RECORD OF DECISION AMENDMENT

OTTAWA RADIATION AREAS, NPL-11

LaSalle County, Ottawa, Illinois

Environmental Protection Agency
Region 5
Chicago, Illinois

Table of Contents

List of Figures

List of Tables

List of Appendices

I. Introduction to the Site and Statement of Purpose

Introduction
Site Name and Location - Ottawa Radiation Areas, NPL-11, Ottawa, LaSalle County, Illinois. Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number ILD980606750.

Statement of Purpose
This ROD Amendment is being issued by the United States Environmental Protection Agency (EPA) under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Specifically, this decision document has been prepared in compliance with CERCLA Section § 117 and NCP Section §300.435(c)(2)(ii).

The EPA is the lead agency and the Illinois Environmental Protection Agency and Illinois Emergency Management Agency (Illinois EMA) are the support agencies. This Record of Decision Amendment (ROD Amendment) for the Ottawa Radiation Areas, NPL-11 selects and explains the amended remedy. The amended remedy changes certain aspects of the September 24, 2003, Record of Decision (2003 ROD). The 2003 ROD selected a remedy that included excavation of contaminated soil exceeding 6.2 picoCuries per gram (pCi/g) of radium-226 at NPL-11.

The amended remedy is being adopted in response to new information that has been collected and analyzed since the 2003 ROD was issued. New information was obtained during the remedial design process and when additional sampling was conducted as part of the 2006-2007 NPL-1, NPL-9, NPL-11, and Illinois Power Building Remedial Action. Additional soil sampling was conducted and temporary wells were installed to measure the groundwater elevation, groundwater flow direction, and the effectiveness of a water filtration system. Figure 1 is a detailed site map. The excavation remedy was never implemented at NPL-11 because it was determined that excavating would be difficult with the need to manage groundwater and the depth of the excavation. Contamination was deeper than determined in the Site Characterization Report (2000). This new information can be found in the Administrative Record.

EPA has determined that it is appropriate to modify the 2003 ROD remedy for NPL-11 by selecting institutional controls as the amended remedy. Institutional controls, such as an environmental covenant under the Illinois Uniform Environmental Covenants Act, 765 ILCS Ch. 122 (UECA), would impose the following perpetual activity and use limitations on the NPL-11 Site (see Figure 2):

- Prohibit excavation of soil at the site below an elevation of 491.25 feet in the area demarcated as the extent of contamination, unless conducted pursuant to an EPA- or

Illinois EMA-approved work plan;

- Prohibit construction of any building in the area demarcated as the extent of contamination, unless a radon reduction system is operating and maintained to ensure that levels of radon in such buildings do not exceed 0.02 working level. Further, only slab-type buildings would be allowed;

- Require that material excavated from any portion of the site be tested and disposed of in accordance with applicable regulations; and

- Prohibit use of groundwater at the NPL-11 Site.

EPA will conduct five-year reviews as required under Section 121 of CERCLA, as amended by SARA and the National Contingency Plan which provide that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure protection of human health and the environment.

EPA has selected the Institutional Controls remedy for the NPL-11 subarea for the following reasons:

- When compared to other alternatives, the excavation of residual contamination would require complex engineering techniques which are technically impracticable to implement.

- Meets the 6.2 pCi/g surface standard of 40 C.F.R. 192.12(a) down to an elevation of 491.25 feet (approximately 5-6 feet below ground surface). A previous removal action excavated soil and left 5 to 6 feet of clean backfill over the area.

- Meets the supplemental standard established in 40 C.F.R. 192.21(c) for the subsurface material below 491.25 feet. The residual contamination which is non-homogenous and found as discrete small point sources below an elevation of 491.25 feet would not pose a present or future risk due to an environmental covenant prohibiting excavation of contaminated material, which exceeds 6.2 pCi/g below an elevation of 491.25 feet.

- Institutional controls prohibit building over the area demarcated as the extent of contamination (see Figure 2) unless a radon reduction system is operating and maintained to ensure that radon gas levels remain acceptable over the long-term.

This ROD Amendment will become part of the Administrative Record file, in accordance with the NCP. Section § 300.825(a)(2) administrative record requirement. The Administrative Record can be found at the EPA Region 5 Records Center, 7th Floor, Metcalfe Federal Building, 77 W. Jackson Blvd., Chicago. EPA has also established an information repository at the Reddick

Library, 1010 Canal Street, Ottawa, Illinois. A copy of the Administrative Record for the site is maintained at the library.

II. Site History, Contamination, and Selected Remedy

Site History

NPL-11 is located on the northeast side of the City of Ottawa, LaSalle County, Illinois. The 0.75-acre site consists of a residential lot bordered by Bellevue Avenue to the north, Goose Creek to the south, and residences to the east and west. Residential properties constitute the primary land use in the vicinity of the site and it is expected to remain that way in the future.

The Ottawa Radiation Sites became contaminated as a result of activities associated with two radium dial painting companies: the Radium Dial Company, which operated in the City of Ottawa from 1920 through 1932 and the Luminous Processes, Inc. (LPI), which operated in the City of Ottawa from 1932 to 1978. The source of contamination was radium sulfate paint that Radium Dial and LPI used in their dial painting operations. During the course of operations, the companies' equipment, material, buildings, and surrounding work areas became contaminated with radium-226, the major isotope of radium sulfate. Waste from these companies was likely disposed of at NPL-8 and may have been used as fill material within the community. Debris from the demolition of the Radium Dial facility, which occurred in 1968, was probably also buried at one or more locations in the area. The Illinois Department of Nuclear Safety currently known as the Illinois Emergency Management Agency demolished the LPI building in 1985, and contaminated debris from this demolition was disposed of at a licensed radioactive disposal facility.

The EPA and the State of Illinois discovered 16 areas in and around the City of Ottawa with radioactive contamination and subsequently targeted them for cleanup. On July 29, 1991, EPA added the Ottawa Radiation Areas, including NPL-11 to the National Priorities List (NPL).

Of the 16 areas, EPA prioritized residential properties and properties near residential areas because they posed a greater endangerment to the public. Between 1993 and 1997, EPA conducted removal activities on 12 of the 16 sites. As part of the removal action in 1996, EPA excavated contaminated soil above 6.2 pCi/g radium at NPL-11. EPA removed a total of 4,176 tons of radium-contaminated soil from three of the NPL-11 properties, Parcel #1, #2, and #3. Parcel #1 was cleaned up to meet the 6.2 pCi/g standard and the radon reduction system was disconnected in that home. The home on Parcel #2 was moved to Lot 18. The cleanup at Parcel #2 and Parcel #3 were terminated due to the difficulties of excavating material located below groundwater. Verification samples indicated that contamination remained below the water table at the elevation 491.24 feet (6 feet below ground surface). Five to six feet of clean backfill was placed over the contamination.

Contamination

EPA's investigation of the residential lot in 2000 found radium-226 concentration exceeded the 6.2 pCi/g standard in one of 24 samples at a depth of 6 feet to 8 feet below ground surface (bgs) at a concentration of 19.5 pCi/g. The estimated volume of radium-226 contaminated soil on site was 74 cubic yards. Groundwater levels ranged from 7 to 10 feet bgs.

In 2006 through 2007, preliminary remedial action sampling was conducted to further delineate the radium-contaminated soil. Three of 22 samples exceeded the 6.2 pCi/g standard; ranging from 9.43 to18.4 pCi/g with depths to 13 feet. The depth to groundwater below the site ranges from 4 to 6 feet bgs. The estimated volume of contamination was revised to 6,070 cubic yards. The radium contamination is non-homogenous, similar to the other subareas.

The preliminary remedial action sampling also included sampling three temporary wells to determine the groundwater elevation, groundwater flow direction, and the effectiveness of a water filtration system. These temporary wells were not installed to characterize the groundwater below the site. Therefore, an annular seal was never placed above a sand pack and the wells were not completed to satisfy the Illinois Water Well Code. The three temporary wells were screened from 5 to 15 feet bgs within the fill and silt overlying the sandstone. The temporary wells were not purged prior to sampling in order to collect a turbid sample that would be representative of groundwater infiltrating an excavation during a remedial action. The results from three temporary wells ranged from 0.6 to 16.9 1 pCi/L for radium-226 which are less than naturally occurring levels of 17.4 pCi/L found in a residential well at NPL-4. Because the temporary well was screened in the fill material, the radium-226 maybe attributed to the presence of radium sulfate bound to particulate matter in the unfiltered sample. Radium sulfate has a low solubility in water. The 2005, treatability study results indicated that the hydraulic conductivity of the shallow aquifer ranged from 1×10^{-2} to 1×10^{-1} centimeters per second. An additional investigation of groundwater will be conducted in the future to determine the extent of contamination.

Groundwater Use in the Area

City of Ottawa municipal drinking water is supplied to city residents from four large volume wells. All of the municipal wells are screened between 1,180 and 1,220 feet bgs within the Galesville Sandstone, and are located within the northeast quadrant of the city. Saline groundwater was encountered at a depth of 1,500 feet bgs during installation of the municipal wells. The concentration of radium in groundwater, in Ottawa and regionally, is historically high due to elevated levels of naturally-occurring radium from the radioactive decay of thorium in both the Galesville and St. Peter Sandstone aquifers. The St. Peter Sandstone was encountered at 16 feet bgs at the NPL-11 Site. The Galesville and St. Peter Sandstone aquifers are not hydraulically connected. In the City of Ottawa, the water supply wells radium concentrations range from 3.8 to 12.4 picoCuries per liter (pCi/L). This concentration exceeds the IEPA Groundwater Quality Standards for Class I Groundwater of 5 pCi/L.

EPA has sampled residential wells, up-gradient and side-gradient to the NPL-4 Site which were screened in the St. Peter Sandstone aquifer. Analytical results of the four unfiltered groundwater samples indicated total radium concentrations as high as 17.4 pCi/L. The total radium concentrations in all four unfiltered groundwater samples exceeded the Illinois EPA Groundwater Quality Standards for Class I Groundwater of 5 pCi/L. The residential wells sampled for the NPL-4 investigations were located within 1.5 miles of the NPL-11 Site within ½ miles of the city limits.

The City of Ottawa has an Ordinance (Number 002-2007) which prohibits the use of groundwater as a potable water supply by the installation or use of potable water supply wells within the City. The Ordinance, effective January 16, 2007, applies to drilling new potable water supply wells and does not address existing wells. Wells installed prior to January 16, 2007 may still be in use.

Summary of Site Risks

Summary of Human Health Risk Assessment: A new risk assessment was conducted (see Table 1). The site was evaluated for the following uses: residential, commercial/industrial workers (indoor and outdoor), construction workers, trespassers, and recreational. Exposure pathways included ingestion, inhalation, and external exposure. The radon concentrations were not measured at the site but were estimated using RESRAD's radon pathway model.

The risk exceeds EPA's upper risk range:

- Current – resident (external exposure and indoor radon inhalation) and industrial/commercial worker indoors (indoor radon inhalation)

- Future – resident (external exposure and indoor radon); industrial/commercial worker indoors (indoor radon inhalation); and industrial/commercial worker outdoor (external exposure)

The level of uncertainly in the risk assessment is moderate. Most of the uncertainly results in the over-estimation of risk but some uncertainties may results in either over- or under- estimation of the risk. However, it is likely that the overall risk is over-estimated by one order of magnitude.

Summary of Ecological Risk Assessment: An ecological risk assessment was not conducted for this site due to its small size, its lack of habitat, and its highly-developed locale.

Human Health Risk Associated with Residual Radium Contaminated Soil: The human health risk associated with residual radium-226 exposure after the implementation of each alternative was calculated (see Tables 2, 3, and 4). For the No Action Alternative, the risks are the same as the above human health calculations since no action would occur. For the excavation alternatives, the acceptable residential land use risk is exceeded due to background. For the institutional control remedy, the acceptable residential land use risk is exceeded but it is lower

than background.

Remedial Action Objectives

The Remedial Action Objectives (RAOs):

- Human Health - prevent ingestion, inhalation, and external exposure to surface soil, subsurface soil, and groundwater contamination.
- Environmental Protection - prevent lateral migration of radium-226 in groundwater and prevent exposure of wildlife to contaminated soil.

Original Selected Remedy

On September 24, 2003, EPA issued the Ottawa Radiation Areas, NPL-11 subarea remedy. The remedy included:

- Excavate soil contaminated with radium-226 above 6.2 pCi/g;
- Backfill excavated areas with clean material;
- Dispose of the excavated contaminated material at a licensed radioactive material or an off-site landfill in accordance with applicable federal and/or state regulations;
- Collect perched groundwater (if necessary), treat and discharge to surface water or discharge to the City of Ottawa's wastewater treatment system; and
- Option of volume reduction - Process excavated soil to (a) separate out the contaminated portion; (b) reduce, to the extent practical, the volume of contaminated soil to be disposed of off-site. This may be done using mechanical screening and/or Segmented Gate System if that system is determined to be effective for the volume of soil to be excavated.

III. Basis for the Document

Summary of Information that Prompted the Remedy Change

The previously selected excavation remedy would be more difficult to implement because the contamination is deeper (down to 13 feet bgs), the groundwater table is at 4 to 6 feet bgs rather than 7 to 10 feet as previously determined, and the volume of radium-contamination soil has increase from 74 cubic yards to 6,070 cubic yards. The radium-226 soil contamination is consistent with the previous investigation in that it is non-homogenous and found as discrete small point sources. During the 2000 sampling event, one of 24 samples exceeded the 6.2 pCi/g cleanup standard. During the 2006-2007 sampling event, three of 22 samples exceeded the cleanup standard.

Implementing the excavation remedy would be difficult because of the need to manage groundwater and the depth of the excavation. Based on the site geology, unconsolidated aquifer, dewatering the excavation would require pumping 24 hours per day, 7 days a week Residents in close proximity to the site would need to be temporarily relocated during dewatering operations. Dry conditions would not be achieved through the dewatering. Personnel would not be able to safely enter the excavation to conduct manual screening of the excavation floor and sidewall to verify that the 6.2 pCi/g standard has been achieved.

The cost of implementing the excavation remedy set forth in the 2003 ROD would increase from $200,000 to $4,880,000. Instead of one week, it would take 20 weeks to implement the excavation remedy. The cost increase is mainly due to soil excavation, handling of soil during dewatering, dewatering system, and off-site disposal.

Summary of Information that Supports Remedy Change

The remedy meets the 6.2 pCi/g surface standard of 40 C.F.R. 192.12(a) down to an elevation of 491.25 feet (approximately 5-6 feet below ground surface). As part of the removal action in 1996, EPA excavated contaminated soil above 6.2 pCi/g radium at NPL-11. Verification samples indicated that contamination remained below the water table at the elevation 491.24 feet (6 feet below ground surface). Five to six feet of clean backfill was placed over the contamination.

EPA established the cleanup level of 6.2 pCi/g for radium-226 in part on 40 C.F.R. Part 192, Standards for the Stabilization, Disposal, and Control of Uranium and Thorium Mill Tailings. The surface soil standard (5 pCi/g radium-226 above background) in 40 C.F.R. Part 192 is not applicable, but is a relevant and appropriate requirement at the site.

The remedy meets the supplemental standard established in 40 C.F.R. 192.21(c) for the subsurface material below 491.25 feet. The residual contamination which is non-homogenous and found as discrete small point sources below an elevation of 491.25 feet would not pose a present or future risk due to an environmental covenant prohibiting excavation of contaminated material, which exceeds 6.2 pCi/g below an elevation of 491.25 feet.

> *40 C.F.R. 192.21 (c). The estimated cost of remedial action to satisfy § 192.12(a) at a "vicinity" site (described under section 101(6)(B) of the Act) is unreasonably high relative to the long-term benefits, and the residual radioactive materials do not pose a clear present or future hazard. The likelihood that buildings will be erected or that people will spend long periods of time at such a vicinity site should be considered in evaluating this hazard. Remedial action will generally not be necessary where residual radioactive materials have been placed semi-permanently in a location where site-specific factors limit their hazard and from which they are costly or difficult to remove, or where only minor quantities of residual radioactive materials are involved. Examples are residual radioactive materials under hard surface public roads and sidewalks, around public sewer lines, or in fence post foundations. Supplemental standards should not be applied at such sites, however, if individuals are likely to be exposed for long periods of time to radiation from such materials at levels above those that would prevail under § 192.12(a).*

The remedy requires that a Five-Year Review be conducted as required by the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii).

EPA's Directive No. 9200.4-25 (February 1998). If supplemental standards in 40 CFR 192, Subpart C, are used in conjunction with the above standards for the remediation of soil, institutional controls should generally be included as a component of cleanup alternatives in order to ensure the response will be protective over time. The requirement of a 5-year review (see 40 CFR §300.430(f)(4)(ii)) would apply if the use of supplemental standards were to result in waste being left on-site at levels that would require limited use and restricted exposure to ensure protectiveness

Institutional controls prohibit building over the area demarcated as the extent of contamination unless a radon reduction system is operating and maintained to ensure that radon gas levels remain acceptable.

Shielding provided by the clean backfill placed on site after the 1996 removal action combined with the environmental covenant, would eliminate external exposure and inhalation hazards associated with the residual contamination.

The installation of a radon reduction system ensures that exposure risks associated with indoor inhalation of radon remain acceptable over the long-term. The residential residual risk is lower than the site background risk.

The NPL-11 Site - Feasibility Study Report (March 2010) and NPL-1, 9, 11, and Illinois Power Building Site - Remedial Action Report (October 2007) are included in the Administrative Record support the need for this amendment.

IV. Description of Alternatives and Evaluation of Alternatives

The following four alternatives were evaluated in the feasibility study. Alternative 2 is the same as the previously selected remedy:

Alternative 1--No Action (Present Worth $0)
The no action alternative is required by CERCLA to be carried forward to the detailed analysis phase in order to provide a baseline for comparison with the other alternatives. The no action alternative provides that no remedial action would be undertaken at the site; therefore, the potential human health and environmental risks associated with exposure to radium-226 would not be mitigated.

Alternative 2--Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal (Present Worth $4,880,000)
This alternative would consist of the following components:

- Dewatering of the excavation and staged soil, and groundwater treatment using filtration and discharge to the City of Ottawa wastewater treatment plant;
- Excavation and staging of soil containing radium-226 at concentrations exceeding 6.2

pCi/g;
- Volume reduction of soil that requires disposal at a radioactive landfill using manual screening;
- Off-site disposal of soil exhibiting radioactivity levels of 6.2 pCi/g or greater at a licensed radioactive waste landfill; and
- Off-site disposal of soil exhibiting radioactivity levels of less than 6.2 pCi/g at a licensed special waste landfill.

This alternative would involve excavation of soil containing radium-226 at concentrations exceeding 6.2 pCi/g from the site and subsequent off-site disposal of the excavated soil. Soil containing radium-226 at concentrations less than 6.2 pCi/g is overlying and intermingled with soil containing radium-226 at concentrations exceeding the standard of 6.2 pCi/g. Therefore, in order to remove the radium-226-contaminated soil, additional soil would require excavation.

Groundwater encountered during the excavation activities would be pumped from the excavation, treated, and discharged to the City of Ottawa wastewater treatment plant through the sanitary sewer underlying Bellevue Avenue. Filtration would be sufficient for treating the groundwater.

The volume of excavated soil requiring disposal at a landfill approved for radioactive waste would be reduced through manual screening of excavated soil with a gamma radiation instrument and through confirmation laboratory analysis. Soil exceeding the standard of 6.2 pCi/g would be transported off-site for disposal at a landfill approved for radioactive waste. Soil below the standard of 6.2 pCi/g would be transported off-site for disposal at a special waste landfill. The excavated areas would be backfilled with clean material from an off-site source once the excavation was completed.

Alternative 3--Installation of a Vertical Barrier, Groundwater Collection Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal (Present Worth $4,750,000)

This alternative would consist of the following components:
- Installation of a vertical barrier, such as a slurry wall or sheet piling, to reduce the influx of groundwater into the excavation;
- Collection of groundwater in the excavation using continuous pumping, dewatering of the staged soil, and groundwater treatment using filtration and discharge to the City of Ottawa wastewater treatment plant;
- Excavation and staging of soil containing radium-226 at concentrations exceeding 6.2 pCi/g;
- Volume reduction of soil that requires disposal at a radioactive landfill using manual screening;
- Off-site disposal of soil exhibiting radioactivity levels of 6.2 pCi/g or greater at a licensed radioactive waste landfill; and
- Off-site disposal of soil exhibiting radioactivity levels of less than 6.2 pCi/g at a licensed

special waste landfill.

This alternative would involve excavation of soil containing radium-226 at concentrations exceeding 6.2 pCi/g from the site and subsequent off-site disposal of the excavated soil. Soil containing radium-226 at concentrations less than 6.2 pCi/g is overlying and intermingled with soil containing radium-226 at concentrations exceeding the preliminary remediation goal (PRG) of 6.2 pCi/g. Therefore, in order to remove the radium-226-contaminated soil, additional soil would require excavation.

A vertical barrier, such as a slurry wall or sheet piling, would be installed around the perimeter of the site to reduce the amount of groundwater encountered during excavation activities. Groundwater encountered during the excavation activities would be pumped from the excavation, treated, and discharged to the City of Ottawa wastewater treatment plant through the sanitary sewer underlying Bellevue Avenue. Filtration would be sufficient for treating the groundwater.

The volume of excavated soil requiring disposal at a landfill approved for radioactive waste would be reduced through manual screening of excavated soil with a gamma radiation instrument and through confirmation laboratory analysis. Soil exceeding the cleanup level of 6.2 pCi/g would be transported off-site for disposal at a landfill approved for radioactive waste. Soil below the cleanup level of 6.2 pCi/g would be transported off-site for disposal at a special waste landfill. The excavated areas would be backfilled with clean material from an off-site source once the excavation was completed.

Alternative 4—Institutional Controls (Present Worth $210,000)

This alternative would consist of institutional controls, such as an environmental covenant under the Illinois Uniform Environmental Covenants Act, 765 ILCS Ch. 122 (UECA), to impose the following use limitations on the NPL-11 Site:

- Prohibit excavation of soil at the site below an elevation of 491.25 feet in the area demarcated as the extent of contamination, unless the excavation is conducted pursuant to a EPA- or Illinois EMA-approved work plan;
- Prohibit construction of any building in the area demarcated as the extent of contamination, unless a radon reduction system is operating and maintained to ensure that levels of radon in such buildings do not exceed 0.02 working level. Only slab-type buildings are allowed;
- Require that material excavated from any portion of the site be tested and disposed of in accordance with applicable regulations; and
- Prohibit use of groundwater at the NPL-11 Site.

EPA will conduct five-year reviews as required under Section 121 of CERCLA, as amended by SARA and the National Contingency Plan which provide that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure

protection of human health and the environment.

Summary of Comparative Analysis of Remedy Alternatives

In accordance with the NCP, the alternatives were evaluated by the EPA using nine criteria. For an alternative to be an acceptable remedy it must pass the EPA's two threshold criteria 1) Overall Protective of Human Health and the Environment and 2) Compliance with Applicable or Relevant and Appropriate Requirements (ARARs).

Overall Protection of Human Health and the Environment: Alternative 1 involves no action. Alternatives 2 and 3 involve the removal of all soil containing radium-226 at concentrations exceeding 6.2 pCi/g from the site; therefore, the potential for the radium-226 to migrate vertically and laterally would be completely eliminated. Alternative 4 does not involve the removal of radium-226 contaminated soil and would not eliminate the potential for radium-226 to migrate from the site. However, shielding provided by the clean backfill placed on the site after the 1996 removal action, combined with the environmental covenant, would prevent external exposure and inhalation hazards associated with the contamination. The site-related risk associated with radium-226 exposure was calculated for each alternative and is included as Tables 2, 3, and 4. Based on these calculations, the site-related risk for Alternative 1 for residential land use would be $4.4x\ 10^{-3}$, while the site-related risk for Alternatives 2 and 3 would be $1x10^{-3}$ (background) and the site-related risk for Alternative 4 would be $6.5x10^{-4}$. Therefore, Alternative 4 provides the greatest overall protection of human health and the environment. The lower risk associated with Alternative 4 is primarily due to the institutional control that requires any buildings constructed at the site to install a radon reduction system to ensure that exposure risks associated with indoor inhalation of radon remain acceptable over the long-term.

Compliance with ARARs: The detailed analysis of alternatives compliance with potential ARARs is set forth in Table 5. Except for Alternative 1, all alternatives would meet the ARARs. The standards of 40 CFR Part 192 are not an applicable requirement because the radioactive material at the NPL-11 Site is not residual material from inactive uranium processing sites. The health-based surface soil standard of 5 pCi/g plus background may be a relevant and appropriate standard because this surface soil standard is a health-based standard whose purpose was to limit the risk from radium-226 and other radioactive chemicals. EPA determined that a standard of 6.2 pCi/g for radium-226 was appropriate based on the background level in the Ottawa area of 1.2 pCi/g for radium-226 plus the 5 pCi/g health-based surface soil standard set forth in 40 CFR Part 192. Alternatives 2 and 3 meet the standard of 6.2 pCi/g. Alternative 4 meets the standard for radium-226 from the ground surface to an elevation of 491.25 feet. Alternative 4 meets the supplemental standard established in 40 CFR Part 192.21(c) for the subsurface material below an elevation of 491.25 feet. For Alternative 4, the residual radioactive material below an elevation of 491.25 feet at the NPL-11 Site would not pose a present or future risk due to an environmental covenant prohibiting excavation of the contaminated material, which exceeds 6.2 pCi/g below an elevation of 491.25 feet. Alternative 4 implements institutional controls that will prohibit building over the area demarcated as the extent of contamination (see Figure 2), unless a radon

reduction system is operated and maintained to ensure that radon gas levels remain acceptable over the long-term.

Long-Term Effectiveness and Permanence: Alternative 1 would not offer long-term effectiveness because no further remedial action would be implemented. Alternatives 2 and 3 would offer the most long-term effectiveness because all the contaminated material would be removed from the site and there would be no uncertainty regarding future exposure risks associated with the contamination. Alternatives 2 and 3 also would allow unrestricted land use at the site. Alternative 4 would offer long-term effectiveness because the environmental covenant would impose perpetual use limitations at the site but would require long-term stewardship of the covenant.

Reduction of Toxicity, Mobility, and Volume Through Treatment: Treatment is not a principal element of any of the alternatives. None of the alternatives would reduce the toxicity, mobility, or volume of the radium-226 in soil through treatment. Alternative 2 and 3 would treat groundwater through filtration; however, these alternatives would simply transfer radium-226 to an off-site location. Alternatives 4 does have a treatment component, if a building is constructed a radon reduction system is required. The radon reduction system, an active control, will minimize the radon risk. EPA has determined that radium-226 contamination does not meet characteristics of materials requiring treatment as described in OSWER Directive 9380.2-06FS entitled "A Guide to Principal Threat and Low Level Threat Wastes."

Short-Term Effectiveness: Alternatives 1 and 4 would be effective in the short-term because the site does not pose an imminent danger; current site risks are manageable without remediation. In the implementation of Alternatives 2 and 3, there is a potential for cross-media contamination and short-term impacts to the community and on-site worker. Residents in close proximity to the site may need to be temporarily relocated during dewatering operations due to noise. Alternatives 2 and 3 would have a lesser short-term effectiveness because appropriate measures would need to be implemented to minimize environmental releases to protect the community, workers, and environment from impacts associated with implementing these alternatives.

Implementation: Implementability is measured in terms of the ability to construct and operate an alternative, the ease of additional remediation, the ability to monitor, and the availability of services and materials. Alternative 1 would not involve implementing any remedial measures and therefore would be easy to implement.

Alternatives 2 and 3 would both be moderately difficult to construct and operate. Alternatives 2 and 3 also would require excavation and disposal. Excavation could be difficult because of the need to manage groundwater and the depth of the excavation. Because of the depth of excavation and the volume of groundwater requiring management, Alternative 2 would be more difficult to implement than Alternative 3.

Alternative 4 would involve an environmental covenant and would be easier to implement than Alternatives 2 and 3.

Alternatives 2 and 3 would be the best selections in terms of ease of additional remediation and ability to monitor because all the contaminated material would be removed and would not require additional remediation or monitoring. Alternative 4 would require any building constructed on the site to install and maintain a radon reduction system.

Alternatives 2 and 3 would be essentially the same in terms of availability of services and material; these are readily available. No services or materials would be needed to implement Alternative 4.

Alternatives 2 and 3 would be similar in terms of overall implementability, although Alternative 3 would be less difficult to implement than Alternative 2 because the volume of groundwater requiring management would be less. Alternative 4 would be less difficult to implement than Alternatives 2 and 3.

Cost: No costs are associated with Alternative 1 (No Action). Other than Alternative 1, Alternative 4 has the lowest cost, with a total present worth cost of $210,000. Alternative 2 would cost $4,880,000, and Alternative 3 would cost $4,750,000.

State Acceptance: The EPA provided the State of Illinois with an opportunity to concur with the recommended remedies. Any future letter from the State of Illinois regarding concurrence on the selected remedies will be added to the Administrative Record.

Community Acceptance: The community has indicated that it supports EPA's recommendations.

Principal Threat Wastes

The NCP established an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP §300.430(a)(1)(iii)(A)). The principal threat concept is applied to the characterization of source material at a Superfund site. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile. EPA has determined that radium-226 at the Ottawa Radiation Areas is not a principal threat waste. The residual contamination is non-homogenous and found as discrete small point sources. The source material is not highly toxic or highly mobile. EPA has determined that radium-226 contamination does not meet characteristics of materials requiring treatment as described in OSWER Directive 9380.2-06FS entitled "A Guide to Principal Threat and Low Level Threat Wastes." There are no non-aqueous phase liquids (NAPLs) at these two sites and as a result principal threat waste was not considered.

Selected Remedy

Based upon considerations of the requirements of CERCLA, the NCP and balancing of the nine criteria, EPA has determined that Alternative 4, Institutional Controls, is the most appropriate for

the NPL-11 Site. When comparing Alternative 4, Institutional Controls to the excavation alternatives, the excavation of residual contamination would require complex engineering techniques which are technically impracticable to implement.

Summary of Rationale for the Selected Remedy

Description of Selected Remedy: Institutional controls would consist of an environmental covenant that imposes activity and use limitations on the site property. The environmental covenant would remain in place for perpetuity. The environmental covenant would prohibit soil excavation below an elevation of 491.25 feet in the area demarcated as the extent of contamination (see Figure 2), unless conducted pursuant to an EPA- or IEMA-approved work plan. Although contaminated soil would not be removed, the overlying clean backfill would minimize future direct contact with the radium-226. If a building is erected at the site, it would be a slab-type building and it would be serviced by municipal water and sewer. Based on preliminary radium-226 groundwater data, EPA has determined that an environmental covenant is necessary to prohibit the use of groundwater for consumption. An additional investigation of groundwater will be conducted in the future to determine the extent of contamination. Excavation of soil would be required for the installation of lateral water and sewer pipes from the water and sewer mains underlying Bellevue Avenue. Soil excavation for laying the lateral water and sewer pipes would not be permitted below an elevation of 491.25 feet in the area demarcated as the extent of contamination. In addition, material excavated from any portion of the site must be tested and disposed of in accordance with applicable regulations. The excavated areas would be backfilled to grade with clean fill after confirmation sampling results have verified that radium-226 concentrations are below 6.2 pCi/g.

Although the radium-contaminated soil is present below an elevation of 491.25 feet in the area demarcated as the extent of contamination and is covered by clean material, the risk assessment determined that radon gas inhalation could be a concern at the site. Therefore, any buildings constructed in the area demarcated as the extent of contamination at the site would be required to install and maintain a radon reduction system to ensure that exposure risks associated with indoor inhalation of radon remain acceptable over the long-term.

The institutional controls would need to be implemented by the property owners, monitored by the City of Ottawa, and enforced by EPA and the State of Illinois. EPA anticipates that environmental covenants could be implemented on the property. The owners of one lot have signed an Administrative Order on Consent agreeing to prohibit residential and commercial construction on the parcel as part of the 1996 removal action. Discussions are underway for implementation of an environmental covenant on the other lot. Because excavation, volume reduction, groundwater management, and off-site disposal would not be conducted, this alternative would be easy to moderate to implement.

The City of Ottawa will establish a repository for environmental covenants and develop procedures for notifying applicants for building permits of activity and use restrictions for the

Ottawa Radiation Areas in accordance with the Remedial Action Consent Decree for the Ottawa Radiation Site, NPL-8 and Luminous Processes Inc. Adjacent subareas (May 2010).

Operation and maintenance (O&M) will be conducted for this Alternative in the form of five-year review periods.

Cost Estimate for the Selected Remedy: For the NPL-11 Site, the cost estimate was developed in the 2010 Feasibility Study Report. The total present worth of this potential alternative, including capital cost is $210,000. A majority of the cost is due to O&M. A detailed breakdown of the cost can be found in Table 6, 7, and 8.

Estimated Outcomes of the Selected Remedy: EPA believes that implementation of the selected remedy will return the site to residential use by eliminating risk from exposure to soil contaminated with radium-226 and radon. This site could be available for residential or commercial use immediately upon implementation of the institutional controls.

Scope and Role of Response Action
EPA does not have sufficient groundwater data to determine if the residual contamination poses a threat to groundwater. Therefore, groundwater will be further evaluated to determine if a response action is necessary. If groundwater contamination is found, a remedy for groundwater may be warranted and presented in a future proposed plan.

V. Support Agency Comments

The EPA provided the State of Illinois with an opportunity to concur with the recommended remedies. Any future letter from the State of Illinois regarding concurrence on the selected remedies will be added to the Administrative Record.

VI. Statutory Determinations

Statutory Determinations
Under CERCLA §121 and the NCP, 40 C.F.R. Part 300, EPA must select remedies that: protect human health and the environment; comply with applicable or relevant and appropriate requirements, unless a statutory waiver is justified; are cost-effective; and utilize permanent solutions and alternatives treatment technologies or resources recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element. CERCLA also has a bias against off-site disposal of untreated wastes. This section discusses how selected remedy meets these statutory requirements.

Overall Protection of Human Health and the Environment: EPA has determined that the selected remedy would provide adequate protection of human health and the environment. The residual contamination which is non-homogenous and found as discrete small point sources below an elevation of 491.25 feet would not pose a clear present or future hazard due to an environmental covenant prohibiting excavation of contaminated material, which exceeds 6.2 pCi/g below an elevation of 491.25 feet. Shielding provided by the clean backfill place on site after the 1996 removal action combined with the environmental covenant, would eliminate external exposure and inhalation hazards associated with the residual contamination. The installation of a radon reduction system ensures that exposure risks associated with indoor inhalation of radon remain acceptable over the long-term.

Soil excavation will not be permitted below an elevation of 491.25, which will prevent the residual contamination from being brought to the surface. Therefore, the risk associated with direct contact, external exposure, and inhalation or ingestion exposure of contaminated soil at the site would be significantly reduced. In addition, the clean backfill cover combined with the institutional controls will prevent migration of the contamination to surface water via storm water runoff. Furthermore, at an elevation of 491.25 feet, the residual contamination is below the biological active zone where plants and other soil dwelling organisms feed, preventing exposure of wildlife to the radium-226. Thus, this remedy would be protective of human health and the environment.

Radon gas, a daughter product of radium-226, presents a risk when it becomes concentrated within buildings and is inhaled. Although the radium-contaminated soil is present at depths below an elevation of 491.25 feet in the area demarcated as the extent of contamination and is covered by clean material, the risk assessment determined that radon gas inhalation could be a concern at the site. Therefore, any buildings constructed in the area demarcated as the extent of contamination at the site would be required to incorporate a radon reduction system to ensure that exposure risks associated with indoor inhalation of radon remain acceptable over the long-term.

If a building is constructed on any portion of the site, the slab-type building would be a required to be serviced by municipal water and sewer. Constructing private wells on any portion of the site would not be permitted for use of groundwater for consumption.

Compliance with ARARs: The selected remedy meets the ARARs set forth in Table 5. The remedy meets the 6.2 pCi/g surface standard of 40 C.F.R. 192.12(a) down to an elevation of 491.25 feet (approximately 5-6 feet below ground surface). A previous removal action excavated soil and left 5 to 6 feet of clean backfill over the area.

EPA established the cleanup level of 6.2 pCi/g for radium-226 in part on 40 C.F.R. Part 192, Standards for the Stabilization, Disposal, and Control of Uranium and Thorium Mill Tailings. The surface soil standard (5 pCi/g radium-226 above background) in 40 C.F.R. Part 192 is not applicable, but is a relevant and appropriate requirement at the site. The subsurface standard (15

pCi/g radium-226) in 40 C.F.R. Part 192 is not an ARAR.

The standards contained within Subpart B of 40 C.F.R. Part 192 are not applicable to the Ottawa Site because they are only applicable for Title I sites designated under Section 102(a)(1) of Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. 7918). The radioactive material at Ottawa is not residual material from inactive uranium processing sites. Subpart B of 40 C.F.R. Part 192 contains two different soil standards. The concentration criterion for surface soil (5 pCi/g of radium-226 above background) is a health-based standard. As stated in 48 Federal Register 600, the relevant source of health risk for surface soil is exposure to gamma radiation, which is the basis for this standard. The purpose of the standard was to limit the risk from inhalation of radon decay products in houses built on land and to limit gamma radiation exposure of people using contaminated land. Thus, this standard is relevant and appropriate to the Ottawa Radiation Site.

The concentration criterion for subsurface soil in Subpart B (15 pCi/g of radium-226) is not a health-based standard, but rather was developed for use in limited circumstances to allow the use of field measurements rather than laboratory analyses to determine when buried tailings had been detected. Thus, the subsurface standard is not relevant and appropriate to the residential areas.

The cleanup standard is established as the removal of soils exhibiting levels of radium-226 at 5 pCi/g above background. The background level of radium-226 in the Ottawa areas was determined to be 1.2 pCi/g. Therefore the cleanup level for radium-226 in soils in residential areas is 6.2 pCi/g and thus meets 40 C.F.R. Part 192.

The remedy meets the supplemental standard established in 40 C.F.R. 192.21(c) for the subsurface material below 491.25 feet. The residual contamination which is non-homogenous and found as discrete small point sources below an elevation of 491.25 feet would not pose a present or future risk due to an environmental covenant prohibiting excavation of contaminated material, which exceeds 6.2 pCi/g below an elevation of 491.25 feet.

The remedy meets the standard established in 40 C.F.R. 192.12(b)(1) and 192.41(b) for occupied or habitable buildings. The institutional control will prohibit construction of any building in the area demarcated as the extent of contamination, unless a radon reduction system is operating and maintained to ensure that levels of radon in such buildings do not exceed 0.02 working level. A reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 working level. In any case, the radon decay product concentration (including background) shall not exceed 0.03 working level. The standard is applicable to radon-222 and radon 220.

Other Criteria, Advisories, or Guidance To Be Considered (TBCs) for this Remedial Action: In implementing the remedy, EPA and the State will often consider a number of non-binding criteria as criteria "to be considered" (TBCs). The selected remedy meets the TBCs set forth in Table 5.

Cost-Effectiveness: The selected remedy is cost-effective for mitigating the risks associated with exposure to soil contaminated with radium-226 at the site. Section 300.430(f)(1)(ii)(D) of the NCP requires EPA to determine cost-effectiveness by evaluating the cost of an alternative relative to its overall effectiveness. The selected remedy provides effective protection of human health and the environmental relative to its overall effectiveness. The selected remedy provides effective protection of human health and the environment for the most reasonable potential future land use scenarios at the site. When compared to other alternatives, excavation of residual contamination is not a cost-effective remedy because excavating below the groundwater table would be difficult and protectiveness can be achieved with institutional controls which meet the supplemental standard. The selected remedy provides a far greater protection than the no-action alternatives.

Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable: EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practical manner. EPA has determined that radium-226 contamination does not meet characteristics of materials requiring treatment as described in OSWER Directive 9380.2-06FS entitled "A Guide to Principal Threat and Low Level Threat Wastes." The Institutional Controls remedy does have a treatment component, if a building is constructed a radon reduction system is required. The radon reduction system, an active control, will minimize the radon risk.

Preference for Treatment as a Principal Element: The selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). EPA has determined that radium-226 contamination does not meet characteristics of materials requiring treatment as described in OSWER Directive 9380.2-06FS entitled "A Guide to Principal Threat and Low Level Threat Wastes." The Institutional Controls remedy does have a treatment component, if a building is constructed a radon reduction system is required. The radon reduction system, an active control, will minimize the radon risk.

Five-Year Review Requirement: The selected remedy for NPL-11 will result in hazardous substances remaining on-site above levels that will not allow for unlimited use and unrestricted exposure. Therefore, EPA will conduct a review within five years after the initiation of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

VII. Public Participation Compliance

The Administrative Record can be found at the EPA Region 5 Records Center, 7th Floor, Metcalfe Federal Building, 77 W. Jackson Blvd., Chicago. EPA also established an information

repository at the Reddick Library, 1010 Canal Street, Ottawa, Illinois. A copy of the Administrative Record for the site is maintained at the library.

EPA issued the Proposed Plan for the ROD Amendment and the public comment period for the Proposed Plan was established from May 3 to June 11, 2010. EPA held a public meeting on May 19, 2010.

EPA received formal oral comments at the public meeting. However, EPA did not receive any written comments during the comment period. The comments and EPA's responses are included in the Responsiveness Summary as Appendix A of this document. The community has indicated that it supports EPA's recommendation.

EPA has met the public participation requirements of Sections 113(k)(2)(B) and 117 of CERCLA, 42 U.S.C. §§ 9613(k)(2)(B) and 9617 for the remedy selection process for the Ottawa Radiation Areas, NPL-11 subarea. This decision document presents the selected remedy for radium contaminated soils for the Ottawa Radiation Areas, NPL-11 subarea. The remedy has been chosen in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision for this site is based on the Administrative Record.

VIII. Documentation of Significant Changes

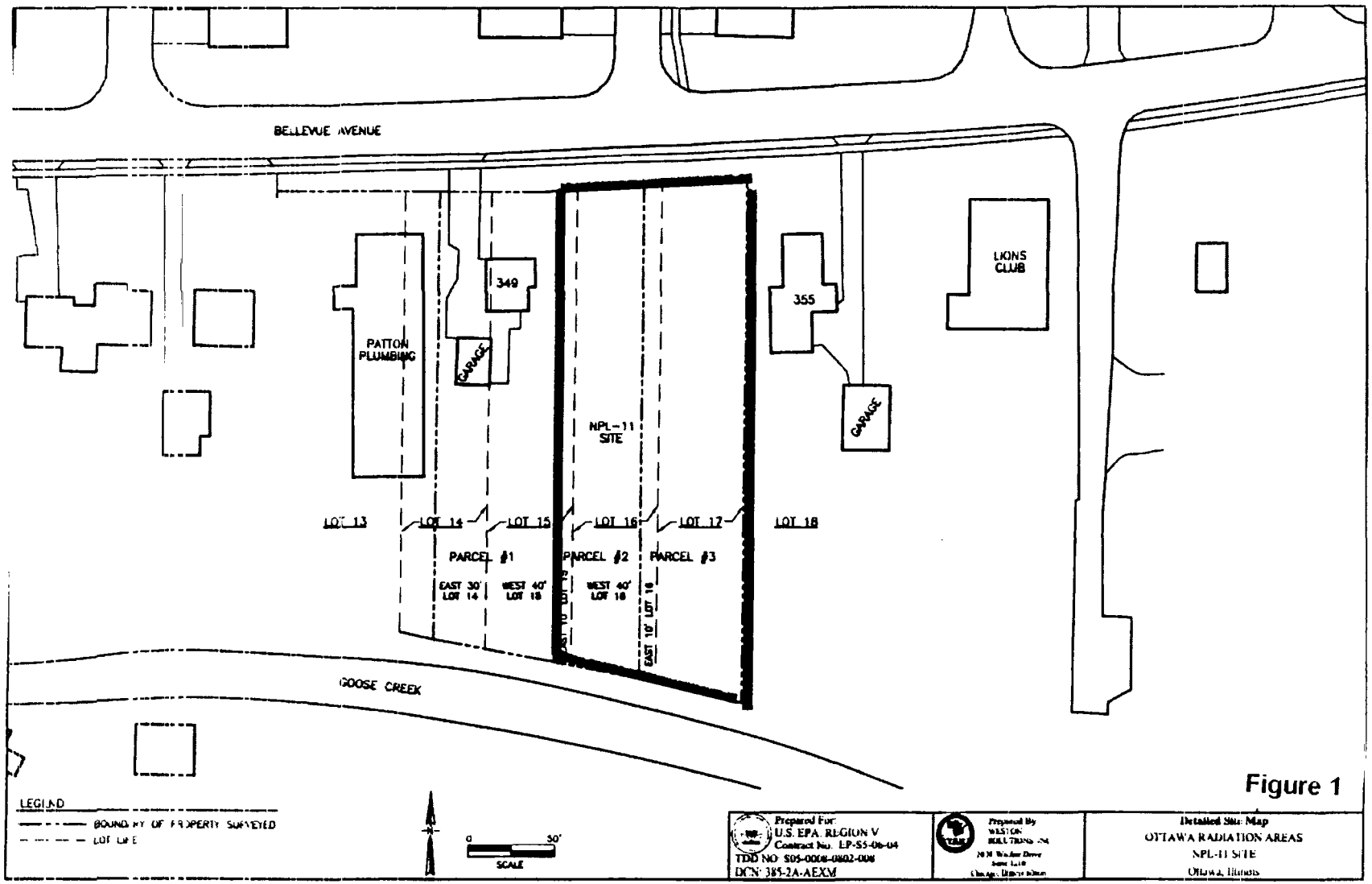
The Proposed Plan was issued for public comment on May 3, 2010. EPA reviewed all verbal comments given at the public meeting. It was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate.

Authorizing Signature

Richard C. Karl, Director
Superfund Division

8/16/10
Date

Figures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PATTON PLUMBING
349
GARAGE
NPL-11 SITE
355
GARAGE
LIONS CLUB
LOT 13
LOT 14
LOT 15
LOT 16
LOT 17
LOT 18
PARCEL #1
PARCEL #2
PARCEL #3
EAST 30' LOT 14
WEST 40' LOT 15
WEST 40' LOT 16
EAST 10' LOT 16
GOOSE CREEK
LEGEND
BOUNDARY OF PROPERTY SURVEYED
LOT LINE
N
0
50'
SCALE
Prepared For:
U.S. EPA, REGION V
Contract No. EP-S5-06-04
TDD NO: S05-0008-0802-008
DCN: 385-2A-AEXM
Prepared By
WESTON SOLUTIONS, INC.
Detailed Site Map
OTTAWA RADIATION AREAS
NPL-11 SITE
Ottawa, Illinois

Figure 1

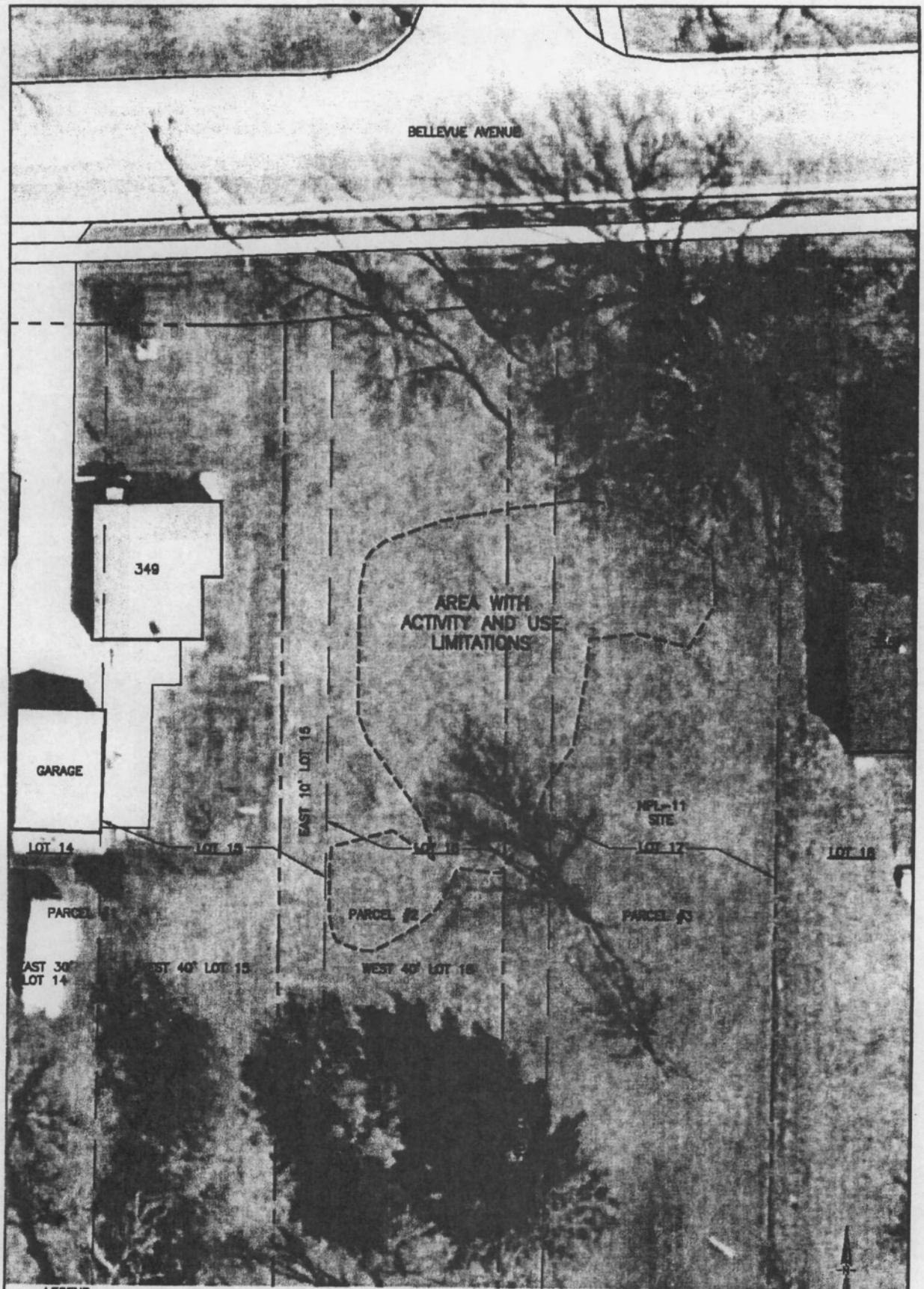

Figure 2

Prepared For: U.S. EPA. REGION V Contract No: EP-S5-06-04 TDD NO: S05-0008-0802-008 DCN: 385-2A-AGHB	Prepared By: WESTON SOLUTIONS, INC 20 N. Wacker Drive Suite 1210 Chicago, Illinois 60606	Alternative 4 Conceptual Site Layout OTTAWA RADIATION AREAS NPL-11 SITE Ottawa, Illinois

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Tables

Table 1

Total Carcinogenic Risk Associated with Radium-226 Exposure
NPL-11 Site
Ottawa, Illinois

Exposure Route	Total Lifetime Cancer Risk										
	Residential Land Use		Trespasser Land Use		Commercial/Industrial Land Use - Indoor		Commercial/Industrial Land Use - Outdoor		Recreational Land Use		Construction Worker
	Adult + Child		Adolescent		Adult		Adult		Adult + Child		Adult
	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current/Future; EPC = 5.6 pCi/g
Risks at TOTAL Concentrations											
Ingestion	1.31E-06	4.10E-06	1.17E-08	3.66E-08	1.31E-07	4.10E-07	2.36E-07	7.40E-07	1.17E-08	3.66E-08	2.38E-08
Inhalation	7.56E-10	2.37E-09	1.95E-11	6.10E-11	5.72E-10	1.80E-09	1.29E-09	4.04E-09	1.95E-11	6.10E-11	9.01E-12
External exposure	1.08E-04	3.39E-04	2.78E-06	8.74E-06	2.45E-05	7.69E-05	5.53E-05	1.73E-04	2.78E-06	8.74E-06	1.16E-06
Subtotal	1.09E-04	3.43E-04	2.80E-06	8.78E-06	2.47E-05	7.73E-05	5.55E-05	1.74E-04	2.80E-06	8.78E-06	1.19E-06
Indoor radon inhalation	4.25E-03	5.33E-03	--	--	3.55E-04	4.47E-04	--	--	--	--	--
Outdoor radon inhalation	4.26E-06	1.34E-05	6.28E-08	1.98E-07	--	--	6.93E-07	2.18E-06	5.23E-07	1.64E-06	9.68E-09
Subtotal	4.25E-03	5.34E-03	6.28E-08	1.98E-07	3.55E-04	4.47E-04	6.93E-07	2.18E-06	5.23E-07	1.64E-06	9.68E-09
TOTAL	**4.4E-03**	**5.7E-03**	**2.9E-06**	**9.0E-06**	**3.8E-04**	**5.2E-04**	**5.6E-05**	**1.8E-04**	**3.3E-06**	**1.0E-05**	**1.2E-06**
Risks at BACKGROUND Concentration (1.2 pCi/g)											
Ingestion	1.10E-06	1.10E-06	9.78E-09	9.78E-09	1.10E-07	1.10E-07	1.98E-07	1.98E-07	9.78E-09	9.78E-09	5.10E-09
Inhalation	6.35E-10	6.35E-10	1.64E-11	1.64E-11	4.80E-10	4.80E-10	1.08E-09	1.08E-09	1.64E-11	1.64E-11	1.93E-12
External exposure	9.08E-05	9.08E-05	2.34E-06	2.34E-06	2.06E-05	2.06E-05	4.64E-05	4.64E-05	2.34E-06	2.34E-06	2.49E-07
Subtotal	9.19E-05	9.19E-05	2.35E-06	2.35E-06	2.07E-05	2.07E-05	4.66E-05	4.66E-05	2.35E-06	2.35E-06	2.54E-07
Indoor radon inhalation	1.14E-03	1.14E-03	--	--	9.58E-05	9.58E-05	--	--	--	--	--
Outdoor radon inhalation	3.59E-06	3.59E-06	6.28E-08	6.28E-08	--	--	5.83E-07	5.83E-07	4.38E-07	4.38E-07	2.07E-09
Subtotal	1.14E-03	1.14E-03	6.28E-08	6.28E-08	9.58E-05	9.58E-05	5.83E-07	5.83E-07	4.38E-07	4.38E-07	2.07E-09
TOTAL	**1.2E-03**	**1.2E-03**	**2.4E-06**	**2.4E-06**	**1.2E-04**	**1.2E-04**	**4.7E-05**	**4.7E-05**	**2.8E-06**	**2.8E-06**	**2.6E-07**
Site-Related Risks (Total minus Background)											
Ingestion	2.12E-07	3.00E-06	1.90E-09	2.68E-08	2.09E-08	3.00E-07	3.81E-08	5.43E-07	1.90E-09	2.68E-08	1.87E-08
Inhalation	1.22E-10	1.73E-09	3.13E-12	4.47E-11	9.16E-11	1.32E-09	2.06E-10	2.96E-09	3.13E-12	4.47E-11	7.09E-12
External exposure	1.70E-05	2.48E-04	4.41E-07	6.40E-06	3.91E-06	5.63E-05	8.91E-06	1.27E-04	4.41E-07	6.40E-06	9.14E-07
Subtotal	1.72E-05	2.51E-04	4.43E-07	6.43E-06	3.93E-06	5.66E-05	8.95E-06	1.27E-04	4.43E-07	6.43E-06	9.33E-07
Indoor radon inhalation	3.11E-03	4.19E-03	--	--	2.59E-04	3.51E-04	--		--	--	--
Outdoor radon inhalation	6.72E-07	9.80E-06	0.00E+00	1.35E-07	--	--	1.09E-07	1.59E-06	8.40E-08	1.20E-06	7.60E-09
Subtotal	3.11E-03	4.20E-03	0.00E+00	1.35E-07	2.59E-04	3.51E-04	1.09E-07	1.59E-06	8.40E-08	1.20E-06	7.60E-09
TOTAL	**3E-03**	**4E-03**	**4E-07**	**7E-06**	**3E-04**	**4E-04**	**9E-06**	**1E-04**	**5E-07**	**8E-06**	**9E-07**

Notes:
-- = Not applicable
EPC = Exposure point concentration
pCi/g = picoCuries per gram

Table 2

Risk Associated with Radium-226 Exposure - Alternative 1*

NPL-11 Site

Ottawa, Illinois

Exposure Route	Total Lifetime Cancer Risk										
	Residential Land Use		Trespasser Land Use		Commercial/Industrial Land Use - Indoor		Commercial/Industrial Land Use - Outdoor		Recreational Land Use		Construction Worker
	Adult + Child		Adolescent		Adult		Adult		Adult + Child		Adult
	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current; EPC = 1.43 pCi/g	Future; EPC = 4.48 pCi/g	Current/Future; EPC = 5.6 pCi/g
Risks at TOTAL Concentrations											
Ingestion	1.31E-06	4.10E-06	1.17E-08	3.66E-08	1.31E-07	4.10E-07	2.36E-07	7.40E-07	1.17E-08	3.66E-08	2.38E-08
Inhalation	7.56E-10	2.37E-09	1.95E-11	6.10E-11	5.72E-10	1.80E-09	1.29E-09	4.04E-09	1.95E-11	6.10E-11	9.01E-12
External exposure	1.08E-04	3.39E-04	2.78E-06	8.74E-06	2.45E-05	7.69E-05	5.53E-05	1.73E-04	2.78E-06	8.74E-06	1.16E-06
Subtotal	1.09E-04	3.43E-04	2.80E-06	8.78E-06	2.47E-05	7.73E-05	5.55E-05	1.74E-04	2.80E-06	8.78E-06	1.19E-06
Indoor radon inhalation	4.25E-03	5.33E-03	--	--	3.55E-04	4.47E-04	--	--	--	--	--
Outdoor radon inhalation	4.26E-06	1.34E-05	6.28E-08	1.98E-07	--	--	6.93E-07	2.18E-06	5.23E-07	1.64E-06	9.68E-09
Subtotal	4.25E-03	5.34E-03	6.28E-08	1.98E-07	3.55E-04	4.47E-04	6.93E-07	2.18E-06	5.23E-07	1.64E-06	9.68E-09
TOTAL	**4.4E-03**	**5.7E-03**	**2.9E-06**	**9.0E-06**	**3.8E-04**	**5.2E-04**	**5.6E-05**	**1.8E-04**	**3.3E-06**	**1.0E-05**	**1.2E-06**

Notes

-- = Not applicable

EPC = Exposure point concentration

pCi/g = picoCuries per gram

* Assumes no action scenario

Table 3

Residual Risk Associated with Radium-226 Exposure - Alternatives 2 & 3*
NPL-11 Site
Ottawa, Illinois

	Total Lifetime Cancer Risk					
Exposure Route	Residential Land Use	Trespasser Land Use	Commercial/ Industrial Land Use - Indoor	Commercial/ Industrial Land Use - Outdoor	Recreational Land Use	Construction Worker
	Adult + Child	Adolescent	Adult	Adult	Adult + Child	Adult
	Background EPC = 1.2 pCi/g	Background EPC = 1.2 pCi/g	Background EPC = 1.2 pCi/g	Background EPC = 1.2 pCi/g	Background EPC = 1.2 pCi/g	Background EPC = 1.2 pCi/g
Risks at BACKGROUND Concentration (1.2 pCi/g)						
Ingestion	1.10E-06	9.78E-09	1.10E-07	1.98E-07	9.78E-09	5.10E-09
Inhalation	6.35E-10	1.64E-11	4.80E-10	1.08E-09	1.64E-11	1.93E-12
External exposure	9.08E-05	2.34E-06	2.06E-05	4.64E-05	2.34E-06	2.49E-07
Subtotal	9.19E-05	2.35E-06	2.07E-05	4.66E-05	2.35E-06	2.54E-07
Indoor radon inhalation	1.14E-03	--	9.58E-05	--	--	--
Outdoor radon inhalation	3.59E-06	6.28E-08	--	5.83E-07	4.38E-07	2.07E-09
Subtotal	1.14E-03	6.28E-08	9.58E-05	5.83E-07	4.38E-07	2.07E-09
TOTAL	**1E-03**	**2E-06**	**1E-04**	**5E-05**	**3E-06**	**3E-07**

Notes:
-- = Not applicable
EPC = Exposure point concentration
pCi/g = picoCuries per gram
* Assumes excavation and backfill.

Table 4

Risk Associated with Radium-226 Exposure - Alternative 4*
NPL-11 Site
Ottawa, Illinois

Exposure Route	Residential Land Use	Trespasser Land Use	Commercial/Industrial Land Use - Indoor	Commercial/Industrial Land Use - Outdoor	Recreational Land Use	Construction Worker
			Total Lifetime Cancer Risk			
	Adult + Child	Adolescent	Adult	Adult	Adult + Child	Adult
	EPC = 1.43 pCi/g & 4.48 pCi/g for indoor radon	EPC = 1.43 pCi/g	EPC = 1.43 pCi/g & 4.48 pCi/g for indoor radon	EPC = 1.43 pCi/g	EPC = 1.43 pCi/g	EPC = 5.6 pCi/g
Risks at TOTAL Concentrations						
Ingestion	1.31E-06	1.17E-08	1.31E-07	2.36E-07	1.17E-08	2.38E-08
Inhalation	7.56E-10	1.95E-11	5.72E-10	1.29E-09	1.95E-11	9.01E-12
External exposure	1.08E-04	2.78E-06	2.45E-05	5.53E-05	2.78E-06	1.16E-06
Subtotal	1.09E-04	2.80E-06	2.47E-05	5.55E-05	2.80E-06	1.19E-06
Indoor radon inhalation	5.33E-04	--	4.47E-05	--	--	--
Outdoor radon inhalation	4.26E-06	6.28E-08	--	6.93E-07	5.23E-07	9.68E-09
Subtotal	5.37E-04	6.28E-08	4.47E-05	6.93E-07	5.23E-07	9.68E-09
TOTAL	**6.5E-04**	**2.9E-06**	**6.9E-05**	**5.6E-05**	**3.3E-06**	**1.2E-06**

Notes:

-- = Not applicable

EPC = Exposure point concentration

pCi/g = picoCuries per gram

* Assumes restriction on excavating soils and use of radon reduction system with 90% efficiency.

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
POTENTIAL FEDERAL CHEMICAL-SPECIFIC ARARs					
Clean Air Act (42 U.S.C. 7401-7462)					
NAAQS (40 CFR Part 50)	Establishes primary and secondary standards for ambient air quality to protect public health and welfare	N	Y	Y	Y
NESHAPS (40 CFR Part 61)	Establishes emissions standards for hazardous air pollutants with no existing ambient air quality standards but that cause or contribute to air pollution that may result in an increase in mortality or an increase in serious irreversible or incapacitating reversible illness	N	Y	Y	Y
National Emission Standards for Radon Emissions from DOE Facilities (40 CFR Part 61, Subpart A)	Standards for emissions of radium-containing materials from storage and disposal facilities	N	Y	Y	Y
Clean Water Act (33 U.S.C. 1251-1376)					
Water Quality Criteria (40 CFR Part 131 Quality Criteria for Water, 1976, 1980, 1986)	Sets criteria for water quality based on toxicity to aquatic organisms and human health	N	Y	Y	Y
Safe Drinking Water Act (40 U.S.C. 300)					
National Primary Drinking Water Standards (40 CFR Part 141)	Establishes health-based standards for public water systems (maximum contaminant levels)	N	Y	Y	Y
National Secondary Drinking Water Standards (40 CFR Part 143)	Establishes welfare-based standards for public water systems (secondary maximum contaminant levels)	N	Y	Y	Y
Maximum Contaminant Level Goals (40 CFR 141.50, 141.51, 141.52)	Establishes drinking water quality goals set at levels of no known or anticipated adverse health effects, with an adequate margin of safety	N	Y	Y	Y
Environmental Radiation Protection Standards for Nuclear Power Operations					
40 CFR Part 190	Sets limits on radiation doses received by members of the general public within the uranium fuel cycle	N	Y	Y	Y
RCRA (as amended by HSWA) (40 U.S.C. 6901)					
Releases from SWMUs (40 CFR 264.94 through 264.99)	Establishes groundwater protection standards and groundwater monitoring requirements for on-site SWMUs	N	Y	Y	Y
Identification and Listing of Hazardous Waste (40 CFR Part 261)	Defines solid wastes subject to regulation as hazardous waste under 40 CFR Parts 262 through 265 and Parts 124, 270, and 271	N	Y	Y	Y
U.S. EPA Effluent Guidelines and Standards					
Discharge of Radioactive Pollutants to Surface Waters (40 CFR Part 440)	Establishes radionuclide concentration limits for liquid effluents from facilities that extract and process uranium, radium, and vanadium ores	NA	Y	Y	Y

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
POTENTIAL FEDERAL CHEMICAL-SPECIFIC ARARs (concluded)					
Uranium Mill Tailings Radiation Control Act (42 U.S.C. 2022, 7901-7942)					
Standards for the Stabilization, Disposal, and Control of Uranium and Thorium Mill Tailings (40 CFR Part 192)	Establishes health-based standards for control of residual radioactive materials from inactive uranium processing sites and standards for cleanup of lands and buildings having radioactive materials from inactive uranium processing sites	N	Y	Y	Y
POTENTIAL FEDERAL LOCATION-SPECIFIC ARARs					
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)	Establishes requirements to protect species threatened by extinction and habitats critical to their survival	NA	Y	Y	Y
National Historic Preservation Act of 1965 (U.S.C. 470 et seq.)	Establishes requirements to protect historically significant facilities	NA	NA	NA	NA
Executive Order 11988, Floodplain Management (40 CFR Part 6, Appendix A)	Establishes agency policy and guidance for carrying out the provisions of Executive Order 11988, "Floodplain Management"	NA	Y	Y	Y
Executive Order 11990, Protection of Wetlands (40 CFR Part 6, Appendix A)	Requires minimization of destruction, loss, or degradation of wetlands	NA	Y	Y	Y
Fish and Wildlife Coordination Act (16 U.S.C. 661-666, 40 CFR 6.302 [g])	Requires consultation when a federal department or agency proposes or authorizes any modification of any stream or other water body; requires adequate provisions for protection of fish and wildlife resources and establishes policy for Executive Order 11990, "Protection of Wetlands"	NA	NA	NA	NA
Discharges of Dredged or Fill Material into Waters of the United States (33 CFR Part 323)	Establishes permit requirements for actions that involve dredging or filling in of a navigable waterway or wetland	NA	NA	NA	NA
TBC Standards					
NAGPRA, Public Law 101-601 (November 16, 1990)	Provides for protection of Native American graves and for other selected purposes	NA	NA	NA	NA
Migratory Bird Treaty Act (16 U.S.C. 703)	Makes it unlawful to take, kill, or possess any migratory bird and any part, nest, or eggs of any such bird	NA	NA	NA	NA
POTENTIAL FEDERAL LOCATION-SPECIFIC ARARs (concluded)					
TBC Standards (continued)					
Archaeological Resources Protection Act of 1979, Public Law 96-95	Provides for protection of archaeological resources on federal and Indian lands	NA	NA	NA	NA

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
POTENTIAL FEDERAL ACTION-SPECIFIC ARARs					
OSHA Regulations (29 U.S.C. 651)					
29 CFR 1910.120	Establishes limits for worker exposures during response actions at CERCLA sites	NA	Y	Y	Y
29 CFR Part 1926	Establishes construction standards	NA	Y	Y	Y
U.S. Army Corps of Engineers Program					
Discharges of Dredged or Fill Materials into Waters of the United States (33 CFR Part 323)	Establishes requirements for actions that involve dredging or filling in of a navigable waterway or wetland	NA	NA	NA	NA
Federal Water Pollution Control Act as Amended by the Clean Water Act of 1977					
Section 208(b)	States that the proposed action must be consistent with regional water quality management plans as developed under Section 208 of the Clean Water Act	N	Y	Y	Y
U.S. EPA NPDES Permit Regulations					
40 CFR 122.21	Permit application must include a detailed description of the proposed action, including a list of all required environmental permits	NA	Y	Y	Y
40 CFR 122.44	Federally approved state water quality standards; may be in addition to or more stringent than federal water quality standards	NA	Y	Y	Y
40 CFR 122.44(a)	Requires the use of the BAT for toxic and non-conventional wastewaters or the BCT for conventional pollutants	NA	Y	Y	Y
40 CFR 122.44(e)	Requires establishment of discharge limits for toxics to be discharged at concentrations exceeding levels achievable by technology-based BAT or BCT standards	NA	Y	Y	Y
40 CFR 122.44(i)	Requires monitoring of discharges to ensure compliance; monitoring programs required to include data on mass, volume, and frequency of all discharge events	NA	Y	Y	Y
40 CFR 125.100	Requires site operator to develop a BMP program and incorporate it into the operations plan or NPDES permit application if required	NA	Y	Y	Y
POTENTIAL FEDERAL ACTION-SPECIFIC ARARs (continued)					
Clean Water Act (33 U.S.C. 1251-1376)					
40 CFR Part 131	States granted enforcement jurisdiction over direct discharges and may adopt reasonable standards to protect or enhance uses and qualities of surface water bodies in the states	NA	Y	Y	Y
U.S. EPA Regulations on Test Procedures for the Analysis of [Water] Pollutants					
40 CFR 136.1-136.4	Requires adherence to sample preservation procedures, including container materials and sample holding times	NA	Y	Y	Y

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
RCRA (42 U.S.C. 6901)					
40 CFR Part 261	Identifies wastes subject to regulation as hazardous wastes	NA	Y	Y	Y
Transportation of Hazardous Waste (40 CFR Part 263)	Requires transporters to be licensed hazardous waste haulers; in case of a discharge during transportation, transporter must take immediate action to protect human health and the environment and clean up the discharge so that it no longer presents a hazard	NA	Y	Y	Y
Releases from SWMUs (40 CFR 264.91 through 264.99)	Establishes groundwater protection standards and groundwater monitoring requirements for on-site SWMUs	NA	Y	Y	Y
Containers (40 CFR 264.171 through 264.178)	Regulations for permanent on-site storage of hazardous wastes or temporary storage phases used during various cleanup actions such as removal or incineration	NA	Y	Y	Y
Tanks (40 CFR 264.191 through 264.198)	Regulations for tank storage of hazardous materials	NA	Y	Y	Y
Waste Piles (40 CFR 264.251 through 264.256)	Establishes minimum technology requirements for waste piles used to place RCRA hazardous waste	NA	Y	Y	Y
Miscellaneous Treatment Units (40 CFR Part 264 Subpart X)	Standards for environmental performance of miscellaneous treatment units	NA	Y	Y	Y
40 CFR Part 26	Regulations for interim hazardous waste facilities in operation before and after November 19, 1980	NA	Y	Y	Y
LDRs (40 CFR Part 268)	Requires any waste placed in land disposal units to comply with LDRs by either attaining specific performance- or technology-based standards	NA	Y	Y	Y
U.S. EPA Effluent Guidelines and Standard					
40 CFR 403.5	States that for wastes discharged to a POTW, the treatment process must not allow waste to pass through untreated or result in contaminated sewage sludge	NA	Y	Y	Y
40 CFR Part 440	Establishes radionuclide concentration limits for liquid effluent from facilities that extract and process uranium, radium, and vanadium ores	NA	Y	Y	Y
POTENTIAL FEDERAL ACTION-SPECIFIC ARARs (concluded)					
Uranium Mill Tailings Radiation Control Act (42 U.S.C. 7401-7462)					
Standards for the Stabilization, Disposal, and Control of Uranium and Thorium Mill Tailings (40 CFR Part 192)	Establishes health-based standards for control of residual radioactive materials from inactive uranium processing sites and standards for cleanup of lands and buildings having radioactive materials from inactive uranium processing sites	N	Y	Y	Y

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
U.S. Department of Transportation Regulations					
49 CFR Parts 170 through 179	Establishes requirements for off-site transportation of site-generated waste	NA	Y	Y	Y
TBC Standards					
NAGPRA, Public Law 101-601 (November 16, 1990)	Provides for protection of Native American graves and for other related purposes	NA	NA	NA	NA
Migratory Bird Treaty Act (16 U.S.C. 703)	Makes it unlawful to take, kill, or possess any migratory bird or any part, nest, or eggs of any such bird	NA	NA	NA	NA
Archaeological Resources Protection Act of 1979, Public Law 95-95	Provides for protection of archaeological resources on federal and Native American lands	NA	NA	NA	NA
POTENTIAL STATE CHEMICAL-SPECIFIC ARARs					
Illinois Permits and General Air Pollution Regulations (35 IAC Part 201)	Sets criteria for discharge of contaminants in the environment causing air pollution; also establishes requirements for permits necessary for construction or modification of any emission source	NA	Y	Y	Y
Illinois Emission Standards and Limitations for Stationary Sources (35 IAC Part 212)	Establishes emission standards for visible and particulate matter	NA	Y	Y	Y
Illinois Air Quality Standards (35 IAC Part 243	Establishes air quality standards	NA	Y	Y	Y
Illinois Water Quality Standards (35 IAC Part 302)	Establishes general-use water quality standards for protecting water for aquatic life, agricultural use, primary and secondary contact use, and most industrial use, and for ensuring the aesthetic quality of the aquatic environment	NA	Y	Y	Y
Illinois Effluent Standards (35 IAC Part 304)	Prescribes maximum concentrations of various contaminants that may be discharged to the waters of the state	NA	Y	Y	Y
POTENTIAL STATE CHEMICAL-SPECIFIC ARARs (concluded)					
Monitoring and Reporting Requirements (35 IAC Part 305)	Prescribes requirements for monitoring, reporting, and measuring contaminant discharges	N	Y	Y	Y
Sewer Discharge Criteria (35 IAC Part 307)	Places certain restrictions on types, concentrations, and quantities of contaminants discharged into sewer systems and POTWs	NA	Y	Y	Y
Illinois Primary Drinking Water Standards (35 IAC Part 611)	Establishes health-based standards for public water systems	NA	Y	Y	Y
Illinois Groundwater Quality Standards (35 IAC Part 620)	Sets groundwater classification and associated water quality standards	NA	Y	Y	Y
Identification and Listing of Hazardous Waste (35 IAC Part 721)	Defines solid wastes subject to regulations as hazardous waste	NA	Y	Y	Y

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
Releases from SWMUs (35 IAC Part 724)	Establishes groundwater protection standards and groundwater monitoring requirements for on-site SWMUs	NA	Y	Y	Y
Permissible Levels of Radiation in Unrestricted Areas (35 IAC Part 1000)	Establishes health-based standards for exposure to radiation levels	NA	Y	Y	Y
Radioactive Emissions to Unrestricted Areas (35 IAC Part 1000)	Establishes concentration limits for emissions of radioactive materials	NA	Y	Y	Y
Licensing Requirements for Source Material Milling Facilities (32 IAC, Chapter II, Subchapter 6, Part 332.150B and B2)	Requires verification sampling during and after removal	NA	Y	Y	Y
Standards for Protection Against Radiation (32 IAC, Chapter II, Subchapter 6, 340.1370)	Establishes standards for protection against radiation hazards, primarily in the occupational setting	NA	Y	Y	Y
TBC Standards					
Illinois Risk Based Cleanup Objectives - TACO (35 IAC Part 742)	Establishes risk-based cleanup objectives for soil and groundwater	N	Y	Y	Y
POTENTIAL STATE LOCATION-SPECIFIC ARARs					
TBC Standards					
Archaeological and Paleontological Resources Protection Act (20 ILCS 3435) and Human Skeletal Remains Protection Act (20 ILCS 3440)	Acts related to human remains and artifacts that may be found in the conduct of any private or public construction project; acts govern assessment, handling, and disposition of remains and artifacts in Illinois	NA	NA	NA	NA
Illinois Historic Resources Protection Act (20 ILCS 3420 and 17 IAC 4180)	Act related to historic preservation that requires consultation with the State Historic Preservation Officer for projects that may impact historic resources	NA	NA	NA	NA
POTENTIAL STATE ACTION-SPECIFIC ARARs					
Illinois Permits and General Air Pollution Regulations (35 IAC Part 201)	Sets criteria for discharge of contaminants in the environment causing air pollution; also establishes requirements for permits necessary for construction or modification of any emission source	NA	Y	Y	Y
Illinois Emission Standards and Limitations for Stationary Sources (35 IAC Part 212)	Establishes emission standards for visible and particulate matter	NA	Y	Y	Y
Illinois Air Quality Standards (35 IAC Part 243)	Establishes air quality standards	NA	Y	Y	Y

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
Illinois Water Quality Standards (35 IAC Part 302)	Establishes general-use water quality standards for protecting water for aquatic life, agricultural use, primary and secondary contact use, and most industrial use, and for ensuring the aesthetic quality of the aquatic environment	NA	Y	Y	Y
Illinois Effluent Standards (35 IAC Part 304)	Prescribes maximum concentrations of various contaminants that may be discharged to waters of the state	NA	Y	Y	Y
Monitoring and Reporting Requirements (35 IAC Part 305)	Prescribes requirements for monitoring, reporting, and measuring containment discharges	N	Y	Y	Y
Sewer Discharge Criteria (35 IAC Part 307)	Places certain restrictions on types, concentrations, and quantities of contaminants discharged into sewer systems and POTWs	NA	Y	Y	Y
Permits (35 IAC Part 309)	Establishes permit requirements for treatment, pretreatment, and discharge requiring NPDES permit	NA	Y	Y	Y
Pretreatment Programs (35 IAC Part 310)	Establishes pretreatment standards for discharge to POTWs	NA	Y	Y	Y
Wastewater Treatment Plant Operator Certification (35 Part IAC 312)	Requires certified operators for wastewater treatment plants	NA	Y	Y	Y
Illinois Primary Drinking Water Standards (35 IAC Part 611)	Establishes health-based standards for public water systems	NA	Y	Y	Y
Illinois Groundwater Quality Regulations (35 IAC Part 620)	Sets groundwater classification and associated water quality standards	NA	Y	Y	Y
Hazardous Waste Operating Requirements (35 IAC Part 720)	Establishes general provisions, definitions, and rule-making petitions and other procedures	NA	Y	Y	Y
General Facility Standards (35 IAC Part 724, Subpart B)	Establishes minimum standards that define the acceptable management of hazardous waste	NA	Y	Y	Y
Releases from SWMUs (35 IAC Part 724, Subpart F)	Establishes requirements for monitoring and detection of hazardous constituents from SWMUs	NA	Y	Y	Y
Standards Applicable to Generators of Hazardous Wastes (35 IAC Parts 721 and 722)	Establishes waste identification, waste manifesting, and pre-transportation requirements for generators of solid wastes	NA	Y	Y	Y
POTENTIAL STATE ACTION-SPECIFIC ARARs (continued)					
Closure and Post-closure (35 IAC Part 724, Subpart G)	Establishes closure and post-closure care requirements of RCRA disposal units	NA	Y	Y	Y
Standards Applicable to Tank Systems (35 IAC Part 724, Subpart J)	Establishes requirements for storing hazardous wastes in tanks	NA	Y	Y	Y
Standards Applicable to Waste Piles (35 IAC Part 724, Subpart L)	Establishes minimum technology requirements for waste piles used to place RCRA hazardous waste	NA	Y	Y	Y
Standards Applicable to Landfills (35 IAC Part 724, Subpart N)	Establishes design and operating requirements for hazardous waste landfills	NA	NA	NA	NA

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

Potential ARAR	Description	Does Alternative Comply?			
		1	2	3	4
Corrective Action for SWMUs (35 IAC, Part 724, Subpart S)	Establishes procedures and standards for establishing a corrective action management unit (CAMU)	NA	Y	Y	Y
Standards Applicable to Containment Buildings (35 IAC Part 724, Subpart DD)	Establishes design and operating standards for buildings used for storing hazardous wastes	NA	Y	Y	Y
Standards Applicable to Special Waste Hauling (35 IAC Part 809)	Establishes requirements for hauling of special waste	NA	Y	Y	Y
Procedural Requirements for All Landfills Exempt from Permits (35 IAC Part 815)	Establishes procedural requirements for landfills exempt from permits	NA	NA	NA	NA
Transportation Standards (35 IAC Part 723)	Establishes transporter standards and manifesting requirements for hazardous waste haulers	NA	Y	Y	Y
Personnel Training (35 IAC Part 724)	Requires appropriate training of persons handling hazardous waste	NA	Y	Y	Y
LDRs (35 IAC Part 728)	Requires any waste placed in land disposal units to comply with LDRs by attaining either specific performance- or technology-based standards	NA	Y	Y	Y
Radioactive Emissions to Unrestricted Areas (35 IAC Part 1000)	Establishes concentration limits for emissions of radioactive materials	NA	Y	Y	Y
TBC Standards					
Licensing Requirements for Source Material Milling Facilities (32 IAC, Chapter II, Subchapter 6, Part 332.150B and B2)	Requirements for verification sampling during and after removal	NA	Y	Y	Y
Standards for Protection Against Radiation (32 IAC, Chapter II, Subchapter 6, 340.1370)	Establishes standards for protection against radiation hazards, primarily in the occupational setting	NA	NA	NA	NA
POTENTIAL STATE ACTION-SPECIFIC ARARs (concluded)					
Archaeological and Paleontological Resources Protection Act (20 ILCS 3435) and Human Skeletal Remains Protection Act (20 ILCS 3440)	Acts related to human remains and artifacts that may be found in the conduct of any private or public construction project; acts govern the assessment, handling, and disposition of remains and artifacts in Illinois	NA	NA	NA	NA
Illinois Historic Resources Protection Act (20 ILCS 3420 and 17 IAC 4180)	Act regarding historic preservation that requires consultation with the State Historic Preservation Officer for projects that may impact historic resources	NA	NA	NA	NA

Notes:

ALARA = As low as reasonably achievable
ARAR = Applicable or relevant and appropriate requirement
BAT = Best available technology
BCT = Best conventional technology
BMP = Best management plan
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = *Code of Federal Regulations*
DOE = United States Department of Energy

Table 5
Detailed Analysis of Alternatives
Compliance with Potential ARARs
NPL-11 Site
Ottawa, Illinois

HWSA	=	Hazardous and Solid Waste Amendments
IAC	=	*Illinois Administrative Code*
ILCS	=	Illinois Compiled Statutes
LDR	=	Land Disposal Restriction
N	=	No, does not comply with ARAR
NA	=	Not applicable
NAAQS	=	National Ambient Air Quality Standards
NAGPRA	=	Native American Grave Protection and Repatriation Act
NESHAPS	=	National Emissions Standards for Hazardous Air Pollutants
NPDES	=	National Pollutant Discharge Elimination System
OSHA	=	Occupational Safety and Health Administration
POTW	=	Publicly-owned treatment works
RCRA	=	Resource Conservation and Recovery Act
SWMU	=	Solid waste management unit
TACO	=	Tiered Approach to Corrective Action Objectives
TBC	=	To be considered
U.S.C.	=	*United States Code*
U.S. EPA	=	United States Environmental Protection Agency
Y	=	Yes, does comply with ARAR

Table 8

ALTERNATIVE 2

Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal

NPL-11 Site

Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
SITE PREPARATION					
Mobilization of Equipment and Supplies	1	LS	$10,000.00	$10,000.00	The cost is for the mobilization of equipment and supplies to the site.
Permits and Easements	0	LS	$0.00	$0.00	Permits are not required. However, the requirements of NPDES and any other permits and easements are to be followed.
Gravel/Stone Access Road	1,040	Ton	$15.00	$15,600.00	An on-site gravel access road will be constructed using 3-inch stone. Quantity assumes an approximate length of 200 feet, width of 8 feet, and thickness of 6 inches. The tonnage is based on 1.30 tons/*ex-situ* cy. Cost includes placement of fabric liner.
Site Development	1	LS	$10,000.00	$10,000.00	Site development includes, but is not limited to, temporary fencing, temporary decontamination pad, sump, silt fence, erosion control measures, investigative and protective measures associated with underground and overhead utilities, and routine snow and ice removal. Site development also includes removal of chain-link fences (where appplicable) to allow site access. Cost also includes any pedestrian traffic controls (as necessary)
Temporary Facilities	20	WK	$2,000.00	$40,000.00	Temporary facilities include, but are not limited to, office trailer, furnishings, electric service, telephone service, restroom facilities, and a decontamination station. The quantity is based on a project length of 100 days (excavation of 100 cy/day above the water table [25 days] and 50 cy/day below the water table [75 days], off-site disposal, decontamination, and demobilization).
Clearing and Grubbing	1	LS	$9,500.00	$9,500.00	Mature tree removal and/or trimming will be required at the site. The quantity is based on removal of four mature trees (diameter greater than 2 feet) and six small trees (diameter less than 6 inches), grinding the debris, and hauling the debris from the site.
SOIL					
Soil Excavation	10,164	Ton	$10.00	$101,638.80	The *in situ* volume of excavated soil includes 6,274 *in situ* cy based on 1,351 cy of radium-contaminated soil and 4,923 cy of special waste soil. The tonnage is based on 1.62 tons/*in situ* cy. The quantity is based on a total excavation depth of 14 feet bgs and 1.5:1 excavation sloping measures (based on the site soils). The cost includes equipment and labor.
Additional Handling of Soil - Dewatering Activities	6,090	Ton	$5.00	$30,450.00	Assumes that multiple handling of the soil is required as soil is placed in roll-off containers, allowed to dewater, and then loaded into Lift Liner bags or trucks for off-site transportation and disposal. The *in situ* volume of soil below the water table is 3,759 cy. The tonnage is based on 1.62 tons/*in -situ* cy. Cost includes equipment and labor.
Backfill - Imported Material	7,213	cy	$15.00	$108,195.00	Backfill is for general fill material. Assumes that excavated material will not be used as backfill. WESTON must approve the source, and laboratory analysis (compared to TACO Tier 1 residential remediation objectives) must be provided for soils used as backfill at the site. The cost includes delivery, placement, and compaction, including 20% factor for compaction. The total *ex-situ* volume of excavated soil is estimated to be 7,529 cy (6,274 *in situ cy*) and a 20% swell factor. Backfill will be placed to a depth of 6 inches bgs.
Backfill - Topsoil	316	cy	$20.00	$6,320.00	The topsoil will contain organic content. WESTON must approve the borrow source, and laboratory analysis (compared to TACO Tier 1 residential remediation objectives) must be provided for topsoil used at the site. The cost includes delivery and placement. The total *ex-situ* volume of excavated soil is estimated to be 7,529 cy (6,274 *in situ cy*) and a 20% swell factor. The quantity assumes that 6 inches of topsoil will be placed at the site and an excavation area of 17,061 square feet.
Site Restoration/Revegetation	1	LS	$2,000.00	$2,000.00	The cost Includes tilling, seeding, and planting. The quantity assumes the excavation area is 17,061 square feet (or 0.4 acre).

Table 6

ALTERNATIVE 2
Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
DEWATERING SYSTEM					
Dewatering System	75	Day	$2,680.00	$201,000.00	The dewatering system will consist of all necessary pumps and piping required for dewatering. The cost includes materials, labor, and equipment required for dewatering the excavation and pumping water from the water treatment system to the sanitary sewer. Labor assumes that one person would be required to maintain the dewatering system 24 hours per day for the duration of the project. The quantity assumes that dewatering will be conducted simultaneously with excavation for 75 days.
Dewatering/Storage of Excavated Soil	20	WK	$440.00	$8,800.00	Excavated soil will be temporarily stored in roll-off containers to allow excess water to drain and provide an area for mixing with the drying agent. The quantity is based on the use of eight 25-cy roll-off containers.
Dewatering Agent Addition and Mixing	6,090	Ton	$100.00	$608,960.00	The addition of a drying agent to dewater excavated soil is required. The cost includes purchase and delivery of the drying agent and *ex situ* mixing of the agent with wet soils prior to loading into Lift Liner bags or dump trucks for off-site transportation and disposal. Soil below the water table will require dewatering. The quantity assumes that the water table is at 4 feet bgs and the *in situ* volume of soil below the water table is 3,759 cy. The tonnage is based on 1.62 tons/*in situ* cy.
Water Treatment System	15	WK	$17,760.00	$266,400.00	Assumes that two groundwater treatment systems will be needed. Each groundwater treatment system will include one 5,000-gallon baffled storage tank and a filtration system consisting of a sand filter and bag filters. The cost includes all necessary pumps and piping for transfer of water, rental of the filtration system, labor, maintenance, QA inspections, and bag filter replacement costs. Labor costs assume that one person would be required to maintain the groundwater treatment system 24 hours per day for the duration of the project.
LABORATORY SERVICES					
Water Disposal Samples	1	Sample	$1,000.00	$1,000.00	Laboratory analysis is required to determine if waste meets Ottawa WWTP acceptance criteria. Analyses include radium-226, radium-228, TPH, BOD, COD, metals, VOCs, SVOCs, TSS, pH, and alkalinity. The quantity assumes that one sample will be collected from the effluent groundwater.
On-Site Laboratory (Radium-226)	20	WK	$7,500.00	$150,000.00	An on-site laboratory will be utilized to analyze soil samples for disposal characterization. The analyses includes radium-226 and the cost includes equipment, utilities, labor, and per diem. Soil excavated above the water table will be manually screened and stockpiled based on radioactivity level. Soil excavated below the water table will be stockpiled in roll-off containers and allowed to dewater. The *in-situ* volume of soil below the water table is 3,759 cy. The ex situ volume assumes a 25% ex situ swell factor and a 20% dewatering swell factor (from the addition of drying agent). One sample will be collected from each 25 cy roll-off container (total of 218 samples) for analysis by the on-site laboratory.
Soil Sample Analysis-Disposal Parameters (Special Waste)	5	Sample	$1,250.00	$6,250.00	Laboratory analysis is required to determine disposal parameters for special waste. Analyses performed include disposal parameters as required by the special waste landfill (assumed to include radium-226, VOCs, SVOCs, TAL metals, pesticides, PCBs, TCLP VOCs, TCLP SVOCs, TCLP metals, pH, reactive cyanide, reactive sulfide, flashpoint, and paint filter). The *in situ* volume of special waste is 4,923 cy. The *ex situ* volume assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy. The quantity assumes that one sample will be collected per 1,000 cy.
Verification Soil Sample Analysis (Radium-226)	16	Sample	$300.00	$4,755.00	Laboratory analysis for radium-226 is required to verify that all radium-contaminated soil has been removed from the excavation. The analytical procedure includes a 7-day screening with a results-only deliverable and a 28-day confirmation re-analysis, with a full data report for data validation. A five-point composite sample will be collected for every 100 square meters of the excavation floor and sidewalls. The quantity assumes an excavation area of 17,061 square feet (or 1,585 square meters).
Imported Material Soil Samples	8	Sample	$1,000.00	$8,000.00	Laboratory analysis is required for imported backfill material. Analyses include VOCs, SVOCs, pesticides, PCBs, metals, pH, and TCLP. The quantity assumes that the total *ex-situ* volume of excavated soil is 7,529 cy (including 6,274 *in situ* cy and a 20% swell factor). One sample will be collected per 1,000 cy of imported material.

Table 6

ALTERNATIVE 2
Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
OFF-SITE TRANSPORTATION AND DISPOSAL					
Disposal of Treated Groundwater at Ottawa WWTP	17,280,000	Gallon	$0.0133	$229,800.00	It is assumed that collected and treated groundwater will be disposed of at the City of Ottawa WWTP at the negotiated rate of $13.33 per 1,000 gallons. The quantity assumes that dewatering of the excavation initiallly will be conducted at a pumping rate of 160 gpm for 24 hours per day (230,400 gallons per day) for the duration of the excavation activities below the water table (75 days)
Transportation of Special Waste to Landfill	9,280	Ton	$20.00	$185,597.10	It is assumed that waste will be transported to a special waste landfill (TBD) in dump trucks by roadways. The *in situ* volume of special waste is 4,923 cy. The quantity assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy.
Disposal of Special Waste	9,280	Ton	$35.00	$324,794.93	It is assumed that waste will be disposed of at a special waste landfill. The *in situ* volume of special waste is 2,112 cy. The quantity assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy.
Lift Liner Bags	255	Bag	$500.00	$127,350.00	Radium-contaminated soil will be placed in Lift Liner bags for transport to the disposal facility. Assumes that each bag contains 10 tons of soil. The quantity assumes that the *in situ* volume of radium-contaminated soil is 1,351 cy. The ex situ volume assumes a 25% ex situ swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons ex situ cy.
Transportation of Radium-contaminated Soil to NORM Radioactive Landfill	128	Trip	$4,025.00	$515,200.00	Lift Liner bags will be transported from the site on flatbed trucks via roadway to the disposal facility. A trip is defined as one-way trasportation from the site to the disposal facility. The *in situ* volume of radium-contaminated soil is 1,351 cy. The *ex situ* volume assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy. It is assumed that two Lift Liner bags will be transported per trip.
Disposal of Radium-contaminated Soil	2,547	Ton	$125.00	$318,375.00	The cost assumes that all radioactive waste generated will be classified as NORM waste. The quantity assumes that the *in situ* volume of radium-contaminated soil is 1,351 cy. The quantity assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy.
DECONTAMINATION					
Collection, Filtration, and Temporary Storage of Decontamination Water	1,000	Gallon	$2.00	$2,000.00	This cost is for the collection of decontamination water, filtration, and temporary storage.
Disposal of Decontamination Water	1,000	Gallon	$0.0133	$13.30	It is assumed that decontamination water will be disposed of at the City of Ottawa WWTP.
DEMOBILIZATION					
Demobilization of Equipment	1	LS	$5,000.00	$5,000.00	The cost is for the demobilization of equipment and supplies from the site.
DIRECT COST SUBTOTAL				**$3,296,999.13**	

Table 6

ALTERNATIVE 7

Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
SUBMITTALS					
Performance and Payment Bonds	1	LS	$98,909.97	$98,909.97	The performance bond is equal to 100% of the subcontract price, and the payment bond is equal to 50% of the subcontract price.
Site Plans	1	LS	$5,000.00	$5,000.00	Plans must be submitted prior to the commencement of work include, but are not limited to, the work plan, RFP, HASP, pollution control plan, transportation and disposal plan, etc.
Required Disposal or Transportation Permits	1	Year	$1,300.00	$1,300.00	Disposal or transportation permits will be required.
TRAFFIC CONTROLS					
Traffic signs and barriers	1	LS	$1,000.00	$1,000.00	Adequate signs and barriers will be used used along streets. The cost includes coordination of traffic controls and any permits with the City of Ottawa.
TRANSPORTATION LOGISTICS SUPPORT					
Shipping Support Manager	300	Hour	$100.00	$30,000.00	The cost assumes that the duration of on-site transportation logistics support is 75 days, with 4 hours per day. Shipping support will be handled remotely.
HEALTH PHYSICS SUPPORT					
Health Physics Supervisor	1,000	Hour	$125.00	$125,000.00	The cost assumes one health physics supervisor on site for the duration of the project (100 days) for 10 hours per day. The health physics supervisor will oversee radiological screening during excavation and clearance surveys.
Rental Vehicle for Health Physics Supervisor	100	Day	$50.00	$5,000.00	The cost assumes that the duration of on-site health physics support is 100 days.
Technician	1,000	Hour	$100.00	$100,000.00	The cost assumes one health physics supervisor on site for the duration of the project (100 days) for 10 hours per day. The health physics supervisor will oversee radiological screening during excavation and clearance surveys.
Rental Vehicle for Technician	100	Day	$50.00	$5,000.00	The cost assumes that the duration of on-site health physics support is 100 days.
Per Diem for Health Physics Supervisor and Technician	100	Day	$109.00	$10,900.00	The cost assumes a daily lodging cost of $70 and a daily M&IE cost of $39.
Radiological Survey Equipment	100	Day	$600.00	$60,000.00	A project duration of 100 days is assumed. Equipment required includes, but is not limited to, pancake GM, alpha meter, 2 x 2 NaI detector/GPS combination, 2 x 2 NaI detector, MicroR meter, tray counter, lapel air samplers, and high-volume air samplers.
ENGINEERING/DESIGN/INVESTIGATION					
Engineering and Design	1	LS	$50,000.00	$50,000.00	The cost assumes the preparation of the design document.
CONTRACTOR PROCUREMENTS (@ 1% of direct costs)					
Contractor Procurements	1	LS	$10,000.00	$10,000.00	The cost assumes the procurement of five (5) subcontractors.
CONSTRUCTION MANAGEMENT					
Resident Engineer	1,000	Hour	$75.00	$75,000.00	This cost will be based on one on-site engineer working approximately 10 hours per day or 50 hours per week for the duration of the project (20 weeks).
Per Diem (Hotel and M&IE)	100	Day	$109.00	$10,900.00	This cost assumes a lodging rate of $55 per day and a M&IE rate of $30 per day.
Car Rental	100	Day	$65.00	$6,500.00	This cost assumes that one rental car will be required for each person on site.
Administrative and Office Support	200	Hour	$50.00	$10,000.00	This cost is assumes administrative and office support for 2 hours per day for the duration of the project (100 days).
INDIRECT COST SUBTOTAL				**$604,509.97**	

Table 6

ALTERNATIVE 2

Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal

NPL-11 Site

Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
ANNUAL O&M COSTS					
ANNUAL O&M COST SUBTOTAL				$0.00	
SUB-TOTAL of DIRECT AND INDIRECT COSTS				$3,901,509.10	
SUB-TOTAL of DIRECT AND INDIRECT COSTS WITH 25%				$4,877,000.00	
SUB-TOTAL of O&M COSTS				$0.00	
SUB-TOTAL of O&M COSTS WITH 25% CONTINGENCY				$0.00	
PRESENT WORTH of O&M COSTS WITH CONTINGENCY				$0.00	This cost assumes an interest factor of 7 % and an O&M period of 30 years.
TOTAL COST (DIRECT COSTS + INDIRECT COSTS + PRESENT WORTH				$4,880,000.00	

Notes:

bgs = Below ground surface
BOD = Biological oxygen demand
COD = Chemical oxygen demand
cy = Cubic yard
gpm = Gallon per minute
GPS = Global positioning system
HASP = Health and safety plan
LS = Lump sum
M&IE = Meals and incidental expenses
NaI = Sodium iodide
NPDES = National Pollutant Discharge Elimination System
NORM = Naturally occurring radioactive material
O&M = Operation and maintenance
PCB = Polychlorinated biphenyl
QA = Quality control
RA = Remedial action
RFP = Request for Proposal
SVOC = Semivolatile organic compound
TACO = Tiered Approach to Corrective Action Objectives
TAL = Target Analyte List
TBD = To be determined
TCLP = Toxicity characteristic leaching procedure
TPH = Total petroleum hydrocarbons
TSS = Total suspended solids
VOC = Volatile organic compound
WESTON = Weston Solutions, Inc.
WK = Week
WWTP = Wastewater treatment plant

Table 7

ALTERNATIVE 3

Installation of a Vertical Barrier, Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
SITE PREPARATION					
Mobilization of Equipment and Supplies	1	LS	$10,000.00	$10,000.00	The cost is for the mobilization of equipment and supplies to the site.
Permits and Easements	0	LS	$0.00	$0.00	Permits are not required. However, the requirements of NPDES and any other permits and easements are to be followed.
Gravel/Stone Access Road	1,040	Ton	$15.00	$15,600.00	An on-site gravel access road will be constructed using 3-inch stone. Quantity assumes an approximate length of 200 feet, width of 8 feet, and thickness of 6 inches. The tonnage is based on 1.30 tons/*ex-situ* cy. Cost includes placement of fabric liner.
Site Development	1	LS	$10,000.00	$10,000.00	Site development includes, but is not limited to, temporary fencing, temporary decontamination pad, sump, silt fence, erosion control measures, investigative and protective measures associated with underground and overhead utilities, and routine snow and ice removal. Site development also includes removal of chain-link fences (where appplicable) to allow site access. Cost also includes any pedestrian traffic controls (as necessary).
Temporary Facilities	20	WK	$2,000.00	$40,000.00	Temporary facilities include, but are not limited to, office trailer, furnishings, electric service, telephone service, restroom facilities, and a decontamination station. The quantity is based on a project length of 100 days (excavation of 100 cy/day above the water table [25 days] and 50 cy/day below the water table [75 days], off-site disposal, decontamination, and demobilization).
Clearing and Grubbing	1	LS	$9,500.00	$9,500.00	Mature tree removal and/or trimming will be required at the site. The quantity is based on removal of four mature trees (diameter greater than 2 feet) and six small trees (diameter less than 6 inches), grinding the debris, and hauling the debris from the site.
SOIL					
Soil Excavation	10,164	Ton	$10.00	$101,638.80	The *in situ* volume of excavated soil includes 6,274 *in situ* cy based on 1,351 cy of radium-contaminated soil and 4,923 cy of special waste soil. The tonnage is based on 1.62 tons/*in situ* cy. The quantity is based on a total excavation depth of 14 feet bgs and 1.5:1 excavation sloping measures (based on the site soils). The cost includes equipment and labor.
Additional Handling of Soil - Dewatering Activities	6,090	Ton	$5.00	$30,450.00	Assumes that multiple handling of the soil is required as soil is placed in roll-off containers, allowed to dewater, and then loaded into Lift Liner bags or trucks for off-site transportation and disposal. The *in situ* volume of soil below the water table is 3,759 cy. The tonnage is based on 1.62 tons/*in -situ* cy. Cost includes equipment and labor.
Backfill - Imported Material	7,213	cy	$15.00	$108,195.00	Backfill is for general fill material. Assumes that excavated material will not be used as backfill. WESTON must approve the source, and laboratory analysis (compared to TACO Tier 1 residential remediation objectives) must be provided for soils used as backfill at the site. The cost includes delivery, placement, and compaction, including 20% factor for compaction. The total *ex-situ* volume of excavated soil is estimated to be 7,529 cy (6,274 *in situ cy*) and a 20% swell factor. Backfill will be placed to a depth of 6 inches bgs.
Backfill - Topsoil	316	cy	$20.00	$6,320.00	The topsoil will contain organic content. WESTON must approve the borrow source, and laboratory analysis (compared to TACO Tier 1 residential remediation objectives) must be provided for topsoil used at the site. The cost includes delivery and placement. The total *ex-situ* volume of excavated soil is estimated to be 7,529 cy (6,274 *in situ cy*) and a 20% swell factor. The quantity assumes that 6 inches of topsoil will be placed at the site and an excavation area of 17,061 square feet.
Site Restoration/Revegetation	1	LS	$2,000.00	$2,000.00	The cost Includes tilling, seeding, and planting. The quantity assumes the excavation area is 17,061 square feet (or 0.4 acre).

Table 7

ALTERNATIVE 3

Installation of a Vertical Barrier, Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal

NPL-11 Site

Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
DEWATERING SYSTEM					
Installation of a Slurry Wall or Sheet Piling	10,240	SF	$10.00	$102,400.00	Slurry wall or sheet piling to be installed around the perimeter of the work area. Cost estimate based on installation of a slurry wall. Quantity assumes the slurry wall will be 120 feet from east to west and 200 feet from north to south, for a total of 640 linear feet. Quantity assumes that the slurry wall will be installed to the bedrock surface at 16 feet bgs.
Dewatering System	75	Day	$2,680.00	$201,000.00	The dewatering system will consist of all necessary pumps and piping required for dewatering. The cost includes materials, labor, and equipment required for dewatering the excavation and pumping water from the water treatment system to the sanitary sewer. Labor assumes that one person would be required to maintain the dewatering system 24 hours per day for the duration of the project. The quantity assumes that dewatering will be conducted simultaneously with excavation for 75 days.
Dewatering/Storage of Excavated Soil	20	WK	$440.00	$8,800.00	Excavated soil will be temporarily stored in roll-off containers to allow excess water to drain and provide an area for mixing with the drying agent. The quantity is based on the use of eight 25-cy roll-off containers.
Dewatering Agent Addition and Mixing	6,090	Ton	$100.00	$608,960.00	The addition of a drying agent to dewater excavated soil is required. The cost includes purchase and delivery of the drying agent and *ex situ* mixing of the agent with wet soils prior to loading into Lift Liner bags or dump trucks for off-site transportation and disposal. Soil below the water table will require dewatering. The quantity assumes that the water table is at 4 feet bgs and the *in situ* volume of soil below the water table is 3,759 cy. The tonnage is based on 1.62 tons *in situ* cy.
Water Treatment System	15	WK	$14,760.00	$221,400.00	Assumes that one groundwater treatment system will be needed. The groundwater treatment system will include one 5,000-gallon baffled storage tank and a filtration system consisting of a sand filter and bag filters. The cost includes all necessary pumps and piping for transfer of water, rental of the filtration system, labor, maintenance, QA inspections, and bag filter replacement costs. Labor costs assume that one person would be required to maintain the groundwater treatment system 24 hours per day for the duration of the project.

Table 7

ALTERNATIVE 3

Installation of a Vertical Barrier, Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
LABORATORY SERVICES					
Water Disposal Samples	1	Sample	$1,000.00	$1,000.00	Laboratory analysis is required to determine if waste meets Ottawa WWTP acceptance criteria. Analyses include radium-226, radium-228, TPH, BOD, COD, metals, VOCs, SVOCs, TSS, pH, and alkalinity. The quantity assumes that one sample will be collected from the effluent groundwater.
On-Site Laboratory (Radium-226)	20	WK	$7,500.00	$150,000.00	An on-site laboratory will be utilized to analyze soil samples for disposal characterization. The analyses includes radium-226 and the cost includes equipment, utilities, labor, and per diem. Soil excavated above the water table will be manually screened and stockpiled based on radioactivity level. Soil excavated below the water table will be stockpiled in roll-off containers and allowed to dewater. The *in-situ* volume of soil below the water table is 3,759 cy. The ex situ volume assumes a 25% ex situ swell factor and a 20% dewatering swell factor (from the addition of drying agent). One sample will be collected from each 25 cy roll-off container (total of 218 samples) for analysis by the on-site laboratory.
Soil Sample Analysis-Disposal Parameters (Special Waste)	5	Sample	$1,250.00	$6,250.00	Laboratory analysis is required to determine disposal parameters for special waste. Analyses performed include disposal parameters as required by the special waste landfill (assumed to include radium-226, VOCs, SVOCs, TAL metals, pesticides, PCBs, TCLP VOCs, TCLP SVOCs, TCLP metals, pH, reactive cyanide, reactive sulfide, flashpoint, and paint filter). The *in situ* volume of special waste is 4,923 cy. The *ex situ* volume assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy. The quantity assumes that one sample will be collected per 1,000 cy.
Verification Soil Sample Analysis (Radium-226)	16	Sample	$300.00	$4,755.00	Laboratory analysis for radium-226 is required to verify that all radium-contaminated soil has been removed from the excavation. The analytical procedure includes a 7-day screening with a results-only deliverable and a 28-day confirmation re-analysis, with a full data report for data validation. A five-point composite sample will be collected for every 100 square meters of the excavation floor and sidewalls. The quantity assumes an excavation area of 17,061 square feet (or 1,585 square meters).
Imported Material Soil Samples	8	Sample	$1,000.00	$8,000.00	Laboratory analysis is required for imported backfill material. Analyses include VOCs, SVOCs, pesticides, PCBs, metals, pH, and TCLP. The quantity assumes that the total *ex-situ* volume of excavated soil is 7,529 cy (including 6,274 *in situ* cy and a 20% swell factor). One sample will be collected per 1,000 cy of imported material.

Table 7

ALTERNATIVE 3

Installation of a Vertical Barrier, Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal

NPL-11 Site

Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
OFF-SITE TRANSPORTATION AND DISPOSAL					
Disposal of Treated Groundwater at Ottawa WWTP	5,313,600	Gallon	$0.0133	$70,700.00	It is assumed that collected and treated groundwater will be disposed of at the City of Ottawa WWTP. The quantity assumes that dewatering of the excavation initiallly will be conducted at a pumping rate of 150 gpm at 24 hours per day (216,000 gallons per day) for 5 days and then reduced to 42 gpm at 24 hours per day (60,480 gallons per day) for the remainder of the excavation activities below the water table (70 days).
Transportation of Special Waste to Landfill	9,280	Ton	$20.00	$185,597.10	It is assumed that waste will be transported to a special waste landfill (TBD) in dump trucks by roadways. The *in situ* volume of special waste is 4,923 cy. The quantity assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy.
Disposal of Special Waste	9,280	Ton	$35.00	$324,794.93	It is assumed that waste will be disposed of at a special waste landfill. The *in situ* volume of special waste is 2,112 cy. The quantity assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy.
Lift Liner Bags	255	Bag	$500.00	$127,350.00	Radium-contaminated soil will be placed in Lift Liner bags for transport to the disposal facility. Assumes that each bag contains 10 tons of soil. The quantity assumes that the *in situ* volume of radium-contaminated soil is 1,351 cy. The ex situ volume assumes a 25% ex situ swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/ex situ cy.
Transportation of Radium-contaminated Soil to NORM Radioactive Landfill	128	Trip	$4,025.00	$515,200.00	Lift Liner bags will be transported from the site on flatbed trucks via roadway to the disposal facility. A trip is defined as one-way trasportation from the site to the disposal facility. The *in situ* volume of radium-contaminated soil is 1,351 cy. The *ex situ* volume assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy. It is assumed that two Lift Liner bags will be transported per trip.
Disposal of Radium-contaminated Soil	2,547	Ton	$125.00	$318,375.00	The cost assumes that all radioactive waste generated will be classified as NORM waste. The quantity assumes that the *in situ* volume of radium-contaminated soil is 1,351 cy. The quantity assumes a 25% *ex situ* swell factor and a 20% dewatering swell factor (from the addition of drying agent). The tonnage is based on 1.30 tons/*ex situ* cy.
DECONTAMINATION					
Collection, Filtration, and Temporary Storage of Decontamination Water	1,000	Gallon	$2.00	$2,000.00	This cost is for the collection of decontamination water, filtration, and temporary storage.
Disposal of Decontamination Water	1,000	Gallon	$0.0133	$13.30	It is assumed that decontamination water will be disposed of at the City of Ottawa WWTP.
DEMOBILIZATION					
Demobilization of Equipment	1	LS	$5,000.00	$5,000.00	The cost is for the demobilization of equipment and supplies from the site.
DIRECT COST SUBTOTAL				**$3,195,299.13**	

Table 7

ALTERNATIVE 3

Installation of a Vertical Barrier, Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
SUBMITTALS					
Performance and Payment Bonds	1	LS	$95,858.97	$95,858.97	The performance bond is equal to 100% of the subcontract price, and the payment bond is equal to 50% of the subcontract price.
Site Plans	1	LS	$5,000.00	$5,000.00	Plans must be submitted prior to the commencement of work include, but are not limited to, the work plan, RFP, HASP, pollution control plan, transportation and disposal plan, etc.
Required Disposal or Transportation Permits	1	Year	$1,300.00	$1,300.00	Disposal or transportation permits will be required.
TRAFFIC CONTROLS					
Traffic signs and barriers	1	LS	$1,000.00	$1,000.00	Adequate signs and barriers will be used used along streets. The cost includes coordination of traffic controls and any permits with the City of Ottawa.
TRANSPORTATION LOGISTICS SUPPORT					
Shipping Support Manager	300	Hour	$100.00	$30,000.00	The cost assumes that the duration of on-site transportation logistics support is 75 days, with 4 hours per day. Shipping support will be handled remotely.
HEALTH PHYSICS SUPPORT					
Health Physics Supervisor	1,000	Hour	$125.00	$125,000.00	The cost assumes one health physics supervisor on site for the duration of the project (100 days) for 10 hours per day. The health physics supervisor will oversee radiological screening during excavation and clearance surveys.
Rental Vehicle for Health Physics Supervisor	100	Day	$50.00	$5,000.00	The cost assumes that the duration of on-site health physics support is 100 days.
Technician	1,000	Hour	$100.00	$100,000.00	The cost assumes one health physics supervisor on site for the duration of the project (100 days) for 10 hours per day. The health physics supervisor will oversee radiological screening during excavation and clearance surveys.
Rental Vehicle for Technician	100	Day	$50.00	$5,000.00	The cost assumes that the duration of on-site health physics support is 100 days.
Per Diem for Health Physics Supervisor and Technician	100	Day	$109.00	$10,900.00	The cost assumes a daily lodging cost of $70 and a daily M&IE cost of $39.
Radiological Survey Equipment	100	Day	$600.00	$60,000.00	A project duration of 100 days is assumed. Equipment required includes, but is not limited to, pancake GM, alpha meter, 2 x 2 NaI detector/GPS combination, 2 x 2 NaI detector, MicroR meter, tray counter, lapel air samplers, and high-volume air samplers.
ENGINEERING/DESIGN/INVESTIGATION					
Engineering and Design	1	LS	$50,000.00	$50,000.00	The cost assumes the preparation of the design document.
CONTRACTOR PROCUREMENTS (@ 1% of direct costs)					
Contractor Procurements	1	LS	$10,000.00	$10,000.00	The cost assumes the procurement of five (5) subcontractors.
CONSTRUCTION MANAGEMENT					
Resident Engineer	1,000	Hour	$75.00	$75,000.00	This cost will be based on one on-site engineer working approximately 10 hours per day or 50 hours per week for the duration of the project (20 weeks).
Per Diem (Hotel and M&IE)	100	Day	$109.00	$10,900.00	This cost assumes a lodging rate of $55 per day and a M&IE rate of $30 per day.
Car Rental	100	Day	$65.00	$6,500.00	This cost assumes that one rental car will be required for each person on site.
Administrative and Office Support	200	Hour	$50.00	$10,000.00	This cost is assumes administrative and office support for 2 hours per day for the duration of the project (100 days).
INDIRECT COST SUBTOTAL				**$601,458.97**	

Table 7

ALTERNATIVE 3

Installation of a Vertical Barrier, Dewatering Using Continuous Pumping, Soil Excavation, Volume Reduction, and Off-Site Disposal
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
ANNUAL O&M COSTS					
ANNUAL O&M COST SUBTOTAL				$0.00	
SUB-TOTAL of DIRECT AND INDIRECT COSTS				$3,796,758.10	
SUB-TOTAL of DIRECT AND INDIRECT COSTS WITH 25% CONTINGENCY				$4,746,000.00	
SUB-TOTAL of O&M COSTS				$0.00	
SUB-TOTAL of O&M COSTS WITH 25% CONTINGENCY				$0.00	
PRESENT WORTH of O&M COSTS WITH CONTINGENCY				$0.00	This cost assumes an interest factor of 7 % and an O&M period of 30 years
TOTAL COST (DIRECT COSTS + INDIRECT COSTS + PRESENT WORTH COSTS) WITH CONTINGENCY				$4,750,000.00	

Notes:

bgs = Below ground surface
BOD = Biological oxygen demand
COD = Chemical oxygen demand
cy = Cubic yard
gpm = Gallon per minute
GPS = Global positioning system
HASP = Health and safety plan
LS = Lump sum
M&IE = Meals and incidential expenses
NaI = Sodium iodide
NPDES = National Pollutant Discharge Elimination System
NORM = Naturally occurring radioactive material
O&M = Operation and maintenance
PCB = Polychlorinated biphenyl
QA = Quality control
RA = Remedial action
RFP = Request for Proposal
SVOC = Semivolatile organic compound
TACO = Tiered Approach to Corrective Action Objectives
TAL = Target Analyte List
TBD = To be determined
TCLP = Toxicity characteristic leaching procedure
TPH = Total petroleum hydrocarbons
TSS = Total suspended solids
VOC = Volatile organic compound
WESTON = Weston Solutions, Inc.
WK = Week
WWTP = Wastewater treatment plant

Table 8

ALTERNATIVE 4
Institutional Controls
NPL-11 Site
Ottawa, Illinois

DIRECT COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
Environmental Covenant with Land Use Restrictions	1	LS	$8,000 00	$8,000 00	This cost includes the labor involved in placing future use restrictions in the two (2) deeds to the property
DIRECT COST SUBTOTAL				$8,000 00	

ANNUAL OPERATIONS AND MAINTENANCE (O&M) COSTS	ENGINEER'S ESTIMATES				COMMENTS
	Quantity	Unit	Unit Price	Cost	
RADON REDUCTION SYSTEM AND RADON GAS MONITORING					
Annual maintenance of radon reduction system and radon gas monitoring	1	LS	$1,000 00	$1,000 00	Cost includes labor and mobilization/demobilization costs for an environmental professional to maintain the radon reduction system and collect necessary radon gas samples, equipment and supplies, shipping, laboratory analysis of radon-222, and preparation of a report
ANNUAL O&M COST SUBTOTAL				$1,000 00	
FIVE YEAR REVIEW	1	5-year	$20,000 00	$20,000 00	The cost to conduct a five-year review based on the size of the NPL-11 site and the amount of data requiring interpretation
FIVE-YEAR O&M COST SUBTOTAL				$25,000 00	

SUB-TOTAL of DIRECT COSTS	$8,000.00
SUB-TOTAL of DIRECT COSTS WITH 25% CONTINGENCY	$10,000 00
SUB-TOTAL of ANNUAL O&M COSTS	$1,000.00
SUB-TOTAL of FIVE-YEAR O&M COSTS	$25,000.00
SUB-TOTAL of ANNUAL O&M COSTS WITH 25% CONTINGENCY	$1,000.00
SUB-TOTAL of FIVE-YEAR O&M COSTS WITH 25% CONTINGENCY	$31,000.00
PRESENT WORTH of ANNUAL O&M COSTS WITH CONTINGENCY	$32,100.00
PRESENT WORTH of FIVE-YEAR REVIEW COSTS WITH CONTINGENCY	$199,020 00
TOTAL COST (DIRECT COSTS + PRESENT WORTH COSTS) WITH CONTINGENCY	**$210,000.00**

Notes:
LS = Lump sum
O&M = Operation and Maintenance

Appendices

Appendix A - Responsiveness Summary

Appendix B - Administrative Record Index

Appendix A - Responsiveness Summary

The purpose of the Responsiveness Summary is to provide a summary of the United States Environmental Protection Agency's (EPA's) responses to the comments received from the public on the Proposed Plan for the Record of Decision (ROD) Amendment for the Ottawa Radiation Areas, NPL-11, Ottawa, LaSalle County, Illinois. Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Identification Number ILD980606750. This Proposed Plan was issued May 3, 2010. The public comment period for the Proposed Plan was established from May 3, 2010 to June 11, 2010. The public meeting was held May 19, 2010 at Ottawa's City Hall. The meeting was divided into two parts. In the first part of the meeting, EPA explained its proposed remedial action change and answered questions. In the second part of the meeting, EPA received formal public comments that are addressed in this responsiveness summary. The entire proceedings of the meeting were transcribed by a court reporter and are being included in the final Administrative Record.

EPA received formal oral comments at the public meeting. EPA did not receive any written comments during the public comment period. EPA is required by law to consider and address only those comments that are pertinent and significant to the remedial action being selected. EPA is not required to address comments which pertain to the allocation of liability for the remedial action, nor potential enforcement action to implement the remedial action, as these are independent of the selection of the remedial action and EPA's Proposed Plan.

EPA is not required to re-print the comments of the commenter verbatim and may paraphrase where appropriate. In many cases in this response summary, EPA has included large segments of the original comment. However, persons wishing to see the full text of all comments should refer to the commenter's submittal to EPA which has been included in the Administrative Record.

Specific responses by EPA are indexed for convenient reference. Comments are shown in normal text and EPA's responses are shown in an italicized type style.

Mr. Andrews: Is there a possibility that EPA, the City of Ottawa, or a private entity could purchase and condemn the property so that the property could never be used?

> ***Response:*** *The selected remedy allows for the construction of slab-type buildings with institutional controls on the two properties, hence condemnation of the properties is not warranted, nor is precluding any use of the properties. The institutional controls ensure that residual contamination would not pose a present or future hazard and would permit the properties to be returned to productive use.*
>
> *As for ownership of the property, EPA can not own property. CERCLA section 104(j)(2) states that "EPA may acquire an interest in real estate in order to conduct a remedial*

action only if the State in which the interest to be acquired is located provides assurances, through a contract, cooperative agreement or otherwise, that the State will accept transfer of the interest upon completion of the remedial action." EPA rarely uses eminent domain where EPA would condemn a property. In this case, it is more cost effective and protective to require institutional controls on the properties. While the City or a private entity could purchase the properties, no matter who owns or purchases the properties, the institutional controls must be implemented, maintained, and monitored into perpetually.

Mr. Bandstra: Is it possible to reduce the costs associated with implementing the deed restrictions in Alternative 4 (selected remedy)? Does EPA have to go through the legal process to implement the deed restriction if the land was sold to whoever, given to the City of Ottawa for the City's control, and then it would be up to the City Building Department to ensure that a building permit is never issued. Maybe that wouldn't have as high of legal costs as actually going through a deed restriction process. Would that be less cost to society? The other thing that you don't get with that is beneficial use of the property. You have a person or persons who own the property. And so you're in a sense trampling on their rights by taking the property away from them, not giving them the opportunity to use it, if they were -- if they found Alternative 4 to be acceptable. So there are ramifications of going that way. Is cost the primary criteria? Would it be cheaper just to purchase it and take it out of circulation as a usable property than to go through the deed restriction process?

Response: *No, it is not possible to implement the selected remedy without the required deed restrictions (institutional controls). The selected remedy requires the institutional controls, such as an environmental covenant under the Illinois Uniform Environmental Covenants Act, 765 ILCS Ch. 122 (UECA). No matter who owns or purchases the properties, the institutional controls must be implemented, maintained, and monitored into perpetuity. The selected remedy allows for the construction of slab-type buildings with institutional controls on the two properties, hence condemnation of the properties nor the need to prevent building permits is necessary. And as noted in the comment, this allows the properties to be returned to beneficial use. Purchasing the property to take it out of use would still require the cost of purchase and maintaining the property without the benefit of returning the properties to productive use. Thus, such an action is unlikely to be less costly then the selected remedy.*

Cost is not a primary criterion in selecting a remedy but is only one of several factors that EPA considered when selecting a remedy.

Appendix B - Administrative Record Index

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
OTTAWA RADIATION SITES
OTTAWA, LA SALLE COUNTY, ILLINOIS

UPDATE #19
JULY 2010

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	01/17/07	Eschbach, R., City of Ottawa		Ordinance No. 002-2007: an Ordinance Prohibiting the Use of Groundwater as a Potable Water Supply by the Installation or Use of Potable Water Supply Wells or by any Other Method within the City of Ottawa **(SDMS ID: 363518)**	2
2	03/08/10	McCandless, G., Illinois Emergency Management Agency	Short, T., U.S. EPA	Letter re: Follow-up to February 23, 2010 Meeting Concerning Radium Contamination Sites in Ottawa, Illinois still on NPL **(SDMS ID: 363519)**	4
3	05/00/10	U.S. EPA	Public	U.S. EPA Fact Sheet: EPA Proposes Changes to Plan for Vacant Properties Cleanup **(SDMS ID: 363520)**	6
4	05/05/10	Daily Times	Public	Newspaper Advertisement: "EPA Proposes Changes to Plan for Vacant Properties Cleanup" **(SDMS ID: 363521)**	1
5	05/19/10	Launius Reporting Services	U.S. EPA	Report of Proceedings Had of the Public Meeting Held on May 19, 2010 re: Ottawa Radiation NPL-11 Site **(SDMS ID: 363522)**	43