” on line 19.**
- Vickie indicated that the highlighted lines (lines 15-23) on page 3 reflect a distinct change in TCEQ policy related to the need to sample in areas of habitat. The work group was satisfied with this language.

B. “Sample Sieving” Text

- Vickie indicated she received quite a bit of feedback from the group on this topic. This was helpful, thanks.
- There was general agreement on the proposed text.
- There was a side bar discussion regarding the need for a risk assessor to be aware of (and to understand how) their lab may process the soil samples, including removal of debris and soil sieving. The group felt that it might make sense to add something about how understanding your data is imperative; a risk assessor should understand the genesis of their data.
- Along this line, Vickie agreed to visit with TCEQ’s Ann Strahl and determine if we should add text. If so, this text would more likely be added to another section (probably “Analytical Considerations”).
- Mike Smith will share references for firing ranges.

- Larry asked if the group was comfortable with removing the ‘other metals’ text (line 38, page 6) that begins with, “In TCEQ’s experience.” The group did not object.

C. Other Text

- High Biased and Low-biased Data Distribution - Margaret Roy indicated it’s preferable not to dismantle the SLERA once it is complete; in other words, start with the right data so it’s not necessary to “explain away” the perceived risk (line 34, page 3). The group was comfortable with the text revisions to this section.
- There was no particular discussion regarding the remainder of the sections; the group seemed comfortable with the text revisions.

III. Overall Report on the Progress of the Wildlife/Hot Spot Subgroup and Discussion of Today’s Goals

- Vickie provided a summary of the subgroup’s work. TCEQ very much appreciates the time and effort from everyone in the subgroup. The subgroup has had 7 calls since our July work group meeting. The subgroup’s objective was to bring a detailed outline to the larger group today. Some issues were not totally resolved but the subgroup felt that they had progressed as far as possible at this point. The main snags revolved around the topic of PCLs and hot spots for small ranging receptors (Vickie’s summary):
 - ◆ What is a small-ranging receptor?
 - ◆ Why do we care about small-ranging receptors given the definition of the ecological PCL in TRRP?
 - ◆ How do you perform a hot spot analysis for a small ranging receptor generally and specifically for the robin and shrew?
 - ◆ Will it help (the hot spot analysis) if we have up-front ecological PCLs for the robin and shrew?
 - ◆ Does it matter (in other words, impact our concern for hot spots for small ranging receptors) if the soil data is principally from areas of ecological habitat?
- Vickie indicated that today’s goal would be to walk through the entire outline at least once. Work group members were encouraged to offer brief comments or questions, but were warned not to get bogged down on any particular subject.
- Vickie indicated the more controversial areas are highlighted in blue in the outline that was provided to the work group.

IV. Discussion of the Wildlife/Hot Spot Outline

A. Walk through wildlife/hot spots outline developed by the subgroup (notes indexed by location in outline):

- D1 and D2a: The text in italics was provided by Ralph Stahl. The subgroup did not agree with this and never had a chance to discuss with Ralph. This text will likely be edited after discussing with Ralph. Similarly, the text regarding wildlife populations will likely be refined. TCEQ advocates a generic definition of population.
- D3f: Regarding exposure point concentration, the aspect of using ProUCL came up in subgroup. Vickie indicated that the reference would likely be general here for ProUCL. However, the guidance will likely have an appendix on how to use ProUCL and that this is not unique to soil.
- D4a and D4b: The introduction and definition here could already be guidance text.

- D4c: Dave Parmer queried whether the small ranging receptor definition should key on smaller body mass as well. Vickie indicated that home range is more relevant.
- D4c (5th bullet): We discussed the notion of a hot spot analysis for small ranging receptors where the LOAEL HQ is less than 1. Larry indicated that the issue of how to address small ranging receptors (from the ecological PCL definition) is very relevant. Vickie agreed but cautioned that the question of how to do a hot spot analysis and when it is triggered is a very different discussion.
- D4e1: Jeff Lane asked if we envision this section as being similar to the sediment hot spot discussion. Vickie indicated that the hot spot evaluation envisioned for wildlife is far different from that for benthos. That said, Vickie will check to see if there is any text from the benthos hot spot text that can be used for wildlife; particularly the introduction.
- D4e3 (third bullet): Regarding the proposal to flag any data point that would result in an HQ of 10 or more as a starting point for the hot spot analysis - Keith Bradley suggested that the subgroup was simply developing mechanics for these decisions to present to the larger work group.
- D4e4 (first bullet): Larry Champagne reiterated that he is asking this question as a way of considering potential alternatives to requiring a hot spot evaluation every time the HQ < 1. As this reflects some significant shifts in the way things have been done (use of data from ecological habitat specifically), will this be an unnecessary burden for those performing ecological risk assessments. What are the appropriate goals?
- D4e5 (regarding hot spot analysis for wide-ranging receptors): Keith suggested that ERAs need to do a better job of describing a particular site relative to the unique habitat needs for wide range receptors such as roosting areas and nesting areas. David Parmer suggested a more expanded discussion on specific habitat. Keith Bradley also suggested adding something about keystone species to this discussion.
- D4e6 (Spatial Analytical Techniques): The thought here is to provide persons with options for analysis as tools to identify hot spots. Michael Jones indicated that the techniques in part c) could be used in places other than hot spot analysis.
- D4f (Risk Management): Vickie: If a location is identified as a hot spot, is it part of a PCLE zone?

B. Next Steps/Assignments

- For action items, see next section.
- The group agreed that it would be most prudent to attempt to address the definition of the ecological PCL as it relates to small ranging receptors.
- If successful, this will go a long way towards getting past some of the questions tied to the small ranging receptor issue. Whatever this work group drafts, will be shared with members of the Ecological Risk Assessment Guidance Development work group for endorsement (via e-mail).
- A small group will develop text for discussion at the November meeting (see action item).
- Everyone is encouraged to comment on the outline, especially those not present today.
- Initial writing assignments were agreed upon (see action items).

V. Action Items

- Vickie agreed to visit with TCEQ's Ann Strahl and determine if we should add text regarding sample manipulations by the lab.
- Mike Smith to share references for firing ranges (related to Soil Sieving).
- Everyone should provide comments (last chance for now) on the "Data for Assessment" by COB October 28.

- Similarly, everyone should provide comments on the wildlife hot spot outline by COB October 28. Those not on today's call are especially encouraged to comment.
- Larry Champagne, Vickie Reat, Chip Wood, and Andrew Pawlisz will collaborate and write proposed text to address the small ranging receptor aspect of the ecological PCL. (by COB November 6)
- Michael Jones and Kirby Tyndall will work together to draft text for D3 - Exposure Point Concentration for discussion at the November meeting. (by COB November 6)
- Andrew Pawlisz will collaborate with Ralph Stahl to draft text for D2 - Exposure Areas. (by COB November 6)
- Larry Champagne indicated he would draft some text for small ranging receptors that does not necessarily follow the outline.
- Vickie will talk to some other people about helping with 4A & B (Hot Spot introduction and definition).

VII. Discussion of future meetings and schedule:

- November 2009 will be the one year anniversary for this work group.
- The work group agreed to continue having meetings/calls the second Wednesday of every month. Vickie will reserve conference rooms and phone lines (done).
- Vickie indicated there may be a need to meet with the TRRP-15H work group regarding some issues such as background.
- The group discussed the possibility of meeting up with members of the group for those planning to attend the SETAC meeting in New Orleans Nov 19-23.

Next Meeting/Conference Call: Thursday November 12, 2009 (9:30 – 12:45). Room B-201 A, TCEQ Building B.

TRRP-15E Meeting
November 12, 2009; 9:30 – 12:45
Minutes

Attendees

(In person and on the phone) Keith Bradley (KBA EnviroScience, Ltd), Krista Butler (URS Corporation), Larry Champagne (TCEQ Remediation Division), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Michael Jones (High Prairie Environmental LLC), Jeff Lane (C-K Associates), Paul Lewis (TCEQ Remediation Division), Jessica Mauricio (TCEQ Remediation Division), Chris McCarthy (CH2MHill), David Parmer (Texas General Land Office), Andrew Pawlisz (Conestoga-Rovers & Associates), Vickie Reat (TCEQ Remediation Division), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Ralph Stahl (DuPont Corp. Remediation Group), John Wilder (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting/ News/ Discussion of Agenda

- The minutes from the October 12 meeting were accepted.
- Paul Lewis indicated that two subcommittee meetings of the TRRP-15 H group are planned this month (November) to discuss the groundwater ingestion pathway and the soil-to-groundwater pathway. For both topics, the groups will be discussing the appropriateness of averaging.
- Paul indicated that the TRRP-15H group is planning on a full work group meeting in December or January.
- Internal staff meetings continue on various topics in TRRP-15H.

II. Discussion of the Soil “Data for Assessment” Text Revisions

- Regarding the introductory paragraph for this entire section, Vickie indicated that we are still looking for suggestions on other guidance documents to put in the parenthetical on line 8 (page 1). These would be general guidance documents related to sampling design and assessment approaches.
- There were no comments on the “Adequacy and Appropriateness of Soil Data,” “High-biased and Low-biased Data Distribution,” “Soil Depth,” and “Soil vs. Sediment.”
- Regarding “Analytical Considerations,” Vickie indicated that she had added lines 2-8 on page 5 after visiting with Ann Strahl, based on feedback from the group during the October meeting. Ann had volunteered that she could poll various labs regarding their SOPs on processing soil samples. Vickie will modify this text if necessary. The workgroup was satisfied with this text as is.
- Vickie indicated she had made a few changes to the “Sample Sieving” text. She indicated that she added some references (lines 25-26, page 5), and needs to confirm some of these. John Wilder indicated that he may be providing comments on the text (last paragraph, page 5) regarding removal of solidified petroleum material.

III. Discussion of proposed text/policy regarding implementation of the “Eco PCL” definition

- Vickie reminded everyone that we would need to have agreement from the ecological workgroup before we could go forward with this policy or some version thereof.
- Larry explained that other than the rodents specified, all other rodents would qualify for PCL exclusion.

- Richard Seiler said he supported this text overall and Keith Bradley indicated it was on target.
- Chris McCarthy asked if persons would be required to calculate a PCL for other receptors in the guild if a rodent hazard quotient exceeds 1. Larry explained that you would have to look at the home range of other receptors in the guild. If the home range is large enough so they will not likely be at risk, justification would be needed.
- Jeff Lane asked if there was anything else to add to better define the eco PCL. Larry indicated that we could certainly change the title, but we were focused on the confusing parts of eco PCL, that is the part centered on rodents and small ranging receptors. Larry indicated that we had proceeded under the assumption that the rest of the definition was straight forward.
- Keith Bradley suggested that we add text that explains why small rodents are the only animals excluded. He suggested that we specifically address the robin and the shrew. Larry said birds were never implied as being in this group.
- Michael Jones thought line 38-40 might leave the reader hanging. Michael indicated it may be helpful to include a sentence as to why the omnivore/invertivore feeding guild is more important than the herbivorous feeding guild, as inferred in the draft text.
- There was discussion regarding the shrew as a measurement receptor. When could it be excluded from PCL development? Larry suggested that the risk assessor would have to look at range of the shrew in Texas as a starting point followed by habitat availability. Our proposal meant to say that if the shrew could be at a site, it should be a measurement receptor.
- Carolyn Fordham suggested that it might be appropriate to defer to the ecology literature for the shrew along the lines that shrews do not multiply as well as mice.
- Larry indicated that he is hesitant to use population terminology as he doesn't want a discussion of "acceptable population loss." Chip Wood and Richard Seiler discouraged this as well.
- Larry, Andrew, Vickie and Chip will have a conference call the morning of December 2 provided we receive comments on this text. Keith and Michael in particular were encouraged to provide comments or text suggestions since they had particular concerns during today's discussions.

IV. Discussion of the Wildlife/Hot Spot Outline (notes by section)

A. Purpose and Rationale (D.1)

- Vickie indicated we will need to go back and look at this once we have this whole section written to see if this introduction fits with the document overall. Vickie also indicated she would compare this to the "introduction" text for sediment.
- The group thought this read very well.

B. Exposure areas – general discussion of wildlife populations (D.2.a)

- Regarding line 39, the group suggested it may be a good idea to strike the sentence starting with "It may be useful..."
- Chris McCarthy suggested we may want to state that a survey is not required and that it is certainly an option.
- Andrew Pawlisz and Ralph Stahl will look at putting this paragraph (lines 37 – 42) in the next section or striking it all together.
- Andrew asked that the group evaluate the population definition and make sure it is correct.

C. Exposure areas – define (D.2.b)

- Regarding the habitat definition (line 29, page 3), Larry asked if it would be beneficial to tie habitat back to anything that does not Tier 1 out under disturbed ground (Tier 1 checklist).
- Vickie opined that the paragraph on soil depth needs some work. She suggested that the text discuss what types of receptors would ordinarily be evaluated using subsurface soil data for incidental soil ingestion and/or food chain transfer. Chris McCarthy indicated he will send some notes on this section.
- Ralph indicated that the statement in middle of last paragraph (too few samples, line 3) should be tied back to the “Data for assessment” section. There was a suggestion that there are often too few samples both spatially and horizontally, and that for human health assessments, data are normally collected from different depth intervals.
- Andrew and Ralph indicated that they will add references to this section and tweak the language for all these paragraphs.

D. Exposure Point Concentration (D.3)

- Kirby Tyndall indicated she evaluated the sediment exposure point discussion to ensure that these sections matched where appropriate.
- Michael indicated that the text from the concept paper (in italics, lines 30-37, page 4) was simply for reference and would not be retained in the actual text.
- Andrew asked about the “extreme outlier” terminology used in lines 19-25, page 5 (paragraph beginning with, “Care should be taken...”). He asked about consistency in terminology. Michael indicated that this phrase is directly from the ERAG so it is nothing new. Michael suggested we retain “extreme” when citing the ERAG, but otherwise avoid this.
- Regarding lines 38-39, page 5 (sentence beginning with, “Since the Tier 2 SLERA...”), John Wilder asked if we were implying that another statistical approach should be used in a site-specific ecological risk assessment. The group didn’t think this language was problematic as the guidance overall is intended to target Tier 2 SLERAs.
- Regarding line 26, page 6 (sentence beginning with, “Persons may also need to...”), the group suggested substituting “samples” for “data.”
- There was a discussion of the proposed flow chart to accompany this text. Regarding the diamond that begins, “Does receptor habitat...,” this question is intended to ask if the data was collected from areas with ecological exposure. Larry indicated that his concern was that data should be collected from ecological habitat rather than the concentrations themselves.
- Continuing on the discussion of the flow chart, Chris McCarthy expressed concern that we are opening the door to a discussion of the minimum amount of acceptable data. What is enough? There was a suggestion to add a footnote to explain the minimum acceptable limits.
- Regarding the left-most rectangle on the chart, Andrew suggested that the chart could be changed to say that data gaps should be discussed with TCEQ. Persons would need to defend why the data is acceptable.
- Regarding the very last paragraph of this section, Vickie said she wants to make sure the language here (especially discussion of point-to-point comparisons) does not conflict with RAD (response action determination) language toward the end of our final document. We need to go back and evaluate this when we write the RAD language.

E. Evaluating wildlife hot spots introduction and definition (D.4.a and D.4.b)

- The group generally liked this language and did not offer any comments.

F. Discussion of the remainder of the wildlife/hot spots outline

- Vickie indicated that most of the remainder of the outline did not change; there were just a few points from comments by e-mail and discussions from last meeting.
- Ralph had question on the 5th bullet under TCEQ philosophy (D.4.c). The text here indicated the need for a hot spot analysis where the LOAEL HQ is less than 1, for small ranging receptors. Vickie indicated that the subgroup did not agree on this and that there have been very few comments received on this bullet. Michael asked for a sample scenario as to why this would be a concern. Larry reiterated that there may be more concern with a mixed data set with high biased data. This led to a discussion of the flow chart (next).

V. Discussion of Larry's proposal/flow chart for evaluating hot spots for small ranging receptors

- Larry explained that he crafted this flow chart in an effort to provide persons an incentive to sample in ecological habitat. He was also hopeful that if we agreed on this flow chart in concept, that we could use it as a spring board to begin drafting text for the remainder of the outline.
- Vickie asked whether the "develop PCLs/risk management recommendation box" should better be described as the hot spot evaluation.
- Vickie asked if the comparison to the default PCL for robin/shrew was based on UCL or point-to-point. Although a point-to-point comparison would be more conservative, Larry indicated he envisioned using the UCL.
- Regarding the HQ >10, this was using the LOAEL HQ. Is the NOAEL HQ appropriated for protected species?
- Most of the group thought the flow chart was pretty clear.
- Vickie ended this discussion with this question for the group: Do you feel this screening as proposed in this flow chart is appropriate to put in guidance for narrowing down what a hot spot is for small ranging receptors? The group needs to think about this and comment. Vickie suggested there needs to be some discussion of biology here.

VI. Action Items

- Universal action item to comment on the wildlife/hot spots outline and expanded text and flow chart by COB November 25. Those not on today's call are especially encouraged to comment.
- Similarly, everyone should provide comments on the ecological PCL text by COB November 20. Those not on today's call are especially encouraged to comment.
- Larry Champagne, Vickie Reat, Chip Wood, and Andrew Pawlisz will have a conference call on December 2 to discuss comments received on the ecological PCL text.
- Michael Jones, Kirby Tyndall, Andrew Pawlisz, Ralph Stahl, and Tom McHugh will revise their sections in the hot spot outline based on discussions during the call and subsequent comments. Revised text is due to Vickie COB December 4.
- The goal will be to begin writing text regarding hot spots for small ranging receptors in January 2010. We will discuss comments and possible resolutions during the December meeting/call.
- Although TCEQ has been sending out draft documents with line numbers, it seems that the various Word versions everyone has results in different line numbers. Therefore, there was a suggestion to send out draft documents as pdf files (in addition to or in place of Word files) so we could all be looking at the same line numbering scheme. Vickie indicated she would look in to this.

Next Meeting/Conference Call: Wednesday December 9, 2009 (9:30 – 12:45). Room 200-33, TCEQ Building D.

TRRP-15E Meeting
December 9, 2009; 9:30 – 12:45
Minutes

Attendees

(In person and on the phone) Larry Champagne (TCEQ Remediation Division), Bill Desmond (TITAN Engineering, Inc.), Carolyn Fordham (Terra Technologies Environmental Services, LLC), Michael Jones (High Prairie Environmental, LLC), Jeff Lane (C-K Associates), Jessica Mauricio (TCEQ Remediation Division), Chris McCarthy (CH2M Hill), Tom McHugh (GSI Environmental, Inc.), Tommy Mobley (Texas General Land Office), David Parmer (Texas General Land Office), Andrew Pawlisz (Conestoga-Rovers & Associates), Damian Preziosi (Integral Consulting, Inc.), Vickie Reat (TCEQ Remediation Division), Margaret Roy (URS Corporation), Richard Seiler (TCEQ Remediation Division), Michael Smith (TCEQ Remediation Division), Kirby Tyndall (Pastor, Behling and Wheeler, LLC), John Wilder (TCEQ Remediation Division), and Charles (Chip) Wood (Texas Parks and Wildlife Department).

I. Minutes from the Last Meeting/ News/ Discussion of Agenda

- There were no changes to the minutes from the November 12, 2009 meeting.
- Note that meetings in 2010 are planned for the second Wednesday morning of the month, with the exception of April; that particular meeting will be April 13th instead because of a state holiday.

II. Update of activities in the TRRP-15H Work Group

- Vickie provided a summary of the recent activities of the TRRP-15 H work group. Paul Lewis provided a written summary for her to use since he could not attend the meeting.
- The group has been meeting internally and externally last month and this month to discuss averaging (whether or not to allow it) for the groundwater ingestion pathway and the soil-to-groundwater pathway.
- The soil-to-groundwater PCL discussion related to pooling data for that comparison has been very contentious. They will have additional meetings to discuss this.
- The TRRP-15H group has not been discussing background. Although Pat Fontenot directed that group to have a draft document by the end of March 2010, Vickie indicated that Paul felt that there would still be plenty of time to for the two groups to collectively discuss background issues.

III. Discussion of Soil “Data for Assessment” Text Revisions

- The only two sections that were modified were “Analytical Considerations” and “Soil Sieving.”
- Regarding the “Analytical Considerations” text, this text was fine with everyone at the November meeting. Since then, Vickie shared the language regarding soil sample processing at the lab with Ann Strahl, and Ann offered some minor changes. The language basically says the same thing; the fundamental change was that it states that samples are almost always homogenized and then a subsample is collected from this. There were no comments on these changes.
- There were also minor changes to the “Soil Sieving” text based on comments from John Wilder. John was concerned about the larger particles that are left behind after sieving (bioavailability, continuing source, waste material), and the text changes were intended to address these concerns.

- Carolyn pointed out this may have a potential overlap with the human health (waste determination mechanism or cross-contamination with other media).
- Vickie thanked Andrew and John for the modifications to this section.

IV. Discussion of Revised Proposed Text/Policy Regarding the Implementation of the “Ecological PCL Definition.”

- As a background, Vickie indicated we had introduced this text at the last meeting with the idea of addressing the ambiguity of the ecological PCL definition in the TRRP rule. While working on the wildlife/hot spot outline, several work group members have asked why we care about hot spots for small ranging receptors since the TRRP rule seems to exclude the need for PCLs for these receptors. The proposed text is intended to clarify this.
- This proposed language will still need to be discussed and “approved” by the ecological risk assessment guidance development workgroup.
- There was good a discussion of this text at the last meeting. The text today reflects comments received since then.
- Larry explained that the idea behind the draft today was to tie the text back to stakeholder concerns (during the TRRP rule development) that PCLs would be required for “nuisance” species.
- Tom McHugh indicated this language was clearer than the previous version and he supported it.
- Tom asked if he determined a hazard quotient for the shrew, would we require an explicit discussion on the protectiveness for small rodents. Larry indicated that as long as you can show that the evaluation of one guild would be protective of the other, this would be fine. Vickie reminded everyone that we don’t expect persons to evaluate every guild that is represented in the food webs in the ecological risk assessment guidance document.
- Chris asked that if PCLs are not going to be necessary for small rodents, would it be more efficient to start with a guild representative that will be used to develop PCLs. Larry said it is still important to evaluate the smaller (or mid) ranging receptors to ensure that the guild is protected.
- Carolyn expressed concern that the nuisance wording in the third full paragraph would cause some problems as people view nuisance animals differently. She advocates the use of the family names to cleanly get us away from the shrew issue or others. Larry indicated that Chip’s suggested text (or something similar) may address this possible problem: “For the purposes of TRRP and this guidance, nuisance species is [are] narrowly defined as those rodent species commonly controlled for the protection of human health and property.”
- Most supported Chip’s suggested language.
- Vickie indicated that we would ask for comments on this proposed text one more time prior to the January meeting. After this, we will pass the proposed text to the ecological risk assessment guidance development work group for their review.

V. Discussion of the Flow Chart for Evaluating Hot spots for Small Ranging Receptors

- Vickie indicated that although we discussed the proposed flow chart last month, she felt that it deserved revisiting as it will be used as a basis for writing guidance text regarding the evaluation of potential hot spots for small ranging receptors.
- TCEQ did not receive any e-mail comments or feedback on the flow chart since the last meeting.
- Vickie asked that when you step through the flow chart and get to the YES box on the far right (develop site-specific PCLs and ecological risk management recommendation), does

a hot spot has been identified that must be addressed or does it mean there is a potential hot spot that should be further evaluated?

- Larry suggested there should be an earlier box or series of steps (TBD) that works you towards a later decision of not likely a concern/ or PCL/risk management requirements needed.
- Regarding the question comparing 95% UCL to the default robin/shrew PCL, Larry pointed out that it is not definite when these PCLs will be developed and for what COCs.
- Margaret asked if there is some way to incorporate an acute component to this. Larry indicated this wasn't in the plans as the PCL will be the midpoint between the NOAEL and LOAEL based screening levels and these will be conservative. There will be no adjustments for seasonality, bioavailability, home range size, etc.
- Looking at the left side of the flow chart, John observed that where the LOAEL-based HQ < 1 (using a UCL), this results in a decision that hot spots are not likely concerns, similar to the way risk assessments are currently done. He asked if we were comfortable with this outcome related to previous concerns that hot spots could be diluted out for small ranging receptors. Vickie indicated this was less of a concern where sampling is based in ecological habitat, and it is assumed that we are starting with a more robust data set than in the past. Vickie asked if everyone was comfortable with this aspect of the flow chart. All agreed.
- There were questions as to how this process would integrate with the current Tier 2 screening. Vickie indicated that the hot spot evaluation would be in addition to the current Tier 2 process; it doesn't replace anything.
- There was extended discussion about the use of outliers and the statistical outlier question in the diamond on the right side. TCEQ does not advocate that a data point be removed simply because it is an outlier. More importantly, statistical outliers that are demonstrated to be a result of errors should be removed; otherwise the outlier should be indicative of a potential hot spot. Outliers that represent areas of elevated concentration could be removed from the data set (i.e., not used in the UCL determination) if those locations will be remediated.
- Michael suggested the outlier terminology in the bottom right diamond be replaced with: "elevated concentration relative to the data set (including valid statistical outliers)" or similar language.
- Damian asked about the status of guidance regarding the calculation of the UCL, outliers, and other statistical concepts. Vickie indicated that the mechanics of running these calculations and associated guidance will be housed in an appendix TBD. Vickie hopes that this will be developed by the TRRP-15H group but expects that if it is not done or is inappropriate for our needs, we will need to write this.
- Vickie asked that work group members comment on the flow chart in preparation for January's meeting. Again, the question is: Do we feel the screening process as proposed in this flow chart is an appropriate approach for addressing hot spots for small ranging receptors? In answering this question, also consider other concepts in the outline text thus far. If the answer is yes, this will be used to craft guidance text.

VI. Discussion of Revised Text for the Wildlife/Hot Spots Outline

D.3 – Exposure Point Concentration

- Michael Jones revised this section based on comments at the last meeting. There were no particular comments on these revisions; Michael clarified the wording of the "extreme outlier" phrase.
- Tom asked about his comment on this section. He had commented (via e-mail) that the draft wildlife text states that the averaging area is the exposure area, but the text does not explicitly make this link. He suggested that the following sentence be added to the beginning of the section: "The exposure point concentration is a statistical representation

- Vickie indicated “exposure area” is currently defined on line 30, page 2.
- Tom suggested that if the data included in the 95% UCL calculation isn’t tied into the exposure area, it needs to be explicitly stated or tied to something.
- After an extended discussion, the work group agreed that persons would not be required to calculate 95% UCLs based on the home range of a receptor. For instance if the home range of a receptor is 1 acre for a 10 acre area of ecological habitat, we wouldn’t require 10 separate UCL determinations for that receptor with additional (different) UCL determinations for the other measurement receptors.
- There was general agreement that the UCL should be calculated for the area of habitat that is a subset of the affected property, even where the receptor’s home range is smaller than the area of habitat. The hot spot analysis is key to this decision as it would address the issue of averaging out hot spots when the UCL is based on an area larger than the home range of a receptor.
- Carolyn suggested that the area of habitat could be further subdivided by habitat types specific to the receptors in question, as opposed to an assumption of it all representing generic ecological habitat.
- Regarding the rest of the outline, Vickie wants to hear more comments on the flow chart before we reconcile the outline with the flowchart. Much of the outline discussion still needs to be captured, specifically the section that deals with the hot spot evaluation of small ranging receptors (4c). E1-4 would need to be re-tooled based on the flow chart. Vickie would like to go forward with fleshing out the outline at next month’s meeting; this seems premature now.

VII. Action items

1. Provide comments to all on the ecological PCL definition text by **COB December 31st**. Chip, Larry, Vickie and Andrew may have a conference call if necessary to address comments (if any).
2. Provide comments to all on the flow chart (for performing a hot spot evaluation for small ranging receptors) by **COB on December 31st**.
3. Vickie and Larry will try to begin re-tooling the flow chart and outline based on the flow chart proposed thus far and the comments received.
4. Michael, Andrew, and Ralph will revise their sections (exposure point concentration and exposure area) to indicate that the EPC and the home range of a receptor are not linked; the exposure area is the intersection of the affected property and the ecological habitat.
5. Andrew and Ralph will revise sections D.1, 2.a, and 2.b to address comments at today’s meeting and the November meeting.
6. Text revisions are due **COB January 6**.

Our next meeting is scheduled for **January 13, 2010** from 9:30-12:45.