8176

FINAL

EXPLANATION OF SIGNIFICANT DIFFERENCES
For
OPERABLE UNIT 5

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

OCTOBER 2001

11/9/01

for Susan Brechbill, Manager — Date
United States Department of Energy – Ohio Field Office

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1.0 INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

8176

1.1 Background

The Fernald Environmental Management Project (FEMP) is a former uranium processing facility located in Hamilton and Butler Counties, Ohio approximately 18 miles northwest of Cincinnati, Ohio. The FEMP is owned by the United States Department of Energy (DOE). In November 1989, the FEMP site (formerly the Feed Materials Production Center [FMPC]) was included on the National Priorities List (NPL) of the U.S. Environmental Protection Agency (U.S. EPA). As the owner of the FEMP, DOE is the lead agency for remediation of the FEMP pursuant to the Consent Agreement as Amended (ACA) under Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Sections 120 and 106(a) signed with U.S. EPA in September 1991. The Ohio Environmental Protection Agency (OEPA) is also participating in the cleanup process at the site.

Operable Unit 5 (OU5) is one of the five operable units identified in the ACA and encompasses all environmental media, both on and off the FEMP property. A Record of Decision (ROD) for OU5 was signed on January 31, 1996.

1.2 Circumstances Giving Rise to Preparation of an Explanation of Significant Differences (ESD) for Operable Unit 5

A final Maximum Contaminant Level (MCL) for uranium has recently been promulgated under the Safe Drinking Water Act (SDWA) (National Primary Drinking Water Regulations; Federal Register Volume 65, Number 236; December 7, 2000; Pages 76707-76753). The changes addressed under this ESD involve aligning the groundwater final remediation levels (FRL) for uranium and the FEMP wastewater treatment requirements stipulated in Section 9 of the OU5 ROD with the recently promulgated MCL.

Under the original ROD, the FRL for uranium in the Great Miami Aquifer was established as 20 µg/L, based on the proposed MCL under the SDWA (Federal Register Volume 58, Number 138, pages 33050 and following, July 18, 1991). In addition, the treated effluent discharges (storm water, remediation wastewater, sanitary wastewater, and groundwater) to the Great Miami River were required to meet a monthly average of 20 µg/L. However, the final MCL for uranium in drinking water has been established at 30 µg/L.

1.3 Regulatory Basis

Pursuant to Section 117 of CERCLA as amended and the National Contingency Plan at 40 CFR 300.435(c)(2)(I), an ESD document should be published when "differences in the remedial or enforcement action, settlement, or consent decree significantly change but do not fundamentally alter the remedy selected in the ROD with respect to scope performance and cost." U. S. EPA guidance (A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents, EPA 540-R-98-031, dated July 1999) categorizes a new applicable or relevant and appropriate requirement (ARAR) promulgation with impacts on cleanup levels to be a significant

change and appropriately addressed through an ESD document. The changes addressed under this ESD involve aligning the groundwater FRL for uranium and the FEMP treatment requirements stipulated in Section 9 of the OU5 ROD with the recently promulgated MCL for uranium under the SDWA.

1.4 Administrative Record

8176

This ESD will become part of the Administrative Record pursuant to 40 CFR 300.825(a)(2) and will be available at the Public Environmental Information Center (PEIC), 10995 Hamilton-Cleves Highway, Harrison, Ohio. The PEIC is open from 8:00 am to 4:00 pm Monday through Friday and may be contacted at (513) 648-7480.

2.0 SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

2.1 Summary of Site Operating History and Extent of Contamination

The FEMP is owned by the U.S. Department of Energy. Operating as the FMPC between 1951 and 1989, the site produced high purity uranium metal products in support of national defense programs. The site consists of approximately 1050 acres encompassing three primary areas: the former production area, the waste storage area, and adjacent forest/pasture land. The former production area is a 136-acre tract at the center of the site. The waste storage area is located west of the former production area. Contaminants from material processing and related activities were released into the environment through air emissions, wastewater discharges, storm water runoff, and leaks and spills. In 1989, operations ceased and efforts were focused on environmental restoration and waste management activities. In 1991, the site name changed to the FEMP to recognize this new emphasis.

The cleanup activities for the site were organized into five operable units. Operable Units 1 through 4 are considered source operable units. OU5 encompasses all environmental media, both on and off FEMP property. OU5 has no operating history of its own but reflects the impacts of the four source operable units on the soil, surface water and sediment, groundwater, plants and animals in the affected area.

2.2 Operable Unit 5 Selected Remedy

The OU5 ROD was signed and effective on January 31, 1996. The selected remedy in the ROD provides for:

- the excavation of contaminated soils and sediment that exceeds ROD established final remediation levels;
- placement of excavated materials in an on-property above grade disposal facility subject to physical and chemical waste acceptance criteria;
- extraction and treatment of Great Miami Aquifer groundwater containing concentrations of contaminants above established or proposed maximum contaminant levels; and

- treatment of collected storm water and process wastewater generated through remedial activities to the extent necessary to ensure discharge limitations are met and final remediation levels in receiving waters are not exceeded.

8176

3.0 Description of Significant Differences and the Basis for the Change

3.1 Summary of Differences and Basis for Change

The final remediation levels for the Great Miami Aquifer adopted in the Operable Unit 5 ROD are designed to achieve Safe Drinking Water Act MCLs or, in the absence of MCLs, the 1 x 10^{-5} Incremental Lifetime Cancer Risk (ILCR) or 0.2 Hazard Quotient (HQ) values for individual constituents through the drinking water pathway (Operable Unit 5 ROD, page 9-33). At the time of ROD signature (January 31, 1996), EPA had not yet promulgated a final MCL for uranium in drinking water. The 20 µg/L proposed uranium MCL (Federal Register Volume 58, Number 138, pages 33050 and following, July 18, 1991) was therefore utilized as the representative uranium MCL in the ROD pending the outcome of EPA's actions in setting the final MCL. The final MCL for uranium in drinking water was recently established at 30 µg/L (National Primary Drinking Water Regulations, Federal Register, Volume 65, Number 236, pages 76707 and following, December 7, 2000) and the proposed MCL has been superceded. Therefore, the final remediation level for uranium in the Great Miami Aquifer is being changed from the proposed standard (20 µg/L) to the final standard (30 µg/L) to be consistent with EPA's December 7, 2000 rulemaking.

Both the proposed MCL and the final MCL compare favorably to the 1 x 10^{-5} ILCR value for uranium in the Great Miami Aquifer (27 µg/L) identified in the Operable Unit 5 Feasibility Study, page 4-19 (DOE, 1995). Adoption of the new final standard will not change the conclusions of the risk assessments used to support the remedy decision making process at the FEMP, and remains consistent with the fundamental groundwater remedial action objective of attaining Safe Drinking Water Act MCLs throughout the affected portions of the aquifer.

The treated effluent discharges to the Great Miami River were required to meet a monthly average of 20 µg/L (OU5 ROD, Section 9.1.5 "Treatment of Discharges"). Therefore, this monthly average concentration for uranium in discharges to the Great Miami River is also being changed to 30 µg/L to be consistent with the MCL. This change in the treated effluent discharges will remain protective as the concentration of uranium in the Great Miami River (outside the mixing zone) to ensure protection of human health under applicable use designations was determined to be 530 µg/L (the surface water FRL).

The OU5 ROD also established a maximum annual mass loading of uranium of 600 lbs. discharged to the Great Miami River. This mass-based limit will remain in effect and unchanged.

As identified, the primary basis for the change is the promulgated final MCL for uranium in drinking water. In promulgating the final MCL, U.S. EPA stated that:

- "EPA, thus, believes that the difference in kidney toxicity risk for exposures at 20 µg/L versus 30 µg/L is insignificant."
- "EPA believes that 30 µg/L is protective of the general population, including children and the elderly."
- "...[t]he Administrator has determined that an MCL of 30 µg/L maximizes the health risk reduction benefits at a cost justified by the benefits."

Making the change is consistent with DOE's Stewardship Role in the commitment of public funding to ensure that public funds are committed only to remedial activities which yield a commensurate environmental or human health related benefit. Making the change is consistent with U.S. EPA initiatives to align past decisions with the current state of knowledge (OSWER Directive 9200.0-22, "Superfund Reforms: Updating Remedy Decisions, US EPA, September 1996.)

3.2 Benefits Resulting from Change

The change has the potential of yielding significant cost savings while retaining the protectiveness of the overall groundwater remedy. Estimated benefits include:

- Preliminary estimates indicate the southern contamination plume is reduced by about 51 acres or a 27% reduction when using 30 µg/L as the final remediation level (in conjunction with recent design data).
- Preliminary estimates indicate a 30% reduction in the aquifer volume requiring remediation when the 30 µg/L uranium MCL is used.
- By increasing the aquifer cleanup level to 30 µg/L, savings will be realized because it will take less time to reach 30 µg/L than it will to reach 20 µg/L. This means less operating time for the pump and treat infrastructure required to remediate the aquifer. Groundwater modeling indicates it will take 4 to 5 years less time to reach 30 µg/L than it will to reach 20 µg/L.

4.0 STATUTORY DETERMINATIONS

The modified remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action and is cost effective. The modified remedy satisfies CERCLA 121which requires remedial actions attain a degree of cleanup that assures protection of human health and the environment.

5.0 PUBLIC PARTICIPATION

A draft ESD was submitted to both U.S. EPA and OEPA for review. Their comments were incorporated into the draft-final revision of the ESD. The draft final ESD was made available for public inspection. Per 40 CFR 300.435 (c)(2)(I) notification of the draft final ESD was published in a newspaper of general circulation including a brief description of the changes being considered. On July 11, 2001, notification of the availability of the draft final ESD document, for public review and comment, appeared in the Cincinnati

Enquirer, The Hamilton Journal, and the Harrison Press. A 30-day public comment period was announced in these notifications ending August 10, 2001. In addition to newspaper notification, post cards announcing this public review and comment period were mailed to 500 key Fernald stakeholders.

A formal public hearing on the proposed changes was requested by members of FRESH at the July 12, 2001 Fernald Citizens Advisory Board regular meeting. To accommodate this request, the public notice period was extended to August 31, 2001 and a public hearing scheduled for August 23, 2001. A notice of the extension of the public comment period and of the August 23, 2001 public hearing was published August 8, 2001 in the Cincinnati Enquirer, Hamilton Journal and Harrison Press.

The public hearing was held on August 23, 2001, at 7:00 pm, in the Alpha Building near the FEMP site. A presentation by DOE-FEMP on the proposed changes was made followed by a presentation by a representative of USEPA's Office of Drinking Water & Groundwater on the promulgation of the uranium final maximum contaminant level under the Safe Drinking Water Act. Following these presentations was a question and answer period. The formal comment period followed this question and answer period. A court reporter was present to record and prepare a transcript of the formal comment period.

As a result of this public comment period and public hearing the DOE-FEMP received comments from six individuals. Four of the commentors were generally against the changes outlined in this ESD while two commentors were generally in favor of the changes proposed. A responsiveness summary to all comments received has been prepared and is Attachment 1 to this final ESD. In addition, copies of the actual comments received and the transcript from the public hearing is included as Attachment 2 to this final ESD.

ATTACHMENT 1

RESPONSIVENESS SUMMARY TO
PUBLIC HEARING AND PUBLIC COMMENTS ON
THE EXPLANATION OF SIGNIFICANT DIFFERENCES FOR OPERABLE UNIT 5

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

This responsiveness summary contains responses to all comments received as a result of the public comment period and public hearing regarding the Operable Unit 5 (OU5) draft-final Explanation of Significant Differences (ESD) document dated July 2001.

There were a total of six commentors. Comments were received in written format via electronic mail and/or read at the August 23, 2001 public hearing; a transcript of which was prepared by Alaracity, Inc.

This summary addresses the comments in alphabetical order based on the commentor's last name. Individual comments are presented followed by DOE response. The commentor's comments have been numbered. Comments have been retyped (or manipulated using a word processor for those received electronically) and presented verbatim. A copy of the actual comments and transcript of the public hearing are included with this summary.

<u>Comments by Lou Bogar (read into the official transcript at the public hearing)</u>:

I've been a Ross resident for 15 years, as some of you know.

Since this isn't a scientific reading, I'm going to state my conclusion first: I strongly support a 30 microgram per liter limit for the aquifer at Fernald for the OU 5.

I have reviewed in detail the background documents presented by the US EPA which they, which supports their conclusions in the revised rule making. And there are three points that I'd like to make.

On the kidney toxicity, you go through the details of the numbers, there's at least a factor of 100, if not greater, on that number for kidney toxicity. Now, that's not unusual and probably acceptable but know that there is a degree of conservatism, which is quite common for these kinds of numbers.

In terms of the radiation effects, i.e. cancer, I'm talking now only about cancer mortality, EPA produces data on morbidity, also. Looking at table Roman VII-5 where they list as a function of picocuries per liter the risk for cancer mortality, either on an annual basis or a lifetime basis. Using the lifetime basis numbers, which were quoted tonight in the handout, I conclude that without exceeding the 10 to the minus four criteria, the range instead of the minus four, 10 to the minus six, without exceeding the 10 to the minus four criteria in risk, you could easily go to 59 micrograms per liter.

EPA in the background document, thirdly, gives the kind of pedestrian discussion of uranium, this equilibrium question. The ratio of U-234 to U-238, and that affects the activity of the uranium isotopes. As a nuclear engineer, any time I see numbers where the

U-234 exceeds the U-238 by any amount, that means to me you're talking about enriched uranium.

However, when you see that kind of number, then you get an isotopic analysis and you say, what is the U-235? In the Fernald situation, my experience has been that in the water, the isotopic composition of the uranium is very close to natural uranium, if not slightly depleted. That is, the U-235 and the U-238 correspond to what God put into the ground.

Now it is known, and has been known for over 40 years in the scientific world, that the ratio of U-234 to U-238 can vary widely. That shouldn't affect us at Fernald because the measurements made in water to judge the accuracy of the cleanup of the aquifer is based on mass. The measurement is made using a technique which measures the mass of uranium. So any arguments about this equilibrium should simply go away.

I'd like to point out in passing the, since 1989, the State of California has enforced a 35 microgram per liter uranium limit. That's because they know that the U-234/U-238 ratio is, in fact, 1.75 -not .675 as at Fernald. They've done the right thing. Maybe for the wrong reasons, but at least know that there are other places with 35 micrograms per liter have been accepted.

The real question is, then, what are the benefits? And I think there are clear benefits that we should all look at real hard and see how much better it would be for the Fernald community to accept a higher uranium number in order to clean up the aquifer faster and cheaper.

Thank you.

Response:

DOE agrees with the comment concerning the adoption of the 30 ppb standard. DOE believes the 30 ppb standard will be protective of human health and the environment.

DOE does not take a position on the findings and interpretations presented by Mr. Bogar. The process of promulgating a Safe Drinking Water Act Maximum Contaminant Level is separate from USEPA administering the Superfund program. DOE has pursued an MCL based clean-up believing it is protective of human health and the environment and is simply adopting the promulgated standard for uranium in drinking water as the clean-up level.

Comments by Lisa Crawford (read into the official transcript at the public hearing):

(Comment 1) My name's Lisa Crawford. I don't even know where to start. I guess my official comments are I'm still nervous and a little worried about changing this. I don't feel like we've had -- I don't feel like we were part of the process in changing the proposed 20 to the official 30. I feel like we were left out of that, and we didn't know it was going on and happening.

Response to L. Crawford Comment No. 1:

The process of promulgating a Safe Drinking Water Act Maximum Contaminant Level is separate from USEPA administering the Superfund program. DOE has pursued an MCL based clean-up believing it is protective of human health and the environment and is simply adopting the promulgated standard for uranium in drinking water as the clean-up level. Adoption of MCL's promulgated under the SDWA is consistent with the level of cleanup standards defined in CERCLA (42 USC 9621)

(Comment 2) I'm concerned with the possible adverse health effects. You know, the notes I took say we go from 5 to 7.5. That's classified as a slight risk. That's a 25 percent increase to me, and that's not a slight risk. And if it's your child or my child or my neighbor's child, it's even more of a concern for us. You know, somebody earlier talked about two lives. Two lives. That could be my kid or my husband, and it worries me. As somebody who lived in a house, who drank from a well that had 190 micrograms per liter in it, you know, 20 sounds a heck of a lot better than being at 30.

Response to L. Crawford Comment No. 2:

As demonstrated during USEPA's presentation during the August 23, 2001 public hearing, the change in risk to human health is extremely small. In promulgating the 30 ppb standard USEPA determined that is protective of sensitive populations and takes into account both kidney toxicity and cancer from uranium exposure. DOE has pursued an MCL based clean-up believing it is protective of human health and the environment and is simply adopting the promulgated standard for uranium in drinking water as the clean-up level.

(Comment 3) Now, this is part of the ROD we went through, part of the commitment that was made to this community. And I just don't feel like we've been given enough evidence or data that convinces me we should go from 20 to 30. Saving money is fine and dandy, but as I said earlier, you know, saving money and saving lives, I would have to choose saving lives.

Response to L. Crawford Comment No. 3:

DOE adopted the proposed 20-ppb standard for the groundwater uranium FRL in the OU5 ROD as a "To-Be-Considered" standard. As documented in the responsiveness summary to the Operable Unit 5 ROD, DOE and the EPA's were in agreement that this standard would be potentially reevaluated once a final standard was promulgated. Further, it is within DOE's stewardship role to ensure that public funds are committed only to remedial actions with a commensurate environmental benefit. DOE does not agree that a formal

hard commitment was made to the 20 ppb. DOE believes the adoption of the 30 ppb standard is protective of human health and the environment and is consistent with DOE's stewardship role in committing public funds for remediation.

(Comment 4) And I would also have to choose that when it's all said and done, I don't want a half-baked cleanup. Working on this issue for 17 years -- when we're done, we want to say we're done. And we want it to be cleaned up properly, and we want it to be done right so 50 years from now, our kids don't have to turn around and fight the same battles that we fought over the last 17 and a half years to get where we think we need it to be. Thank you.

Response to L. Crawford Comment No. 4:

DOE agrees with the comment. DOE is committed to the remediation of the FEMP in accordance with CERCLA and the NCP. The CERCLA required five-year review process will ensure that the remedy so implemented will remain protective of human health and the environment..

Comments by Vicky Dastillung (received as an attachment to an electronic mail message):

Comments on the Explanation of Significant Differences for OU 5 pertaining to the change in the MCL for uranium in drinking water from 20 to 30 parts per billion:
(Comment 1) If the change is made, this must not start a trend toward changing other cleanup levels and making the community accept an inferior cleanup to save money.

Response to V. Dastillung Comment No. 1:

The commentor is reminded that DOE has only petitioned for changing the uranium groundwater cleanup level and the uranium discharge standard and has made no effort to change other uranium standards (OSDF WAC or soils FRL's) that were, to a degree based on the groundwater cleanup level of 20 ppb. However, the cleanup progress and associated evaluations of future Applicable or Relevant and Appropriate Requirements (ARARs) will be conducted in accordance with the CERCLA required five-year review process. DOE is unaware of any other plans to change cleanup standards but reserves the right to consider changes in the future should such changes be justified based first on the continued assurance of protection to human health and the environment and subsequently cost.

(Comment 2) When the site cleanup is considered complete, the AWWT should still be kept in cold standby for at least 5 years, so that it can be used again if a rebound effect manifests itself.

Response to V. Dastillung Comment No. 2:

The response of the aquifer will be monitored in accordance with the CERCLA required five-year review process. The need for further remediation of the aquifer will be determined through this process and required treatment will be provided should it be needed to meet any applicable discharge limitations.

(Comment 3) Question: If more studies are done in the future and the level goes back down after the cleanup is considered "complete", will the EPA require the DOE to start pumping again?

Response to V. Dastillung Comment No. 3:

The cleanup progress and evaluations of ARARs will be conducted in accordance with the CERCLA required five-year review process. The need for further remediation of the aquifer will be determined through this process.

(Comment 4) Because the background level for uranium in water for our area is about 1 ppb, the community could have pushed for a cleanup that would have been all the way back to background. 20 ppb was a compromise that considered risk and technology constraints. The ALARA principle of "as low as reasonably achievable" should be followed for the cleanup at Fernald. Science is not able to determine the effects of the combination of all of the chemical and radiological exposures that humans are now exposed to in their environment. In order to reduce the effects of these multiple concurrent exposures we should strive to keep the exposures of each substance "as low as reasonably achievable".

Response to V. Dastillung Comment No. 4:

The ALARA principle, as it pertains to effluent discharges, was included as a To-Be-Considered requirement in the OU5 ROD (B.3-12) as a result of DOE Order 5820.2A. Specifically, 5820.2A provides as a performance objective that "reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment ALARA." Therefore, with respect to the FEMP's wastewater discharges to the Great Miami River, DOE believes that within the context of the health-based standard for uranium in surface water identified in the Operable Unit 5 ROD, (530 ppb was developed in the Feasibility Study as the risk-based surface water FRL), restricting discharges to the recently promulgated MCL, 30 ppb, as a treatment objective is consistent with the ALARA objective.

During the remedial investigation/feasibility study process the FEMP groundwater remedy was selected to be an MCL-based cleanup due to the human health protectiveness of Safe Drinking Water Act MCL's. The selection was based on stakeholder input at that time. The selection of the proposed MCL, 20 ppb total uranium, in the Operable Unit 5 Record of Decision was, therefore, not made based on a compromise of cost and risk. DOE believes that it would be inappropriate to now use the concept of an ALARA performance objective to justify maintaining the 20 ppb uranium concentration as the aquifer cleanup standard. Separately, the U.S. EPA considered principles similar to DOE's ALARA in establishing the final MCL, noting that 30 ppb is still well within the boundary of acceptable risk.

The Comprehensive Response Action Risk Evaluation (CRARE) (Appendix H of the Operable Unit 5 Feasibility Study) performed risk calculations on the remedial alternatives for three target receptors (undeveloped park user, off-site resident farmer, off-site resident farm child). Calculated post-remedial risks to these modeled receptors were evaluated

using projected residual concentrations of numerous contaminants of concern. As a result of this assessment it was determined that the site-wide remedy would be protective under the multiple constituent/multiple pathway scenario faced at Fernald.

As demonstrated during USEPA's presentation during the August 23, 2001 public hearing, the change in risk to human health from changing the uranium MCL from 20 ppb to 30 ppb is extremely small. In promulgating the 30 ppb standard USEPA determined that is protective of sensitive populations and takes into account both kidney toxicity and cancer from uranium exposure. Adopting the 30 ppb standard does not result in a significant increase in risk from uranium specifically nor does it alter the conclusion of the CRARE that the site-wide remedy would not result in unacceptable health hazards or Incremental Lifetime Cancer Risk to the three target receptors.

DOE has pursued an MCL based clean-up believing it is protective of human health and the environment and is simply adopting the promulgated standard for uranium in drinking water as the clean-up level.

Comments by Arjun Makhijani (hard copy received at the public hearing and read into the official transcript by Lisa Crawford). The comments were later amended with the submission of a revised hard copy on August 30, 2001. The difference between the original and revised comments was only one sentence which is underlined and italicized below.

(Comment 1) In a Record of Decision (ROD) for its Fernald, Ohio site, and therefore in its agreement with the community, the DOE (sic) agreed to remediate the groundwater at Fernald to a standard of 20 micrograms per liter. DOE decisions on clean up are being taken on a site by site basis because the DOE derailed the process of setting national clean up standards after having agreed that it would work with the EPA to create such national standards and abide by them in its clean up operations. The DOE claimed that national standards were not needed because the remediation standards were best created on a site by site basis in a manner appropriate for each site.

Response to A. Makhijani Comment No. 1:

The Operable Unit 5 Record of Decision is a decision document that is based on site specific investigations, cleanup goals and capabilities. This document, as with other FEMP CERCLA decision documents, is site-specific and should not be construed as establishing policy for the DOE complex as a whole. DOE-FEMP and its contractors have not been involved in the national discussions which have taken place with respect to establishing national cleanup standards. In adopting the Safe Drinking Water Act MCLs, the FEMP demonstrated the preference for using recognized, health protective cleanup standards in setting the final remediation levels for the restoration of the Great Miami Aquifer.

(Comment 2) Having spurned national standards in favor of a site by site approach, the DOE is now attempting to use an EPA national standard to relax local clean up standards. This is objectionable as to process, principle, and substance. The DOE opted for local, site by site standards and it should at least stick by the commitments that it made (sic). If the DOE chooses to use a safe drinking water national standard for uranium at Fernald, then it should, first of all, make an across the board and unequivocal commitment to all safe

drinking water standards now and for the infinite (sic) future for all clean up at all DOE sites. Until the DOE makes this commitment, its use of national standards to relax local commitments will lack integrity and smack of opportunism. If the DOE proposes to use the EPA's (sic) national safe drinking water standard for uranium for the Fernald site, the Institute for Energy and Environmental Research will regard this a de facto official commitment to all aspects of the safe drinking water standard for all remediation across the nuclear weapons complex.

Response to A. Makhijani Comment No. 2:

The DOE is committed to the remedation of the FEMP site consistent with CERCLA and the NCP. At the time of the Operable Unit 5 Record of Decision, DOE in consultation with our stakeholders, committed to an MCL based groundwater cleanup. DOE adopted the proposed 20-ppb standard in the OU5 ROD as a "To-Be-Considered" standard. As documented in the responsiveness summary to the Operable Unit 5 ROD, DOE and the EPA's were in agreement that this standard would be potentially reevaluated once a final standard was promulgated.

(Comment 3) At the time of the ROD, there was no national standard for uranium in national EPA safe drinking water regulations. But there were standards for other radionuclides. The DOE has not agreed to respect these safe drinking water standards as a matter of national principle (sic). But ~~it is appealing to~~ ***the DOE is appealing to the*** Fernald community to relax the previously agreed limit for uranium because of a (sic) new EPA limit of 30 micrograms per liter for uranium. This EPA standard is based on the toxicity of uranium as a heavy metal rather than its effect as a radionuclide. It represents a 50 percent relaxation of the previously agreed DOE limit of 20 micrograms per liter.

The EPA national standard and hence the proposed DOE relaxation implicitly ignores the radiation doses from the uranium. If we examine the various limits from a radioactivity point of view, we find that EPA uranium limit amounts to 20 picocuries per liter for natural uranium, and more in case the uranium is enriched. This is in excess of its standard for transuranic alpha-emitting radionuclides in the Safe Drinking Water rules, which is 15 picocuries per liter. The Fernald ROD limit of 20 micrograms per liter corresponds to about 13.4 picocuries per liter. The dose to the bone surface from drinking such water regularly would be about 35 millirem per year. This excludes the radiation dose from eating food grown using this water for irrigation. A fifty percent increase in this dose is completely unwarranted.

Response to A. Makhijani Comment No. 3:

As summarized in the December 7, 2000 rule making promulgating the 30 ppb MCL and as presented by USEPA at the August 23, 2001 Public Hearing on this ESD, USEPA has accounted for both the kidney toxicity of uranium metal as well as cancer effects from radiation for uranium. The process of promulgating a drinking water standard is separate from USEPA administering the Superfund program. Adoption of MCL's promulgated under the SDWA is consistent with cleanup standards defined in CERCLA (42 USC 9621).

(Comment 4) The people who lives near the Fernald plant have been subjected to sufficient risk as a result of historical exposure to radiation. All future exposure to current and future generations in the area should be minimized as a matter of simple justice to the community. In proposing to relax previously agreed rules, the DOE is violating a trust and, in effect, thumbing its nose at the past and present sacrifices of the people of the region.

The EPA standard of 30 micrograms per liter is a maximum upper limit for water contamination and not some desirable level to be achieved. The DOE should be (sic) bound by (sic) ALARA, by the ALARA rule that is the radiation protection rule that requires exposures to be kept 'as low as reasonably (sic) achievable.' Presumably, the DOE settled upon a limit of 20 micrograms per liter in its ROD because it was achievable and reasonable, and, in that sense, a local ALARA limit. A clean up maximum limit of 20 micrograms per liter of uranium would meet the EPA national standard. There is no logical reason to relax it except to save money.

Response to A. Makhijani Comment No. 4:

The ALARA principle, as it pertains to effluent discharges, was included as a To-Be-Considered requirement in the OU5 ROD (B.3-12) as a result of DOE Order 5820.2A. Specifically, 5820.2A provides as a performance objective that "reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment ALARA." Therefore, with respect to the FEMP's wastewater discharges to the Great Miami River, DOE believes that within the context of the health-based standard for uranium in surface water identified in the Operable Unit 5 ROD, (530 ppb was developed in the Feasibility Study as the risk-based surface water FRL), restricting discharges to the recently promulgated MCL, 30 ppb, as a treatment objective is consistent with the ALARA objective.

During the remedial investigation/feasibility study process the FEMP groundwater remedy was selected to be an MCL-based cleanup due to the human health protectiveness of Safe Drinking Water Act MCL's. The selection was based on stakeholder input at that time. If one now were to consider the application of an ALARA performance objective in the development of a groundwater cleanup level, the attainment of SDWA MCL's could be considered reasonable given cost, risk, and technology. Alternatively, if one were to consider maintaining the proposed MCL for uranium as the FRL as "an ALARA objective" DOE maintains that it would not be an appropriate application of ALARA. This argument is supported because the U.S. EPA considered ALARA in establishing the final MCL, noting that 30 ppb is still well within the boundary of acceptable risk. Ultimately, if required, an even stronger argument against such as application of ALARA would rest with the "unreasonableness" of maintaining the 20 ppb FRL for aquifer cleanup at the FEMP given the significant cost difference between attaining 20 ppb as compared to 30 ppb combined with the imperceptible risk reduction gained. As a result of the Feasibility Study for Operable Unit 5, DOE, EPA and other stakeholders agreed that the MCL-based groundwater cleanup is as low as reasonably achievable.

DOE adopted the proposed 20-ppb standard for the groundwater uranium FRL in the OU5 ROD as a "To-Be-Considered" standard. As documented in the responsiveness summary to the Operable Unit 5 ROD, DOE and the EPA's were in agreement that this standard would be potentially reevaluated once a final standard was promulgated. Further, it is

within DOE's stewardship role to ensure that public funds are committed only to remedial actions with a commensurate environmental benefit. DOE does not agree that a formal hard commitment was made to the 20 ppb. DOE believes the adoption of the 30 ppb standard is protective of human health and the environment and is consistent with DOE's stewardship role in committing public funds for remediation.

(Comment 5) If the DOE can argue for vast budgets for a program such as the National Ignition Facility (over $15 billion for construction and operation over its lifetime), so nuclear weapons physicists can have interesting work to do in the post-Cold War era, then surely it can find the modest additional resources needed to fulfill the commitment on groundwater it has already made to the people living around the Fernald facility. To fail to do so would be to repeat the historical injustices of the Cold War, when the health of communities was put far below nuclear weapons production. Having said mea culpa many times over the last decade about its skewed Cold War priorities, and having promised that health will not fall into second place behind production and design and research, the DOE now seems set to renege on that promise. The proposed relaxation of the groundwater rule at Fernald is one more piece of evidence leading to such a conclusion. The DOE should scrap the proposal to relax the groundwater maximum contaminant limit for uranium to 30 micrograms per liter for Fernald and find the resources to meet its prior commitments to the community.

Response to A. Makhijani Comment No. 5:

DOE is committed to attempting to secure the necessary funding for the remediation and restoration activities embodied in the various Record of Decision documents and other negotiated legal agreements at Fernald. By adopting the 30 ppb MCL described in the ESD, DOE believes it is continuing to fulfill its obligation under the OU5 ROD, as well as with CERCLA and the NCP, as DOE has not wavered from the MCL-based cleanup established in the OU5 ROD.

Comments by Gene Willeke (received as an electronic mail message):

I strongly support the proposed ESD, which provides for increasing the discharge standard for uranium and the final remediation level for uranium in the Great Miami Aquifer from 20 ug/l to 30 ug/l

Response:

DOE agrees with the comment.

Comments by Edwa Yocum (received as a hard copy the majority of which was read into the official transcript):

(Comment 1) DOE's letter requesting the ESD only addresses the benefits resulting from the change as a significant cost saving, and does not adequately address the health benefit to the Fernald community.

Again as in the past the Fernald residents are faced with a decision of cost versus health.

The health information from EPA believes the difference in kidney toxicity risk for exposures at 20 ppb versus 30 ppb is insignificant. EPA believes that 30 ppb is protective of the general population.

- **There is not enough scientific literature to make this termination (sic).**
- **What health data is available used animals as the study group.**
- **EPA is changing the standard as a cost saving for communities with public water system (sic).**

Response to E. Yocum Comment No. 1:

The process of promulgating a drinking water standard is separate from USEPA administering the Superfund program. Adoption of MCL's promulgated under the Safe Drinking Water Act is consistent with the cleanup standards defined in CERCLA (42 USC 9621).

(Comment 2) The residents of the Fernald area are not the general population. To this day there are families using ground water as their main source of drinking water.

Response to E. Yocum Comment No. 2:

All citizens within the area affected by the contaminated groundwater have been offered the use of the public water system that DOE has assisted in providing. DOE is aware of instances where citizens have refused this water supply however; DOE is in no position to compel that they use this supply.

The 30-ppb standard is deemed protective to human health and the environment. The OU5 ROD would have adopted the 30-ppb standard for uranium if this standard had been promulgated at the time of ROD signature.

(Comment 3) Here is a list of preliminary health studies relating to adverse health effects from contaminated ground water around the Fernald site.

The information may help change Fernald DOE's request to have 30 ppb for (sic) clean up level for (sic) OU5 ROD.

The information received from the CDC Dose Reconstruction Project – Vol. 1, Task 6. Cumulative uranium concentration to the kidneys. Possible (sic) could have mild health effect to those living in the 2 mile area.

The ATSDR Fernald Public Health Assessment yr. 2000 suggest that the residents have an elevated kidney burden of uranium from past exposures, primarily from consumption of contaminated water.

The Fernald Medical Monitoring Programs cancer Incidence study (1999). Conclusion 1) Urinary Systems Cancer incidence was greater than expected. 2) Kidney/ Renal, Pelvis Cancer incidence was greater than expected.

ATSDR recent study "Prevalence of adverse Health outcomes in residents of the area surrounding the Fernald Site. Conclusion: of this study an excess in all kidney diseases,

all bladder disease, kidney stones. Excess in chronic nephritis, urethral stricture, and hematuria.

As a resident of the Fernald area I have chosen my health, and the health of my communities over the cost savings.

Response to E. Yocum Comment No. 3:

DOE is aware of these health studies and is sensitive to the health concerns of the community surrounding Fernald. DOE assisted in making available to all citizens within the affected area of the contaminated groundwater the use of the public water under CERCLA Removal Action No. 3

The process of promulgating a drinking water standard is separate from USEPA administering the Superfund program. Adoption of MCL's promulgated under the Safe Drinking Water Act is consistent with the cleanup standards defined in CERCLA (42 USC 9621). This MCL based restoration of the aquifer was the basis of agreement with Fernald's stakeholders. DOE believes that with the available public water supply and the restoration of the aquifer to SDWA MCL's that human health and the environment will be protected.

(Comment 4) I must live in Crosby Township and feel confident that during remediation and after the site is closed, our most precious resource the aquifer and the groundwater is safe for consumption.

Response to E. Yocum Comment No. 4:

DOE agrees with the comment. DOE is committed to the remediation of the FEMP in accordance with CERCLA and the NCP. The CERCLA required five-year review process will ensure that the remedy so implemented will remain protective of human health and the environment.

(Comment 5) Cost savings issue only shrinks the size of off-site/on-site contamination of groundwater and lessen DOE's accountability to clean up the Fernald site.

I am asking Fernald DOE to continue using 20 ppb. (sic) as the final maximum contaminant level of the operable Unit 5 ROD.

Thank you

Response to E. Yocum Comment No. 5:

DOE is committed to the remediation of the FEMP in accordance with CERCLA and the NCP. DOE adopted the proposed 20-ppb standard in the OU5 ROD as a "To-Be-Considered" standard. As documented in the responsiveness summary to the Operable Unit 5 ROD, DOE and the EPA's were in agreement that this standard would be potentially reevaluated once a final standard was promulgated. Further, it is within DOE's stewardship role to ensure that public funds are committed on a priority basis only to remedial actions with a commensurate environmental benefit.

ATTACHMENT 2

PUBLIC COMMENTS AND TRANSCRIPT OF PUBLIC HEARING
EXPLANATION OF SIGNIFICANT DIFFERENCES FOR OPERABLE UNIT 5

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

From: Gene Willeke [mailto:WILLEKGE@muohio.edu]
Sent: Friday, July 13, 2001 8:56 AM
To: gary.stegner@fernald.gov
Cc: djsarno@theperspectivesgroup.com
Subject: OU5 ESD

I strongly support the proposed ESD, which provides for increasing the discharge standard for uranium and the final remediation level for uranium in the Great Miami Aquifer from 20 ug/l to 30 ug/l

Gene E. Willeke, Ph.D., P.E.
Director
Institute of Environmental Sciences
Miami University
Oxford, OH 45056
Phone: 513-529-5811
Fax: 513-529-5814

Comments on the Explanation of Significant Differences for OU 5 pertaining to the change in the MCL for uranium in drinking water from 20 to 30 parts per billion:

- If the change is made, this must not start a trend toward changing other cleanup levels and making the community accept an inferior cleanup to save money.

- When the site cleanup is considered complete, the AWWT should still be kept in cold standby for at least 5 years, so that it can be used again if a rebound effect manifests itself.

- Question: If more studies are done in the future and the level goes back down after the cleanup is considered "complete", will the EPA require the DOE to start pumping again?

- Because the background level for uranium in water for our area is about 1 ppb, the community could have pushed for a cleanup that would have been all the way back to background. 20 ppb was a compromise that considered risk and technology constraints. The ALARA principle of "as low as reasonably achievable" should be followed for the cleanup at Fernald. Science is not able to determine the effects of the combination of all of the chemical and radiological exposures that humans are now exposed to in their environment. In order to reduce the effects of these multiple concurrent exposures we should strive to keep the exposures of each substance "as low as reasonably achievable".

Submitted by
Vicky Dastillung
[redacted]

August 23, 2001

Johnny Reising
Fernald Remedial Action Project Manager
U.S. Department of Energy
Fernald Environmental Management Project
P.O. Box 538705
Cincinnati, OH 45253-8705

Ref:. OU5 ROD - Groundwater clean-up level for Uranium
20 ppb verses 30ppb. Comment on ESD

DOE's letter requesting the ESD, only address the benefits resulting from the change as a significant cost saving, and does not adequately address the health benefit to the Fernald community.

Again as in the past the Fernald residents are faced with the decision COST verses HEALTH.

The health information from EPA believes the difference in kidney toxicity risk for exposures at 20ppb versus 30 ppb is insignificant. EPA believes that 30ppb is protective of the general population.

* There is not enough scientific literature to make this termination.
* What health data is available used animals as the study group.
* EPA is changing the standard as a cost saving for communities with public water system

The Residents of the Fernald area are not the general population. To this day there are families using ground water as their main source of drinking water.

Here is a list of preliminary health studies relating to adverse health effects from contaminated ground water around the Fernald site.

The information may help change Fernald DOE 's request to have 30ppb for clean up level for OU5 ROD.

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The Fernald Medical Monitoring Program cancer Incidence study (1999).
Conclusion 1) Urinary System Cancer incidence was greater than expected.
2) Kidney/ Renal Pelvis Cancer incidence was greater than expected. ((SIR).
ATSDR recent study "Prevalence of adverse Health outcomes in residents of the area surrounding the Fernald site.
Conclusion: of this study an excess in all kidney disease, all bladder

disease, kidney stones. Excess in chronic nephritis, urethral stricture, hematuria.

As a Resident of the Fernald area I have chosen my Health, and the health of my communities over the cost saving.

I must live in Crosby Township and feel confident that during remediation and after the site is closed, our most precious resource the aquifer and the groundwater is safe for consumption.

Cost savings issue only shrinks the size of off site/on site contamination of groundwater and lessen DOE's accountability to clean up the Fernald site.

I am asking Fernald DOE to continue using 20ppb. as the final maximum contaminant level of the operable Unit 5 ROD.

Thank you

Edwa Yocum

Edwa Yocum

[redacted]

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Thank you

Edwa Yocum

Edwa Yocum

[redacted]

ieer

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8176

Comments of the Institute for Energy and Environmental Research on the proposed revision of the Fernald Record of Decision regarding the maximum allowable amount of uranium in water

Arjun Makhijani
22 August 2001

In a Record of Decision (ROD) for its Fernald, Ohio site, and therefore in its agreement with the community, the Department of Energy (DOE) agreed to remediate the groundwater at Fernald to a standard of 20 micrograms per liter. DOE decisions on clean up are being taken on a site by site basis because the DOE derailed the process of setting national clean up standards after having agreed that it would work with the EPA to create such national standards and abide by them in its clean up operations. The DOE claimed that national standards were not needed because the remediation standards were best created on a site by site basis in a manner appropriate for each site.

Having spurned national standards in favor of a site by site approach, the DOE is now attempting to use an EPA national standard to relax local clean up standards. This is objectionable as to process, principle, and substance. The DOE opted for local, site by site standards and it should at least stick by the commitments that it has made. If the DOE chooses to use a safe drinking water national standard for uranium at Fernald, then it should, first of all, make an across the board and unequivocal commitment to all safe drinking water standards now and for the indefinite future for all clean up at all DOE sites. Until the DOE makes this commitment, its use of national standards to relax local commitments will lack integrity and smack of opportunism. If the DOE proposes to use the Environmental Protection Agency's (EPA) national safe drinking water standard for uranium for the Fernald site, the Institute for Energy and Environmental Research will regard this as a de facto official commitment to all aspects of the safe drinking water standard for all remediation across the nuclear weapons complex.

At the time of the ROD, there was no national standard for uranium in national EPA safe drinking water regulations. But there were standards for other radionuclides. The DOE has not agreed to respect these safe drinking water standards as a matter of national practice. But it is appealing to the Fernald community to relax the previously agreed limit for uranium because of the new EPA limit of 30 micrograms per liter for uranium. This EPA standard is based on the toxicity of uranium as a heavy metal rather than its effect as a radionuclide. It represents a 50 percent relaxation of the previously agreed DOE limit of 20 micrograms per liter.

The EPA national standard and hence the proposed DOE relaxation implicitly ignores the radiation

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doses from the uranium. If we examine the various limits from a radioactivity point of view, we find that EPA uranium limit amounts to 20 picocuries per liter for natural uranium, and more in case the uranium is enriched. This is in excess of its standard for transuranic alpha-emitting radionuclides in the Safe Drinking Water rules, which is 15 picocuries per liter. The Fernald ROD limit of 20 micrograms per liter corresponds to about 13.4 picocuries per liter. The dose to the bone surface from drinking such water regularly would be about 35 millirem per year. This excludes the radiation dose from eating food grown using this water for irrigation. A fifty percent increase in this dose is completely unwarranted.

The people who live near the Fernald plant have been subjected to sufficient risk as a result of historical exposure to radiation. All future exposure to current and future generations in the area should be minimized as a matter of simple justice to the community. In proposing to relax previously agreed rules, the DOE is violating a trust and, in effect, thumbing its nose at the past and present sacrifices of the people of the region.

The EPA standard of 30 micrograms per liter is a maximum upper limit for water contamination and not some desirable level to be achieved. The DOE should still be bound by the ALARA rule that is the radiation protection rule that requires exposures to be kept "as low as reasonable achievable." Presumably, the DOE settled upon a limit of 20 micrograms per liter in its ROD because it was achievable and reasonable, and, in that sense, a local ALARA limit. A clean up maximum limit of 20 micrograms per liter of uranium would meet the EPA national standard. There is no logical reason to relax it except to save money.

If the DOE can argue for vast budgets for a program such as the National Ignition Facility (over $15 billion for construction and operation over its lifetime), so nuclear weapons physicists can have interesting work to do in the post-Cold War era, then surely it can find the modest additional resources needed to fulfill the commitment on groundwater it has already made to the people living around its Fernald facility. To fail to do so would be to repeat the historical injustices of the Cold War, when the health of communities was put far below nuclear weapons production. Having said mea culpa many times over the last decade about its skewed Cold War priorities, and having promised that health will not fall into second place behind production and design and research, the DOE now seems set to renege on that promise. The proposed relaxation of the groundwater rule at Fernald is one more piece of evidence leading to such a conclusion. The DOE should scrap the proposal to relax the groundwater maximum contaminant limit for uranium to 30 micrograms per liter for Fernald and find the resources to meet its prior commitments to the community.

8176

PUBLIC HEARING ON THE EXPLANATION OF SIGNIFICANT DIFFERENCES FOR OPERABLE UNIT 5

- - -

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

- - -

Thursday, August 23, 2001

ALACRITY
6531 Silver Skate Drive
Liberty Township, Ohio 45044
(513) 759-0739

I N D E X

	Page
Opening Comments:	
Mr. Gary Stegner,	
DOE Public Affairs	3
Comments in Formal Comment Period:	
Fax of Arjun Makhijani, Dated 22 August 2001 from the Institute for Energy and Environmental Research (attached)	
Read by Ms. Lisa Crawford	5
Ms. Crawford	12
Ms. Edwina Yocum	14
Mr. Louis Bogar	16
Closing Comments:	
Mr. Stegner	20

(The Public Hearing on the Explanation of Significant Differences for Operable Unit 5 was called to order at 7:05 p.m., at the Alpha Building, Classroom D, 10967 Hamilton-Cleves Highway, Harrison, Ohio 45030.)

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(9:10 p.m. after a recess was taken from the first session of the Public Hearing.)

MR. STEGNER: Let's go ahead and get started. Now we have the Formal Public Comment period.

What we ask you to do is if you do want to have a comment on the record, use the microphone, if you don't mind, state your name clearly for the record, address if you want.

Again, I want to remind you: You do not have to make your comments verbally here tonight. If you can have them to the DOE, to me, by August 31st -- you can

1 provide them to me this evening if you
2 want them for the record -- however you
3 want to handle that.
4 But right now we have two people who
5 have indicated they do want to speak.
6 First is Werner. Is Werner still here?
7 Okay. And now we have -- Lou?
8 MR. BOGAR: I didn't fill out a
9 sheet.
10 MR. STEGNER: You don't have to.
11 MR. BOGAR: Okay.
12 MR. STEGNER: What I will do is, the
13 people who did, we'll take them first.
14 And then anybody else, we'll allow them
15 to go.
16 Lisa, you've indicated that you
17 wanted to, so you go.
18 MS. CRAWFORD: Well, I actually have
19 one that I'm going to hand to you --
20 MR. STEGNER: That's fine.
21 MS. CRAWFORD: -- That I was asked
22 to read this evening on behalf of this
23 person.
24 MR. STEGNER: Fine.
25 MS. CRAWFORD: And it's a faxed

1 copy, so it's all I have.
2 MR. STEGNER: All right.
3 MS. CRAWFORD: I don't have a copy
4 machine at work. Sorry. (Reading)
5 "Comments of the Institute for
6 Energy and Environmental Research on
7 the proposed revision of the Fernald
8 Record of Decision regarding the
9 maximal, maximum allowable amount of
10 uranium in water."
11 These comments were submitted by Arjun
12 Makhijani. (Reading)
13 "In a Record of Decision (ROD) for
14 its Fernald, Ohio site, and
15 therefore in its agreement with the
16 community, the DOE (sic) agreed to
17 remediate the groundwater at Fernald
18 to a standard of 20 micrograms per
19 liter. DOE decisions on clean up
20 are being taken on a site by site
21 basis because the DOE derailed the
22 process of setting national clean up
23 standards after having agreed that
24 it would work with the EPA to create
25 such national standards and abide by

1 them in its clean up operations.
2 The DOE claimed that national
3 standards were not needed because
4 the remediation standards were best
5 created on a site by site basis in a
6 manner appropriate for each site.
7 "Having spurned national standards
8 in favor of a site by site approach,
9 the DOE is now attempting to use an
10 EPA national standard to relax local
11 clean up standards. This is
12 objectionable as to process,
13 principle, and substance. The DOE
14 opted for local, site by site
15 standards and it should at least
16 stick by the commitments that it
17 made (sic). If the DOE chooses to
18 use a safe drinking water national
19 standard for uranium at Fernald,
20 then it should, first of all, make
21 an across the board and unequivocal
22 commitment to all safe drinking
23 water standards now and for the
24 infinite (sic) future for all clean
25 up at all DOE sites. Until the DOE

1 makes this commitment, its use of
2 national standards to relax local
3 commitments will lack integrity and
4 smack of opportunism. If the DOE
5 proposes to use the EPA's (sic)
6 national safe drinking water
7 standard for uranium for the Fernald
8 site, the Institute for Energy and
9 Environmental Research will regard
10 this a de facto official commitment
11 to all aspects of the safe drinking
12 water standard for all remediation
13 across the nuclear weapons complex.
14 "At the time of the ROD, there
15 was no national standard for uranium
16 in national EPA safe drinking water
17 regulations. But there were
18 standards for other radionuclides.
19 The DOE has not agreed to respect
20 these safe drinking water standards
21 as a matter of national principle
22 (sic). But it is appealing to the
23 Fernald community to relax the
24 previously agreed limit for uranium
25 because of a (sic) new EPA limit of

1 30 micrograms per liter for uranium.
2 This EPA standard is based on the
3 toxicity of uranium as a heavy metal
4 rather than its effect as a
5 radionuclide. It represents a 50
6 percent relaxation of the previously
7 agreed DOE limit of 20 micrograms
8 per liter.
9 "The EPA national standard and
10 hence the proposed DOE relaxation
11 implicitly ignores the radiation
12 doses from the uranium. If we
13 examine the various limits from a
14 radioactivity point of view, we find
15 that EPA uranium limit amounts to 20
16 picocuries per liter for natural
17 uranium, and more in case the
18 uranium is enriched. This is in
19 excess of its standard for
20 transuranic alpha-emitting
21 radionuclides in the Safe Drinking
22 Water rules, which is 15 picocuries
23 per liter. The Fernald ROD limit of
24 20 micrograms per liter corresponds
25 to about 13.4 picocuries per liter.

1 The dose to the bone surface from
2 drinking such water regularly would
3 be about 35 millirem per year. This
4 excludes the radiation dose from
5 eating food grown using this water
6 for irrigation. A fifty percent
7 increase in this dose is completely
8 unwarranted.
9 "The people who lives near the
10 Fernald plant have been subjected to
11 sufficient risk as a result of
12 historical exposure to radiation.
13 All future exposure to current and
14 future generations in the area
15 should be minimized as a matter of
16 simple justice to the community. In
17 proposing to relax previously agreed
18 rules, the DOE is violating a trust
19 and, in effect, thumbing its nose at
20 the past and present sacrifices of
21 the people of the region.
22 "The EPA standard of 30
23 micrograms per liter is a maximum
24 upper limit for water contamination
25 and not some desirable level to be

1 achieved. The DOE should be (sic)
2 bound by (sic) ALARA, by the ALARA
3 rule that is the radiation
4 protection rule that requires
5 exposures to be kept 'as low as
6 reasonably (sic) achievable.'
7 Presumably, the DOE settled upon a
8 limit of 20 micrograms per liter in
9 its ROD because it was achievable
10 and reasonable, and, in that sense,
11 a local ALARA limit. A clean up
12 maximum limit of 20 micrograms per
13 liter of uranium would meet the EPA
14 national standard. There is no
15 logical reason to relax it except to
16 save money.
17 "The DOE can argue for vast
18 budgets for a program such as the
19 National Ignition Facility (over $15
20 billion for construction and
21 operation over its lifetime), so
22 nuclear weapons physicists can have
23 interesting work to do in the
24 post-Cold War era, then surely it
25 can find the modest additional

1 resources needed to fulfill the
2 commitment on groundwater it has
3 already made to the people living
4 around the Fernald facility. To
5 fail to do so would be to repeat the
6 historical injustices of the Cold
7 War, when the health of communities
8 was put far below nuclear weapons
9 production. Having said mea culpa
10 many times over the last decade
11 about its skewed Cold War
12 priorities, and having promised that
13 health will not fall into second
14 place behind production and design
15 and research, the DOE now seems set
16 to renege on that promise. The
17 proposed relaxation of the
18 groundwater rule at Fernald is one
19 more piece of evidence leading to
20 such a conclusion. The DOE should
21 scrap the proposal to relax the
22 groundwater maximum contaminant
23 limit for uranium to 30 micrograms
24 per liter for Fernald and find the
25 resources to meet its prior

1 commitments to the community."
2 Those are Mr. Makijani's comments,
3 not mine. I just agreed to bring them
4 and read them this evening and hand a
5 copy for the official record.
6 My name's Lisa Crawford. I don't
7 even know where to start. I guess
8 my official comments are I'm still
9 nervous and a little worried about
10 changing this.
11 I don't feel like we've had -- I
12 don't feel like we were part of the
13 process in changing the proposed 20 to
14 the official 30. I feel like we were
15 left out of that, and we didn't know it
16 was going on and happening.
17 I'm concerned with the possible
18 adverse health effects. You know, the
19 notes I took say we go from 5 to 7.5.
20 That's classified as a slight risk.
21 That's a 25 percent increase to me,
22 and that's not a slight risk. And if
23 it's your child or my child or my
24 neighbor's child, it's even more of a
25 concern for us.

1 You know, somebody earlier talked
2 about two lives. Two lives. That could
3 be my kid or my husband, and it worries
4 me.
5 As somebody who lived in a house,
6 who drank from a well that had 190
7 micrograms per liter in it, you know, 20
8 sounds a heck of a lot better than being
9 at 30.
10 Now, this is part of the ROD we went
11 through, part of the commitment that was
12 made to this community. And I just don't
13 feel like we've been given enough
14 evidence or data that convinces me we
15 should go from 20 to 30.
16 Saving money is fine and dandy, but
17 as I said earlier, you know, saving
18 money and saving lives, I would have to
19 choose saving lives. And I would also
20 have to choose that when it's all said
21 and done, I don't want a half-baked
22 cleanup.
23 Working on this issue for 17 years
24 -- when we're done, we want to say we're
25 done. And we want it to be cleaned up

1 properly, and we want it to be done
2 right so 50 years from now, our kids
3 don't have to turn around and fight the
4 same battles that we fought over the last
5 17 and a half years to get where we think
6 we need it to be.
7 Thank you.
8 MR. STEGNER: Thank you. Has Mr.
9 Heine returned?
10 Okay. If not, we'll take general
11 comments from the public now. Lou, you
12 indicated you wanted to speak and after
13 him, Edwina?
14 MS. YOCUM: Okay.
15 MR. BOGAR: You want to go first?
16 You can.
17 MS. YOCUM: I'll go first if you
18 don't mind. Edwina Yocum. Do you need
19 my address?
20 THE COURT REPORTER: Only if you
21 want to give it, ma'am.
22 MS. YOCUM: No. Again, as in the
23 past, the Fernald residents are faced
24 with a decision of cost versus health.
25 I have a list of health studies

1 relating to groundwater and from people
2 drinking from private wells and cisterns.
3 The information received from the
4 PBC Dose Reconstruction Process, Volume
5 I, Page 6 states: (reading)
6 "Cumulative uranium concentration to
7 the kidneys possibly could have mild
8 health effects to those living in
9 the two mile area."
10 The ATSDR Fernald Public Health
11 Assessment 2000 suggests that the
12 residents have an elevated kidney burden
13 of uranium from past exposures,
14 primarily from consumption of
15 contaminated water.
16 The Fernald Medical Monitoring
17 Programs Cancer Incident Study 1999
18 conclusions: Urinary systems cancer
19 incidence was greater than expected;
20 kidney, renal, pelvic cancer incidence
21 was greater than expected.
22 ATSDR's recent study: Prevalence of
23 Adverse Health Outcomes in Residents of
24 the Area Surrounding the Fernald Site.
25 The conclusions of this study? An excess

in all kidney diseases, all bladder diseases and, example, like kidney stones. Also excess in chronic nephritis, urethra stricture and hematuria.

As a resident of the Fernald area, I have chosen my health and the health of my community over the cost savings.

I must live here, and I must feel confident that during remediation, and after the site is closed, that our most precious resource, the aquifer and groundwater, are safe.

Cost savings is a process that only shrinks the size of off-site and on-site contamination.

It only lessens DOE's, it only lessens DOE's accountability to clean up the Fernald site.

Thank you.

MR. STEGNER: Thank you. Lou?

MR. BOGAR: I'm not going to read all of this. My name is Louis Bogar (spelling) L-O-U-I-S B-O-G-A-R. No Ds, no Ts, anything like that.

1 I've been a Ross resident for 15
2 years, as some of you know.
3 Since this isn't a scientific
4 reading, I'm going to state my conclusion
5 first: I strongly support a 30 microgram
6 per liter limit for the aquifer at
7 Fernald for the OU 5.
8 I have reviewed in detail the
9 background documents presented by the US
10 EPA which they, which supports their
11 conclusions in the revised rule making.
12 And there are three points that I'd like
13 to make.
14 On the kidney toxicity, you go
15 through the details of the numbers,
16 there's at least a factor of 100, if not
17 greater, on that number for kidney
18 toxicity.
19 Now, that's not unusual and probably
20 acceptable but know that there is a
21 degree of conservatism, which is quite
22 common for these kinds of numbers.
23 In terms of the radiation effects,
24 i.e. cancer, I'm talking now only about
25 cancer mortality, EPA produces data on

1 morbidity, also.

2 Looking at table Roman VII-5 where

3 they list as a function of picocuries per

4 liter the risk for cancer mortality,

5 either on an annual basis or a lifetime

6 basis. Using the lifetime basis numbers,

7 which were quoted tonight in the handout,

8 I conclude that without exceeding the 10

9 to the minus four criteria, the range

10 instead of the minus four, 10 to the

11 minus six, without exceeding the 10 to

12 the minus four criteria in risk, you

13 could easily go to 59 micrograms per

14 liter.

15 EPA in the background document,

16 thirdly, gives the kind of pedestrian

17 discussion of uranium, this equilibrium

18 question. The ratio of U-234 to U-238,

19 and that affects the activity of the

20 uranium isotopes.

21 As a nuclear engineer, any time I

22 see numbers where the U-234 exceeds the

23 U-238 by any amount, that means to me

24 you're talking about enriched uranium.

25 However, when you see that kind of

1 number, then you get an isotopic analysis
2 and you say, what is the U-235?
3 In the Fernald situation, my
4 experience has been that in the water,
5 the isotopic composition of the uranium
6 is very close to natural uranium, if not
7 slightly depleted.
8 That is, the U-235 and the U-238
9 correspond to what God put into the
10 ground.
11 Now it is known, and has been known
12 for over 40 years in the scientific
13 world, that the ratio of U-234 to U-238
14 can vary widely.
15 That shouldn't affect us at
16 Fernald because the measurements made in
17 water to judge the accuracy of the
18 cleanup of the aquifer is based on mass.
19 The measurement is made using a
20 technique which measures the mass of
21 uranium.
22 So any arguments about this
23 equilibrium should simply go away.
24 I'd like to point out in passing
25 the, since 1989, the State of California

1 has enforced a 35 microgram per liter
2 uranium limit.
3 That's because they know that the
4 U-234/U-238 ratio is, in fact, 1.75 --
5 not .675 as at Fernald.
6 They've done the right thing. Maybe
7 for the wrong reasons, but at least know
8 that there are other places with 35
9 micrograms per liter have been accepted.
10 The real question is, then, what are
11 the benefits? And I think there are
12 clear benefits that we should all look at
13 real hard and see how much better it
14 would be for the Fernald community to
15 accept a higher uranium number in order
16 to clean up the aquifer faster and
17 cheaper.
18 Thank you.
19 MR. STEGNER: Thank you. Are there
20 any more comments for the record this
21 evening?
22 Again, if you have comments and want
23 to get them on the record, please have
24 them to me or someone at Fernald to be
25 placed in the record by the 31st of

1 August.

2 With that --

3 MS. DASTILLUNG: To the Post Office

4 box of the --

5 MR. STEGNER: Post Box is fine.

6 MS. DASTILLUNG: Okay.

7 MR. SCHNEIDER: If they haven't

8 moved it.

9 MR. STEGNER: And with that, thank

10 you all for coming and participating. We

11 appreciate it. Be careful going home.

12 (The Public Comment Period concluded

13 at 9:30 p.m.)

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1 C E R T I F I C A T E

2 STATE OF OHIO :
: SS:
3 COUNTY OF HAMILTON :

4 I, Julia C. Sager, the undersigned,
5 a duly qualified and commissioned Notary Public
6 within and for the State of Ohio, do hereby
7 certify that at the time and place stated herein,
8 I recorded in stenotypy and thereafter transcribed
9 by computer-aided transcription into typewritten
10 form under my supervision the within 21
11 (twenty-one) pages, and that the foregoing is a
12 true, complete and accurate report of my said
13 stenotypy notes.

14 I further certify that I am neither
15 a relative of, attorney, nor employee for any
16 party or their counsel and have no interest in the
17 result of this meeting.

18 IN WITNESS WHEREOF, I have hereunto
19 set my hand and official seal of office at Liberty
20 Township, Ohio, this 4th day of September, 2001.

21 Julia C. Sager

22

23 Commission Expires March 26, 2006

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25