PARSONS

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File
SEAD 115
RCRA
Closure
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MEMORANDUM

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Subject: Seneca Army Depot Closure of Open Detonation Site

Project Reference: Seneca Army Depot
Project Number: 736676.01002

BACKGROUND

The Seneca Army Depot (SEAD) has an open burn (OB) facility and an open detonation (OD) facility that they desire to close. A RCRA Part B permit was applied for but has not been granted. The OB and OD facilities are maintained and operated under interim status as miscellaneous treatment units (Subpart X). The SEAD is listed under CERCLA as an NPL site.

The OB area is within the area identified in the NPL site description. The former OB area consisted of burn pads on ground surface and trenches that were used for the open burning of munitions. The remediation of this former OB area is being addressed under CERCLA and currently underway. Although not in use, the current OB facility consists of steel burn trays located on a secondary containment concrete pad. This OB facility was constructed over the former OB area and is an engineered structure that is exempt from groundwater monitoring. The current OB facility (concrete pad and burn trays) remains as a RCRA Subpart X miscellaneous treatment unit under an interim status permit. The OB facility was used to treat munitions that have the RCRA classification as reactive hazardous wastes (D003). The OB area is distinct from the OD area, which is located across the road. However, during operation of the OD area, kick-out material from the OD area has landed on the former OB area. The kick-out material is also being removed during the remediation of the former OB area. The current OB facility (concrete pad and burn trays) has yet to be closed.

The OD area has been in use since 1941 for the destruction of surplus, out-dated, and unstable munitions. The OD facility was used to treat munitions that have the RCRA classification as reactive hazardous wastes (D003). The OD facility consists of a detonation mound that is approximately 500 feet long, 14 feet high, and 1.0-acre in size. The hill was formed by earthmoving equipment with glacial material. The east side of the hill contains small, excavated bunkers that house the explosives during the detonation events. Approximately eight feet of soil is placed on top of the explosives to be detonated. During operation of the OD area, kick-out material was distributed over approximately 60 acres adjacent to the mound. The OD facility was operated as a RCRA Subpart X miscellaneous treatment unit under the SEAD interim status permit. In 1988, NYSDEC identified the OD facility as a SWMU.

A closure plan that was provided within the 13 September 1996 version of the RCRA Part B Permit Application (NYSDEC Part 373 Permit Application) addressed the closure of the active OB and OD areas. The OD area is slated for closure as a waste pile in accordance with Subpart L, 40 CFR 264.258 closure requirements. A clean closure is planned through the removal or decontamination of waste residues. In the event that a clean closure is not feasible, the OD area plan provides for closure in accordance with the requirements that apply to a landfill (40 CFR 264.310). The NYSDEC has the RCRA delegated authority to implement the hazardous waste management regulatory program in place of the Federal USEPA program. This includes the regulatory authority for Subpart X units and SWMUs.

PURPOSE FOR REGULATORY REVIEW

The regulatory review in this memorandum provides a qualitative comparison of the closure of the OD facility under RCRA regulations, rather than CERCLA regulations and guidance. Two RCRA regulatory strategies for completing the closure of the interim status OD facility are compared to the CERCLA process in this memorandum. These alternative strategies are identified as follows:

RCRA Clean Closure - This strategy would pursue completing the closure of the OD facility as a clean closure under interim status. This closure method would include the removal of waste residues and return the OD area to a "clean" unrestricted state. (The elements of this closure are detailed in Attachment 1.)

RCRA Landfill Closure - This strategy would pursue completing the closure of the OD facility as a landfill under RCRA interim status. This closure method would cover any remaining waste residues with a RCRA landfill cap and provide other appropriate protective measures. (The elements of this closure are detailed in Attachment 1.)

CERCLA Landfill Response - This strategy would pursue closing the OD facility as a landfill under CERCLA in conjunction with the remedial actions for the NPL site. Option 1 under this strategy consists of performing or interim actions to reduce the potential threat to human health and the environment followed by a non-time critical removal action under 40 CFR 300.415. Option 2 would consist of conducting a remedial action in the form of landfilling the residues and/or covering the areas of concern under 40 CFR 300.415. (While the elements of each CERCLA response option are detailed in Attachment 1, for the purposes of this memorandum both are generally referred to collectively as the CERCLA response.)This strategy is dependent on the inclusion of the OD area within the NPL site description.

RCRA CLOSURE REQUIREMENTS

The OD area has been permitted under RCRA interim status and therefore 6 NYCRR Subpart 373-3 Interim Status Standards For Owners and Operators of Hazardous Waste Facilities apply to this facility and are administered by NYSDEC. The rejection of the Part B/Part 373 Permit Application and the pending shutdown of the facilities forced the decision to keep these units under interim status. Pertinent closure requirements within these regulations are provided for reference in Attachment 2. It is a separate document (file bdm2006.doc) for ease of formatting.

COMPARISON OF REGULATORY STRATEGIES

The RCRA regulations were reviewed to identify the issues associated with the "clean" closure strategy and the landfill closure strategy. These RCRA strategies provide similar results as would be developed under a CERCLA cleanup. The timing of the RCRA process may be more efficient and provide SEAD more control over the methods and outcomes. Attachment 1 provides the comparison of concerns and requirements associated with each of the regulatory strategies. It is a separate document (file bdm2005.doc) for ease of formatting.

As shown in Attachment 1, the RCRA Clean Closure strategy has the least regulatory issues. NYSDEC has primary authority over RCRA closures. Since the previous closure plan was not approved, a revised closure plan needs to be developed and work its way through the approval process. This process includes public reviews and needs to meet 6 NYCCR 373-3.7 requirements that include a contingent closure plan for closure as a landfill in case all residues cannot be removed. However, this strategy has an extreme challenge in the removal of all waste residues due to the scattering of kick-out material over up to 60 acres. Studies indicating with certainty that all reactive wastes are deactivated or consumed in the detonation process, otherwise the costly hand inspection and sorting of the residues would be required. The cleanup levels would parallel those being used for the cleanup of the former OB area. A clean closure would not require additional permitting and would not restrict the future land use or require deed restrictions.

The RCRA Landfill Closure strategy is more involved from a regulatory viewpoint than the clean closure. A revised closure plan needs to be developed, publicly reviewed, and approved by NYSDEC. This closure would require a RCRA cap to be placed over the area that residues remain. Concerns that may need explored include LDR issues and the landfilling of material that the Army is treating as potentially reactive for safety reasons (requiring a 4-foot cover). Groundwater monitoring would be required and continue for 30-years during post closure. Closed site activities would include cover maintenance, security and reporting. Part 373 permitting would be required for post closure monitoring. Deed and land use restrictions would be required for the capped area.

The CERCLA response would require that the unit be within the established NPL site boundary. It would be administered by USEPA and involve either a Removal Action or a Remedial Action (requiring the usual sequence of RI, FS, and RD studies). The RCRA capping and monitoring requirements would be included as ARARs in the studies and design. The multiple stages of the CERCLA response (either under a Removal or Remedial Action) involve multiple public hearings and interaction with the other regulatory agencies. In general, it is not uncommon for a CERCLA Remedial Action to exceed four years. Issues with neutralization of explosive residues and LDRs would be concerns addressed as ARARs. CERCLA Section 121(e) exempts the remedial action from the permitting process, however many of the requirements are applied as ARARs.

In general RCRA provides a more structured and expedited means for the closure of the OD facility. The inclusion of the OD facility as a RCRA interim status provides for its standing as an active RCRA unit. The lack of closure of this active RCRA unit in a installation closure raises compliance issues with the RCRA regulations. The New York regulations provide set time frames for review and activity completion. NYSDEC has the authority to require and oversee the closure of the OD facility as a RCRA unit. USEPA oversees the NY RCRA program and can comment through that process. The goal would be to separate the closure of the OD unit from the CERCLA issues with groundwater contamination so that a RCRA closure can be completed. The RCRA process provides for fewer reviews and less public involvement.

PROPOSED APPROACH TO OPEN DETONATION SITE CLOSURE

A potential approach for implementation of a RCRA closure would be to work though the following steps. Materials developed during this approach would have use under the CERCLA strategy, if for some unknown reason it were to become the driver.

1. Parsons briefs SEAD cleanup leadership concerning final version of this memorandum (with attachments), including this proposed approach to obtain authorization to proceed.

2. Parsons to obtain previous closure plan reviews; review NYSDEC SEAD RCRA files, obtain SEAD FFA (to make sure that it contains no troublesome aspects and to ensure conformity with.)

3. Parsons to prepare for SEAD cleanup leadership a briefing and/or narrative on closure alternatives [CERCLA alternatives optional], recommended alternative, recommended closure strategy, with draft closure strategy time line and identification of RCRA closure plan modifications required.

4. Army reviews alternative with recommended alternative, and recommended RCRA closure strategy.

5. Army adopts its preferred closure strategy.

6. Army briefs NYSDEC staff on recommended closure strategy and schedule.

7. Army briefs NYSDEC leadership about need to accelerate the SEAD cleanup process, including a high level (*i.e.*, generalized) briefing on the specific closure strategy and schedule. Army endeavors to obtain NYSDEC leadership buy in and commitment of NYSDEC resources to keep closure process moving as quickly as possible.

8. [Interchangeable with #7] Army briefs EPA Region II on closure strategy and schedule. If possible, this includes an optional EPA Region II leadership briefing on the need to accelerate overall SEAD cleanup.

9. Prepare preliminary modifications to closure plan using existing data.

10. Finalize modifications and submit revised closure plan to NYSDEC with 180 day notice.

11. State and public review and public hearing if requested.

12. Modify closure plan as required and obtain NYSDEC approval.

13. Conduct closure as per plan.

14. Prepare closure documentation and identify any post closure activities as appropriate.

15. Certify closure is complete

Closure as a landfill would require incorporation of post-closure plan development, approval, and activities into the scheduling.

ATTACHMENT 2
NEW YORK STATE RCRA CLOSURE REQUIREMENTS

The OD area has been permitted under RCRA interim status and therefore 6 NYCRR Subpart 373-3 Interim Status Standards For Owners and Operators of Hazardous Waste Facilities apply to this facility and are administered by NYSDEC. The pertinent closure requirements within these regulations are provided for reference in the following text. The 6 NYCCR Subpart 373-3 regulations are taken from the December 2001 issue of the ENFLEX disks to which Parsons subscribes.

6 NYCRR SUBPART 373-3 INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE FACILITIES

373-3.7 Closure and Post Closure

(a) Applicability. Except as section 373-3.1 of this Subpart provides otherwise:

(1) subdivision (b) through paragraph (f)(1) of this section (which concern closure) apply to the owners and operators of all hazardous waste management facilities; and

(2) paragraph (f)(2) through subdivision (j) of this section (which concern post-closure care) apply to the owners and operators of:

(i) all hazardous waste disposal facilities;

(ii) waste piles and surface impoundments from which the owner or operator intends to remove the wastes at closure to the extent that these sections are made applicable to such facilities in sections 373-3.11(f) and 373-3.12(g) of this Subpart;

(iii) tank systems that are required under section 373-3.10(h) of this Subpart to meet the requirements for landfills; and

(iv) containment buildings that are required under 373-3.30(c) of this Subpart to meet the requirement for landfills.

(b) Closure performance standard. The owner or operator must close the facility in a manner that:

(1) minimizes the need for further maintenance;

(2) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and

(3) complies with the closure requirements of this Subpart, including but not limited to the requirements of sections 373-3.10(h), 373-3.11(f), 373-3.12(g), 373-3.13(g), 373-3.14(d), 373-3.15(e), 373-3.16(e), 373-3.17(e) and 373-3.30(c).

(c) Closure plan; amendment of plan.

(1) Written plan.

(i) By May 19, 1981, or by six months after the effective date of the rule that first subjects a facility to provisions of this section, the owner or operator of a hazardous waste management facility must have a written closure plan. Until final closure is completed and certified in accordance with paragraph (f)(1) of this section, a copy of the most current plan must be furnished to the commissioner upon request, including request by mail. In addition, for facilities without approved plans, it must also be provided during site inspections, on the day of inspection, to any officer, employee or representative of the department who is duly designated by the commissioner.

(2) Content of plan. The plan must identify steps necessary to perform partial and/or final closure of the facility at any point during its active life. The closure plan must include, at least:

(i) a description of how each hazardous waste management unit at the facility will be closed in accordance with subdivision (b) of this section;

(ii) a description of how final closure of the facility will be conducted in accordance with subdivision (b) of this section. The description must identify the maximum extent of the operations which will be unclosed during the active life of the facility;

(iii) an estimate of the maximum inventory of hazardous waste ever onsite over the active life of the facility and a detailed description of the methods to be used during partial closures and final closure, including but not limited to methods for removing, transporting, treating, storing or disposing of all hazardous wastes, and identification of and the types of the offsite hazardous waste management units to be used, if applicable;

(iv) a detailed description of the steps needed to remove or decontaminate all hazardous waste residues and contaminated containment system components, equipment, structures and soils during partial and final closure, including but not limited to procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard;

(v) a detailed description of other activities necessary during the partial and final closure period to ensure that all partial closures and final closure satisfy the closure performance standards, including but not limited to groundwater monitoring, leachate collection, and run-on and runoff control;

(vi) a schedule for closure of each hazardous waste management unit and for final closure of the facility. The schedule must include, at a minimum, the total time required to close each hazardous waste management unit and the time required for intervening closure activities which will allow tracking of the progress of partial and final closure (for example, in the case of a landfill unit, estimates of the time required to treat or dispose of all hazardous waste inventory and of the time required to place a final cover must be included); and

(vii) an estimate of the expected year of final closure for facilities that use trust funds to demonstrate financial assurance under section 373-3.8(d) or (f) of this Subpart and whose remaining operating life is less than twenty years, and for facilities without approved closure plans.

(3) Amendment of plan. The owner or operator may amend the closure plan at any time prior to the notification of partial or final closure of the facility. An owner or operator with an approved closure plan must submit a written request to the commissioner to authorize a change to the approved closure plan. The written request must include a copy of the amended closure plan for approval by the commissioner.

(i) The owner or operator must amend the closure plan whenever:

([a]) changes in operating plans or facility design affect the closure plan;

([b]) there is a change in the expected year of closure, if applicable; or

([c]) in conducting partial or final closure activities, unexpected events require a modification of the closure plan.

(ii) The owner or operator must amend the closure plan at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the closure plan. If an unexpected event occurs during the partial or final closure period, the owner or operator must amend the closure plan no later than 30 days after the unexpected event. These provisions also apply to owners or operators of surface impoundments or waste piles who intend to remove all hazardous waste at closure but are required to close as landfills in accordance with section 373-3.14(d) of this Subpart.

(iii) An owner or operator with an approved closure plan must submit the modified plan to the commissioner at least 60 days prior to the proposed change in facility design or operation, or no more than 60 days after an unexpected event has occurred which has affected the closure plan. If an unexpected event has occurred during the partial or final closure period, the owner or operator must submit the modified plan no more than 30 days after the unexpected event. These provisions also apply to owners or operators of surface impoundments and waste piles who intended to remove all hazardous waste at closure but are required to close as landfills in accordance with section 373-3.14(d) of this Subpart. If the amendment to the plan is a major modification according to the criteria in Subpart 373-1 of this Part, the modification to the plan will be approved according to the procedures in paragraph (4) of this subdivision.

(iv) The commissioner may request modifications to the plan under the conditions described in subparagraph (i) of this paragraph. An owner or operator with an approved closure plan must submit the modified plan within 60 days of the commissioner's request, or within 30 days if the unexpected event occurs during partial or final closure. If the amendment is considered a major modification according to the criteria in Subpart 373-1 of this Part, the modification to the plan will be approved in accordance with the procedures in paragraph (4) of this subdivision.

(4) Notification of partial closure and final closure.

(i) The owner or operator must submit the closure plan to the commissioner at least 180 days prior to the date on which the owner or operator expects to begin closure of the first surface impoundment, waste pile, land treatment or landfill unit, or final closure if it involves such a unit, whichever is earlier. The owner or operator must submit the closure plan to the commissioner at least 45 days prior to the date on which the owner or operator expects to begin partial or final closure of a boiler or industrial furnace. The owner or operator must submit the closure plan to the commissioner at least 45 days prior to the date on which the owner or operator expects to begin final closure of a facility with only tanks, container storage, or incinerator units. Owners or operators with approved closure plans must notify the commissioner in writing at least 60 days prior to the date on which the owner or operator expects to begin closure of a surface impoundment, waste pile, landfill, or land treatment unit, or final closure of a facility involving such a unit. Owners and operators with approved closure plans must notify the commissioner in writing at least 45 days prior to the date on which the owner or operator expects to begin partial or final closure of a boiler or industrial furnace. Owners or operators with approved closure plans must notify the commissioner in writing at least 45 days prior to the date on which the owner or operator expects to begin final closure of a facility with only tanks, container storage, or incinerator units.

(ii) The date when the owner or operator "expects to begin closure" must be either:

([a]) within 30 days after the date on which any hazardous waste management unit receives the known final volume of hazardous wastes, or, if there is a reasonable possibility that the hazardous waste management unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous waste. If the owner or operator of a hazardous waste management unit can demonstrate to the commissioner that the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes and the owner or operator has taken, and will continue to take, all steps to prevent threats to human health and the environment, including compliance with all interim status requirements, the commissioner may approve an extension to this one-year limit; or

([b]) for units meeting the requirements of paragraph (d)(4) of this section, no later than 30 days after the date on which the hazardous waste management unit receives the known final volume of nonhazardous wastes, or if there is a reasonable possibility that the hazardous waste management unit will receive additional nonhazardous wastes, no later than one year after the date on which the unit received the most recent volume of nonhazardous wastes. If the owner or operator can demonstrate to the commissioner that the hazardous waste management unit has the capacity to receive additional nonhazardous wastes and the owner or operator has taken, and will continue to take, all steps to prevent threats to human health and the environment, including compliance with all interim status requirements, the commissioner may approve an extension to this one-year limit.

(iii) The owner or operator must submit the closure plan to the commissioner no later than 15 days after:

([a]) issuance of a judicial decree or final order under article 71 of ECL, to cease receiving hazardous wastes or to close; or

([b]) termination of interim status except when a permit is issued simultaneously with termination of interim status.

(iv) The commissioner will provide the owner or operator and the public, through a newspaper notice, the opportunity to submit written comments on the plan and request modifications of the plan within 30 days of the date of the notice. The commissioner will also, in response to a request or at his or her own discretion, hold a public hearing whenever such a hearing might clarify one or more issues concerning a closure plan. The commissioner will give public notice of the hearing at least 30 days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written comments, and the two notices may be combined.) The commissioner will approve, modify, or disapprove the plan within 90 days of its receipt. If the commissioner does not approve the plan, the owner or operator shall be provided with a detailed written statement of the reasons for refusal, and the owner or operator must modify the plan or submit a new plan for approval within 30 days after receiving such written statement. The commissioner will approve or modify this plan in writing within 60 days. If the commissioner modifies the plan, this modified plan becomes the approved closure plan. The commissioner must assure that the approved closure plan is consistent with subdivisions (b) - (f) of this section and the applicable requirements of section 373-3.6, 373-3.10(h), 373-3.11(f), 373-3.12(g), 373-3.13(g), 373-3.14(d), 373-3.15(e), 373-3.16(e), 373-3.17(e) and 373-3.30(c) of this Subpart. A copy of this modified plan with a detailed statement of reasons for the modifications must be mailed to the owner or operator.

(5) Removal of wastes and decontamination or dismantling of equipment. Nothing in this subdivision shall preclude the owner or operator from removing hazardous wastes and decontaminating or dismantling equipment in accordance with the approved partial or final closure plan at any time before or after notification of partial or final closure.

(d) Closure; time allowed for closure.

(1) Within 90 days after receiving the final volume of hazardous wastes, or the final volume of nonhazardous wastes if the owner or operator complies with all applicable requirements in paragraphs (4) and (5) of this subdivision, at a hazardous waste management unit or facility, or within 90 days after approval of the closure plan, whichever is later, the owner or operator must treat, remove from the unit or facility, or dispose of onsite, all hazardous wastes in accordance with the approved closure plan. The commissioner may approve a longer period if the owner or operator demonstrates that:

(i)([a]) the activities required to comply with this paragraph will, of necessity, take longer than 90 days to complete; or

([b])([1]) the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or has the capacity to receive nonhazardous wastes if the facility owner or operator complies with paragraphs (4) and (5) of this subdivision; and

([2]) there is a reasonable likelihood that the owner or operator or another person will recommence operation of the hazardous waste management unit or the facility within one year; and

([3]) closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and

(ii) the owner or operator has taken and will continue to take all steps to prevent threats to human health and the environment, including compliance with all applicable interim status requirements.

(2) The owner or operator must complete partial and final closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of hazardous wastes, or the final volume of nonhazardous wastes if the owner or operator complies with all applicable requirements in paragraphs (4) and (5) of this subdivision, at the hazardous waste management unit or facility, or 180 days after approval of the closure plan, if that is later. The commissioner may approve an extension to the closure period if the owner or operator demonstrates that:

(i)([a]) the partial or final closure activities will, of necessity, take longer than 180 days to complete; or

([b])([1]) the hazardous waste management unit or facility has the capacity to receive additional hazardous wastes, or nonhazardous wastes if the facility owner or operator complies with paragraphs (4) and (5) of this subdivision; and

([2]) there is reasonable likelihood that the owner or operator or another person will recommence operation of the hazardous waste management unit or the facility within one year; and

([3]) closure of the hazardous waste management unit or facility would be incompatible with continued operation of the site; and

(ii) the owner or operator has taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed but not operating hazardous waste management unit or facility, including compliance with all applicable interim status requirements.

(3) The demonstrations referred to in subparagraphs (1)(i) and (2)(i) of this subdivision must be made as follows:

(i) the demonstrations in subparagraph (1)(i) must be made at least 30 days prior to the expiration of the 90-day period in paragraph (1); and

(ii) the demonstrations in subparagraph (2)(i) must be made at least 30 days prior to the expiration of the 180-day period in paragraph (2), unless the owner or operator is otherwise subject to the deadlines in paragraph (4).

(4) The commissioner may allow an owner or operator to receive nonhazardous wastes in a landfill, land treatment, or surface impoundment unit after the final receipt of hazardous wastes at that unit if:

(i) the owner or operator submits an amended Part 373

application, or a Part 373 application, if not previously required, and demonstrates that:

([a]) the unit has the existing design capacity as indicated on the Part A application to receive nonhazardous wastes; and

([b]) there is a reasonable likelihood that the owner or operator or another person will receive nonhazardous wastes in the unit within one year after the final receipt of hazardous wastes; and

([c]) the nonhazardous wastes will not be incompatible with any remaining wastes in the unit or with the facility design and operating requirements of the unit or facility under this Part; and

([d]) closure of the hazardous waste management unit would be incompatible with continued operation of the unit or facility; and

([e]) the owner or operator is operating and will continue to operate in compliance with all interim status requirements; and

(ii) the Part 373 application includes an amended waste analysis plan, ground-water monitoring and response program, human exposure assessment required under subdivisions 373-1.5(d) and (h) of this Part, and closure and post-closure plans, and updated cost estimates and demonstrations of financial assurance for closure and post-closure care as necessary and appropriate to reflect any changes due to the presence of hazardous constituents in the nonhazardous wastes, and changes in closure activities, including the expected year of closure if applicable under subparagraph (c)(2)(vii) of this section, as a result of the receipt of nonhazardous wastes following the final receipt of hazardous wastes; and

(iii) the Part 373 application is amended, as necessary and appropriate, to account for the receipt of nonhazardous wastes following receipt of the final volume of hazardous wastes; and

(iv) the Part 373 application and the demonstrations referred to in subparagraphs (i) and (ii) of this paragraph are submitted to the commissioner no later than 180 days prior to the date on which the owner or operator of the facility receives the known final volume of hazardous wastes, or no later than 90 days after the effective date of this rule in New York State, whichever is later.

(5) In addition to the requirements in paragraph (4) of this subdivision, an owner or operator of a hazardous waste surface impoundment that is not in compliance with the liner and leachate collection system requirements in sections 373-2.11 and 373-2.14 of this Part, or section 373-3.11 or 373-3.14 of this Subpart must:

(i) submit with the Part 373 application:

([a]) a contingent corrective measures plan; and

([b]) a plan for removing hazardous wastes in compliance with subparagraph (ii) of this paragraph; and

(ii) remove all hazardous wastes from the unit by removing all hazardous liquids and removing all hazardous sludges to the extent practicable without impairing the integrity of the liner(s), if any;

(iii) removal of hazardous wastes must be completed no later than 90 days after the final receipt of hazardous wastes. The commissioner may approve an extension to this deadline if the owner or operator demonstrates that the removal of hazardous wastes will, of necessity, take longer than the allotted period to complete and that an extension will not pose a threat to human health and the environment;

(iv) if a release that is a statistically significant increase (or decrease in the case of pH) in hazardous constituents over background levels is detected in accordance with the requirements in section 373-3.6 of this Subpart, the owner or operator of the unit:

([a]) must implement corrective measures in accordance with the approved contingent corrective measures plan required by subparagraph (i) of this paragraph no later than one year after detection of the release, or approval of the contingent corrective measures plan, whichever is later;

([b]) may receive wastes at the unit following detection of the release only if the approved corrective measures plan includes a demonstration that continued receipt of wastes will not impede corrective action; and

([c]) may be required by the commissioner to implement corrective measures in less than one year or to cease receipt of wastes until corrective measures have been implemented if necessary to protect human health and the environment;

(v) during the period of corrective action, the owner or operator shall provide semi-annual reports to the commissioner that describe the progress of the corrective action program, compile all ground-water monitoring data, and evaluate the effect of the continued receipt of nonhazardous wastes on the effectiveness of the corrective action;

(vi) the commissioner may require the owner or operator to commence closure of the unit if the owner or operator fails to implement corrective action measures in accordance with the approved contingent corrective measures plan within one year as required in subparagraph (iv) of this paragraph, or fails to make substantial progress in implementing corrective action and achieving the facility's background levels; and

(vii) if the owner or operator fails to implement corrective measures as required in subparagraph (iv) of this paragraph, or if the commissioner determines that substantial progress has not been made pursuant to subparagraph (vi) of this paragraph the commissioner shall:

([a]) notify the owner or operator in writing that the Department is terminating interim status, pursuant to Part 621 of this Title, to require the initiation of closure in accordance with the deadline in paragraphs (1) and (2) of this subdivision and provide a detailed statement of reasons for this determination.

(e) Disposal or decontamination of equipment, structures and soils. During the partial and final closure periods, all contaminated equipment, structures and soils must be properly disposed of or decontaminated unless otherwise specified in sections 373-3.10(h), 373-3.11(f), 373-3.12(g), 373-3.13(g) and 373-3.14(d) of this Subpart. By removing any hazardous wastes or hazardous constituents during partial and final closure, the owner or operator may become a generator of hazardous waste and must handle that waste in accordance with all applicable requirements of Part 372 of this Title.

(f) Certification of closure and survey plat.

(1) Certification of closure. Within 60 days of completion of final closure of a facility or within 60 days of partial closure of any hazardous waste management unit, the owner or operator must submit to the commissioner, by registered mail, a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by an independent professional engineer registered in New York. Documentation supporting the independent registered professional engineer's certification must be furnished to the commissioner upon request until the commissioner releases the owner or operator from the financial assurance requirements for closure under section 373-3.8(d) of this Subpart.

(2) Survey plat. No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the county clerk in the county in which the facility is located, and to the commissioner, a survey plat indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor registered in New York. The plat filed with the local zoning authority, or the authority with jurisdiction over local land use, and with the county clerk in the county in which the facility is located must contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with the applicable regulations of this section.

(g) Post-closure care and use of property.

(1)(i) Post-closure care for each hazardous waste management unit subject to the requirements of subdivision (g) through (j) of this section must begin after completion of closure of the unit and continue for 30 years after that date, and must consist of at least the following:

([a]) monitoring and reporting in accordance with the requirements of sections 373-3.6, 373-3.11, 373-3.12, 373-3.13 and 373-3.14 of this Subpart; and

([b]) maintenance and monitoring of waste containment systems in accordance with the requirements of sections 373-3.6, 373-3.11, 373-3.12, 373-3.13 and 373-3.14 of this Subpart.

(ii) Any time preceding closure of a hazardous waste management unit subject to post-closure care requirements or final closure, or any time during the post-closure period for a particular hazardous waste disposal unit, the commissioner may:

([a]) shorten the post-closure care period applicable to the hazardous waste management unit, or facility (if all disposal units have been closed), if the commissioner finds that the reduced period is sufficient to protect human health and the environment (e.g., leachate or ground-water monitoring results, characteristics of the hazardous waste, application of advanced technology, or alternative disposal, treatment or reuse techniques indicate that the hazardous waste management unit or facility is secure); or

([b]) extend the post-closure care period applicable to the hazardous waste management unit or facility if the commissioner finds that the extended period is necessary to protect human health and the environment (e.g., leachate or ground-water monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment).

(2) The commissioner may require, at partial and final closure, continuation of any of the security requirements of section 373-3.2(e) of this Subpart during part or all of the post-closure period when:

(i) hazardous wastes may remain exposed after completion of partial or final closure; or

(ii) access by the public or domestic livestock may pose a hazard to human health.

(3) Post-closure use of property on or in which hazardous wastes remain after partial or final closure must never be allowed to disturb the integrity of the final cover, liners, or any other components of the containment system, or the function of the facility's monitoring system, unless the commissioner finds that the disturbance:

(i) is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

(ii) is necessary to reduce a threat to human health or the environment.

(4) All post-closure care activities must be in accordance with the provisions of the approved post-closure plan as specified in subdivision (h) of this section.

(h) Post-closure plan; amendment of plan.

(1) Written Plan. By May 19, 1981, the owner or operator of a hazardous waste disposal unit must have a written post-closure plan. An owner or operator of a surface impoundment or waste pile from which the owner or operator intends to remove all hazardous wastes at closure must prepare a post-closure plan and submit it to the commissioner within 90 days of the date that the owner or operator or commissioner determines that the hazardous waste management unit or facility must be closed as a landfill, subject to the requirements of subdivisions (g) through (j) of this section.

(2) Until final closure of the facility, a copy of the most current post-closure plan must be furnished to the commissioner upon request, including request by mail. In addition, for facilities without approved post-closure plans, it must also be provided during site inspections, on the day of inspection, to any officer, employee, or representative of the department who is duly designated by the commissioner. After final closure has been certified, the person or office specified in paragraph (3) of this subdivision must keep the approved post-closure plan during the post-closure period.

(3) For each hazardous waste management unit subject to the requirements of this subdivision, the post-closure plan must identify the activities that will be carried on after closure of each disposal unit and the frequency of these activities, and include at least:

(i) a description of the planned monitoring activities and frequencies at which they will be performed to comply with sections 373-3.6, 373-3.11, 373-3.12, 373-3.13 and 373-3.14 of this Subpart during the post-closure care period;

(ii) a description of the planned maintenance activities, and frequencies at which they will be performed, to ensure:

([a]) the integrity of the cap and final cover or other containment systems in accordance with the requirements of sections 373-3.11, 373-3.12, 373-3.13 and 373-3.14 of this Subpart; and

([b]) the function of the monitoring equipment in accordance with the requirements of sections 373-3.6, 373-3.11, 373-3.12, 373-3.13 and 373-3.14 of this Subpart; and

(iii) the name, address and phone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure care period.

(4) Amendment of plan. The owner or operator may amend the post-closure plan at any time during the active life of the facility or during the post-closure care period. An owner or operator with an approved post-closure plan must submit a written request to the commissioner to authorize a change in the approved post-closure plan. The written request must include a copy of the amended post-closure plan for approval by the commissioner.

(i) The owner or operator must amend the post-closure plan whenever:

([a]) changes in operating plans or facility design affect the post-closure plan; or

([b]) events which occur during the active life of the facility, including partial and final closures, affect the post-closure plan.

(ii) The owner or operator must amend the post-closure plan at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the post-closure plan.

(iii) An owner or operator with an approved post-closure plan must submit the modified plan to the commissioner at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected the post-closure plan. If an owner or operator of a surface impoundment or waste pile who intended to remove all hazardous waste at closure in accordance with sections 373-3.11(f) and 373-3.12(g) of this Subpart is required to close as a landfill in accordance with section 373-3.14(d), the owner or operator must submit a post-closure plan to the commissioner within 90 days of the determination by the owner or operator or commissioner that the unit must be closed as a landfill. If the amendment to the post-closure plan is a major modification according to the criteria in Subpart 373-1 of this Part, the modification to the plan will be approved according to the procedures in paragraph (6) of this subdivision and Part 621 of this Title.

(iv) The commissioner may request modifications to the plan under the conditions described in subparagraph (i) of this paragraph. An owner or operator with an approved post-closure plan must submit the modified plan no later than 60 days after the commissioner's request. If the amendment to the plan is considered a major modification according to the criteria in Subpart 373-1 of this Part, the modifications to the post-closure plan will be approved in accordance with the procedures in paragraph (6) of this subdivision. If the commissioner determines that an owner or operator of a surface impoundment or waste pile who intended to remove all hazardous wastes at closure must close the facility as a landfill, the owner or operator must submit a post-closure plan for approval to the commissioner within 90 days of the determination.

(5) The owner or operator of a facility with hazardous waste management units subject to these requirements must submit the post-closure plan to the commissioner at least 180 days before the date the owner or operator expects to begin partial or final closure of the first hazardous waste disposal unit. The date the owner or operator "expects to begin closure" of the first hazardous waste disposal unit must be either within 30 days after the date on which the hazardous waste management unit receives the known final volume of hazardous waste or, if there is a reasonable possibility that the hazardous waste management unit will receive additional hazardous wastes, no later than one year after the date on which the unit received the most recent volume of hazardous wastes. The owner or operator must submit the post-closure plan to the commissioner no later than 15 days after:

(i) termination of interim status (except when a permit is issued to the facility simultaneously with termination of interim status); or

(ii) issuance of a judicial decree or final orders under Article 71 of ECL to cease receiving wastes or close.

(6) The commissioner will provide the owner or operator and the public, through a newspaper notice, the opportunity to submit written comments on the post-closure plan and request modifications to the plan no later than 30 days from the date of the notice. The commissioner will also, in response to a request or at his or her own discretion, hold a public hearing whenever such a hearing might clarify one or more issues concerning a post-closure plan. The commissioner will give public notice of the hearing at least 30 days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for the public to submit written comments, and the two notices may be combined.) The commissioner will approve, modify, or disapprove the plan within 90 days of its receipt. If the commissioner does not approve the plan, the owner or operator shall be provided with a detailed written statement of reasons for the refusal, and the owner or operator must modify the plan or submit a new plan for approval within 30 days after receiving such written statement. The commissioner will approve or modify this plan in writing within 60 days. If the commissioner modifies the plan, this modified plan becomes the approved post-closure plan. The commissioner must ensure that the approved post-closure plan is consistent with subdivisions (g) - (j) of this section. A copy of the modified plan with a detailed statement of reasons for the modifications must be mailed to the owner or operator.

(7) The post-closure plan and length of the post-closure care period may be modified any time prior to the end of the post-closure care period in either of the following two ways:

(i) The owner or operator or any member of the public may petition the commissioner to extend or reduce the post-closure care period applicable to a hazardous waste management unit or facility based on cause, or alter the requirements of the post-closure care period based on cause.

([a]) The petition must include evidence demonstrating that:

([1]) the secure nature of the hazardous waste management unit or facility makes the post-closure care requirements unnecessary or supports reduction of the post-closure care period specified in the current post-closure plan (e.g., leachate or groundwater monitoring results, characteristics of the wastes, application of advanced technology, or alternative disposal, treatment or reuse techniques indicating that the facility is secure); or

([2]) the requested extension in the post-closure care period or alteration of post-closure care requirements is necessary to prevent threats to human health and the environment (e.g., leachate or groundwater monitoring results indicate a potential for migration of hazardous wastes at levels which may be harmful to human health and the environment).

([b]) These petitions will be considered by the commissioner only when they present new and relevant information not previously considered by the commissioner. Whenever the commissioner is considering a petition, the commissioner will provide the owner or operator and the public, through a newspaper notice, the opportunity to submit written comments within 30 days of the date of the notice. The commissioner will also, in response to a request or at his or her own discretion, hold a public hearing whenever a hearing might clarify one or more issues concerning the post-closure plan. The commissioner will give the public notice of the hearing at least 30 days before it occurs. (Public notice of the hearing may be given at the same time as notice of the opportunity for written public comments, and the two notices may be combined). After considering the comments, the commissioner will issue a final determination, based upon the criteria set forth in subparagraph (i) of this paragraph.

([c]) If the commissioner denies the petition, the commissioner will send the petitioner a brief written response giving a reason for the denial.

(ii) The commissioner may tentatively decide to modify the post-closure plan if the commissioner deems it necessary to prevent threats to human health and the environment. The commissioner may propose to extend or reduce the post-closure care period applicable to a hazardous waste management unit or facility based on cause, or alter the requirements of the post-closure care period based on cause.

([a]) The commissioner will provide the owner or operator and the affected public, through a newspaper notice, the opportunity to submit written comments within 30 days of the date of the notice and the opportunity for a public hearing as in clause (i)(b) of this paragraph. After considering the comments, the commissioner will issue a final determination.

([b]) The commissioner will base the final determination upon the same criteria as required for petitions under clause (i)(a) of this paragraph. A modification of the post-closure plan may include, where appropriate, the temporary suspension rather than permanent deletion of one or more post-closure care requirements. At the end of the specified period of suspension, the commissioner would then determine whether the requirements should be permanently discontinued or reinstated to prevent threats to human health and the environment.

(i) Post-closure notices.

(1) No later than 60 days after certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the county clerk in the county in which the facility is located, and to the commissioner, a record of the type, location and quantity of hazardous wastes disposed of within each cell or other disposal unit of the facility. For hazardous wastes disposed of before January 12, 1981, the owner or operator must identify the type, location and quantity of the hazardous wastes to the best of his or her knowledge and in accordance with any records the owner or operator has kept.

(2) Within 60 days of certification of closure of the first hazardous waste disposal unit, and within 60 days of certification of closure of the last hazardous waste disposal unit, the owner or operator must:

(i) record with the county clerk, in the county in which the facility is located, a notation on the deed to the facility property -- or on some other instrument which is normally examined during title search -- that will in perpetuity notify any potential purchaser of the property that:

([a]) the land has been used to manage hazardous wastes;

([b]) its use is restricted under this section; and

([c]) the survey plat and record of the type, location and quantity of hazardous wastes disposed of within each cell or other hazardous waste disposal unit of the facility required by this subdivision and subdivision (f) of this section have been filed with the local zoning authority, or the authority with jurisdiction over local land use, and with the county clerk in the county in which the facility is located, and with the commissioner; and

(ii) submit a certification, signed by the owner or operator, that the notation specified in subparagraph (i) of this paragraph has been made, including a copy of the document in which the notation has been placed, to the commissioner.

(3) If the owner or operator, or any subsequent owner or operator, of the land upon which a hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues, the liner, if any, and all contaminated structures, equipment, and soils, the owner or operator must request a modification to the approved post-closure plan in accordance with the requirements of paragraph (h)(7) of this section. The owner or operator must demonstrate that the removal of hazardous wastes will satisfy the criteria of paragraph (g)(3) of this section. By removing hazardous waste, the owner or operator may become a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 372 and 373 of this Title. If the owner or operator is granted a permit modification or otherwise granted approval to conduct such removal activities, the owner or operator may request that the commissioner approve either:

(i) the removal of the notation on the deed to the facility property or other instrument normally examined during title search; or

(ii) the addition of a notation to the deed or instrument, indicating the removal of the hazardous waste.

(j) Certification of completion of post-closure care. No later than 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner or operator must submit to the commissioner, by registered mail, a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification must be signed by the owner or operator and an independent professional engineer registered in New York. Documentation supporting the professional engineer's certification must be furnished to the commissioner upon request until the commissioner releases the owner or operator from the financial assurance requirements for post-closure care under section 373-3.8(f)(8) of this Subpart.

373-3.12 Waste Piles

373-3.12(g) Closure and post-closure care

(1) At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.) contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless section 371.1(d)(4) of this Title applies; or

(2) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures and equipment as required in paragraph (1) of this subdivision, the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, the owner or operator must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (see section 373-3.14(d) of this Subpart).

373-3.14 Landfills

373-3.14(d) Closure and post-closure care

(1) At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to:

(i) provide long-term minimization of migration of liquids through the closed landfill;

(ii) function with minimum maintenance;

(iii) promote drainage and minimize erosion or abrasion of the cover;

(iv) accommodate settling and subsidence to maintain the cover's integrity; and

(v) have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(2) After final closure, the owner or operator must comply with all post-closure requirements contained in section 373-3.7(g) through (j) of this Subpart including maintenance and monitoring throughout the post-closure care period. The owner or operator must:

(i) maintain the integrity and effectiveness of the final cover, including making repairs to the cover as necessary to correct the effects of settling, subsidence, erosion, or other damaging events;

(ii) maintain and monitor the leak detection system in accordance with section 373-2.14(c)(3)(iii)([d]) and (c)(3)(iv) of this Title, and paragraph (l)(2) of this section, and comply with all other applicable leak detection system requirements of this Subpart;

(iii) maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of section 373-3.6 of this Subpart;

(iv) prevent run-on and runoff from eroding or otherwise damaging the final cover; and

(v) protect and maintain surveyed benchmarks used in complying with subdivision (c) of this section.

373-2.24 Miscellaneous Units

Note: Section 373-3.24 of the interim status regulations is reserved indicating that interim status regulations have not been promulgated. Therefore it would be prudent to review the final status standards under 373-2.24

373-2.24(d) Closure and post-closure care

(d) Post-closure care. A miscellaneous unit that is a disposal unit must be maintained in a manner that complies with subdivision 373-2.24(b) during the post-closure care period. In addition, if a treatment or storage unit has contaminated soils or groundwater that cannot be completely removed or decontaminated during closure, then that unit must also meet the requirements of subdivision 373-2.24(b) during post-closure care. The post-closure plan under subdivision 373-2.7(h) must specify the procedures that will be used to satisfy this requirement.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Basis for Site Status	RCRA Interim Status	RCRA Interim Status	NPL/BRAC site within a BRAC facility undergoing CERCLA cleanup	N/A
Primary Regulatory Authority	NYSDEC	NYSDEC	USEPA Region II	No official policy difference— but NYSDEC may be more responsive if it is publicly accountable as the lead regulator.
Secondary Regulatory Authority	USEPA Region II	USEPA Region II	NYSDEC	N/A
Study Requirements	Provided adequate information is available, no required studies before closure plan preparation.	Provided adequate information is available, no required studies before closure plan preparation.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Requires an Engineering Evaluation/Cost Analysis (EE/CA) (documents meets NCP) **plus** Streamlined Risk Evaluation (SRE)(contents specified for both)—Takes **6+ months** **Opt. 2—Remedial Action:** Requires RI, FS, RD—no mandated time frame but likely to last 12+ months—requires repeated regulator reviews/comment periods.	RCRA allows greater scheduling acceleration/ flexibility due to absence of mandatory steps/reviews.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Administrative Record	RCRA closure documentation and certification required. No administrative record required to be created.	RCRA closure documentation and certification required. No administrative record required to be created.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Admin. record required. **Opt. 2—Remedial Action:** Admin. record required.	RCRA allows greater flexibility—no need to create administrative record.
Closure/Response Requirements	Complete removal of hazardous residues.	RCRA cap, groundwater monitoring. Neutralization of explosive residues and/or containment of hazardous residues.	**Opt. 1—Non-Time Critical Removal/Interim Action:** ARARs may require RCRA cap/groundwater monitoring. ARARs may require neutralization of explosive residues and/or containment of hazardous residues. **Opt. 2—Remedial Action:** ARARs require RCRA cap, groundwater monitoring ARARs may require neutralization of explosive residues and/or containment of hazardous residues.	No practical difference between RCRA/CERCLA, although neutralization/ containment may not be necessary for removal/interim action.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Closure/Response Plan--Regulator Approval	Submit closure plan 180-days before starting, 60-days if pre-approved. Public comment period required (see concern below). Plan must be approved or rejected by NYSDEC within 90 days of NYSDEC receipt.	Submit closure plan 180-days before starting, 60-days if pre-approved. Public comment period required (see concern below). Plan must be approved or rejected by NYSDEC within 90 days of NYSDEC receipt.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Removal decision document approval required by USEPA/ NYSDEC. Public comment period required (see concern below). Period for regulator review and approval/disapproval specified in FFA. **Opt. 2—Remedial Action:** RI Rpt/FS Rpt/ROD/RD approval required by USEPA/NYSDEC- (Period for regulator review and approval/disapproval specified in FFA.) Public comment period on ROD/RD required (see concern below).	RCRA allows greater flexibility and speed of decision-making. CERCLA requires dual regulator concurrence on at least 4 major documents, and at least two public comment periods.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Closure/Response Timing	Notification of closure 180-days before starting, 60-days if pre-approved. Public review for 30-days and Public Hearing, if requested, requires 30-day notice. Plan must be approved or rejected within 90 days. Waste removal must be completed within 90-days from plan approval unless extension approved. Closure must be completed within 180-days unless extension approved. Certification of closure within 60-days of closure completion.	Notification of closure 180-days before starting, 60-days if pre-approved. Public review for 30-days and Public Hearing, if requested, requires 30-day notice. Plan must be approved or rejected within 90 days. Closure must be completed within 180-days unless extension approved. Certification of closure within 60-days of closure completion. Schedule of work longer + Preiferg work +	**Opt. 1—Non-Time Critical Removal/Interim Action:** SEAD FFA controls specified review periods. No specified deadline for completion of regulator review/decision making. **Opt. 2—Remedial Action:** SEAD FFA controls specified review periods. No specified deadline for completion of regulator review/decision making on RI Rpt/FS Rpt/ROD/RD. Experience indicates that 4-years or more is not uncommon.	RCRA allows greater certainty and speed of decision making for Remediation (and most likely Removal as well.).

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Cleanup Levels	Requires removal of all wastes and residues. Based on NYSDEC TAGMs with health based modifications or OB area levels as appropriate	Based on NYSDEC TAGMs with health based modifications or OB area levels as appropriate Requires neutralization of explosive materials due to LDR issues or variance.	**Opt. 1—Non-Time Critical Removal/Interim Action:** NYSDEC TAGMS are To Be Considered (TBC). LDR ARARs may require neutralization and/or containment of hazardous residues. **Opt. 2—Remedial Action:** NYSDEC TAGMS are To Be Considered (TBC). LDR ARARs may require neutralization and/or containment of hazardous residues.	No practical difference between RCRA/CERCLA.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Closure/Response Ramifications for SEAD's Facility-Wide CERCLA Clean-Up	Need to consider closure results/completeness in facility's CERCLA final site-wide remedy. Clean-up levels may be used at other SEAD sites (if used without an appropriate caveat).	Need to consider closure results/completeness in facility's CERCLA final site-wide remedy. Clean-up levels Clean-up levels may be used at other SEAD sites (if used without an appropriate caveat).	**Opt. 1—Non-Time Critical Removal/Interim Action:** Need to consider removal results/completeness in facility's CERCLA final site-wide remedy. Clean-up levels may be used at other SEAD sites (if used without an appropriate caveat). **Opt. 2—Remedial Action:** Need to consider site response results/completeness in facility's CERCLA final site-wide remedy. Clean-up levels may be used at other SEAD sites (if used without an appropriate caveat).	No practical difference between RCRA/CERCLA.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Post Closure/Post Response Monitoring/Review	Not required	Required for 30 years or more.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Post removal monitoring not required (unless ARAR or condition of EPA/NYSDEC approval.) **Opt. 2—Remedial Action:** Most likely required as ARAR until at least 5-year post-ROD review (may be required for 30+ years.)	Theoretically RCRA clean closure/removal are equally favorable; in reality entire facility will need to be monitored until at least 5-year post ROD review is completed. Thus, no real difference between RCRA/CERCLA is likely.
Closed Site Operations and Maintenance	Not required	Cover maintenance, security, reporting. ~~quarterly~~ semi annual inspection	**Opt. 1—Non-Time Critical Removal/Interim Action:** Post removal O&M not required (unless ARAR/ condition of EPA/NYSDEC approval.) **Opt. 2—Remedial Action:** Post RD O&M not required (unless ARAR/condition of EPA/NYSDEC approval.)	In practical terms, there does not seem to be a significant difference between RCRA and CERCLA.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Permitting Implications	Additional RCRA permits not required.	Part 373 Permit required for post-closure monitoring.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Exempt from permit requirements by 42 U.S.C. 9621(e) and 40 C.F.R. 300.400(e) (but substantive permit requirements may be incorporated as ARARs.) **Opt. 2—Remedial Action:-** Exempt from permit requirements by 42 U.S.C. 9621(e) and 40 C.F.R. 300.400(e) (but substantive permit requirements may be incorporated as ARARs.)	CERCLA provides greater flexibility for on-site response actions.
Safety Restrictions	Not required	4-ft cover required	**Opt. 1—Non-Time Critical Removal/Interim Action:** Not required (but 4 ft cover etc may be ARAR/condition of the removal.) **Opt. 2—Remedial Action:** Not required (but 4-ft cover etc may be ARAR/condition of the remedial action.)	In practical terms, there does not seem to be a significant difference between RCRA and CERCLA.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Land Use Controls (LUCs) / Deed Restrictions	Not required	LUCs / Deed Restrictions required	**Opt. 1—Non-Time Critical Removal/Interim Action:** Not required (but likely to be condition of removal/adopted by SEAD for additional health/ environmental-protection. **Opt. 2—Remedial Action:** Not required (but likely to be condition of remedial action/ adopted by SEAD to provide additional health/ environ-mental protection.	In practical terms, there does not seem to be a significant difference between RCRA and CERCLA.
Required Public Involvement	30-day public review of closure plan. Public hearing may be requested.	30-day public review of closure plan. Public hearing may be requested.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Minimum 30-day pubic comment period required for removal decision document. **Opt. 2—Remedial Action:** Minimum 30-day pubic comment period required for ROD and RD decision documents.	In practical terms, there does not seem to be a significant difference between RCRA and CERCLA.

ATTACHMENT 1 - COMPARISON OF RCRA/CERCLA REGULATORY STRATEGIES (CONTINUED)

REGULATORY CONCERN	RCRA CLEAN CLOSURE	RCRA LANDFILL CLOSURE	CERCLA RESPONSE FOR LANDFILL	RESULT OF RCRA/ CERCLA COMPARISON
Multiple Waste Site Consolidation	Not required.	Not required—consolidation may occur but would require a CAMU and permitting.	**Opt. 1—Non-Time Critical Removal/Interim Action:** Not required—consolidation may occur in accordance with ARARs (which may require CAMU as an ARAR/ condition of USEPA/ NYSDEC approval. **Opt. 2—Remedial Action: - -** Not required—consolidation may occur in accordance with ARARs (which may require CAMU as an ARAR)/ condition of USEPA/ NYSDEC approval.	In practical terms, there does not seem to be a significant difference between RCRA and CERCLA.

US Code as of: 01/23/00

Sec. 2692. Storage, treatment, and disposal of nondefense toxic and hazardous materials

- (a)
  - (1) Except as otherwise provided in this section, the Secretary of Defense may not permit the use of an installation of the Department of Defense for the storage, treatment, or disposal of any material that is a toxic or hazardous material and that is not owned either by the Department of Defense or by a member of the armed forces (or a dependent of the member) assigned to or provided military housing on the installation.
  - (2) The Secretary of Defense shall define by regulation what materials are hazardous or toxic materials for the purposes of this section, including specification of the quantity of a material that serves to make it hazardous or toxic for the purposes of this section. The definition shall include materials referred to in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601(14)) and materials designated under section 102 of that Act (42 U.S.C. 9602) and shall include materials that are of an explosive, flammable, or pyrotechnic nature.

- (b) Subsection (a) does not apply to the following:
  - (1) The storage, treatment, or disposal of materials that will be or have been used in connection with an activity of the Department of Defense or in connection with a service to be performed on an installation of the Department for the benefit of the Department.
  - (2) The storage of strategic and critical materials in the National Defense Stockpile under an agreement for such storage with the Administrator of General Services.
  - (3) The temporary storage or disposal of explosives in order to protect the public or to assist agencies responsible for Federal, State, or local law enforcement in storing or disposing of explosives when no alternative solution is available, if such storage or disposal is made in accordance with an agreement between the Secretary of Defense and the head of the Federal, State, or local agency concerned.
  - (4) The temporary storage or disposal of explosives in order to provide emergency lifesaving assistance to civil authorities.
  - (5) The disposal of excess explosives produced under a Department of Defense contract, if the head of the military department concerned determines, in each case, that an alternative feasible means of disposal is not available to the contractor, taking into consideration public safety, available resources of the contractor, and national defense production requirements.
  - (6) The temporary storage of nuclear materials or nonnuclear classified materials in accordance with an agreement with the Secretary of Energy.
  - (7) The storage of materials that constitute military resources intended to be used during peacetime civil emergencies in accordance with applicable Department of Defense regulations.
  - (8) The temporary storage of materials of other Federal agencies in order to provide assistance and refuge for commercial

carriers of such material during a transportation emergency.

- (9) The storage of any material that is not owned by the Department of Defense if the Secretary of the military department concerned determines that the material is required or generated in connection with the authorized and compatible use of a facility of the Department of Defense, including the use of such a facility for testing materiel [1] or training personnel.
- (10) The treatment and disposal of any material that is not owned by the Department of Defense if the Secretary of the military department concerned determines that the material is required or generated in connection with the authorized and compatible use of a facility of that military department and the Secretary enters into a contract or agreement with the prospective user that -
  - (A) is consistent with the best interest of national defense and environmental security; and
    (B) provides for the prospective user's continued financial and environmental responsibility and liability with regard to the material.
- (11) The storage of any material that is not owned by the Department of Defense if the Secretary of the military department concerned determines that the material is required or generated in connection with the use of a space launch facility located on an installation of the Department of Defense or on other land controlled by the United States.

- (c) The Secretary of Defense may grant exceptions to subsection (a) when essential to protect the health and safety of the public from imminent danger if the Secretary otherwise determines the exception is essential and if the storage or disposal authorized does not compete with private enterprise.

- (d)
  - (1) The Secretary may assess a charge for any storage or disposal provided under this section. Any such charge shall be on a reimbursable cost basis.
  - (2) In the case of storage under this section authorized because of an imminent danger, the storage provided shall be temporary and shall cease once the imminent danger no longer exists. In all other cases of storage or disposal authorized under this section, the storage or disposal authorized shall be terminated as determined by the Secretary.

Footnotes

[1] So in original. Probably should be "material".

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96, P.O. BOX 9
ROMULUS, NEW YORK 14541-0009

REPLY TO
ATTENTION OF

SOSSE-BEC

10 September 2002

MEMORANDUM FOR

Commander, US Army Materiel Command, ATTN: Elaine Andregg, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001
Commander, US Operations and Support Command, ATTN: AMSIO-SF (Mr. Bryant), 1 Rock Island Arsenal, Rock Island, IL 61299
Commander, Defense Ammunition Center, US Army Technical Center for Explosives Safety (USATCES), ATTN: SOSAC-ES (Jean Gallagher), 1 C Tree Road, Building 35, McAlester, OK 74501-9053

SUBJECT: OB/OD Concept Paper

1. The Seneca Army Depot Activity (SEDA) is in the process of closing as required under Base Realignment and Closure Act (BRAC) 1995. Part of that process is closing the Open Burning/Open Detonation (OB/OD) Solid Waste Management Unit (SWMU) at the facility. We have already addressed the soil remediation at the OB grounds and are considering options for the completion of the closure at the OB/OD grounds. Based on issues (cost and implementation) that arose during the OB project, SEDA is considering a capping option in addition to the traditional clearance techniques used by the Army for these areas. I am requesting a preliminary determination on the use of this alternate approach.

2. SEDA has developed the enclosed concept paper that presents this alternate approach to closure of the OD grounds and highlights the conditions and history at our specific site. SEDA is requesting a formal determination be made as to the acceptability of the proposed approach. The essence of the proposed remedy is that a 4-foot cap of clean fill is the equivalent of clearance to 4 feet, which is the default clearance depth to allow unrestricted surface recreation.

3. Costs were estimated for each approach (clearance of all OE/OE scrap to four feet and capping). In this case, the cost for either approach is approximately equal. There may be some changes to the estimates depending upon survey and other pertinent data. The BRAC program has consistently seen cost growth with the traditional methods of removal. This proposed alternative has been estimated conservatively and has the ability to reduce cost by reducing the cap size through further investigation and engineering techniques. The determination of the acceptability on the proposed approach of capping should be based on a technical determination on whether the level of protection the cap provides is equivalent to that of the clearance option.

4. If it is determined that capping is an acceptable option, SEDA will proceed to detailed planning for remediation of this site considering all factors. Typically these factors include: protection of human health and the environment, implementability, short term impacts, ability to meet applicable, relevant and appropriate regulations (ARARs), long term effectiveness, preference for reduction of volume and mobility through treatment (if under CERCLA), community concerns, state acceptance and costs. Only after a full consideration of all factors will a final decision be made.

5. This concept paper submission is specific to SEDA, but there is a broader issue regarding sites across the Army and should be considered. In general, every ordnance site across the ARMY will be different and have its own constraints. Consideration of options should be evaluated on a site-specific basis (considering all factors). Providing more that one closure/cleanup option to individual installations will allow them to select a remedy that best fits their situation and provide potentially significant cost savings to the Army. Under any alternative, closure/cleanup will require the submission and approval of an Explosive Safety Submission (ESS) for the particular action. Final approval of the ESS and thus the action remains with the Department of Defense Explosive Safety Board (DDESB). Providing acceptance or rejection of this concept will give SEDA, as well as other installations, the ability to consider this as another alternative in remediating ordnance sites.

6. If you have any questions or require additional information to enable you to make a determination, please contact me at 607-869-1309 or via e-mail at absoloms@seneca-hp.army.mil.

Enclosure

STEPHEN M. ABSOLOM
Commander's Representative

CF:
Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E (R. Battaglia), SEDA Office for Project Management, Romulus, New York 14541-5001
Commander, U.S. Army Corps of Engineers, Huntsville, ATTN: CEHND-ED-CS (Glenn Earhart), P.O. Box 1600, Huntsville, Alabama 35807
Commander, US Army Base Realignment and Closure Office, ATTN: MAJ Hinnant, Room 2D673, DAIM-BO, 600 Army Pentagon, Washington, D.C. 20310-0600
Commander, U.S. Army Environmental Center, ATTN: SFIM-AEC-IRP (Mike Kelly), Aberdeen Proving Ground, Maryland 21010-5410
Commander, U.S. Army Operations Support Command (OSC), ATTN: AMSOS-EQE (B. Wright), Rock Island, IL 61299-6000
Mr. Joe Pearson, Strategic Management Initiatives, Inc., 1119 Canterbury Drive, Lansdale, PA 19446

Conceptual Plan

Ordnance and Explosives for a RCRA Closure of the Open Burning and Open Detonation (OB/OD) Grounds,

Seneca Army Depot Activity

Romulus, New York

September, 2002

Submitted by
Seneca Army Depot Activity

CONTENTS

1. Introduction

This plan is submitted to gain conceptual approval for the placement of a Resource Conservation and Recovery Act (RCRA) cap in the Open Burn/Open Detonation (OB/OD) area at Seneca Army Depot Activity (SEDA). An overall site map showing the general location of the OB/OD grounds is provided as Figure 1. Both New York State and EPA Remedial Project Managers defer Ordnance and Explosives/Unexploded Ordnance (OE/UXO) requirements to the Department of Defense (DoD). If this concept is approved, the Army will submit a standard Explosives Safety Submission (ESS), providing the normally required level of detail to the Department of Defense Explosives Safety Board (DDESB) for approval.

As part of this closure process, a large disposal pile resulting from previous response actions in the OB area will be consolidated and contained beneath the proposed RCRA Cap. The overall closure approach is to level this pile on the OD area where clearance of potential OE is costly and a four-foot thick RCRA cap is the proposed remedy. The large quantity of range residue, demil residue, fragments, and non-OE scrap metal at the OD grounds likely creates a situation where capping, and not removal, is the proposed remedy. The remainder of the OB/OD area will have anomalies investigated and removed to depth such that at the end of the project the area can be certified for surface recreation. This general concept is presented in Figure 2. The essence of this proposed remedy is that a 4-foot cap of clean fill is the equivalent of clearance to 4 feet, which is the default clearance depth to allow unrestricted surface recreation (Chapter 12 of DoD 6055.9 STD, July 1999).

This preliminary determination is requested so that SEDA can begin planning and interfacing with the regulators and the community with a high degree of confidence that the proposed approach is conceptually acceptable internally within the DoD

2. Facility Background

SEDA is a 10,600-acre US Army facility located in Seneca County, New York, Figure 1. It is bounded on the west by State Route 96A and on the east by State Route 96. The cities of Geneva and Rochester are located to the northwest (14 and 50 miles, respectively); Syracuse is 53 miles to the northeast and Ithaca is 31 miles to the south. The surrounding area is generally used for farming.

Open detonation/open burning operations have been conducted from the early 1940s until recently in the munitions destruction area (90 acres) in the northwest portion of the installation. The OD grounds occupy an area of approximately 60 acres within the northern portion of this site and the OB grounds cover an adjacent 30 acres.

At the OB/OD grounds a variety of rounds were demilitarized and there is no Chemical Warfare Materials (CWM) known or suspected at this site.

SEDA currently has an interim RCRA Part B permit for the operation of the OB/OD areas. This area must be closed in accordance with RCRA closure requirements and comply with CERCLA for releases of hazardous substances (primarily metals). However, even though this capping proposal must satisfy environmental regulators, environmental issues are not part of this explosives safety conceptual submission.

SEDA was included on the 1995 Base Realignment and Closure List and is due to be closed. The Seneca County Industrial Development Agency (IDA) has prepared a reuse report entitled "Seneca Army Depot Reuse Plan and Implementation Strategy". In accordance with this plan the majority of the installation will be used for housing developments, industrial development, institutional and conservation/recreation uses upon transfer. The proposed reuse is shown on Figure 1. The OB/OD grounds fall within the area designated for "Conservation/Recreation" and will be included in the transfer of property to the IDA. The intended uses, which fall within the definition of "Conservation/Recreation", are wildlife habitation, wildlife viewing, hiking/walking and picnicking. Although there is currently no plan for establishing camping facilities, the IDA does not wish to restrict such a possibility in the future. Therefore, this Conceptual Plan is based on the conservative assumption that the clearance depth to be used will be based upon the Public Access scenario (e.g. surface recreation/farming, see Chapter 12 of DoD 6055.9 STD, July 1999).

3. **Work Completed to Date**

The remediation of soils contaminated with metals and OE at the OB grounds (an approximately 30 acre area) is in the process of being completed in accordance with the Record of Decision (ROD), February 1999 and the ESS (including modifications) for OE clearance in the OB area only. Because the heavy concentration of metallic debris rendered detectors ineffective, the top layer of soil was removed and sifted to remove OE and oversize material. OE materials and debris were also separated from metals contaminated soils prior to treatment and/or disposal. This resulted in a large pile of debris containing OE. The separated material contained large amounts of rocks, roots, soil clods, scrap metal and OE, and because it could not readily be certified as non-OE, various methods were attempted to further segregate out the OE material. Due to operational constraints for handling OE, these attempts were not completely efficient and proved to be labor intensive and costly. The large pile of debris (approximately 15,666 cubic yards) containing OE from this operation still exists on the adjacent OD area. It is estimated that 5% of this remaining pile is OE and OE related scrap (OES) and other ferrous scrap.

The separation attempts included processing by mechanical screening a minimum of three times. A small portion was also separated by magnet, which proved to be more efficient than other methods for removing the majority of ferromagnetic materials. During this process, the material was repeatedly moved from various staging areas by bucket loaders and conveyors and has been subjected to material handling equipment buckets, tracks and tires as part of the attempts to segregate the OE material. While

improvements in separation and handling were achieved over time during the clearance of the OB grounds, for the debris pile it may be more cost effective to use the alternate approach of consolidation and capping at the OD grounds than is now being proposed (see Section 4 – cost evaluation).

After the initial removal of OE materials from the OB grounds, the entire area (30 acres) was then subjected to geophysical survey and the anomalies that were discovered were flagged. SEDA has just recently completed the investigation and removal of all anomalies to a depth of at least two feet. Initial indications are that based on the type and depth of anomalies being found that clearance of the entire 30 acres to a depth of 4 feet has been accomplished.

An initial survey for OE has been performed at the OD grounds as part of the Ordnance and Explosive Engineering Evaluation and Cost Analysis (May 2000, Parsons Engineering Science, Inc.). An Expanded Site Inspection (ESI) was performed in 1995 ~~xxxx~~ to evaluate potential releases of hazardous substances at the OD grounds.

4. **Cost Analysis**

Alternatives for the handling of the oversized material were evaluated in the "Seneca Validation Report for Mt. Molle Disposal Pile", June 14, 2002. The report focused on the handling of this material separately from the actions at the OD grounds. However since these two areas are an integrated Solid Waste management Unit (SWMU) and overall cost efficiencies can be obtained by handling the oversized material with the OD grounds closure, new alternatives are now being considered. Two alternatives for addressing the oversized material and the OD closure together are summarized below and costs presented for each.

> Alternative 1. Segregate OE materials from oversize pile and dispose according to current procedures. Clear the approximately 76 acres of the central area of the OD area using methods refined during OB grounds clearance. Clearance will be performed such that future use of the area can be unrestricted surface activity. In general this involves: excavating the top 1 foot of soil over the entire area and separating out OE materials; after the top 1 foot is removed, performing a geophysical survey to identify remaining anomalies; intrusively investigating identified anomalies, removing and demilitarizing OE materials found; replacing excavated soils and final grading. During this process soils contaminated with metals will be segregated, stabilized and disposed off-site.
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Tables 1 and 2 present the costs for Alternatives 1 and 2 respectively. The total capital cost of Alternative 1 is approximately $17,721,000 and the total capital cost for

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Tables 1 and 2 present the costs for Alternatives 1 and 2 respectively. The total capital cost of Alternative 1 is approximately $17,721,000 and the total capital cost for

Alternative 2 is approximately $18,342,000. The cost of the RCRA cap for Alternative 2 is based on typical unit costs derived from Means Environmental Remediation Cost Data – Unit Price. Alternative 1 was estimated by applying actual cost data from the removal activities at the OB grounds, to the OD grounds. This estimate takes into account the lessons learned during the OB grounds clearance and represents actual costs from the latter stages of that removal action that should represent the most cost effective time periods of that removal effort. The RCRA cap estimate (Alternate 2) should be considered Feasibility Study (FS) quality estimate and is considered an order of magnitude engineering cost estimate.

Alternative 2 will also require long-term operation and maintenance of the RCRA cap which would include inspections to assure that the cap has not been disturbed and that the cover is properly maintained. The annual cost of inspections and maintenance is estimated to be $34,931~~8,391~~ and the total present worth (assuming a 30~~50~~ year period of operation and an interest rate of 5%) is estimated to be $536,957.~~637,698~~.

Other considerations potentially impacting the costs include the following:

- The removal operations of Alternative 1, have potentially more cost uncertainty associated with this action. The actual costs will be impacted by the nature of the material to be segregated, the number of OE items to be demilitarized, the efficiency of the contractor and the potential for unknowns to be discovered. All of these items can contribute to cost and schedule growth. The overall BRAC experience with clearance/removal options has been that actual costs usually exceed the initial estimates. The installation of a cap of known design should be relatively straightforward and is usually completed with little or no change for unforeseen conditions.

- The placement of a RCRA cap is an engineered land use control that will be formally maintained throughout its life and should provide for a secure isolation of the waste materials (OE and Hazardous Toxic or Radiologic Waste). The basic cap design includes the following layers (from the top to bottom): top soil (erosion control layer – 6 inches); common fill layer (18 inches), filter fabric, drainage layer (sand – 12 inches), geomembrane (20 Mil); low hydraulic conductivity layer (clay – 24 inches). These engineered layers, including the geomembrane should help reduce any potential for upward movement of OE materials due to freeze/thaw cycles.

- The RCRA cap can provide for containment of HTRW materials that may require remediation for RCRA Closure/CERCLA action. A RCRA cap would eliminate the need for treatment and disposal of HTRW soils. ~~This could eliminate the need for treatment and disposal of this material and result in cost savings.~~ The costs of treatment and off-site disposal are included in the Alternate 1 estimate.

- It should be recognized that the cost of the cap under Alternate 2 represents a conservative scenario. During design and implementation, engineering and

investigative methods could be employed to reduce the overall area to be capped as follows:

1) The perimeter portions of the area to be addressed could be pushed toward the center, resulting in a smaller area to be capped.
2) The surface (top 1 foot) of the perimeter portions of the area to be addressed could be pushed toward the center followed by clearance. Once again reducing the area to be capped.
3) A more definitive study could be performed identifying the most cost effective mix of clearance and capping. The outer portions of the area to be addressed will likely have a lower cost to clear and may be more cost effectively cleared whereas the more interior portions will likely have the HTRW and higher concentrations of OE and thus may be more cost effectively capped.

Therefore whereas clearance activities are likely to experience cost growth, the cap is likely to come in at a lower overall cost than estimated and overall be more cost effective.

Overall the use of a RCRA cap provides an equivalent level of protection for OE materials at a potential cost savings. In addition, the potential uncertainties with removal of OE materials and the corresponding cost and schedule growth are not necessarily issues with the RCRA cap.

5. Approach Overview

The large pile of debris containing OE material generated as part of the cleanup/closure of the OB soils will be leveled and capped with the RCRA cap that is proposed as part of the OD closure.

This conceptual plan proposes the placement of a RCRA cap in the OD area where waste will be left in place. The cap would meet both RCRA Closure requirements, CERCLA remediation requirements (to address metals contaminants in soils at the OD grounds), and OE requirements sufficient for transfer of the property for reuse as a conservation/recreation area with unrestricted surface activity by the public.

The following discussion describes the approach for clearance and capping at the OD grounds and is conceptually shown on Figure 2. OE remediation at the SEDA OD Grounds will take place in the following phases. An OE removal ESS will be prepared covering all actions to accomplish this closure. The phases for such an effort include:

Phase I. The peripheral portions of the extended OD Grounds site (outside the 76 acres proper) will be cleared of vegetation and geophysically mapped.

Phase II. Anomalies identified from Phase I will be intrusively investigated. OE will be removed to depth.

Phase III. The areas encompassing the high-metal concentration and HTRW contamination, predominantly the 76 acres proper of the OD grounds, will have the berm leveled into the smallest footprint, graded appropriately, surface swept for potentially dangerous items, and then covered with a cap that meets the RCRA landfill closure requirements. The pile of oversized material from the OB grounds would also be leveled into this area and consolidated under the cap. The cap will cover an area of approximately 76 acres. The thickness of the cap (minimum of 4 feet) would be designed to meet both RCRA requirements and clearance depths for munitions based on proposed use of the property as a Conservation/Recreation area (i.e. surface recreation). See Section 4 for cap description. A 4-foot cap provides the equivalent of clearance down to 4 feet, thus meeting the intent of Army policy for allowing unrestricted surface recreation.

Phase IV. Concurrent with Phase III, the OB Tray will be cleaned and removed. The concrete containment area will then be cleaned, excavated and disposed of. The area underneath the tray will then be geophysically investigated for OE related items. Any items found will be excavated and removed to depth.

For all phases, OE items that are apparent during the above mentioned activities will be removed, certified, and disposed of in accordance with standard procedures.

6. **Land Use Restrictions**

The closure of the OB/OD area will be in accordance with RCRA (40 CFR 265 Subpart G, Closure and Post Closure and corresponding NYSDEC 373-3). This includes the preparation of a closure plan, which includes requirements for a survey of the waste left in place and description of cap as well as continued maintenance and monitoring of the cap for the post closure period. The survey of the waste/description of the cap must be filed with local authorities and include restrictions which require the owner/operator (in this case the Seneca Industrial Development Authority) to restrict disturbance of the cap. This will restrict activities to surface use/non- intrusive activities. As part of the closure plan, the operation and maintenance activities (including compliance with the deed notice) will be required to be reported to NYSDEC as part of an annual report.

Responsibilities for maintenance and monitoring activities will be placed in the deed. The restrictions will include no digging, maintenance of erosion control (surface vegetative cover), restrictive warning signs regarding hazardous and ordnance safety warnings. Maintenance of the deed restrictions and cover will be responsibility of the future owner. The Army will monitor these provisions during the 5-year reviews. The Army could also require a certification be filed annually with the county clerk and submitted to the Army, noting that the deed restrictions are in place and that the required maintenance is being performed.

The entire site will be released for use and access for the intended use as a conservation/recreation area and associated activities.

7. Public Involvement

This removal is being performed under the RCRA and CERCLA requirements since Seneca is a BRAC federal facility on the National Priorities List. The required public involvement mechanisms are already in place including the BRAC Closure Team (BCT), Restoration Advisory Board (RAB).

Table 1
OD Clearance and Mt. Molle Treatment

SENECA ARMY DEPOT

Item Description	Cost
Process Material to Separate out Dangerous Items	$5,845,000
Stabilize HTRW Contaminated Soil	$1,740,000
Load HTRW Soils	$463,386
Transport and Dispose of HTRW Soils	$5,236,000
Clear Soil of Dangerous Items	$1,100,000
Geophysically Map New Conditions (Final Clearance Survey)	$98,800
Investigate Anomalies	$760,000
Treatment of OE/OES (Dangerous) Items	$726,880
Grade and Vegetate Area	$1,500
Work Plan Preparation	$50,000
Oversize Material From OB Seperation and Processing	$1,699,528
Total Remedial Action	$17,721,094
Per Acre Cost	$233,172

Table 2
RCRA CAP AT OD
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Remedial Action (Capital Costs)					
Mobilization	LS	$25,000.00	1	$25,000	Engineers Estimate
Erosion Control (silt fence)	Feet	$1.91	10000	$19,100	Means Ref. No. 18 05 0206
Rough Grading for Cover	SY	$0.92	367333	$337,947	Means Ref. No. 17 03 0103 Includes moving Oversize material from OB area over to OD area
UXO Supervisor During earthmoving activities	Hr	$34.77	2080	$72,322	Assume UXO personnel needed for a total of 1 year. UXO supervisor rate from Means 33 04 0102
UXO Tech During Earth Moving Activities	Hr	$29.70	2080	$61,776	Assume UXO personnel needed for a period of 1 year. Disposal Technician rate from Means 33 04 0101
Low Hydraulic conductivity layer (total 24 inches clay)	CY	$15.87	244889	$3,886,387	Means Ref. 33 08 0506 assumes on-site source of low permeability soils
Geomembrane 20 mil	SF	$0.71	3306000	$2,347,260	Means Ref. 33 08 0541
Drainage layer (12 inches of sand)	CY	$11.00	122444	$1,346,889	Means Ref. 17 03 0426
Filter Fabric	SF	$0.20	3306000	$661,200	Means Ref. 33 08 0511
Fill (Haul, Deliver, Spread, Compact Common Fill) 18 inches thick	CY	$6.95	183667	$1,276,483	Means Ref. No. 17 03 0422 assume on-site source of material available
Fill (Haul, deliver and spread topsoil)	CY	$25.23	61222	$1,544,637	Means Ref. No. 18 05 0301
Vegetate Cover (hydro seed)	Acre	$503.00	76	$38,228	Means Ref. No. 18 05 0401
Install Monitoring Well (5 at 20 ft each)	FT	$103.00	100	$10,300	per recent installation at MOTBY
Labor Well Sampling (8 quarters)	Hours	$51.33	320	$16,427	2 people for 1 day plus planning and reporting time for each of 8 events. Rate is equivalent to staff scientist less mark ups for remediation that are added below.
metals/PAH analysis	Each	$500.00	64	$32,000	5 samples per round plus duplicate/MSDS/Trip Blank
Prepare Deed Notice	LS	$15,000.00	1	$15,000	Engineer's Estimate
Subtotal				$11,690,954	
General Conditions (10%)				$1,169,095.45	Engineer's Estimate based on guidelines in Means
Overhead (17.5%)				$2,045,917.04	Engineer's Estimate based on guidelines in Means
Subtotal				$14,905,967	
Contingency 10%				$1,490,597	
(Engineering Support/Construction Mgt/As Built) 5%				$745,298	Based on rates from AOC 50 Cost Estimate for Fort Devens
Subtotal				$17,141,862	
Profit 7%				$1,199,930	
Total Remedial Action				$18,341,792	
Total Present Worth of O & M				$536,957	
Total Capital and O & M				$18,878,749	
Per Acre Cost				$248,405	

Table 2
RCRA CAP AT OD
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Operation and Maintenance/Long Term Monitoring					
GW Monitoring Labor per year	HR	$51	40	$2,053	
metals/pah Analysis	Ea	$450	8	$3,600	
Haul and Deliver Topsoil	CY	$25	612	$15,446	Replace 1 % of topsoil cover each year
Revegitate 5% of Cover	Acre	$503	3.8	$1,911	
Subtotal				$23,011	
General conditions (10%)				$1,611	Engineer's Estimate based on guidelines in Means
Overhead (17.5%)				$5,753	Engineer's Estimate based on guidelines in Means
Subtotal				$30,375	
Contingency 15%				$4,556	
Total Yearly O&M				$34,931	
PW of 30 years of O & M (assume interest is 5%)				$536,957	Present Worth factors for 30 years is 15.372.
Cost Per Acre				$7,065.22	

Note: Unit costs from Means are base prices from RS Means, Environmental Remediation Cost Data - Unit Price, 2002 and adjusted for location using a factor of 1.

Figure 2

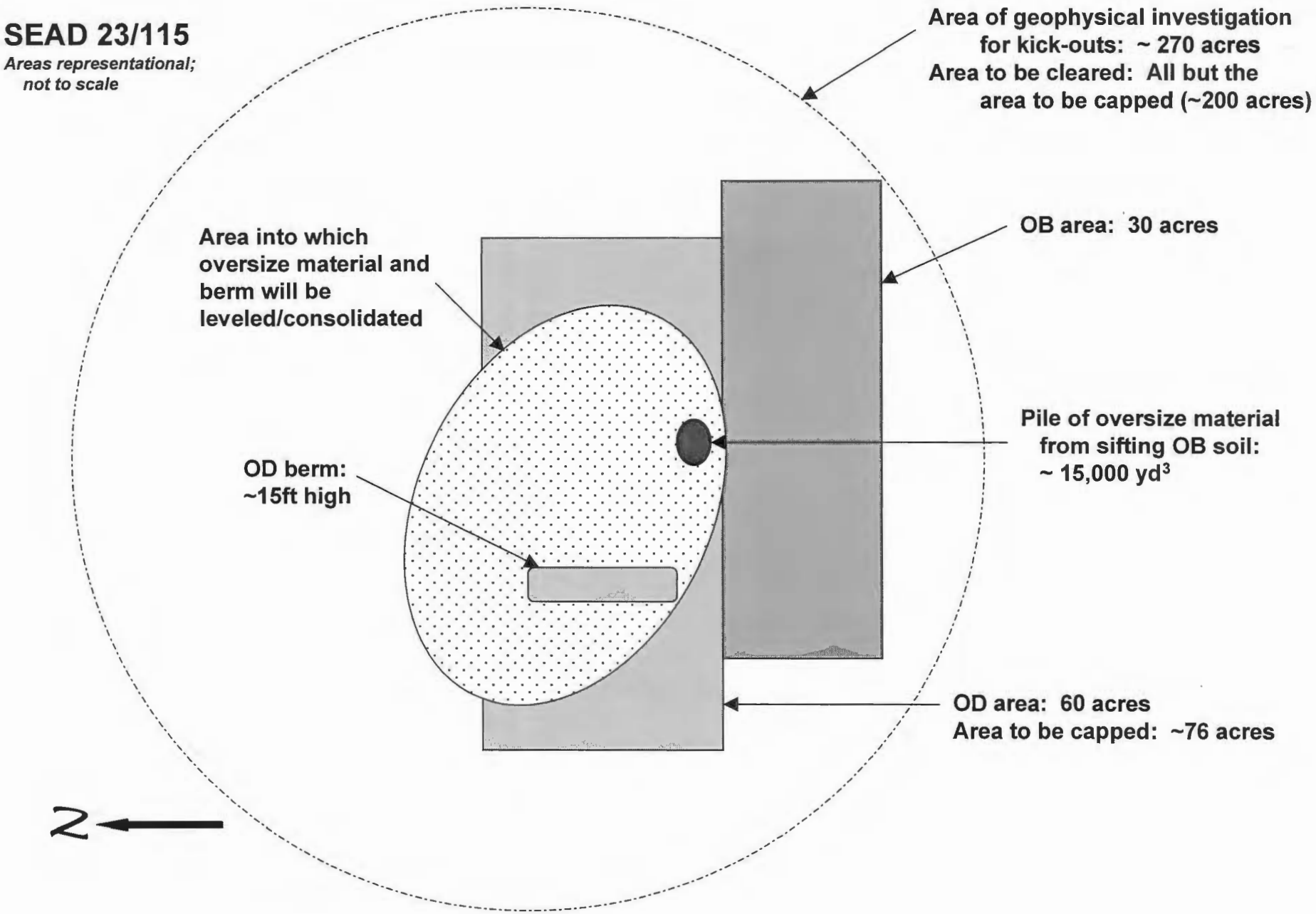
SEAD 23/115
Areas representational; not to scale
Area of geophysical investigation for kick-outs: ~ 270 acres
Area to be cleared: All but the area to be capped (~200 acres)
OB area: 30 acres
Area into which oversize material and berm will be leveled/consolidated
Pile of oversize material from sifting OB soil: ~ 15,000 yd3
OD berm: ~15ft high
OD area: 60 acres
Area to be capped: ~76 acres
2

Figure 1
Seneca Army Depot Activity

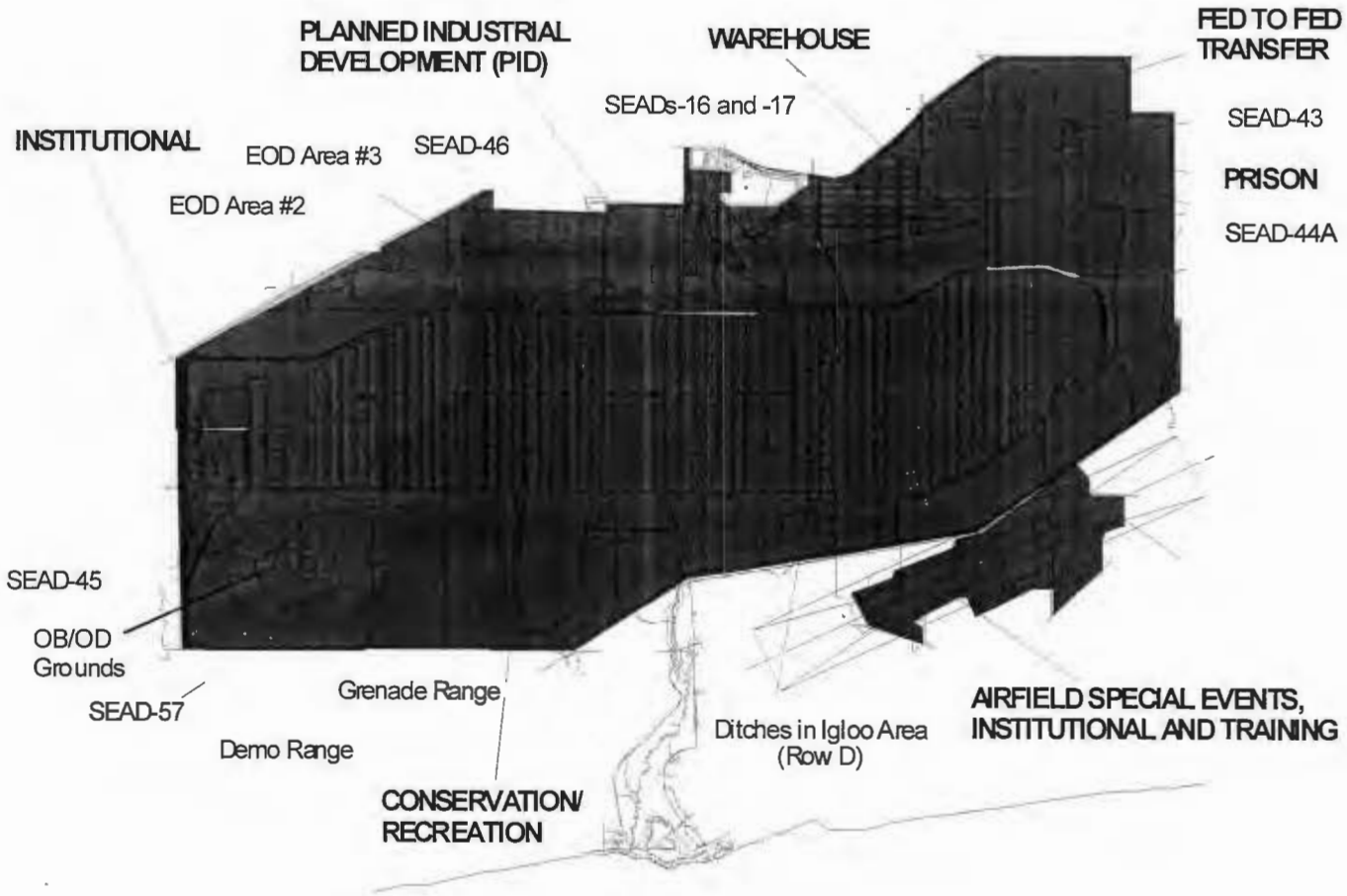

Table 1-A
One Foot Cut and Separate Material
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Remedial Action (Capital Costs)					
Erosion Control (silt fence)	Feet	$1.91	10000	$19,100	Means Ref. No. 18 05 0206
Excavate - 4 CY Crawler Mounted Excavator w/operator	CY	$3.00	122444	$367,814	Price from RACER less markups to be added in on summary sheet.
Rough Grading for Drainage	SY	$0.95	367333	$348,967	Means Ref. No. 17 03 0103
Surface Clearance - UXO Supervisor	Hr	$34.77	4160	$144,643	Assume excavation work takes 2 year thus OES Supervisor needed for 1 manyear or 2080 hours to oversee excavation and hauling operations. UXO supervisor rate from Means 33 04 0102
Surface Clearance - Safety Officer	Hr	$34.77	4160	$144,643	Use same rate as UXO supervisor.
Surface Clearance - UXO Technician	Hr	$29.70	8320	$247,104	Assume excavation work takes 2 year and 2 UXO Technicians needed for 1 manyear each to oversee excavation and hauling operations. Disposal Technician rate from Means 33 04 0101
On-site Haul to conveyor and magnetic seperator	CY	$1.38	122444	$168,973	Means Ref 02234 0340, 12 CY truck, up to 1 mile haul
Purchase conveyor system	Ea	$101,500.00	2	$203,000	Assume costs for convey and material handling unit are similar to system radial stacking conveyor with 2cy hopper and 55 long conveyor, means 33 15 0432; add $50,000 for electromagnet. Need two systems to process all material in one year. That gives processing rate of 35 CY per hour.
Operator for conveyor/magnet - use UXO technician	Hr	$29.70	4160	$123,552	One operator required for each unitDisposal Technician rate from Means 33 04 0101
UXO Technicians to clear material after magnetic seperation	Hr	$29.70	33280	$988,416	Assume seperation work takes 2 years and 4 UXO technicians are required to operate each seperation line. Thus total of 8 UXO technicians required. Technician rate from Means 33 04 0101
Load seperated OE/OES	CY	$3.00	21000	$63,082	Assume 75% of material (total estimated 28000 cy) comes from 1 foot cut. Use excavator price from soils as load price
Haul Seperated material to processing area	CY	$1.38	21000	$28,980	Assume 75% of material (total estimated 28000 cy) comes from 1 foot cut. Cost from Means Ref 022 266 0310, 12 CY truck, 1/4 mile haul
Test soils for metals every 200 CY plus 15% for QA/QC samples	EA	$225.00	704	$158,413	Cost is from lab quote from ???? Plus 50% to cover cost of sample collection and data management.
Load Soils to be treated and disposed off-site	CY	$3.00	87000	$261,341	Soils to be treated and disposed total 87,000CY per SEDA assumption. Load price is same as excavaton price
Subtotal				$2,848,274	

Assumptions: This process involves the removal of 1 foot of soil and the demolition berm and removing metalic OE/OES via a magnet and furhter screening for non-metallic OE/OES. After material is processed and tested it either goes back to the area as fill, or goes for stabilizatin and off-site disposal. Total soils that must be removed and treated due to HTRW concern is 87000CY.

Note: Unit costs from Means are base prices from RS Means, Environmental Remediation Cost Data - Unit Price, 2002 and adjusted for location using a factor of 1.

Table 1-B
Mag/Flag/Clear after 1 Foot Removal Done
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Remedial Action (Capital Costs)					
Geophysical Survey (mag and flag)	Acre	$3,120.00	76	$237,120	Surface Towed Ordnance locator, Means Ref 33 04 0112
UXO technicians to work with survey crew to flag locations	Hr	$29.70	1280	$38,016	Two UXO technicians to flag anamolies over a 4 month period. Disposal Technician rate from Means 33 04 0101
UXO Supervisor to lead investigation and removal operations	Hr	$34.77	2080	$72,322	Assume clearance work takes 1 year thus OES Supervisor needed for 1 manyear or 2080 hours to oversee excavation and hauling operations. UXO supervisor rate from Means 33 04 0102
Safety Officer	Hr	$34.77	2080	$72,322	Assume clearance work takes 1 year thus Safety Officer needed for 1 manyear or 2080 hours to oversee excavation and hauling operations. Use same rate as UXO supervisor rate from Means 33 04 0102
UXO technicians to work with excavator for removal operations	Hr	$29.70	4160	$123,552	Assume clearance work takes 1 year and 2 OES Technicians needed for 1 manyear each to oversee excavation handling operations. Disposal Technician rate from Means 33 04 0101
Excavator, Track mounted with operator	Hr	$131.49	4160	$546,998	Means 17 03 0434, .5 CY bucket, Assume 2 needed for the entire year
Truck, for OE/OES to be loaded into and haul to processing area	Hr	$67.55	2080	$140,504	Assume 1 truck needed full time petween two crews. Means Crew COEID
Subtotal				$1,230,834	

Assumptions: Initial operation is to do geophysical survey to locate anamolies and flag, followed by clearance of anamolies down to 4 feet. Assume 400 anamolies per acre and crew can do 250 anamolies per day. 400 anamolies x 76 acres = 30,400 anamolies at 200 per crew day leaves 152 days to clear 76 acres accounting for innefficiencies say one year for clearance operations.

Note: Unit costs from Means are base prices from RS Means, Environmental Remediation Cost Data - Unit Price, 2002 and adjusted for location using a factor of 1.

Table 1-C
Process Oversized Material
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Remedial Action (Capital Costs)					
				$0	
Excavate - 4 CY Crawler Mounted Excavator w/operator	CY	$3.00	16000	$48,063	Use Crew CODEL from Means, excavator 1CY bucket and operator
12 CY truck and operator to move materials around	Hr	$67.55	640	$43,232	Assume 1 truck needed full time. Means Crew COEID
Purchase conveyor system	Ea	$101,500.00	1	$101,500	Assume costs for convey and material handling unit are similar to system radial stacking conveyor with 2cy hopper and 55 long conveyor, means 33 15 0432; add $50,000 for electromagnet
Operator for conveyor/magnet - use UXO technician	Hr	$29.70	640	$19,008	Disposal Technician rate from Means 33 04 0101
UXO Technicians (5 required) to clear material after magnetic seperation	Hr	$29.70	3200	$95,040	Disposal Technician rate from Means 33 04 0101, three technicians required.
UXO Supervisor	Hr	$34.77	640	$22,253	UXO supervisor rate from Means 33 04 0102
UXO Safety Officer full time	Hr	$34.77	640	$22,253	Assumed Safety Officer same rate as UXO supervisor rate from Means 33 04 0102
Load remaining debris from Mt. Molle	EA	$3.00	15200	$45,660	Assume 95% of material in Molle is debris that can be backfilled on-site. Use excavator price from soils as load price
12 CY truck and operator to move materials to areas to be backfilled	CY	$67.55	640	$43,232	Assume truck time equal to processing time, truck rate from Means Crew COEID
Subtotal				$440,240	

Assumptions: Process for treating Mt. Molle is as follows excavate material from pile haul to coveyor belt, run material on belt past magnet to remove ferrouos items, UXO technicians then check for non-ferrous material. Material is stockpiled awaiting burning in tray. 7 UXO personnel required to man operations (five technicians full time and supervisor full time and safety officer full time); Process rate is equal 25 CY per hour to account for nature of material already in pile; 16000 CY will take approximately 640 hours

Note: Unit costs from Means are base prices from RS Means, Environmental Remediation Cost Data - Unit Price, 2002 and adjusted for location using a factor of 1.

Table 1-D
Treat OE/OE Scrap
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Remedial Action (Capital Costs)					
Excavator to place and remove materials from Burn Tray	Hr	$102.78	1600	$164,448	Use Crew CODEL from Means, excavator 1CY bucket and operator
12 CY truck and operator to move materials around	Hr	$67.55	1600	$108,080	Assume 1 truck needed full time. Means Crew COEID
Fuel/Misc. ODC per Burn		$1,000.00	200	$200,000	
UXO Technician	Hr	$29.70	3200	$95,040	Disposal Technician rate from Means 33 04 0101
UXO Supervisor to Oversee OB operations	Hr	$34.77	800	$27,816	UXO supervisor rate from Means 33 04 0102
UXO Safety Officer to Oversee OB operations	Hr	$34.77	800	$27,816	Assumed Safety Officer same rate as UXO supervisor rate from Means 33 04 0102
Subtotal				$595,384	

Assumtions: 15 to 20 tons of OE/OES can be burned at a time; 1 burn per day is accomplished; set up of new burn and removal of old burn takes 8 hours; OES crew required includes 2 technicians full time and 1/2 time for OES supervisor and 1/2 time for safety officer; fuels and other ODC per burn are $500 each burn; total material to be burned is 1400 cubic yards from OD (28000 yards at 5%) and 800 CY from mt. Molle; 1 yard of material is equal to 1.5 tons; disposal of material is free taken by recycler. 2200 cy x 1.5tons per cy= 3300 tons and 17.5 tons per burn yields approx 200 burns

Note: Unit costs from Means are base prices from RS Means, Environmental Remediation Cost Data - Unit Price, 2002 and adjusted for location using a factor of 1.

Table 2
RCRA CAP AT OD
SENECA ARMY DEPOT

Item Description	Unit	Unit Cost	Quantity	Item Total	Comments
Remedial Action (Capital Costs)					
Mobilization	LS	$25,000.00	1	$25,000	Engineers Estimate
Erosion Control (silt fence)	Feet	$1.91	10000	$19,100	Means Ref. No. 18 05 0206
Rough Grading for Cover	SY	$0.92	367333	$337,947	Means Ref. No. 17 03 0103 Includes moving Oversize material from OB area over to OD area
UXO Supervisor During earthmoving activities	Hr	$34.77	2080	$72,322	Assume UXO personnel needed for a total of 1 year. UXO supervisor rate from Means 33 04 0102
UXO Tech During Earth Moving Activities	Hr	$29.70	2080	$61,776	Assume UXO personnel needed for a period of 1 year. Disposal Technician rate from Means 33 04 0101
Low Hydraulic conductivity layer (total 24 inches clay)	CY	$15.87	244889	$3,886,387	Means Ref. 33 08 0506 assumes on-site source of low permeability soils
Geomembrane 20 mil	SF	$0.71	3306000	$2,347,260	Means Ref. 33 08 0541
Drainage layer (12 inches of sand)	CY	$11.00	122444	$1,346,889	Means Ref. 17 03 0426
Filter Fabric	SF	$0.20	3306000	$661,200	Means Ref. 33 08 0511
Fill (Haul, Deliver, Spread, Compact Common Fill) 18 inches thick	CY	$6.95	183667	$1,276,483	Means Ref. No. 17 03 0422 assume on-site source of material available
Fill (Haul, deliver and spread topsoil)	CY	$25.23	61222	$1,544,637	Means Ref. No. 18 05 0301
Vegetate Cover (hydro seed)	Acre	$503.00	76	$38,228	Means Ref. No. 18 05 0401
Install Monitoring Well (5 at 20 ft each)	FT	$103.00	100	$10,300	per recent installation at MOTBY
Labor Well Sampling (8 quarters)	Hours	$51.33	320	$16,427	2 people for 1 day plus planning and reporting time for each of 8 events. Rate is equivalent to staff scientist less mark ups for remediation that are added below.
metals/PAH analysis	Each	$500.00	64	$32,000	5 samples per round plus duplicate/MSDS/Trip Blank
Prepare Deed Notice	LS	$15,000.00	1	$15,000	Engineer's Estimate
Subtotal				$11,690,954	
General Conditions (10%)				$1,169,095.45	Engineer's Estimate based on guidelines in Means
Overhead (17.5%)				$2,045,917.04	Engineer's Estimate based on guidelines in Means
Subtotal				$14,905,967	
Contingency 10%				$1,490,597	
(Engineering Support/Construction Mgt/As Built) 5%				$745,298	Based on rates from AOC 50 Cost Estimate for Fort Devens
Subtotal				$17,141,862	
Profit 7%				$1,199,930	
Total Remedial Action				$18,341,792	
Total Present Worth of O & M				$637,698	
Total Capital and O & M				$18,979,490	
Per Acre Cost				$249,730	

4- 10 8% COE ?

File

OD
SEAD
115

Statement of Work for SEAD 115
Prepared by
Thomas Battaglia
New York District Corps of Engineers

This statement of work and cost estimate is prepared to provide a concept to Close SEAD 115 Open Burning Grounds Tray and the Open Detonation site. It is based on the lessons learned from the Open Burning Grounds and current real time cost. The assumptions are provided as a basis for the cost.

Assumptions:

1. The site will be geophysically mapped before intrusive work is accomplished. The information obtained from this effort will delineate the exact location where anomalies will be hand dug and where hand digging specific anomalies is no longer effective. The cost for this effort is identified separately. This cost should also be included in any estimate that this SOW is compared to.
2. The actual size of the area to be remediated will be determined after the 1 above. For the SOW it is assumed that 76 acres (106 acres associated with a 1200 radius –30 acres cleared part of the OBG) will be identified as too cluttered to differentiate anomalies.
3. The ESI provides a basis of the determination that soil is required to be treated and disposed of. This quantity is estimated to be 50,000 cyds surface soil and 37,000 cyds from the berm. Total soil volume to be treated and disposed of is 87,000cyds.
4. Soil volume from the cluttered area is assumed to be 120,000cyds.
5. Soil volume of the berm is assumed to be 37,000cyds.
6. Anomaly concentration is assumed to be 400 per acre during the final clearance.
7. All dangerous scrap is properly treated and certified for disposal. There is no cost for that actual smelting.
8. 28,000 cyds of ferrous metal will be removed from the site.
9. PRICES QUOTED ARE BASED ON TODAYS ESTIMATES FOR WORK EFFORT CURRENLTLY BEING NEGOIATED WITH THE CONTRACTOR and SUBCOPNTRACTOR. PERFORMANCE AND COST ARE A RESULT OF THE CURRENT STAFF WITH THE CORPERATE KNOWLEDGE GAINED FROM THE PAST 3 YEARS. ALL PRICING SHOULD BE TREATED FOR OFFICIAL USE ONLY AND NOT DISTRIBUTED FOR PUBLIC INFORMATION.
10. The estimate assumes a continuous funding stream so that there are no mobilization and demobilization requirement. (Mob and Demob effort are avoided)
11. All cost include contractor overhead and profit (fee 18%).
12. All cost include 10% for Corps of Engineers project management and includes 1 Field Project Engineer and 1 OE safety specialist).

The contractor will excavate 1 foot of soil from 76 acres. The soil will be processed to remove ferrous and non-ferrous ordnance related scrap. The scrap will be processed and certified non- dangerous and disposed of at an off -site smelting operation. Excavated soil will be stockpiled in 200cyd increments, tested and disposed of. The contractor will perform the same process on the "berm" at the open detonation grounds. The contractor

will process material so that all material is handled, inspected and processed in the same operation. No stockpiling of material for further processing will be permitted. The contractor will remove the burn tray, demolish the concrete pad and perform geophysical investigation of the exposed area. After excavation of material, to include the area under the burning tray pad, the contractor will geophysically map the excavated area, locate and excavate the anomalies, properly treat and dispose of material found. The contractor will perform a 10% quality assurance inspection on the geophysically mapped grids to confirm removal of dangerous items. The area will be graded to drain away from Reader creek and seeded with and an appropriate field seed.

The Explosive Safety submission will include the contractors work plan regarding processing of material, and the excavation of anomalies.

The contract is a cost plus incentive fee contract with competitively bid fixed price sub contracts. It also includes an insurance policy for cost over runs of in scope work. It does not include cost overruns for work that is not in the scope of the project.

COST ESTIMATE

Efforts associate with all projects considered.

Item 1. Surface Sweep, Clear, Grub, and geophysically map with GPS grid corrdinates 400 acres. (2500 foot radius of influence). $2,950,000.

Item 2. Re-acquire and remove anomalies on approximately 250 Acres (assume 10,000 anomalies to acquire). $550,000.

Total of cost to be included in all project evaluations

Effort associated with project SOW

Item 1. Process material to separate out dangerous items	$5,845,000
Item 2. Stabilize of HTRW contaminate soil	$1,740,000
Item 3. Load HTRW soil	$463,386
Item 4. Transport and dispose of soil	$ 5,236,000
Item 5. Clear soil of dangerous items	$ 1,100,000
Item 6. Geophysically map the "new condition" (final clearance survey)	$ 98,800
Item 7. Investigate anomalies	$ 760,000
Item 8. Treat and dispose of Dangerous items	$726,880
Item 9. Grade and vegetate area	$1,500
Item 10. Work Plan Preparation	$50,000
Item 11. Insurance Certificate 1%	$ 160,000
Total cost of Items 1-11	$16,180,686

Table 1
OD Clearance and Mt. Molle Treatment

SENECA ARMY DEPOT

Item Description	Cost
Process Material to Separate out Dangerous Items	$5,845,000
Stabilize HTRW Contaminated Soil	$1,740,000
Load HTRW Soils	$463,386
Transport and Dispose of HTRW Soils	$5,236,000
Clear Soil of Dangerous Items	$1,100,000
Geophysically Map New Conditions (Final Clearance Survey)	$98,800
Investigate Anomalies	$760,000
Treatment of OE/OES (Dangerous) Items	$726,880
Grade and Vegetate Area	$1,500
Work Plan Preparation	$50,000
Oversize Material From OB Seperation and Processing	$1,699,528
Total Remedial Action	$17,721,094
Per Acre Cost	$233,172