United States Government | Department of Energy

memorandum

Ohio Field Office
Columbus Environmental Management Project

DATE: January 4, 2002 C02-005

REPLY TO ATTN OF: Baillieul - CEMP

SUBJECT: **CATEGORICAL EXCLUSION DETERMINATION FOR DEPLOYMENT OF *IN SITU* SOIL WASHING AT THE COLUMBUS ENVIRONMENTAL MANAGEMENT PROJECT (CEMP)**

TO: Robert Grandfield, NEPA Compliance Officer

Background

Active and abandoned filter beds at the Battelle West Jefferson site became contaminated with radionuclides during the period of active research at the site. The primary contaminant of concern is Cesium-137 which has been adsorbed onto the surface of clay minerals in the soil and filter bed media. The filter beds in question lie on the floodplain of Big Darby Creek, a State and National Scenic River. A 1990 Environmental Assessment and Finding of No Significant Impact (FONSI) for the BCL Decommissioning Project (BCLDP - also CEMP) evaluated the impacts of complete excavation of the affected filter beds and any surrounding soil contaminated above release levels. Since that analysis, an *in-situ* remediation process has been identified which can affect the removal of contaminant radionuclides with much less disruption of this sensitive environmental area than the reference excavation alternative.

Description of Proposed Action

The Well Injection Depth Extraction (WIDE) system is a hybrid soil flushing/soil de-watering and vapor extraction tool that uses prefabricated vertical wells (PVWs™) for the *in-situ* remediation of contaminated, fine-grained and low-permeability soils. For the West Jefferson site deployment, a solution will be pumped through a series of shallow wells into the contaminated subsurface clay and sand soil mixture. This solution, made up of water and a proprietary lixiviant (ammonium citrate dibasic), will separate the Cesium from the soil particles so that contaminated liquid can then be collected through the vertical vacuum sealed wells. The liquid is then transferred up through a vacuum tight PVC pipe matrix and into a collection tank. It is then processed through a pre-filter to separate particulates, including Cobalt and Americium (if any) and a 3M Selective Separation Cartridge to remove the now soluble Cesium. The liquid is then recharged with lixiviant for re-injection and re-circulation through the soil.

Containment of the lixiviant solution to the area of concern is assured by the closed-loop nature of the injection - extraction process, and by the very low hydraulic conductivity of the glacial soils surrounding the filter beds. At the end of the process, residual lixiviant will be flushed from the system by injection with clean water. Any remaining aqueous lixiviant will biodegrade into water, carbon dioxide, and ammonia. Although no air permits are required for this system, High Efficiency Particulate Air (HEPA) filtration will be applied to all air exhausts from the WIDE vacuum system as a precaution, and to provide a collection point for routine air monitoring. Filter and selective ion extraction media containing radionuclides will be disposed of as low level radioactive waste.

In-situ soil remediation is a category of activity listed in the Decommissioning Plan for the BCLDP and approved by the U.S. Nuclear Regulatory Commission (NRC). The Ohio Environmental Protection Agency (OEPA) is very familiar with the WIDE system in other applications and will grant an exemption from formal permitting procedures related to Permits to Install air de minimus, and underground injection for Class V aquifer remediation projects.

A more detailed description of the proposed action is provided in Attachment A.

Categorical Exclusion Being Applied

The WIDE system deployment falls under several categorical exclusion categories provided in Appendix B to DOE's National Environmental Policy Act Implementing Procedures and Guidelines - 10 CFR 1021.

B.2.3 Installation of equipment for personnel safety and health

Deployment of the WIDE system avoids the need for extensive soil excavation, a high hazard activity. Remote operation of the radionuclide collection system reduces potential worker exposure.

B.6.2. Siting/construction/operation of pilot-scale waste collection/treatment/ stabilization/containment facilities.

The WIDE system deployment at the West Jefferson site is a pilot scale demonstration of this technology funded through the DOE Subsurface Contaminants Focus Area. (EM-50)

B.6.8 Modifications for waste minimization/reuse of materials.

The large volume of low level waste that would result from excavation of the filter beds and adjacent soil under the previously approved approach will be avoided by deployment of the WIDE system.

Regulatory Requirements in 10 CFR 1021.410 (b)

The proposed action fits within the class of actions listed in Appendix B to subpart D of 10 CFR 1021. It does not threaten a violation of any applicable statutory, regulatory, or permit requirement. The action involves only the temporary installation of equipment allowed under the cited categorical exclusions. The application of in situ remediation reduces the likelihood of uncontrolled or unpermitted releases from the contaminated filter beds. Use of the WIDE technology reduces considerably the level of disruption that will take place in a sensitive environmental area (compared to the approach approved under the 1990 Finding of No Significant Impact).

There are no extraordinary circumstances related to this proposal that may affect the significance of the environmental effects of the proposed action.

Other activities related to the remediation of the West Jefferson site, of which this proposed action is a part, have already been addressed through a formal Environmental Assessment. The proposed action replaces, and is less impacting than, the referenced soil remediation approach (excavation) evaluated in that Environmental Assessment.

Recommendation

I recommend that the proposed action described above be granted a categorical exemption pursuant to 10 CFR 1021.

Thomas A. Baillieul — 4 Jan 02

Thomas A. Baillieul, Director
Columbus Environmental Management Project

Date

Determination

Based on my review of information conveyed to me and in my possession concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have determined that the proposed action fits within the specified class of actions, all other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

Robert Grandfield — January 7, 2002

Robert Grandfield, NEPA Compliance Officer
Ohio Field Office

Date

Attachment A.

Deployment of the WIDE System for in situ remediation of filter beds and surrounding soil at the Battelle West Jefferson site

Introduction/Overview

The mission of the CEMP is to remove radioactive contamination from multi-use laboratory facilities owned by Battelle Memorial Institute (Battelle) in and around Columbus, Ohio. Current activities are focused on three buildings and adjacent grounds of the former Nuclear Sciences Area at Battelle's West Jefferson, Ohio facility (Figure 1). The project is being conducted under a cost-shared arrangement between the U.S. Department of Energy (90% share) and Battelle (10% share), and is part of the closeout of Contract W-7405-ENG-92.

Several filter beds, part of the West Jefferson site's wastewater treatment system (Figure 2), became contaminated with low levels of radionuclides as a result of site operations. The filter beds are located within the flood plain of the Big Darby Creek, a designated Ohio pristine river, and National Scenic River. The area had previously been remediated by removing the leach field tiles and sand from the area. However, small amounts of soluble Cesium apparently became entrained on the clay fines during the re-grading effort prior to the installation of the one-foot clay cap.

The filter bed area has been extensively characterized for radioactive constituents. The only radioactive constituent above free release levels is Cesium-137, although trace to minor amounts of Strontium-90, Americium-241, Cobalt-60, and Plutonium -238/239 have been detected. The Cesium contamination ranges from slightly over 15 pCi/gm to 200 pCi/gm in an area approximately 35 meters long by 20 meters wide by 2.5 meters deep. Clay minerals in the filter bed medium and surrounding soil have adsorbed the Cesium, keeping it relatively immobile, as verified by monitoring wells and periodic sampling.

The method of remediation, evaluated in the project's Environmental Assessment, is by excavation and consequent disposal of the low level contaminated soil at a DOE- approved radioactive disposal site. This approach can be implemented safely, but requires significant containment controls to limit the silt and excavation fines from affecting the Big Darby Creek. It also involves excavating, packaging and shipping approximately 84,000 cubic feet of radioactive soil for costly burial at the Envirocare facility in Clive, Utah.

Use of the WIDE system involves the *in-situ* removal of the Cesium in the soil with a closely controlled well injection/extraction method. The Cesium is essentially stripped from the clays by injecting a lixiviant liquid through a close-spaced set of wells, and extracting with the liquid out of the ground by a second set of adjacent vacuum wells. Once installed, the system operates with minimal hands-on control. Periodic soil sampling and direct down-hole gamma ray measurements can be used to determine the effectiveness of the cesium extraction.

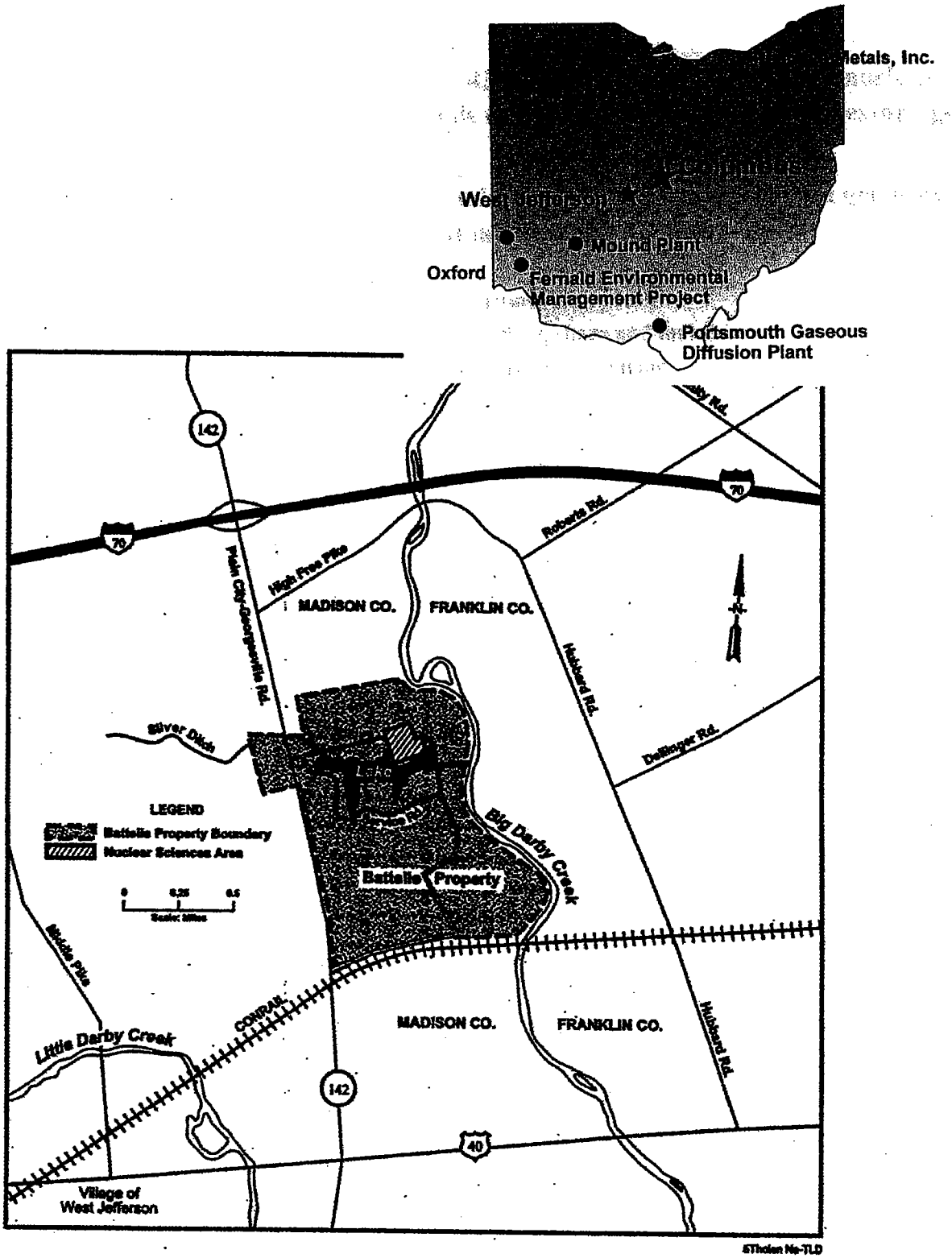

Figure 1. Location of the Battelle West Jefferson facility.

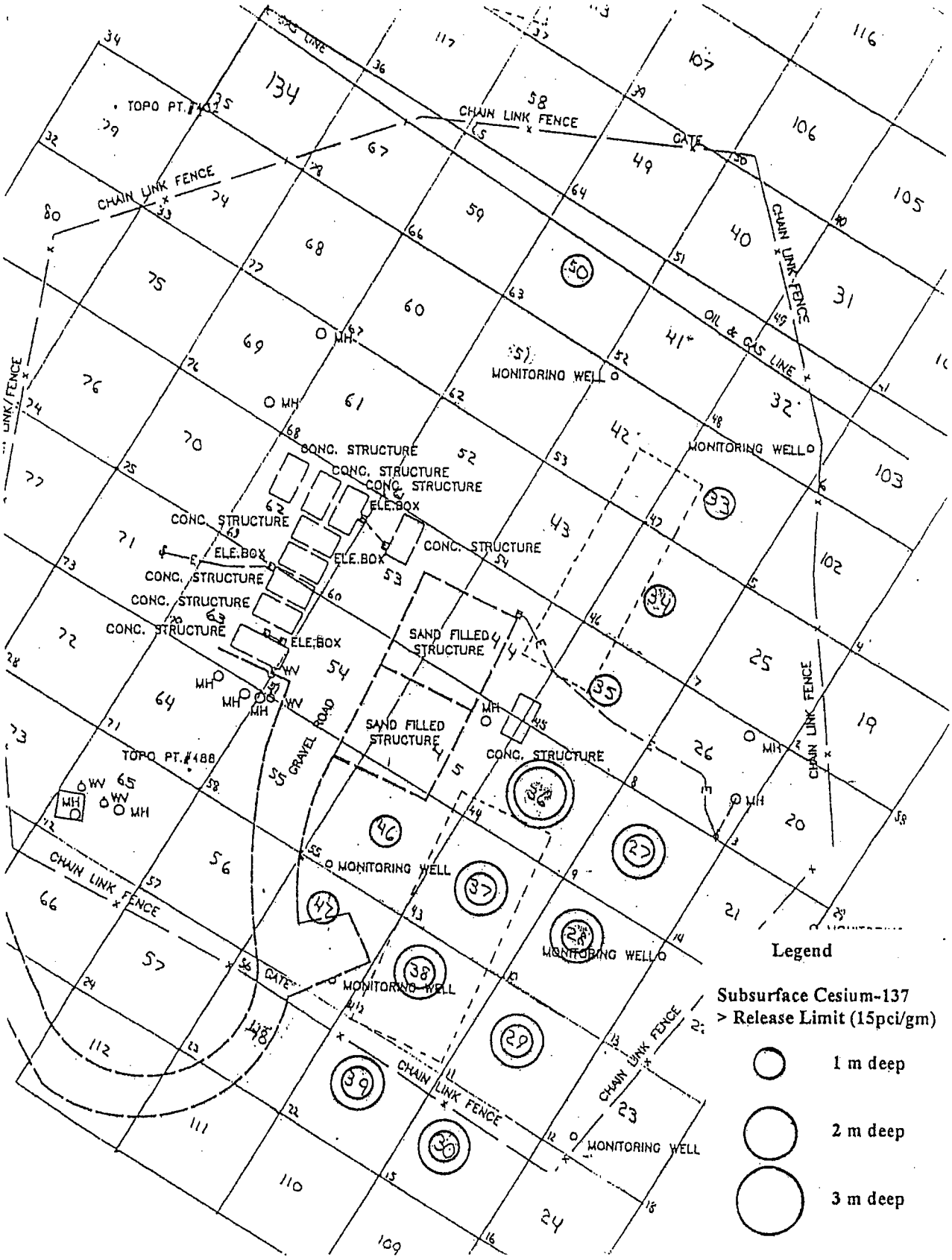

Figure 2. Plan of the West Jefferson North Filter Bed area showing soil contamination levels (grids are 10m X 10m).

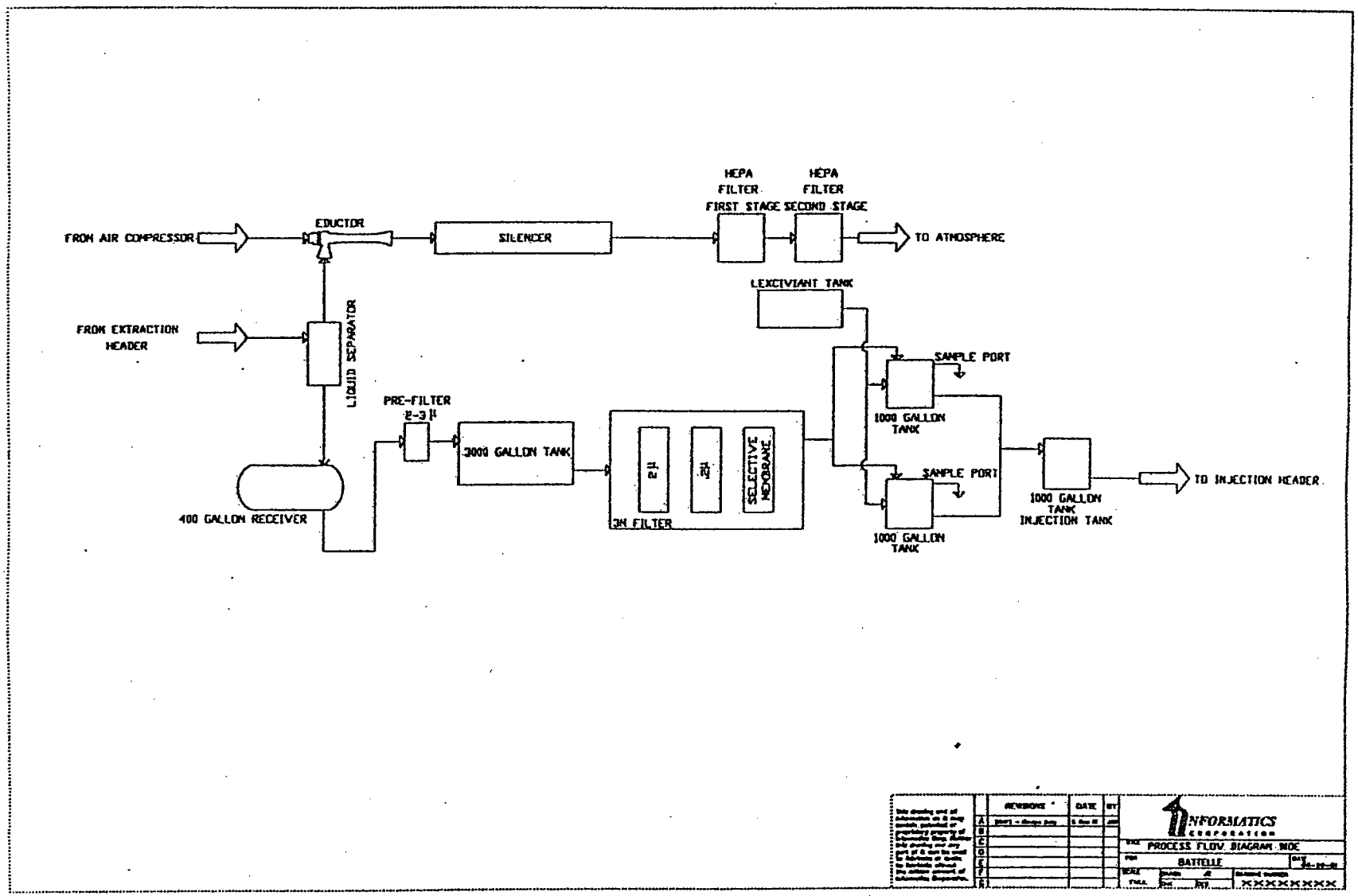

Figure 3. Schematic diagram of the WIDE System.

System Background

The Well Injection Depth Extraction (WIDE) system was developed by West Virginia University, North Carolina State University and the NILEX Corporation through DOE funded grants from the National Energy and Technology Laboratory (NETL) in Morgantown, West Virginia. It has been commercialized by the Informatics Corporation of Richland, Washington. It was originally used to extract volatiles (gasoline) in Weston, West Virginia and has recently been used to extract jet fuel, JP-4 from Lockborne Air Force Base in Columbus, Ohio. During a DOE pilot demonstration at the Ashtabula Environmental Management Project, Ashtabula, Ohio, the system was found to not only extract TCE from a Corrective Action Management Unit (CAMU) but also Technectium 99 and Uranium that had become soluble in the liquid. Since Cesium can also become soluble in water, this system is a suitable candidate for the Battelle project. Both the West Virginia and the Ashtabula projects required Surface Water Discharge Permits since the wastewater was discharged.

The Ohio EPA is very familiar with the WIDE process and has approved it use in a number of applications. Contingent on submittal of appropriate design and process control information, they have expressed a willingness to exempt the project from the formal procedures for Permits to Install – Air de Minimus and Underground Injection Permits related to Class V aquifer remediation projects. Since Informatics has utilized a Quality Assurance program to validate their methods and sampling, there was no Contaminate Removal Certificate or Chemical Removal Certificate required at Ashtabula. Battelle does not anticipate these requirements either for the same reason but will provide final status survey results to the NRC upon completion.

System Description

The WIDE system is a hybrid soil flushing/soil de-watering and vapor extraction tool that uses prefabricated vertical wells (PVWs™) for the *in-situ* remediation of contaminated, fine-grained and low-permeability soils. It has been field demonstrated as suitable for removal of dissolved-phase contaminates and has been successfully permitted by the Ohio EPA and the NRC (through the Ohio Department of Health).

For the Battelle West Jefferson deployment, a solution will be pumped through the WIDE system wells into the contaminated subsurface clay and sand soil mixture. This solution, made up of water and a proprietary lixiviant (ammonium citrate dibasic), will separate the Cesium from the soil particles so that contaminated liquid can then be collected through the vertical vacuum sealed wells. The liquid is then transferred up through a vacuum tight PVC pipe matrix and into a collection tank. It is then processed through a pre-filter to separate particulates, including Cobalt and Americium (if any) and a 3M Selective Separation Cartridge to remove the concentration of now soluble Cesium. The liquid is placed into a tank where it is recharged with lixiviant. Re-injecting it into the ground then recycles it. Figure 3 is a schematic diagram of the WIDE system operation.

The WIDE system is a particularly effective fluid delivery system for removing contamination within low permeability, high clay fraction soils such as those found at the West Jefferson site. Conventional technologies such as pump and treat groundwater remediation, and vapor extraction using conventional well fields, are typically ineffective when applied to these conditions. The PVW's, used in lieu of conventional wells and sumps, can extract liquids/gases and/or inject liquid flushing agents. From the outside, PVW's look like a large drinking straw, but with multiple openings up and down the length of the well. Internally, PVW's are constructed of a geosynthetic composite system consisting of an inner core; and an outer filter jacket. The tightness of the fabric weave varies to allow liquids to pass back and forth, while keeping a minimum of soil particles from entering the well. Since vacuum is used for the extraction of the liquid, it is imperative that the PVW's are sealed from the surface. This seal allows the PVW's to remove the liquids from the adjacent injection well, through the fines, and into the PVC transfer tubes that carry the liquid to the filters. The vacuum transfer system not only requires the PVC and wells to be sealed, but any air leakage into the atmosphere is immediately detected. Since the underground well openings to the separation filters are sealed so well, the vacuum system will actually work better if the surface is flooded (i.e. the periodic flooding of the filter bed area will not have any adverse impact on the WIDE system operation nor increase the likelihood of releases of contaminants to the environment).

System Operational Characteristics

The Wide system is essentially a closed-cycle extraction system with no contaminate emissions. There is essentially total liquid recycle with 99.95% Cesium and particulate removal from the transfer liquid. There are no air or noise emission concerns with this system. Noise suppression and air/water vapor separation equipment has been installed on this equipment. Even though there is no air-water contact of compressor air with the transfer liquid under normal operations, a double HEPA filter has been installed on the compressor exhaust as a precaution and as a radioactive monitoring point for operational assurance. Sampling and monitoring of the transfer liquid, the contaminated well field, the particulate and Cesium collection filters, and the injection tank is performed continuously during the eight-hour per day processing period. This will significantly minimize potential radiological exposure to operating personnel and the general public. The system is not designed to be run in extended below freezing temperatures since no heat generating equipment is included. The scheduled time for processing with the WIDE system is from March to mid-October.

In addition, the WIDE system has several physical and operational limitations that make it environmentally safe and environmentally isolated from the Big Darby Creek flood plain. The PVW's in the contaminated well field are spaced only two feet apart, due to the low permeability of the soils, and are alternated between injection and extraction wells. The pressures used in the injection wells cannot move the liquids two feet to the extraction wells without aid of the vacuum system. An operator is always present during injection to monitor the system and to control/balance the injection/extraction rates. Furthermore, extraction wells surround the injection wells, thus keeping the movement of the lixiviant transfer liquid within the specified target volume. When the system is shut off or if there is a power failure, the movement of fluids

within the filter bed media is slow without a significant pressure gradient. It is even slower in the low permeability clay soils surrounding the filter bed.

The stripping of the Cesium from the West Jefferson soils and its extraction from the transfer liquid is both contaminant-specific and site-specific. The proprietary lixiviant developed by the Pacific Northwest National Laboratory has been adjusted specifically for the high clay fines soil found at the site. A treatability study was performed on the north abandoned filter bed soil to prove it would strip Cesium from site-specific clay fines. A dynamic test on additional soil is presently being conducted with the lixiviant under simulated field process conditions. The Cesium-specific selective removal cartridge system developed by 3M has been proven to perform well with the citric acid base used in the lixiviant.

It is anticipated that approximately 2000 PVW's approximately 9 feet deep will be used for the *in-situ* injection/extraction process to remove the Cesium. The wells will be abandoned properly per State of Ohio regulations at the conclusion of the remediation process. Minor excavation will be performed, as necessary, following the WIDE process to remediate any shallow soil contamination that was inaccessible to the WIDE circulation cell. The goal is to leave the area in a stable, radioactively releaseable condition without relocating active filter bed systems, underground utilities, or requiring extensive upgrades to the area's infrastructure (roads, power requirements, etc.)

Waste Issues

During the WIDE system operation, radioactive constituents will be collected on both the pre-filters and the Cesium separation filters. The lixiviant liquid is not capable of creating a mixed waste through its chemical stripping action. The present chemical analysis of the area in question does not indicate a mixed waste situation either. Both the particulate filters and the Cesium filters will be changed out as radiological activities and will be disposed of as LLW at Envirocare or Hanford just as other Cesium and spent fuel contaminated filters are processed in the BCLDP presently. The filters are generally removed inside local containment using a bag-in/ bag-out method. The wet filter is then transported to JN-1 where it is dried, packed with absorbent and placed in B-25 boxes for disposal. It is anticipated that four to six particulate filters and up to four Cesium filters could be processed in this manner.

In addition to radiological waste, some non-radiological and chemical waste could have to be processed. Although the WIDE system process calls for flushing the field with water at the end of the remediation, the citrus based lixiviant acid could need to be neutralized for disposal. The project's Waste Management organization has performed this type of work before. It is anticipated that only limited work of this type will be required. Biodegradation of any residual lixiviant in the soil is anticipated to result in ammonia (fertilizer) carbonate, and water. No negative impacts to floodplain biota are expected.

Review of NEPA Compliance for Battelle West Jefferson to Implement in Situ Soil Treatment Utilizing Well Injection Depth Extraction (WIDE™) to Reduce Cesium 137 Levels

Introduction

The Department of Energy, Ohio Field Office (DOE/OFO) requested a review of the adequacy of the Environmental Assessment at the Battelle West Jefferson Site to allow in situ soil treatment to reduce cesium 137 in soil to free release levels. The soil project was originally planned as an excavate, box and ship to an approved radioactive waste disposal site. The Well Injection Depth Extraction (WIDE™) is a new technology that utilizes a soil flushing /soil de-watering and vapor extraction technique to reduce/remove a variety of soil contaminants eliminating the need to excavate contaminated soil. The clean up to free release levels is driven by Battelle's plan to terminate their NRC SNM-7 Decommissioning License.

Discussion

Technology

In the summer of 2001 Battelle became interested in a new technology that was developed with funding from DOE's Office of Science and Technology (OST). The innovative technology, developed by researchers from North Carolina State University, has been named Well Injection Depth Extraction (WIDE™). The system utilizes Prefabricated Vertical Wells (PVWs™) to inject cleaning materials and extract the injected liquids with the contaminants. A variety of factors make the WIDE™ system very attractive to Battelle. These include cost, waste volume reduction, reduced risk to worker and public and reduced risk to the environment.

The technology is highly suited for in situ remediation of contaminated fine-grained and low permeability soils. Instead of generating 84,000 ft^3 of radioactively contaminated soil for transportation and burial several particulate prefilters and several 3M cartridge filters containing the ^{137}Cs will be the radioactive waste stream from this process. The chemicals used in this process are deemed as "green". Any residual chemical will decompose into fertilizer. No mixed wastes can be generated during the ^{137}Cs removal.

Battelle Documentation

Battelle is a privately owned site that operates under NRC SNM-7 Decommissioning License. Battelle performed various projects for the DOE and its successor agencies. This resulted in radioactive contamination in buildings and the site soil. In June 1990 an Environmental Assessment For Battelle Columbus Laboratories Decommissioning Project was prepared. On June 14, 1990 Peter N. Brush acting assistant Secretary Environment, Safety, and Health signed a FONSI based on the analyses in the EA. In situ soil remediation is not described in the 1990 EA.

On August 31, 2001 the 1990 EA was re-evaluated and updated to include actual clean up events that occurred and changes in regulatory requirements. Also the section on soil clean up was changed to incorporate a fourth alternative: in situ soil washing to remove contaminants. This re-evaluation served two purposes; 1) to validate that all of the work completed to date was still bounded by the 1990 assessment and the FONSI was still accurate, and 2) to incorporate the in situ soil clean up option that was submitted to, and approved by, the NRC in the 1993 Battelle Columbus Laboratories Decommissioning Project (BCLDP).

Regulatory Overview

EPA

Neither state nor federal EPA regulations require the reduction of the ^{137}Cs levels. The quantity in the ground does fit the definition of an RQ (reportable quantity) under (CERCLA), and it is not a RCRA regulated waste. The proposed in situ clean up system will have approximately 2000 PVWs™. The Ohio EPA has approved the WIDE™ technology for use at the Ashtabula Environmental Management Project in Ashtabula, Ohio and Lockborne Air Force Base in Columbus, Ohio. The Ohio EPA has reviewed the proposed project at the Battelle WJ site and ruled that installation of the PVWs™ will not require a Class V injection well permit to install (PTI) or a permit to operate (PTO). There will be no wastewater discharge. There is no air water contact of compressor air with the transfer liquid. Potential air emissions will be controlled by a double HEPA filter on the compressor exhaust and will serve as a radioactive monitoring point for operational assurance.

NRC

NRC License SNM-7 was issued to Battelle for possession and decommissioning of their sites at West Jefferson Ohio and King Avenue in Columbus Ohio. The NRC approved the BCLDP in 1993. The BCLDP contains a short discussion about in situ soil clean up. License SNM-7 has been revised over twenty times since it was issued. Each revision addressed a very specific area with detailed information about a change in process or operation with regard to nuclear material. A conference call was held on December 2, 2001 with Mike McCann, Senior Radiation Specialist – NRC, Craig Jensen, CHP – Radiation Safety Officer Battelle, April Chance Radiology Technical Support Manager Battelle, Cid Voth Project Manager Battelle, Jim Griffin Sierra Lobo DOE support and Charles Friedman Sierra Lobo DOE support. The NRC position on deployment of the WIDE™ system is that a revision to the SNM-7 License will be necessary. The revision will need to follow the NRC requirements regarding the specific technical and safety information required about the WIDE™ system. The application for the revision will require an environmental review performed by DOE since DOE prepared the original EA. Further, the NRC will accept DOE's recommendations from the environmental review without performing their own review. NRC has agreed to an expedited review for the license revision request.

DOE

DOE prepared the original Environmental Assessment for the Battelle King Avenue and West Jefferson sites. A FONSI was issued based on the analysis of the proposed decommissioning actions. The EA was prepared in June of 1990 and the FONSI was issued at the same time. The EA was reevaluated in August 2001. The reevaluation updated the EA to current regulations and a section about in situ soil clean up was added. All of the decommissioning work performed to date and the proposed in situ soil clean up are bounded by the updated EA. The proposed WIDE™ system technology is a very specific soil clean up that will cost less, reduce potential worker and public exposure and vastly reduce the waste volume compared to the excavate and bury technology that was described in the original EA.

Conclusion

The NRC, which has the same authority as DOE to prepare EISs, EAs, and CatXs, has published NUREG-1748 Environmental Review Guidance for Licensing Actions Associated with NMSS Programs. This guidance specifically addresses tiering of environmental documentation and refers back to Council on Environmental Quality (CEQ) regulation in 40 CFR 1508.28, which defines tiering. The DOE published ORDER O 451.1B National Environmental Policy Act Compliance Program to delineate the internal requirements for compliance with NEPA 1969. In this DOE likewise cites not having to redo NEPA documentation by citing 10 CFR 1021 DOE NEPA Implementing Procedures unless there are extraordinary circumstances and refers back to the same CEQ 40 CFR 1508.28 citation as the NRC. According to 10 CFR 1021, DOE or NRC, can use tiering to prepare more specific or narrowly focused environmental documents without duplicating the relevant parts of more general previously prepared documents.

Review of the WIDE™ technology for implementation as an in situ soil clean up at Battelle West Jefferson indicates that it would fall under the following categorical exclusions cited in 10 CFR 1021.400 Subpart D: B6 Categorical exclusions applicable to environmental restoration and waste management activities; B6.2 - Siting/construction/ operation of pilot-scale waste collection/treatment/stabilization/ containment facilities; and B6.8 – Modifications for waste minimization/reuse of materials.

Implementation of in situ soil clean up with the WIDE™ system will not require an Environmental Assessment because it is bounded by the original EA and the EA reevaluation. A Categorical Exclusion should be prepared to document no degradation to the environment, or worker and public health. The Cat X can be tiered from the EA. Battelle will need to revise their NRC license SNM-7 and refer to the approved Cat X for the WIDE™ system.

References

10CFR1021 National Environmental Policy Act Implementing Procedures

DOE Order O451.1B National Environmental Policy Act Compliance Program

40CFR1508 Council on Environmental Quality Regulations Implementing the Procedural Provisions of NEPA

NRC Environmental Review: Guidance for Licensing Actions Associated with NMSS Programs NUREG-1748 September 2001

10CFR51.1 Nuclear Regulatory Commission Environmental Protection regulations applicable to NRC's domestic licensing and related regulatory functions

10CFR51.20 Nuclear Regulatory Commission Criteria for and identification of licensing and regulatory actions requiring environmental impact statements

10CFR51.21 Nuclear Regulatory Commission Criteria for and identification of licensing and regulatory actions requiring environmental assessments

10CFR51.22 Nuclear Regulatory Commission Criteria for categorical exclusions; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review

DOE Memorandum from Office of NEPA Policy and Assistance January 16, 1998 Subject: Guidance on National Environmental Policy Act (NEPA) Categorical Exclusion Determinations

DOE Memorandum from EH-25 August 7, 1992 Subject: Appendix A Categorical Exclusions

National Energy Technology Laboratory Categorical Exclusion for WIDE™ pilot test at Lockborne Air Force Base, Lockborne, Ohio 9/1/00 – 5/31/01

Letter Craig E. Jensen, CHP – Radiation Safety Officer Battelle Columbus Operations to Mr. Mike McCann, Senior Radiation Specialist US NRC

Project Management Plan (PMP) Well Injection Depth Extraction Deployment at the Battelle Columbus Laboratories Decommissioning Project – by Informatics Corporation

Decommissioning Plan for the Battelle Memorial Institute Columbus Operations to US Nuclear regulatory Commission May 1993

Letter NRC to Battelle December 6, 1993 "...determined that your decommissioning program is adequate and acceptable."

Decommissioning Plan for the Battelle Memorial Institute Columbus Operations to US Nuclear Regulatory Commission Revision 3 August 8, 2000

Letter Battelle to NRC October 8, 2001 Response to Request for Information, License SNM-7, Docket No. 070-0008, Concerning Basis for Use of the WIDE Pump and Filter System

Evaluation of 1990 Environmental Assessment August 31, 2001

Finding Of No Significant Impact and Environmental Assessment: Battelle Columbus Laboratories Decommissioning Project June 1990

Mobilization of Cesium from Soils with PNNL Lixiviant Shas V. Mattigood PhD

Test Plan for Dynamic Flow Tests Using PNNL Lixiviant to Assess Leachability of Cesium-137 from West Jefferson North Site Soils, Ohio.

Well Injection Depth Extraction (WIDE^{TM}) Soil Flushing Subsurface Focus area March 2000

MSDS Sheets for:

- MSDS# A5736 11/17/99 Ammonium Citrate Dibasic
- MSDS# C4730 11/17/99 Citric Acid
- MSDS# H5960 03/26/99 Hydroxyl Amine Hydrochloride

Lixiviant Tests to Assess Leachability of Cesium-137 from West Jefferson North Site Soils October 2001

Contacts

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DOE

OFO
Robert Grandfield III
CEMP
Tom Baillieul
Jim Griffin (Sierra Lobo)
MEMP
Sue Smiley

United States Government **Department of Energy**

memorandum

Ohio Field Office
Columbus Environmental Management Project

DATE: September 25, 2001 C01-038

REPLY TO ATTN OF: CEMP: Baillieul

SUBJECT: **RE-EVALUATION OF 1990 ENVIRONMENTAL ASSESSMENT FOR THE COLUMBUS ENVIRONMENTAL MANAGEMENT PROJECT (CEMP)**

TO: Robert Grandfield, NEPA Compliance Officer, Ohio Field Office

The Columbus Environmental Management Project (CEMP) has completed a re-evaluation of the project's Environmental Assessment and Finding of No Significant Impact (FONSI) which were originally issued in 1990. At this point, the project has completed all planned work at Battelle's King Avenue site, and is in the final stages of approval for a revised project baseline focused on the completion of the West Jefferson site. All sections of the Environmental Assessment were examined to see if updated site information, or changes in technical approach in any way change the conclusion in the FONSI. Also the DOE checklist for Environmental Assessments was utilized to assure that all current DOE expectations have been addressed. The two attachments to this memorandum provide the results of the review. While more extensive information is available concerning both the West Jefferson site and the site end state, the impacts associated with the clean-up are still bounded by the 1990 assessment.

Given the age of the original FONSI, it is probably appropriate to have the Manager confirm that the original decision is still valid.

If you have any questions regarding this re-evaluation , please do not hesitate to call me at (614) 760-7372.

Thomas A. Baillieul

Thomas A. Baillieul, Director
Columbus Environmental Management Project

TAB/psr

Attachments:
1. DOE-CEMP review of EA chapters 1 and 2.
2. Battelle review of EA chapters 3-6 and Attachment A

ATTACHMENT 1

PERIODIC RE-EVALUATION OF THE ENVIRONMENTAL ASSESSMENT FOR THE BCL DECOMMISSIONING PROJECT - SEPTEMBER, 2001

EA Section		Evaluation Comments
1.0	Introduction	N/A
1.1	Description of Proposed Action	The Columbus Environmental Management Project is no longer part of the DOE Surplus Facilities Management Program (SFMP). That program was merged with the Environmental Management (EM) program in the early 1990s. The overall action remains unchanged although the technical approach has been modified.
1.2	Need for Action	No change required. The project is more than 75% complete, and is included in the current EM strategy for site closure.
1.3	Environmental Setting	Enhanced and updated information on the environmental setting is given in the re-evaluation for chapters 3 and 4. Also see the Annual Site Environmental Reports for the BCL Decommissioning Project published for the past 10 years - they contain a wealth of site information.
2.0	Current Status	The planned decontamination and release of buildings at Battelle's King Avenue site has been completed. All project activities are now focused on the former West Jefferson North Nuclear Sciences Area. No continued work with radioactive materials is anticipated at this site, and the goal is to demolish the three major buildings, leaving the site available for re-use without radiological restrictions.
2.1	Building Contamination	The radioactive inventory in the JN-1 Hot Cell building was re-estimated in 1995 as 60,000 Curies, not 6,000 Curies as originally reported in the 1990 EA. Much of this inventory has already been removed and packaged as TRU waste, or shipped off site as low-level waste. In 1996, the fuel transfer pool was drained and the water evaporated. The pool has been lined and is currently used to store packaged drums of remote-handled TRU waste. Removal of the reactor bioshield in building JN-3 has reduced the original radioactive inventory of that building by 95%.

2.2	Soil Contamination	In 1995, contamination discovered at two storm sewer outfalls into Battelle Lake was remediated, including the area of soil contamination nearest the dam. A settling pond has been constructed in conjunction with the active JN-1 storm drain. Additionally, a water filtration/ion exchange system has been installed to remove soluble cesium from the effluent. In 1999, an abandoned outfall pipe into Big Darby Creek west of the filter bed area was found to be leaching low levels of cesium contamination which was then being concentrated in the stream bottom sediments. The pipe was removed following coordination with all cognizant regulatory authorities. Soil sampling on a 10-meter grid across the entire West Jefferson North site has not detected contamination above release levels, even beneath the asphalt pad east of JN-1. Soil sampling around the active and abandoned filter beds has detected cesium-137 contamination above release levels down to 3 meters depth. Total contaminated soil volume in this area is less than 7,000 ft^3.