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EPA Superfund
Record of Decision:

MW MANUFACTURING
EPA ID: PAD980691372
OU 05
VALLEY TOWNSHIP, PA
12/22/1997

EPA 541-R98-013
<IMG SRC 980130>

RECORD OF DECISION
MW MANUFACTURING SITE
DECLARATION

SITE NAME AND LOCATION

MW Manufacturing Superfund Site
Operable Unit 5
Valley Township, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedial action for the MW Manufacturing Site located in Valley Township, Montour County, Pennsylvania (the Site), developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability act of 1980 as amended by the Superfund Amendments and Reauthorization Act, (CERCLA), 42 U.S.C. °°9601 et. seq. and is consistent, to the extent practicable, with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based upon the contents of the Administrative Record for the MW Manufacturing Site.

The Commonwealth of Pennsylvania has concurred with the selected remedy. A copy of the letter of concurrence is attached.

ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, in accordance with Section 106 of CERCLA, 42 U.S.C. º9606, that actual or threatened releases of hazardous substances from this Site, as discussed in Section VI (Summary of Site Risks), if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The following remedy, as subsequently described, is one of five operable units that comprise a comprehensive remedy for the Site. Operable Unit 1 (OU-1), completed in March 1992 addressed carbon waste at the Site. Operable Unit 2 (OU-2) addressed the chopped and shredded pieces of wire insulation (referred to as "Fluff") resulting from the copper reclamation process; it also addressed contaminated soils, lagoon water and containerized material on-site. OU-2 called for the use of on-site incineration; the remedy for OU-2 is reevaluated in this ROD. Operable Unit 3 (OU-3) addresses long-term contaminated groundwater impacts from the Site. OU-3 is currently in design phase. Operable Unit 4 (OU-4) consisted of the design and installation of a public water supply for certain residences and businesses. OU-4 was completed in August 1996. The Remedial Design (RD) for OU-2 included a series of treatability studies which were completed in November 1995. The treatability studies revealed that the selected remedy for OU-2 has the potential for adverse impacts on human health and the environment. Operable Unit (OU-5) was undertaken to reevaluate the remedy for the Site contaminants previously addressed under OU-2. The original selected remedy (OU-2) included the following major components:

- on-site incineration of Fluff, stabilization of ash, and disposal of ash in an off-site landfill permitted pursuant to the Resource Conservation and Recovery Act of 1976 (42 U.S.C. °° 6901-6986)(RCRA);

- on-site incineration of impacted soils for organics removal, stabilization of metals in ash where necessary and, disposal of ash in an off-site RCRA landfill;

- on-site treatment of lagoon water for organics and metals and discharge in accordance with Federal National Pollution Discharge Elimination System (NPDES) and the Commonwealth of Pennsylvania requirements;

- on-site incineration of the contents of tanks and drums, stabilization of the ash, and disposal of the ash in an off-site RCRA landfill and;

- covering of the soils under the Fluff once the Fluff has been removed in accordance with RCRA Subtitle C requirements.

The selected remedy in this ROD, referred to as OU-5, will protect the public from exposure to impacted soil, Fluff, lagoon sediments and water, the contents of tanks and drums located on-site. In addition, the selected remedy will provide both short-term and long-term protection of human health and the environment.

The elements of the selected remedy for this amended ROD (OU-5) are:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;

- Treatment/containment of contaminants in Fluff, lagoon sediment, and surface soils through ex-situ stabilization and backfilling excavated areas with the stabilized material;

- Treatment of soil containing Non Aqueous Phase Liquids (NAPLs) utilizing low temperature thermal desorption;

- Covering the stabilized material and any other areas of concern with an EPA and PADEP approved two-foot soil cover. The cover will be graded and vegetated to prevent ponding and to control erosion.

- Site restoration by removing all debris from the Site;

- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;

- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek adjacent to the Site and/or to an industrial process;

- Implementation/enforcement of institutional controls at the Site (such as deed restrictions);

- Long-term operation and maintenance (O&M) activities including Site security through the maintenance of existing Site fence.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the Remedial Action and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume.

The components of the selected remedy, in conjunction with the OU-1, OU-3, and OU-4 remedies, represent the maximum extent to which a permanent solution and treatment technology can be utilized in a cost-effective manner for the Site.

Pursuant to CERCLA Section 121(c), 42 U.S.C. º9621(c), the 5-year Site reviews will apply to the remedial action, because this remedy will result in hazardous substances remaining on-site at levels that would not allow for unrestricted use of the Site. The 5-year Site reviews will ensure that the remedy continues to provide adequate protection to human health and the environment.

<IMG SRC 98013A>

RECORD OF DECISION

MW MANUFACTURING SITE, OU-5
VALLEY TOWNSHIP, MONTOUR COUNTY, PENNSYLVANIA

DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

The approximately 15-acre MW Manufacturing Superfund Site (the Site) is located in Valley Township, Montour County, Pennsylvania, 2 miles north of Danville, 700 feet west of State Route 54, and about E mile south of Interstate 80 (see Figure 1 for the Site location map). The Site is located on the Riverside USGS quadrangle map. The Pennsylvania Department of Transportation (PennDOT) maintains a storage area immediately north of the Site. Farmlands and wooded lots are adjacent to the Site to the west and south. Mauses Creek flows in a southerly direction past the Site on the west side of Route 54.

Mausdale, a residential area with approximately 24 homes, is located approximately 1/4 mile southeast of the Site, and Danville (estimated population 5,200) is located 2 miles south. At the intersection of Routes 54 and 1-80, there are a number of private residences, three motels, three gas stations, and several restaurants. These properties, as well as a Head Start school located just north of the PennDOT storage area, have been provided with a public water supply as their source of potable water. The public water supply was provided as part of the remedial action for OU-4 for the Site.

The Site is surrounded by a fence equipped with a locked gate. Facilities located on the Site consist of one large, inactive building which occupies approximately one acre of the property. In addition, there is a smaller building which occupies approximately 3,350 square feet to the south of the main building. The rear portion of the main building is partially collapsed. The remainder of the Site consists of open land, above ground storage tanks, underground storage tanks, miscellaneous drums, piles of Fluff, and a lagoon containing surface water.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Site is inactive, in part due to legal actions by the Pennsylvania Department of Environmental Protection (PADEP). PADEP records indicate that Mr. Allan Levin of Doylestown, Pennsylvania, proprietor of MW Manufacturing Corporation, owned the property from about 1966 to 1972. MW Manufacturing engaged in secondary copper recovery from scrap wire, using both mechanical and chemical processes, until it ceased operations. In 1972, MW Manufacturing filed for protection under Chapter 11 of the United States Bankruptcy Code, and the Philadelphia National Bank acquired the property.

Warehouse 81 Inc. acquired the Site in 1976. Subsequently, Warehouse 81 Inc. and Domino Salvage, Inc. formed a limited partnership to recover wire at the Site. Records indicate that the only activities conducted by the Warehouse 81/Domino Salvage partnership were mechanical recovery operations. While the mechanical processes generated the largest waste piles of Fluff, the chemical process used by MW Manufacturing generated the largest environmental impact (the carbon waste material and the lagoons, see Figure 2).

The chemical process used a hot bath to melt the polyvinyl chloride (PVC) plastic insulation away from the the scrap copper wire. The high temperatures decomposed plastic insulation into carbon, which separated out as a granular black material, and also enhanced the dissolution of lead from the plastic insulation and copper from the metal wire. The chlorinated solvent tetrachloroethene (PCE) was then used to remove the residual oil from the separated copper. These inorganic and organic compounds have been identified throughout the Site.

The mechanical process generated the Fluff waste. The Fluff waste consists of fibrous insulation material mixed with bits of plastic and copper. Phthalate esters, copper, lead and chlorinated solvents are all present in this Fluff waste. The source of the low levels of chlorinated solvents in the Fluff is not clear as no solvents were used during the mechanical stripping operations.

A Potentially Responsible Party (PRP) search was conducted for the Site. As a result of this search, EPA determined that the previous owners and operators of the Site had gone out of

business. EPA notified current owners of the Site, Michael G. Sabia and Michael G. Sabia, Jr., doing business as Warehouse 81 Limited Partnership, of their potential liability at the Site and offered them the opportunity to conduct the Remedial Investigation/Feasibility Study (RI/FS), but they elected not to participate. EPA conducted the RI/FS beginning in August 1988. Following the completion of the RI/FS, EPA divided response actions at the Site into 5 Operable Units. OU-1 addresses the carbon waste that has been left on-site from the copper recovery process. In March 1989, EPA issued a ROD which selected off site incineration for the carbon waste as the remedy for OU-1. A Special Notice Letter to conduct the Remedial Design and Remedial Action (RD/RA) for OU-1 was sent to Warehouse 81 on March 6, 1989. Again, Warehouse 81 declined to participate. The excavation and off-site incineration of the carbon waste were completed by EPA in March 1992.

Additional PRP investigations in 1992 discovered records that led to the identification of AT&T Nassau Metals (Nassau) and Pennsylvania Power and Light (PP&L) as additional PRPs. A general notice letter regarding their Potential liability for the Site was sent to Nassua and PP&L on May 19, 1992.

EPA issued the ROD for OU-2 in June 1990, this ROD addressed the Fluff, impacted soils and impacted lagoon water at the Site. In December 1992, Nassau petitioned EPA to reopen the OU-2 ROD. EPA reopened the public comment period and Nassau submitted commcnts to supplement their petition to reopen the ROD in October 1993. In March, 1994 EPA agreed to consider alternatives proposed by Nassua provided that Nassua conducted a treatability study and a Focus Feasibility Study (FFS) to reevaluate the remedial alternatives. Between 1993-1995, Nassau undertook a series of studies to evaluate an alternate remedy for the Site. These studies are summarized in Section IV.B of this ROD.

On June 30, 1992 EPA issued the ROD for OU-3 which addresses groundwater contamination. By letter dated September 30, 1992, EPA sent Special Notice to Nassau, PP&L and Warehouse 81 and its general partner, Michael G Sabia, Sr. which informed those PRPs that the EPA was willing to enter into a federal consent decree with them to conduct the Remedial Design/Remedial Action (RD/RA) contemplated by the OU-3 ROD. Nassua and PP&L responded, but failed to make an acceptable good faith offer to the Agency in regard to OU-3. Warehouse 81 and Michael G. Sabia, Sr. did not respond to the Special Notice letter. On March 31, 1993, a Unilateral Administrative Order was issued to the each PRP to conduct the RD/RA for OU-3. Nassua and PP&L agreed to conduct the RD/RA for OU-3. During the design phase, EPA decided to split OU-3 in to two operable units: OU-3 and OU4. OU-3 addresses the long-term groundwater cleanup, and OU-4 provides public water to affected residences. The construction of a public water supply was completed in August 1996.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Most of the residents who were interviewed in the Danville and Valley Township areas said that they first became aware of the problem at the MW Manufacturing Site in March 1986. At that time, EPA discovered lead contamination in a well near the Site. EPA noted that discovery in a news release which was carried in the local papers. EPA also hosted a public meeting on March 11, 1986, to discuss the water situation with residents and officials. Approximately 50 people attended the meeting. EPA supplied bottled water to the users of the well until later samples revealed safe levels of lead in the well water. The original levels of lead have not been observed since then and the EPA believes that any lead in the original sample may have been from lead solder in the plumbing. Lead above the action levels has not been detected in any of the later samples taken after the water had been run for a few minutes to flush the lines (see OU-3 ROD section III). A continuous "Plume" of lead could not be identified as emanating from the Site to the residential wells tested. Additionally, as part of the implementation of the OU-4 remedy, a public water supply has been provided to certain local residents and businesses. The existence of these safeguards contributes to reducing concern about the Site on the part of local hotel and restaurant owners and employees who comprise a large segment of the local business community. The provision of a public water supply has also mitigated the concern of local residents associated with utilizing potentially impacted private wells.

The Proposed Plan for the carbon pile remedial action (OU-1) was placed in the designated information repository on February 24, 1989. Concurrently, a public comment period, which ran until March 27, 1989, was announced in a newspaper advertisement. A public meeting was held on February 28, 1989, to present the Proposed Plan and preferred alternative for removing the

carbon waste pile. Approximately twenty citizens attended as well as local township and county officials and the media. A ROD for the carbon waste pile was signed on March 30, 1989. EPA completed the excavation and off-site incineration of the carbon waste in March 1992.

On April 16, 1992, EPA released the Focused Feasibility Study and Proposed Plan for OU-3 for public comment. EPA placed the Administrative Record in the Docket Room in EPA Region III (Philadelphia) as well as the Thomas Beaver Library in Danville, PA. EPA placed an advertisement in three local newspapers announcing public comment period on the Proposed Plan that ran from April 16, 1992 to May 16, 1992. EPA subsequently extended the public comment period 30 days. A notice of the extension was advertised in two newspapers on May 29, 1992.

EPA held a public meeting on May 7, 1992 at the Montour County Court House to present the Proposed Plan for OU-3. Approximately 60 people attended the public meeting. Comments obtained throughout the public comment period, including the public meeting, were addressed in the Responsiveness Summary of the ROD for OU-3. This ROD was subsequently divided in to two operable units: OU-3 (addressing groundwater cleanup) and OU-4 (addressing provision for public water supply).

As part of the design and construction activities related to the implementation of OU-3 and OU-4, particularly the installation of a public water supply, local officials and interested members of the public were apprised of the status of OU-2 and OU-5. The installation of the waterline has facilitated the participation and cooper-ation of local officials, residents, Nassau, EPA and PADEP. A public ceremony was held to initiate waterline construction on October 31, 1995 and periodic Fact Sheets have been transmitted to local businesses and residents regarding the overall Site and particularly, the installation of the waterline.

The Remedial Investigation Report, Risk Assessment Report, Feasibility Study Report and Proposed Plan for OU-2 were placed in the information repository on February 19, 1990. A public comment period was announced in newspaper advertisements on February 24, and 25, 1990. A public meeting was held on February 27, 1990, to present the Proposed Plan and preferred alternative for remediating on-site wastes and soils. One private citizen attended, as well as local township and county officials and the media. In December 1992, AT&T Nassau Metals Corp. (Nassau) petitioned EPA to reopen the ROD for OU-2. EPA reopened the public comment period and Nassau submitted comments to supplement the petition to reopen the ROD in October 1993. Between 1993 and 1995, Nassau undertook a series of studies to evaluate an alternate remedy for the Site. These studies included a Reevaluation of the Risk Assessment and a Focused Feasibility Study which were performed and submitted to EPA on May 22, 1995. These documents supported an alternate remedy for the Site designated as OU-5.

The Focused Feasibility Study Report, Treatability Study Report, Reevaluation of the Risk Assessment Report, Proposed Plan and other documents prepared to support the remedial action for OU-5 were placed in the information repository on August 8, 1997. A public comment period was announced in a newspaper advertisement on August 11, 1997. A public meeting was held on August 20, 1997 to discuss the proposed remedial action. Approximately 20 people attended the public meeting. Response to public comment can be found in the Responsiveness Summary at the end of this document.

Based on the aforementioned community relations activities EPA has met the public participation requirements of Sections 113(k)(2)(b)(iv) and 117 of CERCLA.

IV. SUMMARY OF SITE CHARACTERISTICS

A. Site Geology and Hydrogeology

1. Site Geology

The Site lies within the Valley and Ridge physiographic province of the Appalachian region. The province is dominated by tightly folded mountains that create alternating valleys and ridges. While valley floors and ridge tops may be flat locally, bedrock generally consists of layered sequences of sedimentary rock dipping at angles up to 40 degrees. Late Pleistocene glacial events have covered the bedrock in some areas with till that ranges in thickness from zero to 40 feet.

At the Site, 8 to 26 feet of unconsolidated clay, silt, sand, gravel and boulders overlie a predominantly shale and limestone bedrock. Bedrock in the region of the Site consists of mainly silt, shale and limestone units of Upper Silurian/Lower Devonian age. In descending order (top to bottom) the bedrock units are the Tonoloway Formation, the Wills Creek Formation, and the Bloomsburg Formation. The contact between the Tonoloway Formation and the Wills Creek Formation is reported to occur in the northern portion of the Site over a transition interval greater than 200 feet. In the southern portion of the Site, bedrock comprises the Upper and Lower Wills Creek Formations. These units are dominated by alternating beds of limestone and clastic and calcareous shale.

Bedrock underlying the Site is moderately fractured, with prominent fractures present in the bedrock at depths less than 100 feet. Fractures occur less frequently with increasing depth, which is indicative of decreasing permeability with depth. Fractures are generally oriented parallel to bedding and dip to the northwest.

2. Site Hydrogeology

In the overburden deposits at the Site, groundwater is generally present at depths ranging from 10 to 20 feet below ground surface. Groundwater flow in the overburden is generally eastward, toward Mauses Creek.

In the bedrock aquifer, groundwater occurs primarily in secondary porosity structures such as fractures and bedding planes. Groundwater flow in the shallow, intermediate and deep bedrock is generally eastward, toward Mauses Creek. Data indicate that the different geologic formations that compose the bedrock behave as one hydrastratigraphic unit.

Groundwater flow at the Site is naturally constrained to a narrow flow path discharging into Mauses Creek rather than dispersing over a large area off-site. Along the southern boundary of the Site, groundwater flow has a northern component, and then flows northeast and east toward Mauses Creek. Groundwater across the north Site boundary flows to the east, toward the discharge point at Mauses Creek. Vertical gradients are generally downward in the overburden and upward in the deep bedrock, creating a natural hydraulic barrier at depth.

B. Summary of the Previous Investigations and Findings

A number of environmental activities have been performed at the Site by EPA and Nassua in connection with OU-2 and OU-5, including:

- OU-2 Remedial Investigation/Feasibility Study (EPA);
- OU-2 Pre-Design Investigations (performed by Weston for EPA under a contract with US Army Corps of Engineers (ACOE));
- OU-2 Remedial Design activities (EPA/ACOE);
- OU-5 Fluff Leachability testing (Nassau); and
- OU-5 Supplemental Site Characterization (Nassau);
- OU-5 Re-Evaluation of Risk Assessment (Nassau); and
- OU-5 Focused Feasibility Study including two supplements (Nassau); and
- OU-5 Treatability Study (Nassau).

1. Remedial Investigation

EBASCO (and its subcontractor NUS) conducted the RI for OU-2 at the Site on behalf of EPA. RI field sampling activities began in May 1988. In addition to the field sampling and analyses, a risk assessment was also conducted by NUS as part of the RI. The RI results were presented in the Final Remedial Investigation Report dated July 1989; this was subsequently amended as the Revised Final RI Report dated April 1990.

The results of the RI are summarized below:

- During the course of the RI, a number of areas were identified and sampled to determine whether they were sources of chemical constituents detected in the environment and/or presented a potential risk to human health. These areas included several piles of Fluff, eighteen (18) drums and barrels at various locations throughout the Site, three storage tanks, a lagoon, and a pile of carbon waste. These areas are shown in Figure 2.

- The primary chemicals of interest (COIs) detected in water at the Site were volatile organic compounds (VOCs) (primarily PCE), while bis(2-ethylhexyl) phthalate (BEHP), polychlorinated biphenyls (PCBs), copper, lead and di-n-octyl phthalate were the primary COIs in the Fluff.

- The Fluff contains high levels of BEHP, di-n-octyl phthalate, copper, antimony and lead; moderate levels of PCBs; and low levels of VOCs. The carbon waste contained numerous VOCs at high levels. In light of these findings, the Fluff was determined to be a source of the BEHP, di-n-octyl phthalate, copper, antimony and lead detected in soils, and the carbon waste was interpreted to be a source of the VOCs in groundwater at the Site.

  Materials in drums present at the Site were similar in composition to the carbon waste, but the volume of drummed material was small in comparison to the total volume of carbon waste. Carbon waste was addressed as a separate operable unit (OU-1) and was been removed from the Site in a remedial action performed by EPA.

- The surface soil samples collected near the Fluff and carbon waste piles generally contained higher concentrations of contaminants than soil samples collected elsewhere at the Site. Surface soils throughout the Site contained BEHP, PCE, lead, antimony and copper. The presence of these constituents is considered to be indicative of on-site erosion of the Fluff/carbon waste, or of prior bulk movement of the wastes. Soils beneath the Fluff/carbon waste piles were not sampled.

- Subsurface soil samples collected in the northern portion of the Site (in the Fluff/carbon waste/lagoon area) contained the same COIs. In some borings, Fluff was reported to constitute the upper few feet of the sampled column. In general, evidence of Fluff presence in the samples collected below two feet decreased significantly. One boring, located near the northwestern comer of the building, apparently penetrated a former lagoon. Elevated concentrations of PCE were reported throughout the soil column in that area.

- Soil contamination from VOCs and inorganic constituents is randomly scattered throughout the southern portion of the Site. In some areas of the Site, soils containing elevated concentrations of VOCs were observed only in the lower intervals of the soil borings, at the water table. In these cases, the presence of VOCs was attributed to groundwater transport from a source area, rather than indicating downward migration of VOCs from the ground surface in the immediate vicinity of the sampling location.

- The on-site monitoring wells downgradient of the identified source areas contained elevated concentrations of VOCs. The well cluster closest to the carbon waste pile displayed the highest VOC concentrations. Well monitoring of both the overburden and the bedrock units displayed VOC concentrations in this area.

2. OU-2 Feasibility Study

The Feasibility Study for OU-2 was completed by NUS on behalf of EPA in November, 1989.

The alternatives evaluated by the EPA, as presented in the Feasibility Study, include:

- No action;

- On-site disposal of Fluff waste in a RCRA hazardous waste landfill, on-site physical/chemical treatment of soils with on-site landfill disposal, cap closure over RCRA units;

- Off-site disposal of Fluff waste in a RCRA hazardous waste landfill, on-site physical/chemical treatment of soils with off-site landfill disposal, cap closure over RCRA units;

- On-site incineration, cap closure over RCRA units;

- Off-site incineration, cap closure over RCRA units; and,

- Off-site incineration of Fluff waste, on-site physical/chemical treatment of soils with off-site landfill disposal, cap closure over RCRA units.

Based on the results of the RI/FS, EPA selected the following remedy for the Site as documented in the ROD issued June 29, 1990:

- on-site incineration of Fluff and stabilization of ash and disposal in an off-site RCRA landfill;

- on-site incineration of impacted soils for organics removal, stabilization of metals where necessary and, disposal in an off-site RCRA landfill;

- on-site treatment of lagoon water for organics and metals and discharge in accordance with Federal NPDES and the Commonwealth of Pennsylvania requirements;

- on-site incineration of the contents of tanks and drums and, stabilization of the ash and disposal in an off-site RCRA landfill and/

- covering of the soils under the Fluff once the Fluff has been removed in accordance with RCRA Subtitle C requirements.

3. OU-2 Pre-Design Investigations

Several predesign investigation efforts have been conducted for OU-2 at the Site. These activities and the results are summarized in the following sections.

a. Weston Pre-Design Investigation

Weston was contracted by ACOE to conduct predesign activities on behalf of EPA. Predesign activities included field investigations such as treatability study sampling, surveying, and geochemical and geotechnical subsurface soil sampling. In addition, two treatability tests were completed, including a muffle furnace test and a rotary kiln simulator pilot-scale test. Weston completed the following field activities in October, 1991: installation of 19 geochemical soil borings and the collection of 50 soil samples; installation of 13 geotechnical soil borings and the collection of 14 treatability study samples; and surveying of surface and subsurface features.

The Weston predesign field investigation was used to provide data on the characteristics of Fluff and Site soils for muffle furnace and pilot-scale rotary kiln studies. Through the predesign investigations, Weston identified similar constituents in the Fluff, and surface and subsurface soils at the Site. However, the Fluff contained PCE and BEHP concentrations which were an order of magnitude less than the respective average concentrations of these constituents identified in the Fluff during the RI. In addition, concentrations of di-n-octyl phthalate and copper were approximately three times less than the average concentrations of these constituents identified during the RI.

The results of the pilot-scale rotary kiln treatability study detected dioxins and furans in bottom ash, flue ash, and flue gas samples. Weston indicated that increased operating temperatures in the kiln and secondary combustion chamber might be necessary to prevent the formulation of dioxins/furans in the bottom and flue ash. In addition, the rotary kiln simulator testing indicated that the baghouse filter capture efficiencies for particulates and inorganic constituents were lower than expected due to the high fraction of small particles in the waste streams.

b. EPA Pilot-Scale Incineration Testing

EPA and ACOE requested that a pilot-scale test program be conducted at the EPA's Incineration Research Facility in Jefferson, Arkansas to support evaluation to the suitability of incineration at the Site. The objective of the additional pilot-scale testing was to conduct testing on a larger scale, which would be more representative of the size of incinerator proposed to be used at the Site, in order to provide flue gas emission and ash residue characteristic data. The data from this study confirmed the formation of dioxin.

The major conclusions of the pilot-scale incineration testing include the following:

- kiln-ash discharge from the incineration of both Fluff and soils is dioxin-contaminated and requires management as a dioxin-contaminated material;

- flue gas particulate collected as baghouse ash is a cadmium and lead-contaminated toxicity characteristic hazardous waste and requires management as a hazardous waste; and

- Dioxins were generated during the incineration of Fluff and may pose a human health risk.

C. Synthetic Precipitation Leaching Procedure (SPLP) Testing for Fluff

McLaren/Hart on behalf of Nassau conducted SPLP testing on the Fluff for Semi-VOCs (SVOCs), (particularly BEHP). This was done because during the RI concentrations of BEHP in the Fluff were measured in the percent range. Given the extremely high concentrations of BEHP measured in the Fluff and the relatively high levels of BEHP in plastic when used as plasticizers, it was hypothesized that BEHP detected in the Site soil is simply a constituent of the original plastic portion of the cable product contained in the Fluff rather than leaching of BEHP. The leaching test data are presented in the Fluff Leachability Testing Summary Report dated August 1994 submitted to EPA and PADEP.

The findings of the leaching test indicate that the amount of phthalate compounds released to the environment from the plastic portion of the Fluff under Site conditions is likely to be extremely low. The Fluff primarily consists of plastic, and the plastic contains high concentrations of BEHP, and other phthalates. However, under normal site degradation and weathering conditions, as simulated in the leaching test, the phthalate compounds do not readily leach from the Fluff. This testing indicated that the leaching of SVOCs from the Fluff is apparently not occurring under normal Site weathering conditions. The groundwater monitoring results confirmed this hypothesis. The phthalate were not found in appreciable amount in the groundwater samples (see table 2 of OU-3 ROD). In conclusion although the phthalates are present in percentage range in the Fluff, they do not leach to the groundwater from the Fluff.

4. OU-5 Supplemental Site Characterization

McLaren/Hart conducted a field investigation of the Site on behalf of Nassau to obtain additional data for the re-evaluation of the remedial alternatives considered in OU-2. The field work was completed in July 1994. The purpose of the supplemental sampling and characterization was to obtain additional data to design treatability studies and reevaluate alternatives. The supplemental characterization also provided more recent data on COI and an updated estimate of the Fluff volume. Details regarding the Supplemental Site Characterization work are provided in the Supplemental Site Characterization Report dated October 1994 submitted to EPA and PADEP.

The configuration of one of the Fluff piles had changed between topographic surveys conducted in 1986 and 1992. This Fluff pile appeared to have been reworked into two mounds, with some material located between the mounds in a relatively level area. However, it did not appear that there was any mixing of Fluff and the underlying soils prior to the reworking of the pile. McLaren/Hart estimated the Fluff volume on-site to be approximately 30,000 cubic yards, which was comparable with the 32,000 cubic yard estimate presented in the OU-2 RI report.

The Fluff contained similar VOCs to those identified during the OU-2 RI. The maximum PCE concentration detected during the Supplemental Site Characterization investigation (146.5 mg/kg) was almost an order of magnitude higher than the maximum PCE concentration detected in the Fluff during the RI (18 mg/kg). The average PCE concentration detected was 17.2 mg/kg. The concentrations of VOCs in the Fluff varied a great deal both vertically and laterally in each of the Fluff piles. There was no obvious pattern to the distribution of VOCs; either by depth or location. The source of VOCs in Fluff is unknown.

The Fluff was also analyzed for PCBs. Four PCB Aroclors were identified in the Fluff samples: Aroclors 1242,1254,1260, and 1268. The concentration of total PCBs in the Fluff samples ranged from 1.2 to 162 mg/kg, with an average of approximately 49 mg/kg. The maximum PCB (total) concentration detected during the Supplemental Site Characterization exceeded the maximum concentration detected in the Fluff during the RI.

The soils beneath and adjacent to the Fluff piles were sampled and were found to contain primarily PCE and TCE. The presence of these VOCs was not laterally continuous across the

Fluff pile area.

Subsurface soils in areas of the Site with no visible Fluff were also sampled and analyzed for VOCs. The most frequently detected VOC in these locations was PCE, at concentrations ranging from 4 to 180,000 ug/kg, with an average of approximately 11,000 ug/kg.

5. OU-5 Focused Feasibility Study (FFS) and FFS Supplement

A Focused Feasibility Study was completed by McLaren/Hart on behalf of Nassau in May, 1995.

The alternatives evaluated, as presented in the Focused Feasibility Study, include:

1. No Action;
2. Surface Capping;
3. Ex-Situ Stabilization/Vapor Phase Carbon Treatment, Low Temperature Thermal Desorption (LTTD) of NAPLs and a Soil cover;
4. Soil Vapor Extraction/Bioventing, Surface Capping;
5. Soil Vapor Extraction/Bioventing, Ex-Situ Stabilization, Surface Capping;
6. LTTD, Surface Capping;
7. On-Site Incineration, Stabilization and Off-Site Disposal of Ash, Surface Capping;
8. Off-Site Incineration, Surface Capping.

Alternatives given in bullets 2 to 8 above have common elements as follows:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;
- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;
- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek, adjacent to the Site and/or to an industrial process;
- Long-term operation and maintenance (O&M) activities, including Site security through the maintenance of existing Site fence; and
- Implementation/enforcement of institutional controls at the Site (such as deed restrictions).

The results of the FFS evaluation are summarized in Section VII of the ROD.

In June 1996, as part of the Pre-Design Investigation for OU-3, a GeoProbe Investigation was conducted at the Site. The objective of the GeoProbe Investigation was to collect groundwater quality data in the overburden to evaluate the nature and extent of impacts from potential source areas.

Field observations for soil indicated the presence of residual and pooled non-aqueous phase liquid (NAPL). Although these areas of pooled NAPL were primarily identified below the water table (and therefore, are subject to OU-3), one area immediately south of the main building NAPL in overburden soils. This area (approximately 225 cubic yards (CY)) was identified as appropriate for inclusion in the OU-5 remedial action due to finding of NAPL. The presence of NAPLs in soil poses a principle threat to the groundwater.

The results of the FFS Supplement evaluation are summarized in Section VII of the ROD.

6. OU-5 Treatability Study Report

A Treatability Study was conducted to evaluate the potential feasibility of ex-situ stabilization of Fluff and impacted soils.

The primary objectives of the Treatability Study were as follows:

- Identify the appropriate ratio of solidification/stabilization mixing reagents that meet the analytical and physical treatability test objectives;

- Identify key process parameters such as mix/cure time, critical analytes that may exhibit limitations during solidification/stabilization handling and procedures;

- Provide data necessary to scope, cost and implement full-scale treatment using the solidification/stabilization technology; and,

- Provide additional leaching data on untreated and treated Site materials using the Synthetic Precipitation Leaching Procedure (SPLP) and using Toxic Chemical Leaching Procedure (TCLP).

The results of the treatability study are reported in the Treatability Study Report submitted to the EPA in May 1996. The results of this Treatability Study indicate that the use of a 10% Type I Portland Cement mix design on a combined soil and Fluff matrix will provide a physically strong and relatively impermeable matrix which would be a viable remedial action for the Site.

V. SCOPE AND ROLE OF RESPONSE ACTIONS

The remedial action at this Site has been divided into five operable units; OU-1 (carbon waste pile remediation), OU-2 (on-site incineration of wastes and impacted soils), OU-3 (groundwater remediation) OU-4 (installation of a public water supply) and OU-5 (re-evaluation of OU-2 remedy). The principal threat to human health and the environment at the Site addressed in OU-5 is from the direct contact with PCE, BEHP, PCBs, and metals including lead, antimony and copper. The principle threat to groundwater is from presence of NAPLs in soils. The remedy which is the subject of this ROD is being implemented to protect human health and the environment by preventing direct contact with Fluff and impacted soils and reducing further migration of contaminants into the groundwater. In addition the remedy will address the principle threat to the groundwater. This remedy addresses the following areas: four wire-Fluff waste piles, impacted soils, lagoon water and sediments, soils with NAPLs, drums and storage tanks. The remedy is consistent with Section 300.430(a)(1) of the National Contingency Plan (NCP).

VI. SUMMARY OF SITE RISKS

This section of the ROD summarizes the results of the human health risk assessment which was performed during the RI/FS. The baseline risk assessment provides the basis for taking a response action and indicates the exposure pathway(s) that need to be addressed by the remedial action. It also details the potential risks related to the no-action scenario.

A. Baseline Risk Assessment

As part of the comprehensive assessment of the remedy for OU-2, a human health risk assessment was performed during the RI/FS. MacLaren and Hart on behalf of Nassau performed a re-evaluation of the risk assessment. The re-evaluation of the risk assessment incorporated certain site-specific exposure and environmental quality data, as well as current chemical-specific toxicity information, scientific approaches, and EPA guidance. The risk assessment included several tasks for the media of interest at the Site including: 1) identification and quantification of chemicals which could potentially impact human health; 2) comparison of these chemical concentrations to background levels and to risk-based screening concentrations to determine the COIs on-site, 3) identification and quantification of the potentially exposed populations; 4) identification of complete exposure pathways; 5) derivation of potential contaminant intakes for each exposure pathway; and 6) comparison of predicted chemical exposures to available toxicological information, in order to derive estimates of noncarcinogenic hazards and carcinogenic risks potentially posed to each population group.

EPA requires a remedial action at a site when the carcinogenic risk level exceeds 1 x 10 -4, or in other words, when there is a probability of one additional case of cancer in a population of 10,000 exposed to Site contaminations. The potential for health effects resulting from exposure to noncarcinogenic compounds is evaluated by comparing an estimated daily dose presented by Site conditions to an acceptable level. If this ratio exceeds 1.0, there is a potential for impact based on hazards from that particular compound. These ratios can be added for exposure to multiple contaminants. The sum, known as the Hazard Index (HI), is not a mathematical prediction for the severity of toxic effects, but rather a numerical indicator of the transition from acceptable to unacceptable levels. Higher HI generally indicates greater adverse health effect.

The conclusions of the Risk Assessment related to human health and the environment are presented below.

Current Land Use - Currently the Site is vacant. Individuals who could currently be exposed to contaminants at the Site include: trespassers and residential communities downwind of the Site. The baseline risk assessment found that Site contaminants currently do not pose an unacceptable health risk to any of these individuals.

Future Land Use - A Re-Evaluation of Risk (April 1996) was performed for this Site. In this re-evaluation new toxicity information was incorporated into the risk analysis. However, the Site risk was determined for a potential resident, while in fact, the Site has been classified and zoned for industrial use only. Therefore, Site risks and cleanup levels were recalculated by EPA using an industrial worker scenario. The contaminant concentration data used in these analyses can be found in the RI (July 1989). The analytical data found in the Revised Final Remedial Investigation Report (1990) may differ from that found in the Supplemental Site Characterization report. Generally, the contaminants levels found during the Supplemental Site Characterization activities are higher than the levels found during the RI. Table 1 summarizes the potential carcinogenic and noncarcinogenic risk to future industrial use of the Site and exposed to the Fluff pile and soil.

Table 1
Summary of Site Risks to Future Industrial Workers

Media	Carcinogenic Risk	Noncarcinogenic Risk (HI)
Fluff Waste	7.8 x 10 -3	87.0
Soil	6.3 x 10 -5	1.2
Total Risk	7.8 x 10 -3	88.2

B. Remedial Cleanup Action Levels

It should be noted that seventeen PCBs samples of Fluff collected during the RI yielded a PCB concentration range of 1 to 18 mg/kg with an average of 9 mg/kg. Six PCBs samples of Fluff collected during the Supplemental Site Characterization revealed a PCB concentration range of 1.2 to 162 mg/kg with an average of 49 mg/kg. The combined weighted average based on the number of samples collected during the RI and Supplemental Site Characterization is 19 mg/kg which is less than Toxic Substance Control Act (TSCA) regulated level of 50 mg/kg and, therefore, TSCA requirements do not apply. Also, the EPA Office of Solid Waste and Emergency Response (OSWER) directive 9355.4-01 states that, for an industrial setting, material containing PCBs two to three order of magnitude above site specific action levels constitutes a "principle threats" and must be addressed as such. For this Site, this translates into PCBs levels above 1000 mg/kg. The concentration of PCBs found at this Site are an order of magnitude less than 1000 mg/kg, and, therefore, there is no "principle threat" at the Site due to PCBs. PCBs were used as plasticizer in the wire insulation material and they are imbedded in the plastic matrix of the Fluff. The groundwater does not have detectable levels of PCBs indicating that PCBs in the Fluff are not leaching to the groundwater. Also, the leachability test on Fluff did not show any leachable PCBs. The following table gives remedial action levels based on the future industrial land use scenario considering three pathways i.e., dermal, inhalation and ingestion.

Table 2
Remedial Actions Levels (RALs)

Contaminants	Soil, Fluff and Lagoon Sediments			
	RALs based on Carcinogenic Risk		RALs based on Noncarcinogenic	RALs based on EPA Directives
	10 -4	10 -6	(HI)	
BEHP	34,800 mg/kg	348 mg/kg	-	-
PCBs 1	-	-	-	10 mg/kg
Lead 2	-	-	-	1000 mg/kg
Antimony	-	-	65 mg/kg	-
Copper	-	-	27,684 mg/kg	-
di-n-octyl phthalate	-	-	1828 mg/kg	-
PCE	375 mg/kg	3.75 mg/kg	-	-

1 Recommended cleanup levels for PCBs are 10 mg/kg for an industrial use (OSWER Directive 83554-01).
2 Recommended screening levels is level of 1000 mg/kg for an industrial use (OSWER Directive # 9355.4-12)

Based on information collected at the Site and the recommended cleanup levels, estimates of the volume of materials which need to be addressed under OU-5 are as follows:

- Lagoon water - 301,000 gallons
- Tanks and drums - 40 cubic yards
- Fluff waste - 32,000 cubic yards
- Soils and sediments - 6,895 cubic yards
- Soils containing NAPL - 225 cubic yards.

VII. DESCRIPTION OF ALTERNATIVES

The Superfund process requires that the alternatives selected to address a site meet several criteria. The alternative must be protective of human health and the environment and comply with ARARs. Permanent solutions to environmental problems should be developed whenever possible. The solutions should also reduce the volume, toxicity and mobility of the contaminants.

The FFS identified and evaluated a variety of technologies and alternatives to determine if they were capable of being protective of human health and the environment and complying with ARARs.

All costs and other considerations specified below are scoping estimates based on best available information. Present-worth is defined as the total cost of implementing the remedy including capital costs, and operation and maintenance costs of the remedial action for a period of 30 years.

Subsection A, below, discusses a Baseline No Action Alternative. Then, seven other alternatives are discussed (Subsection B). As certain elements are common to all seven alternatives, these common alternatives are discussed first. The alternative originally contemplated in the June 29, 1990 ROD for OU-2 is also evaluated.

A. Baseline Alternative No Action

Estimated Capital Cost: $0
Estimated Annual 0&M Cost: $55,000
Estimated Present-Worth Cost: $845,460

The No Action alternative is considered in the detailed analysis to provide a baseline against which the other remedial alternatives can be compared. This alternative involves taking no further action at the Site to remove, remediate, or contain the Fluff, impacted soils or lagoon

water associated with OU-5.

Implementation of this alternative would not achieve remedial action objectives and would not reduce the migration of COIs into the groundwater. There are no major implementability considerations associated with this alternative. Since this alternative would result in wastes remaining on-site, five year site reviews would be required to monitor the effectiveness of this alternative.

The costs associated with this alternative are Site maintenance and repair costs.

B. Elements Common to the Remaining Alternatives

Estimated Capital Cost:	$166,802
Estimated Annual O&M Cost:	$55,000
Estimated Present-Worth Cost:	$1,012,262

The following common elements are included in each of the subsequent remedial alternatives that were evaluated:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;
- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;
- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek, adjacent to the Site and/or to an industrial process;
- Long-term operation and maintenance (O&M) activities, including Site security through the maintenance of existing Site fence; and
- Implementation/enforcement of institutional controls at the Site (such as deed restrictions).

B.1 Alternative 1 - Surface Capping

Estimated Capital Cost:	$1,596,354
Estimated Annual O&M Cost:	$12,000
Estimated Present-Worth Cost*	$2,793,080

* Cost includes common elements

This alternative consists of the consolidation and regrading of lagoon sediment, Fluff and surface soil, and the installation of a surface cap meeting RCRA Subtitle C requirements over the regraded material. The common elements previously described would also be implemented.

For this alternative, the lagoon sediment would be excavated and consolidated with the Fluff piles. The Fluff piles would be regraded and compacted to form a stable surface with suitable slopes, and a RCRA Subtitle C cap would be installed over the Fluff/sediment/soils. The cap would cover an area of approximately 8 acres.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Implementation of this alternative would result in effectively reducing the infiltration of precipitation, thus mitigating the potential for the migration of COIs to the groundwater. In addition, placement of the cap would eliminate potential exposure pathways including dermal contact, runoff, and wind dispersion.

B.2 Alternative 2 - Ex-Situ Stabilization/Vapor Phase Carbon Treatment/Low Temperature Thermal Desorption

Estimated Capital Cost:	$6,924,062
Estimated Annual O&M Cost (Years 1-2):	$346,203
Estimated O&M Cost (Years 3-30):	$ 12,000
Estimated Present-Worth Cost*:	$8,752,530

* Cost includes common elements

This alternative involves the treatment/containment of COIs in Fluff, lagoon sediment, and surface soils through ex-situ stabilization, followed by Site restoration and placement of a two-foot soil cover. The RCRA Subtitle C cap need not to be placed over the backfilled area as the stabilized waste will provide equivalent performance. Fluff was reported to constitute the upper few feet of the soil column underneath the Fluff, this remedy calls for excavating down to two feet of the soil underneath the Fluff. The common elements would also be implemented

Site preparation would involve the leveling of the Fluff area and spreading the Fluff to a uniform depth. Fluff, lagoon sediments, and two feet of soils underneath the Fluff would be excavated and stockpiled for subsequent stabilization.

The excavation activities would occur inside a temporary, moveable structure intended to prevent the introduction of precipitation into the excavation and to control dust and VOC emissions. All material would be stockpiled and treated in a staged treatment area. The structures would be operated under slight negative pressure, and the exhaust air flow would be routed through a vapor-phase carbon adsorption unit.

Excavation would be performed at a rate necessary to provide a stockpile of materials sufficient to support three to five days of treatment (approximately 750 to 1,250 cubic yards). Based on the treatability study results, stabilization would be performed by mixing the materials with 10% Type I Portland Cement. Following mixing, the resulting slurry would be placed into the excavation and allowed to cure. Excavation activities would continue on the remaining trenches within the excavation structure. Once all materials are treated within the excavation structure, the structure would be moved to the next excavation area.

The excavated areas would be backfilled with the stabilized material in a manner intended to promote drainage following curing of the stabilized materials. ITic surface soil inside the current fenced area will be covered, with a two foot layer of soil and vegetated to prevent ponding of liquids and to minimize erosion. All the surface soils having contaminants levels above the RALs in the excavated area will be covered to eliminate the direct contact threat.

The resulting fixed/stabilized solid matrix will minimize the potential migration of COIs to groundwater; the stabilization process and subsequent soil cover also would prevent direct contact. The potential for uncontrolled volatile and dust emissions would be mitigated through the use of the temporary structures covering the excavation and stockpile/process areas.

The presence of NAPLs in overburden soils would be treated through the use of low temperature thermal desorption (LTTD). The area identified contains approximately 225CY of soil containing NAPL. The extent of this area and the total volume of soil treated with LTTD would be subject to change if new discoveries of NAPLs in soil are made during the implementation of the remedial action.

LTTD can effectively remove NAPL from the soil by heating the soil under vacuum conditions to induce volatization. The optimal temperature and pressure will be determined during a pre-design treatability study. The soils treated by LTTD will be backfilled into the excavations (with prior stabilization, if necessary).

B.3 Alternative 3 - Soil Vapor Extraction/Bioventing, Surface Capping

Estimated Capital Cost:	$8,697,147
Estimated Annual O&M Cost (Years 1-2):	$ 175,000
Estimated O&M Cost (Years 3-30):	$ 12,000
Estimated Present-Worth Cost*	$10,210,034

*Cost includes common elements

This alternative consists of the installation of an SVE/bioventing system in the targeted soil and Fluff areas for remediation of volatile and some semi-volatile COIs through vapor extraction and biological treatment. Lagoon sediments would be excavated and consolidated with soils and Fluff in the area of the SVE/bioventing system. The common elements would also be implemented.

Soil and Fluff would be graded to a level surface. Extraction/injection wells and the associated piping for the vapor extraction and air/nutrient addition systems would be installed following grading activities. The area to be addressed by the SVE/bioventing system would be approximately 4.5 acres. Assuming a 10 foot radius of influence for soils, the number of extraction wells is estimated to be 90. Therefore, a total of 90 extraction wells are assumed for this remedial alternative. The final configuration of the SVE/bioventing system would be determined during the remedial design phase. Injection of oxygen into the soils would be accomplished by closing specific extraction wells to allow for a passive injection system. A 10-mil High Density Polyethylene (HDPE) cover would be installed and secured over the area to be treated to prevent "short-circuiting" of the air flow. Portable blowers would be installed, and off-gas would be passed through vapor-phase activated carbon canisters.

Following completion of the SVE/bioventing organic constituent treatment cycle (assumed to be two years), the synthetic cover and process unit components (e.g., wells, piping, etc.) would be removed, and the treated materials would be regraded and compacted to form a stable surface with suitable slopes. A RCRA Subtitle C cap would then be installed over the area to prevent surface water infiltration. The cap would cover approximately 8 acres.

Through the combination of the treatment of organic constituents and the use of surface capping to address residual COIs not treated through the SVE/bioventing process (i.e. metals), this alternative would be effective by eliminating the direct contact pathway, as well as mitigating the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term. Excavation/grading activities would increase the short-term potential for exposure, as well as the potential for exposure, as well as the potential for migration of COIs from these areas. These short-term exposures from COIs could be mitigated during excavation/grading activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls.

B.4 Alternative 4 - Soil Vapor Extraction/Bioventing, Ex-Situ Stabilization, Surface Capping

Estimated Capital Cost:	$12,030,443
Estimated Annual O&M Cost (Years 1-2):	$ 175,000
Estimated O&M Cost (Years 3-30):	$ 12,000
Estimated Present-Worth Cost*:	$13,543,330

*Cost includes common elements

This alternative represents a combination of Alternatives 2 and 3. The ex-situ stabilization technology of Alternative 2 would be employed following the completion of the SVE/bioventing organic constituent treatment cycle of Alternative 3, in order to address any residual COIs. The RCRA Subtitle C cap need not to be placed over the backfilled area as the stabilized waste will provide equivalent performance. Fluff was reported to constitute the upper few feet of soil column underneath the Fluff. This remedy calls for excavating two feet of soil underneath the Fluff. The common elements would also be implemented.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the treatment of organic constituents and the use of stabilization and surface capping to address residual constituents not treated through the SVE/bioventing process (i.e., metals) this alternative would be effective by eliminating the direct contact pathway, as well as reducing the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term.

Excavation/grading activities for both the SVE/bioventing and the ex-situ stabilization element of the alternative would increase the short-term potential for exposure, as well as the potential

for migration of COIs from these areas. The potential short-term exposure of COIs can be mitigated during excavation/grading activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls. The temporary structures employed during the stabilization process would also serve to reduce the short-term potential for exposure to dust and VOCs.

B.5 Alternative 5 - Low Temperature Thermal Desorption, Surface Capping

Estimated Capital Cost:	$10,499,000
Estimated Annual O&M Cost:	$ 12,000
Estimated Present-Worth Cost*:	$11,712,262

*Cost includes common elements

The LTTD alternative consists of the excavation of Fluff, lagoon sediment, and surface soil treatment of these materials using LTTD, backfilling of the treated materials into the excavated area, regrading and compacting the backfilled area, and constructing a RCRA Subtitle C cap over the backfilled area to prevent surface water infiltration. The common elements would also be implemented.

Targeted materials would be excavated and stockpiled in a temporary structure that would prevent precipitation or inclement weather conditions from increasing the material moisture content or otherwise affecting remedial activities. Excavation of targeted material would be performed at a rate necessary to provide a stockpile of materials sufficient to support tree to five days of treatment (approximately 750 to 1250 cubic yards). Any precipitation collected in the excavation treatment would be routed to the lagoon water treatment system and ultimately discharged to surface water (discussed as a common element).

Materials to be treated would be moved from the temporary structure and loaded into the LTTD treatment unit. The unit would be a continuous system in which contaminants would be removed from the soil through volatilization. Volatilization would be accomplished through agitation of the soil in the presence of heat and vacuum pressure.

Following the LTTD treatment cycle, the materials would be removed from the treatment unit via a conveyor belt system and placed in a temporary stockpile for cooling and confirmatory sampling.

Upon verification that treatment objectives have been achieved, the treated materials would be used as backfill for the excavations. Following the completion of the treatment activities, the excavated/backfilled area would be graded and compacted to form a stable surface with suitable slopes, and a RCRA Subtitle C cap would be installed over the backfilled area to prevent infiltration of surface water and to prevent subsequent leaching of metal and non volatile organic contamination . The cap would cover an area of approximately 8 acres. The surface of the cap would be vegetated and maintained for a period of 30 years.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the treatment of organic constituents and the use of surface capping to address residual constituents not treated through the LTTD process (i.e., metals), this alternative would be effective by eliminating the direct contact pathway, as well as mitigating the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term.

Excavation/grading activities for both the LTTD element of the alternative as well as the surface capping element of the alternative would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. These potential short-term exposures can be mitigated during excavation/grading activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls. The temporary structures employed during the LTTD stockpiling activities would also serve to reduce the short-term potential for exposure from dust and VOCs.

B.6. Alternative 6 - On-site Incineration, Stabilization and Off-site Disposal of Ash,

Surface Capping

This alternative is the remedy selected in the June 29, 1990 Record of Decision (ROD) for OU-2.

Estimated Capital Cost:	$35,556,000
Estimated Annual O&M Cost (Years 1-2):	$175,000
Estimated Present-Worth Cost*:	$36,889,405

*Cost includes common elements

Based on the Final Feasibility Study (November, 1989), capital costs for on-site incineration is $34,329,000. However, based on the new volume calculation, the estimated capital cost of Alternative 6 is $35,556,000.

This remedy which is defined in the June 29, 1990 ROD for OU-2, consists of the following elements:

- On-site incineration of the Fluff, stabilization of ash and disposal of stabilized ash in an off-site RCRA landfill;
- On-site incineration of the contaminated soils for organics removal, stabilization of the metals where necessary, and disposal in an off-site RCRA landfill;
- On-site treatment of the lagoon water for organics treatment and metals removal and discharge in accordance with Federal NPDES and Pennsylvania requirements (discussed as a common element);
- Covering of the soils under the Fluff piles, after the Fluff has been removed, in accordance with RCRA Subtitle C closure requirements.

The common elements would also be implemented.

A transportable rotary kiln incineration system would be used to implement this alternative. Fluff would be graded to form a level surface, excavated, and stockpiled in a temporary structure. Excavation would be performed at a rate necessary to provide a stockpile of materials sufficient to support three to five days of treatment. Stormwater collected in the excavation would be routed to the lagoon water treatment system and discharged to Mauses Creek (common element).

Following incineration, combined bottom and fly ash would be stabilized on-site as needed using a cement-based or other suitable stabilizing agent and placed in a temporary stockpile for hardening and confirmatory sampling. Upon verification that the treatment goals/disposal requirements have been achieved, the stabilized ash would be loaded onto trucks for transport to a permitted off-site hazardous waste disposal facility.

Quench water and other fluids generated during the incineration/stabilization processes would be collected and treated on-site using a physical/chemical process, and discharges to Mauses Creek.

The excavated area would be backfilled and graded to promoted drainage, and covered with a RCRA Subtitle C cap to prevent infiltration of surface water.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the treatment of organic constituents, the use of stabilization and off-site disposal to address residual constituents not treated through the incineration process, and the use of surface capping to address any residual constituent concentrations remaining in the excavated area followed by backfilling, this alternative would be effective in meeting the remedial action objectives by eliminating the direct contact pathway, as well as reducing the potential for migration of COIs from soils to groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long-term.

Excavation, material handling, and off-site transportation activities would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. These

potential short-term exposures can be mitigated during these activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls. The temporary structure employed during the stockpiling activities would also serve to reduce the short-term potential for exposure. Emissions control on the incineration unit would serve to reduce the short-term potential for exposure to constituents released during the incineration process, but there may be an increased risk, based on pilot-scale tests, to on- and off-site receptors to dioxin and furan emissions.

B.7 Alternative 7 - Off-site Incineration, Surface Capping

Estimated Capital Cost:	$49,928,000
Estimated Annual O&M Cost:	$12,000
Estimated Present-Worth Cost*:	$51,124,702

*Cost includes common elements

This alternative involves the incineration of the Fluff, lagoon sediment, surface and subsurface soil in an off-site rotary kiln incinerator. This alternative includes the excavation and off-site transport of Fluff/sediment/soils to a permitted incineration facility for treatment and subsequent disposal of the resultant ash, the backfilling of the excavated area, and the construction of a RCRA Subtitle C cap over the backfilled area to prevent infiltration of surface water. The cap would cover approximately 8 acres. The common elements would also be implemented.

The deed restrictions included in the common elements would serve to prohibit future use of the property which might compromise the integrity of the cap. Site security measures (also a common element) would be maintained to prevent inadvertent damage to the cap by trespassers.

Through the combination of the off-site transport and treatment/disposal actions, and the use of surface capping to address any residual constituent concentrations remaining in the excavated area following backfilling, this alternative would be effective by eliminating the direct contact pathway, as well as reducing the potential for migration of C0Is from soils to the groundwater. With proper routine maintenance, the cap would remain reliable and effective in the long term.

Excavation, material handling, and off-site transportation activities would increase the short-term potential for exposure, as well as the potential for migration of COIs from these areas. These can be mitigated during construction activities through the implementation of conventional health and safety techniques, as well as dust and erosion/runoff controls.

VIII. COMPARATIVE EVALUATION OF ALTERNATIVES

Each of the remedial alternatives summarized in this plan has been evaluated with respect to the nine (9) evaluation criteria set forth in the NCP, 40 C.F.R. Section 300.430(e)(9). These nine criteria can be categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. A description of the evaluation criteria is presented below:

Threshold Criteria:

1. Overall Protection of Human Health and the Environment addresses whether a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether a remedy will meet all of the applicable, or relevant and appropriate requirements of environmental statutes.

Primary Balancing Criteria:

3. Long-term Effectiveness refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals are achieved.

4. Reduction of Toxicity, Mobility, or Volume through Treatment addresses the degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume of contaminants.

5. Short-term Effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and environment that may be posed during the construction and implementation period until cleanup goals are achieved.

6. Implementability addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. Cost includes estimated capital, operation and maintenance costs, and present worth costs.

Modifying Criteria:

8. State Acceptance indicates whether, based on its review of backup documents and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

9. Community Acceptance includes assessments of issues and concerns the public may have regarding each alternative based on a review of public comments received on the Administrative Record and the Proposed Plan.

The comparison of the remedial alternatives based on these criteria is presented below.

1. Overall Protection of Human Health and the Environment

The implementation of the No Action Alternative would not provide protection of human health and the environment. Exposure to contaminants in the Fluff waste and Site soils would pose a health threat to individuals who come in contact with these materials, particularly if exposure occurs regularly. Because this alternative does no meet this threshold criterion, it will not be further evaluated under the remaining criteria.

Alternatives 1 - 7 provide overall protection of human health and the environment by either removing contaminants in the Fluff, soil, and sediment and/or isolating them to prevent direct contact and the potential for further migration. Alternative 1 (Multilayer Cap) prevents direct contact with contaminants in the Fluff waste, soils, and sediments and reduces the potential for contaminant migration by consolidating the material and covering it with an impermeable cap.

Alternative 2 (Stabilization with Soil Cover) immobilizes contaminants by mixing the Fluff, soil, and sediment with cement-like material prior to covering with soil. Stabilization of the Fluff material and soil reduces both the potential for individuals to come in direct contact with the contaminants and the potential for contaminants to migrate to the groundwater. The soil cover provides additional protection against direct contact with the stabilized contaminants. The treatment of the NAPLs provides additional protection against migration of contaminants in the soil to groundwater. Protection from the release of VOCs into the environment during the stabilization process is achieved through the utilization of a temporary enclosed structure capable of capturing and treating VOC emissions. Such emissions would be treated through a vapor phase carbon adsorption unit.

Alternatives 3, 4, and 5 each use a combination of treatment and an impermeable cap to prevent direct contact with contaminants in the Fluff, soil and sediment and to reduce the potential for contaminant migration to groundwater. Alternatives 3 and 5 remove organic contaminants in the Fluff and soil through SVE/bioventing prior and LTTD, respectively, prior to capping.

Alternative 4 includes the components of Alternative 3 and adds stabilization to further immobilize the inorganic contaminants prior to capping.

Alternatives 6 and 7 also use a combination of treatment and an impermeable cap to prevent direct contact with contaminants and to reduce the potential for contaminant migration to groundwater. These alternatives destroy the organic contaminants through on- or off-site incineration. Residual contamination in the ash is stabilized (if necessary) and disposed off-site. Therefore, the amount of contamination remaining on-site and capped is reduced.

2. Compliance with ARARs

Any cleanup alternative considered by EPA must comply with all applicable or relevant and

appropriate federal and state environmental requirements. Applicable requirements are those substantive environmental standards, requirements, criteria, or limitations promulgated under federal or state law that are legally applicable to the remedial action to be implemented at the Site. Relevant and appropriate requirements, while not being directly applicable, address problems or situations sufficiently similar to those encountered at the Site that their use is well-suited to the particular site. All the alternatives comply with the following ARARs, as appropriate:

Chemical-Specific ARARs

The Pennsylvania Land Recycling Program Regulations at 25 Pa. Code 250.305 identify soil remedial standards which are applicable to the implementation of the remedy.

Action-Specific ARARs

Multilayer Cap: The following provisions of the Pennsylvania Residual Waste Management Regulations, 25 Pa. Code Chapter 288, Subchapter C, regarding the closure of landfills are relevant and appropriate to the covering or capping of the landfilled industrial waste materials in Alternatives 2, 3, and 4: (1) access to the Site shall be controlled as set forth in 25 Pa. Code º288.212 (a); (2) the cover shall be constructed in conformance with the requirements of 25 Pa. Code º288.234; (3) revegetation of the cover shall be established in accordance with the requirements of 25 Pa. Code º288.236, and shall meet the standard for successful revegetation as set forth in 25 Pa. Code º288.237; and (4) soil erosion and sediment control shall be conducted in accordance with the requirements of 25 Pa. Code º288.242. The following provisions of the Pennsylvania Hazardous Waste Regulations, 25 Pa. Code Chapter 264, regarding the maintenance of landfill caps are relevant and appropriate to the maintenance of the capped area of the Site in Alternatives 1, 3, 4, 5, 6 and 7: (1) closure performance standards shall be achieved as set forth in 25 Pa. Code º 264.111; (2) post closure care and use of the Site shall be carried out in accordance with the requirements of 25 Pa. Code º 264.117; (3) the final cover shall meet the requirements of 25 Pa. Code º 264.3 10(1); (4) vegetation of the cover shall meet the requirements of 25 Pa. Code º 264.310(4); and (5) the closure shall meet the performance objectives of 25 Pa. Code º 264.310(5).

Excavation: The provisions of Pennsylvania's Erosion and Sedimentation Control and Restoration Regulations set forth in 25 Pa. Code ºº 102.4-24 are applicable to earth-moving activities associated with the multilayer cap to be installed in Alternatives 2, 3 and 4. In addition, Pennsylvania regulations regarding the Prohibition of Certain Fugitive Emissions and Particulate Matter set forth at 25 Pa. Code ºº 123.1 and 123.2 are applicable to the dust suppression controls required to be used in conjunction with these earth-moving activities.

Discharge of Treated Lagoon Water: A common element under all the alternatives is treating the water in the lagoons, if necessary, in a physical/chemical treatment process and discharging the treated water to an unnamed tributary of Mauses Creek or to an industrial process. The following substanitive requirements of the National Pollutant Discharge Elimination System are applicable to these discharges: 40 C.F.R. ºº 122.2, 122.4, 122.5, 122.21, 122.26, 122.29, 122.41, 122.43-45, 122.47, 122.48, and 25 Pa. Code ºº 92.1, 92.3, 92.31, 92.41, 92.51, 92.55, 92.57, and 92.73. The following requirements of the Pennsylvania Drinking Water standards are relevant and appropriate to all discharges to an industrial process: 25 Pa. Code ºº 109.201-203. The following water quality standards are applicable to all discharges (regardless of where discharged): 40 C.F.R. º 131.32 and 25 Pa. Code ºº 93.1-9z. The following requirements for controlling the discharge of toxic substances are applicable to all discharges (regardless of where discharged): 25 Pa. Code ºº 16.1, 16.24, 16.31-51, 16.101-102.

Hazardous Waste Generation: The alternatives involving on-site treatment (Alternatives 2 through 6) may result in the generation of wastes that would be regulated under current hazardous waste regulations. Any hazardous waste generated shall be analyzed and characterized according to the requirements of 25 Pa. Code º 262.11 and identified pursuant to the requirements of 25 Pa. Code º 262.12. Authorization for shipment of hazardous waste shall be obtained pursuant to 25 Pa. Code º 262.13. All shipments of hazardous waste for treatment at a separate location on the Site shall be manifested according to the requirements of 25 Pa. Code ºº 262.20, 262.22, 262.23, and shall meet all of the packing, placarding and labeling requirements of 25 Pa. Code ºº 262.30, 262.33. If hazardous waste is accumulated on the Site, it shall be done so in accordance with all of the requirements of 25 Pa. Code º 262.34. Transportation of hazardous waste for treatment on the Site shall comply with all the

requirements of 25 Pa. Code Part 263. Hazardous wastes shall be stored in accordance with the requirements of 25 Pa. Code Part 264 subparts I and J.

3. Long-Term Effectiveness and Permanence

Alternative 1 (Multilayer Cap) will provide an effective remedy in the long term provided that the cap is properly maintained. Permanence of the remedy is also dependent on proper maintenance. Although 30 years of maintenance has been included for cost-estimating purposes, maintenance will be required for an indefinite period and components of the cap could eventually require replacement.

Alternative 2 (Stabilization with Soil Cover) provides a greater level of long-term effectiveness and permanence than Alternative 1 because it relies less on maintenance. Stabilization of the Fluff material and soil will immobilize the contaminants and reduce the potential for leaching into the groundwater. Additionally, the two-foot soil cover will prevent direct contact with the stabilized mass. The soil cover over the stabilized mass is expected to provide equivalent performance to a RCRA Subtitle C Cap. Maintenance of the soil cover and institutional controls to prevent its disturbance would be required to ensure permanence.

Alternative 3 (SVE/Bioventing and Cap) and Alternative 5 (LTTD and Cap) will both provide greater long-term effectiveness and permanence than the multilayer cap alone (Alternative 1), but may be less effective than Alternative 2 since neither SVE/Bioventing or LTTD will immobilize the inorganic contaminants. Therefore, Alternatives 3 and 5, like Alternative 1, requires greater reliance on proper maintenance of the cap to achieve long-term effectiveness and permanence.

Alternatives 4, 6, and 7 provide the greatest degree of long-term effectiveness and permanence. Alternative 4 reduces the level of organic contamination to be capped through SVE/bioventing and immobilizes the inorganic contaminants through stabilization, thus reducing reliance of proper cap maintenance. Alternatives 6 and 7 reduce the level of both organic and inorganic contaminants to be capped. Organic contaminants are destroyed in the incineration process and inorganic contaminants which remain in the ash are stabilized, if necessary, and disposed off-site. Use of a multilayer cap in Alternatives 4, 6, and 7 may also provide somewhat greater long-term effectiveness and permanence that use of a soil cover (Alternative 2).

4. Reduction of the Toxicity, Mobility or Volume of Contaminants Through Treatment

Alternative 1 does not provide any reduction in the toxicity, mobility or volume of Site contaminants through treatment. The use of a multilayer cap does, however, reduce the mobility of contaminants by preventing rain from moving through the contaminated material and transporting contaminants to the groundwater.

The use of stabilization in Alternatives 2 and 4 primarily reduces the mobility of Site contaminants. This treatment process may, however, increase the volume of material due to the addition of the curing agents. While the mobility of organic contaminants may increase during the treatment process, particularly VOCs, the treatment area would be covered to capture volatilized contaminants. In addition, the process of stabilization facilities volatilization of volatile organics due to heat generation and mixing. Thus alternatives 2 and 4 reduce the volume of organics in the stabilized waste. The SVE/bioventing treatment in Alternatives 3 and 4 reduce the toxicity and volume of Site organic contaminants by encouraging biological degradation and extraction of volatile organics.

Alternative 5 (and Alternative 2 in the NAPL areas) reduces the toxicity, mobility and volume of primarily volatile organic contaminants by volatilizing and capturing the contaminants through the LTTD process. Inorganic contaminants would remain in the treated material and would be capped on-site. Alternatives 6 and 7 reduce the toxicity, mobility and volume of organic contaminants by destroying them through incineration. However, incineration has the potential create and release contaminants through air emissions which are more toxic than those entering the process. Controls measures must be properly implemented to ensure unacceptable releases do not occur. Inorganic contaminants that cannot be destroyed will remain in the ash and may be immobilized through stabilization if required prior to landfilling at an off-site facility.

5. Short-Term Effectiveness

Alternative 1 (Multilayer Cap) provides short-term effectiveness because it requires minimal disturbance of the contaminated material and can be implemented relatively quickly. Relatively few controls are needed during construction to ensure safety.

Alternatives 2, 4, and 5 also provide short-term effectiveness, but require use of air emission controls (e.g., temporary enclosed structures over excavation) and monitoring devices during excavation to ensure the safety of on-site workers and others in close proximity of the Site. These measures can be readily implemented though the required Site health and safety program.

Alternative 3 does not require excavation, but similar air emission controls and monitoring devises are required to ensure that contaminants volatilized through the SVE/bioventing process are not released from the Site. Alternatives 4 and 5 also require such measures to volatilized emissions.

Alternative 6 can provide short-term effectiveness, but this effectiveness is highly dependent on proper control measures. Alternative 6 has the potential to release toxic air emissions (ie., furans and dioxins) from the on-site incinerator based on the results of pilot-scale tests. The chlorine content of Fluff waste is very high because of the polyvinyl chloride insulation used. Along with the presence of polyvinyl chloride, the presence of copper as a catalyst makes an ideal condition for the formation of dioxins during the incineration. Short-term effectiveness of this alternative depends on proper implementation of air emission control devices for the incinerator stacks to monitor and control these emissions. Flue gas particulate collected as baghouse ash is cadmium and lead-contaminated and would require management as a hazardous waste. Proper handling of the kiln ash discharge and baghouse ash is required to ensure that these materials do not pose a health threat to on-site workers. Alternative 6 also involves off-site transportation of the incinerator ash, thus requiring additional measures to ensure safety.

The short-term effectiveness of Alternative 7 depends on the use of proper controls during excavation as described for Alternatives 2, 4, and 5 and on proper precautions during transportation of the excavated material off-site. These controls can be readily implemented through the required Site health and safety program.

6. Implementabilily

The technology and materials required to construct the multilayer cap in Alternative 1 (also a component of Alternatives 3 through 7) are readily available, so this alternative can be easily implemented. The soil cover in Alternative 2 can also be readily constructed.

The stabilization process in Alternatives 2 and 4 would not be difficult to implement since 10% Type I Portland Cement is readily available. The SVE/bioventing processes in Alternatives 3 and 4 have been demonstrated to work effectively at other sites and are commercially available technologies. However, performance of SVE/bioventing is dependent on Site-specific characteristics of the material being treated (e.g., temperature, moisture, pH, nutrient content) and the success and duration of treatment is difficult to predict. SVE/bioventing is expected to require a longer time frame to implement than stabilization.

The LTTD treatment process of Alternatives 2 and 5 has been demonstrated to be effective for volatile organics at other sites and is a commercially available technology. Successful implementation of LTTD is less dependent on Site-specific factors than SVE/bioventing and can be readily implemented. LTTD requires controls to ensure that contaminants volatilized during the process are not released to the air at unacceptable levels.

On-site incineration in Alternative 6 is a demonstrated and commercially available treatment technology. However, optimization of the system for the Site-specific characteristics of the material to be incinerated may be difficult. Incineration must comply with stringent RCRA incinerator operating regulations and standards. The close proximity of residences and a school may make implementation difficult, and the public has historically opposed on-site incineration.

Alternative 7 requires no on-site treatment and can be readily implemented. Off-site incineration facilities are commercially available to handle the materials from the Site. The equipment and materials needed to safely excavate and transport the contaminated Fluff, soil, and sediment are

readily available.

7. Cost

Table 3 presents a comparative cost summary of the alternatives discussed in this Proposed Plan.

Table 3
Remedial Alternatives Cost Summary

Alternative	Capital Cost	Annual O&M Cost 1-2 Years	Annual O&M Cost 3-30 Years	Present Worth
1	$1,596,354	$12,000	$12,000	$2,793,080
2	$6,924,062	$346,203	$12,000	$8,752,530
3	$8,697,147	$175,000	$12,000	$10,210,034
4	$12,030,443	$175,000	$12,000	$13,543,330
5	$10,499,000	$12,000	$12,000	$11,712,262
6	$35,556,000	$175,000	$0	$36,889,405
7	$49,928,000	$12,000	$12,000	$51,124302

8. State Acceptance

The Commonwealth of Pennsylvania has concurred with the selected remedy, Alternative 2.

9. Community Acceptance

In general, the community has accepted the selected Fluff, soil, the lagoon water and the on-site tanks & drums remedy for the OU-5. The Responsive Summary, attached, provides a through review of questions and comments received during the Public Comment Period including EPA's responses.

IX. SELECTED REMEDY

A. General Description of Selected Remedy

The selected remedy for OU-5 - surface soil, lagoon water and sediment, Fluff (chopped and shredded wire insulation material mixed with bits of plastic and copper), and waste materials contained in tanks and drums, is Alternative 2 - Ex-Situ Stabilization/Low Temperature Thermal Desorption. This alternative involves the following components:

- Site preparation which includes temporary sedimentation and erosion control and the clearing of vegetation around the Fluff and lagoon;
- Treatment/containment of contaminants of interest in Fluff, lagoon sediment, and surface soils through ex-situ stabilization and backfilling excavated areas with the stabilized material;.
- Treatment of soil containing Non-Aqueous Phase Liquids utilizing Low Temperature Thermal Desorption desorption to reduce tetrachloroethene (PCE) levels below the level that constitutes a principle threat;
- Covering the areas on the Site within the fenced area shown in Figure 2 with two-foot of EPA and PADEP approved soil layer and vegetation contour to prevent ponding and to control erosion;
- Site restoration by removing all the debris;
- Off-site transport of materials in tanks and drums at the Site to an appropriate facility;
- Excavation and off-site disposal to an appropriate facility of drums, tanks and contaminated soil due to any leaking drums and/or tanks.

- Draining of lagoon water, treatment of the water in a physical/chemical treatment process (if needed), and discharge of the treated water to an unnamed tributary of Mauses Creek, adjacent to the Site and/or to an industrial process;

- Implementation/enforcement of institutional controls at the Site, including but not limited to, deed restrictions;

- Long-term operation and maintenance (O&M) activities including Site security through the maintenance of existing Site fence.

Site preparation shall include the leveling of the Fluff piles and spreading the stabilized Fluff to a uniform depth. All Fluff, minimum of two feet of lagoon sediments, and minimum of two feet of soils underneath the Fluff piles shall be excavated and stockpiled for subsequent stabilization. The extent of the sediments and the soils excavation beyond the minimum shall be determined by field observations for the presence of visible Fluff. The excavation activities shall occur inside a temporary, moveable structure intended to prevent the introduction of precipitation into the excavation and to control dust and volatile organic compound (VOC) emissions. All material shall be stockpiled and treated in a staged treatment area. The structures shall be operated under slight negative pressure, and the exhaust air flow shall be routed through a vapor-phase carbon adsorption unit to treat VOC emissions.

Excavation shall be performed at a rate necessary to provide a stockpile of materials sufficient to support three to five days of treatment (750 to 1,250 cubic yards). Stabilization shall be performed by mixing the materials with 10% or greater Type I Portland Cement. Following mixing, the resulting slurry shall be placed into the excavation and allowed to cure. Excavation activities shall continue on the remaining trenches within the excavation structure. Once all materials are treated within the excavation structure, the structure shall be moved to the next area of excavation.

The excavated areas shall be backfilled with the stabilized material in a manner intended to promote drainage following curing of the stabilized materials. The fenced area shown in Figure 2 shall be covered with a two-foot topsoil layer and vegetated to prevent ponding of liquids and minimize erosion.

The presence of Non-Aqueous Phase Liquids in overburden soils shall be treated through the use of Low Temperature Thermal Desorption. The extent of this area and the total volume of soil treated with Low Temperature Thermal Desorption may be subject to change based on the results of the investigation for the presence of Non-Aqueous Phase Liquids in soil to be conducted during the implementation of the remedial action.

Low Temperature Thermal Desorption can effectively remove Non-Aqueous Phase Liquids from the soil by heating the soil under vacuum conditions to induce volatization. The optimal temperature and pressure shall be determined during a pre-design treatability study. The soils treated by Low Temperature Thermal Desorption shall be backfilled into the excavations (with prior stabilization if the treated soil demonstrates the characteristic of a hazardous waste based upon the results of a Toxicity Characteristic Leaching Procedure test. 40 C.F.R. º261.24.).

The resulting fixed/stabilized solid matrix minimizes the potential migration of contaminants of interest to groundwater; the stabilization process and subsequent soil cover also prevent direct contact. The potential for exposure to volatile and dust emissions is mitigated through the use of the temporary structures covering the excavation and stockpile/process areas and treatment of VOCs through vapor-phase carbon adsorption.

The South West area (as shown in the Figure 2) of the Site shall be investigated for any buried drums and if the drums are found excavation of the subsurface soil shall be performed. If the drums or tanks are discovered, they shall be excavated and removed. If characterization testing of the drum contents indicates the presence of listed waste (40 C.F.R. Part 261, Subpart D) or if the contents exhibit a characteristic of hazardous waste (40 C.F.R. 261, Subpart C), they shall be managed in accordance with the federal land disposal restrictions (40 C.F.R. Part 268). The drum debris shall be managed in similar manner. Subsurface soil in the area surrounding the drums shall be tested for the presence of Non-Aqueous Phase Liquids. If Non-Aqueous Phase Liquids are discovered, the Non-Aqueous Phase Liquid containing soils shall be treated, with Low Temperature Thermal Desorption as discussed more fully in subsection B. 10 below.

B. Performance Standards/Cleanup Criteria

To reduce the risk to human health and the environment, impacted surface and subsurface soils, lagoon water and sediment, Fluff, and waste materials contained in tanks and drums, shall be remediated as described in Section IX, Description of Selected Remedy. Remediation shall be performed for materials which exceed the Remedial Action Levels presented in the table 2, in accordance with the ARARs; and other criteria listed in Section X, Statutory Determinations. All components of the selected remedy, Alternative 2, shall be implemented in accordance with the performance standards detailed herein and ARARs; listed in Section X, Statutory Determinations.

1. Erosion Control

Erosion and sediment control measures shall be installed in accordance with the substantive requirements of the Commonwealth Pennsylvania Clean Stream Law and in accordance with any related local regulations. Prior to commencement of excavation or soil disturbance work, an erosion and sedimentation control plan shall be developed and implemented to address control measures for all activities that potentially transport soil or sediment. The plan shall be developed and submitted to EPA for acceptance and to PADEP and the local goveriunent for approval.

2. Pilot Testing of Stabilization Process

During the remedial design phase, field pilot testings of the stabilization process shall be performed to obtain optimal stabilization process parameters as set forth in "Solidification/Stabilization and its Application to Waste Material (EPA/530/R-93/012 June 1993)."

3. Stabilization of Fluff and Two Feet of Soil underneath the Fluff.

The Fluff and soil shall be screened and separated before stabilization to achieve the parameters developed during the field pilot testings. The proper ratio of Fluff and soil shall be mixed with appropriate amount of binding material to achieve the standards developed during the field pilot testings. The stabilized waste shall be checked in accordance with "Stabilization/Solidification of CERCLA and RCRA Wastes, Physical Tests, Chemical Testing Procedures, Technology Screening, and Field Activities (EPA 625/6-89/022 May 1989)." Soil beneath the Fluff piles shall be excavated to a minimum of two feet. The extent of excavation of soil beyond two feet underneath Fluff piles shall be determined by visual observation of Fluff presence. The stabilized mass shall pass the SPLP leachability test.

4. Backfilling of the Excavated Areas

The excavated areas shall be backfilled with the stabilized material.

5. Placing of Two Feet of Soil Cover within the Fence Area shown in the Figure 2.

a. The two feet of soil cover shall be placed over the entire area of the Site within the fenced area shown in Figure 2.

b. The soil cover shall be covered with vegetation to control air and water erosion of the soil and to maintain aesthetic value of the area.

C. The soil cover shall protect Site users from being exposed to the soil contaminants either by the direct contact with contaminated waste/soil or by inhalation/ingestion of soil and/or Fluff dust.

d. The final soil cover shall be designed and constructed in accordance with the Pennsylvania Residual Waste Management Regulations, 25 Pa. Code Chapter 288, Subchapter C, regarding closure of landfills. Relevant provisions include, but are not limited to, 288.212 (access control), 288.234 (final cover and grading), 288.236 (revegetation), 288.237 (standards for successful revegetation), and 288.242 (soil erosion and sedimentation control).

6. Monitoring Program

The groundwater and surface water monitoring requirements for OU-5 are covered under the OU-3 groundwater monitoring program. Perimeter air monitoring shall be performed at a minimum of four locations at each of the four compass points at the perimeter of the Site for the contaminants identified in table 2. The fugitive emissions control actions levels shall be set according to Occupational Safety & Health Act (OSHA) permissible exposure levels (PELs) if available or according to adverse human health effect threshold. Fugitive emissions shall be controlled in accordance with applicable Pennsylvania Air Resources Rules and Regulations. The monitoring for VOCs and total dust shall be performed using on-site monitors to obtain real time readings. A fugitive emissions control plan shall be developed based on the fugitive emissions control action levels and submitted to EPA for acceptance and to PADEP for their review and approval if required by the law.

7. Storm Water Control

A storm water control plan shall be developed to minimize runoff and erosion from all areas of soil/Fluff disturbance associated with Site remediation activities and to prevent migration of Fluff off Site. The plan shall be submitted to EPA for acceptance. The plan shall be submitted to PADEP, the local county and the local government for their approval.

8. Surface Water Discharge

Any surface water discharge to Mauses Creek shall comply with substantive requirements of the Commonwealth of Pennsylvania National Pollution Discharge Elimination System regulations, 25 Pa. Code Chapter 92. A plan to comply with those requirements shall be submitted to EPA and PADEP for review and approval.

9. Use of Treated Water

If the treated water is used for an industrial purpose, it shall meet PADEP drinking water standards set forth at 25 Pa. Code Subchapter 109.13.

10. Investigation of Presence of Non-Aqueous Phase Liquids in the soil

Areas identified as the former carbon pile area, buried lagoon area and the area adjacent to the west side of the plant building (see figure 2) shall be sampled using a geoprobe and checked for Non-Aqueous Phase Liquids presence using soil water shake test as described in the document EPA/600/R-93/022. A sampling and analysis plan for Non-Aqueous Phase Liquid testing shall be submitted to EPA and PADEP for their approval.

11. Thermal Desorption

The soils with Non-Aqueous Phase Liquids shall be treated with the Low Temperature Thermal Desorption to drive off Non-Aqueous Phase Liquids and to achieve PCE cleanup levels of 375 mg/kg. The low temperature thermal desorption system shall have air pollution control measures as needed to meet Commonwealth of Pennsylvania Control and Abatement of Air Pollution requirements and specifically shall meet federal and Commonwealth of Pennsylvania air emissions standards. Any residual carbon waste generated during the treatment shall be disposed off-site at an approved RCRA Subtitle C facility. If the thermal treatment is not successful in achieving the cleanup levels for PCE, soils with Non-Aqueous Phase Liquids shall be sent off-site for the treatment and disposal at RCRA Subtitle C approved facility.

12. Investigation of Possible Buried Drums

The South West area (as shown in the figure 2) of the Site shall be investigated for any buried drums or tanks by using geophysical screening technique. If evidence of drums or tanks is indicated, excavation of the subsurface soil shall be performed. If the drums or tanks are discovered, they shall be excavated and removed. If characterization testing of the drum contents indicates the precence of a listed waste (40 C.F.R. Part 261, Subpart D) or if the contents exhibit a characteristic of a hazardous waste (40 C.F.R. 261, Subpart C), they shall be managed in accordance with the federal land disposal restrictions (40 C.F.R. Part 268). The drum debris shall be managed in similar manner. Subsurface soil in the area surrounding the drums shall be tested for the presence of Non-Aqueous Phase Liquids. If Non-Aqueous Phase Liquids are discovered, the Non-Aqueous Phase Liquid containing soils shall be treated with

Low Temperature Thermal Desorption as discussed more fully in subsection B.10 above.

13. Removal of Above Ground Drums and Above Ground Tanks

If the contents of the above ground drums and above ground tanks are listed wastes (40 C.F.R. Part 261, Subpart D), they shall be managed in accordance with the federal land disposal restrictions (40 C.F.R. Part 268). The drum debris shall be managed in a similar manner.

14. Removal Plans for the Drums and Tanks

A removal plan shall be submitted to EPA and PADEP for their review and acceptance detailing the assessment and removal of all drums and tanks.

15. Removal of Non Hazardous Contents and Debris

The Site shall be cleared of all debris and non hazardous waste in accordance with Pennsylvania Municipal Waste Landfill Regulations, specifically those regulations applicable for construction debris landfills, Pennsylvania Code Title 25, Chapter 277, and those relating to residual waste management, Pennsylvania Code Title 25, Chapter 287.

16. Institutional Control

Institution controls, including but not limited to deed restrictions, shall be implemented to restrict land and groundwater use at the Site and reduce the potential for human exposure to contamination by prohibiting residential development and any use that would decrease the performance of the soil cover, and/or involve the use of groundwater at the Site.

17. Operation and Maintenance

The stabilized waste and the soil cover shall be maintained in accordance with the requirements set forth in 25 Pa. Code Section 264.111, 264.117, and 264.310(l), (4) and (5).

18. Quality Control Monitoring

Quality control monitoring shall be performed to evaluate the stabilized waste and the cover. The frequency and the nature of quality control monitoring shall be determined during the Remedial Design and shall be approved by EPA in consultation with PADEP prior to implementation.

X. STATUTORY DETERMINATIONS

EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, 121 (b) of CERCLA, 42 U.S.C 9621, established several other statutory requirements and preferences. These requirements specify that upon completion, the selected remedial action for each site must comply with applicable or relevant and appropriate ("ARARs") environmental standards established under federal and state environmental laws unless a statutory waiver is invoked. The selected remedy must also be cost effective and must utilize treatment technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that permanently and significantly reduces the volume, toxicity, or mobility of hazardous substances. The following sections discuss how the selected remedy for this Site meets these statutory requirements.

A. Protection of Human Health and the Environment

The selected remedy for Fluff, soil, lagoon water and sediments is protective of human health and the environment and eliminates the potential for a direct contact with contaminants by placing of a vegetated soil cover over the stabilized waste. The remediation will also minimize soil, Fluff and sediment as a continuing sources of impacts to groundwater, and surface water, and subsurface soils. In addition, the contaminated groundwater under the Site shall be extracted and contained under the OU-3.

Air monitoring shall be performed during the excavation phase to monitor air emissions and to provide information for control measures and worker's exposure. Appropriate safety equipment shall be worn by Site workers to protect against exposure during the remediation effort. With the

addition of long-term monitoring and institutional controls, this remedy is protective of human health and the environment.

B. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The selected remedy includes excavation and ex-situ stabilization of soils, sediment, and Fluff in exceedance of specified action levels for the Site. The remedy will comply with ARARs and To Be Considered (TBC) Material detailed in this section.

Chemical-specific ARARs and TBCs:

Pennsylvania Water Quality Standards, Pennsylvania Code Title 25, Sections 93.1-9z which identify surface water quality standards and protected uses of surface water. This Act is applicable to the discharges of lagoon water to Mauses Creek.

Administration of the Land Recycling Program, 25 Pa. Code, Section 250.305 which identifies soil cleanup levels. This Act is applicable to determine the soil remediation standards.

Location-specific ARARs and TBCs

The Fish and Wildlife Coordination Act, 16 USC 661, which provides for consideration of the impacts on wetlands and protected habitats. The Act is applicable to the treatment of the lagoon water and sediment.

The Fish and Wildlife Improvement Act of 1978 and the Fish and Wildlife Conservation Act of 1980, 16 USC 742a and 16 USC 2901, which provide for consideration of the impacts on wetlands and protected habitats. The Acts are applicable to the treatment of the lagoon water and sediment.

Pennsylvania Dam Safety and Encroachment Act, Act of 1978, 25 Pa. Code, Sections 105 et seq. This Act, and the regulations promulgated thereto, are applicable to any response actions conducted in or near wetlands areas.

Action specific ARARs:

Toxic Substances Control Act (TSCA) of 1976, 40 CFR Part 761, which pertains to the regulation and enforcement for testing of commercial chemical substances entering the environment. This Act is applicable to PCB testing.

Pennsylvania Hazardous Waste Regulations, Pennsylvania Code Title 25, Sections 262.11-13, 262.20-23, 262.30, 262.33, 262.34,264.111, 264.117, 264.310(l),264.310(4), 264.310(5), as well as Part 263 and Subparts 264 I and J which are applicable to the on-site hazardous waste treatment, storage and disposal alternatives.

Pennsylvania Hazardous Waste Activity Rules, Pennsylvania Code Title 25, Sections 266.20-24, which pertains to the standards for recycled material used in a manner consistent with disposal. These rules are applicable to on-site stabilization and disposal of Fluff waste as well as reuse of treated water for any industrial purpose.

Pennsylvania Municipal Waste Landfill Regulations, Pennsylvania Code Title 25, Sections 277.132-151, 277.217, 277.218, 277.220, 277.234, 277.235 which pertain to the construction of debris landfills. These rules are relevant and appropriate to on-site stabilization and disposal of Fluff waste.

Clean Water Act's National Pollution Discharge Elimination System (NPDES) Regulations, 40 CFR Sections 122.2, 122.4, 122.5, 122.21, 122.26, 122.29, 122.41, 122.43-45, 122.47, 122.48, which regulate discharge of pollutants into navigable waters. These regulations are applicable to the discharge of lagoon water to Mauses Creek.

Pennsylvania Clean Streams Law, Pennsylvania Code Title 25, Sections 16.1, 16.24, 16.31-5 1, 16.101-102, which provide protection for the protection of streams and water quality control. This Act and regulations are applicable to the discharge of lagoon water to Mauses Creek.

Pennsylvania NPDES Rules, Pennsylvania Code Title 25, Sections 92.1, 92.3, 92.31, 92.41, 92.51, 92.55, 92.57, and 92.73, which provides regulations which govern point-source discharges to Pennsylvania waters. These rules are applicable to the discharge of lagoon water to Mauses Creek.

Pennsylvania Wastewater Treatment Regulations, Pennsylvania Code Title 25, Sections 95.1-3, 95.7, 95.9, outline regulations which govern wastewater treatment. These regulations are applicable to the discharge of lagoon water to Mauses Creek and industrial reuse of the treated water.

Pennsylvania Industrial Waste Treatment Regulations, Pennsylvania Code Title 25, Sections 97.1, 97.2, 97.14, 97.15, 97.81-83, outline regulations which provides requirements and standards for the treatment of industrial waste discharges to surface water. These regulations are relevant and appropriate to the discharge of lagoon water to Mauses Creek.

Pennsylvania Special Water Pollution Control Regulations, Pennsylvania Code Title 25, Sections 101.1-2, which outlines regulations requiring notification of downstream users in the event of a release of toxic substances. These regulations are relevant and appropriate to the discharge of lagoon water to Mauses Creek.

Pennsylvania Safe Drinking Water Regulations, Pennsylvania Code Title 25, Sections 109.201 - 203, which provide the required contaminant levels that must be met if water is to be used for drinking water. These regulations are relevant and appropriate if the lagoon water is used for an industrial purpose.

Pennsylvania Storm Water Management Act requires that measures be taken to control stormwater runoff during alterations or development of land. This Act is applicable to the excavation and regrading that will take place on the Site.

Pennsylvania Erosion Control Regulations, Pennsylvania Code Title 25, Sections 102.4-24, which outline requirements that measures should be taken to control erosion and sedimentation during remedial activities. These regulations are applicable to the excavation and regrading that will take place at the Site.

Air Resources, Pennsylvania Code, Title 25, Sections 123.1, 123.2 and 127.1 which are applicable to fugitive dust control and Best Available Technology (BAT). These regulations are applicable to the air pollution control measures to be employed during the excavation and ex-situ stabilization process as well as the LTTD operation.

C. Cost-Effectiveness

The NCP requires EPA to evaluate cost-effectiveness after first determining if the alternative satisfies the threshold criteria: Protection of human health and the environment and compliance with ARARS. As indicated above the selected remedy meets the threshold criteria; therefore the cost effectiveness of the remedy is discussed below.

The selected remedy is considered cost-effective because the total costs are proportional its overall effectiveness. The estimated present-worth cost for the selected remedy, including a thirty year operation and maintenance cost, is $8,752,530. While the No Action Alterative and Alternative 1 would be less costly to implement than the selected alternative (Alternative 2), they are less protective of human health and the environment and do not satisfy ARARS in some cases. Also, alternative 1 in long term may not provide as much physical strength as alternative 2 which incorporates stabilization of Fluff waste. The increased compressive strength provided by the stabilized Fluff will increase cap performance and life. The use of Alternatives 3,4, and 5 would potentially provide the same level of protection to human health and the environment as Alternative 2, however, these alternatives are more costly and more difficult to implement than the selected remedy. Implementation of Alternatives 6 and 7 would result in reducing the potential for leaching of COIs to the groundwater through destructive removal at a much higher cost than Alternative 2,3,4 and 5, but would pose a risk to on- and off- site receptors due to the potential generation of dioxin contaminated material and cadmium/lead contaminated baghouse ash, a characteristic hazardous waste.

D. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among the other evaluation criteria. Of the alternatives that are protective of human health and the environment and meet ARARs, EPA has determined that the selected remedy provides the best balance in terms of long-term effectiveness and permanence, reduction of toxicity, mobility, or volume, short-term effectiveness, implementability, cost, state and community acceptance.

The selected remedy addressed threats posed by the impacts at the Site. The remedy is protective of human health and the environment, meets ARARs, and is cost effective.

E. Preference for Treatment as a Principal Element

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among the other evaluation criteria.

MW Manufacturing Superfund Site
Valley Township, Montour County, Pennsylvania
Responsiveness Summary

This community relations responsiveness summary is divided into the following sections:

Overview:	A summary of EPA's selected remedy for Operable Unit 5 (OU-5) at the Site.
Background:	A brief history of community interest and involvement during remedial activities at the Site.
Comments and Responses:	A summary of the comments, questions, issues, and concerns received by EPA during the public comment period and EPA's responses to those comments, questions, issues and concerns.

Overview

In order to better address the complex conditions at the MW Manufacturing Site, EPA divided the Site into five separate areas called operable units (OUs). Each OU, described below, represents a different area of concern at the Site.

OU-1 - carbon waste sludge;
OU-2 - fluff waste, soils, storage tanks, lagoon water, and sediments;
OU-3 - contaminated ground water;
OU-4 - public water supply; and
OU-5 - fluff waste, soils, storage tanks, lagoon water, and sediments.

EPA completed the cleanup of OU-1 in 1992 and issued a Record of Decision (ROD) for OU-3 and OU-4 in 1993. In addition, after evaluating several clean-up alternatives for OU-2, EPA conducted a Focused Feasibility Study 1995, and chose to reevaluate the remedy chosen for OU-2 in the ROD for OU-5.

In connection with the remedies considered for OU-5, EPA issued a Proposed Remedial Action Plan (Proposed Plan) on August 12, 1997. The Proposed Plan outlined several clean-up alternatives including EPA's preferred altemative. EPA's preferred clean-up alternative includes:

- Excavating, stabilizing, and backfilling the fluff waste, lagoon sediment, and the surface soil;
- Treating soils containing visible oil/solvent with low temperature thermal desorption;
- Disposing of tanks and drums off-site;
- Draining, treating, and discharging lagoon water to a tributary next to the Site;
- Covering the backfilled area with two feet of top soil and seeding; and
- Limiting future use of the area through controls such as deed restrictions.

After considering information received during the public comment period, EPA selected this clean-up alternative for OU-5 and presented this in the Record of Decision. EPA believes that the selected remedy best meets EPA's evaluation criteria, is protective of human health and the environment, and is cost effective.

Background

After releasing the Proposed Plan, EPA held a 30-day public comment period from August 12, 1997, to September 11, 1997. During the public comment period, EPA accepted written comments on the clean-up alternatives and held a public meeting on August 27, 1997 to present the Proposed Plan for OU-5 to the community. The public

meeting also provided an opportunity for community members to have their questions and comments answered and documented in the public meeting transcript. EPA announced the public meeting in the Press Enterprise and the Danville News on August 12, 1997, and in a fact sheet mailed to the entire site mailing list. During the meeting, EPA addressed citizen's comments and answered questions on the clean-up alternatives and future Site work.

Before selecting its preferred alternative as the final clean-up alternative for OU-5, EPA considered all comments received during the public comment period, as well as those voiced at the August 27, 1997 public meeting.

Community involvement and interest in the MW Manufacturing Site is extensive. Although the potentially responsible parties (PRPs) for the Site installed a waterline to connect residents to the public water supply in 1996, the community is still very concerned about contaminated ground water and the economic impact of the Site on the community. In addition, EPA interviewed several community members in May 1997 to gather information about current community concerns regarding the Site and its cleanup. EPA will use this information to revise the Community Relations Plan for the Site and to better address the community's needs and concerns.

Comments and Responses

Comments Received During the Public Meeting

This section provides a summary of the comments, questions, issues, and concerns received by EPA during the August 20, 1997 public meeting. The comments and questions are grouped in the following categories:

1. Cleanup Schedule
2. Soil and Fluff Waste Cleanup/Stabilization Process
3. Ground Water and Lagoon Cleanup
4. Economic Impacts and Future Site Development
5. Technical and Potential Responsible Parties Comments

1. Cleanup Schedule

A few citizens expressed concern about the planned time table for Site cleanup.

EPA Response: After receiving public comments, EPA will officially document a clean-up decision in a Record of Decision (ROD) for OU-5. The ROD is a formal document that describes the clean-up plan EPA will use to address contamination at the Site. After issuing the ROD, EPA will require that the PRPs prepare a work plan and implement the clean-up actions. EPA expects the soil stabilization and construction of a ground water treatment system to be complete by the year 2000. However, the ground water treatment system will operate for 30 years or until EPA's clean-up standards are achieved.

A citizen asked if EPA will inspect the Site following clean-up activities to determine whether the actions outlined in the ROD are working.

EPA Response: When the design plan is finalized it will include a quality assurance plan. The quality assurance plan is a schedule of routine testing and monitoring that evaluates the success of the clean-up actions implemented. EPA will also conduct long-term monitoring during the operation and maintenance of the clean-up actions to ensure that clean-up goals EPA identified in the ROD are achieved.

2. Soil and Fluff Waste Cleanup/Stabilization Process

- A citizen asked if stabilization is a proven process; if it has been tried with the same materials found at the Site; and if it was successful.

EPA Response: Stabilization is an established process that involves mixing waste material with another substance to solidify and immobilize the chemicals in the waste.

Once the waste is solidified, water infiltration is reduced significantly reducing the ability of contaminants to leach out. The stabilization process has been implemented using different kinds of materials with different characteristics, and it has worked very well. Although the process has not been implemented with the exact waste material found at the MW Manufacturing Site, fluff and contaminated soil from the site have been successfully stabilized in lab testing.

The stabilization process is often based on site-specific material. For example, contaminated soil can be stabilized using plain lime. The lime naturally stabilizes the soil and prevents chemicals from moving through the soil into the ground water. Cement is being used to stabilize the waste material at the MW Manufacturing Site because the material contains small pieces of hard copper wire. Studies showed that the cement mixture has low permeability, good strength, and longevity which will stabilize the waste and prevent it from causing further contamination.

- A citizen asked what happens to the stabilized material.

EPA Response: Once the material is stabilized it will be put back into the ground and covered by two feet of clean soil.

- A citizen asked if contaminants will travel through the stabilized fluff, and if so, does that mean that the contaminants are undetectable, or that they are below EPA standards.

EPA Response: The stabilized soil and fluff will be impermeable, like a rock, therefore immobilizing the contaminants, However, like a rock, the stabilized material may crack if it is exposed to corrosive material. EPA will monitor the area to make sure this doesn't happen.

Of the principal contaminants found in the fluff (lead, bis(2-ethylhexyl) phthalate (BEHP), di-n-octyl phthalate and copper) only copper, which is relatively less toxic, has been detected the ground water in appreciable amount. Therefore, even prior to stabilization, the leaching of the principal toxic compounds from the fluff material is not occurring.

- A citizen asked how long the finished product (stabilization) will retain its quality of impermeability.

EPA Response: Combining the contaminated soil and fluff with cement solidifies the materials into a rock-like substance. This substance may crack, but it will still remain impermeable. EPA will continue to monitor the stabilized materials and perform routine tests to ensure the clean-up plan's long-term effectiveness.

- A citizen asked why EPA doesn't transport the stabilized material to a landfill or some other location.

EPA Response: EPA considered moving the material off-site, however, several factors made it unfeasible:

- Heavy truck traffic involved in transporting the contaminated materials creates the possibility of spills or accidents;

- The ground water at the site is already contaminated. Therefore, moving the stabilized material would not enhance the use of the Site because there will still be restrictions imposed regarding future development on the site as a result of the ground water contamination; and

- The material would present the same issues to the community where it was moved.

- A citizen asked whether EPA will consider and address the aerosols (air particles) that might be generated during the soil removal and

stabilization process.

EPA Response: The actual stabilization will be done in a portable enclosed structure on the site. The contaminated soil and fluff will be transported into the enclosed structure and mixed with the cement inside. The air inside the enclosed structure will then be treated through a ventilation system before it is released to the environment. The only time dust will be generated from the soil and fluff will be during the transportation into the enclosed structure. In order to control this dust, the material will be sprayed with water. In addition, there will be constant real-time air monitoring performed during all clean-up actions at the Site. If elevated levels of contamination are detected in the air, all operations will cease.

The stabilization process is designed to provide three layers of protection to both residents and on-site workers. First, the process will be conducted in an enclosed structure; second, the workers will wear protective clothing inside the structure and the air coming out of the structure will be cleaned; and third, the air outside the work area will be constantly monitored to ensure safe levels. These procedures will be implemented the entire time the stabilization process is being implemented.

- A citizen asked how water runoff will be handled once the soil and fluff are stabilized and the area is re-capped.

EPA Response: Prior to designing the actual stabilization plan, engineers will consider the annual rainfall and expected runoff for the Site. It is probable that drainage pipes will be built on the Site to discharge the runoff into a nearby creek. The runoff water from the Site will not become contaminated because it will not pass through the stabilized contamination.

- A citizen summarized the current plan, noting that the previous plan to use incineration is no longer an option: EPA will excavate contaminated soil, combine the soil with the fluff material, mix both with Portland cement, put the mixture under the ground, cover the mixture with soil and vegetation, and then install a drainage system so the water flows away from the Site.

EPA Response: EPA agrees that this is an accurate assessment.

3. Ground Water and Lagoon Cleanup

- A citizen asked what will happen to the contaminated water in the lagoon on the Site.

EPA Response: First the water in the lagoon will be analyzed to determine if it is contaminated. If the water is not contaminated, then it will be legally discharged into a nearby stream or creek, probably Mauses Creek or Mahoning Creek. If the water is contaminated, it will be pumped to a water treatment system where it will be cleaned to Clean Water Act and Clean Streams Law standards and then discharged into a nearby stream or creek.

- A few citizens asked if there is going to be a water treatment system installed at the Site and if the water pumped up from the ground will go through some type of treatment process before it is discharged into a stream or creek. And if so, how many wells have been or will be drilled.

EPA Response: EPA has determined that the ground water at the Site is contaminated and that it is likely that a water treatment system will be used to treat the groundwater and possibly the water in the lagoon. However, a ground water treatment system has not yet been designed, so no extraction wells have been drilled and the total number of wells needed will not be determined until a system is designed.

- A citizen asked where the ground water system will be built.

EPA Response: The exact location of the ground water system cannot be determined until the system is designed; however, the system will likely be built in an area of the

site where future development is restricted. Once the ground water treatment system is built, a fence will be erected around the system to restrict access.

- A few citizens expressed concern about the amount of water that will be pumped from the ground and how this will affect the wells in the area.

EPA Response: According to a recent study conducted by the PRPs, pump tests showed that an estimated volume of 12 to 20 gallons per minute can be pumped out of extraction wells without adversely affecting other wells in the area. This amounts to about 25,000 gallons per day. The alternative outlined in the ROD is a conceptual design based on site investigations and studies. During the Remedial Design, EPA will determine specifications for each clean-up action and make sure that they do not adversely impact the community.

Before a ground water treatment system is constructed, there are additional tests and studies needed to determine how the system is affecting the ground water level. These studies can determine even the slightest drop in the ground water level. The wells outside the area where the pumping will be occurring will be monitored to ensure that the extraction wells are not adversely affecting the water level in these wells. Also, the actual ground water system will be routinely monitored.

- A citizen asked if EPA can project how long the ground water remediation will last.

EPA Response: It is hard to predict how long the ground water remediation will last until the system is operating. Once the groundwater treatment system is operating, sampling results will provide data that can be analyzed to determine the rate at which the groundwater is being cleaned. This data will also provide an estimate of how long the groundwater system will need to operate to reach EPA's clean-up levels.

It is also hard to predict the length of the groundwater cleanup because the solvents that are contaminating the groundwater are dense non-aqueous phase liquids (DNAPL). DNAPLs are not easy to capture during a pump and treat cleanup because the DNAPLs enter fractures in the bedrock and are difficult to extract. Once in the bedrock fractures, the DNAPLs serve as a constant source of continued contamination. This makes it hard to predict how long groundwater remediation will last.

4. Economic Impact and Future Site Development

- A few citizens expressed concern about the future development of the site. One citizen compared it to a nuclear waste dump and commented that stabilization seems like the cheapest or easiest alternative.

EPA Response: EPA will place restrictions on the property that will limit the future use of the property. Such restrictions will include fencing the 8-acre area of stabilization. Because the ground water at the site is contaminated, and the ground water clean up process will be on-going for some time. EPA chose this alternative because it best satisfies EPA's cleanup standards including:

Threshold Criteria
Overall protection of human health and the environment
Compliance with applicable laws

Balancing Criteria
Long-term effectiveness and performance
Reduction of toxicity, mobility, and volume through treatment
Short-term effectiveness
Ability to implement
Cost

Modifying Criteria
State acceptance
Community acceptance.

- A citizen expressed concern over the economic impact caused by the appearance of the Site, and asked when the building located on the site will be demolished.

EPA Response: EPA is in the process of issuing an Administrative Order to the Site owner regarding the building. The Administrative Order requires the Site owner to demolish and remove the building. Once EPA issues the Administrative Order, the Site owner will have a 60-day period to respond to the Order or negotiate with EPA. EPA expects the building to be demolished by Spring 1998.

Written Comments Received During the Comment Period

1. It should be clarified that the dioxins and furans [are] formed (and unable to be destroyed) as part of the incineration process, rather than being contained in the fluff material that is subject to stabilization.

EPA Response: EPA agrees that detections of the Dioxins and Furans in the pilot incineration testing were due to formation of dioxins and furans as by products of the combustion. EPA has modified texts in the ROD in Section IV B3 b on page 12.

2. Combining Portland cement, which contains lime, with the elements of cooper and lead could lead to precipitation of these metals and promote leaching of the metals to the groundwater.

EPA Response: Alkaline compounds such as lime (calcium oxide) and cement (anhydrous calcium silicate) act as binders and immobilize many inorganic compounds including lead and copper. Alkaline compounds keep pH levels high in the solidified waste which prevents leaching by converting metals into insoluble metal hydroxides. EPA has identified solidification and stabilization using cement as a Best Demonstrated Available Treatment Technology (BDAT) for metal containing waste. (EPA/530/R-93/012 June 1993.)

3. The removal of junk and debris from the Site is appropriate but the responsibility for this activity should be with the Site owner.

EPA Response: The Record of Decision is a decision document that is intended to set forth EPA's chosen remedial action to be implemented at a site. Discussions of individual parties' liability is not appropriate in the Record of Decision. The Superfund statute defines liability for various classes of parties, and EPA will negotiate with potentially responsible or consider other appropriate enforcement actions in the context of its enforcement process.

4. The description of preferred alternative includes placement of a cover that meets PADEP Residual Waste cover requirements. It is Nassau understanding that the stabilized material will have two-foot soil cover placed over it that is vegetated to prevent the ponding of liquids and minimize erosion. Although the estimated area of the two-foot cover is 8 acres, the final configuration of the area subject to soil cover will be determined during the remedial design phase of the project.

EPA Response: During the prepublic meeting with Nassau, the Commonwealth of Pennsylvania and local township representatives, it was determined that the most environmentally sound approach would be to extend the soil cover over the entire area inside the MW Manufacturing fence to make certain no area is left exposed which could pose any public health threat. In addition, the full soil cover would maintain the aesthetics of the land. This position was discussed at the public meeting, and was depicted in a graphic prepared by Nassau.

5. The total risks presented in the Proposed Plan Table 1 represent EPA's assessment of the cumulative risk or hazard indices for chemicals of concern in fluff material and surface soil based upon the worst case residential; exposure scenarios presented in Appendix D of the Re-Evaluation of the Risk Assessment dated May 1995. However, the non-

carcinogenic risk estimates of 1.42 (adult plus child) and 4.63 (child) for exposure to soil is not equal to the total cumulative non-cancer risk, and it is unclear what this number represents. The risk estimates in the Re-Evaluation of the Risk Assessment dated May 1995 were representative of exposure scenarios that were considered to be "reasonable exposures" for a residential receptor rather that a "worst case". Evaluating risks related to reasonable exposure scenarios is considered to be more appropriate than estimating the potential risk for a hypothetical resident considering the low potential for future land use to be residential.

EPA Response: There are three issues as follows to address in this statement: (1) As stated in the Proposed Plan, Table 1 is a representation of the total risk for Chemicals of Concern (COCs) in fluff material and surface soil based on a future residential land use scenario. Residential areas exist near the MW Manufacturing Site, therefore, the evaluation of risk to future potential residents was warranted. The total non-cancer risk for the residential scenario is a summation of the risks associated with those COCs that possess non-cancer risks in fluff material (polychlorinated biphenyls (PCBs), antimony, and copper) and in the surface soil (PCBs and copper). It should be noted that the non-cancer risks identified as "Total Estimated Hazard" found in Appendix D of the Re-Evaluation of Risk Report (1996) are not correct. The "Total Estimated Hazard" for surface soil and fluff material as reported in Appendix D is actually the risk associated solely with PCBs and copper, respectively.

(2) To address the issue of "reasonable" versus "worst case" exposure scenarios it is important to understand the definitions of these scenarios as presented in the Re-Evaluation of Risk Report and in EPA Guidance. The "reasonable" exposure in the Report corresponds to a "central tendency" estimate of the risk as defined by EPA. This estimate can be defined as the average risk. The "worst case" exposure in the Report corresponds to a "reasonable maximum exposure (RME)" estimate of the risk as defined by EPA. The RME estimate is defined as the highest exposure that is reasonably expected to occur at a site [Risk Assessment Guidance for Superfund (RAGS): Human Health Evaluation Manual (Part A)/EPA/1989] and, therefore, corresponds to the potential risk to sensitive subgroups or populations. EPA recommends that both the central tendency risk estimate and the RME risk estimate be determined for Superfund sites (Guidance on Risk Characterization for Risk Managers and Risk Assessors/EPA/1992). The RME exposure scenario is the preferred risk scenario for the determination of human health risk (RAGS/1989).

(3) It should be noted that both future residential and future Industrial exposure scenarios should have been evaluated in Appendix D of the Re-Evaluation of Risk Report. Unfortunately, the future industrial exposure was not calculated in the Re-Evaluation of Risk Report. For this reason, EPA, in the Proposed Plan, made a determination of the potential risk to a future industrial worker exposed to current Site conditions.

6. The cleanup goals in the Focused Feasibility Study dated May 1995 were developed for those chemicals of concern demonstrating carcinogenic risk estimated in excess of 10 -6 or non-cancer hazard quotients greater than 1 for future residential exposure. The Proposed Plan states that cleanup levels for fluff and surface soil were developed for the Site contaminants (BEHP[bis(ethylhexyl)phthalate], PCBs[polychlorinated biphenyls], copper and antimony) that present unacceptable risk estimates for routine exposure under an industrial land use scenario. However, the Proposed Plan uses EPA Region III risk-based Remedial Action Levels. Based on a site-specific industrial use scenario, the only chemicals of concern in surface soil that would warrant development of risk based cleanup levels are BEHP, and perchloroehtylene (PCE). However, BEHP is not considered a chemical of concern since it appears at the Site in an inert form (plastic) and was found to be immobile in the leachability studies as presented in the Fluff Leacability Testing Summary Report dated August 1994.

EPA Response: The COCs in surface soil were determined by EPA based on the RME scenario for a potential industrial worker as explained in the response to

Statement 5. The COCs are tetrachloroethylene (PCE), PCBs, BEHP, antimony, and copper. The cleanup level for PCE was omitted from the Proposed Plan. Site-specific cleanup levels for these compounds will appear in the Record of Decision. BEHP is considered to be a COC because it was detected in soil in its free form.

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