FINAL
MARE ISLAND NAVAL SHIPYARD
Restoration Advisory Board (RAB) Meeting Minutes

HELD THURSDAY, January 28, 2016

The Restoration Advisory Board (RAB) for former Mare Island Naval Shipyard (MINS) held its regular meeting on Thursday, January 28, 2016, at the Mare Island Conference Center, 375 G Street, Vallejo, California. The meeting started at 7:04 p.m. and adjourned at 8:54 p.m. These minutes contain a transcript of the discussions and presentations from the RAB Meeting.

RAB Community Members in Attendance:

- Myrna Hayes (Community Co-Chair)
- Paula Tygielski
- Maurice Campbell

RAB Navy, Developers, Regulatory, and Other Agency Members in Attendance:

- Janet Lear (Navy Co-Chair)
- Dwight Gemar (Weston Solutions, Inc.)
- Valerie Harris (Navy Lead Remedial Project Manager)
- Patrick Hsieh [Department of Toxic Substances Control (DTSC)]
- Brooks Pauly [Navy Remedial Project Manager (RPM)]
- Neal Siler (Lennar Mare Island)
- Elizabeth Wells [California Regional Water Quality Control Board (Water Board)]
- Reginald Paulding (Navy RPM)
- Nick Shih (Contract Navy RPM)

Community Guests in Attendance:

- Fred Ousey (Envirotech Services)

RAB Support from Construction Engineering Services, LLC, in Attendance:

- Virginia Demetrios
- Emily Siegel
- Doris Bailey (Stenographer)
- Wally Neville (Audio/Visual Support)

I. WELCOME AND INTRODUCTIONS (Myrna Hayes [Community Co-Chair] and Janet Lear [Navy Co-Chair])

CO-CHAIR LEAR: Okay. We'll go ahead and get started. Welcome, everyone, to the Mare Island Restoration Advisory Board. My name is Janet Lear I'm the Navy co-chair.

CO-CHAIR HAYES: And I'm Myrna Hayes, and I am the community co-chair.

MR. CAMPBELL: Maurice Campbell, community member.

MR. SILER: Neal Siler, Lennar Mare Island.

MS. WELLS: Elizabeth Wells with the San Francisco Bay Regional Water Quality Control Board.

MR. HSIEH: Patrick Hsieh, California Department of Toxic Substances Control.

MR. GEMAR: Dwight Gemar with the Regional Board of Weston Solutions in the Bay Area.

MS. PAULY: Brooks Pauly, RPM for the Navy.

MS. HARRIS: Valerie Harris, RPM for the Navy.

MR. SHIH: Nick Shih, contracted support and RPM for the Navy.

MR. PAULDING: Reggie Paulding, RPM for the Navy.

MR. OUSEY: Fred Ousey with Envirotech Services.

MS. DEMETRIOS: Virginia Demetrios with CES.

MS. SIEGEL: Emily Siegel with CES.

CO-CHAIR HAYES: Not to sweat the details too much here, but a little -- it would probably be helpful for those reading the minutes if somebody could say what an RPM is, a regional project or something, you know, you don't know what an RPM is. And the same thing with whoever it is you work for, Virginia. It would probably be helpful for the minutes if someone could explain both of those things.

MS. DEMETRIOS: We're Construction Engineering Services JV which is a joint venture of JM Waller Associates and Engineering Remediation and Resources Group, Inc. (ERRG).

MS. PAULY: And an RPM is a remedial project manager.

CO-CHAIR HAYES: Thank you.

CO-CHAIR LEAR: Okay. So we have our first presentation for the evening which is the Investigation Area (IA) F1 Feasibility Study (FS). This presentation will be presented by Brooks Pauly, Navy RPM.

II. PRESENTATION (Brooks Pauly [Navy]): *Investigation Area F1 Feasibility Study*

MS. PAULY: Hi, everybody. So good evening and welcome.

CO-CHAIR HAYES: I don't think you're on.

MS. PAULY: Oh, okay. Nope. And testing. Great. Well, good evening and welcome. I am Brooks Pauly. And tonight's presentation is the update of the Investigation Area F1 Feasibility Study which has recently been finalized and approved by the Base Realignment and Closure Team (BCT).

CO-CHAIR HAYES: Don't use too many acronyms.

MS. PAULY: I saw it coming and I couldn't stop myself.

CO-CHAIR LEAR: Can you make it full screen?

MS. PAULY: So to our presentation outline which we typically do so you kind of know what's coming. I'm going to talk about the goal of a feasibility study, or FS you'll hear me saying.

To give some site location, history, current and future site use.

Past site investigations: the remedial investigation or RI conclusions and recommendations, which has three areas evaluated for active remediation or target treatment zones (TTZs). You might hear me say TTZs. Spoiler alert, the RI concluded that three areas need further action. And that will lead into our Remedial Action Objectives and the remedial alternatives that were chosen for those three areas. And some of you may also know the IA F1 by its munitions program name, the Production Manufacturing Area or the PMA.

So this FS is for the Installation Restoration Program or IRP, which generally deals with potential non-munitions issues, but munitions are being handled under the separate -- under separate FS under the Navy's Munitions Response Program or MRP.

Similarly, polychlorinated biphenyls, or PCBs, that are outside the buildings are included under our IRP program. And they don't present any unacceptable risk at the site as we've determined through the RI process.

But PCBs within the buildings, as some of you may know, are being handled under a separate Navy base-wide PCB program. So I just kind of want to make that clear. I'm going to mention it later in the presentation, but I kind of wanted to mention it now that these are all under the CERCLA process and they will -- all the programs will eventually be combined, and I'll touch on that briefly at the end.

So we always have questions at the end, but I'm also happy to clarify things and answer any questions as we go along. All right.

So, goal of a feasibility study. The goal is to evaluate the path forward for site remediation. It's pretty simple. Put another way, we evaluate different ways of managing or cleaning up the site so it doesn't present an unacceptable risk to the human health and environment.

So we get data input from the RI, as I mentioned, the remedial investigation. And that data gets input into the FS, feasibility study. As we mentioned or I may have mentioned in previous presentations -- oh, I'm sorry, Fred, do you have a question?

MR. OUSEY: No.

MS. PAULY: Oh, okay. I saw a hand. The IA F1 RI was completed back in September of 2012. So then the FS also identifies the Remedial Action Objectives, or the RAOs. It identifies remedial alternatives, or RAs, for sites that have unacceptable risks. And then it rates the alternatives based on seven out of the nine National Oil and Hazardous Substances Pollution Contingency Plan, blessedly shortened to the NCP criteria. So the seven criteria are listed, seven of the nine are listed here. So obviously the first two are the threshold criteria, they're absolutely required. So for an alternative to be acceptable, it has to meet those first two criteria: protection of human health and the environment, and compliance with applicable or relevant and appropriate requirements, sometimes called ARARs. It also has to, you know, be evaluated for balancing or for -- yes, the balancing criteria which are the long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost.

All right. And the last two criteria of the nine are the state and community acceptance, and these are evaluated after developing and receiving comments on the proposed plan, and then they're presented in the Record of Decision. So we'll get to mentioning that later.

Finally we get to a map here. And we realize that some of these figures are, you know, some of these are a little bit hard to see on the figures. We're really only presenting figures on here that you

can see the things that we're talking about. But hopefully we've actually printed out larger versions of the figures -- yes, I'm seeing them held up -- eleven by seventeens at the end of your handout, so if there was something you wanted to see a little more clearly, hopefully that will be helpful.

So this figure shows the sites or the site itself, I should say, which is in the orange boundary. It also shows the seven subareas. And it -- the colors depict the reuses for the areas. So you can see most of the F1 area is the pink industrial reuse. We've got some green regional park reuse here. And then the subarea six is open space and wetlands reuse. So you can see that -- oh, and this little tiny area, map down here at the bottom, you can see that the F1 area is located at the southeastern corner of Mare Island. Talked about the outline.

And we did talk about the different reuses. Oh, and it's based on -- the reuse is actually, so the colored areas, are based on the Mare Island specific plan which was last updated in 2008 if you wanted to look at that reference. A little bit of IA F1 history. As I mentioned before, this area is also known as the Production Manufacturing Area, or PMA, because it was used to produce and manufacture ordnance. That started pretty much since base operations started in 1854. Subsequently ended in 1973. But then the buildings were used for several years for things like office space, et cetera, et cetera.

And there actually were 22 underground storage tanks that have received closure from the Regional Water Board. So that was an example of that there.

All right, the current and future land use. So currently the site is designated industrial. So the whole site is managed as industrial right now, but the planned future use is just what we showed you on the previous figure which showed a mix of industrial, Regional Park and recreational area on the southern end, and open space and wetlands in subarea six.

Those past investigations started back in 1983 and went through 2009. We did thirteen different investigations. And data from those went into that remedial investigation report, the RI report that was done in 2012.

In 2013 the Regional Water Board pointed out that there were a few areas of TPH that needed a little bit more investigation, so we completed that additional sampling for what we call TPH areas 2B, 14, and 15.

I think as I mentioned earlier too, the potential risks related to munitions, because this was a munitions production area, are being handled under the separate Munitions Response Program or MRP.

And so those programs, like I said, are almost parallel with each other right now. The IRP program is a little bit ahead of the MRP program. But our hope is to bring them together, and the draft munitions response RI/FS combined document is currently under agency review.

So as we mentioned, under the FS, the content slide that I showed earlier, data from those investigations from 1983 on were used in the RI, especially for the risk assessments in the RI. And that RI came to conclusions and had recommendations that feed into the FS. So those get kind of summarized again in the FS, and then they feed into the RAOs and the RAs.

Just to do a quick summary of those RI conclusions and recommendations for each one of the subareas, we'll talk about that right now.

For subarea one it's going to be industrial reuse in the future. We found no unacceptable risk to the industrial workers or hypothetical residents.

As I mentioned TPH area 2B was in this area and it was closed through additional sampling which was documented in that FS that has just been finalized.

No further actions needed for subarea one.

Similarly for subarea two. We had very similar results from the RI.

Moving on to subarea three. So the RI concluded there was also no unacceptable risk to the industrial construction worker or ecological receptors in that area; however, lead in the soil may pose an unacceptable risk to the hypothetical resident.

And for that reason we have to have ICs or institutional controls on the area to prevent residential and other sensitive uses, because that would pose an unacceptable risk to those receptors.

Again there's no further action needed for the current land use; but again, we use those administrative actions, if you will, the ICs to restrict the sensitive uses.

In subarea four --

CO-CHAIR HAYES: Boy, though -- boy, this is loud now -- I might note that there would be a land use restriction anyway on residential in those areas because of the state lands reversionary land.

MS. PAULY: Oh, okay.

CO-CHAIR HAYES: Which would also prohibit residential and probably those other sensitive uses, but definitely residential. So you'll have a double protection there.

CO-CHAIR LEAR: Hi, Paula.

MS. TYGIELSKI: I'm sorry, I didn't mean to be an interruption.

MS. PAULY: Not at all, welcome. I actually thought you were going to say munitions which is another, there's a third layer as well that will be on the site. Moving onto subarea four which also is industrial reuse. This is our first area that does require further action. We concluded in the RI that there would need to be further action in the area, specifically for lead in soil in the area south of building A75, yes, A75.

Luckily this is not an unacceptable risk to ecological receptors, specifically. I mentioned TPH areas fourteen and fifteen, those are in subarea four, and those were closed again through additional documentation in the FS.

And so we're going to also have those same ICs to restrict residential and other sensitive uses for this site.

CO-CHAIR HAYES: Could you just -- why would you -- in subarea three you have lead in soil may pose an unacceptable risk -- oh, to industrial construction workers. Oh, okay.

MS. PAULY: Right. So it's acceptable for someone who's only there part-time.

CO-CHAIR HAYES: Yeah. Yeah. Yeah. I know what that means.

MS. PAULY: Okay.

CO-CHAIR HAYES: But I was just trying to figure out what the difference was and why you were having to take some action. But I see now, thank you.

MS. PAULY: You're most welcome. And even, like I said, even after the action is done we'll still need to have ICs on this site as mentioned there.

So just to show you the actual area -- pardon me, my device has failed a bit. So here's the figure for our first area requiring the action in which you can see the target treatment zone or TTZ south of Building A75. This is the building.

And then this is the area where shallow soil is the medium of concern there, so shallow soil is two to three feet below ground surface (bgs), and that's for the metals that I mentioned before.

CO-CHAIR HAYES: Wait. Wait. Wait. Explain what you just said about shallow soil. What's that have to do with anything?

MS. PAULY: Oh, it's -- that's the -- that's what's actually going to need to be remediated. So it's not a groundwater issue, it's not a deep soil issue --

CO-CHAIR HAYES: So it's lead in soil at more or less the surface?

MS. PAULY: Correct.

CO-CHAIR HAYES: All right. Thank you.

MS. PAULY: Exactly. All right. So moving onto subarea five. You recall that subarea five from our reuse map has two future reuses, industrial in the northern area, and Regional Park in the southern area.

And so lead in the soil around Building A17 poses an unacceptable risk to hypothetical residential receptors and, therefore, potentially future recreational receptors as well, and also ecological receptors. So that will need to be dealt with.

And luckily in the industrial area, which is the northern portion of subarea five, there is no unacceptable risk to the construction workers or even in that case the hypothetical residents. Okay.

And as before, even after the action that we are contemplating here, the actions that we're contemplating in the FS, there will need to be institutional controls (ICs) on this site for sensitive land uses and in particular formation of open space and ecological habitat in the industrial area.

This is Building A. On this slide you can see Building A17 down here. It's within the --

CO-CHAIR HAYES: Brooks, I'm sorry to just be pestering, but what the heck does that mean, "ICs are evaluated to restrict residential and other sensitive uses and formation --" what's that mean? "-- of open space or ecological habitat." What's that mean?

MS. PAULY: So that would be like grasses and trees and other things that sensitive ecological receptors might be drawn to are going to be restricted in those areas.

CO-CHAIR HAYES: Okay. You gotta -- that's still not helping me enough.

MS. PAULY: Okay.

CO-CHAIR HAYES: What is that going to mean to that particular subarea?

MS. PAULY: A portion, yes, a portion of the subarea. Similarly to what we do in the rest of the PMA in the F1 right now, we do a lot of vegetation control for fire maintenance, you know, for fire prevention; and that also has the added effect of not drawing, being an attractive habitat potentially for certain sensitive receptors.

CO-CHAIR HAYES: It does?

MS. PAULY: I think Janet might have a --

CO-CHAIR LEAR: Okay. So at this site, this portion of the site is planned for industrial reuse, right. So when we're evaluating the ecological receptors, we're assuming that there isn't going to be a lot of open space where there could be habitat for ecological receptors. That's the evaluation.

And the regulatory agencies were concerned that there be some kind of a restriction to prevent that formation of open space habitat, even though we know that it's going to be an industrial reuse area.

CO-CHAIR HAYES: Well it says subarea four, so it's this area right here?

CO-CHAIR LEAR: No, it's five here.

MS. PAULY: There are two areas.

CO-CHAIR HAYES: So this is a mistake then?

CO-CHAIR LEAR: Okay. I thought we were talking about five.

CO-CHAIR HAYES: Or am I behind?

MS. PAULY: Oh, I'm on five.

CO-CHAIR HAYES: You're on five?

MS. PAULY: But you're exactly right, so let's go back to four. In four we also have, there is a portion of four that needs to be restricted, yes, for formation of open space and ecological habitat.

So if we were to go back up and look at four, this is going to remain an industrial area. And if I'm not mistaken, there was one hit of -- I'm going to forget what it is, but it's near -- it was one of the hits associated with Building A190.

And so that just pushed -- it pushed the concern for ecological receptors in that area such that there was a requirement to have the prevention of the formation of open space and ecological habitat, which loosely translates to keeping the weeds down.

CO-CHAIR HAYES: Hmmm. All right. I guess maybe we should have talked -- it would have been helpful to me, okay.

MS. PAULY: Okay.

CO-CHAIR HAYES: Maybe nobody else on the tour, if while we were at this location we could have had this conversation. Because Mother Nature is tending to just do some ecological benefit, which we see as a benefit anyway, while things are just sitting around to these areas. They're a former marsh and they're subsiding, and they're just naturally going to make some good habitat.

And we actually don't see that at this point, you know, we being those of us who manage the park on the other side of the property or are going to be managing the property adjacent to, say, half of subarea five. It seems like that's going to get a little bit complicated or that it already is. Just mowing does do something.

But I've just -- I've never heard of this before until now. So all your visiting with the regulators hasn't really ever come to us, and this kind of -- this is the time to be talking about it. But we've never heard of this as a potential remedy. And as you -- just mowing is eventually not going to be enough if that's what you're trying to achieve.

And so I'm just curious about whether you've done any, somewhere along the line in this, and maybe I'm just getting too hysterical, have you done some cost benefit analysis of remediating or removing these contaminants rather than the long-term expense of mowing. And I understand that you're trying to get the city of Vallejo to take the property over, and my concern there is that their first line of action on all mowing sites is to first spray with Glyphosate. And this becomes very complicated if what you've got is, to me anyway, if you're trying to reduce the formation, as you call it, of open space; it's already there, or ecological habitat, it's already there.

So you're going to have to do something different. And it might be more cost effective to just take the contaminant of concern away. I don't know if you've done any analysis on that.

MS. PAULY: Well, if I understand your concern, your concern is that the Glyphosate might impact things off-site?

CO-CHAIR HAYES: Well, that's one issue, but it certainly is that you would be -- because if you're trying to give the property for management to the City of Vallejo, that has been or is their stated practice. We have that problem. I see it as a problem in some of our management areas. Now, the Navy does not ask its contractors to spray first, but they spray first, then mow.

So my concern is that if you're going to be using aggressive means to prevent the formation or the continuation of open space and ecological habitat right adjacent to, in subarea five, adjacent to open space where we actually want to attract or we expect that we will want to attract, make a good habitat and attract and have open space, then I'm just asking for clarification on that. That seems to me -- I can see restricting residential --

MS. PAULY: Right.

CO-CHAIR HAYES: -- but I don't see that this is going to be a very effective or satisfactory way of managing your -- the resource -- when you have a split use in that subarea.

MS. PAULY: Well, I can't speak to what the city, city's policies are and what they would do, but I do understand the concern. It's worth noting, and it might be helpful to see on the big picture here that subarea four and subarea five, the industrial portions of it, are somewhat removed from -- there's a little bit, obviously a little bit of overlap here that goes off-site, but primarily these are, these are buffered a little bit by the subarea three in particular here.

CO-CHAIR HAYES: Well, we're really talking, I mean right now I'm talking about subarea five.

MS. PAULY: Right.

CO-CHAIR HAYES: So there's no buffering at all. There's half green and half purple. So I'm just saying that your, this management scenario, this IC scenario is very close to being a very difficult to manage scenario. So maybe you're going to address that some other time. I'm just putting that on the record as my concern.

CO-CHAIR LEAR: So Brooks, the IC to prevent formation of open space ecological habitat, is that for the entire area or is that for a subarea?

CO-CHAIR HAYES: No, it's the industrial area.

CO-CHAIR LEAR: I'm asking if it is limited to a specific portion of that?

MS. PAULY: Subarea is what you're saying? Like a subarea of the subarea?

CO-CHAIR LEAR: Yes. Because we have -- we're doing the active remediation in a very small subset of the larger area, so I'm just wondering if that is true for this issue as well I don't remember.

MS. PAULY: I see what you're saying. Just to clarify for those that aren't as familiar as Janet and I, it's not the lead specifically that's causing this need, it's actually a, an organic compound.

CO-CHAIR LEAR: But it is not widespread.

MS. PAULY: But it is not widespread. And so conceptually, because the ICs have not been developed, conceptually they could be limited to a very small area. So that -- that actually could address that problem. It could. But I think that it's a good thing to bring up, definitely.

MS. TYGIELSKI: Wouldn't it be just easier to make it a parking lot and not worry about it?

CO-CHAIR HAYES: Hey, Paula, your thing's not on, we can't hear your good words.

MS. PAULY: Is it on?

MS. TYGIELSKI: Maybe it would be just easier to make a parking lot over part of the area that you're concerned about.

CO-CHAIR LEAR: And that's kind of what this IC does. It's just an administrative way of saying use this area for a parking lot or an industrial use, but don't develop it into open space.

MS. PAULY: Right.

CO-CHAIR LEAR: Just like we're saying use it as an industrial area, don't develop it into residential uses.

MS. PAULY: Right. Don't put a hospital there, don't put a garden there, yeah.

CO-CHAIR LEAR: But the actual IC design document where we really work out the details, provide a map showing specifically where these restrictions would be, that comes a little bit later in the process, and we'll have some discussion of that when we're there, when we're at that point with the group.

CO-CHAIR HAYES: I guess I -- and again, because I don't do this stuff every day and you would think that I might figure this out after about two decades, but I'm still not -- I don't -- I guess I don't want this issue forgotten. I don't want it buried in a document that -- and in discussions that we're not a part of.

And I don't know where you do the analysis of the different cost benefits, if that's in this document or the next one up, and I don't know how you're going to remember or I'm going to remember that this is an issue, but I think this is a situation where you have, you have made a subarea that has two different reuses. You made that, you could change it. You could either make a subarea like Lennar does of 5.A and 5.B or 5.1 and 5.2, and then you could apply different, your different ICs to these two subareas.

But you say that you have this reuse, industrial reuse sub or portion of subarea five, but that's going to be very hard to track in a document in my opinion. And/or you could just plain put in the analysis the removal of that contaminant. Sometimes you guys are ridiculous in hanging onto that justification for keeping the shit there when it might be just as straightforward or cheaper to rip it out.

So I don't know why you can't put that alternative in there except for that it might open up some can of worms for you or something. But it just, this seems just a little bit cumbersome to me, and maybe I'm making way too big a deal about it, but then that's me.

MS. PAULY: Well, we definitely wanted to hear your concern. And I heard you saying something about changing the reuse areas, and Janet, correct me if I'm wrong --

CO-CHAIR HAYES: No, I did not say that. No. No. No. No. No, I did not say that.

MS. PAULY: No? Okay.

CO-CHAIR HAYES: I said that you maybe you should, or it would be helpful because you have subarea five -- you've made up the term subarea five, that's not part of the reuse plan.

MS. PAULY: That's correct.

CO-CHAIR HAYES: So you could, like Lennar does, has gone to, break down your subarea into a Part A, Part B, or Part 1, Part 2, 5.1, 5.2, so that it's very clear that it's not just this ambiguous industrial reuse portion of Subarea 5. Since -- you know, rather than renumbering everything, you could just make a, because this is a big deal to me as a manager of the property that's, that isn't yet -- I mean, if I had this sort of issue in the property we have now, it would cause a different kind of management scenario than if the property adjacent to a piece of property is supposed to be, you know, denuded or have some other.

MS. PAULY: Right.

CO-CHAIR HAYES: And maybe it's a contiguous property physiologically, geographically land type, maybe you have a marsh and you just have this magic line that you cause to be created and you're going to, you're going to apply pesticides, herbicides up to a property line, and then you're going to -- I mean to a magic line, and then I'm going to have a rule against using pesticides and herbicides on my property. It's not going to work out very well, I don't think, in this particular subarea. So that's my point.

MS. PAULY: I think I do get that. Okay. So to give a little history of how the subareas were created and how this sort of process goes along. We create the subarea without knowing what's there first. Exactly like you said, we created it just based on buildings that were next to each other and things that seemed to be associated with each other based on the historical use.

And so then once we do the investigation then we find out that there's this unacceptable risk. So it is a little bit, it would be very difficult for the Navy administratively to go back and try to redo that risk assessment or anything like that. But it's possible, like you were mentioning and I think what Janet was saying, is that we could look, when we look at the ICs we could look at the exact area that really needs to be managed and it might need to be smaller.

CO-CHAIR LEAR: And, in fact, because they have different reuses, they were actually assessed during the risk assessment differently.

MS. PAULY: Well that's true too.

CO-CHAIR LEAR: So we could very easily call them 5A and 5B because they were evaluated for risks separately.

But when we get to the institutional controls, when we get to the design, it would be areas requiring institutional controls; so it would be totally separate from the subareas, it would be whatever area we need to implement that IC on. So it could be a much smaller subset.

MS. PAULY: Right.

CO-CHAIR LEAR: But let's -- because these are tracking and we're going to combine the MRP site as well as the IRP site together before we do the Record of Decision and the design document --

MS. PAULY: Right.

CO-CHAIR LEAR: -- we have some time to talk about the details.

MS. PAULY: Yep.

CO-CHAIR LEAR: And we can revisit this in more detail.

CO-CHAIR HAYES: All right.

CO-CHAIR LEAR: Okay?

CO-CHAIR HAYES: Yes.

MS. PAULY: It won't get lost. Okay. But thank you for bringing that up.

So subarea six is the open space and wetlands reuse area. Just to kind of continue on with what we were talking about with the RI conclusions and recommendations.

The RI concluded there was no unacceptable risks to the recreational receptor based on that land use there.

There is unacceptable risks to ecological receptors, however, from metals and sediment that was identified in the northern portion of the area. And I'll get that figure in just a minute.

So that is our third area of needed further action that we're going to consider in the FS. And similarly, ICs will be evaluated to restrict things like residential and sensitive uses. You can't put a residence out in the wetlands.

So in subarea seven, our last subarea, the regional park reuse that is the southernmost portion of the F1 site, there's no unacceptable risk to recreational, hypothetical resident, or ecological receptors. So there's no further action needed there.

All right. And so on this figure you can see subarea six. This is wetlands area. And very similar to what you were talking about, Myrna, we don't need to go and dig up the whole wetlands for metals, there were just a very small subarea here within subarea six in the northern portion near outfall 33 that's impacted with some metals. So you can see we're going to be doing an action here in subarea four, the subarea five action, and then this subarea six action here. So -- okay.

CO-CHAIR HAYES: So can I ask you a question about subarea seven?

MS. PAULY: Sure.

CO-CHAIR HAYES: You say there's no further action needed to address risk to humans or ecological receptors, that is only in this chemicals of concern program?

MS. PAULY: Correct.

CO-CHAIR HAYES: That's not including munitions?

MS. PAULY: That's right.

CO-CHAIR HAYES: Because I'm going to ask this, and I don't expect you to know what I'm talking about because I'm not sure I know what I'm talking about; but I was approached by a citizen who told me that a representative of the State Assemblyperson who he works for said that what we needed to do was to pressure the Navy, we as the public -- and I'm not quite sure why he told her this -- but she asked me to her house and she said, "Can you explain to me what this person meant when he said that you should pressure the members of the public for a no further action letter or confirmation from the state, concurrence from the state for this area."

Why would this individual say that? What does that mean? Because what difference would it make, even if this area was cleared for whatever but it wasn't cleared for munitions yet? Is that just an obfuscating kind of political babble that that person was headed toward, or is there something that I don't know about that's going on behind the scenes for the transfer of this property or use of this property?

CO-CHAIR LEAR: I do not know.

MS. PAULY: No, I'm not really even understanding the person's statement.

CO-CHAIR HAYES: You know, well, neither was I. So either the person who told me about it was taking incorrect notes, or the person who was telling her about it didn't quite have the story right. But I'm just, when I see this no further action, this alerts me, interests me too because that is actually the area that the person told this woman to talk to you about.

So if any of you knows anything or can learn anything? Or just forget it. It's just -- I'm trying to piece some things together, and I don't -- even though I'm the RAB co-chair I don't actually know anything about what you guys do in these little meetings you have. So this is the only meeting that I have where I ask questions. Because I don't get phone calls anymore, I don't get to go to any of your other meetings anymore.

MS. TYGIELSKI: Okay. I have a -- I have a question about your question. It says in subarea seven that no further action needed. Has already been decided. Maybe that politician is interested in having that documented?

MS. PAULY: That's documented in the RI. It's documented, it's repeated in the FS, and it would be documented in the ROD.

MS. TYGIELSKI: But maybe that politician doesn't know that.

CO-CHAIR HAYES: Patrick is --

MS. PAULY: Hard to say.

MR. HSIEH: I haven't heard of anything about this subarea specifically. And I know that Assemblypeople and the elected leaders are, you know, free to contact our department, they have their channels, we actually have someone who is employed directly just to liase with the legislature, and they do and they will regularly come up to us with their concerns.

CO-CHAIR HAYES: Okay. It might be helpful, I don't know if you want to come back to the next RAB meeting or text me or e-mail or call me or whatever, but maybe you could ask that liaison person in your department what -- if somebody has approached them, if they're free to say, maybe they have some sort of political reason they can't say.

But just that jumped out at me because that's the first time I've seen that in writing regarding that subarea. And I don't know, again, why the person told this woman that she should pressure, or we as the public should pressure for you to concur.

MR. HSIEH: Okay. I can do that for sure.

MS. PAULY: Okay. So now that we've gone through the RI conclusions and recommendations, those do feed into the Remedial Action Objectives for the FS. And I'll just mention the chemicals of concern since we've gone through, I know, quite a few subareas here.

So basically the FS translates the RI conclusions into very detailed Remedial Action Objectives. I didn't want to bore you with them all here, but in general the RAOs are to make the area suitable for the proposed land use and prevent exposure of human and ecological receptors to chemicals of concern posing an unacceptable risk. It's as simple as that.

So just to reiterate. There are three areas that remedial alternatives were evaluated for. So the lead in the shallow soil south of Building A75, that's Building A75 in the uplands.

Lead in shallow soil near Building A17, again subarea five in the uplands.

And then it's copper, lead, and zinc in sediment near Outfall 33. That is subarea 6. And that is the wetlands.

I'm sorry, I'm losing my train of thought.

Okay. Remedial alternatives for the upland portion of the site. I just wanted to point out they are developed and evaluated separately from the wetlands area. So we did evaluate human health risk in the various subareas, so one through five and then number seven.

But when we're evaluating the remedial alternatives, the similar remedial alternatives apply to the uplands, and then different ones apply to the wetlands. So we've broken it up that way. So we're not just coming up with one final alternative, we'll actually have an alternative for the wetlands and one for the uplands.

Okay. And here they are. So the remedial alternatives identified for the uplands include, and this is included for all, for all different areas, we are required to consider the no action alternative.

So we do want to consider, you know, would it be protective of human health and the environment to do no action? We want to conserve the public's money, so we do consider that alternative and we have to prove and state why that alternative is not okay, why it doesn't meet the NCP criteria, those seven criteria. So number one is always no action.

For the lead in the shallow soil near Building A75 and A17, we are considering ICs. So we talked about the institutional controls. And then the action of putting an asphalt cap on, so just like you were mentioning.

We're also considering the ICs combined with excavation and then off-site disposal.

Similarly, for the copper, lead, and zinc in the sediment near outfall 33, that's the wetlands area, subarea six, we're considering ICs in combination with either excavation, and then because the receptors are different in the uplands versus the wetlands, we considered on-site sediment relocation from the wetlands into the upland area where it would not pose an unacceptable risk to any other receptors.

Then we also considered the obvious, ICs, excavation, and then off-site disposal. What we're calling W2 and W3 for the wetlands alternatives, and then U2 and U3 for the uplands alternatives.

All right. Oh, boy, I'm realizing this slide is probably pretty difficult to read. It's really just for your reference. I'm not going to go through all of it. Essentially this is just a more detailed description of the uplands alternative.

So ICs, capping with asphalt, and ICs excavation and off-site disposal, just like I mentioned.

And essentially what each alternative achieves, it achieves the RAOs by removing soil or sediment that is above the risk level, or removing some sort of complete pathway so that sensitive receptors are not able to be exposed to the soil. So either you put a cap on or, you know, ICs do the same thing by preventing, let's say, hospitals from being built in an area, or daycare centers.

Okay. Very similar for the uplands -- or for the wetlands. Again, this is just excavation, and then potentially moving some of that impacted sediment into the uplands or just fully taking it off-site.

MS. TYGIELSKI: I have a question.

MS. PAULY: Yes, Paula.

MS. TYGIELSKI: Under it says U3.

CO-CHAIR HAYES: Paula, turn it on.

MS. TYGIELSKI: U3, institutional controls.

MS. PAULY: Yes.

MS. TYGIELSKI: The first line in that big box says soil in the TTZs would be excavated. What are TTZs?

MS. PAULY: I'm sorry. So I had mentioned it before, the target treatment zones.

MS. TYGIELSKI: Okay.

MS. PAULY: But it would have been nicer to have written it out here. There are acronyms at the back of your handout that can be helpful too. Sometimes flipping back there. But I'm always happy to jump in.

Okay. I think we've covered the wetlands as well. Okay. So this is where, this actually gets to the more interesting portion for an engineer, for the RPM. So after identifying and describing the alternatives, we evaluate them. And that's kind of a two-step process. So we have all our alternatives, this is on the left hand column here.

We have our NCP criteria, one through seven up above. And so obviously each one of the alternatives, if they're going to be even considered at all, have to meet, as I mentioned, the overall protection of human health and the environment, and the compliance with the ARARs, the applicable and relevant requirements. Okay.

But then we start to look at, you know, are they -- is there long-term effectiveness and permanence of the remedy? Reduction of toxicity and mobility or volume through treatment. And that -- it doesn't count, you can't actually say the reason these boxes are zero here, they're poor, is that those metals are just not going away. There's not really a way to treat metals to destroy them that is practical. You just remove them. So you actually don't get any credit, even for taking them completely off-site.

So this is where we actually compare the alternatives just to the criteria. We don't compare them to each other yet, that's the second step. But once we actually compare them to the, to the criteria, then we look at the overall ranking.

And you can see that in this case for the uplands, alternative U3 is definitely preferred, even though it's a little bit more expensive.

CO-CHAIR HAYES: And I'll just make a note for the record that everything that you refer to as uplands, like next to A75, whatever, those are actually former marsh, and so if you're going to put a cap on it, over time the cap would fall apart anyway.

MS. PAULY: That is correct, and that's why O&M is part of this, operations and maintenance is definitely part of the cost consideration. So it's definitely included.

All right. So similar for the wetlands we did the same kind of process of evaluation where first we compare the alternatives to the criteria, and then we compare them to each other. All right.

And as you saw with the uplands, the highest ranked alternative was U3, which was the institutional controls with excavation and then off-site disposal, similarly for the wetlands. It just didn't make sense, exactly for the purpose you stated, Myrna, that the operation and maintenance of trying to manage keeping that sediment in the upland area was just, it was going to be too difficult.

And so I think, I mentioned that U3 had -- it cost more but it had better long-term effectiveness than U2.

And W3 costs less, and it actually had better implementability and better long-term effectiveness.

Okay. So our path forward. We're almost done. I told you I was going to mention the combined program, Janet mentioned it as well. We're going to be bringing all the different programs together under the proposed plan and the draft remedial action plan. That is anticipated for Spring of 2016. We still have time to talk about the details of that and how that looks in terms of subareas.

So it presents the preferred remedial action alternatives which are going to be U3 and W3. And it has the public comment period. That would be a good time to make that comment.

Later the Record of Decision and the Remedial Action Plan, it's going to be this fall. It actually documents the selected remedial action alternatives, and that is our decision document. And then we'll go into the remedial design in 2017, and the remedial action in 2018.

So were there -- if there weren't any other questions, I thank you all very much.

CO-CHAIR HAYES: Thank you.

CO-CHAIR LEAR: All right. So now we have our second presentation given by Mr. Neal Siler of Lennar Mare Island. He's going to be talking about Installation Restoration Site 15, proposed pilot test work plan.

III. PRESENTATION (Neil Siler [Lennar Mare Island]): – *Installation Restoration Site 15 Proposed Pilot Test Work Plan Implementation Investigation Area C1*

MR. SILER: Okay. I'll try to do this as succinctly as possible because I've said this before and I'm sure I'll have to say it again, that Navy is a tough act to follow always.

CO-CHAIR HAYES: But then you're Neal, so it's easy.

MR. SILER: So as Janet mentioned, I'm going to talk about the Installation Restoration Program site 15 pilot test work plan implementation. And you're seeing this before any of the regulators see it just to show you where we are and what we're planning on moving forward with.

As I usually do, I'm going to give you a description of the site, I'm going to talk about the approved remedy and what we have done to do date with the site, to tell where we are with the progress of that remediation. I'm going to discuss current conditions and what the data needs that we addressed were, and what we identified and addressed, and then give you an idea of what our proposed work plan would be.

Did you not get a slide show?

CO-CHAIR HAYES: No.

MS. TYGIELSKI: I would like one too.

CO-CHAIR HAYES: Anybody else who didn't get a copy of the slide presentation?

MR. SILER: So moving right along. Installation Restoration program site 15 is located in the northern section of the Eastern Early Transfer

Parcel in the southeastern portion of investigation area C1.

It's a four acre site that the former use was a plating shop. It appeared that there were some chromic acid tanks in that plating shop that had leaked, had generated a number of metals that were, became mobilized and got into the environment, and also some chlorinated volatile organic compounds that we looked at.

There's been work going on at this site since 1983, investigation between '83 and 2010.

There were some remedial actions that were performed in the late eighties and early nineties with the removal of those underground storage tanks, and then the drain system that they drained into which is believed to be the source of the contamination in the area.

And then we started doing some pilot tests to see what was -- bench scale and field pilot tests to see what would be the best way to move forward. And that started in 2008-2010.

And we started in 2010 and 2011 in implementing the remedial action program at the site.

So this next slide right here, that just kind of goes over what I said. You can see these buildings are quite old, starting in 1899, Building 101, up to

1921, Building 273. The future use of the site is going to be industrial. Right along the waterfront there will be a promenade where people can walk along that area.

As I mentioned, the constituents of concern are arsenic, cadmium, lead mainly in soil; hexavalent chromium is in the groundwater also that's been removed from the soil; and then the chlorinated volatile organic compounds.

And then as you can see, the previous investigation and remedial actions are kind of laid out there at the base of that slide.

So there was a lot of back and forth as to what the remedy should be. And we identified a program that went to address both contamination in soil and in groundwater.

We excavated the metal hot spots around Building 225, which again I mentioned was believed to be source of the contamination in the area. We have the cap of the building itself that will be over areas that we could not get to in a reasonable way. And that addressed the soil contamination.

Now, the groundwater contamination, what we did is we actually put in a permeable reactive barrier, you'll see that in a little bit in the slide. That was charged with zero-valent iron that abiotically breaks down the chlorinated volatile organic compounds. We disposed of all the materials that we excavated out of that trench, and we restored that portion of the site.

In addition to that, because we knew that would just treat in one area, we did some what's called enhanced reductive dechlorination injections. We put a number of compounds in that we hoped would accelerate the breakdown of the volatile organic compounds in groundwater, and then we continued monitoring.

And the reason I have these in the bold and italic, this is where we are right now. Now hopefully we'll eventually have a land use covenant and an operation and maintenance plan for this site, and hopefully that will only be for this cap that will be around Building 225. Because if we can get the chlorinated volatile organic compounds down enough, we won't need anything for the monitoring well network that we have in place or the permeable reactive barrier.

So again, just kind of showing you where these areas are. Building 225 is back up this way right here.

You can see it right here, 225.

This is the permeable reactive barrier. It's that brown line that you see right there.

The upgradient area which is called the chlorinated ethene hot spot and plume core areas, they're on the eastern side of the permeable reactive barrier wall.

And then the chlorinated ethene near shore area is on the western side of the permeable reactive barrier wall.

In addition to that we did three injection events. We did one in the first quarter of 2011, one in the fourth quarter of 2011, and one in the third quarter of 2012.

What we injected. We injected microbes. We injected that in 2009 in a bench scale test and again in 2011.

A proprietary compound called EHC which is the zero-valent iron and a carbon substrate, about 37,000 pounds of that were injected.

Cheese whey, which is the additional carbon source, about 29,000 pounds.

And then about 105,000 gallons of nutrients, stimulants, stabilizers, and tracers that helped to stimulate the microorganisms that we injected that were in place in the environment.

So this gives you an idea of one of the ERD injections that was done in 2012. You can see the network, everything is connected in here. They have containers where we inject things.

The next slide, of course, is my favorite slide because they're mixing up soilant green. And here's the soda ash, the cheese whey. I always love that Kraft cheese whey bag right there.

And this is the sodium hexametaphosphate which is, what's the brand name of sodium hexametaphosphate? Calgon take me away, that's it.

CO-CHAIR HAYES: Sounds appropriate.

MR. SILER: So before we started this program with the ERD injection, this is what the plume looked like.

This was the outermost boundary of the plume.

The hot spot core area is this dark purple area right here.

There's another area outside of that that had concentrations that were slightly reduced.

And then we had this near shore area right here.

So that's what it looked like before we started doing our remediation program.

Now, this is a little bit different scale here, but this is what it looks like today. So it's about 150 feet across. This is hot spot area one, this is right around well IR-15MW0107. And I'll show you back when we go back here on this slide.

That's just this small area right here between this well and a well that's downgradient that's clean, it's only about ten, fifteen feet.

The other hot spot area is these wells right down here, hot spot area number two, and they're around wells R75 and R77.

And going back to the slide you saw previously where we started from, that's just this area right in here. And again, there's only about 20 feet separating those wells.

And the third hot spot area which is in the near shore plume area which is downgradient of the permeable reactive barrier, that's around well P31 which is right here.

Going back to that previous slide to show you where we started at. Again, that's only about a ten foot area -- that's just about a 20 foot area, that's just right in here, right there.

So this thing has cleaned up nicely to where we wanted it to be. The only problem is we don't have it down enough to where we can proclaim that we're done with remediation.

So this gives you an idea just how this thing fluctuated between the first injection event, second, third, and as we're going back today. And you can see this fluctuated. You can see the concentration went up, which is what it should have done, because what we were doing is we were converting the perchloroethylene or the more halogenated compounds, we were converting them to less halogenated compounds; trichloroethylene, Cis-1,2, dichloroethene, and then finally vinyl chloride ethene and ethane. So then it went up and then it went down quite a bit here and now it's coming back up again. So that's first hot spot area, hot spot area one.

Hot spot area two which is R75 and R77, you can see these came down really quite dramatically as we started doing the injections. They're still not down, they tend to be a little bit recalcitrant. Again, this is the buildup of vinyl chloride, the same as in the hot spot number one around the well IR-15MW0107.

And then this is the third hot spot. This is P31, this is the near shore area. It came down quite dramatically.

This peak right here was really anomalous. We don't know what caused that. I have a feeling somebody mislabeled, although they swear on a stack of Bibles they didn't, a sample, but it's just staying down right here. Again, it's just not quite down enough. This right now, the last time we

had it, the total chlorinated ethene concentration was about 144. It's not down enough as far as we need it.

At the R75, R77 site it was about 39, about 4,000 and about 13,000.

And then at well MW0107 it was about 191,000.

And if you take a look at the back of your packet there's an eleven by seventeen figure that shows you the concentrations as they are today, and what the cleanup goals are.

So what we know is that the remedy is working in both the hot spot and the near shore areas. The plume over time since we started this in 2011 is continuing to contract. The total CVOC concentrations or chlorinated volatile organic compounds concentrations are decreasing. What we're really seeing is the buildup of residual or breakdown products that we want it to go to.

There's one well, and that's that really hot spot well, that's IR-15MW0107 has some Cis-1,2-dichloroethylene in it. But the remaining that we're seeing now is this vinyl chloride right here.

And we know that degradation is continuing to occur. We can see the vinyl chloride increasing. The only problem is that each step when you go down this line from perchloroethylene to trichloroethylene to dichloroethylene to vinyl chloride, that process is slower every time you go down that road. So you have to make sure that you stimulate what's there to continue that process to non-toxic compounds which are ethene and ethane.

So we know we have these three hot spot areas where we've not reached completion in the ERD process.

This is hot spot area number one about, around well IR-15MW0107, hot spot area 2, R75, R77 in the near shore, and well P31.

So we went back and looked at why aren't things breaking down any longer, and we started taking a look at, you know, total organic compound concentrations, because the best way to explain this is that the microbes that we have in the groundwater that are breaking this down biotically, they breathe the chlorinated volatile organic compounds, and they want to eat something else. And what they want to eat is carbon.

So we look at total organic carbon, and we look at an indicator of available carbon that they can -- that they, you know, they have food for. Concentrations have been decreasing across the site since the 2012 injection event. It's being consumed. That carbon's been consumed and that's why this process is slowing down.

So we know since we went out there and looked in November of 2015 that the system needs carbon. But it's kind of important, what type of carbon does it need. So we looked at a number of substrates and these are commonly referred to as volatile fatty acid substrates. So we looked at things like -- and I love the names of them -- lactate, formate, there's Butylate, proportionate, you know, all sorts of different names, acetate.

We found out that acetate is what we have in the environment right now, and that's probably the least stimulating to the microorganisms to help break down, so we've got to get something in there to help those microorganisms to feed on the carbon so that they can do their job.

We also looked at the microbial population. Again, as I mentioned, we had added substrate in a pilot test in 2009, and then full scale remediation in 2011. The last time we had measured them

since November of 2015 was back in December of 2011. And we found that they're still present but they're stressed.

And you can look at the ratio of the type of microbes that you have to see that they're stressed. And the reason they're stressed, they don't have anything to eat or something that's really good for them to eat.

So we went back and looked at a number of different remediation techniques, things that we could inject to stimulate the microorganisms.

The evaluation considerations, you know, their effectiveness, how they're going to react as far as protect human health and the environment.

The reliability.

The success to meet Remedial Action Objectives in a reasonable period of time.

And then also the implementability of what we were going to look at, both technical and administrative.

The existing infrastructure.

Safety concerns as we put things in the ground.

And the land use.

Special considerations. You know, we have that permeable reactive barrier in place, and we want it to stay in place and continue to do its work in reducing the chlorinated ethene population, so we don't want anything that will hurt that wall.

And then because we're so close to the strait, we want to make sure that we're not hurting any aquatic organisms as whatever we treat it with gets into the strait.

And then, of course, what's always important, especially to my boss, relative cost. So these are the four options --

CO-CHAIR HAYES: And your boss is us, turns out.

MR. SILER: That's right.

CO-CHAIR HAYES: Because we're paying the bill.

MR. SILER: So, remedial options. First thing we looked at was no action, which basically just to continue monitoring. Now, these things will eventually break down over time, but is that a reasonable time frame for -- that will satisfy both the community and the regulatory agencies. There's no additional cost, no additional capital cost beyond the groundwater monitoring. It's easily implemented. It's safely implemented. We've been doing it. Everybody always says that this is the low cost alternative, but if you look at it over the length of time that it works, it actually costs more than anything else because you don't get to an end point except for a very, very long duration of time.

The next one we looked at was continuing what we've done, the enhanced reductive dechlorination with bioaugmentation. Again, this is easily implemented. It's the current approved remedial action that we have at the site, so there's really not much else that we have to do as far as documentation. We know it's effective, we can see that it's effective. It can safely be

implemented. It's safe for the aquatic habitat. And it's not a threat to the existing remediation facilities that we have in place.

Now, the only problem is that we're going to have to jumpstart that. As I mentioned, we're probably going to have to introduce additional microbes and the right ratio of types of microbes that we want to look at.

The problem is, as I mentioned, is that with each daughter compound that you produce it takes longer and longer to break down. So, you know, we always have to do this in a sequential manner, and it may require multiple injection events as we move forward.

The next thing we looked at was in situ chemical oxidation. It looked like there may have been some success with this. The best thing about this is there's no daughter products produced. You basically just destroy what you have right there.

Now, the disadvantage of it is that you could potentially implement this upgradient of the PRB wall, but downgradient of the PRB wall you could actually get some toxic compound as far as the aquatic habitat, so it limits what we can do with that. It is something that could break down the PRB wall, we don't want that PRB wall, or permeable reactive barrier wall broken down.

We found out we did this when we actually introduced the oxidizing medium into the substrate underground, we got a lot of foaming. So it looked like we were going to have a lot of gas generation and we didn't want to have that. We had that in the area. We wanted to make sure that this was stable, something we didn't have a problem with.

The other problem I mentioned is that we have hexavalent chromium right now that is mainly in a non-toxic trivalent form that's precipitated out pretty much. If we oxidize this this will raise the valent state of the chromium and we could produce hexavalent chromium which, again, would be a threat to both human health and the environment.

The other thing that it does is if we oxidize is that it will destroy the indigenous population, the microbial population that we have in place. So if we had to go back and do something else to get that started, it would be harder to jumpstart that.

The other thing we looked at was a bioreactor. And that's basically just taking a very, very concentrated carbon substrate, digging a pit, putting it around the hot spot where it would actually do the most good, and make sure it came in contact with the hot spot. It's a very small footprint.

The problem is, in this area you have so many underground utilities moving across the area that it's going to be really hard to get that hot spot in the proper place.

And one thing if you noticed on the slides I showed you earlier of the PRB wall, when we actually put the PRB wall in, we found two 20 by 20 by 20 foot concrete blocks that we didn't know were there before. So whenever you dig here on Mare Island it's a crapshoot, you have no idea what you're going to find.

And the other problem with this is that we'd have to excavate. Which you couldn't leave this in place. Because the problem is that it wouldn't hold up geotechnically and it has a low life cycle. If you do that you may have to excavate numerous times. But if you just left it there it wouldn't give you the proper substrate. Over time you'd probably get a sinkhole. So even if you got it down you'd have to dig it all up and then actually go ahead and geotechnically fill with graded fill and make sure the hole was compacted properly. So that's the problem with that.

So what we came up with again was the best idea, and that's why this is shaded gray right here. Because again what we've been using properly but figuring out how to stimulate those microbes.

So the proposed remedial option is going to be a fourth injection event. We should have this pilot test work plan in either tomorrow or sometime next week. Hopefully we can do this in early February or March of 2016 at multiple injection locations. We're going to increase the available carbon.

The first thing we're going to use is lactate. It's rapid, efficient, but it's short-lasting. So that's kind of like the, you know, Red Bull and the five hour energy drink for the microbes right there. As opposed to -- eventually if we have to do multiple lactate injections we'll do that, but eventually we want to get to the emulsified oil, slow and long-lasting. We get to that point to make sure it keeps the microorganisms satisfied with what they have to eat.

We're going to boost the microbial population, increase the biodiversity. We're going to put in dehalococcidies and vinyl chloride reductase microbes, provide additional nutrients, and treat the mixing water prior to injection because we want to deplete dissolved oxygen in the water, we want to make sure it's anaerobic conditions so that we're not hurting the microbial population that we want in place as we move down the line.

So this next slide gives you an idea of what we've come up with in the three hot shots. And I'll show that in the next slide where you can see it.

This is the lactate, about 3,000 pounds added to about 3,000 gallons of water for both hot spot areas one and two. It's a lesser amount, 1,200 pounds with about a thousand gallons of water in hot spot area three.

KB-1 plus, that is the microbes that we want to put into the ground. And that is a microbial mix that does well in a saline environment.

This KB-1 plus primer, that's the oxygen, dissolved oxygen depleting that we want to prime the water with before we pour it in.

So you can see here, here's the total gallons that we're going to put in each place, and then its location. And then here is about the gallons per well that we're going to put in.

So the next slide shows you the three hot spot areas. Hot spot area number one, that's the well IR-15MW0107 and the wells around it. We want to go ahead and put the injection in that area.

Hot spot area two, these are R75, R77. We're going to inject directly into those wells and two wells around it.

And then hot spot area three, that's P31 right there, we're going to inject in wells around it also.

What's interesting is that even though this has a, again has a concentration of vinyl chloride that we're not happy with, it doesn't meet our goal, P51 which is within ten feet, it's fine and it continues to be fine, it's right downgradient. So it's just stuck in this one spot, very, very recalcitrant.

Same here, R75, you know, within ten feet you don't, you have this high contamination, ten feet you don't see it at all.

Same is true here at MW0107, within ten, fifteen feet you don't see any contamination at all, but we've got to get rid of this to be able to close out this site.

So that's the end of my presentation. If anybody has any questions, I would be glad to answer them.

CO-CHAIR HAYES: You've done quite a bit in four years.

MR. SILER: Getting there.

CO-CHAIR HAYES: So what's the speculation on maybe how much longer this should take?

MR. SILER: It's hard to say.

CO-CHAIR HAYES: Because it's slowing down.

MR. SILER: Yeah, it's hard to say. But if we can stimulate it, hopefully we can get it in there to really move fast, we may be able to do something quick.

We won't know there until we get it into the environment to see how it reacts. Once we do that we'll have a better idea.

CO-CHAIR HAYES: So you're going to be injecting early this year, when do you or how frequently do you monitor?

MR. SILER: What we'll do is that after we inject, and we're hoping to do that hopefully here in the spring sometime, 30 to 45 days afterwards we'll go back in and do monitoring in those locations. And so if we get that done in February or March, we'll be back in there in March, April to take a look at it. And then in May we have the regular groundwater monitoring event --

CO-CHAIR HAYES: Quarterly.

MR. SILER: -- that we're doing there so we'll have another one in May. It's actually semi-annually now. So we'll take a look at it at that point. Any other questions? Thank you very much.

CO-CHAIR LEAR: Thank you, Neal.

We are at our first public comment period. Any comments?

(NO RESPONSE.)

CO-CHAIR LEAR: All right. Ten minute break.

(Thereupon there was a brief recess.)

IV. ADMINISTRATIVE BUSINESS (Myrna Hayes [Community Co-Chair] and Janet Lear [Navy Co-Chair])

CO-CHAIR LEAR: So we're at administrative business and announcements.

Since we had the RAB tour last time, the meeting minutes we are looking for your comments on are the ones dated September 24th. So if you have comments on those meeting minutes, please get those to Myrna or myself.

Did you have any administrative?

CO-CHAIR HAYES: No.

V. FOCUS GROUP REPORTS

CO-CHAIR LEAR: Okay. So we are at focus group reports and discussion.

Paula, did you have anything you wanted to share?

MS. TYGIELSKI: No.

CO-CHAIR LEAR: All right. And the city is not represented tonight. I hear Erin is not feeling well.

So we are at Lennar update.

a) Lennar Update (Neal Siler [Lennar Mare Island])

MR. SILER: Okay. So if you want to follow along, you should have this eleven by seventeen sheet right here.

And some of the work that we've been performing over the last few months are depicted in the photographs on the left-hand side of the sheet.

You can see the top photograph is a collection of concrete confirmation samples at a PCB site in building 746. This is 746A which is located on the southeastern portion of the facility. We've been also been doing some work at PCB site building 746 which is on the north side of the facility. They've scabbled the floor in about eighteen grid areas of this one room here. And the photograph shows them collecting confirmation samples in those areas.

So most of those confirmation samples came back below the cleanup goal, but there are about three of the eighteen that we're going to have to go back and do some additional scabbling on.

The lower photograph is installation of monitoring wells around a former underground storage tank site, M57 in the Building 866 area in Investigation Area C-2. It's an area that we're converting from commercial industrial reuse to residential reuse. And so this is the last thing that we have to do in that area.

We looked like we had cleaned that up. We went back, took another sample, and it was above the cleanup goal. It's been consistently above the cleanup goal, it still keeps coming down, but we're going to do something just to take care of that contamination. Which we put four wells around it, this one central well that we have, about within fifty feet of it, and they're all non-detect. And so we've got this one spot, just like we have at IR-15, that's above the cleanup goal.

So we're probably going to do something, either make the case for leaving it in place, or not being a major threat, or just, you know, adding something just to go ahead and consume it at one time.

So to take a look at some of the other fieldwork that we performed over the time period, which is in the little matrix right below there. Did the groundwater monitoring events at Installation Restoration Program Site 03, industrial pump station 04, and the T-2 oil water separator.

Also did the second monitoring event, which you have some of the results for at Installation Restoration Program Site 15.

Again the monitoring well installations at UST site M57.

We also did remediation at the 746 sites.

And at two sites at Building 688 there's an electrical substation in the outside of that building, we did some additional work there over the last week.

And we also -- there were ten pits inside the building and we did remediation on those.

Upcoming fieldwork that we hope to complete in the next few months is the Building 121, to complete that remediation.

Attack a FOPL segment that sits in front of Building 207 along the drive right there.

Be able to remediate two oil houses and one cistern that's very close to the Mare Island museum.

And then also go ahead and remediate one remaining PCB site in Building 742, which is an elevator shaft in that building.

And then again, you know, get this pilot test going for IR-15.

So documents that we have received comments on. We submitted the investigation area B.2 draft final implementation report.

And also we received comments on the draft final investigation area H2 implementation report. And those are -- these two areas that are right here B.2-2 and H2H2, and they're very close to being finalized, so we can turn that green to blue and be done in those areas.

And then hopefully in the other area that we have green, which is investigation area C3, we have one site that we're -- looks like we're going to be able to present a plan to close out, and that's the Building 144 oil water separator. And once that's completed, all we have left there are just documents to finalize, and we can move forward on that one.

So hopefully we can get Investigation Area B.2-2 and H2 closed out this year. And hopefully later this year or early next year we can get investigation area C3 closed out. And again, there's some other things that we're looking at. Trying to get the Remedial Action Plans for Investigation Area C1 and C2 done.

And that about coverings what we've been doing over the past few months. So if anybody has any questions, please let me know.

One more thing I want to mention that's coming up is that we're going to be doing our annual inspections for the areas that we have covered by land use covenants, and we're also going to be doing five year reviews on a number of those areas also. And what those areas encompass are Investigation Area B.1 which is the old crane test area; Investigation Area B.2-1; there are nine PCB sites in investigation area C3; and about nine more in the Investigation Area D1.2 commercial area; along with the entire Investigation Area D1.2.

So that's it. If anybody has any questions, let me know. Okay.

CO-CHAIR HAYES: Okay. Adjacent to or west of H2 you have quite a large green area that says IR-10, IR something?

MR. SILER: IR-10, IR-13.

CO-CHAIR HAYES: 13, yeah.

MR. SILER: Those are --

CO-CHAIR HAYES: What is that?

MR. SILER: Those are Installation Program Restoration Program sites --

CO-CHAIR HAYES: Yeah, I know that part.

MR. SILER: -- that were within Investigation Area H2. It was an area where they had stored some polychlorinated biphenyl equipment, the Navy had stored it in the past. There's been some remediation done in there. And then the final thing, because this is going to be converted to a park, there is a land use covenant over that area. And so that has been executed and recorded with Solano County.

CO-CHAIR HAYES: So where is -- does H2 go all the way over there to the dotted line then?

MR. SILER: Yeah, it just goes over to the dotted line, that goldenrod and black dotted line. So IR-10 and IR-13 are part of Investigation Area H2.

CO-CHAIR HAYES: Gotcha, all right. Thank you.

CO-CHAIR LEAR: Weston update.

b) Weston Update (Dwight Gemar [Weston Solutions, Inc.])

CO-CHAIR HAYES: What, do you have a little Post-It note now?

MR. GEMAR: I had taken a couple of photos to make it look impressive. So hopefully everybody grabbed a Weston update. So other than recurring monitoring reports, we're down to just two documents under the Weston early transfer parcel work. One is -- and both are associated with environmental or Installation Restoration Site 05, Dredge Pond 7 South, and the Western Magazine area which are all in the southwest corner of Mare Island.

The first document has been through the agencies once and is now back to them -- the Record of Decision and Remedial Action Plan for those sites.

And then also the Navy is looking at an internal draft of a remedial design report for our institutional controls that are the selected remedy for that area.

Other than that, Investigation Area H1 is, the grass is getting green again and the extraction trench continues to operate. We're down to less than a gallon per minute on our 7,200 linear foot extraction trench, which basically indicates that the amount of free water underneath the landfill is just about gone, which means the cap is doing its job. We've generated over 32 million gallons since we started in 2005.

And right next to the landfill is good old wetland B. And now that El Nino has arrived, so are the ducks. And there are ducks in the pond and that's fun to see.

CO-CHAIR HAYES: Yep.

MR. GEMAR: And then as far as the Western early transfer parcel, we do quarterly monitoring of our trail which is part of the remedy for that area to provide public access, and that was recently done along with our perimeter fencing, and no deficiencies were noted. However, our gravel road needed a little repair with the El Nino rains, getting a few ruts and potholes, so we brought in a load of crushed rock and smoothed it out so that people could, you know, tear ass even faster down that road unfortunately. But it will be nice and smooth for them, you know, at least until they rut it up again.

Any questions? All right. Thanks.

CO-CHAIR LEAR: Did you have a question?

CO-CHAIR HAYES: I don't -- I'm not -- this is another one of those questions I'm not quite sure how to ask. The Western Magazine, the pond areas in between the road system, that is a -- was a 1987 Army Corps, U.S. Fish and Wildlife Service endangered species agreement habitat enhancement that the Navy did for the use of the dredge ponds, continued use of the dredge ponds, continued use of the dredge ponds. That was supposed to be for Salt Marsh Harvest Mouse habitat, the California Clapper Rail. But built and designed primarily to be pickleweed habitat. There was one pond that there's always a big discussion about whether, whose fault it was that it wasn't graded the way it ought to be to enhance it for pickleweed, so that one's kind of always been a big old pond.

What I'm curious about is I thought that once Brian McDonough, construction manager for Lennar or whatever his title is now, told me that you, the Navy or the city, or the Navy and the city and Lennar, somehow or another had arranged to direct all the surface run-off on the new developments for Lennar into those ponds. I see that they are brimming full to the top.

Those were never intended to be fresh water impounds. Those really are in that agreement to have been pickleweed habitat. And El Nino put a little a water in there, but I want to know whether you know or have addressed that in this document.

I know that's sort of complicated, but you should be able to figure it out. And tell me whether, indeed, stormwater run-off is being directed into those ponds.

If so, I think we have to go back and revisit that agreement with the U.S. Fish and Wildlife Service and the Army Corps, because I'm not quite sure that's what's supposed to be happening there.

Thank you.

CO-CHAIR LEAR: Neal, do you know anything about that?

MR. SILER: No. No.

CO-CHAIR LEAR: Let me check into that.

CO-CHAIR HAYES: I'm not blaming, I'm just saying, as they say.

c) Regulatory Agency Update (Patrick Hsieh [Department of Toxic Substances Control], and Elizabeth Wells [Regional Water Quality Control Board])

CO-CHAIR LEAR: Yeah. Okay. Regulatory update.

MR. HSIEH: I don't have anything.

MS. WELLS: I have a couple things. One is that we have been working with DTSC and with Lennar on the, what Neal was talking about with the implementation reports for, what was it, B.2-2?

MR. SILER: B.2-2 and H2.

MS. WELLS: And H2. And trying to continue closing petroleum sites, and working on Records of Decision for the Navy.

And the other thing I wanted to mention is the next Restoration Advisory Board meeting is on Cesar Chavez day which is a state holiday, so the state regulators are likely not to be here.

Any questions for the regulators?

CO-CHAIR LEAR: I think we need to move that just for you.

CO-CHAIR HAYES: I think we do.

CO-CHAIR LEAR: You should have just kept quiet about it.

CO-CHAIR HAYES: Well, you could have still have the holiday, it's just that you would be lucky enough to also be able to come here, so you have double. I mean it is -- I hope you do see this as an honor to be a part of a public process.

And so I guess on that note I'm just a tiny bit curious about, you know, we used to have somewhat robust reports from the agencies, and kind of more like similar to what Weston and Lennar and the Navy give. So I personally, since we do come here, would like to hear a little bit more from the agencies as best you can. I know it might seem like it's just sort of a big sigh, but that is what we're here for is three-way communication.

MS. WELLS: Can the Post-it note be this size?

CO-CHAIR HAYES: Yeah. Yeah, if you can write small enough or have big enough way of describing what you're doing. Or there's a whole pad as you have. So use a whole pad.

MS. WELLS: We can put something together if you'd like that.

CO-CHAIR HAYES: We would. I would. I shouldn't say we, but I kind of feel like I would because I'll bet you you're doing something that would be relevant to the Restoration Advisory Board.

VI. CO-CHAIR REPORTS (Myrna Hayes [Community Co-Chair] and Janet Lear [Navy Co-Chair])

CO-CHAIR LEAR: Okay. Co-chair report. So we have the Navy monthly progress report, a little flyer here. We did PCB cleanup work at three sites -- four sites down in southern Mare Island. And one of those I believe we got a closure letter on. Valerie, was that site A17?

MR. SHIH: We got results back but we didn't necessarily get formal closure on the document or on the site.

CO-CHAIR LEAR: Okay. Well, I'm going to take credit this time and next time that we're down to three PCB sites to clean up.

And so there was work at A142, where we had to remove some soil and the top of a foundation and footer.

And at A266, which is the building that had all the wood block floor, we did take out some more wood block floor below a compressed air tank, and did some more concrete remediation. So there's some photos there of people hard at work.

The Navy submitted three documents during the reporting period. And we got comments from EPA on one PCB site closure report.

And concurrence from DTSC and the Water Board on the F1 feasibility study which we heard about tonight.

So our next RAB meeting may or may not be on the 31st of March, and I will let everyone know when we get a confirmation on that.

And I bet you have some things?

CO-CHAIR HAYES: Should we just make a tentative date now? And what is a better date for you and your holiday?

MS. WELLS: I don't know if Thursdays are the easiest day for everybody. So if you want to do a week later or if you want to keep it within the same week, that's the question for you guys to answer.

CO-CHAIR LEAR: I mean, there's a lot of parts and pieces we got to figure out, like availability.

MS. WELLS: And I think that -- isn't Easter the following week? So people have, it's the 27th.

CO-CHAIR HAYES: Of March.

MR. SILER: It's an early Easter.

MS. WELLS: So I don't know people who have spring breaks and schools. So maybe the two of you can look and propose a couple of dates or something and then we can --

CO-CHAIR HAYES: All right.

MS. WELLS: If you want to do it that way?

CO-CHAIR HAYES: Uh-huh.

CO-CHAIR LEAR: Okay.

MS. WELLS: Sure.

MS. TYGIELSKI: If you want to let people know when the next meeting is by e-mail, send it to Paula Tygielski at Gmail; okay?

CO-CHAIR LEAR: Okay. Very good.

CO-CHAIR HAYES: Okay. I think I can make my report pretty quick. The 20th anniversary San Francisco Bay Flyway Festival is scheduled February 19 through 21. And I have a few copies of the call for art here. And we'll be updating our website shortly to reflect the schedule.

And I thank Lennar Mare Island for supplying, providing a building again for us. It will be the same location building 253 at 575 Connolly Street. And we welcome people to attend and to participate.

Thanks. Bye. That's it.

CO-CHAIR LEAR: Okay, everyone. Thank you so much for coming and we'll see you next time. Drive safe.

CO-CHAIR HAYES: Oh, oh, wait, there's a public comment period after.

CO-CHAIR LEAR: Sorry. Public comment period.

MR. CAMPBELL: Okay. Is there any community representation on the BCT?

CO-CHAIR LEAR: No, there is not.

MR. CAMPBELL: Myrna?

CO-CHAIR HAYES: There used to be and we were all welcome to attend if we wanted to. And I don't know how we kind of fell off of the list of invitees or how that happened, but probably be

a good idea to put us back on board, at least invited, cause those were instructive. Diana faithfully attended every one of them, I believe.

CO-CHAIR LEAR: Any other comments? Okay.

Now, thank you for coming and drive safe. See you next time.

(Thereupon the proceedings ended at 8:54 p.m.)

List of Handouts:

- Presentation Handout – Investigation Area (IA) F1 Feasibility Study
- Presentation Handout – Installation Restoration Program Site 15 Proposed Pilot Test Work Plan Implementation Investigation Area C1
- Navy Monthly Progress Report
- Weston Solutions Mare Island Update
- Lennar Mare Island January 2016 RAB Update

Attachment 1. Presentation Handout – Investigation Area (IA) F1 Feasibility Study

Investigation Area (IA) F1
Feasibility Study
Mare Island Naval Shipyard, Vallejo, California

Restoration Advisory Board Meeting

January 28, 2016

Presentation Outline

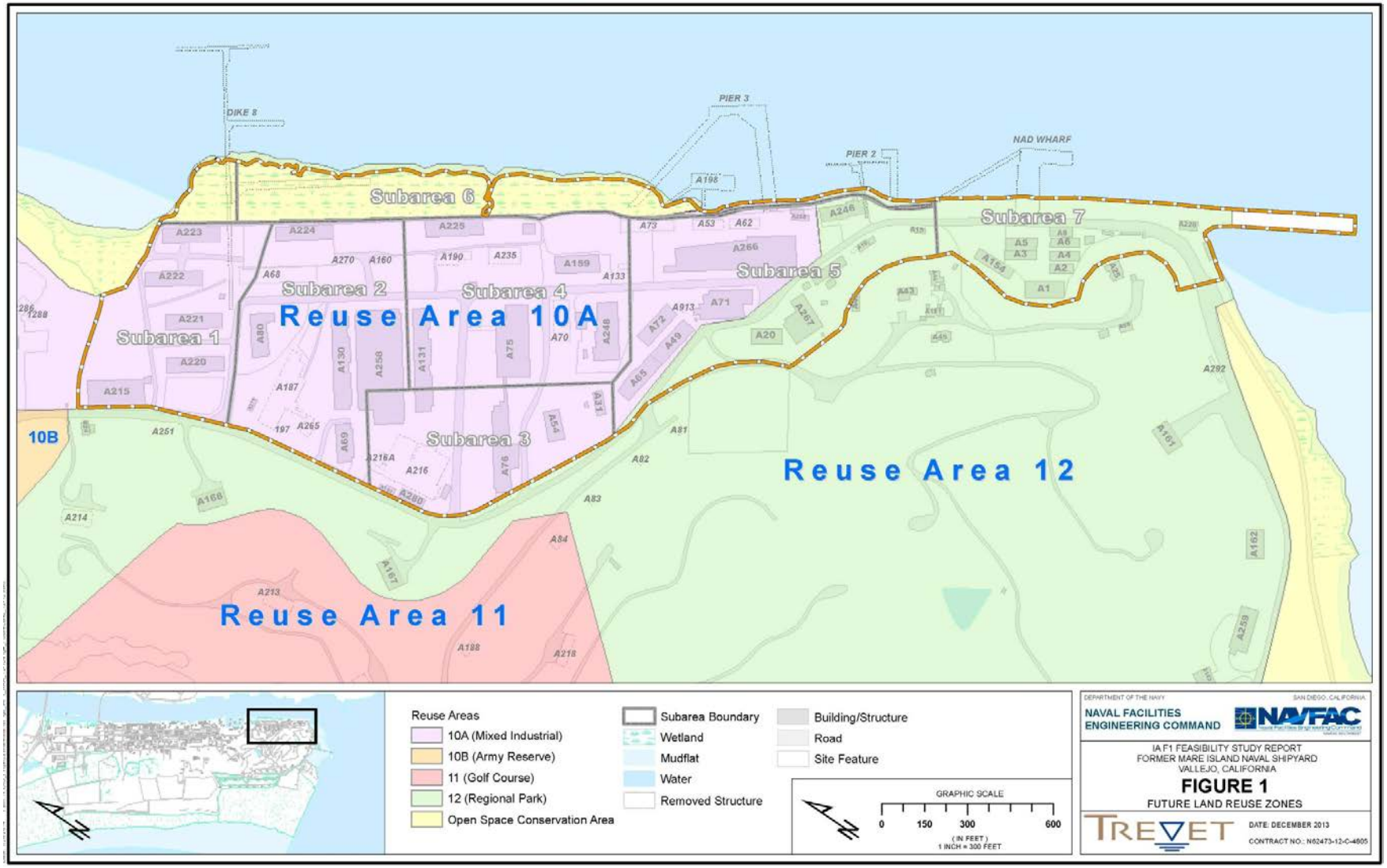
- Goal of a Feasibility Study (FS)
- Site Location, History, and Current and Future Use
- Site Investigations
- Remedial Investigation (RI) Conclusions and Recommendations
  - 3 Areas Evaluated for Active Remediation (Target Treatment Zones)
- Remedial Action Objectives & Remedial Alternatives
- Path Forward
- Questions

Goal of a Feasibility Study?

The goal of the FS document is to evaluate the path forward for site remediation.

- Data input from the Remedial Investigation (RI)
- Identifies the Remedial Action Objectives (RAOs)
- Identifies Remedial Alternatives (RAs)
- Rates those Alternatives based on 7 of the 9 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Criteria
  1. Protection of human health and the environment,
  2. Compliance with applicable or relevant and appropriate requirements (ARARs),
  3. Long-term effectiveness and permanence,
  4. Reduction of toxicity, mobility, or volume through treatment,
  5. Short-term effectiveness,
  6. Implementability, and
  7. Cost

IA F1 Site Location, Subareas, and Future Use



IA F1 Area History

- Also known as the Production Manufacturing Area (PMA).
- Ordnance was manufactured and stored at IA F1 since operations began at MINS in 1854.
- In 1973, ordnance production in the area ceased. Many buildings were subsequently used for storage or were converted for office space.
- All twenty-two underground storage tanks (USTs) located within IA F1 have received closure from the Regional Water Board.

Building A-258

IA F1 Current and Future Re-Use

- Currently the area is designated as Industrial
- Planned future use of property:
  - Industrial
  - Regional Park/recreational
  - Open space/wetlands

Building A-224

IA F1 Investigations

- 1983- 2009 -The Navy collected soil, sediment, groundwater, and soil gas samples during 13 investigations. Data from these investigations were used in the Remedial Investigation Report (2012) including the ecological and human health risk assessment.
- 2013 - Additional sampling for Total Petroleum Hydrocarbons (TPH) completed at TPH Areas 2b, 14, and 15.
- Potential risks directly related to munitions at the IA F1 area are being investigated separately under the Munitions Response Program.

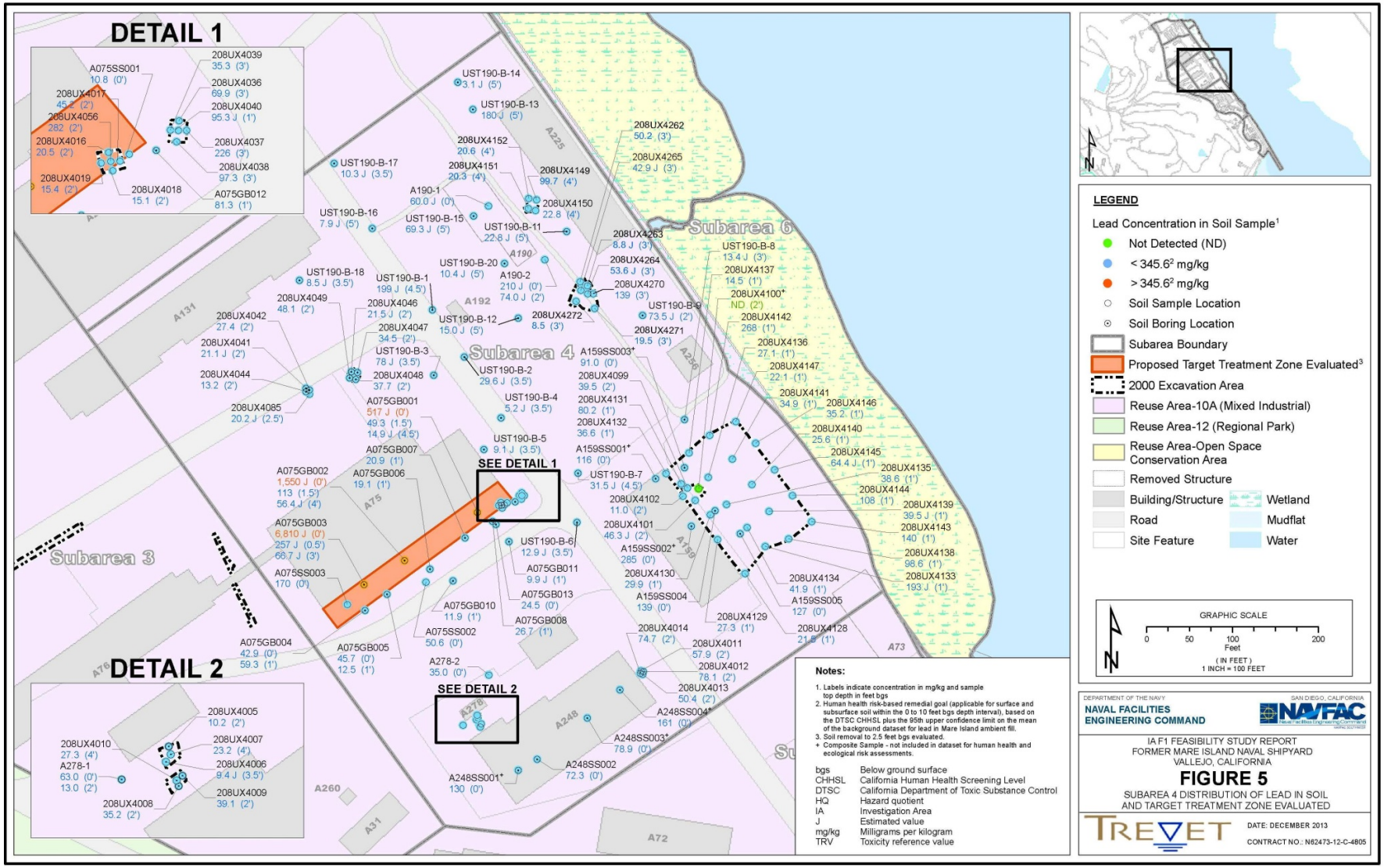
Remedial Investigation Conclusions and Recommendations

- Subarea 1 (Industrial Re-Use):
  - No unacceptable risk to industrial/construction workers, hypothetical residents or ecological receptors.
  - TPH area 2b has been closed through additional sampling documented in the FS.
  - No further action is needed to address risk to humans or ecological receptors based on the future industrial land use.
- Subarea 2 (Industrial Re-Use):
  - No unacceptable risk to industrial/construction workers, hypothetical residents or ecological receptors.
  - No further action is needed to address risk to humans or ecological receptors based on the future industrial land use.

Remedial Investigation Conclusions and Recommendations

- Subarea 3 (Industrial Re-Use) :
  - No unacceptable risk to industrial/construction worker or ecological receptors.
  - Lead in soil may pose an unacceptable risk to hypothetical residents.
  - No further action is needed to address risk to humans or ecological receptors based on the future industrial land use.
  - ICs are evaluated to restrict residential and other sensitive uses.
- Subarea 4 (Industrial Re-Use) :
  - Lead in soil in the area to the south of Building A75 poses an unacceptable risk to the industrial/construction worker and hypothetical residents.
  - No unacceptable risk to ecological receptors
  - TPH areas 14 and 15 have been closed through additional sampling documented in the FS.
  - No further action is needed to address risk to ecological receptors.
  - Further action is needed at Building A75 to address risk to humans based on the future industrial land use.
  - ICs are evaluated to restrict residential and other sensitive uses, and formation of open space or ecological habitat.

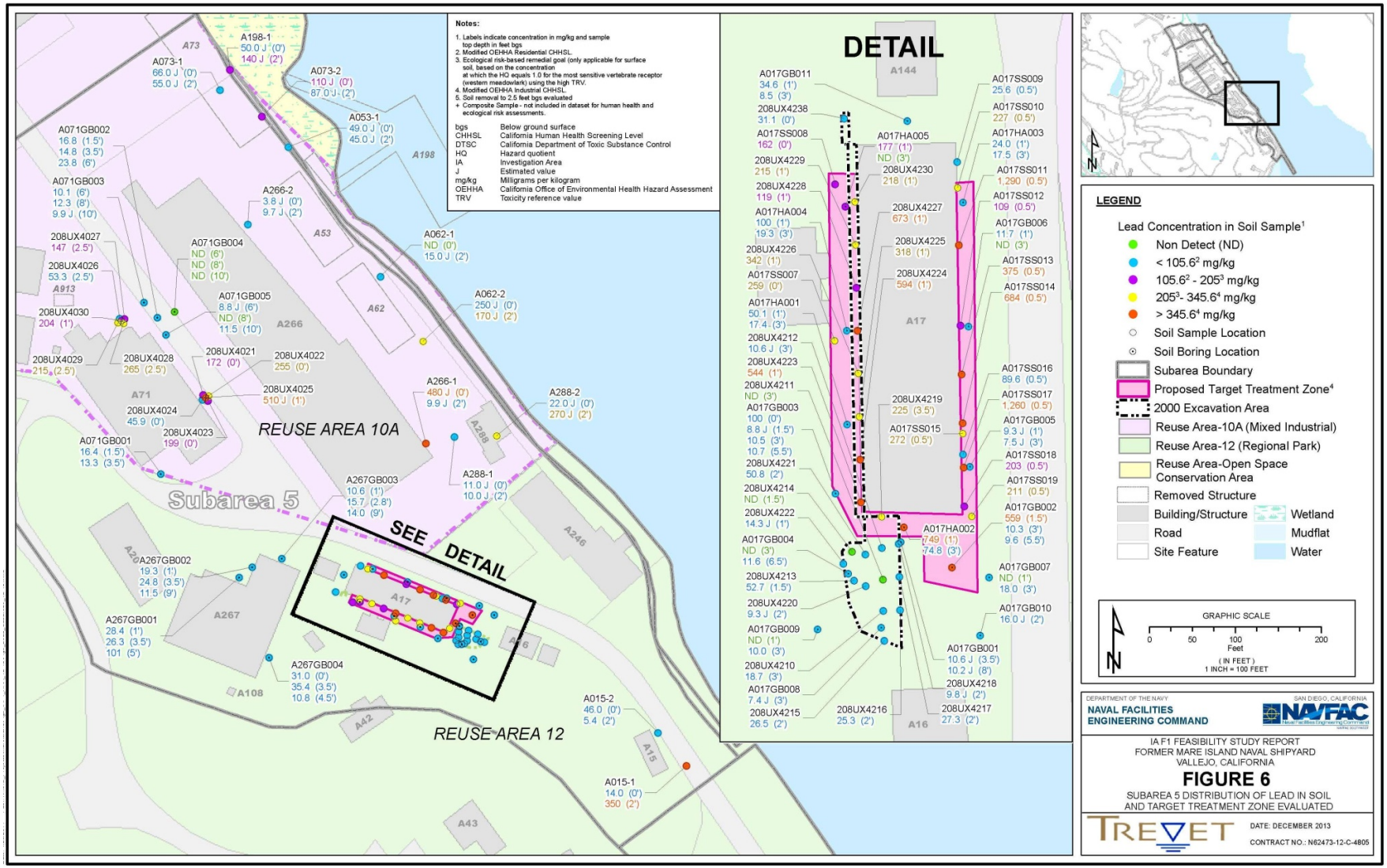
IA F1 Subarea 4
Target Treatment Zone (TTZ) Evaluated South of Building A75



Remedial Investigation Conclusions and Recommendations

- Subarea 5 (Partial Industrial and Regional Park Re-Use):
  - Regional Park -lead in soil around Building A17 poses an unacceptable risk to residential receptors (and therefore potentially to future recreational receptors) and also ecological receptors.
  - Industrial Area- no unacceptable risk to industrial/construction workers or hypothetical residents was identified.
  - Further action is needed to address risk to the future recreational receptor and ecological receptors around Building A17.
  - ICs are evaluated to restrict residential and other sensitive land uses across Subarea 5, and formation of open space or ecological habitat in the Industrial Re-Use portion of Subarea 5.

IA F1 Subarea 5
TTZ Evaluated Near Building A17

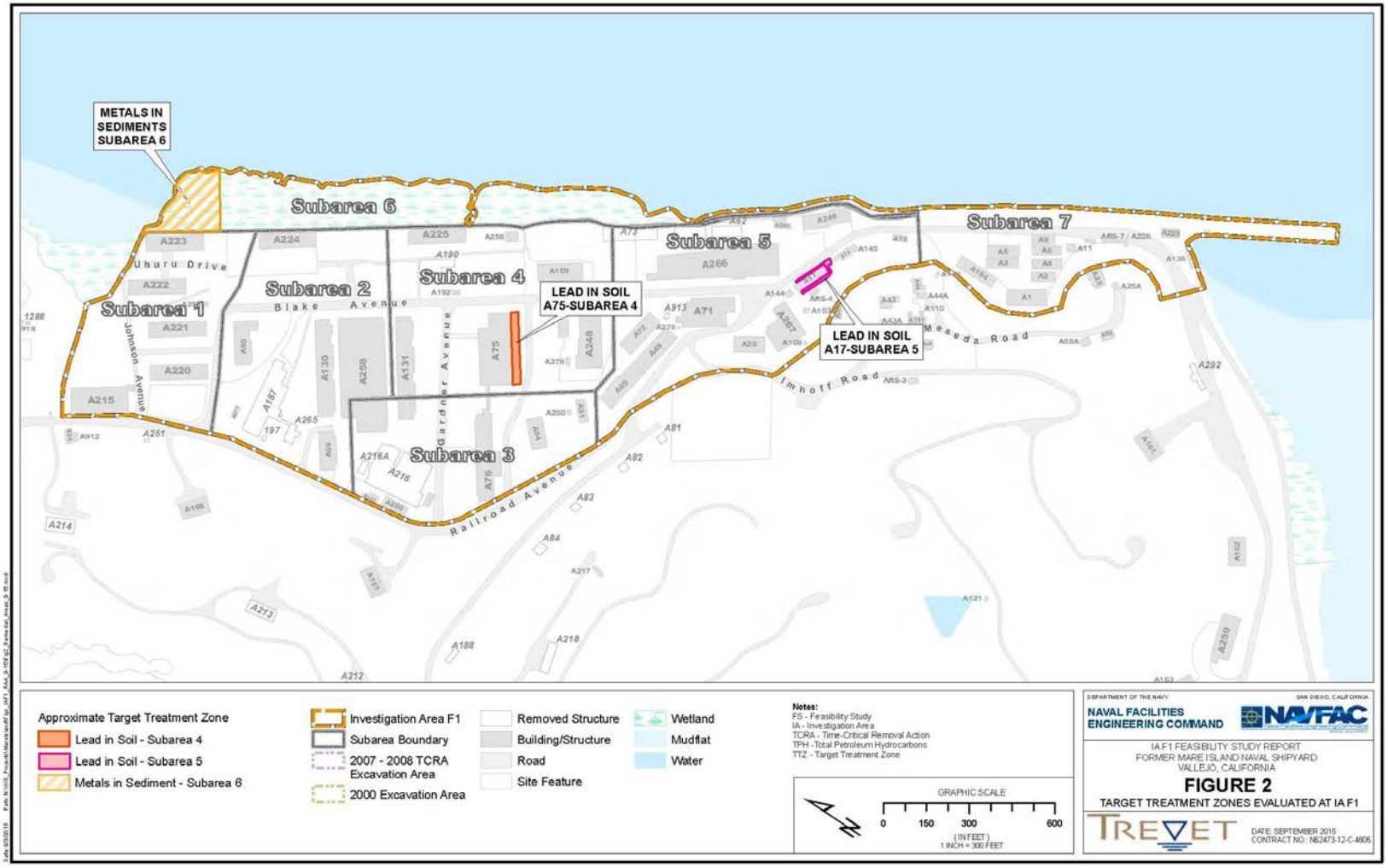


Remedial Investigation Conclusions and Recommendations

- Subarea 6 (Open Space/Wetlands Re-Use):
  - No unacceptable risk to a recreational receptor based on the land use.
  - Unacceptable risk to ecological receptors from metals in sediment was identified near outfall 33.
  - Further action is needed to address risk to ecological receptors near outfall 33.
  - ICs are evaluated to restrict residential and other sensitive land uses.

- Subarea 7 (Regional Park Re-Use) :
  - No unacceptable risk to recreational, hypothetical resident or ecological receptors.
  - No further action needed to address risk to humans or ecological receptors based on future land use.

IA F1 Subarea 6
Target Treatment Zone (TTZ) Evaluated Near Outfall 33



Remedial Action Objectives (RAOs) and Chemicals of Concern (COCs)

- The FS translates the RI conclusions into detailed Remedial Action Objectives (RAOs). In general the RAOs are to make the area suitable for the proposed land use and prevent exposure of human and ecological receptors to chemicals of concern (COCs) posing an unacceptable risk.
- Remedial alternatives are evaluated for 3 areas:
  - Lead in shallow soil (0 to 2 feet below ground surface, ft bgs) south of Building A75 (Subarea 4- Upland)
  - Lead in shallow soil (0 to 2 ft bgs) near Building A17 (Subarea 5- Upland)
  - Copper, lead, and zinc in sediment (0 to 2 ft bgs) near Outfall 33 (Subarea 6- Wetland).
- Remedial alternatives for the upland portion of the site are developed and evaluated separately from the wetlands area.

IA F1
Remedial Alternatives Identified

Lead in shallow soil near Building A75 (Subarea 4) & A17 (Subarea 5)

1. No Action

U2. ICs and Asphalt Cap

U3. ICs, Excavation and Off-site Disposal

Copper, lead, and zinc in sediment near Outfall 33 (Subarea 6)

1. No Action

W2. ICs, Excavation, and On-site Sediment Relocation to Upland

W3. ICs, Excavation, and Off-site Disposal

IA F1
Summary Description of Remedial Alternatives

Summary of Remedial Alternatives (Uplands)

	Alternative	GRA Category	Description	Purpose
	1 – No Action	No Action	No action taken.	Exposure pathways unaffected.
Upland Soil (Subarea 4 and 5)	U2 – Institutional Controls and Asphalt Cap	Containment and ICs	The TTZs would be paved with asphalt, approximately 13,500 square feet. ICs would prevent sensitive uses for soil in areas that do not warrant unrestricted reuse and exposure and provide for maintenance of remedy. Long-term monitoring, maintenance, and reporting would be required.	Removes exposure pathways by physically shielding receptors from exposure to contaminated soil, capped in the TTZ. A beneficial use exception for shallow groundwater was received for the site.
	U3 – Institutional Controls, Excavation, and Off-Site Disposal	Removal and ICs	Soil in the TTZs would be excavated, approximately 1,250 CY. The removed soil would be disposed of off-site at a permitted facility and excavations would be backfilled. ICs would prevent sensitive uses for soil and groundwater in areas that do not warrant unrestricted reuse and exposure and provide for maintenance of remedy. Long-term monitoring, maintenance, and reporting would be required.	Eliminates exposure pathways by removing contaminated soil off site. Prevents sensitive receptor exposure to soil.

ARAR Applicable or relevant and appropriate requirements
CY Cubic yards
IA F1 Installation Area F1
ICs Institutional Controls
RAOs Remedial action objectives
TTZ Target treatment zone

IA F1
Summary Description of Remedial Alternatives

Summary of Remedial Alternatives (Wetlands)

	Alternative	GRA Category	Description	Purpose
	1 – No Action	No Action	No action taken.	Exposure pathways unaffected.
Wetland Sediment (Subarea 6)	W2 – Institutional Controls, Excavation, and On-Site Sediment Relocation to Upland	Relocation and ICs	Alternative W2 employs ICs and the relocation of 3,550 BCY of sediment from the TTZ in Subarea 6 to the uplands portion of IA F1 to meet ARARs and RAOs. The sediment would be characterized prior to relocation to the uplands. Based on this characterization, the sediment relocated to the upland area may be suitable for beneficial reuse, or may be placed in a containment cell and covered to reduce risk. The wetlands would be backfilled to original elevation with imported fill sediment and wetlands habitat restored to target criteria. ICs would prevent sensitive uses for soil in areas that do not warrant unrestricted reuse and exposure and provide for maintenance of remedy. Long-term monitoring, maintenance, and reporting would be required.	Eliminates exposure pathways to ecological receptors by relocating impacted sediment to an upland area devoid of ecological habitat. Prevents sensitive receptor exposure to soil.
	W3 – Institutional Controls, Excavation, and Off-site Disposal	Removal and ICs	Sediment in the TTZ would be excavated, approximately 4,000 CY. The wetlands would be backfilled to original elevation with imported fill sediment and wetlands habitat would be restored to target criteria. The removed sediment would be disposed of off-site at a permitted facility. ICs would prevent sensitive uses for soil in areas that do not warrant unrestricted reuse and exposure and provide for maintenance of remedy. Long-term monitoring, maintenance, and reporting would be required.	Eliminates exposure pathways by removing the contaminated sediment off-site. Prevents sensitive receptor exposure to soil.

ARAR Applicable or relevant and appropriate requirements
CY Cubic yards
IA F1 Installation Area F1
ICs Institutional Controls
RAOs Remedial action objectives
TTZ Target treatment zone

IA F1 Upland Area
Remedial Alternatives Comparison

Table 4. Upland Remedial Alternatives Rankings for NCP Criteria

Alternatives	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume through treatment	Short-Term Effectiveness	Implementability	Total Cost ($Million)	Overall Rating by Alternative
Alternative 1: No Action	Non-Protective	NA	○	○	●	●	● ($0)	○
Alternative U2: Institutional Controls and Asphalt Capping	Protective	Yes	◑	○	◑	●	◑ ($1.60)	◑
Alternative U3: Institutional Controls, Excavation, and Off-Site Disposal	Protective	Yes	●	○	◔	●	◑ ($1.90)	◕

ARAR applicable or relevant and appropriate requirements
NA not applicable
NCP National Oil and Hazardous Substances Pollution Contingency Plan

Legend:

○ Poor
◔ Marginal
◑ Good
◕ Very Good
● Excellent

IA F1 Wetland Area
Remedial Alternatives Comparison

Table 5. Wetland Remedial Alternatives Ranking for NCP Criteria

Alternatives	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume through treatment	Short Term Effectiveness	Implementability	Total Cost ($Million)	Overall Rating by Alternative
Alternative 1: No Action	Non-Protective	NA	○	○	●	●	● ($0)	○
Alternative W2: Institutional Controls, Excavation, and On-Site Sediment Relocation to Upland	Protective	Yes	◕	○	◔	◑	◑ ($2.79)	◑
Alternative W3: Institutional Controls, Excavation, and Off-Site Disposal	Protective	Yes	●	○	◔	◕	◑ ($2.56)	◕

ARAR applicable or relevant and appropriate requirements
NA not applicable
NCP National Oil and Hazardous Substances Pollution Contingency Plan

Legend:

○ Poor
◔ Marginal
◑ Good
◕ Very Good
● Excellent

IA F1 Feasibility Study
Results of Remedial Alternatives Comparison

- IA F1 Uplands Subareas (4 and 5)
  - The highest ranking alternative is Alternative U3- Institutional Controls, Excavation, and Off-Site Disposal, scoring as Very Good overall.

- IA F1 Wetland Subarea (6)
  - The highest ranking alternative is Alternative W3- Institutional Controls, Excavation, and Off-Site Disposal scoring as Very Good overall.

IA F1 Path Forward

- Combined Program (IRP/MRP) Proposed Plan/Draft Remedial Action Plan (PP/Draft RAP) – Spring 2016
  - Presents preferred remedial action alternative(s)
  - Public comment period
- Record of Decision/Remedial Action Plan – Fall 2016
  - Documents the selected remedial action alternative
- Remedial Design – 2017
- Remedial Action – 2018

Questions?

Acronyms and Abbreviations

- ARARs = Applicable or Relevant and Appropriate Requirements
- bgs = below ground surface
- BRAC = Base Realignment and Closure
- CHHSL = California Human Health Screening Level
- COC = chemical of concern
- cont'd = continued
- CY = cubic yards
- DTSC = California Department of Toxic Substances Control
- ERA = ecological risk assessment
- FS = Feasibility Study
- ft = feet
- GRA = general response action
- HQ = Hazard Quotient
- IA = Investigation Area
- ICs = Institutional Controls
- IR = Installation Restoration
- IRP = Installation Restoration Program
- J = indicates an estimated value
- mg/kg = milligrams per kilogram
- MRP = Munitions Response Program
- NA = not applicable
- NCP = National Oil and Hazardous Substances Pollution Contingency Plan
- ND = Not Detected
- NE = none established
- OEHHA = California Office of Environmental Health Hazard Assessment
- PCB = Polychlorinated biphenyl
- PMA = Production Manufacturing Area
- PP = Proposed Plan
- RAs = Remedial Alternatives
- RAB = Residential Advisory Board
- RAO = Remedial Action Objective
- RAP = Remedial Action Plan

Acronyms and Abbreviations (cont'd)

- RGs = Remedial Goals
- RI = Remedial Investigation
- SL = Screening Level
- TCRA = Time-Critical Removal Action
- TPH = Total Petroleum Hydrocarbons
- TPH-dr = TPH-Diesel Range
- TPH-gr = TPH –Gasoline Range
- TRV = Toxicity Reference Value
- TSCA = Toxic Substances Control Act
- TTZ = Target Treatment Zone
- U = not detected, detection limit estimated
- UJ = detection limit estimated
- UST = Underground Storage Tank

Attachment 2. Presentation Handout – Installation Restoration Program Site 15 Proposed Pilot Test Work Plan Implementation Investigation Area C1

Installation Restoration Program Site 15

Proposed Pilot Test Work Plan Implementation

Investigation Area C1

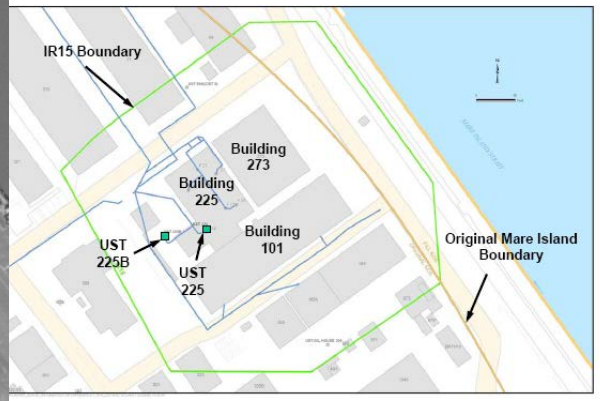
Presented to
Mare Island Restoration Advisory Board

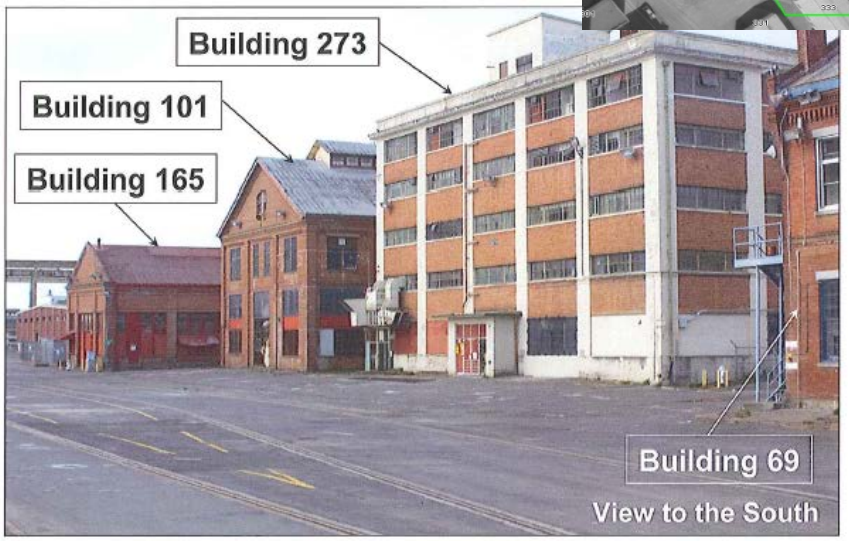
January 28, 2016

Topics

- Installation Restoration Program Site 15 (IR15) Site Description
- Review Approved Remedy for IR15
- Discuss Remediation Progress
- Discuss Current Conditions and Data Needs
- Proposed Pilot Test Work Plan Implementation
- Questions

Site Location and Features





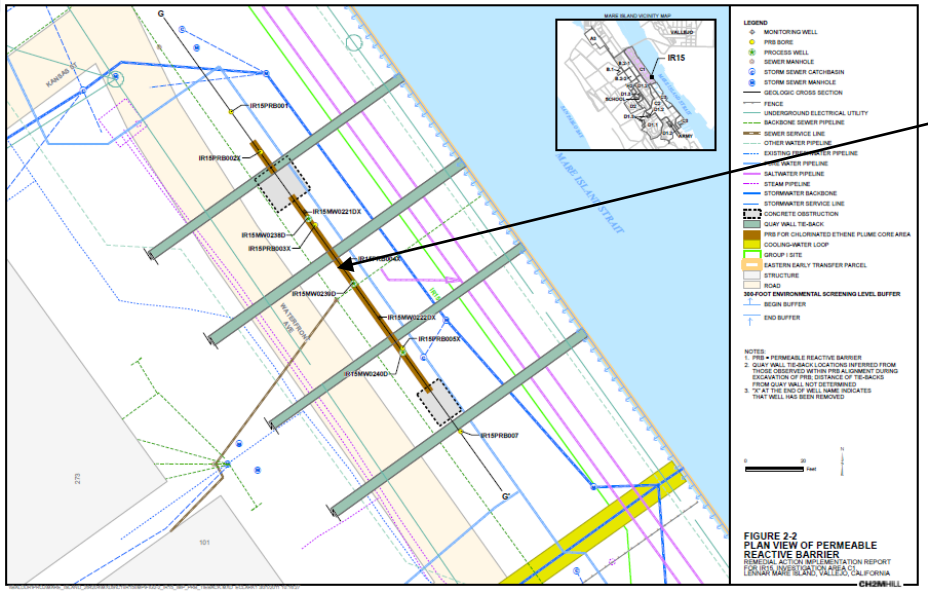
Site Description

- **Four (4) Acres Industrial / Commercial Waterfront**
- **Historic Use**
  - Building 101 – 1899 - Pipe Cleaning
  - Building 225 – 1911 – Plating Shop
  - Building 273 – 1921 – Electrical and Optical Shop / Warehouse / Offices
- **Future Use**
  - Industrial / Commercial / Promenade
- **Constituents-of-Concern**
  - Metals – Arsenic, Cadmium, Lead and Hexavalent Chromium
  - Chlorinated Volatile Organic Compounds (CVOCs)
- **Previous Investigative and Remedial Actions**
  - 1983 – 2010 – Investigations
  - 1987 – Underground Storage Tank (UST) 225B Removal
  - 1993 – UST 225 and Building 225 Floor Drain Removal
  - 2008 – 2010 – Bench Scale Pilot Studies
  - 2010 – ? – Remedy Implementation

Regulatory Agency – Approved Remedy

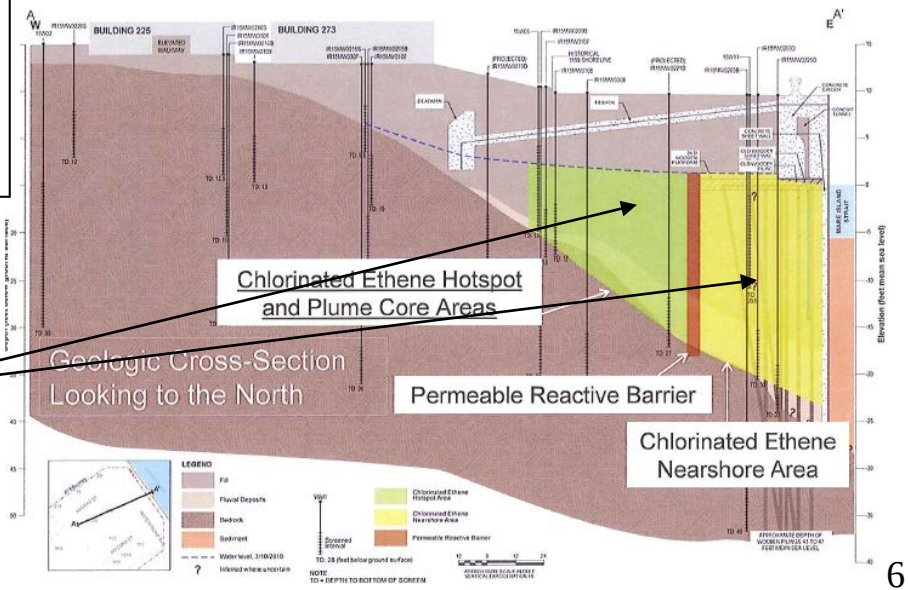
- Excavation of Metal Hotspots Around Building 225
- Use Building 225 Concrete/Asphalt Foundation as a Cap
- Trench Excavation for Permeable Reactive Barrier (PRB)
- Place Reactive Media (Zero-Valent Iron – ZVI) in PRB Trench
- Offsite Disposal of Excavated Materials
- Site Restoration
- ***Enhanced Reductive Dechlorination (ERD) Injection(s) in Nearshore and Hotspot Plume Areas***
- ***Groundwater Monitoring / Monitored Natural Attenuation***
- Land Use Covenant (LUC) Preparation and Execution
- Operation and Maintenance Plan Preparation and Implementation

Regulatory Agency-Approved Remedy (Continued)



PRB Wall Placement

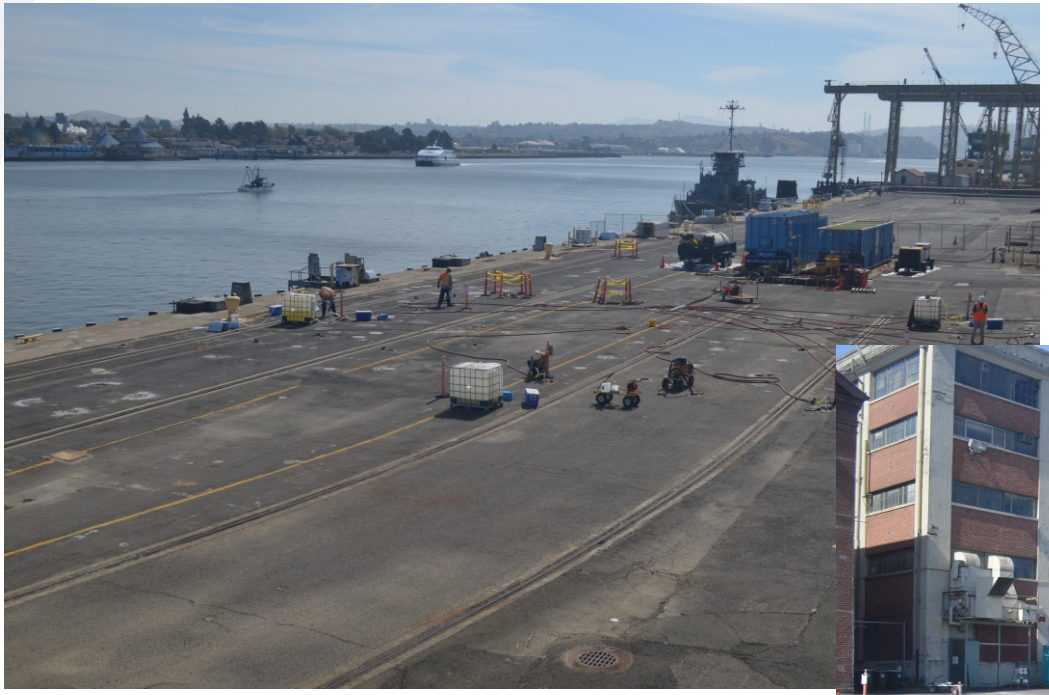
ERD Injection Areas



There Have Been Three ERD Injection Events – 2011 and 2012

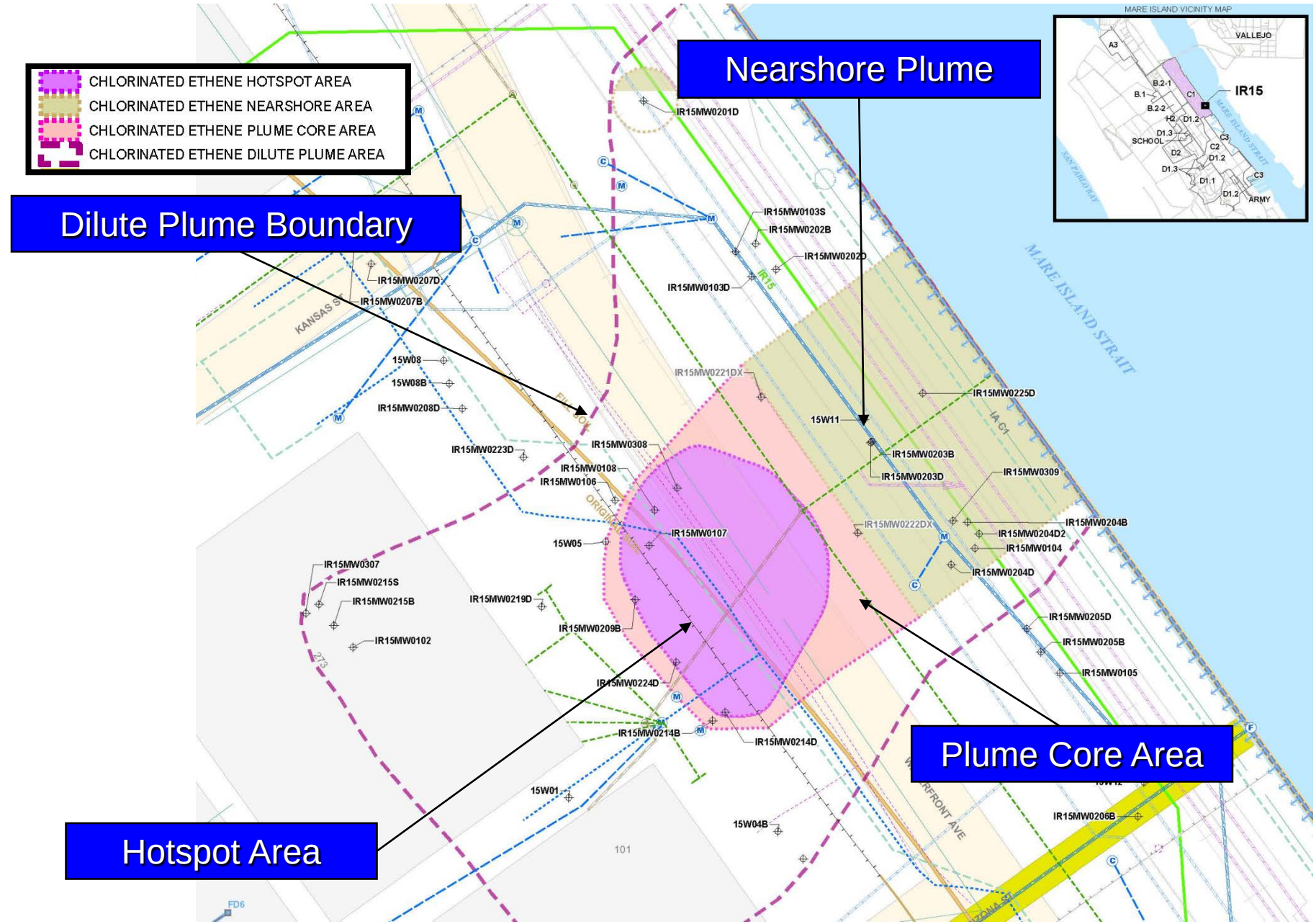
- First Injection Event – First Quarter 2011
- Second Injection Event – Fourth Quarter 2011
- Third Injection Event – Third Quarter 2012
- What Was Injected?
  - Bioaugmentation – Microbe Addition
  - EHC – Zero-Valent Iron (ZVI) and Carbon Substrate
    - ✓ 37,000 Pounds
  - Cheese Whey – Additional Carbon Source
    - ✓ 29,000 Pounds
  - Nutrients, Stimulants, Stabilizers and Tracer
    - ✓ 105,000 Gallons

Third Injection Event at IR15 – September 2012 (Photographs)

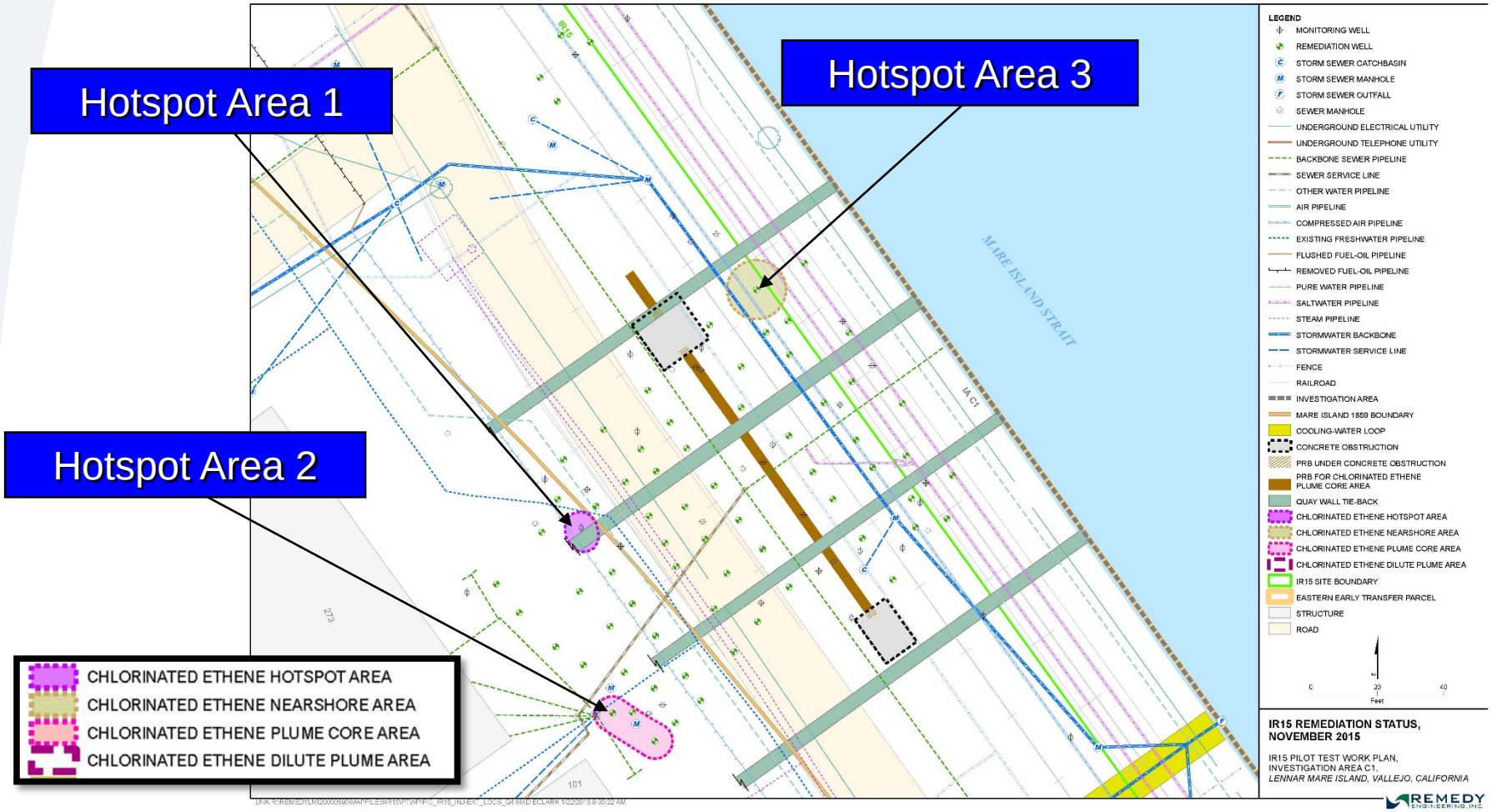


Third Injection Event at IR15 – September 2012 - (Photographs) (Continued)

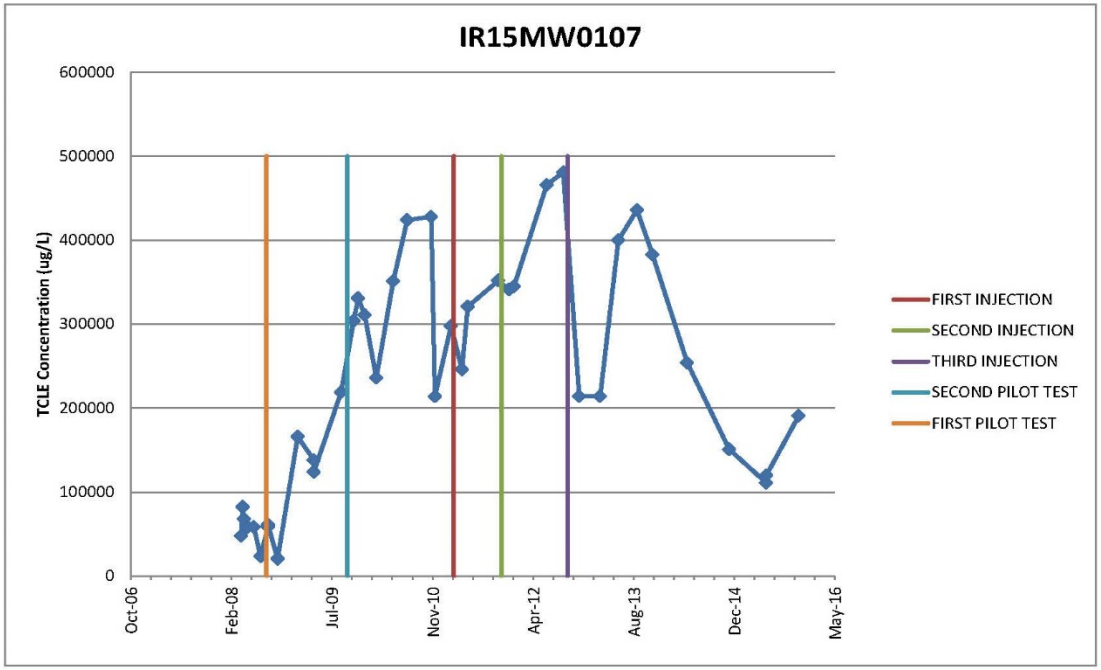
Pre-Remedial Action Conditions - 2011



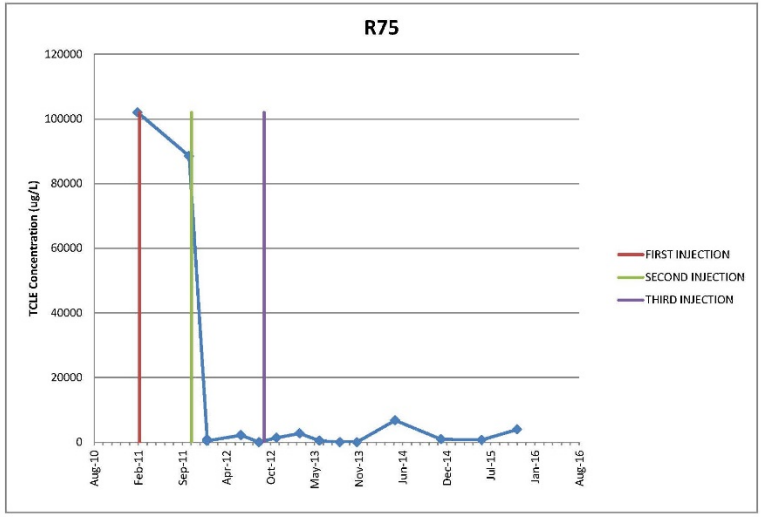
Remediation Progress:
Fourth Quarter 2015

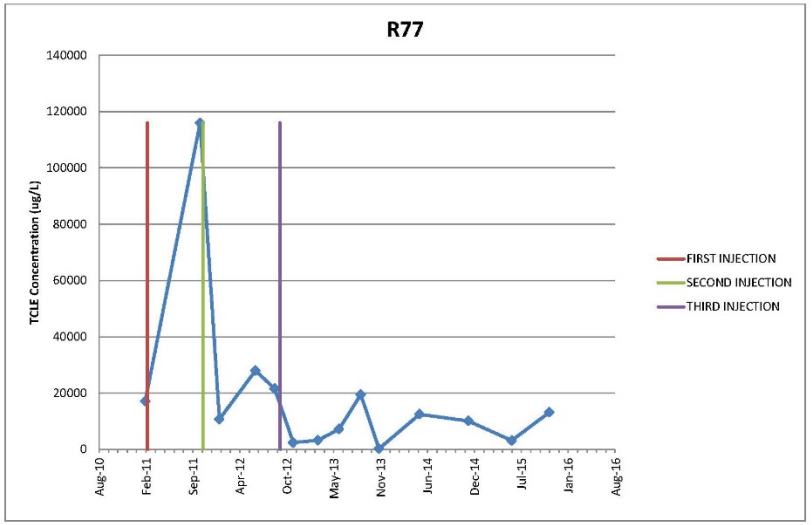


Remediation Progress:
Hotspot Area 1 – IR15MW0107

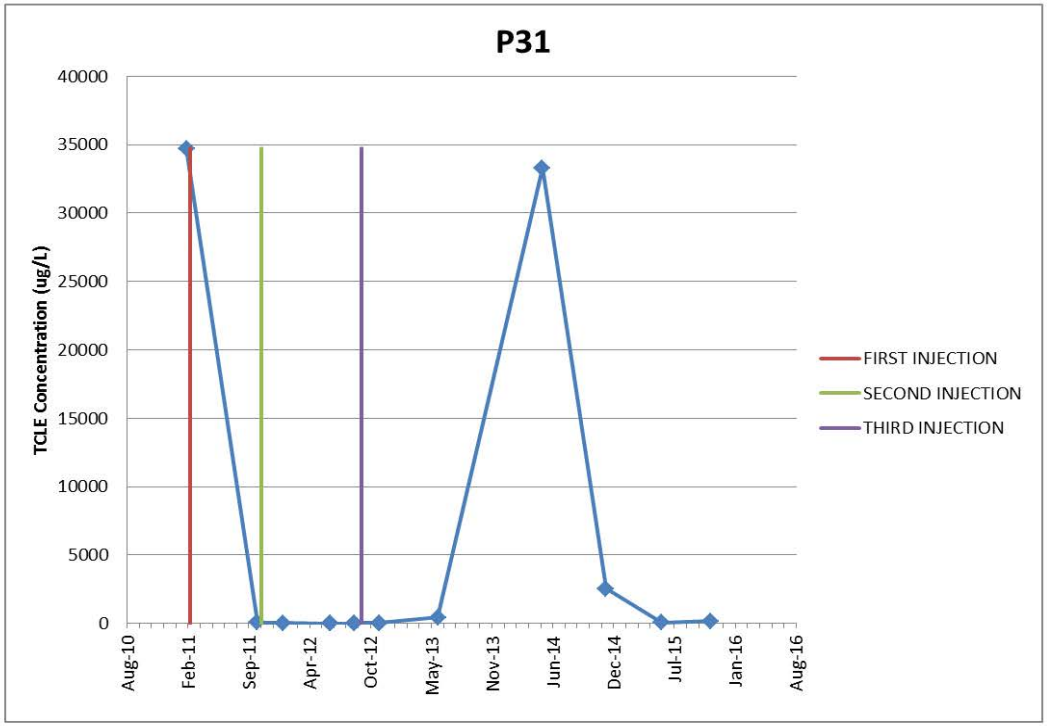


Remediation Progress:
Hotspot Area 2 – R75 and R77





Remediation Progress:
Hotspot Area 3 – P31



Current Condition Assessment and Additional Data Needs

- **Remedy is Working**
  - For Both Hotspot and Nearshore Areas
    - ✓ Plume is Continuing to Contract
    - ✓ Total CVOC Concentrations Decreasing
    - ✓ Residual CVOC Species Consist of Breakdown Products
      - ❖ Cis-1,2-Dichloroethene (cis-1,2-DCE), Vinyl Chloride (VC)
    - ✓ Degradation Continuing to Occur – VC Increasing
      - ❖ VC Degradation is Final and Slowest Step in ERD Process
- **ERD Process Has Not Reached Completion in Several Wells**
  - Hotspot Area – Wells IR15MW0107, R75 and R77
  - Nearshore Area – Well P31

Current Condition Assessment and Additional Data Needs (Continued)

- **Total Organic Carbon (TOC) Concentrations and Trends**
  - An Indicator of Available Carbon Substrate
  - Concentrations Decreasing Across Site Since 2012 Injection Event
  - Available Carbon Has Been Consumed
    - ✓ ERD Process is Slowing and Possibly Stalling
  - System Needs Carbon – November 2015
- **Microbial Population**
  - Added to Subsurface in 2009 and 2011
  - Last Measurements in December 2011
  - Needed New Measurement – November 2015
    - ✓ Microbes were Present, but Under Stress
      - ❖ Lack of Available Carbon

Remedial Option Evaluation

- **Evaluation Considerations**
  - Effectiveness
    - ✓ Human Health and Environmental Protectiveness
    - ✓ Reliability and Success to Meet Remedial Action Objectives (RAOs)
    - ✓ Time to Achieve RAOs
  - Implementability
    - ✓ Technical and Administrative
      - ❖ Existing Infrastructure
      - ❖ Safety Concerns
      - ❖ Land Use
    - ✓ Special Considerations
      - ❖ Remedial Measures in Place
        - ❑ Passive Reactive Barrier (PRB) Wall
      - ❖ Distance to Mare Island Strait – Within 50 Feet
  - Relative Cost

Remedial Option Evaluation (Continued)
IR15 Pilot Test Work Plan, Investigation Area C1, Eastern Early Transfer Parcel
Former Mare Island Naval Shipyard, Vallejo, California

Remedial Option	Advantages	Disadvantages
No Action	Easily Implemented	Long Duration
	No Additional Costs Beyond Regular Groundwater Monitoring	Uncertainty in Achieving Goals within Reasonable Timeframe
	Safely Implemented at Nearshore Area	Low Acceptability to Regulatory Agencies
	No Threat to Existing Remediation Facilities (PRB Wall)	Initial Cost Low. Ultimate Cost Very High.
Enhanced Reductive Dechlorination (ERD) with Bioaugmentation	Easily Implemented	May Need Jump-Starting
	Current Approved Remedial Action	Multiple Daughter Products Produced that Require Treatment. ERD Process Takes Longer for Each Daughter Product
	Proven Effectiveness	May Require Multiple Injection Events
	Safely Implemented at Nearshore Area. Safe for Aquatic Habitat.	
	No Threat to Existing Remediation Facilities (PRB Wall)	
In-Situ Chemical Oxidation (ISCO)	Previous Pilot Test Indicated Some Success	Cannot be Safely Implemented at Nearshore Area
	No Daughter Products Produced - Contaminants Consumed	Poses a Threat to Existing Remediation Facilities (PRB Wall)
		Potential Gas Generation and Surfacing
		Hexavalent Chromium Generation
		Microbial Population Destruction
		May Require Multiple Injection Events
Bioreactor	Small Footprint - Ideal for Addressing Small Hotspots	Relatively Difficult to Implement - Excavation Required
	No Threat to Existing Remediation Facilities (PRB Wall)	Wells May Need to be Destroyed
	Can be Safely Implemented at Nearshore Area. Safe for Aquatic Habitat.	Geotechnical and Life-Cycle Issues

Proposed Remedial Option

- **ERD with Enhanced Bioaugmentation**
  - Fourth Injection Event – Early 2016
    - ✓ Multiple Injection Locations
  - Increase Available Carbon
    - ✓ Lactate – Rapid, Efficient and Short Lasting
    - ✓ Emulsified Oil – Slow and Long Lasting
  - Boost Microbial Population
    - ✓ Increase Biodiversity
      - ❖ Dehalococcidies (Dha)
      - ❖ Vinyl Chloride Reductase (vcrA) Microbes
  - Provide Additional Nutrients for Microbial Population
  - Treat Mixing Water Prior to Injection
    - ✓ Deplete Oxygen in Water (Anaerobic)

Proposed Remedial Option (Continued)

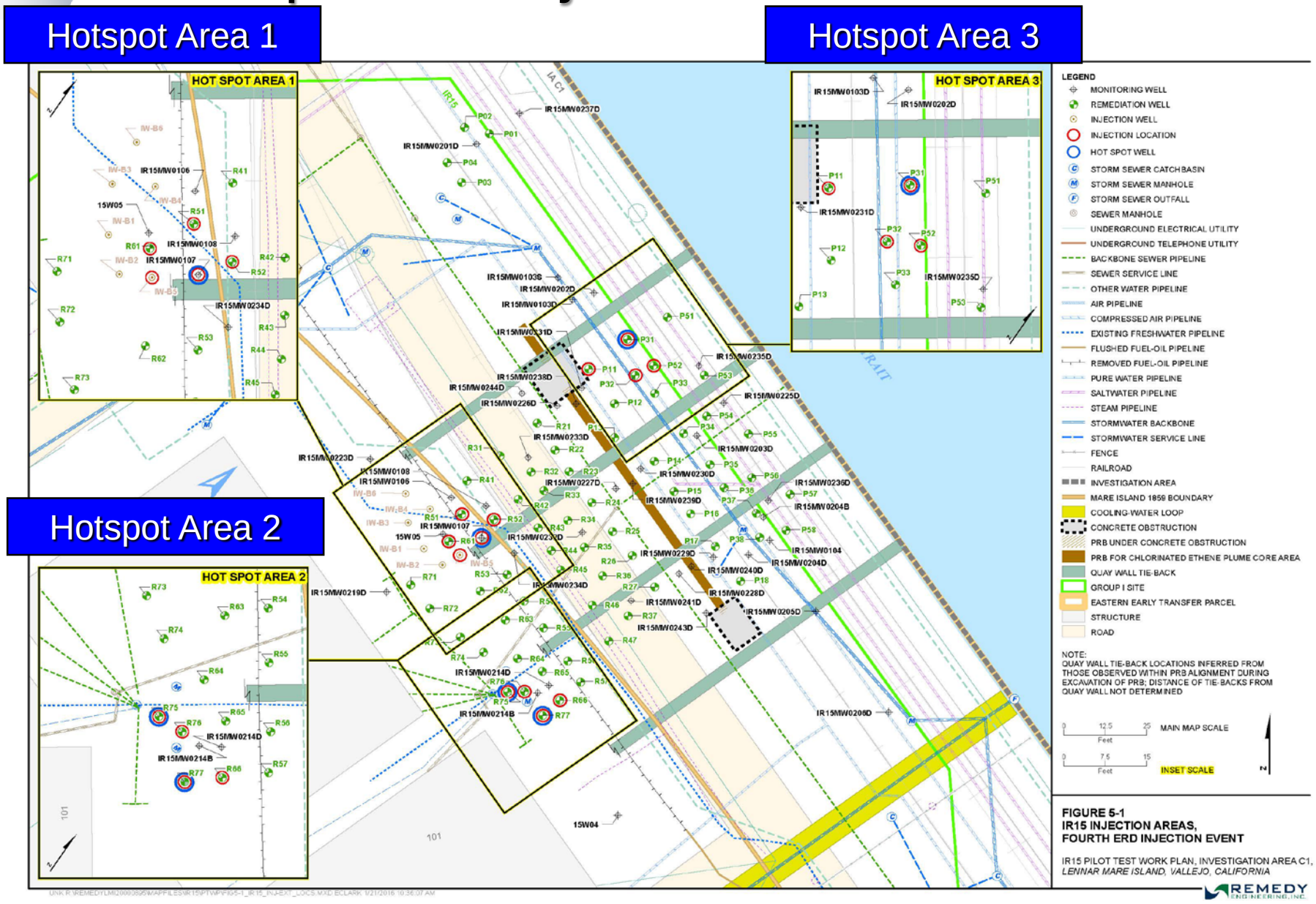
Summary of Proposed Injection Amendments
IR15 Pilot Test Work Plan, Investigation Area C1, Eastern Early Transfer Parcel
Former Mare Island Naval Shipyard, Vallejo, California

	Hotspot Area 1	Hotspot Area 2	Hotspot Area 3
Wilclear Plus® Lactate with Accelerite®	3,000 pounds (275 gallons)	3,000 pounds (275 gallons)	1,200 pounds (110 gallons)
Added Water	2,970 gallons	2,970 gallons	990 gallons
KB-1® Plus	1 gallon	1 gallon	0.5 gallons
KB-1® Primer	12 packages	12 packages	4 packages
Total Injection Volume	3,245 gallons	3,245 gallons	1,100 gallons
Approximate Injected Volume Per Well	650 gallons	811 gallons	275 gallons

Notes:

1. Hotspot Area 1 consists of 5 injection wells
2. Hotspot Area 2 consists of 4 injection wells
3. Hotspot Area 3 consists of 4 injection wells
4. Amendment mixture will be injected in approximately equal amounts per well; field modifications will be made, as necessary, based on the ability of each well to accept the amendment injection.
5. Wilclear Plus® Lactate and Accelerite® to be provided by JRW Bioremediation, LLC (Lenexa, KS)
6. KB-1® Plus and KB-1 Primer to be provided by Sirem Laboratories (Ontario, Canada)

Hotspot and Injection Well Locations



Questions?

Acronyms and Abbreviations

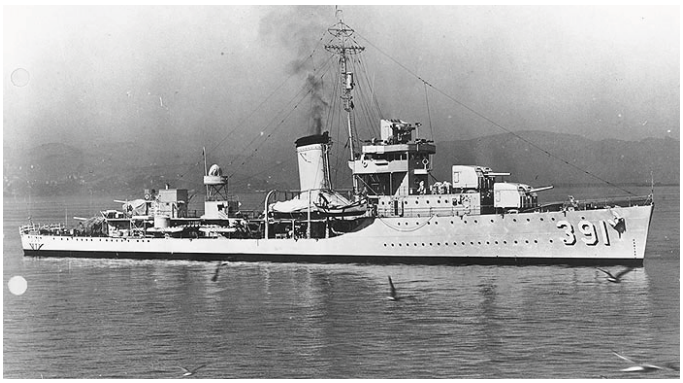
- cis-1,2-DCE – cis-1,2-Dichloroethene
- CVOC – Chlorinated Volatile Organic Compound
- Dhc – Dehalococcides
- EETP - Eastern Early Transfer Parcel
- ERD – Enhanced Reductive Dechlorination
- IA - Investigation Area
- IR – Installation Restoration Program Site
- ISCO – In-Situ Chemical Oxidation
- LUC – Land Use Covenant
- PRB – Permeable Reactive Barrier
- RAO – Remedial Action Objectives
- TCLE – Total Chlorinated Ethenes
- TOC – Total Organic Carbon
- UST – Underground Storage Tank
- VC – Vinyl Chloride
- vcrA – Vinyl Chloride Reductase
- ZVI - Zero-Valent Iron

Attachment 3. Navy Monthly Progress Report

Navy Monthly Progress Report

Former Mare Island Naval Shipyard

January 28, 2016



USS *Henley* (DD-391), Mare Island, October 1937

1.0 INTRODUCTION

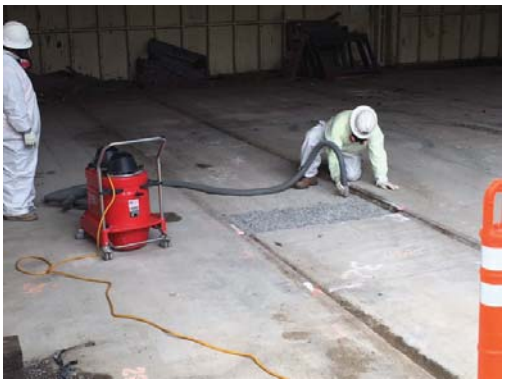
The Department of the Navy (Navy) prepared this monthly progress report (MPR) to discuss environmental cleanup at the former Mare Island Naval Shipyard (MINS) in Vallejo, California. This MPR does not discuss cleanup work by the City of Vallejo or its developers, Lennar Mare Island and Weston Solutions, through the Environmental Services Cooperative Agreements. The work completed through those agreements this month is reported separately. This MPR discusses progress made during the reporting period from January 1, 2016 through January 28, 2016. The information provided in this report includes updates to fieldwork and removal actions, document submittals, the progress of regulatory reviews, issues associated with Navy environmental programs, and Base Realignment and Closure (BRAC) Cleanup Team (BCT) and Restoration Advisory Board (RAB) meetings.

2.0 FIELDWORK, REMOVAL ACTIONS AND UPCOMING EVENTS

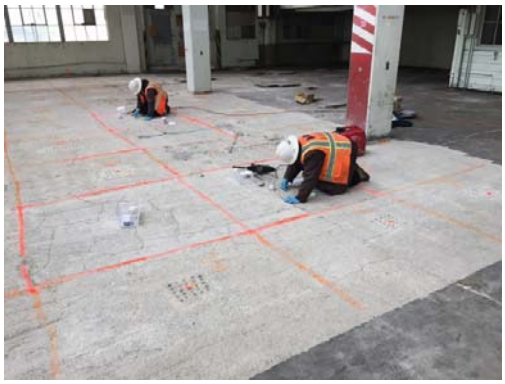
During the month of January 2016, the Navy performed field work in Investigation Area F1.

Investigation Area F1 (Buildings A17, A71, A142, and A266)

The Navy performed field work as part of an ongoing cleanup process for Polychlorinated Biphenyls (PCBs). At Building A17, the Navy collected 4 supplemental samples from the concrete floor to verify remediation completion. At Building A71, the Navy remediated approximately 22.5 square feet of PCB-contaminated concrete flooring and collected verification samples from the remediated area. At Building A142, the Navy removed approximately 1.5 cubic yards of PCB-contaminated soil; remediated the top of the building foundation footing in the area of soil removal; and collected soil and concrete verification samples. At Building A266, the Navy removed approximately 20 square feet of wood block flooring below a compressed air tank; remediated a total of approximately 111 square feet of concrete flooring in 6 different areas; and collected concrete verification samples from the remediated areas.



Clean up after concrete removal at Building A71



Concrete sampling at Building A266

3.0 DOCUMENT SUBMITTALS AND PROGRESS OF REGULATORY REVIEW

The Navy submitted the following documents during the reporting period, listed below:

- Final Building 742 Non-time Critical Removal Action Summary Report
- Final PCB Site Closure Report for Building A271 in Investigation Area F1
- Draft Installation Restoration Site 04 Remedial Investigation/Feasibility Study Report

The Navy received comments or concurrence from regulatory agencies on the following documents during the reporting period:

- Comments received from the U.S. Environmental Protection Agency (EPA) on the Draft PCB Site Closure Report for Building A17 in Investigation Area F1
- Concurrence from the Department of Toxic Substances Control (DTSC) and San Francisco Bay Regional Water Quality Control Board (Regional Water Board) on the Final Investigation Area F1 Feasibility Study

4.0 REGULATORY REVIEW: YEAR-TO-DATE PROGRESS

The documents presented in the following table include only documents that address sites where the Navy remains responsible for the cleanup work.

Number of Documents Submitted by the Navy	37
Number of **DTSC** Comments Received by the Navy	18
Number of **Regional Water Board** Comments Received by the Navy	17
Number of **EPA** Comments Received by the Navy	4

BCT meetings are held regularly with the Navy, DTSC, Regional Water Board, and EPA to discuss the progress of environmental cleanup at MINS. The next BCT meeting will be held on March 31, 2016.

NAVY CONTACT INFORMATION

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San Diego Telephone: (619) 524-1924
San Diego Fax: (619) 524-0575
www.bracpmo.navy.mil

RESTORATION ADVISORY BOARD MEETING SCHEDULE

The RAB meets the last Thursday of every other month, **unless otherwise noted in bold**. The next RAB meetings are scheduled for:

- March 31, 2016
- May 26, 2016
- July 28, 2016

Meetings begin at 7:00 p.m. and are held at:
Mare Island Conference Center
375 G Street, Vallejo, CA 94592

Attachment 4. Weston Solutions Mare Island Update

Mare Island RAB Update

January 2016

DOCUMENT STATUS

The following document has been reviewed by the regulatory agencies and is being finalized based on responses to agency comments:

- *Record of Decision/Remedial Action Plan for Installation Restoration Site 05, Dredge Pond 7S, and the Western Magazine Area*

The following document is being reviewed by the Navy:

- *Remedial Design for Installation Restoration Site 05, Dredge Pond 7S, and the Western Magazine Area* (to address land use controls and implementation)

INVESTIGATION AREA H1

WESTON continues operations and maintenance activities of the 72-acre IA-H1 Containment Area perimeter groundwater collection trench system. The effluent flow has slowed to less than one gallon per minute due to the effectiveness of the multi-layer engineered cap which excludes infiltration of rainwater. Quarterly effluent sampling was completed in November. Since 2005, over 32 million gallons of groundwater have been removed and discharged to the Vallejo Sanitation and Flood Control District.

"Ducks on the Pond" (IA-H1 Wetland B)

WESTERN EARLY TRANSFER PARCEL

Quarterly inspection of the Mare Island San Pablo Bay Trail was completed in November along with inspection of the WETP perimeter signage. No deficiencies were noted. Crushed rock was added and graded to perform routine maintenance on the entrance road to the trailhead.

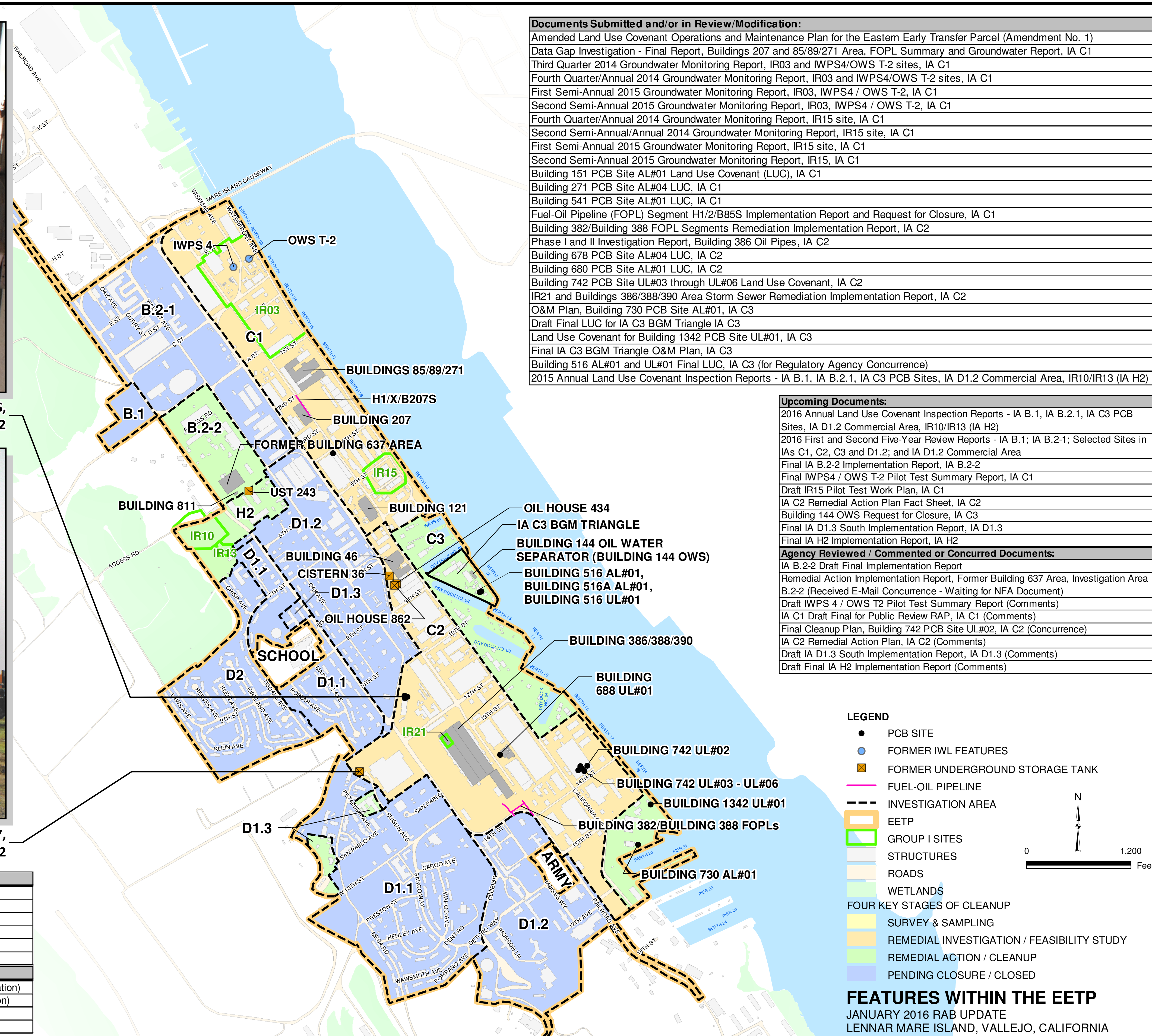
Grading for Road Repair

Attachment 5. Lennar Mare Island January 2016 RAB Update

COLLECTION OF CONCRETE CONFIRMATION SAMPLES, SCABBLED AREAS, BUILDING 746A PCB SITE UL#01, INVESTIGATION AREA C2

INSTALLATION OF MONITORING WELLS, UNDERGROUND STORAGE TANK SITE M57, BUILDING 866 AREA, INVESTIGATION AREA C2

Field Work Performed:
2015 Second Semi-Annual Groundwater Monitoring Event - IR03 and IWPS4 / OWS T-2, IA C1
2015 Second Semi-Annual Groundwater Monitoring Event - IR15, IA C1
Well Installation, Underground Storage Tank (UST) Site M57, Building 866 Area, IA C2
Building 688 PCB Site UL#01, IA C2 (Continuation of Remediation)
Building 688 Pits Remediation, IA C2
Building 746 UL#01 and Building 746A UL#01 PCB Site Remediation, IA C2 (Continuation of Remediation)
Upcoming Field Work:
Building 121, Rooms 101 and 103, Petroleum Hydrocarbon Remedial Actions, IA C1 (Continuation of Remediation)
FOPL Segment H1/X/B207S, Petroleum Corrective Action Plan Implementation, IA C1 (Initiation of Remediation)
Oil Houses 434 and 862 and Cistern 36, IA C2 (Initiation of Remediation)
Building 742 UL#02 PCB Site Remediation, IA C2 (Initiation of Remediation)



Documents Submitted and/or in Review/Modification:
Amended Land Use Covenant Operations and Maintenance Plan for the Eastern Early Transfer Parcel (Amendment No. 1)
Data Gap Investigation - Final Report, Buildings 207 and 85/89/271 Area, FOPL Summary and Groundwater Report, IA C1
Third Quarter 2014 Groundwater Monitoring Report, IR03 and IWPS4/OWS T-2 sites, IA C1
Fourth Quarter/Annual 2014 Groundwater Monitoring Report, IR03 and IWPS4/OWS T-2 sites, IA C1
First Semi-Annual 2015 Groundwater Monitoring Report, IR03, IWPS4 / OWS T-2, IA C1
Second Semi-Annual 2015 Groundwater Monitoring Report, IR03, IWPS4 / OWS T-2, IA C1
Fourth Quarter/Annual 2014 Groundwater Monitoring Report, IR15 site, IA C1
Second Semi-Annual/Annual 2014 Groundwater Monitoring Report, IR15 site, IA C1
First Semi-Annual 2015 Groundwater Monitoring Report, IR15 site, IA C1
Second Semi-Annual 2015 Groundwater Monitoring Report, IR15, IA C1
Building 151 PCB Site AL#01 Land Use Covenant (LUC), IA C1
Building 271 PCB Site AL#04 LUC, IA C1
Building 541 PCB Site AL#01 LUC, IA C1
Fuel-Oil Pipeline (FOPL) Segment H1/2/B85S Implementation Report and Request for Closure, IA C1
Building 382/Building 388 FOPL Segments Remediation Implementation Report, IA C2
Phase I and II Investigation Report, Building 386 Oil Pipes, IA C2
Building 678 PCB Site AL#04 LUC, IA C2
Building 680 PCB Site AL#01 LUC, IA C2
Building 742 PCB Site UL#03 through UL#06 Land Use Covenant, IA C2
IR21 and Buildings 386/388/390 Area Storm Sewer Remediation Implementation Report, IA C2
O&M Plan, Building 730 PCB Site AL#01, IA C3
Draft Final LUC for IA C3 BGM Triangle IA C3
Land Use Covenant for Building 1342 PCB Site UL#01, IA C3
Final IA C3 BGM Triangle O&M Plan, IA C3
Building 516 AL#01 and UL#01 Final LUC, IA C3 (for Regulatory Agency Concurrence)
2015 Annual Land Use Covenant Inspection Reports - IA B.1, IA B.2.1, IA C3 PCB Sites, IA D1.2 Commercial Area, IR10/IR13 (IA H2)

Upcoming Documents:
2016 Annual Land Use Covenant Inspection Reports - IA B.1, IA B.2.1, IA C3 PCB Sites, IA D1.2 Commercial Area, IR10/IR13 (IA H2)
2016 First and Second Five-Year Review Reports - IA B.1; IA B.2-1; Selected Sites in IAs C1, C2, C3 and D1.2; and IA D1.2 Commercial Area
Final IA B.2-2 Implementation Report, IA B.2-2
Final IWPS4 / OWS T-2 Pilot Test Summary Report, IA C1
Draft IR15 Pilot Test Work Plan, IA C1
IA C2 Remedial Action Plan Fact Sheet, IA C2
Building 144 OWS Request for Closure, IA C3
Final IA D1.3 South Implementation Report, IA D1.3
Final IA H2 Implementation Report, IA H2
Agency Reviewed / Commented or Concurred Documents:
IA B.2-2 Draft Final Implementation Report
Remedial Action Implementation Report, Former Building 637 Area, Investigation Area B.2-2 (Received E-Mail Concurrence - Waiting for NFA Document)
Draft IWPS 4 / OWS T2 Pilot Test Summary Report (Comments)
IA C1 Draft Final for Public Review RAP, IA C1 (Comments)
Final Cleanup Plan, Building 742 PCB Site UL#02, IA C2 (Concurrence)
IA C2 Remedial Action Plan, IA C2 (Comments)
Draft IA D1.3 South Implementation Report, IA D1.3 (Comments)
Draft Final IA H2 Implementation Report (Comments)

FEATURES WITHIN THE EETP

JANUARY 2016 RAB UPDATE
LENNAR MARE ISLAND, VALLEJO, CALIFORNIA

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