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**MINUTES OF THE**  
**THE CITY OF SANTA FE & SANTA FE COUNTY**  
**BUCKMAN DIRECT DIVERSION BOARD MEETING**

**October 4, 2018**

This meeting of the Santa Fe County/City Buckman Direct Diversion Board meeting was called to order by Councilor Peter Ives, Chair, at approximately 4:20 p.m. in the Santa Fe City Council Chambers, 200 Lincoln Avenue, Santa Fe, New Mexico.

Roll was called and the following members were present:

**BDD Board Members Present:**

- Councilor Peter Ives, Chair
- Commissioner Anna Hamilton
- Councilor Michael Harris
- Commissioner Anna Hansen [County alternate]
- Denise Fort
  
- Tom Egelhoff [non-voting]

**Member(s) Excused:**

- Commissioner Roybal

**BDD Board Alternate Members Present:**

- J.C. Helms [Citizen Alternate for Denise Fort]
- Ginny Selvin [Las Campanas alternate]

**Others Present:**

- Nick Schiavo, Interim BDD Facilities Manager
- Nancy Long, BDD Board Consulting Attorney
- Mackie Romero, BDD Finance Manager
- Stephanie Lopez, City Utilities Department
- Bernardine Padilla, BDD Public Relations Coordinator
- Michael Dozier, BDD Operations Supervisor
- Shannon Jones, City Public Utilities Department Director
- Rachel Brown, County Deputy Attorney
- Michael Kelley, County Public Works
- Rick Carpenter, City Manager Water Resources and Conservation
- Kyle Harwood, BDD Co-counsel

1 James Bearzi, Glorieta GeoScience  
2 Alex Puglisi, City Utilities, Environmental Compliance Specialist  
3 Adrian T. Garcia BDD Maintenance Superintendent  
4 Pat Longmier, NMED Groundwater Bureau  
5 Doug Hintze, DOE EM LANL  
6 Steven Horak, DOE EM LANL  
7

### 8 **3. APPROVAL OF AGENDA**

9 *[Exhibit 1: Agenda]*

10  
11 CHAIR IVES: Are there any changes from staff?

12 NICK SCHIAVO (Interim Facilities Manager) Yes, there is a request to  
13 move item 15 before item 7.

14 CHAIR IVES: Very good. We will try to move action items because we  
15 have hard 6 o'clock end. This will ensure we cover the necessary business. Any changes  
16 from the Board?

17 COMMISSIONER HAMILTON: No. .

18 CHAIR IVES: Yes, JC.

19 MR. HELMS: [Speaking without a microphone – he referred to page 22 of  
20 the September minutes and requested information regarding the composition of the  
21 committee reviewing the PMFSA.]

22 MR. SCHIAVO: Mr. Chair, if I may?

23 CHAIR IVES: Yes, please.

24 MR. SCHIAVO: I was actually intending to give an update under matters  
25 from staff, item 10 report from the Facilities Manager.

26 CHAIR IVES: Not saying it is not significant to add as an agenda item,  
27 and actually we have just recently talked about trying to have a more formal meeting with  
28 the vice chair and the chair and staff on the agenda so items like this will be clearly  
29 covered in the future. Why don't we take the report during the facilities manager's report  
30 and see if that is satisfactory to resolve that issue and if not we can put it on the agenda  
31 for our next meeting once again.

32 MR. HELMS: [away from a microphone – states there are deficiencies in  
33 the minutes that require attention]

34 CHAIR IVES: Yes, let's hear from our facilities manager and we can then  
35 bring it back as an agenda item at the following meeting. If you want to discuss it as part  
36 of the facilities manager's report maybe we can have to come up to one of the  
37 microphones, JC if that will work. Okay.

38 Any other changes from the Board on the agenda.

39 COUNCILOR HARRIS: I'll move to approve as amended.

40 BOARD MEMBER FORT: Second.

41 CHAIR IVES: Very good, we have a motion and a second. Any further  
42 discussion? All those in favor signify by saying "aye." Any opposed? Any abstentions?  
43

44 **The motion passed by unanimous [5-0] voice vote.**  
45

1  
2 **4. CONSENT AGENDA**  
3

4 CHAIR IVES: Any changes from staff?

5 MR. SCHIAVO: No changes, Chair.

6 CHAIR IVES: Councilor, anything to be pulled? Coming down the line.

7 COMMISSIONER HANSEN: Are we not approving the minutes or is that  
8 after. Oh, I get – this always confuses me here. No, I don't have anything to be pulled.

9 CHAIR IVES: And I wanted to pull item number 12 and I'll give folks a  
10 highlight. Because we have this hard cutoff at 6 and we're often pushing up against it  
11 I'm going to make the recommendation that rather than starting our meetings at 4:15 we  
12 start them at 4. So I will pull it to make that proposed change.

13 COMMISSIONER HANSEN: I agree with that.

14 CHAIR IVES: So, I would pull item number 12. What is the pleasure of  
15 the Board?

16 COMMISSIONER HAMILTON: Move to approve consent, the remainder  
17 of consent.

18 COUNCILOR HARRIS: Second.

19 CHAIR IVES: Very good. We have a motion and a second. Any further  
20 discussion? All those in favor signify by saying "aye." Any opposed? Any abstentions?  
21

22 **The motion carried by unanimous [5-0] voice vote.**  
23

24 **CONSENT AGENDA:**

25 **11. Request to authorize funding of \$84,752.00 from the Major Repair and**  
26 **Replacement Fund to purchase and install two new variable frequency**  
27 **drivers**

28 12. Removed from consent

29 **13. Request for approval of the 2019 Fiscal Services Audit Committee (FSAC)**  
30 **Meeting Calendar**

31 **14. Middle Rio Grande Endangered Species Collaborative Program Annual**  
32 **Report Update**  
33

34 **APPROVAL OF MINUTES: September 6, 2018**  
35

36 CHAIR IVES: Are there any changes from staff?

37 MR. SCHIAVO: No, Chair.

38 CHAIR IVES: Changes from the Board, JC.

39 MR. HELMS: Starting on the middle of page 22 where is Councilor  
40 Harris comments that this is going to be a tough conversation. He was fairly emphatic --

41 CHAIR IVES: Do you want to step up to a microphone?

42 MR. HELMS: Is this clear? I am so sorry. In the middle of page 22  
43 Councilor Harris is saying that this is going to be a tough conversation and he was quite  
44 firm about that point. Then Commissioner Hansen jumped in with a very passionate  
45 statement of her views on the matter and about the ability of the Board to hire and fire its  
46 own facilities director – that entire conversation of Hansen's is missing. Then it goes on

1 – and I'll finish then I'll turn this over to Hansen. It goes on and says, Ms. Long speaks  
2 about good representation and I made the point that I thought the citizen member should  
3 also be on that committee and there's a reason for that. The Councilors and  
4 Commissioners are obviously more important but they are elected and sometimes in these  
5 debates it is good to have an unelected member. That's the purpose of the citizen  
6 member who is not looking to his constituents and is going to just tell it as it is. So I  
7 would like that noted that we were concerned about that. I was in particular.

8 Finally, I asked for the names of the members of the Commission [sic] and it was  
9 said by both Ives and Long that we'll get that information out via email, hopefully  
10 tomorrow. I have never received those names and I would like them.

11 Now I would like to turn this over to Commissioner Hansen because her words  
12 were totally blanked out.

13 COMMISSIONER HANSEN: I'm not sure they were blanked out. I'm on  
14 page 21 but you're saying that – I did read these minutes and I have changes but –

15 MR. HELMS: Oh, you're correct. I was picking up in the middle of 22 so  
16 I take back what I just said. If you're happy then I'm happy.

17 COMMISSIONER HANSEN: Yes, I think that what I said was on page  
18 21. Then I will go to my changes that I have to the minutes.

19 I might be wrong on this but on page 13 towards the bottom, it's a report from the  
20 Interim Facilities Manager and Mr. Schiavo says, thank you very much and then Chair  
21 Ives, questions anyone, Councilor. Councilor Harris, Hello, Nick. Mr. Schiavo: Hello,  
22 Councilor. Then it says, Commissioner Hamilton, he doesn't have any questions either. I  
23 thought you said that, Councilor Ives or did you say that?

24 COMMISSIONER HAMILTON: I don't remember saying that.

25 COMMISSIONER HANSEN: I know it doesn't seem right for you to say  
26 that.

27 COMMISSIONER HAMILTON: I can't think of why I would have said  
28 that.

29 COMMISSIONER HANSEN: It sounds like you would have said it,  
30 Chair Ives.

31 CHAIR IVES: I have absolutely no recollection.

32 COMMISSIONER HAMILTON: It just inserts me in the middle of a  
33 conversation and not that there's a problem but –

34 COMMISSIONER HANSEN: As the Chair, you would have said that and  
35 then it goes back to Councilor Harris.

36 CHAIR IVES: I am happy to substitute my name there, regardless.

37 COMMISSIONER HANSEN: Okay, good. Thank you. And then over on  
38 page 17, the top of the page – oh, yeah, we have line number here – at line 5,  
39 Commissioner Hansen, I know. Know has an extra space between the k and the n. And  
40 then line 9 it say's also I would like an update on the chloride plume and it is the  
41 perchlorate plume. And perchlorate is spelled P-E-R-C-H-L-O-R-A-T-E. Okay, so that's  
42 what that should be.

43 And I think that was all the changes that I had for the minutes.

44 CHAIR IVES: Very good. What is the pleasure of the Board?

45 COMMISSIONER HANSEN: Motion to approve with changes.

46 COMMISSIONER HAMILTON: Second.

1 CHAIR IVES: We have a motion and a second. Any further discussion?  
2 All those in favor signify by saying "aye." Any opposed? Any abstentions?

3  
4 **The motion passed by unanimous [5-0] voice vote.**

5  
6 **5. REPORT ON OCTOBER 2, 2018 FISCAL SERVICES AND AUDIT**  
7 **COMMITTEE**  
8

9 CHAIR IVES: Welcome, Mackie.

10 MACKIE ROMERO (BDD Financial Manager): Hello. Thank you. Mr.  
11 Chair, members of the Board, a Fiscal Services and Audit Committee meeting was held  
12 on Tuesday, October 2<sup>nd</sup>. In attendance was myself, BDD Financial Manager, Nick  
13 Schiavo, BDD Facilities Manager, from the City we had, Councilor Harris, Debra  
14 Garmendia-Harris, Bradley Fletch. From the County we had Commissioner Hamilton and  
15 Joe Gonzales. And from Las Campanas we had Ginny Selvin. During this time I provided  
16 an update on our fiscal year 17/18 audit and financial statement which is our current  
17 financial statements and audit. We had our entrance conference with our auditors on  
18 September 17<sup>th</sup> and they are scheduled to begin field work around November 1<sup>st</sup>. We  
19 discussed consent agenda items numbered 11 and 13 and then discussion and action item  
20 number 15.

21 There were no major concerns or questions and unless anyone in attendance had  
22 any comments that's the end of my presentation.

23 CHAIR IVES: Good. Any questions from the Board? Thank you for that  
24 report.

25  
26 **DISCUSSION AND ACTION:**

27 **15. Request for approval of Amendment No. 3 to the contract with Alpha**  
28 **Southwest for the BDD Raw Water Pump Project, Bid No. '16/38/B to**  
29 **increase the contract sum by \$27,718.71 for a total contract amount of**  
30 **\$1,075,718.24**  
31

32 CHAIR IVES: That takes us to the item 15 which we moved up. Nick.

33 MR. SCHIAVO: Thank you, Chair. There's a memo I put together that  
34 provides a summary over the last two and a half years of what's going on with this  
35 particular project. I can do, if you all would like, I can do a brief summary year by year  
36 and then go to what is being asked at this point.

37 COMMISSIONER HANSEN: Do we have a hard copy of that?

38 MR. SCHIAVO: It should be in your –

39 COMMISSIONER HANSEN: Oh, we're going to 15. Okay, I'm sorry.

40 CHAIR IVES: Please.

41 MR. SCHIAVO: Very good. So in 2016 RFB 16/38 was released and this  
42 was to take a look at a way to change out the raw water pumps. As you know, that's been  
43 one of the challenges in the system bringing raw water up and the abrasive water that has  
44 affected the shafts over, I'm sure, over your time here. As Board members I am sure that  
45 you've heard about how the shafts have been wearing due to the cooling water. The  
46 pumps were designed and you'll see in 16, they were designed and installed and failed

1 pretty quickly in 2017. And what was happening was they were designing and building  
2 four pumps at a time putting two of the pumps at each 1A and 2A and having them fail  
3 and while they were doing that they were actually moving to slightly different designs  
4 working on the other four pumps.

5 The upshot is that over the last two and a half years we have been having pumps  
6 built, installed, having them fail so at this point of all the pumps that have been installed,  
7 we only have two that operating and they are actually on what's called "lag phase" so  
8 they are not being used. They are only being used during an emergency. And I started to  
9 review all of this information and of course became concerned about where we were at in  
10 this contract, where we were at with the different amendments. So what I am proposing  
11 under action requested is that we not go ahead through this change order and change the  
12 design, yet again, on all four pumps but that we slow down a little bit and just do a  
13 redesign on one of the pumps. Have that installed at the end of this month, beginning of  
14 November and see how well that operates.

15 Again, I can go through the different iterations but essentially the concept was  
16 that we had pumps that were being cooled with raw water that was wearing the shafts  
17 prematurely. The concept was that we would use some type of oil or grease in lieu of the  
18 cooling water. The different iterations of that failed. At this point, what I am  
19 recommending rather than building four new pumps and installing all four pumps that we  
20 take a look at just one point and this again would continue to use oil system for cooling  
21 under pressure. I have Adrian here who is in charge of facilities maintenance and I met  
22 with him quite a few times on this subject. It believes again that it is worthwhile for us to  
23 at least try this, what I'm considering a last option on this particular RFB, this particular  
24 project. With that, I will stand for questions.

25 CHAIR IVES: Questions from the Board? Councilor.

26 COUNCILOR HARRIS: Again, I attend the FSAC and we discussed this  
27 at length and I have a very good understanding and also I agree with the approach that  
28 Mr. Schiavo is advocating here to really at just one of those pumps. The discussion at  
29 FSAC was a little bit more technical in terms of psi and things such as that. But he  
30 makes a real case, a solid case, for proceeding this way. And of course Commissioner  
31 Hamilton was there as well. So, depending on what comes out of this test if you will or  
32 this period, I think then Mr. Schiavo is prepared to make some longer term  
33 recommendations but he is not prepared to do that right now. Is that a fair statement,  
34 Commissioner Hamilton?

35 COMMISSIONER HAMILTON: Yes and thank you. I was going to say  
36 something along those lines. First of all, I wanted to mention on the record that I actually  
37 found the summary, the nature of it, the temporal-sequence all summarized in one place  
38 incredibly helpful. And I think the idea of doing a test case because this summary and  
39 Mr. Schiavo just summarized really well with ongoing like problem after problem that  
40 there's not that much confidence that this is going to be the fix – that to look at it on a  
41 pilot basis just makes a lot of sense to me.

42 And I actually found it really interesting to see what other things Mr. Schiavo is  
43 planning to look for in terms of alternatives that might also feed into this so that was a  
44 very useful discussion. I think, I really do think this is a good approach under the  
45 circumstances.

46 COMMISSIONER HANSEN: So this will save us money at the moment

1 for this fiscal year so of speak or not? I mean is that the logic that you're looking at? Are  
2 you just looking to do a test case?

3 MR. SCHIAVO: Chair, Commissioner, it was less about saving money  
4 and more about making sure that what we were going to try was going to work before I  
5 advised having the other pumps built the same way.

6 COMMISSIONER HANSEN: Okay.

7 COMMISSIONER HAMILTON: This really saves spending money,  
8 more money, on something if it doesn't work, okay.

9 COMMISSIONER HANSEN: Okay.

10 BOARD MEMBER FORT: And for my understanding, do we bear the  
11 risk in effect? So if I buy something from whatever, some big box store, and it doesn't  
12 work and I tell them to take it back and it's under warranty but we bear all of the risk  
13 under the contract in terms of whether or not it works as we intended it to?

14 MR. SCHIAVO: Chair, Member Fort, I think the risk is probably split  
15 between the engineering firm that was doing the design and then the construction firm  
16 that was actually doing the installation. One of iterations that what was manufactured  
17 was not to spec and the reason for failing is it wasn't manufactured correctly. I hesitate  
18 to answer legal questions but I think there is probably some shared fault between the two  
19 of those.

20 COMMISSIONER HAMILTON: Which is being pursued separately,  
21 slightly related but slightly independently of this specific decision.

22 COUNCILOR HARRIS: Sure, and we did discuss that as well. It's a fair  
23 question and we discussed that in detail, as you said, both on the engineering side as well  
24 as the manufacturing side.

25 BOARD MEMBER FORT: Thank you.

26 CHAIR IVES: What is the pleasure of the Board on this matter?

27 COUNCILOR HARRIS: I'll move to approve.

28 COMMISSIONER HAMILTON: Second.

29 CHAIR IVES: We have a motion and a second. Any further discussion?  
30 All those in favor signify by saying "aye." Any opposed? Any abstentions?

31  
32 **The motion passed by unanimous [5-0] voice vote.**

33  
34 **INFORMATIONAL ITEMS**

35 **6. Monthly Update on BDD Operations**

36  
37 CHAIR IVES: Michael.

38 MICHAEL DOZIER (Operations Superintendent): Mr. Chair, members of  
39 the Board, I do have one correction. On item number 1 it should be September not  
40 August. Sorry about that. For the month of September we are averaging 5.33 million  
41 gallons of diversions. Deliveries to 4A/5A drinking water deliveries were 4.84 million  
42 gallons a day and raw water deliveries to Las Campanas were averaging around .49  
43 million gallons a day. The BDD is providing approximately about 40 percent of the City  
44 and County water for the month. And I'll stand for any questions.

45 CHAIR IVES: Questions from the Board on this report? Commissioner.

46 COMMISSIONER HANSEN: Have we moved all the water to Abiquiu?

1 MR. DOZIER: I do believe the majority has been moved.  
2 COMMISSIONER HANSEN: From Heron – the City and the County?  
3 MR. DOZIER: Yes.  
4 CHAIR IVES: Other questions? What is the pleasure of the Board – oh,  
5 that’s right it is informational. Michael, thank you.  
6 MR. DOZIER: Thank you.  
7

8 **8. Presentation on Los Alamos National Laboratory Cleanup Efforts**  
9

10 CHAIR IVES: Doug, welcome back.  
11 DOUG HINTZE: Good evening Mr. Chair and members of the Board.  
12 Thank you for inviting me back here. I’m going to give you a brief update on things that  
13 are going on as far as the cleanup activities here at Los Alamos. I’m not going to get a  
14 lot into the chromium project because you’re following me with New Mexico  
15 Environment Department and my presentation would be very similar to his. So instead of  
16 having to hear it twice I’m going to skip that. But I’ll be around so if you want any  
17 additional questions I’ll be here.

18 Just a reminder for what our responsibilities are, we’re the Office of  
19 Environmental Management for the Department of Energy Los Alamos. We’re  
20 responsible for legacy cleanup of waste and contaminated areas pre-1999 and we do that  
21 under three principles. One, safety: safety is the number one priority that should be  
22 inherent that you shouldn’t even have to ask twice about that. Second thing is efficiency.  
23 For every dollar that you give us, it’s your dollar, it’s my dollar, it’s all the dollars of the  
24 United States, people throughout the United States. So we need to use that efficiently.  
25 Get the biggest bang from the buck. And the last thing is transparency. We don’t have  
26 any classified materials whatsoever in our program so we’ll come out and talk to you  
27 about anything that we’re doing and how we’re doing it at any time. We invite you up to  
28 the site to see the activities that we’re doing and welcome you to come up there and walk  
29 through. I know Commissioner Hansen has been up there and other folks have been up  
30 there as well. So come on up, we’d love to show you what we’re doing. After all, in our  
31 view it’s good to cleanup. There’s hardly anyone who argues about that. The question  
32 normally comes down to, how clean is clean and how soon can we clean it up. Part of the  
33 reason we like to do this is as you understand what we’re doing you can become  
34 advocates to go back there and ask for money if you want us to clean it up quicker. We  
35 are not allowed to do that. We don’t lobby Congress.

36 With that, the biggest thing that I would say occurred since I last came back in  
37 December, we added a transition. It started in January and finished in April. So we have  
38 a new prime stand-alone contract that is just responsible for the environmental  
39 management scope broken away from the laboratory and the management and operating  
40 contractor. A 97-day transition period ended on April 30<sup>th</sup> so they have had  
41 responsibilities since that time partnering with us to go forth with the cleanup. We, of  
42 course, cannot just do everything stand-alone because we are part of the laboratory. We  
43 still have interface agreement with the management and operating contractor as well as  
44 we have memorandum of understanding with our federal counterpart because the rest of  
45 the lab is managed by the National Nuclear Security Administration. So we’re a tenant  
46 command and we’re roughly when you look at it just to see the size, we’re 8 percent from

1 a budget perspective of the entire site budget. The site budget is roughly \$2.5 billion a  
2 year and we're around \$200 million.

3 Talking about the cleanup: we do our cleanup in accordance with the Consent  
4 Order and that consent order is divided into 17 campaigns as 1,395 solid waste  
5 management units or areas of concerns which are those areas that we have to clean up  
6 and we're continuing to work off all of those 17 campaigns – all of those 1,395 areas are  
7 bundled into the 17 campaigns and then in Consent Order appendix C they're prioritized  
8 and we're working through those 17 campaigns. We don't do them one at a time,  
9 depending on the funding, depending on the activities so we have four or five of those  
10 activities/campaigns that we're working at any one time.

11 Just his past summer, we finished the fieldwork for our first campaign which was  
12 the historical properties. Because as you're probably well aware, where the town of Los  
13 Alamos is was the original site for the Manhattan Project which we are still doing  
14 cleanup of those areas and now we've finished with the fieldwork for that.

15 From the big picture, our program as right from a life cycle perspective goes from  
16 now to about 2038 with a level of funding of \$190 million a year. So any money that we  
17 get in excess of \$190 million goes to accelerating cleanup and I'll mention a little bit  
18 more when I talk budget in the last – in a couple of slides from now.

19 BOARD MEMBER FORT: May I ask a question, a polite question. You  
20 seem to be looking at a handout; are you going to give us handouts?

21 MR. HINTZE: No, because I was asked to not give a handout. However,  
22 I have no problem because this is the handout to the Regional Coalition about a month  
23 ago so we certainly can give you this here --

24 COMMISSIONER HANSEN: Who asked you not to give a handout?

25 MR. HINTZE: We were just asked to do a verbal.

26 BOARD MEMBER FORT: I am someone who understands better when I  
27 am looking at written materials.

28 COMMISSIONER HANSEN: I'm a little shocked. I would have  
29 preferred to have also written material. I don't know why it is only verbal especially  
30 when you're working off of a handout that you gave to the Regional Coalition.

31 MR. HINTZE: I have no problem with giving it. If you folks want to  
32 make copies of it right now you can make copies of it right now or you can take it  
33 afterwards. This has been released to the public so whichever you want to do it.

34 COMMISSIONER HANSEN: Let's just proceed because we're limited in  
35 time but --

36 CHAIR IVES: In the future, let's get copies.

37 MR. HINTZE: Sure.

38 CHAIR IVES: That's easy.

39 MR. HINTZE: Sure. From the Consent Order from the campaigns, the  
40 number one priority is --

41 COMMISSIONER HANSEN: But we would like to have copies  
42 afterwards.

43 MR. HINTZE: Okay, sure. The number one priority that we have for the  
44 campaigns is the chromium project and again I'm not going to go into the chromium  
45 project because I know Pat Longmire is here from NM ED and he'll talk to that. Second  
46 highest priority is the historical properties which I said we've completed the field cleanup

1 of that and then the third one is that we have the second plume for rural disposal  
2 explosives, RDX. So those are the three highest priorities. With the RDX, similar to the  
3 chromium, we're in the feasibility stage or the characterization stage of that where we're  
4 continuing to dig wells so we can make sure we understand the extent of the plume and  
5 then we can determine what the final remedy is.

6 As far as the Consent Order, every year under the Consent Order we create just  
7 one year of enforceable milestones and those are based upon the actual appropriation that  
8 we get. One of the first discussions that we had in negotiations with the New Mexico  
9 Environment Department was, do you believe that the regulatory agreements drive the  
10 funding or does Congress just give us the funding and that leads to what we can actually  
11 do in the field. And just about every DOE site is under a lot of pressure because the  
12 normal answer is that the regulatory agreements do not drive the funding so very quickly  
13 you get into a lot of issues with being able to meet the milestones especially when you  
14 have milestones that are years in the future. And so in this case here, every year we come  
15 up with 10 to 20 milestones, enforceable milestones, and then we have two years worth  
16 of target milestones and those targets normally roll into enforceable milestones. So for  
17 fiscal year 18 which just ended this year here, we completed all the milestones that were  
18 in the Consent Order. We had two milestones that we actually had to put into fiscal year  
19 19 because there were things beyond control. One of those was in drilling the well for  
20 the RDX project, we hit a boulder at 760 feet, it threw off the drill so we had to actually  
21 close up that well and drill another well. So that's the sort of thing that if it is beyond our  
22 control we're able to make changes to those just about immediately and Pat will talk  
23 about one associated with the chromium project and how we can work from a technical  
24 basis and change these agreements such that we can do the right thing instead of  
25 continuing down a path that doesn't make sense.

26 From a waste perspective, and this here is a little bit off, you're probably well  
27 aware that the drum that caused the event down at the Waste Isolation Pilot Plant came  
28 from Los Alamos. We had 60 of the identical drums that were up there that for a three  
29 year period we have been testing, evaluation and preparing for treatment. We completed  
30 treatment of those 60 drums that we had in November of last year. We had an additional  
31 27 drums that did not have the kitty litter in it which caused the chemical reaction and so  
32 we completed those additional 27 drums in the March timeframe. So as we were going  
33 through the transition period to the new contract, we finished that at that time that was  
34 what our number one priority was; treatment of those nitrate salt drums.

35 The second priority for us was the chromium project and what we did was we  
36 installed the interim measures which is the first of the campaigns and that is to make sure  
37 that we're resting the migration of the plume off site. And so the interim measures were  
38 initiated for that and basically what it does is it puts a hydrologic barrier between the sites  
39 boundary and the chromium plume to keep it up onto the site property. That by no means  
40 is the final remedy. The final remedy we have probably another two, three years of  
41 testing to determine how we're going to get to the heart of the plume and when we do  
42 that it will also address some of the other constituents that may be out there such as  
43 perchlorate and some other things. All of that will be taken care of in the final remedy  
44 for the chromium.

45 One of the things that we're doing now as part of the standup for the new  
46 contractor, as a matter of fact here in about one hour, at 6 o'clock we will make our first

1 shipment of transuranic waste to Waste Isolation Pilot Plant. We've already loaded it.  
2 It's been released. It just can't leave the site until 6 o'clock. It'll be the first shipment  
3 from this organization, EM LA, it'll be the first shipment from the environmental  
4 management program since the event down in WIPP four years. So it's a good story to  
5 say and the second part of that is, we're going to be on a continuous schedule pretty much  
6 once a week to continue to ship off those wastes so we're real excited on that because I  
7 think all of us would love to see the waste off the hill in disposition permanently.

8 Then the last thing I just want to talk about is budget. Our budget request for  
9 fiscal year 18 which just was over was \$191 million. The request for 19 which we're just  
10 going into was \$191 million. In both years the appropriators gave us \$220 million – 16  
11 percent more than we requested and that's significant. That allows us to significantly  
12 accelerate the scope that we have. What we want to do is demonstrate that we are  
13 efficiently using that money such that Congress gets it in their thoughts that maybe 220 is  
14 the number they would like to stabilize on versus 191. So it's a good story for this year  
15 and 18. What we've done as part of the contract transition is focus on the infrastructure.  
16 We need to put in some trailers for our folks that are out in the areas. We need to go in  
17 and what we call "reskin the dooms" the areas that have the transuranic waste stored.  
18 They are just fiber over a metal frame and they've been band aided so we just need to  
19 replace the whole skin. Some of the folks might say that doesn't sound too hard. Most of  
20 those are about \$2 million a pop to get those skins redone. So, we're hitting  
21 infrastructure hard this year that will allow us over the rest of the contract period to hit  
22 the actual execution of cleaning up the sites and then disposing of the waste.

23 That's pretty much all I have for an update. I'm ready for any questions and I'll  
24 be glad to leave a copy of this here.

25 CHAIR IVES: Questions? Yes, down at this end.

26 BOARD MEMBER FORT: Mr. Chairman, if I could, I would actually  
27 like to combine our questions after we hear from Pat Longmire as well, at least for me.  
28 Thank you. If you're available to stay around.

29 COMMISSIONER HAMILTON: What do you attribute getting – the  
30 success of getting extra money the last two years in your total budget? What efforts do  
31 you think led to that?

32 MR. HINTZE: One of things, Mr. Chair, members of the Board, one of  
33 the things that when I first came here we didn't have a life cycle cost estimate in the  
34 program. So we were always being asked, well, where are you going? How can we see what  
35 you're trying to accomplish? So one of the first things that we did in conjunction with  
36 the Consent Order was to do the life cycle and so that immediately – and that's a public  
37 document and I actually have a copy of it right here, I brought it with me – it shows you  
38 exactly what our plans are. And more than that, the second part over the last three years,  
39 we've been, like I said, transparent. We'll tell you exactly what we can do for that \$190  
40 million and so over the last couple of years what we've done is, we've also shown these  
41 are things that we can do if given more money. Now we don't go out there and lobby but  
42 again folks such as the Regional Coalition, the governors from the different pueblos they  
43 can go back there and say, Hey, these are those specific items. And right now the big  
44 emphasis is on technical to area 21 which is right next, you look over from the airport as  
45 you're going up to Los Alamos, and so when you focus on one single or a couple of  
46 activities, that can be done with that funding then Congress will normally listen. For

1 example, the Regional Coalition went up and said one thing and Los Alamos as a county  
2 said another thing then they're not going to do anything. It's because the focus was on  
3 specific activities.

4 COMMISSIONER HAMILTON: Thanks.

5 MR. HINTZE: You are welcome.

6 CHAIR IVES: Councilor.

7 COUNCILOR HARRIS: I'd like to hear a little bit about the new  
8 contractor. You know, it's always a little bit of an issue. Whatever the role may be, it's  
9 complex. So a little bit about the background of the new contractor, what the contract  
10 looks like, what benchmarks are there and those types of things. Can you provide a little  
11 bit of information?

12 MR. HINTZE: Sure, the new contractor is, for short, N3B, Newport News  
13 Shipyard in combination with BWXT. And so N3B is their teaming arrangement. They  
14 have two critical subcontractors; both of them are small business. One is Long and Echart  
15 and the other is a combination of TetraTech and Sealasaka, a Native American company.  
16 The BWXT Newport News Shipyard or Newport News Stoller is a sub of Huntington  
17 Ingalls Industry who builds all the Navy's aircraft carriers and a large portion of the  
18 submarines. Huntington Ingalls and Newport News Stoller is big on the nuclear  
19 operations side. BWXT has been throughout the Department of Energy on the  
20 environmental management side for decades in the cleanup for environmental  
21 management. Right now, BWXT is one of the four partners in the current M&O  
22 contractor at LANS. But, again, they're also going through a transition that will end here  
23 in November 1<sup>st</sup>. Huntington Ingalls, aside being the parent for our contractor, is one of  
24 the critical subs to the new contractor that's running the M&O. So in one respect you can  
25 say there's a lot of integration between the different contractors and some folks might say  
26 that's good and some folks might say that's bad. You know, it all depends. When we  
27 evaluate the contractor one of the big parts is who is the leadership team that is proposed.  
28 We have to evaluate the key officials for that and their experience. So the executive  
29 leadership that is part of the N3B contract have done decades of work cleaning up in  
30 Idaho, Oakridge, Portsmouth Paducah -- a lot of the EM, Environment Management, sites  
31 in DOE. So the work they that they did is similar to the work that we're doing here so  
32 you have direct correlation to that.

33 And then when you talk about the performance measures and the benchmarks,  
34 how much waste are we dispositioning off the sites, how many areas are we cleaning up.  
35 That's the simple metrics that we go by and that's what their job is to do. And, of course,  
36 the cleanup is in line with the Consent Order and the standards that those are built upon  
37 and then for the radiological side it's DOE order 458.

38 We have the standards in place and the performance metrics that they have to  
39 meet.

40 COUNCILOR HARRIS: Is their performance evaluated annually?

41 MR. HINTZE: Mr. Chairman, members of the Board, the contract is a  
42 five-year base and then two option periods, a three-year option period and a two-year  
43 option period. And so during the five-year base the performance periods are annually and  
44 so my staff and I, and I'm fee determining official so I'm the one who actually writes the  
45 letter that awards them whatever percentage of the fee that they earn. My staff's  
46 oversight responsibilities is every day. And then monthly we write in an evaluation of

1 the contractor performance and then monthly we and they get together. They give us  
2 their self-assessment of their performance. We give them feedback on what we see. And  
3 then every quarter, we give them an actual formal report and then annually every year we  
4 have to actually grade them.

5 COUNCILOR HARRIS: Are those reports available?

6 MR. HINTZE: I have to find that one out. I do know that the final letter  
7 that I send over and all of that – we actually go in and give an evaluation of them at the  
8 end of the performance period. I know that is posted on a public website. I do not know  
9 about the quarterly reports.

10 COUNCILOR HARRIS: Yes, that's a five-year period.

11 MR. HINTZE: No, every one year. One year.

12 COUNCILOR HARRIS: Oh, one year.

13 MR. HINTZE: One year performance period. I'll go and check on the  
14 quarterly report.

15 COUNCILOR HARRIS: Thank you, Chair.

16 COMMISSIONER HAMILTON: Mr. Chair. I just wanted to comment  
17 for transparency that Mr. Hintze mentioned TetraTech as one of the subcontractors and I  
18 also work for TetraTech. Although, I work for a group that has no direct association with  
19 the group that is involved in this contract.

20 COMMISSIONER HANSEN: The new contractor, did they cleanup at  
21 Rocky Flats?

22 MR. HINTZE: Um, well, the new contractor is the teaming arrangement  
23 now, no, because this is a stand-alone team that was put together just for this proposal. So  
24 I know that this N3B organization did not because it didn't exist. I do not know if there  
25 were certain partners within that whether it be at TetraTech or BWXT did. I can find that  
26 out if there were members of the team that did.

27 COMMISSIONER HANSEN: Okay, I would appreciate that. I also have  
28 – I would hope that you are staying around because after Pat's presentation I would like  
29 to ask some questions. Okay.

30 CHAIR IVES: I actually have a question before Doug leaves. I got a  
31 notice from the Energy Communities Alliance earlier today that the Department of  
32 Energy is seeking comment on the interpretation of the statutory term "high-level waste."  
33 The notion being that rather than characterizing by facility they would actually  
34 characterize it by the nature and type of the waste itself. How do you see that impacting  
35 what you're doing up at LANL?

36 MR. HINTZE: Seeing that this was about 20 years of my life at a  
37 previous DOE site, a period has no impact on us other than – and the big issue is because  
38 of the way you define high-level waste by the Nuclear Waste Policy Act, it's the source  
39 not the risk or the concentration. So what they're trying to do is say let's evaluate it by  
40 the risk and then you wouldn't necessarily have to dispose of it just because of the source  
41 of where it came from.

42 Now if that goes through the impact that it will have on us would mean that you  
43 could send some of the high-level waste which now by law has to go to a federal  
44 repository, Yucca Mountain or whatever it comes out to be, could potentially be disposed  
45 of in WIPP. So that means that if it is disposed of in WIPP you are now competing with  
46 us disposing of the waste here. So that's how it would impact us, prioritization of

1 shipments to WIPP.

2 CHAIR IVES: Got you. Thank you, that was what I suspected to be the  
3 case knowing Savannah River and their desire to ship to WIPP. Sorry, Kyle.

4 KYLE HARWOOD ( BDDDB Co-counsel): Sorry to interrupt. I just  
5 wanted to apologize for any confusion about the handouts. When we talked about  
6 scheduling this, what I told Doug was just do the same thing you did last December and  
7 last December it said verbal and we didn't think about it much beyond that. So, I  
8 apologize for that confusion and we'll get the handouts out tomorrow.

9 CHAIR IVES: Very good. And Doug if you don't mind sticking around  
10 for questions after the presentation by NM ED.

11  
12 **9. New Mexico Environment Department Chromium Project Update Los**  
13 **Alamos National Laboratory**

14  
15 PATRICK LONGMIRE (NMED): Good afternoon, Mr. Chairman,  
16 members of the Board. I am Patrick Longmire. I am originally from Los Alamos. My  
17 dad worked with Robert Oppenheimer and I worked at Los Alamos for 22 years. And on  
18 December 21 or 22, 2005 I disclosed to the lab the presence of this chromium plume. I  
19 am trained in contaminant groundwater geochemistry and I have a vested interest in this  
20 so I appreciate the opportunity to be here.

21 This presentation that I will be giving this afternoon is based on a presentation  
22 that was given to the New Mexican legislative body, the radioactive and hazardous waste  
23 materials which I couldn't attend.

24 CHAIR IVES: Let me just ask before you start. We're at about 8 minutes  
25 after 5, we have a hard stop at 5:59 and 45 seconds. And I know folks up here are going  
26 to have a bunch of questions and we have a number of other items on the agenda so I just  
27 don't know if you have a sense of how long your presentation is.

28 MR. LONGMIRE: It was scheduled for 15 minutes but I will try and  
29 make it shorter.

30 CHAIR IVES: No worries.

31 MR. LONGMIRE: Okay.

32 CHAIR IVES: Please.

33 [Technical problems were encountered and fixed]

34 MR. LONGMIRE: Okay, we'll first consider the site location then the  
35 conversion of an injection well CrIN-6 to extraction well CrEX-5 and then I'll give an  
36 update on the interim measures for the chromium plume and then an update on a  
37 perchlorate plume that was released into Mortandad Canyon most likely from TA 55 and  
38 TA 50 and then just briefly mention the in-situ or subsurface remediation of the  
39 chromium plume using sodium dithionite at one well and molasses at another well and  
40 then just briefly mention some remaining uncertainties that are relevant to the corrective  
41 measures evaluation.

42 Everybody should have a copy of this presentation. I brought five extra  
43 hardcopies. This just shows a map view of Los Alamos, 43 square miles, National  
44 Laboratory, Pueblo de San Ildefonso to the east and northeast and the chromium plume  
45 outlined there is about 900 to 1,000 feet below the canyon bottom and about 1.5, 1.7  
46 miles in length about .5 to .7 miles in width. This figure shows conceptualization and it's

1 fairly accurate in some areas where we have monitoring wells given the outline of the  
2 plume at 50 parts per billion. Now 50 parts per billion is the New Mexico Water Quality  
3 Control Commission groundwater standard for total dissolved chromium. That includes  
4 the toxic, hexavalent chromium and the non-toxic form, trivalent chromium. Last year,  
5 in July 2017, when one of the wells, CrIN-6 that's on the eastern portion of the lab was  
6 drilled, there's a consistent 260 parts per billion chromium in the groundwater. Our  
7 background value statistical background value is 7.5 parts per billion. So as a  
8 groundwater geochemist I looked at this and there are several other contaminants, nitrate,  
9 sulfate, and I looked at the ratios of chromium over sulfate versus nitrate and basically  
10 that water coming from CrIN-6 had the same ratio as R-28 near the center of the plume  
11 and CrPZ-1. So nitrate, sulfate and chromium in the groundwater at Los Alamos, they  
12 are mobile. They move at the same rate. So if the groundwater is moving at 200 feet per  
13 year, these chemicals are moving pretty much the same rate. So then I formed a  
14 hypothesis that there's got to be a flow vector to the east northeast. Now, there is PM-3,  
15 a supply well, that is about a quarter of mile east of the conceptual 50 parts per billion  
16 line. PM-3 is rigorously monitored by DOE, N3B and the New Mexico Environment  
17 Department. So that was the motivation and he had discussions on, well, CrIN-6 should  
18 they actually be injecting or extracting because conceptually if there was injection of  
19 water at that point, would that push this plume of an unknown volume towards PM-3.  
20 And everybody got the message and we were all onboard with that.

21 What this shows here is if CrIN-6 was actually an injection a given unknown  
22 volume of the plume would be displaced because water is being injected into CrIN-6  
23 displacing that water and the laboratory did a very rigorous computer simulations. I trust  
24 the simulations and it showed that PM-3, yes indeed, would be at risk. So the decision  
25 was that this should be an extraction well.

26 On April 26, 2018, New Mexico Environment Department received the CrIN-6  
27 evaluation report. In that report there was a recommendation that CrIN-6 should be an  
28 extraction well as the best method for meeting the interim measures objectives. That is,  
29 controlling the migration of the chromium plume and protecting PM-3. Then on June 6,  
30 2018, NMED approved the conversion of CrIN-6 to CrEX-5, extraction well 5, and that  
31 decision was based on through this being an extraction well, that would provide the  
32 greatest control for controlling the migration of that plume and lowering the risk or  
33 potential impacts to the supply well PM-3.

34 This just shows a portion of the plume and additional monitoring well is going to  
35 be drilled to the east northeast of CrEX-5 and this outline here is the 50 parts per billion  
36 contour for the plume and we expect that sometime in January through March of next  
37 year CrEX-5 should be completed. And, so as the groundwater is moving towards the  
38 east northeast then we are having technical discussions with N3B and DOE and those  
39 discussions are useful discussions. We are getting down to the nuts and bolts that a  
40 monitoring well R, for regional aquifers, 70 would be drilled in this oval-shaped area  
41 there. And that well would serve as a nature extent – how far has this plume migrated  
42 and then it could also be as a plume control either as an injection or an extraction and we  
43 don't know till we actually get the groundwater chemistry data to make those decisions.

44 Here shows the outline of the plume at the 50 parts per billion and there are a total  
45 of 35 wells that are drilled in the plume. The blue arrow indicates the general  
46 groundwater flow. The regional flow is to the southeast and if there is some movement

1 to the east then that would explain this lobe that is the northeast part of the plume. So the  
2 laboratory and DOE and N3B have installed a series of what's known as injection wells  
3 and we can see them CrIN-1 going from the northeast to the south southwest CrIN-1,  
4 CrIN-2, CrIN-3, CrIN-4, CrIN-5 and then those are injection wells. And then there are  
5 four extraction wells that are in the squares here, CrEX-1, -2, -3, and -4 and three of the  
6 extraction wells are working now. So the purpose of the pump and treat is to pump the  
7 contaminated water out at about 60, 80 gallons per minute. Run that water through an  
8 anion exchange, strip out the chromium that can be from a 100 to maybe 500 parts per  
9 billion. After it goes through those anion exchange columns then the chromium is  
10 reduced to less than 5 parts per billion which is great because the groundwater standard is  
11 50 parts per billion. Our statistical background is 7.5 parts per billion. So then as the  
12 effluent water is injected into the wells here and the ones that are operating now are  
13 shown in the green rectangles, CrIN-3, -4, and -5 and then we have the three extraction  
14 wells, CrEX-1, CrEX-2, CrEX-3 that's just right next to R-28 and the purpose of that is  
15 as this clean water is injected in is to try to have hydrologic control to slow the movement  
16 of the chromium plume and also there would be some mixing of this fresh clean water  
17 with the contaminated water. So, so far that's working as pump and treat. The other  
18 technology that I'll talk about soon is actually injecting chemicals to transform the toxic  
19 hexavalent chromium into chromium 3+ which precipitates out as a solid in the aquifer.

20 Perchlorate, the laboratory was one of the leaders in working with plutonium,  
21 americium – these chemicals or elements are known as actinides and perchlorate acid is  
22 an excellent acid. It is an oxidizing acid that if you wanted to oxidize plutonium 3 to  
23 plutonium 5 or 6 you can do that. So perchlorate acid is used quite a bit at some of the  
24 facilities at the laboratory. It's a very strong acid. It's probably about 1,000 times  
25 stronger than sulfuric acid. But it's a great oxidizing acid for plutonium separation. On  
26 this map here, I show the outline of the chromium plume and then this perchlorate plume  
27 that we've know about for some time. And then if you look at the yellow here, at Los  
28 Alamos there are three different types of aquifers. There's very shallow alluvial aquifers  
29 maybe from several feet down to hundred feet. Then there's these what's called perched  
30 intermediate zones, that are about 300 to 500 feet below ground surface. Then the  
31 regional aquifer at about 900 feet. So if we look at these numbers where it says, Vadoze  
32 one to the left side of the figure, we'll see numbers like 85.7 parts per billion that's  
33 perchlorate 223 parts per billion. That perchlorate, that's the residual fingerprint of the  
34 perchlorate that was discharged into Mortandad Canyon probably from the early '60s,  
35 1963 when a treatment plant, TA-50 was constructed and was discharging treated  
36 radioactive liquid waste. So this perchlorate is like chromium it just zips through the  
37 fractures and the rocks. It moves at the same rate of groundwater. We do have a New  
38 Mexico tap water standard of 13.8 parts per billion and our background statistical value is  
39 .414 parts per billion. There is natural perchlorate. It is produced in the atmosphere. But  
40 we see this perchlorate plume that is migrating in the same direction as groundwater flow  
41 of part of the chromium plume and it's on the southwestern south southern portion of the  
42 plume. The highest values that we have measured in the regional aquifer occur at a well  
43 or a piezometer CrPZ-4 average values of about 50 parts per billion. Again, our  
44 background's .414 and then some of the other wells they range between 11 and 15 part  
45 per billion. So everybody is aware now that we're seeing perchlorate at two locations  
46 that are above the New Mexico Tap Water Standard of 13.8 parts per billion.

1 So I'm sure, in the future, there will be treatment of perchlorate along as there is  
2 now with the chromium. And these are numbers taken from the Intelius database  
3 provided by the laboratory May through July this year.

4 The laboratory, N3B and DOE has installed a total of 35 wells. We have 14  
5 different locations that the wells are sampled monthly through very thorough chemical  
6 analyses including perchlorate, tritium, nitrate, chromium, etc., and then in the blue  
7 rectangular areas we have seven locations that are sampled quarterly, once every three  
8 months. So there is a very robust monitoring program. As a groundwater chemist, I like  
9 that there are state-of-the-science analytical methods. The DOE oversight bureau goes  
10 out and collects samples so there is pretty good agreement with the data between the two  
11 organizations.

12 Chromium is a universal contaminant. It's worldwide. At Los Alamos between  
13 1957 and 1972 between 32,000 and 71,000 kilograms of potassium dichromate were used  
14 in a cooling tower as an anti-corrosion agent and as a fungicide control. So that  
15 chromium overtime migrated through the rocks down 1,000 feet and created this plume.  
16 So what people are looking at to try to clean up plumes as alternative to pumping and  
17 treating which can take decades is to inject chemicals that will transform the toxic  
18 chromium 6+ to chromium 3+. One of those chemicals is known as sodium dithionite, it  
19 works great. That was conducted at well R-42 and the chromium concentrations before  
20 treatment were 700 to 1,000 parts per billion and now they are less than 2 parts per  
21 billion. The other well to the east, R-28, that was a biological experiment to inject  
22 molasses that we put on our pancakes, inject it into the well and basically that molasses is  
23 an organic carbon and stimulates a lot of natural biological growth in the aquifer and that  
24 helps reduce or convert the hexavalent chromium to trivalent chromium. And we're  
25 going through – I'm going through and modeling all of these reactions to see how well  
26 they're working. So far, it looks pretty good. This just shows here –

27 COMMISSIONER HANSEN: That the molasses looks pretty good or the  
28 sodium dithionite?

29 MR. LONGMIRE: Sodium dithionite looks good in the sense that it is  
30 effectively removing the chromium. With the molasses with the data now, in May of  
31 2005 there was a slight decrease in the pH and there is just more complex biochemical  
32 reactions. The chromium was all converted to non-toxic chromium with the molasses but  
33 it's a little higher concentration than what was found at R-42. Typically, before 30 and  
34 60 parts per billion but the most recent data from Intelius collected in August showed it at  
35 less than 30 parts per billion. But it's a complex system because you've got all of these  
36 bugs and all these reactions going on so it's a little more complicated than the sodium  
37 dithionite.

38 The key questions are: How long is this going to last? Because you have a certain  
39 zone that has been treated chemically, you have this chromium contaminated water  
40 moving in to that zone, could there be re-oxidation of the chromium? I'm spending a lot  
41 of time using a computer code to just try and answer those questions. And I'm sure that  
42 N3B is doing the same.

43 Some uncertainties are and N3B we're in agreement with this, so at the  
44 northeastern portion of the plume between CrEX-5 and PM-3 we don't know that plume  
45 boundary. Is it 100 feet, is it 1,000 feet, is it 2,000 feet? Hopefully, R-70 will answer  
46 that question. There is also areas where the chromium concentrations are increasing.

1 There is one well that is northwest of R-28, R-42, called – it's R-43 when we drilled that  
2 well in 2010 it was background. The chromium was less than 4 parts per billion and now  
3 it's up to about 200 parts per billion. So where is that chromium coming from? And it is  
4 very likely there could have been multiple sources of the chromium.

5 We do have a well installed on Pueblo de San Ildefonso land. It's called San  
6 Ildefonso Mortandad Regional Well 2 and it is down gradient. It is showing background  
7 concentrations of chromium; however, there are questions of if this chromium is moving  
8 not just along the pipe, but if it's moving in a certain volume and distance, do we have  
9 the whole southern portion of the plume characterized. And in this aquifer, it's really  
10 complex aquifer, it's like a mumble jumble. We had the 1,000-year storm event and the  
11 Santa Fe River that received boulders and cobbles and all of that, this is what this aquifer  
12 looks like. It is not like a sandbox. So there's preferred flow path. It is not just uniform  
13 flow and the hydrogeologist, I think they have done an excellent job, Dave Broxton and  
14 Gunday that I worked with when I was at the laboratory are starting to sort out these  
15 preferred flow paths and I think that's the key. If we can define these fast paths, these  
16 fast flow paths, then we'll know where most of the chromium is moving and try to target  
17 those areas for remediation.

18 I think we'll have question and here's my contact information and I want to thank  
19 everybody for their attention and time.

20 CHAIR IVES: Thank you very much for that report and we'll

21  
22 CHAIR IVES: Thank you very much for that report and we'll open it up  
23 for questions from the Board. Why don't we start on this end and then work our way  
24 down.

25 BOARD MEMBER FORD: Nice to see you again, Patrick. Do you think  
26 everything that can be done at this site is being done? If money were not an object, would  
27 you have other recommendations?

28 MR. LONGMIRE: That's a very good question, Mr. Chairman and Board  
29 Member. It's a complex plume, and part of this complexity is the 1,000 feet to  
30 groundwater, a thick vadose zone I think geochemically, we are on track. We are looking  
31 at ways to try to treat this, what's called in situ or in the subsurface. I think we need  
32 strategies on: do we go after hotspots? Do we – but I also feel too, and it's just the  
33 scientist in me, is that if we had 100 percent understanding of its nature and extent then  
34 that would help formulate – we know the technologies that are available. That may be  
35 where we apply these technologies. Can we clean up a plume that's a mile in length? I  
36 don't know because it's complex because of the heterogeneities in the flow paths and the  
37 depth to the groundwater. But if we target the real hotspots, and we are using  
38 technologies that people are using at other sites there too – sodium dithionite. I personally  
39 myself prefer sodium dithionite over molasses, because that's a very complex chemistry  
40 and there's other side reactions that take place with the molasses and I know N3B, the  
41 geochemists there are sorting that out and we're talking about that.

42 I think that the complete characterization to really understand the transport, and  
43 do we understand completely what potentially is flowing from the lab boundary to the  
44 Pueblo de San Ildefonso? I notice to some people it is a high priority and we do have one  
45 monitoring well, that's CmER-2. That is down-gradient and so far it is showing  
46 background concentrations for chromium and a lot of this too is based on modeling. And

1 modeling is a really powerful tool but to test that modeling, having enough empirical  
2 data, understanding the hydrology and the chemistry and really sorting that out. So I think  
3 we're going to be working on it for some time and I think as a multi-disciplinary  
4 approach with engineers, microbiologists, geochemists, hydrologists, and trying to have  
5 that effective communication with DOE and we do have these technical meetings which I  
6 think are a good start for that.

7 BOARD MEMBER FORD: Thank you very much. And just to refresh my  
8 understanding of this, is this part of the consent order?

9 MR. LONGMIRE: Yes, it is.

10 BOARD MEMBER FORD: It is. So at the time the Environment  
11 Department entered into the consent order what was known about the plume as compared  
12 to now? Has that changed?

13 MR. LONGMIRE: So definitely, it's changed. So when we had the first  
14 consent order between 2005, 2010, it did require – it was very prescriptive: Go out and  
15 drill these wells. But that was good, because we had no idea. When I discovered the  
16 chromium at R-28 and said, well, where else would we look? And I knew that we should  
17 look for elevated sulfate, because sulfate was a co-contaminant with it, and nitrate, that as  
18 we start drilling other wells, like R-42, and then we start kind of homing in on the area,  
19 but over time, like wells like R-43 that initially was background; now has 200 parts per  
20 billion chromium. I think that through the consent order, although it's a little more  
21 generalized now, as long as we can stay focused on the most effective – do we really  
22 understand the nature and extent and focus on how to remediate this plume and what are  
23 the key areas?

24 Obviously, protection of the supply wells is at the highest priority and so I think  
25 as we go through it's a project that we really learn more about as we get more data.

26 BOARD MEMBER FORD: Thank you.

27 COMMISSIONER HANSEN: Thank you, Patrick, for your presentation. I  
28 really appreciate it. I have a number of questions. One is, what is the side effect of the  
29 sodium –

30 MR. LONGMIRE: Dithionite?

31 COMMISSIONER HANSEN: Yes. What are the negative impacts of it?

32 MR. LONGMIRE: Okay. Mr. Chairperson, members of the Board, so  
33 sodium dithionite consists of sodium and then a form of sulfur called sulfite and then  
34 oxygen. And how it works is that sulfite isn't stable in water. If you had a glass of water  
35 it would want to change to sulfate and as that happens, that helps reduce the chromium  
36 6+ to chromium 3+. There are side reactions with iron and manganese. Now, if you have  
37 an aquifer that's got a lot of reduced iron, that is iron 2+, that's good, because that can  
38 keep the chromium in a non-toxic form. And so with that reaction, as long as the iron  
39 stays at iron 2+, and then the manganese remains reduced, then everything is good  
40 chemically. But if that manganese – okay, and you've probably heard of desert varnish.  
41 You're out walking and you see all this black staining on the rock cliff faces, desert  
42 varnish, that's manganese dioxide. If that manganese that's in the water is manganese 2+,  
43 if it transforms to this manganese dioxide, that has the ability to reoxidize the chromium.

44 And so in California, California, I think there standard is in the low parts per  
45 billion from the chromate standard, there's a lot of natural chromium in the groundwater  
46 that's tied, or it's associated with the manganese chemistry. So the side reactions mainly

1 are – and it's designed to produce iron and manganese and as long as those stay elevated  
2 then the chromium should stay reduced. A key question is though, we've done this at ne  
3 well and we have this reactive zone. If you get oxidizing water with chromate in it,  
4 what's the potential for that reoxidizing? So in a sense, with the sodium dithionite, the  
5 side reactions mainly involve iron and manganese.

6 COMMISSIONER HANSEN: So with the perchlorate plume, which  
7 everyone has heard me speak about numerous times, and I'm glad to see that it's back on  
8 these pictures, and that it hasn't disappeared again, but I believe that there's another  
9 perchlorate plume found closer to PM-3, and it's not on these maps. Is that true?

10 MR. LONGMIRE: So with – Mr. Chair, Board members, when we  
11 sampled, and I was involved, we did six different iterations of background water quality,  
12 water chemistry. So we have a database of about 400 water samples where we looked at  
13 the statistics of perchlorate, and this natural background perchlorate, the upper statistical  
14 value is .414 parts per billion. At PM-3 it's between this .4 and .5 parts per billion. It's  
15 just slightly above the background, but way below that 13.8 parts per billion in the New  
16 Mexico tap water standard.

17 And so I think that there is part of perchlorate that is moving there but the  
18 concentrations are much lower than what we see in that plume that I defined with up to  
19 50 parts per billion.

20 COMMISSIONER HANSEN: Okay. I have one other question. This is  
21 really maybe for – I have a number of other questions but I know that we have a limited  
22 amount of time. So, Mr. Hintze, I have heard that people from New Mexico ED have had  
23 their Q clearance pulled and that they can't get on site any longer. And can you tell me  
24 why?

25 MR. HINTZE: Actually, we don't control Q clearances because we don't  
26 have any requirement for Q clearances for our program. So any Q clearances that would  
27 have issued before are controlled and would be issued by the NNSA field office on the  
28 other side. So no, I cannot – it does not apply to our program, the need for any clearances.

29 COMMISSIONER HANSEN: So do you know why? I mean, can you  
30 answer – who would have that answer?

31 MR. HINTZE: That would be the other field office besides us, the  
32 National Nuclear Security Administration field office. But in order to do the job  
33 clearances are not required because we have folks who don't have clearances, so they  
34 have to get escorted out to certain areas on the site just for us to do the job.

35 COMMISSIONER HANSEN: Okay. So I would hope that you would  
36 actually really make it a quarterly update. The last time you were here was I think last  
37 year and you said you were coming back in March and it's now October. So I would  
38 really appreciate it if this would be more of a regular update, because I am concerned  
39 about the Buckman wells and how these plumes are moving towards the Buckman wells  
40 and so it would be good if we had a presentation about that. We're limited in time here,  
41 unfortunately. The last time we had a meeting where we had the ability we were in the  
42 chambers at the County and we weren't limited in time. And sometimes that is a benefit  
43 to you and a detriment to us, but I think a regular update would allow for us to have  
44 questions on a more regular schedule and we would not be so limited in the information  
45 we're getting.

1 MR. HINTZE: As I said, one of our principles is transparency, so I would  
2 be glad to come back at any frequency, even more than quarterly, and if you would like  
3 to have other meetings outside of this we'd be glad to have those as well. So we don't  
4 want you to get the impression that we're trying to not give you the information.

5 CHAIR IVES: On that point, it sounds like both you and Mr. Longmire  
6 would welcome contact from the Board and/or the public on these issues, so I don't think  
7 there's any lack of opportunity to engage you, hopefully on these issues, whether or not  
8 it's in a formal session like this or a less formal session, where there might be more time  
9 to go into more depth on some of those issues.

10 MR. HINTZE: Mr. Chair, exactly.

11 CHAIR IVES: Good. Thank you. Other questions?

12 COMMISSIONER HANSEN: How is Los Alamos County involved in the  
13 evaluation process for the NC2 chromium remediation testing, and the sovereign tribal  
14 nations?

15 MR. HINTZE: Could you repeat that once more please?

16 COMMISSIONER HANSEN: How is Los Alamos County involved in the  
17 evaluation process for the NC2 chromium remediation testing? And sovereign nations?

18 MR. HINTZE: So how is Los Alamos, and then how are the pueblos?

19 COMMISSIONER HANSEN: Yes.

20 MR. HINTZE: Okay. So in the first one, for the Los Alamos County, their  
21 concentration, as you can – their focus is going to be on the water supply wells. And so  
22 anything that we do as far as the chromium project we give continuous – we have  
23 continuous meetings with the Utility Department for Los Alamos County. We also give  
24 updates to the Los Alamos County Council and I meet monthly with the County  
25 Manager. So we are in continuous communications on all the activities we have, just like  
26 this. We also are interacting, more than just on communications with the San Ildefonso  
27 Pueblo. They have an environmental department that goes out there. Any sample that we  
28 get from the CrIN-2 well that Pat was talking about goes through the San Ildefonso first.  
29 We also give updates to the – we've just given in the last couple months, a couple  
30 updates to the tribal council. I know the New Mexico Environment Department has given  
31 an update to the tribal council. We give presentations to their community at large  
32 whenever the governor wishes us to do so.

33 Everything that we do in these activities are communicated and coordinated with  
34 the organizations that you talked about.

35 COMMISSIONER HANSEN: Okay. Thank you.

36 COUNCILOR HARRIS: I don't really have too much, Mr. Hintze. What I  
37 think would be most useful, not only for myself but for just the public at large and the  
38 various bodies you address would be to give the information out about the performance  
39 of N3B, rather than just what seems – although you're uncertain – the requirement for an  
40 annual review and release. If you were to do it quarterly or semi-annually I think.  
41 Because it's a complex task. It's a complicated team. And sometimes these teams work  
42 better than others. And it would be good to know that the team is working and meeting  
43 the performance standards that are outlined. I think that would be very helpful for you  
44 and others to be able to convince that things are moving forward against that long-range  
45 plan that you've defined. So that's my suggestion.

1 And I just wanted to thank Dr. Longmire for a very excellent not only package but  
2 explanation. It's impressive and it provides a lot of assurance to myself. So thank you  
3 very much.

4 MR. LONGMIRE: Just real briefly, Mr. Chair and Board members, this  
5 addresses the vulnerability of the Buckman wells. The Rio Grande is a groundwater  
6 divide. That's a ridge, and it's really hard to get water to flow from the Pajarito Plateau  
7 underneath the river to the Buckman well field. And we've looked at the chemistry,  
8 Michael Dale and I, we dated that water with carbon-14, it's a totally different system. So  
9 I really feel, and we could have discussions and go in more detail. Bottom line is I don't  
10 think the Buckman wells are going to be jeopardized by chromium. What I'm concerned  
11 about, especially with the Buckman Diversion, and I've investigated this, are the  
12 presence of pharmaceuticals coming out of wastewater treatment plants discharging to  
13 the Rio.

14 We're finding sulfamethoxazole, methadone – an opiate – and acetaminophen.  
15 These are at parts per trillion level, but who knows down 20 years from now, the  
16 significance of these. But we do sample the lab and the DOE Oversight Bureau, sample a  
17 series of White Rock Canyon springs that discharge in White Rock Canyon and we note  
18 there's a little chloride, tritium and nitrate, but I really do feel that the Buckman well  
19 fields, they're in the own hydrologic domain. Thank you.

20 COMMISSIONER HANSEN: I appreciate that. But what about surface  
21 water?

22 MR. LONGMIRE: So, well, with surface water, so this chromium plume  
23 is down about 1,000 feet. The chromium that was released from the outfall, the TA-3  
24 cooling tower in the Sandia Canyon, that's long gone. Any of that surface water  
25 component. And that's another point that I'm working on and I think we should revisit,  
26 because we find wells like R43 that originally were background – now the chromium is  
27 200 parts per billion – is go back and redo a mass balance. We know how much was  
28 released, how much is stored in the vadose zone, and how much is in the regional aquifer.  
29 That along with nature and extent I feel is a prerequisite to really utilizing the best  
30 technologies for remediation. That will help drive where we need to do the remediation.  
31 Thank you.

32 COMMISSIONER HANSEN: I also want to thank you for an excellent  
33 presentation. Thank you.

34 MR. LONGMIRE: Thank you very much.

35 COMMISSIONER HAMILTON: Really quick, follow-up question. Are  
36 you doing independent sampling of pharmaceuticals and other emerging contaminants?

37 MR. LONGMIRE: Yes, Mr. Chairperson and members of the Board. So  
38 when I was with the DOE Oversight Bureau, I worked with them for four years after I  
39 retired from Los Alamos is that Michael Dale, other people, we set up this program to do  
40 it and now Dylan Boyle, who's a hydrologist with the Oversight Bureau is continuing to  
41 do that work and I continue to remain involved in it. And I've given presentations and I  
42 would be glad to forward those presentations to anybody that would like to see them.

43 COMMISSIONER HAMILTON: I'll give you my card. That would be  
44 hugely interesting and I think useful to us. Thank you.

45 MR. LONGMIRE: Yes.

1 COMMISSIONER HANSEN: He's done an excellent presentation to the  
2 Santa Fe City River Commission, which I sit on also and it was fantastic. So I want to  
3 thank you for that presentation also. On pharmaceuticals.

4 MR. LONGMIRE: Thank you.

5 CHAIR IVES: Questions? Very good. Thank you very much. We  
6 appreciate your being here. Doug as well, wherever he went. I should ask: Any  
7 questions? We probably have three or four minutes, because it's a quick report.

8 COUNCILOR HARRIS: It is a quick question. Let's make it 15-second  
9 type. You said that chromium travels with the water.

10 MR. LONGMIRE: Yes.

11 COUNCILOR HARRIS: But can it also diffuse itself even in still water?

12 MR. LONGMIRE: Excellent question, Mr. Chairperson and member of  
13 the Board. So chromium has two forms, oxidation states. The hexavalent chromium, the  
14 toxic form, and if you have groundwater that has dissolved oxygen or what's known as an  
15 aerobic aquifer, it can move at the same rate as the groundwater. Remember I talked  
16 about those really heterogeneous flow paths? If you have very fine zones with clay silt  
17 you can get diffusion into those and out of those as well. So you have the stuff going  
18 down, analogy of I-25, just going right along, and then there's me on my bike riding my  
19 mountain bike out on these trails. So you can have these different fractions of the  
20 chromium in these different flow paths. They're mainly controlled by the hydraulic  
21 properties.

22 CHAIR IVES: Thank you again.

23  
24 **10. Report from Interim Facilities Manager**

25  
26 MR. SCHIAVO: Thank you, Chair. I have two items. The first is with  
27 respect to the PFMSA. We had a productive meeting yesterday afternoon and both  
28 County and City attorneys were given some homework, some assignments and the  
29 intention is to have a follow-up meeting on October 15<sup>th</sup>, so after that meeting I believe  
30 that we'll be ready to bring amendment number 8 back before this Board at the  
31 November meeting. So that's the first item.

32 The second item, I've been talking with Kyle regarding the study session. He said  
33 that he has contacted everyone who would be involved and he's in the process of doing a  
34 poll to find a good date and time. So I'll keep you posted on that also. That's all I had.

35 COMMISSIONER HANSEN: We haven't received anything from Kyle.

36 MR. SCHIAVO: I apologize. Mr. Chair. It's Kyle's intention to put the  
37 poll out tomorrow.

38 CHAIR IVES: Did you have questions on that first item, amendment  
39 eight? Because that I think deals with some of the – no, okay.

40  
41 **CONSENT AGENDA**

42 **12. Request for approval of the 2019 Buckman Direct Diversion Board Meeting**  
43 **Calendar**

44  
45 We'll move off the informational items to the one item pulled from  
46 Consent, which was item number 12, which dealt with our meeting schedule. And my

1 proposal is given tightness of time and the plethora of questions that we always have, that  
2 we move our start time to 4:00 p.m. as opposed to 4:15. I would love for someone to  
3 bring forward a motion to approve the meeting schedule with a start time of 4:00 p.m.

4 COMMISSIONER HANSEN: So moved.

5 COUNCILOR HARRIS: Second.

6 CHAIR IVES: We have a motion and a second. Is there any further  
7 discussion?

8 COMMISSIONER HANSEN: I'll just comment that I thought the same  
9 thing and I am very happy to see that our minds are all thinking alike and I like the idea  
10 of 4:00 p.m. start Can it be effective immediately?

11 CHAIR IVES: We can do that.

12 COMMISSIONER HANSEN: That's great. That would be fantastic. So  
13 effective November 1<sup>st</sup>, which is our next meeting. So I include that in my motion that  
14 effective November 1<sup>st</sup> we will meet at 4:00 p.m.

15 CHAIR IVES: And I assume that is a friendly amendment to the second.  
16 Whoever seconded.

17 COMMISSIONER HANSEN: Councilor Harris.

18 COUNCILOR HARRIS: I accept the amendment.

19 CHAIR IVES: Very good. We have a motion with an amendment and a  
20 second. Any further discussion?

21  
22 **The motion passed by unanimous [5-0] voice vote.**

23  
24 CHAIR IVES: Very good. Our meeting schedule going forward is  
25 established.

26  
27 **MATTER FROM THE PUBLIC**

28  
29 CHAIR IVES: I don't know if anybody is here to -- please, come forward.

30 JONI ARENDS: Good afternoon, members of the Buckman Board. My  
31 name is Joni Arends. I am with Concerned Citizens for Nuclear Safety. CCNS is a thirty-  
32 year-old non-profit organization based here in Santa Fe. We've been watching the  
33 laboratory since 1988. Specifically, we've been watching the groundwater and the  
34 surface water issues since the Cerro Grande fire in May 2000.

35 And I just want to point out a couple of things really quickly. So under the permit,  
36 the groundwater discharge permit that allows for the extraction and re-injection of the  
37 treated water, the laboratory said that they would voluntarily meet a 45 ppb standard, and  
38 so none of these plume maps show 45 ppb compliance. I just want to point that out that  
39 they agreed to a 90 percent of the New Mexico standard, which I think is a big deal,  
40 because if it was 45, we might see this plume, it may have a different shape which may  
41 have an impact.

42 Further, the fact that George Rice, who's a groundwater hydrologist from near  
43 San Antonio, Texas, did a report that said that the source of the perchlorate plume at  
44 Outfall 051 from the radioactive liquid waste treatment facility, said in 2002 that the  
45 travel times from that facility, which is west of where the plume is right now, could travel  
46 the eight miles from the outfall to the river in 26 years or less. So given that this plume

1 started, or this discharge started in the sixties, there's a lot of – the need for the mass  
2 balance is very, very important, and that's why I really support the fact that there's going  
3 to be a working group or a discussion about water quality. We need to be looking for  
4 mass balance. We need to be looking at the sources. We need to be looking at the travel  
5 times and what's been showing up in the springs along the Rio Grande, because as Pat  
6 said, Dr. Longmire said, there's tritium, there's chloride, there's other constituents along  
7 the river.

8 And just for a point of clarification. I have to give some history.

9 CHAIR IVES: Ma'am, I'm going to have to ask you to be really quick,  
10 because we have –

11 MS. ARENDS: One more. In 2002 the New Mexico Environment  
12 Department released the draft consent order for public review and comment. After it was  
13 released, for 18 months, the permittees, the laboratory and the Environment Department  
14 went behind closed doors to negotiate the consent order. During that time the laboratory  
15 found the elevated levels of chromium in Mortandad Canyon, and they didn't tell. And as  
16 a result, when the consent order became effective on March 1, 2005, then the laboratory  
17 had to tell its story. And that story was told on December 23, 2005.

18 So this isn't a feel-good type of experience. This is a threat to Santa Fe's drinking  
19 water, to the drinking water of the pueblos, the drinking water of the region. And we need  
20 to be very serious at this point in time because it's been going on for a really long time.  
21 And I'm happy to meet with folks about this, but it's so much more serious because the  
22 contaminants are moving and they've been shown to be moving across this facility. So I  
23 appreciate that we're going to be meeting at 4:00. Thank you.

24 CHAIR IVES: Thank you. Nobody else from the public. That brings us to  
25 Matters from the Board. The speed round. The lightning round.

## 26 27 **MATTERS FROM THE BOARD**

28  
29 CHAIR IVES: As we close out, I would make a statement. I will state for  
30 the record and our minutes that the only matter discussed during the executive session of  
31 our last Board meeting on September 6, 2018 was the matter as stated in the motion to go  
32 into executive session and no action was taken.

33  
34 **NEXT REGULAR MEETING: Thursday, November 1, 2018 @ 4:00 p.m.**

## 35 36 37 **ADJOURNMENT**

38  
39 Having completed the agenda, Chair Ives adjourned the meeting at 5:55 p.m.

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42 Approved by:

43  
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46 Peter Ives, Board Chair

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Respectfully submitted:

Karen Farrell, Wordswork

**FILED BY:**

**ATTEST TO:**

\_\_\_\_\_  
GERALDINE SALAZAR  
SANTA FE COUNTY CLERK

\_\_\_\_\_  
YOLANDA Y. VIGIL  
SANTA FE CITY CLERK