November 20, 2014

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Agenda for the November Board Meeting

6:00
Call to order, introductions
Review of agenda

Federal Coordinator Comments -- **5 minutes**

Liaison Comments -- **5 minutes**

Administrative Issues -- **20 minutes**

- ***DRAFT - Recommendation 14-XX: Construction of an On-Site Disposal facility at the Paducah Gaseous Diffusion Plant site***
- Elections

Subcommittee Chair Comments -- **10 minutes**

Public Comments -- **15 minutes**

Final Comments -- **5 minutes**

Adjourn

Paducah Waste Disposal Alternatives

PART 5

Waste Issues Summary

- 3.6 million cubic yards of waste
- Cell design is for 8 million cubic yards
- 44% of the waste is soils
- Existing landfill will continue to be used
- Assumption is that up to 5% of the waste will be shipped off site no matter what

- Paducah only has low-level waste
- The Proposed Plan is targeted to be released in Spring of next year.
- Off-site vs. on-site cost is approximately $500 million or around 5% of the cleanup cost ($9-$13 Billion)

Waste Issues Summary

- Off-Site
  - Cost factors and risk are higher
  - Low break even point ($174M and 200,000 CY)
  - Transportation is biggest cost and risk
- On-Site
  - All sites are technically feasible and met the Threshold Criteria
    - Each site has its own complex technical advantages and disadvantages
  - Cell will be designed to meet the Maximum Credible Earthquake of 7.6
  - Flooding concerns are minimal

Oak Ridge Observations

- The regulators recognized that employment was a factor in the cell decision
- The decision to have a cell or not was made in Nashville among politicians and regulators
- **The public had a significant impact of the location of the cell**
- **A more technically challenging location was chosen to maximize industrial reuse potential**
- Groundwater table was a big factor and also an ongoing issue

- The existing cell site and associated facilities are approximately 140 acres currently and will be another +/- 50 acres if a new cell is construction.
- The Oak Ridge cell is approximately 75 feet tall
- The existing and proposed cell is designed for 4 million cubic yards
- The waste management company employs around 80 people (does include additional landfill sites nearby)
- Oak Ridge believes the waste cell has been a key factor in continued expedited D&D

Modifying Criteria . . .
Community Acceptance

- What is Important to us?
  - Safety
  - **Immediate D&D**
  - Minimize site-wide legacy waste footprint
  - **Industrial reuse opportunities**
  - Maintain/Enhance Recreational use
  - **Job retention / creation**
  - Maximize usable land
  - Community assets
  - Aesthetics - not only the CERCLA facility, but the site

Waste Disposal
Facility Location

Burial Grounds

Environmental Cleanup

- Future Use

Infrastructure

D&D Sequencing

How do we make sure what we want happens?

Future Use

- Meet DOE cleanup mission
- Define future site mission
- Define community expectations of end state of the site

=

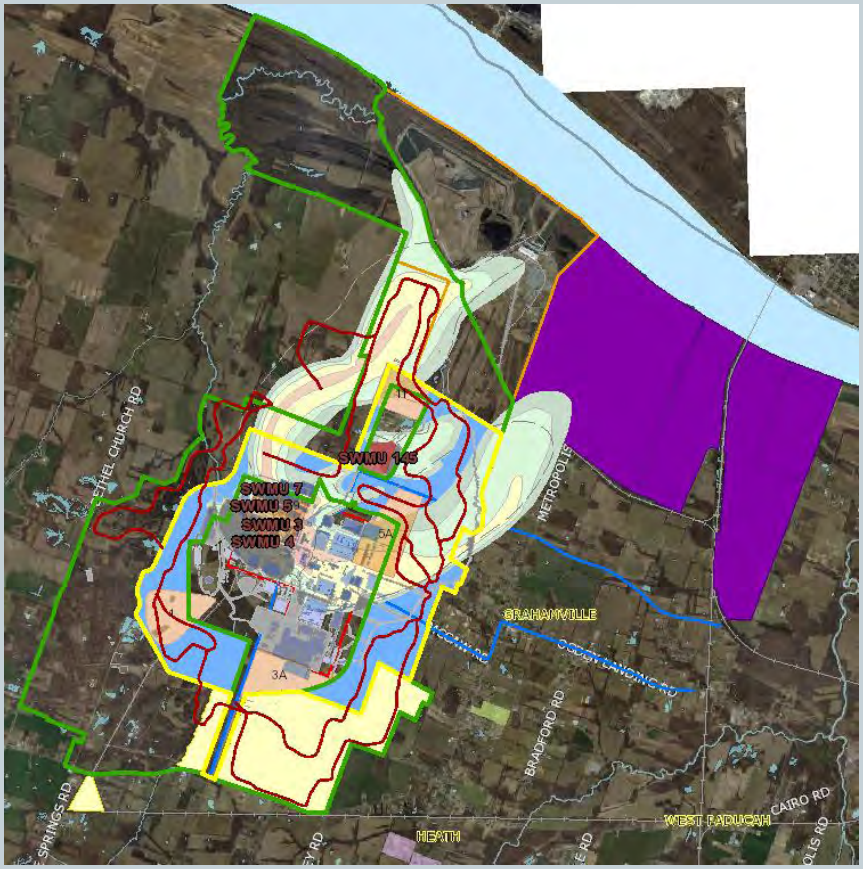
New FFA Enforceable Milestones

- Implementable and actionable goals
- Goals must be enforceable with defined timelines
- Sequenced remediation and D&D to match Future Use

Future Use Vision

- MAP – http://map-gis.paducahky.gov/PGDPViewer

- Waste Disposal Facilities
- Groundwater Plume
- Burial Grounds
- Dog Trial Trails
- West KY WMA
- Industrial Needs
- DOE End State
- SWMU's
- D&D Sequence
- Transportation Access
- Infrastructure
- Assets and Facilities

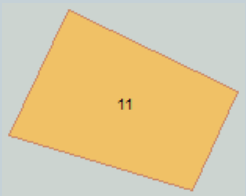


Brainstorm

- CAB core values draft
  - Focused on on-site disposal
  - Consider sites in this order 11, 9, 5A, 1, 3A – **DRAFT**
  - **Immediate D&D with the CERCLA Cell decision as a starting point**
  - Construct a haul road from the state road project to the PGDP site
  - Recycle to reduce waste and provide assets
  - Partner with DOE to achieve best possible outcome for all parties
- Other factors
  - Aesthetics
    - Height more important than footprint?
    - Borrow pits, lakes, soils
    - Final closure form? Grass vs. Rock vs. ?
  - Available Land
  - Physical Assets
  - Infrastructure Optimization
  - Interaction with adjacent industrial sites
  - Existing / potential recreation opportunities

Brainstorm

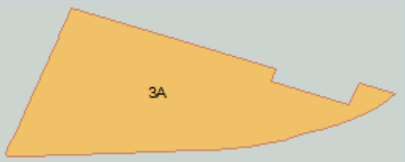
- On-site assumption
  - Look at each site – Pros and Cons



How Do You Feel About . . .

- Site 1?
  - Pros
  - Cons
    - Good developable land
    - Bad geotechnical characteristics
    - Takes up bigger section of recreational land
    - Surrounded by blue line streams and wetlands

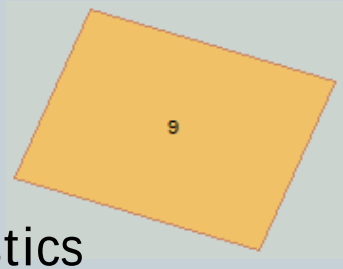
- Site 3A?
  - Pros
    - Away from groundwater plume
    - Regulators like it
  - Cons
    - Interferes with industrial prospect and available land
    - Bad geotechnical characteristics
    - Highly visible location



How Do You Feel About . . .

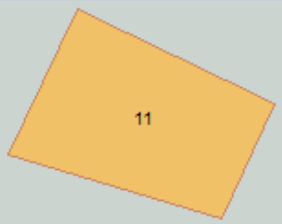
- Site 5A?
  - Pros
    - DOE's first choice
    - Regulator's first choice
    - Has design options to minimize height
  - Cons
    - Highly visible location
    - Takes up potential recreational land
    - Developable land

- Site 9?
  - Pros
    - Burial grounds go away*
    - Land inside the industrialized area
  - Cons
    - Difficult logistics
    - Hard to monitor
    - EPA has concerns



How Do You Feel About . . .

- Site 11?
  - Pros
    - Out of sight



  - Cons
    - Furthest travel?
    - Waste has to cross county road?
    - Land constrained?

- Other thoughts?

Path Forward?

- CAB finalize draft recommendation for CERCLA cell – 11/20
- Meet with DOE and regulators
- PACRO needs to be ready to work quickly
- CAT communications - continue to talk to locals, state, and DC
- Further develop Future Use / Vision

- Suggestions?

PADUCAH GASEOUS DIFFUSION PLANT
CITIZENS ADVISORY BOARD

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Paducah Gaseous Diffusion Plant Citizens Advisory Board
Meeting Minutes
November 20, 2014

The Citizens Advisory Board (CAB) met at the Environmental Information Center (EIC) in Paducah, Kentucky on Thursday, November 20th at 6:00 p.m.

Board members present: Judy Clayton, Ben Peterson, Dianne O'Brien, Ralph Young, Robert Coleman, Renie Barger, Ken Wheeler, Jim Tidwell, Tom Grassham, Carol Young, Richard Rushing, David Franklin, and Mike Kemp.

Board Members absent: Eddie Edmonds, Jonathan Hines, and Kevin Murphy.

Board Liaisons and related regulatory agency employees: Todd Mullins, Gaye Brewer (KDWM), Jennifer Tufts (on phone)

DOE Deputy Designated Federal Official: Jennifer Woodard, DOE

U.S. Department of Energy (DOE) related employees: Buz Smith, , DOE; Joe Walker, Mark Duff, Elizabeth Wyatt, Steve Christmas, Craig Jones, LATA Environmental Services of Kentucky (LATA); Dianne Snow, Swift and Staley (SST); Matt LaBarge, Waste Control Specialists; Paul Kreitz, Fluor Paducah; Eric Roberts, Jim Ethridge, EHI Consultants (EHI).

Public: Tony Graham, Joni Chambers, Madelyn Chambers, Bob Leeper and Tim Thomas

Introductions:

Peterson opened the meeting at 6:00 pm, and asked for introductions and then reviewed the Agenda, which was approved by the Board. He then introduced Paul Kreitz from Fluor, for an announcement. Kreitz invited the Board to a reception with members of Fluor's management team.

Federal Coordinator Comments: none

Liaison Comments: none

Peterson then introduced ***DRAFT - Recommendation 15-XX: Construction of an On-Site Disposal facility at the Paducah Gaseous Diffusion Plant site*** for consideration by the Board. **Wheeler** said he appreciated the Board's time and effort leading up to the development of the recommendation. **Young** said that this recommendation has been in consideration for several years, but not finalized, and that having it completed was something for everyone to be proud of.

O'Brien: In regard to this document, I really appreciate because I know you really worked hard. Writing in this kind of style is not easy to do. You can't cover all the	**Wheeler:** I think it's already there Dianne.

bases. There are some things I'd like to call to your attention, and those of you on the CAB have a handout from me. I usually have someone edit my writing in the books and things that I have published, but this does not have my editing to it. So Joe (Walker), you'd probably find a bunch of things wrong. Regarding the draft, paragraph two where it says "the Citizens Advisory Board has spent hours reviewing these studies…", and yes we have. And I appreciate that, it's time consuming. Including the University of Kentucky, it seems to me that we ought to at least refer to that study. That study was how many million dollars? I don't recall. They put into that survey and they published the results. But the results of that, come on over to my document to you. In that health was their number one priority. Mr. Grassham suggested that we put in health and safety. So if you look down there to core values, I'm suggesting that we put in health and safety based on that study and survey that they did.	
O'Brien: It's not on my copy. I'm reading off of the one that is on my computer, not the one that was handed out tonight. Sorry. I stand corrected. Part of that study indicated that people would like to have most waste taken off-site. And I think we ought to refer to that. And that is not in our document.	**Tidwell:** I'm sorry, say that again.
O'Brien: In that study, the majority of people wanted to have waste taken off-site.	**Tidwell:** In that UK study? When was that issued?
O'Brien: You can find it online. But that's the one where they had several meetings around town and then they summarized what the participants said they wanted. And it seems to me that if we are going to give credence to that, that we've looked at that, and we've studied that, that we ought to say what it says. And what it says is that most people want the material taken offsite.	**Wheeler:** Do you have any historical record of how those meetings were held, or who the participants were?
O'Brien: It was not a random sample survey. The meetings were advertised and we had access to those. And what they tried to do is what is called a stratified sample, in which they invited different strata of people to those interactions. They got the audience involved by getting them to look at possible solutions, feeding that in by computer. And we had access to that information.	**Tidwell:** No, I'm asking when was this? What's the timeframe of the study? **Mullins:** I think it was several years ago.
O'Brien: Not several years ago Todd, a few years ago.	**Clayton:** I don't want to dispute you but I would want to see the evidence. I attended every one of those…
O'Brien: I'm just reading summary data Judy.	**Clayton:** I just don't remember…
O'Brien: This is the published summary data. And it's available online. But is just seems to me if we are going to say we have looked at that, we ought to say what it says. That's normally the way you handle that, if you are going to quote a study.	**Wheeler:** I guess my thoughts to that Judy would be that the groups that have most recently participated in straw votes are the ones that I think have all put in for a significant amount of time and effort educating themselves on the pros and cons of the various locations and alternatives.
O'Brien: Well we are looking at an N of 15, a number of 15 for reporting our summary data on what we're	**Tidwell:** 15 what?

saying. We had 15 in that straw poll.	
O'Brien: 15 people that voted. Is that correct Ben?	**Peterson:** That is correct.
Tidwell: Who are these people?	**O'Brien:** You and the rest of the Board.
Tidwell: I voted for it to be on-site.	**Grassham:** The majority of the people voted for a CERCLA cell. There was only two that voted against it.
O'Brien: When Ben was introducing that, didn't you say up front we had a number of 15, and what was the number of those participants of the University of Kentucky survey, I'm not quite sure but it's more than 15.	**Grassham:** I imagine, to be perfectly honest about it, they didn't ask me what I thought and it was specifically who they invited to their meeting that they did the poll on, and to me, that's a little bit slanted.
O'Brien: And that's the way ours is. I think Ken's point is we've been studying this stuff.	**Wheeler:** Can we take that under advisement?
O'Brien: Yes, please. But the point is if we are going to say that study is there, we ought to say number one, their priority was health, number two, and they wanted most of the hazardous waste taken offsite.	**Wheeler:** As written, the draft does not refer to that study.
O'Brien: Mine does, on line five of paragraph two.	**Wheeler:** In a general sense, and a point of fact, I wrote that sentence, and the reference that was made to the University of Kentucky was not the health study, it was the seismic study. **Roberts:** Dianne, let me pull that study and we can look at the data. I believe, if I remember correctly, the question you are referring to on whether or not people would prefer to having waste onsite was essentially, would you prefer waste stored onsite or offsite and I think the way it was worded they knew it was going to be offsite. I think that is what the Board has said continuously. Onsite is not necessarily our preferred choice. Onsite with the right conditions might be the best overall solution.
O'Brien: So we say it that way. That part of that study will be in the last few pages, the summary data will be.	**Roberts:** No problem.
O'Brien: The sick worker, if you will look to the middle of the second page of my document, this is U.S. Labor statistics, 2-18-13, that's the amount of dollars that is said to have been given at that date to Paducah Gaseous Diffusion Plant workers and their families for compensation. Now, you know and I know that that's not the CAB's function. But the point here is we've got hazardous substances at the plant that I would like to see taken somewhere else. And we know they're hazardous because we paid out that kind of stuff.	**Peterson:** I think one of the arguments to that Dianne, and one of the arguments, in my opinion, for a cell is so that those hazardous things that you mentioned that are related to some of these possible claims are put in a form that is more stable and much less hazardous than they are currently just sitting in a building left to weather. So the sooner, the quicker we can get those buildings and those materials out of there and into a either offsite or in one of these cells engineered to hold this material and is therefore less hazardous I think meets the very argument you are trying to make.
O'Brien: Well, I think you and Judy have made the point that leaving them out there in a field somewhere is not appropriate. And you've done a good job of saying that. But the point is we know they're hazardous. We know that they cause damage, and my fear as a health educator is that we just let things go. And I've given you a picture of some children here. This is not in the United States, and we don't do research on human subjects, but I've seen the research on fruit flies that have been exposed to radiation. They	**Wheeler:** Could we stop right there, Dianne.

get extra eyes, they get extra wings, and they are born deformed. And even other substances other than radiation can cause deformities. This just happened in Moscow, and we probably wouldn't do this in the United States but we know it happened in Love Canal. We had things buried and people were not careful. And so kids were born with extra rows of teeth. They were born deformed. They had record miscarriages. And I think we don't have to do research on human beings to know that that happens. When we went to Tennessee, I was a little bit disturbed because we were taking a tour and they said "oh, that's beryllium over there". And I'm thinking "Ugh" (scream). We've got beryllium in Paducah. So if you look at down there in my fourth paragraph, I think that what we ought to do is take materials that are really hazardous and remove them. We have earthquakes; I brought you the data on that.	
O'Brien: Yes sir.	**Wheeler:** Because I think you are moving into another topic.
O'Brien: Ok, then let me get back to beryllium then. On page two, they have beryllium in Tennessee; they're going to bury it there. We went by the containers, they showed us those. And I'm thinking about some of the things and I can't remember if it is beryllium or not but they had a variance so that they had permission to bury it. What I'm suggesting is, I'd like to say for the CAB there are certain substances that we don't want you to ask for permission to bury. Yes sir.	**Coleman:** Whose back yard are you going to place this hazardous material in? You are saying not to store it here, so whose back yard are you going to pollute?
O'Brien: They have places out west, and we talked that. You probably weren't here sir the last time we talked about that, the places that are accepting hazardous waste.	**Coleman:** Have you calculated the hazard in transporting this material over long distances and the possibility of accidents?
O'Brien: Yes.	**Kemp:** Those places out west are not designed any better than here. There's different geologic circumstances, but if you look at the second part where it talks about waste acceptance criteria, if I understand the way that's defined, the waste acceptance criteria will be designed to achieve exactly what you want to do which is prevent waste from going into the CERCLA cell that will present a threat over a certain level. And nobody necessarily disagrees with you…
O'Brien: Oh, I'm not saying you are. I want to make it abundantly clear that I said it to you. I had my first geology class, graduate level class, when I was 12 years old. We have earthquakes here. We have flood plains here. We have major rivers that they don't have in the desert.	**Wheeler:** Let me tell you how I tried to address that. Again, if you haven't read the draft…
O'Brien: I have read it.	**Wheeler:** If you will go to the second paragraph on the second page.
O'Brien: When it talks about wildlife?	**Wheeler:** No. If the onsite storage option is selected for disposal…
O'Brien: I had notes printed on mine, this copy I just got tonight.	**Wheeler:** This was published early this morning. In any event, let me try to explain the rational I tried to use in dealing with this issue.
O'Brien: I remember that about acid batteries and	**Wheeler:** Those are all examples. There is no way did

refrigerants and all that.	I attempt, nor do I think we should attempt, to characterize every single potential component or element that we are concerned about at this point in time because, frankly there are going to be again new things that come up throughout the next twenty years that we are not familiar with. If we attempted today to list definitively every isotope or every component or every element that we feel should not be on the site, that, to me, would be carte blanche to allowing any other element that we did not list in the future to be put in…
O'Brien: There's a way to do that in legal writing and it refers to other substances of this nature.	**Wheeler:** That's exactly what I said, yes mam.
O'Brien: What I did was these elements: beryllium, plutonium, TCE, these are the ones that are listed in the University of Kentucky study. In their particular document.	**Wheeler:** And I'm quite confident that when the cell is designed, part of that design process will be the development of the waste acceptance criteria (WAC). And there will be a specific list, and a specific set of WAC's that are generated that are a part of that design process that we will be expected to review and comment on.
O'Brien: And I think your point is well taken. You're exactly right. We can't list every substance. That's the reason I took the ones out of the University of Kentucky study.	**Young:** Dianne, one of our core values is that our waste acceptance criteria will not be, let's say, easier or less stringent than anybody else's. So if Fernald only allowed so many pounds or whatever of something, ours is not going to say we can have twice as much in there. We are going to be consistent with all waste acceptance criteria that's across the whole complex that DOE has. There's going to be nothing special about Paducah. Nothing less stringent or wow, look at Paducah, we can store this awful stuff there. That's not going to be the case. Or at least by these core values. It might be the case by the time…
O'Brien: I guess I'm less trusting than I was previously. To be really truthful. I have interviewed a friend that works at Hanford, and they have leaks. And she works in safety.	**Young:** Just kind of thinking out loud here, you know they have these things called a minority report, and maybe we could draft another recommendation that addresses your concern. It's like we don't think you went far enough here. Maybe think of another recommendation or whatever that might be the minority report that says you didn't give ample consideration for these things.
O'Brien: And you do that and sometimes the minority report turns into the majority sometimes in court decisions. I just wanted to make sure that as a health educator you knew that beryllium is out there and it is cancerous. And you knew that what we saw in Tennessee, was they were burying it there. And I wanted to make sure that you knew that plutonium was there. I talked to a former plant manager there.	**Young:** Rather than have this recommendation balloon into every substance known to man…
O'Brien: No, it's not. These are what were mentioned by the UK study. You can't cover all of that. And I think Ken's point is well taken. You can't cover all of that. But I think that if we know, we don't want to have variances, like what they are doing in Tennessee. Based on the criteria, we can have, Gaye (Brewer) brought me a list of criteria here. I think we need to have in our core values to say somehow we don't want	**Wheeler:** That's exactly why the last sentence in the second paragraph is there. There again I'm afraid you haven't read it yet.

to have a variance to let some of these slide by. That's my point.	
O'Brien: Well, I read what I had as of yesterday. This was printed you told me this morning.	**Wheeler:** And distributed this morning. **Clayton:** When Dianne is done, I'd like to say a couple of things.
O'Brien: One more thing. First page under core values number three. "In the event that onsite waste disposal is selected, DOE has demonstrated the ability to design and construct a cell." I suspect that's true. But "that's protective of human health and the environment." I'm not sure they have demonstrated that. Can we re-word that?	**Wheeler:** Well they haven't yet. The point…
O'Brien: They say designed, I don't think they have demonstrated it yet.	**Wheeler:** Well they haven't yet.
O'Brien: I don't think they have demonstrated they can protect human health.	**Wheeler:** That's a forward looking demand.
O'Brien: Ok.	**Kemp:** It needs a couple of wordsmithing things like "must be demonstrated", or "should be demonstrated". That kind of thing.
O'Brien: You're getting it. Thank you.	**Wheeler:** So we are going to say "DOE must demonstrate". Well said.
O'Brien: I don't know if you saw the front page of the paper where they are teaching children how to react during an earthquake. I'm sorry to keep pounding on this, but in 1912 we had damage over 50 miles, the rivers ran backwards, and there were waves up to thirty feet tall. Do we need to acknowledge…	**Clayton:** That was 200 years ago, not 100.
O'Brien: Thank you Judy. I stand corrected.	**Peterson:** I believe that's adequately addressed in the bullet you just re-worded for us. They must demonstrate that it is protective of human health and the environment.
O'Brien: You're right. I rest my case. Now what happens is if as a health educator, I'm not telling you, you have not been forewarned. Thank you.	**Wheeler:** Judy, did you have a couple of comments? **Clayton:** As a matter of record, since this was presented to us, based on my 37 years of experience out there, I want to make a couple of corrections. The study listed several substances that were present at the plant that were part of the process of enriching uranium and plutonium. We never processed plutonium.
O'Brien: Judy I don't mean to dispute your word, but Steve Polston who was the plant manager said that plutonium was sent there, and I've forgotten where he told me it came from.	**Clayton:** It came in as a daughter product from Hanford. I know all about it. But we didn't process plutonium per se. And in minute mass and we know where it is. The U.S. government has paid out billions of dollars to sick workers. I think it's more to the tune of a half billion.
O'Brien: I just got this offline. They could have reported it wrong.	

O'Brien indicated that she thought that the recommendation should refer to the results of the University of Kentucky study mentioned in the recommendation with specific points. She also expressed concern about allowing unwanted substances into the waste cell that could cause harm to the population at some point in the future. **Wheeler** and **Young** pointed out that the Waste Acceptance Criteria would limit unwanted items and keep them from being put into the cell. **Peterson** added that a map of locations should be added to the recommendation.

After no comments on the Recommendation from the public, the Board voted and approved the document with mentioned changes, by a vote of 12-0 with one abstention.

Peterson then turned over the meeting to **Roberts** to conduct officer elections. **Peterson** was re-elected as Chair for another term, by acclimation. **Barger** was nominated and elected to serve as Vice Chair, by acclimation.

Subcommittee Chair Comments: There was discussion on re-establishing a Burial Grounds subcommittee. It was suggested that the Board develop that during the upcoming retreat/working session.

Public Comments: none

The meeting adjourned at 7:05pm.

Approved by **Ben Peterson, Chairman**

Ben Peterson

HEALTH ISSUES RELATED TO SUBSTANCES at the WEST PADUCAH PLANT CURRRENTLY KNOWN AS THE USEC P LANT

THIS PLANT WILL BE DECOMMISSIONED AND DEMOLISHED AS A U.S. DEPARTMENT OF ENERGY (DOE) POSSESSION

In a million dollar research study funded by the US Congress and approved by the DOE, the participants in the Paducah area noted that health was their number 1 priority. The study was conducted by the University of Kentucky and had volunteers as participants. The study listed several substances that were present at the plant that were part of the process of enriching uranium and plutonium. Uranium enrichment was the primary function of the plant.

The US Government has paid out billions of dollars to the sick worker program to people in Paducah and other plants who became ill as a result of their employment. Exposure to substances can cause illnesses. Some of these substances and their related health problems are listed on the following pages. These substances listed came from the University of Kentucky lists of substances at the USEC facility and were collaborated by discussions with former managers of the USEC facility.

Illustration 1. Photo of children from another country who had been exposed to industrial pollution. The children born near the Love Canal in New York State experiences birth defects and mothers had miscarriages. The contamination was from public, governmental and private sources. People new the substances were dangerous and noted so in legal documents.

At the Paducah location the DOE has choices to make concerning the removal or burial of industrial waste. They could bury the waste contaminates at USEC facility in a clay filled grave, covered nicely with grass or other attractive cover. It could have new plastic, rocks, gravel and it could be monitored. **Material that is a health hazard could and should be removed to a location that is not troubled by earthquakes, floods and tornados**. The Paducah location has a bad reputation which is not equal to the safer locations like the western states that will take contaminated waste.

A Paducah burial ground could erode with a earthquake of 1912 proportions. To ignore earthquakes and tornados is being deliberately

indifferent and possibly negligent. After study of earthquakes, new enrichment technology was sent to Portsmouth, OH, not Paducah, KY. There is a distinct possibility of earthquakes in the Western Kentucky region. In 1912 the damage was over 50 miles. The rivers ran backwards. There were waves listed about 30 ft tall.

A copy of an article related to the high possibility of earthquakes in Western Kentucky is located in the Smithsonian. Paducah is the center of an area in the New Madrid fault. CAB members have this.

BP was recently found guilty of deliberately contaminating the Gulf of Mexico. The Ohio River is not too large to contaminate. Radiation from Japan and the earthquake there has now reached the California coast.

In law there is an expression of **deliberate indifference related to negligence.** Did you know that a substance was dangerous? Did you deliberately ignore a dangerous situation would occur?

According to the U.S. Dept of Labor as of 2/18 13, $656, 441, 705.00 has been paid to Paducah Gaseous Diffusion Plant workers or their families as compensation for illnesses determined to be related to radiological or toxic exposures at the plant in Paducah, KY.

At the USEC plant there are dangerous substances. There have been law suits filed against the plant that have been won. There are about 100 families that have water purchased for them now because of pollution.

The lists that follow are an attempt to briefly list a substance and its health hazards:

Beryllium Cancer , lung cancer, also affect liver, kidneys, heart, nervous system and lymphatic system. Fumes may injure eyes, skin, exposed areas. Chronic beryllium disease.

Plutonium Cancer, genetic damage, sickness, burns, alpha, beta, gamma radiation, can accumulate in bones, radio active chemical element when exposed to moist air forms oxides and hydrades that expand up to 70% in volume, which can flake off as a powder and spontaneously ignite.

Trichloroethylene (TCE) Cancer, long term kidney cancer, non-Hodgkin

lymphoma, autoimmune disease, heart disease in developing fetus, harm to central nervous system, kidneys, liver, male reproductive system.

Technetium 99 Cancer, increased risk, damage to organs, used in some diagnostic medical tools.

Polychlorinated Biphenyls (PCBs) Cancer, damage immune system, reproductive system, nervous system, endocrine system, (learning disabilities, vision, memory, learning, thyroid damage, PCBs in mother's milk)

Uranium Cancer, enriched uranium much more damaging, toxic to kidneys renal cells, respiratory disease, alveoli changes, fibrosis or emphysema, inhibit glucose transportation, bone damage (animal studies, birth defects, liver, kidney, soft tissue damage.)

Asbestos lung cancer, mesothelioma, asbestosis plural plaques, plural thickening, plural infusions, may take 15 years to show results, progresses even after exposure has stopped.

Other hazards
Uranium active black ooze... seeping from ground ¼ mile away from personal property. Three (3) drums were found behind a resident's yard. Law suit resulted. Settled for plaintiff.
Tornado Nov 17, 2013 workers reportedly inhaled plutonium. And other highly reactive materials.
Earthquake Paducah is a known risk

We do not need to be deliberately indifferent to the long term problems future generations could have from contamination. LOOK AT THE CHILDREN

Would you exchange a child with a birth defect for a short term job?

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