REMEDIAL ACTION WORK PLAN FOR THE COLONIE SITE

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AUGUST 1985

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Prepared by
**U.S. DEPARTMENT OF ENERGY
OAK RIDGE OPERATIONS OFFICE**

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MASTER

REMEDIAL ACTION WORK PLAN
FOR THE
COLONIE SITE

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AUGUST 1985

U.S. DEPARTMENT OF ENERGY
OAK RIDGE OPERATIONS

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1.0 INTRODUCTION AND OBJECTIVES

1.1 BACKGROUND

The United States Government initiated the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974. FUSRAP is a Department of Energy (DOE) effort to identify, decontaminate, or otherwise control sites where low-level radioactive contamination (exceeding current guidelines) remains from the early years of the nation's atomic energy program. It is currently being managed by the DOE. The objectives (Ref. 1) of FUSRAP include:

- o Identification of candidate sites
- o Determination of whether authority exists for DOE to undertake work, and, if so, characterization of radiological conditions
- o Stabilization and/or decontamination of sites as required and pursuant to authorization and appropriation by Congress
- o Development of acceptable stabilization and disposal sites in cooperation with the affected states
- o Certification of the acceptability of the sites for future use

1.2 SITE IDENTIFICATION

The Colonie site is a DOE FUSRAP site located in the Town of Colonie, New York, and consisting of an interim storage site and several vicinity properties (Figure 1-1). The Colonie Interim Storage Site (CISS) is the former National Lead (NL) Industries plant located at 1130 Central Avenue. There are 11 vicinity properties that received remedial action in 1984: 7 located south of the site on Yardboro and Palmer Avenues just across the Colonie-Albany town limits in Albany, and 4 located northwest of the site along Central Avenue in Colonie. Of these properties, nine are residences and two are commercial properties.

FIGURE 1-1 COLONIE INTERIM STORAGE SITE AND VICINITY PROPERTIES

1.3 PURPOSE

This document describes the engineering design, construction, and associated plans for remedial action on the vicinity properties and the interim storage site. These plans include both radiological and chemical work as follows:

Radiological

- o Excavating the above-guideline radioactive wastes on the vicinity properties
- o Designing required facilities for the interim storage site
- o Preparing the interim storage site to receive these contaminated materials
- o Transporting the contaminated materials to the interim waste storage stockpile
- o Preparing necessary schedules for accomplishing the remedial actions

Chemical

- o Developing the Resource Conservation and Recovery Act (RCRA) closure plans
- o Neutralizing chemical hazards associated with plating solutions
- o Inventorying on-site chemicals
- o Disposal of chemicals and/or residues

2.0 SITE DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

The CISS comprises the former NL Industries property and plant building located at 1130 Central Avenue, Town of Colonie, New York (Figure 1-1). The building is about 45 years old, of irregular shape, and has about 11,000 m² (120,000 ft²) of floor space.

A small front section of the building is office space and consists of approximately 630 m² (6800 ft²) including a two-story section at the northern corner of the building. This area is not radioactively contaminated. The remainder of the building was used for manufacturing operations and consists of four large bays with 5.8-m (19-ft) ceilings, several smaller rooms or work areas around the bays, and a loading dock. A railroad spur with access to the building is located on the southern side of the building. This area is radioactively contaminated.

Most of the building has built-up roofing over a wooden deck. Bay 4, however, has a precast concrete roof. The roof is generally in fair to poor condition. From a structural standpoint, however, the building is in reasonably good condition.

An underground drain enters the site northwest of the NL building and runs almost due south across the property. Surface drainage collectors feed into the underground drain.

In addition to the former NL plant, remedial action will be conducted on vicinity properties within an 800-m (2625-ft) radius of the property.

2.2 RADIOLOGICAL DESCRIPTION

The NL plant was used primarily for manufacturing counterweights and conventional weapons projectiles using depleted uranium. Low-level radioactive material is known to have been accumulated and buried in

certain areas north of the building, including the northwest side of the fenced area, which is actually located on Niagara Mohawk Power Corporation property (Ref. 2).

In general, however, most of the radioactive contamination on the vicinity properties is from airborne releases of uranium from the processing operations at the plant.

A radiological survey was performed by Teledyne Isotopes and reported to NL Industries, Inc., on October 31, 1980 (Ref. 3). The results showed measurable deposition primarily to the northwest and southeast of the plant in the directions of prevailing winds.

To date, the Oak Ridge National Laboratory (ORNL) has completed radiological surveys of 67 residential properties in the vicinity of the plant.

2.3 CHEMICAL DESCRIPTION

In addition to the radioactive waste at the Colonie site, there are several categories of chemicals stored in the NL plant. Acids, bases, and cyanide solutions were used in nickel and cadmium plating trains. These chemicals have been sampled and analyzed and procedures are being developed to neutralize them. As an interim safety measure, the solutions have been transferred to approved storage containers until they are neutralized. Preliminary data indicate that all chemical solutions used in the plating train contain significant concentrations of uranium.

The NL building also contains a large amount of unused chemicals that were left in the laboratory. BNI is currently taking an inventory of these chemicals; after the chemicals have been identified, plans will be developed for disposal. Although no radiological testing has been conducted, many of these chemicals are anticipated to be uncontaminated.

Also remaining in the plant are large amounts of industrial grade chemicals. Many of these chemicals are in unopened containers and therefore are not radioactively contaminated. They may be removed, sold, etc., as DOE deems appropriate.

2.4 SITE GEOLOGY AND HYDROLOGY

The CISS is underlain by Ordovician shale of the Normanskill Formation at a depth of approximately 45 to 60 m (150 to 200 ft). The bedrock is overlain by thin layers of glacial till and stratified drift. These glacial deposits are overlain by a 100- to 150-ft-thick (30- to 45-m-thick) layer of unconsolidated deposits of clay and silt. The soil borings in the vicinity of the former NL plant indicate the presence of gray clay and silt at a depth of 12.7 to 18 m (42 to 60 ft) beneath the site. Layers of gray sand, silt, and clay extend upward to within 3 to 6 m (10 to 20 ft) of the surface; over most of the site the surficial material is a fine, brown dune sand.

Groundwater in the vicinity of the site is available in small quantities from the bedrock aquifer and in moderate-to-large quantities from the stratified drift. The groundwater flows to the southeast or east in the vicinity of the site.

The site is located within the Patroons Creek drainage basin about 2.3 k (1.6 mi) east of Rensselaer Lake. Patroons Creek lies about 0.4 k (0.25 mi) south of the plant. The surface hydrology of the CISS itself consists of a small stream that enters the site from the northwest through a culvert, flows through an old lake bed, and exits through another culvert on the south side of the site. The stream reappears after passing under the Penn Central railroad tracks adjacent to the site and empties into Patroons Creek.

3.0 MANAGEMENT APPROACH

All FUSRAP sites are under the direction of the DOE Assistant Secretary for Nuclear Energy, through the Office of Remedial Action and Waste Technology and the Division of Facility and Site Decommissioning.

DOE Headquarters (DOE-HQ) has the responsibility for developing overall policy applicable to FUSRAP. DOE-HQ provides broad guidance and establishes the program budget.

The Oak Ridge Operations Office (ORO), Technical Services Division (TSD) manages FUSRAP on a day-to-day basis and oversees the work of the Project Management Contractor (PMC) chosen to implement project activities. In addition to the technical and administrative management of FUSRAP, ORO-TSD manages the authorized project budget.

The PMC, Bechtel National, Inc. (BNI), acts as DOE's representative in the planning, management, and implementation of FUSRAP. As PMC, BNI is responsible for analyzing site conditions and planning, recommending, and engineering remedial actions for the various FUSRAP sites. Upon approval from ORO-TSD, BNI implements remedial actions as required. BNI administers construction subcontracts, coordinates the sequence of operations, controls the relationships among subcontractors, and ensures completion of each authorized project according to plan.

In implementing approved remedial actions at a specific site, BNI will subcontract the work locally to the extent that it is cost-effective and expedient to the program.

At each FUSRAP site, BNI is responsible for defining and implementing quality assurance procedures and environmental monitoring, safety, and radiological programs. BNI is responsible for monitoring and controlling all activities at the site through

close cooperation with its radiological support subcontractor, Eberline Analytical Corporation (EAC), and all remedial action subcontractors.

Argonne National Laboratory (ANL) is responsible for the National Environmental Policy Act (NEPA) process as outlined in the Council on Environmental Quality guidelines and implementing DOE guidelines. As part of its NEPA responsibilities, ANL will perform the required types and levels of environmental analyses necessary to support work activities.

4.0 WORK PLAN

4.1 REMEDIAL ACTION CRITERIA

The radiological guidelines determined by DOE to be applicable to cleanup of radioactive materials at the CISS are summarized below. These site-specific guidelines were developed by DOE and New York State officials and were reviewed by EPA (Ref. 4).

The site-specific remedial action guidelines for the Colonie vicinity properties are:

- o Soil contaminated with depleted uranium will be removed if concentrations exceed 35 pCi/g when averaged over the top 5 cm (2 in.) of soil and a 100-m² (1076-ft²) area.
- o Any contaminated area exceeding 100 pCi of depleted uranium per gram of soil averaged over the top 5 cm (2 in.) of soil and 1 m² (10 ft²) will be removed.
- o At depths greater than 5 cm (2 in.), the criteria are numerically the same; however, concentrations will be averaged over a 15-cm (6-in.) depth.
- o For contamination of surfaces such as roofs and asphalt, remedial action will be conducted if the beta-gamma measurement averaged over 1 m² exceeds 0.2 mrad/h or if the maximum exposure rate in any 100-cm² area exceeds 1.0 mrad/h.

In addition, many of the hazardous chemical problems at CISS fall under the authority of RCRA or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

4.2 SITE CHARACTERIZATION

Of the 67 residential properties surveyed to date, it was determined that 31 properties were not contaminated in excess of DOE guidelines and therefore were not designated. Thirty-six properties have been designated for remedial action of which 11 (Refs. 5-16) were decontaminated in FY 1984. Of the remaining 25 designated properties, 24 are scheduled for remedial action in FY 1985. The one remaining designated property is a vacant lot adjacent to the

CISS and will be decontaminated at the same time as the CISS. ORNL will continue the survey of other potentially contaminated residential properties in 1985.

For the interim storage of contaminated wastes from vicinity properties, no additional on-site characterization surveys are required at the CISS. However, before final cleanup of the site for unrestricted use, additional radiological surveys will be conducted to accurately locate and identify buried radioactive material and to define the extent and level of contamination in the building and on the remainder of the site.

4.3 PRELIMINARY ENGINEERING ALTERNATIVES

The decontamination work to be performed consists of Phase I and Phase II. Phase I involves removing contaminated materials from vicinity properties and storing them for a period of up to 25 years at the CISS. Phase II includes decontaminating the interim storage site and placing all the contaminated materials now on-site (principally the buried waste and the rubble from demolishing the building, if required) along with the stored contaminated materials at a final disposal facility to be selected prior to the beginning of Phase II.

Before starting the Phase I decontamination, several preliminary engineering studies were performed concerning alternative actions at the CISS. These studies considered the following:

- o Method of interim storage at the CISS
- o Storage of contaminated soils and rubble outdoors on the NL plant grounds
- o Storage of contaminated soils and rubble inside the NL plant in metal bins
- o Storage of contaminated soils and rubble inside the NL plant in wooden bins

- o Bulk storage of contaminated soils and rubble inside the NL plant
- o Demolition versus decontamination of the NL plant
- o Potential cost savings if excavation of contaminated soil on the Niagara Mohawk property is deferred

The results of the studies showed that:

- o There is adequate storage space on the CISS for interim storage of contaminated material from vicinity properties.
- o It is considerably more cost-effective to store vicinity property materials outside rather than inside the plant. However, consideration of state and local concerns about outdoor storage led to a decision to store materials inside the building for 1984 work.
- o The building at the site should be demolished as part of the cleanup plan for this facility.
- o Considerable cost savings can be realized if cleanup of the Niagara Mohawk property is deferred until final cleanup of the site.

The currently planned work involves the cleanup of vicinity properties with interim storage at the CISS and the neutralization of plating room solutions to eliminate primary chemical hazards. The details of the work plan for the interim work are presented in Section 4.7 of this document.

4.4 NEPA

The National Environmental Policy Act promotes environmental considerations in federal decision making. DOE implementing guidelines for NEPA are followed in evaluating proposed interim remedial actions and final disposition of all the contaminated material. Through the NEPA process, DOE conducts the applicable level of environmental analyses and advises appropriate federal, state, and local agencies and the public of proposed remedial actions. All work will be conducted with the appropriate level of NEPA documentation.

4.5 DESIGN ENGINEERING

In January 1984, BNI started design engineering to support the NEPA activities and began developing the engineering packages necessary to support the vicinity property cleanup. In February 1985, BNI resumed design engineering and the development of the engineering packages necessary to support the cleanup of additional vicinity properties (detailed cost estimates, drawings, specifications, schedules, and requisitions) as described in Section 4.7 below.

4.6 ACCESS AGREEMENTS

Access agreements for radiological and civil engineering surveys are being obtained by ORNL. Access agreements are already in place for remedial action at the following locations: 1146, 1148, 1150, 1152, and 1162 Central Avenue (bowling alley); 25/27 and 50 Yardboro Avenue; and 7 Palmer Avenue. Access agreements will be obtained by BNI for the following properties:

- o 24 Yardboro Avenue (private residence)
- o 1118 Central Avenue (Ford's Tavern)
- o 1160/62 Central Avenue (private residence)

BNI will obtain access agreements for any additional properties designated for remedial action as a result of continuing surveys.

4.7 REMEDIAL ACTIONS

4.7.1 Previous Work

Remedial actions for 1984 consisted of the cleanup and restoration of the 11 residential vicinity properties listed below and produced 532 m³ (700 yd³) of contaminated soil and rubble that was transported to the CISS for interim storage. The properties are located within 0.8 km (0.5 mi) of the CISS; they are shown in Figure 4-1.

FIGURE 4-1 VICINITY PROPERTIES

27/29 Yardboro Avenue
52 Yardboro Avenue
68 Yardboro Avenue
74 Yardboro Avenue
80 Yardboro Avenue
78 Yardboro Avenue

33 Palmer Avenue
1114 Central Avenue
1144 Central Avenue
1144A Central Avenue
1159 Central Avenue

Excavation was required under roof drip lines, trees, and along paved sidewalks and driveways. These areas were excavated to a depth of about 7.5 cm (3 in.). Before excavation, the grass and weeds were mowed and raked up to minimize the inclusion of organic matter with the contaminated material. The excavated material was stored in Bay 4 inside the NL plant. Organic materials were separated from the waste material and stored separately inside the plant in an appropriate fire-rated area.

The height of the storage pile in the building was 3 m (10 ft). The pile was covered with reinforced plastic sheets to control dust after placement and to prevent erosion since occasional roof leaks have occurred. All floor drains in the area of the storage pile have been grouted closed. Sand bags were placed around the base of the pile to contain the material within the pile.

Areas where contaminated soils were excavated were restored to their original condition. Cleaned areas were restored with clean backfill. Grass areas on private properties were restored with sod or were seeded. Contaminated soil sediment buildup on top of concrete was excavated and the concrete washed clean. In several areas contaminated asphalt surfaces were abraded to remove the contamination.

A washdown facility for equipment and transport vehicles was constructed at the CISS. It consisted of a pit lined with a membrane and filled with crushed stone. The cleaning unit was a combination water/steam unit.

Water collected during decontamination activities was sampled and analyzed for uranium. No water exceeding the 600 pCi/l concentration guide was generated. Consequently, all water was discharged to the Albany County Sewage Treatment Plant.

In addition to the remedial action subcontractor, a land surveying subcontractor was required to survey property boundaries.

4.7.2 FY 1985 Work

The planned remedial actions for 1985 consist of decontaminating and restoring up to 24 residential properties on Yardboro, Central, and Palmer Avenues and on Reynolds Street, all within 0.8 km (0.5 mi) of the CISS, as shown in Figure 4-1. These properties are listed below.

5 Yardboro Avenue	1152 Central Avenue
24 Yardboro Avenue	1160 Central Avenue
25/27 Yardboro Avenue	1160/1162 Central Avenue
50 Yardboro Avenue	1161/1163 Central Avenue
1100 Central Avenue	1166 Central Avenue
1104 Central Avenue	1167 Central Avenue
1118 Central Avenue	1168 Central Avenue
1129 Central Avenue	1170 Central Avenue
1146 Central Avenue	1185 Central Avenue
1147 Central Avenue	1195 Central Avenue
1148 Central Avenue	7 Palmer Avenue
1150 Central Avenue	1 Reynolds Street

Radiological characterization of designated properties will be conducted to define the boundaries of contamination. Excavation will be required in any area where contamination is found to exceed DOE guidelines. These areas will generally be excavated to a depth of approximately 7.5 cm (3 in.). Before excavation, grass and weeds will be mowed and raked up to minimize inclusion of organic matter with the contaminated material. If the grass and weed material is contaminated below criteria, it will be disposed of off-site as

clean material. The excavated material will be transported to the CISS in covered dump trucks or in other BNI-approved transport equipment and stored in Bay 4 inside the plant. Contaminated organic material will be stored separately inside the plant in a fire-rated area.

The existing pile inside the plant will be uncovered and some sand bags will be removed from its perimeter to allow the piling of additional contaminated material. The final pile will have additional sand bags placed around its perimeter to contain and snape the material within, and will be covered with reinforced plastic sheets.

Areas where contaminated soils are excavated will be restored to their original condition using suitable, uncontaminated backfill. Grass areas on private properties will be restored by sodding or seeding. Contaminated soil sediment buildup on top of concrete or asphalt surfaces will be removed and the surfaces washed clean. If asphalt surfaces are found to be contaminated or become damaged during the cleanup of adjacent areas, they will be removed and replaced with a layer of new asphalt.

The washdown facility for cleaning contaminated equipment and transport vehicles will remain at its original location. Water from the washdown facility will be sampled and tested, and if found to be below the release criterion (600 pCi/l), will be discharged as done in 1984.

In addition to the remedial action subcontract, a civil surveying subcontract will be required. The land surveyor will survey the property boundaries on all vicinity properties prior to remedial action.

Planned FY 1985 work regarding chemical hazards at CISS includes:

- o Transferring plating solutions from plating tanks to plastic storage tanks
- o Characterizing plating solutions with respect to acidity, alkalinity, cyanide, and total uranium
- o Neutralizing primary hazards of plating solutions
- o Developing a RCRA closure plan
- o Inventorying the on-site chemical hazards

After DOE acquired the site and informed the EPA Region II it did not intend to continue operations, EPA requested that DOE submit a revised RCRA Part A application (NLI had previously filed a Part A application and was granted interim status as a storage facility for hazardous chemical wastes) and a closure plan. The revised Part A application was submitted to EPA in December 1984. The closure plan was submitted to the EPA in July 1985.

4.7.3 Future Work

Cleanup of the remaining vicinity properties is scheduled for 1986 and 1987 as required. Because the radiological surveys have not been completed yet, the extent of work required is unknown, but is estimated to involve approximately 1800 m³ (2354 yd³) and 60 additional vicinity properties. This material will be brought to the CISS and stored either inside the building or elsewhere on the property.

It is assumed at this time that property owned by Niagara Mohawk adjacent to and west of the CISS will not be decontaminated until the CISS itself is decontaminated.

4.8 OCCUPATIONAL EXPOSURE

An evaluation of the occupational exposure for decontaminating vicinity properties has led to the conclusion that, from a radiological standpoint, the health risks are insignificant. Risks associated with working inside the contaminated building depend on the activities performed and must be evaluated on an individual basis.

Personnel trained in the protection of workers from ionizing radiation and chemical exposure are assigned to this project to ensure that exposures to workers are below the limits allowed by federal regulations.

4.9 CONFIRMATION SAMPLING AND ANALYSIS

Radiological measurements are required to identify the material that is contaminated in excess of remedial action criteria and to confirm that the remedial action was effective in removing contaminated material (see Appendix A).

4.9.1 Characterization of Contamination Boundaries

Before beginning decontamination efforts on each designated property, a characterization survey will be conducted to define the excavation limits. The limits derived from the ORNL designation surveys will serve as a guideline for finding areas suspected of being contaminated in excess of criteria; they are not to be considered final boundaries.

A grid system, typically 6 ft, will be established over the area by the radiological support subcontractor and will be tied to the property corners. Property corners are tied to the state grid system by the surveyors who provided property drawings before the characterization. 'FIDLER' (field instrument detection low energy radiation) measurements will be made at each grid point. A scan

using the FIDLER will be made between grid points. Soil samples will be taken from suspect areas to estimate the concentration of uranium in picocuries per gram and to quantify the depth of contamination. Gross alpha counting will be used to analyze these soil samples. Excavation boundaries will be mapped and provided to the remedial action subcontractor for excavation.

Other surfaces will be monitored as necessary to determine their radiological condition. These surfaces may include sidewalks, driveways, steps, porches, patios, window ledges, roofs, walls, and fences. For comparison to applicable criteria, survey results will be taken with an instrument capable of determining the exposure rate in mrad/h.

If the extent of contamination found during the characterization survey varies significantly from that shown in the remedial action access agreements with the property owners, DOE will advise the owner, and excavation will proceed only after a suitable revised agreement has been reached. A significant variation is defined as one that affects structures, other improvements, or actions not included in the original property owner-DOE Memo Agreement.

4.9.2 Excavation Control

After contamination limits have been determined by the characterization survey, excavation will proceed. Two methods will be used to locate contamination boundaries, to monitor the effectiveness of the initial excavation to the prescribed contours, and to locate areas where contamination still exceeds DOE remedial action guidelines. Near-surface scanning will be performed using a FIDLER-type scintillation probe with a 5-in.-diameter by 0.063-in.-thick NaI crystal to detect the low-energy gamma emissions characteristic of uranium. The FIDLER has been calibrated using soil samples taken from the CISS and then analyzed at a laboratory.

To provide quick turnaround for the analysis of soil samples, a technique has been developed using gross alpha counting. This method requires taking a soil sample and then drying and pulverizing it. The pulverized sample is prepared by passing 0.5 gram of the sample through an 60-mesh sieve onto a 5-cm (2-in.) diameter planchet. The sample is counted for 10 minutes in a low-background alpha counter. The calculated minimum detectable activity (MDA) for this technique is 15 pCi/g (see Appendix A).

A laboratory will be set up at the CISS for soil sample analysis. Approximately 20 samples per day can be analyzed by one technician using one alpha counter. Total sample evaluation time (for sample preparation and counting) ranges from 4 to 24 hours. Standard laboratory procedures (e.g., washing instruments between uses) will be implemented to avoid cross contamination of soil samples.

4.9.3 Confirmation Survey

When a cleaned area is in compliance with the criteria as determined by measurements by the two methods described, the radiological status of that area will be documented prior to backfilling. The confirmation survey will consist of near-surface gamma measurements taken within the responsive range of the instrument, and systematic soil sampling. Soil samples will be taken at the rate of at least 4 per 100 m² (1076 ft²). Soil samples will be evaluated in the field laboratory using the gross alpha counting technique. Soil samples will also be sent to the radiological support subcontractor's laboratory for a standard isotopic analysis. Aliquots of confirmation samples will also be provided upon request to the State of New York for independent analysis (see Appendix A). All post-remedial action samples will be archived at least until final certification is complete by the independent verification contractor.

4.9.4 Post-Remedial Action Report

During the cleanup operations, BNI will collect and document data from analyses of soil samples and in situ radiological measurements to confirm the adequacy of the remedial action.

Results of measurements and sample analyses documenting final radiological conditions will be presented in a post-remedial action report for each designated property.

4.10 WASTE VOLUME PROJECTIONS

The actual and projected waste volumes for the CISS and vicinity properties, based on the proposed FUSRAP criteria presented in Section 4.1, are provided in Table 4-1. The volumes shown are only approximate and must be verified by radiological surveys. In addition, an undetermined volume of contaminated material may be generated if the existing plant is either decontaminated or demolished by DOE at some time in the future.

4.11 QUALITY ASSURANCE

The provisions of the DOE FUSRAP Plan for Quality Assurance comply with DOE Order 5700.6, and apply to BNI as PMC, to subcontractors, architect-engineers, construction and service subcontractors, and other subcontractors as may be identified (Ref. 17).

Quality assurance requirements apply to all work being performed at the CISS. BNI will carry out the Project Quality Assurance Program in accordance with the above parameters. Effectiveness of implementation will be appraised by the BNI quality assurance organization, and by DOE-ORO as it deems appropriate.

4.12 SURVEILLANCE AND MAINTENANCE

To protect the environment and the health and safety of the public and site personnel, BNI has developed a maintenance and surveillance program at the CISS. The program is designed to ensure adequate containment of contamination, provide regular sampling and monitoring of effluents and surface/subsurface water migrations, and provide physical safety and security controls. It includes plans for site security, surface and well water monitoring, air monitoring, grass mowing, and fence repair. Procedures for these activities are contained in the Field Operations Manual, FUSRAP Project Instruction 8.0. The program will be carried out until completion of ultimate site cleanup and will ensure that applicable requirements of DOE, State of New York, and other federal regulatory agencies are met.

TABLE 4-1
WASTE VOLUME PROJECTIONS
FOR THE COLONIE SITE

Fiscal Year	Property	Projected Volume ^a (yd ³) ^b	Actual Volume (yd ³)
1984	Yardboro, Central, and Palmer Avenue residences	350	700
1985	Yardboro, Central, and Palmer Avenue residences and Reynolds Street residence	680	
1986 and Out Years	Vicinity property residences Niagara Mohawk Power Corp. and Town of Colonie properties west of the CISS and on-site contamination	1800 26,820 ^c	
	TOTAL	30,000 ^d	

^aProjected volume estimates are based on current information, but are not definitive. For example, the volumes may change as the extent of contamination is defined by radiological characterization.

^bFor equivalent m³, multiply by 0.76.

^cIncludes building rubble

^dTotal includes actual volume for FY 1984.

5.0 SCHEDULE AND COST

Figure 5-1 summarizes the preliminary schedule for actions required to implement the cleanup of vicinity properties and interim storage at the CISS. The schedule for cleanup of the CISS will be developed when the final disposal option has been defined. Decontamination of the CISS cannot be scheduled until a New York disposal site has been identified and scheduled for construction.

Cost estimates are also provided in Figure 5-1 for fiscal years 1985, 1986, and 1987. Cost estimates and the schedule beyond 1987 will depend on the location of the selected disposal site and the time of the transfer of materials from the CISS to final storage.

MILESTONE DESCRIPTION	FY 84				FY 85				FY 86				FY 87			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RADIOLOGICAL CHARACTERIZATION VICINITY PROPERTIES SITE		(4 SURVEYS)				(4 SURVEYS)			-----							
SUBSURFACE CHARACTERIZATION WELL INSTALLATION GEOLOGIC REPORT																
CHEMICAL TREATMENT TRANSFER SAMPLE AND ANALYSIS DISPOSAL																
ENGINEERING EVALUATION OF ALTERNATIVES FOR CISS																
DESIGN ENGINEERING VICINITY PROPERTIES																
REMEDIAL ACTION VICINITY PROPERTIES																
NEPA																
SURVEILLANCE AND MAINTENANCE																
TOTAL COST (IN MILLIONS)	0.8				1.4				1.2				1.9			

FIGURE 5-1 COLONIE SITE -- SCHEDULE AND COST SUMMARY

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4. Letter, E.L. Keller to R.L. Rudolph. "Colonie Vicinity Property Decontamination," May 7, 1984.
5. Oak Ridge National Laboratory. Results of the Radiological Survey at 78 Yardboro Avenue, Albany, New York (AL 001), Oak Ridge, TN, March 1984.
6. Oak Ridge National Laboratory. Results of the Radiological Survey at 80 Yardboro Avenue, Albany, New York (AL 002), Oak Ridge, TN, March 1984.
7. Oak Ridge National Laboratory. Results of the Radiological Survey at 74 Yardboro Avenue, Albany, New York (AL 003), Oak Ridge, TN, March 1984.
8. Oak Ridge National Laboratory. Results of the Radiological Survey at 68 Yardboro Avenue, Albany, New York (AL 004), Oak Ridge, TN, March 1984.
9. Oak Ridge National Laboratory. Results of the Radiological Survey at 52 Yardboro Avenue, Albany, New York (AL 005), Oak Ridge, TN, March 1984.

10. Oak Ridge National Laboratory. Results of the Radiological Survey at 33 Yardboro Avenue, Albany, New York (AL 006), Oak Ridge, TN, March 1984.
11. Oak Ridge National Laboratory. Results of the Radiological Survey at 130 Yardboro Avenue, Albany, New York (AL 007), Oak Ridge, TN, March 1984.
12. Oak Ridge National Laboratory. Results of the Radiological Survey at 128 Yardboro Avenue, Albany, New York (AL 008), Oak Ridge, TN, March 1984.
13. Oak Ridge National Laboratory. Results of the Radiological Survey at 124 Yardboro Avenue, Albany, New York (AL 009), Oak Ridge, TN, March 1984.
14. Oak Ridge National Laboratory. Results of the Radiological Survey at 1144 Central Avenue, Colonie, New York (AL 010), Oak Ridge, TN, March 1984.
15. Oak Ridge National Laboratory. Results of the Radiological Survey at 1144A Central Avenue, Colonie, New York (AL 011), Oak Ridge, TN, March 1984.
16. Oak Ridge National Laboratory. Results of the Radiological Survey at 27/29 Yardboro Avenue, Albany, New York (AL 012), Oak Ridge, TN, March 1984.
17. U.S. Department of Energy. Order 5700.6, "Quality Assurance - ORO Site Implementation Plan," Washington, DC, March 1982.

APPENDIX A
RADIOLOGICAL SURVEY/MONITORING PLAN
FOR COLONIE SITE

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RADIOLOGICAL SURVEY/MONITORING PLAN

The following plan provides detailed procedures for site characterization, excavation guidance, and site radiological status confirmation and documentation following remedial action at Colonie, New York.

Radiological surveys at FUSRAP sites are done for four purposes. The first purpose is to determine whether radioactivity exists on a property in concentrations exceeding the remedial action guidelines and to determine the approximate boundaries of these concentrations. This is a designation survey and properties in this category are "designated" by DOE for remedial action. At CISS, these surveys are being performed by ORNL. The second survey is to determine more accurately the horizontal and vertical boundaries of the contaminated material so that the cleanup can be completed. This is a characterization survey and will be performed by BNI immediately before remedial action begins. The third is to ensure that the cleanup removed all contamination exceeding the guidelines. This is a confirmation survey. The fourth survey is conducted by an independent contractor to DOE. This survey is conducted to verify that the remedial action is complete and to allow DOE to release the property for unrestricted use.

1.0 GENERAL

In implementing applicable guidelines (Work Plan, Section 4.1), the following assumptions apply:

- o The designation surveys are adequate in scope to ensure that all properties on which deposits of radioactivity exceed guidelines are being identified.
- o Elements of this plan are applicable to all exposed surfaces that result from the removal of materials containing depleted uranium.

- o On-site decisions will be made regarding the adequacy of the cleanup based on analysis of radiation measurements at defined grid points.
- o Soil samples will be collected and analyzed on-site, to the extent possible, by the radiological services subcontractor to expedite the remedial action. The frequency of sampling depends on area radioactivity levels and shall be determined by the radiological subcontractor site manager.
- o Post-remedial action radiological measurements and sampling (the confirmation survey) will be coordinated with applicable regulatory groups (e.g., DOE, state and local groups).
- o Measurements and analytical data will be documented in a uniform format for subsequent verification and certification and archival purposes.

2.0 CHARACTERIZATION SURVEY

Designation radiological surveys have shown that the radiological conditions at some vicinity properties exceed remedial action guidelines and have estimated the general extent of contamination. The objective of the characterization survey is to accurately identify these areas on the vicinity properties that require remedial action.

The characterization surveys will be performed primarily using the FIDLER-type detector which has been calibrated at the CISS for use in locating depleted uranium contamination. This calibration was performed by measuring contaminated soil with the FIDLER, then excavating that soil and having its uranium content analyzed by standard laboratory analysis. By performing a linear regression of these data, a calibration line was developed with a coefficient of correlation of 0.99. Ground surface measurements will be made at the intersection of grid lines that have been established by the radiological support subcontractor. These grid lines are tied to the state coordinate system. The grid blocks will be adjusted in size to adequately characterize each property. A typical size for the majority of the properties might be 1.8 x 1.8 m (6 x 6 ft). Walkover scans using the FIDLER will also be made in between the grid points. Soil samples will be taken and analyzed by gross alpha counting to estimate uranium concentrations in questionable areas, for periodic checks on the FIDLER calibration, and for depth determinations.

Other miscellaneous surfaces (e.g., asphalt, concrete, porches, window sills, ledges, fences, cellar doors, and steps) will be surveyed for surface contamination using a pancake-type beta-gamma instrument for which the counts per minute can be converted to mrad/h for uranium. Sufficient measurements will be made to apply the surface contamination criteria delineated in Section 4.1. All contamination is fixed since it has been subjected to weather for more than 4 years.

3.0 EXCAVATION MONITORING AND CONTROL

Removing the sod and its root system is generally sufficient to accomplish the decontamination. Radiological measurements will be made to confirm the adequacy of the excavation. Excavation will proceed downward and laterally until the soil decontamination guidelines are met as determined by field measurements. If the extent of contamination, as determined in the field, differs significantly from the extent shown in the agreements with the property owners, DOE or their contractor will advise the owner, and excavation will proceed only after a suitable revised agreement has been reached. A significant variation is defined as one that affects structures, other improvements, or action not included in the original property owner/DOE Memo Agreement.

3.1 PRIMARY EXCAVATION CONTROL

Excavation of the surface soil will proceed in each affected area identified from the characterization survey. As material is removed, excavation control will be provided by instrument measurements and soil analysis. Gamma measurements will be taken with a 5- x 0.063-in. NaI crystal (FIDLER-type) held at the ground surface and connected to a portable ratemeter/scaler. FIDLER type crystals are specially designed to detect low energy gamma radiation such as that emitted by depleted uranium. Soil samples will also be taken and analyzed by a gross alpha counting technique to determine soil uranium concentrations. An iterative process of soil removal and radiological measurements will continue until the measurements indicate that the remedial action guidelines for soil have been reached.

3.2 RESIDUAL CONTAMINATION DETECTION

As soon as practicable after the initial removal of contaminated soil is completed, the following procedure for identifying and removing residual contamination will be initiated.

- a. Background for the area will be obtained by taking several (at least five) readings at random locations in the Albany/Colonie area of construction and arithematically averaging these five readings. These locations will be sufficiently removed from the construction activity so as not to be affected by the presence of contamination, but should be typical of the area.
- b. Using a count rate meter with a 5- x 0.063-in., unshielded NaI detector (FIDLER), the entire area of excavation will be scanned. This scan will be performed by slowly moving the FIDLER over the area at a height of approximately 1 in. The scanning rate will be slow enough to ensure that the response time of the FIDLER is not exceeded. The detector will be placed inside a PVC pipe with an open end window to preclude damage to the crystal.
- c. All spots found to exceed the predetermined count rate (from calibration) will be marked by stakes or spray paint directly on the ground.
- d. If any question exists concerning the accuracy of the FIDLER measurement (suspected shine from adjacent areas, a source of radioactivity other than depleted uranium, etc.) a soil sample can be taken to determine the uranium concentration.
- e. All results will be reported to the resident BNI engineer and, as appropriate to the DOE engineer for consideration as to additional remedial action based on the ALARA principle and the remedial action guidelines given in Section 4.1.
- f. Guidance will be provided for soil removal in areas where soil removal has been decided upon.
- g. In those areas where additional soil is removed, the area will be reevaluated to confirm that the residual contamination has been removed and the remaining level of contamination will be documented.
- h. After this procedure has been completed, the confirmation and documentation measurements will be made and soil samples collected.

4.0 CONFIRMATION SURVEY

When the guideline limits have been reached, as determined by excavation control measurements and field soil sample analysis, the radiological status of the cleaned area will be documented prior to backfilling. Collection of the measurements delineated in the following subsections will constitute the confirmation (post-decontamination) survey, which will be conducted by the radiological support subcontractor. Field-logged data will be recorded in a manner to be readily auditable by independent agents. A grid similar to the one shown in Figure A-1 will be established over excavated areas.

4.1 SOIL SAMPLES (FIELD LAB ANALYSIS)

Soil samples will be collected in the excavated areas. These samples will be taken for the purpose of confirming the estimates of radionuclide soil concentrations based on the surface gamma measurements, and will be collected in the center of the four 25 m^2 (270 ft^2) blocks contained within each 100 m^2 (1076 ft^2) area as shown in Figure A-2. Sampling for confirmation of the guideline limit(s) shall not be initiated until radiological surveys demonstrate that no significant concentrations of residual radioactivity are present. Each of these samples will be evaluated in the field laboratory using a gross alpha counting technique.

If the radionuclide concentration in an individual sample is less than the residual contamination guidelines, the sample may be included in a mathematical composite of at least a statistical minimum of adjacent samples within the boundaries of a single property to determine the average radionuclide concentration for the area described by those samples. If the average of those samples exceeds the 35 pCi/g guideline, further soil removal may be required. Results of analyses of soil samples from the 5- x 5-m ($16.5\text{-} \times 16.5\text{-ft}$) grid will not be used to derive average radionuclide concentrations for areas containing fewer than

FIGURE A-1 SAMPLE PLAN VIEW OF REMEDIAL ACTION
CANDIDATE PROPERTY

- GRID POINTS FOR RADIATION MEASUREMENTS
- MONITORING GRID POINTS USED FOR RADIATION MEASUREMENTS AND SOIL SAMPLING
- ◆ CENTER GRID LOCATION
- INITIAL PLANNING GRID POINTS FOR SURVEY

FIGURE A-2 SAMPLE 10 m x 10 m GRID BLOCK TO BE ESTABLISHED FOR POST-REMEDIAL ACTION MEASUREMENTS

30 sample points due to the statistical limitations of small sample size, but will be used in conjunction with the surface gamma measurements for determination of the need for further excavation.

4.2 Soil Sample Distribution and Storage

Samples taken for field analysis after the last excavation cut will also be sent to the radiological support subcontractor's laboratory to be dried, pulverized, screened, and analyzed by gamma spectrometry or comparable methods. Upon request, these samples will be split into aliquots for analyses by DOE's independent verification subcontractor or New York state. All post-remedial action samples will be archived until DOE authorizes their release.

5.0 BACKFILLING

When the guideline level has been reached, as determined by results from field soil sample analysis, the remedial action subcontractor will be authorized to begin backfilling and restoration of the area. This authorization should occur within a few days of completion of excavation.

The results of radiological tests relating to remedial action guidelines shall be reported to specified DOE and State (and local where appropriate) representatives. In the event that test results reveal a failure to meet guideline limits, DOE will direct and cause to be implemented such activities as may be necessary to remedy the situation.

6.0 CERTIFICATION

During the cleanup operations, the radiological support subcontractor will collect and document data from analyses of soil samples to determine the adequacy of the remedial action. Concurrently and independently, an independent verification contractor will periodically collect and analyze soil samples and make in situ radiological measurements.

After completion of the remedial action, all measurement procedures and data will be evaluated by DOE which will then certify the radiological status of the site.

The conclusions of the verification survey, conducted by the independent verification contractor, will be presented in the post-remedial action report for each designated site.

7.0 QUALITY CONTROL

Only calibrated instruments shall be used and calibration procedures, results, and frequency logs shall be retained at the site for review. Instruments will be calibrated in accordance with the radiological support subcontractor's quality assurance program. The calibration standards contained in this program are traceable to the National Bureau of Standards.

All measurements and analyses shall be done using applicable project instruction on quality control (see for example, PI-23.01, Quality Controls for Sample Analysis in the Mobile Counting Laboratory). Similarly, all measurements and analyses by Eberline shall conform to the EAC Quality Assurance Manual requirements.

DOCUMENT COMMENT/RESOLUTION

Page 1 of 9

Remedial Action Work Plan for the Colonie Site

Project FUSRAP

Noted By: ORO/TSD-BNI

W.O. _____

<p>A. J. Whitman, DOE/B. Fritz, Aerospace</p> <p>Reviewer Date of Comments</p>			<p>Originator Date of Resolution</p>			<p>Reviewer Initial</p>	
m	Reference Page/Para.	Comments Show Actual Proposed Rewording, If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.
	2/Fig 1	Palmer Avenue should be labeled on the map. Also, the labels for the Niagara Mohawk property and the Colonie Interim Storage Site should be made more legible.		X	A new, more current photograph was used.	<i>Hand</i>	
	3/1	Add a 4th bullet: disposal of chemicals and/or residues.	X				
	4/5	This sentence implies that when DOE owns the site we also own the vicinity properties. Please reword to clarify to actual meaning.	X				
	5/4 & 5	Clarify whether any of these chemicals are contaminated with radioactivity, i.e., whether there is mixed waste at the site.	X				
	6/2	The first sentence is incomplete. What formation provides moderate-to-large quantities of groundwater?	X				
	7/1	DRAP is the Division of Remedial Action <u>Projects</u> .	X		Revised to include organizational name changes.	<i>Hand</i>	
	9/1	The FUSRAP/RSFMP guidelines for radioactive soil concentrations (Feb. 1985) were not used at this site. If these guidelines were used for control of residual radioactivity (e.g. section E, E-1 and E.2) other than radioactive soil concentrations, then the criteria document cited is out of date. The correct title for the updated version is: <u>U.S. Department of Energy Guidelines for Residual Radioactivity at Formerly Utilized</u>	X		Text revised to explain the development of the guidelines used at Colonie.	<i>Hand</i>	

DOCUMENT COMMENT/RESOLUTION

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Initiated By: _____

Project _____

W.O. _____

Reviewer		Date of Comments	Originator		Date of Resolution	Reviewer Initial	
m	Reference Page/Para.	Comments Show Actual Proposed Rewording. If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.
		Sites Remedial Action Program and Remove Surplus Facilities Management Program Sites (February 1985). Furthermore, differentiation between the FUSRAP/RSFMP and the site specific guideline for radioactive concentrations in soil and surface contamination. Therefore this paragraph and reference 16 should be clarified or deleted.					
	9/2	The formulation of the site specific guidelines should be defined (i.e. in conjunction with New York State Department of Health and EPA) and referenced.	X		See previous comment.	<i>Hand</i>	
	9/4	Delete the word "radioactively" in the last sentence. Its use here implies that the 11 properties are still contaminated with chemicals.	X				
	12/2	What is a civil survey? Should this be civil engineering surveys?	X				
	14/2	If the storage pile is within a building what kind of erosion is being prevented? Delete "... and to prevent erosion" or clarify the statement.	X		Text revised to add that roof leaks may cause the erosion.	<i>Hand</i>	
	14/3	Wording in fourth sentence should be " <u>was</u> excavated,"	X				
	16/1	See Item #11 above re: erosion.	X		See Comment 11.	<i>Hand</i>	
	17/1	Discuss RCRA permitting needs in connection with the storage and treatment of the hazardous chemicals.	X		Text revised to describe RCRA permitting requirements.	<i>Hand</i>	

DOCUMENT COMMENT/RESOLUTION

Page 3 of 9

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 ginated By: _____

Project _____
 W.O. _____

Reviewer			Date of Comments		Originator			Date of Resolution		Reviewer Initial	
mm	Reference o. Page/Para.	Comments Show Actual Proposed Rewording. If Possible	Accept Comment	Reject Comment	Reason for Rejection			Accept Resol.	Reject Resol.		
5	18/2	Based on the discussions held at OR between DRAP/OR/BNI, etc., it was decided to avoid confusion between confirmation activities and verification activities that the word confirmation would not be used. (The words confirm and verification are synonymous, therefore can't be used as BNI uses it.) The words post-remedial action should be used instead. Therefore the title of Section 4.9 should be "Post-remedial Action Surveys and Analysis." The word "confirm" in paragraph 2, line 2 should be replaced by the word "establish".		X	As discussed at a meeting July 30, it was decided to retain the word confirmation.						
6	18/4	Define and relate the grid system accordingly, i.e. relation to the state grid system.	X								
7	18/6	Define or reference a definition of the "FIDLER" to clarify to the reader what a "FIDLER" is.	X								
8	18/5	Last line: Calibration; is this type of calibration defined in the appendix. If not, it should be defined there and referenced here.	X								
9	19/2	Procedures to be used to prevent cross-contamination of samples should be mentioned.	X								
	20/1	See comment item 15 for change of title to section 4.9.3 and use of the word confirmation within the paragraph.		X	See Comment 15.						

DOCUMENT COMMENT/RESOLUTION

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Initiated By: _____

Project _____

W.O. _____

Reviewer		Date of Comments	Originator		Date of Resolution	Reviewer Initial	
m	Reference Page/Para.	Comments Show Actual Proposed Rewording, If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.
	20/1	Line 4: Is this ground level of the excavated area, ground level of the pre-excavation area or ground level of the backfilled area? Clarify this expression. Line 5: How near is "near surface gamma measurements"? Use a number, e.g., 1 cm	X		Text has been clarified.	Jan 1	
	20/1	The archiving of samples from the post-remedial action survey should be mentioned.	X				
	21/3	The environmental and physical safety and security plans should be referenced here and described in the appendix similar to the Radiological Survey and Monitoring Plan.	X				
	23/2	There are no cost estimates on this page if they are on Figure 5-1, so state.	X				
	24/Fig 5-1	Indicate whether the Engineering Evaluation of Alternatives is for the vicinity properties or CISS.	X				
	24/Fig 5-1	NEPA activities should be included in this schedule, if appropriate.	X				
	24/Fig 5-1	The figure shows remedial action at 25+ vicinity properties beginning in the third quarter of FY 1986 and no remedial actions during FY 1985. Page 15 (section 4.7.2) indicates that this work will be done in FY 1985. This inconsistency should be resolved. Also, what are the 60 properties that are scheduled for decontamination in FY 1987? If it is likely that 60	X				

DOCUMENT COMMENT/RESOLUTION

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Initiated By: _____

Project _____

W.O. _____

Reviewer			Date of Comments		Originator		Date of Resolution		Reviewer Initial	
Ref.	Reference Page/Para.	Comments Show Actual Proposed Rewording. If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.			
		additional properties requiring decontamination will be discovered, the ramifications need to be discussed in this plan. These numbers and plans should be addressed based on the latest information.								
8	24/Fig 5-1	The cost figures on Figure 5-1 should be broken down and explained in the text (on page 23). This is to give the reader the activities associated with these costs, e.g., radiological monitoring, chemical treatment, characterization, various phases of the engineering process, etc.		X	As discussed at the July 30 meeting, the cost figures will remain as they are.			DAJ		
9	26/16	See comment #7.	X		The reference has been changed.					
	A-1/2	Line 6: Insert DRAP after DOE.		X	As discussed at the July 30 meeting, this was not a mandatory change.			RAJ		
	A-1/2	Next to last line: "Confirmation" should be "post-remedial action".		X	See response to Comment 15.			RAJ		
	A-1/2	Include the fourth survey: Verification Survey by the Independent Verification Contractor [(IVC) to be named].	X							
	A-1/2 & 3	The fourth sentence in the second paragraph and the first bullet in the third paragraph indicate that all of the designation surveys have been completed. This is not consistent with the last sentence in the partial paragraph at the top of page 10 and the implication in Figure 5-1 that 60 additional vicinity properties requiring remedial action may be discovered. This issue requires clarification.	X		Text has been revised to indicate that the designation surveys are not complete.			RAJ		

DOCUMENT COMMENT/RESOLUTION

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red By: _____

Project _____

W.O. _____

Reviewer		Date of Comments	Originator		Date of Resolution	Reviewer Initial	
Reference Page/Para.	Comments Show Actual Proposed Rewording. If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.	
A-2/Fig A-1	The words "confirmation and/or" should be deleted.		X	As discussed at July 30 meeting It was decided to delete the figure.			
A-2	It appears that the "Pre-decontamination survey" and "backfill" activities are reversed. o Documentation should follow backfilling. o Independent verification activities (IVA); although they start toward the beginning of the sequence (monitor excavated surface) a square box for verification should be on the same level that documentation is with "localized areas", "cost/benefit", and "retrofit" activities also at this level, e.g.		X	See previous comment.			
A-3/2 & 3	"Confirmation" should be "post-remedial action". Insert "verification and" before certification.		X	See Comment 15.			
A-4/2	Explain/define calibration procedures especially for the "FIDLER".		X	Reference to procedures has been added to the text.			

DOCUMENT COMMENT/RESOLUTION

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ated By: _____

Project _____

W.O. _____

Reviewer		Date of Comments	Originator		Date of Resolution	Reviewer Initial	
Reference Page/Para.	Comments Show Actual Proposed Rewording, If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.	
A-4/3	The DOE guidelines referenced in comment number 7 include standards for surface contamination of 5000 dpm/100 cm ² for fixed alpha and 1000 dpm/100 cm ² for removable alpha. It may be necessary to take smear samples of some surfaces to determine whether contamination observed with a survey meter exceeds the guidelines. This should be mentioned here.	X		Text has been clarified to explain why smear samples are unnecessary.	<i>AMJ</i>		
A-5/2	Line 5: Define a FIDLER type crystal as it differs from any other crystal.	X		A description of the FIDLER crystal has been added.	<i>AMJ</i>		
A-5/2	Line 6: What isotope or energy will the single-channel analyzer be set at and how will it relate to depleted uranium? Address this point.	X		Text has been revised.			
A-6/a	Background readings should be taken away from the construction area as they may be influenced by the "contamination" in the construction area e.g., shine.	X		Text has been clarified to address this comment.	<i>AMJ</i>		
A-6/b	Line 4: FNI should be BNI.	X					
A-6/h	The BNI-FUSRAP PI 22.02, Section 5.1 addresses the scanning procedure and states "... the detector should be moved along the surface at a rate of 6-15 inches under per second." In Section 5.2, it states that "... the detector is drug over the surface."	X		The text has been revised to delete the specific reference and explain the activity.	<i>AMJ</i>		

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Project _____

W.O. _____

Noted By: _____

Reviewer		Date of Comments	Originator		Date of Resolution	Reviewer Initial	
Reference Page/Para.	Comments Show Actual Proposed Rewording, If Possible	Accept Comment	Reject Comment	Reason for Rejection	Accept Resol.	Reject Resol.	
	In the work plan, I assume the 5 X 0.063 in. refers to the crystal dimension. If that's the case, then <u>dragging</u> an unshielded instrument across the ground would put the crystal at risk of damage thereby compromising the readings. Furthermore, the response time for a FIDLER is not fast enough to detect anything at a scan rate of 6-15 inches per second.	X		Text has been revised to explain the activity.	Janh		
	Sections a and b on this page should be readdressed to explain/clarify the above noted comment (comment #42).	X					
A-7/1	The word "confirmation" where used should be "post-remedial action".		X	See Comment 15.	Janh		
A-7/1	Line 4: There are no "... following measurements..." noted that will constitute the post-remedial action survey. If the statement is to be used list the "following measurements".	X		Text has been revised.	Janh		
A-7/2	Line 2: "Confirming" should be "establishing".		X	See Comment 15.	Janh		
A-10/2	Mistitled - based on the text, the title should be Distribution and Storage -.	X					
	This section needs explanation/clarification. Line 5 addresses split samples for DOE and New York State. The samples are DOE samples to begin with, therefore, explain "analyses by DOE".	X		Text has been clarified.	Janh		

DOCUMENT COMMENT/RESOLUTION

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noted By: _____

Project _____

W.O. _____

Reviewer		Date of Comments		Originator		Date of Resolution		Reviewer Initial	
Reference Page/Para.	Comments Show Actual Proposed Rewording. If Possible	Accept Comment	Reject Comment	Reason for Rejection		Accept Resol.	Reject Resol.		
A-13/1	Explain or clarify: "A DOE archive sample..."; retained for 5 years (5 years from when, etc.); "the remaining samples" (which remaining samples); year from when, etc.	X		Text has been revised to explain the time reference and specify the samples to be used.					
	Are the calibration sources traceable to NBS standards? How is the quality of calibration determined? Are the quality assurance documents DOE approved or approved by authoritative quality assurance organizations, i.e., ANSI.	X		The calibration is traceable to NBS standards and the text has been revised to state that.					