PROPOSED REMEDIAL ACTION PLAN

CAMP SUMMIT
Fulton (T), Schoharie County, New York
Site No. 4-48-006

March 2004

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: <u>SUMMARY AND PURPOSE OF THE PROPOSED PLAN</u>

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Camp Summit site. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this proposed remedy. As more fully described in Sections 3 and 4 of this document, past wood treatment operations have resulted in the disposal of fuel oil and hazardous wastes, including pentachlorophenol and dioxins/furans. These wastes have contaminated the soil and groundwater at the site, and have resulted in:

- a significant threat to human health associated with exposure to contaminated soil and groundwater.
- a significant environmental threat associated with the impacts of contaminants to soil, sediment and groundwater.

To eliminate or mitigate these threats, the NYSDEC proposes the following remedy:

- Excavation of contaminated soil with limited off-site disposal of grossly contaminated material. The majority of impacted soil would be consolidated on-site and capped with an impermeable multi-layer geomembrane cap.
- Implementation of a groundwater monitoring program to assess the effectiveness of the cap.
- Development of a site management plan to: (a) maintain the capped area (mowing, erosion repairs, etc); (b) restrict use of shallow groundwater in the area subject to long term monitoring (c) evaluate the potential for vapor intrusion for any buildings developed on the site, including provisions for mitigation of any impacts; and (d) prohibit redevelopment or use of the capped area.
- The property owner would provide an annual certification, prepared and submitted by a professional engineer or environmental professional acceptable to the NYSDEC, which would certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or soil management plan.
- Imposition of an institutional control in the form of an environmental easement that would: (a) require compliance with the approved site management plan, (b) prohibit use and development of the capped area; (c) restrict use of shallow groundwater as a source of potable or process water without the necessary water

quality treatment; and (d) require the property owner to complete and submit to the NYSDEC an annual certification to insure compliance with the use restrictions.

The proposed remedy, discussed in detail in Section 7, is intended to attain the remediation goals identified for this site in Section 5. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the March 2004 "Remedial Investigation (RI) Report", the March 2004 "Feasibility Study" (FS), and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

NYSDCS SICF
Summit-West Fulton Road
Summit, NY 12175
(518) 287-1721
ATTN: Bruce Yelich
(By appointment only)

Summit Town Garage
Charlotte Valley Road
Summit, NY 12175

NYSDEC Region 4
1150 Westcott Road
Schenectady, NY 12306-2014
(518) 357-2356
ATTN: Marcia Ellis
(By appointment only)

NYSDEC Central Office
625 Broadway, 11th Floor
Albany, NY 12233-7014
(518) 402-9564
ATTN: Bradley Brown
(By appointment only)

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from March 2, 2004 through March 31, 2004 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for March 17, 2004 at the Summit Town Garage beginning at 7:00 P.M.

At the meeting, the results of the RI/FS will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. Bradley Brown at the above address through March 31, 2004.

The NYSDEC may modify the preferred alternative or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the NYSDEC's final selection of the remedy for this site.

SECTION 2: <u>SITE LOCATION AND DESCRIPTION</u>

Camp Summit is located in the Town of Fulton, Schoharie County. The property is located in a New York Reforestation Area known as the Schoharie County Reforestation Area No. 6, located in a rural area in the foothills of the Catskill Mountains (Figure 1). Camp Summit is an active New York State Department of Correctional Services (NYSDCS) incarceration facility. The 290 acre property is owned by the NYSDEC, but operated by NYSDCS. The inactive hazardous waste disposal site occupies approximately 12 acres, approximately 300 feet south of the main prison office building. The site consists of the former wood treatment building and surrounding gravel and grass covered areas.

Camp Summit is bordered on the southeast by additional New York State owned land. The remainder of the property is bordered by private property, some of which is used for residential purposes. The local topography is hilly. An on-site pond feeds a tributary of Panther Creek. The tributary is a Class C (fish propagation) stream and Panther Creek is a Class C(TS) (trout spawning) stream. A NYSDEC Regulated Wetland is located approximately 0.5 miles northeast of the site.

SECTION 3: <u>SITE HISTORY</u>

3.1: <u>Operational/Disposal History</u>

Camp Summit facility inmates participate in various work programs. One of the work activities formerly performed by the Camp Summit inmates was a sawmill and wood treatment operation. The treatment plant was constructed as a dip tank process. The process operated from approximately 1964 to 1975. Initial treatment was with copper napthenate, which began during the fall of 1964, and continued for approximately one year. Pentachlorophenol (PCP) was used beginning in late 1965 or early 1966. The process consisted of soaking poles and lumber in pentachlorophenol filled dip tanks, hanging the wood over the tanks to allow a majority of the treating material to drip off, and transporting the treated wood on a small rail cart to drip and dry in a staging area outside the building. The plant was shut down in July of 1975 due to a fish kill in the on-site pond, resulting from a spill at the treatment building.

3.2: <u>Remedial History</u>

The Camp Summit site is one of three NYSDCS facilities in the State currently under investigation by the NYSDEC due to former wood treatment operations. Each of the three sites is an active incarceration facility operated by the NYSDCS, and located on property under the jurisdiction of the NYSDEC. The NYSDCS provided the funding for building construction at the Camps and provides for the maintenance and security. The NYSDEC provides the work programs, technical forestry staff to supervise work, and tools and equipment required to carry out the work. The wood treatment programs were developed to provide lumber and round poles for NYSDEC construction and maintenance projects. The pole treatment plants, however, are no longer in operation. Wood treatment at Camp Summit was discontinued in 1975.

In October 1997 the NYSDEC Division of Operations requested that the Division of Environmental Remediation (DER) perform an environmental investigation at Camp Summit.

The DER completed a Preliminary Investigation (PI) at Camp Summit in June 1999. The PI consisted of the excavation of test pits, the installation and sampling of monitoring wells and the collection of surface soil, sediment and subsurface soil samples. The investigation found pentachlorophenol in subsurface soil around a NYSDEC office, beneath the former treatment building, in former outdoor staging areas, in a drum rinsing area, in surface soil in the former outdoor staging areas, and on surfaces inside the former treatment building. Pentachlorophenol was also found in sediments at concentrations below the screening levels in the small pond located on site, and in groundwater. Dioxin, a common contaminant of commercially produced pentachlorophenol, was found in surface and subsurface soil, in sediments, in samples of fish and a turtle from the pond on-site, and in groundwater. Based on these findings the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1999. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

In 2001, the NYSDEC initiated a Remedial Investigation/Feasibility Study (RI/FS) for the Camp Summit site. The RI was developed to build on the information generated during the PI and to help fully delineate the extent of contamination known to exist.

SECTION 4: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between November 2001 and July 2003. The field activities and findings of the investigation are described in the RI report.

The following activities were conducted during the PI and RI:

- Collection of twenty-nine (29) surface soil samples.
- Collection of thirty (30) soil samples from shallow test pits.
- Installation of forty-eight (48) test pits across the site.
- Installation of twenty-two (22) soil borings.
- Conversion of nine (9) of the twenty-two (22) borings to monitoring wells.
- Collection of groundwater samples from all monitoring wells.
- Collection of groundwater samples from five (5) decommissioned production wells.

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code. *Division of Water Technical and Operational Guidance Series 1.1.1* (TOGS 1.1.1) was used for screening groundwater. The groundwater standard for total phenolic compounds listed in TOGS 1.1.1 is 1.0 part per billion (ppb). Because PCP is the only phenolic compound detected in the groundwater at the site, an SCG of 1.0 ppb has been used. Finally, 6NYCRR Part 700-705 lists a groundwater standard of 0.0007 parts per trillion (ppt) for 2,3,7,8-TCDD. This value has been adopted as the groundwater SCG, with the other forms of dioxins and furans normalized to 2,3,7,8-TCDD using the USEPA's toxicity equivalence factors (TEFs).
- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046;

Determination of Soil Cleanup Objectives and cleanup Levels". For dioxins/furans a cleanup level of 1 ppb 2,3,7,8-TCDD equivalence has been selected as the soil cleanup objective.

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

- NYSDEC Technical Report 87-3, *The Niagara River Biota Contamination Project: Fish Flesh Criteria for Piscivorous Wildlife*, July 1987,

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI report.

4.1.1: <u>Site Geology and Hydrogeology</u>

Depth to bedrock across the site varies greatly, ranging from zero to 95 feet or more below ground surface (bgs). This is evidenced by the visible rock outcrops in the shale quarry (northeast portion of the Camp property), and the water supply well logs documenting 21 to 95 feet of overburden. Well logs for supply wells located at the correctional facility reported the bedrock as brown rock, blue and gray sandstone, and blue shale. The overburden was described as brown and gray hardpan, boulders, and gray clay. The wells range in depth from 250 feet to 610 feet bgs.

During the RI, subsurface conditions were recorded during drilling and test pit activities. Observations of the shallow overburden were made during the test pit investigation. In general, the top two feet of overburden consists of broken gray shale that ranges in size from gravel to boulders. Intermixed within the shale is brown silt and sand. This surface layer is likely fill material placed as a base for buildings and for staging treated and untreated lumber. The shale quarry is the likely source of the fill material. Beneath the fill is very dense glacial till consisting of clay, sand, silt, and shale cobbles and boulders varying in color; including orange, gray, tan, and brown.

The RI revealed that groundwater occurs primarily in the lenses of sand and gravel under unconfined conditions within the till unit . Although these lenses appear to be discontinuous, they are likely hydraulically connected to some degree through fractures in the till. Shallow groundwater recharge occurs through the infiltration of precipitation. Groundwater discharge, if present, appears to occur to the on-site pond. Groundwater is known to exist in the bedrock based on the production well logs and it is expected that confined or semi-confined conditions exist within the bedrock. It was not determined if groundwater within the till and the bedrock are hydraulically connected, but this could reasonably be expected in areas where bedrock is relatively shallow.

Depth to groundwater ranged from seven to fourteen feet bgs during the latest groundwater sampling event. The RI revealed that groundwater flows in a northeasterly direction, generally following surface topography in the direction of the pond.

4.1.2: <u>Nature of Contamination</u>

As described in the RI report, many soil, sediment, and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are pentachlorophenol (PCP) and dioxins/furans.

PCP is a manufactured chemical which is a restricted use pesticide and is used industrially as a wood preservative for utility poles, railroad ties, fence posts, and wharf pilings. PCP was used at the Camp Summit site in the treatment of wood using a mixture of PCP and fuel oil. Fuel oil was used to dissolve the PCP into solution for the dipping process.

The primary fuel oil constituents of concern at this site are a subset of semi-volatile compounds (SVOCs), known as polycyclic aromatic hydrocarbons (PAHs).

PCP and dioxins/furans have low water solubility and a strong tendency to adhere to soil or sediment particles in the environment. Furthermore, PCP breaks down rapidly when exposed to sunlight and is less likely to be present in exposed surface soils. PAHs are also expected to be adsorbed to soil with limited potential for leaching. Therefore, their mobility in the environment is mainly limited to physical (erosional and depositional) mechanisms.

4.1.3: <u>Extent of Contamination</u>

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in soil, sediment, and biota and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Discussions that follow this section include the data generated during both the PI and the RI.

Much of the soil sample data from the PI presented below is from immunoassay testing. Immunoassay testing is a screening procedure that allows for efficient and cost effective analysis of the sample for a specific compound, in this case pentachlorophenol. A percentage of the samples collected were split, with one half undergoing the immunoassay testing, the other half sent to a contract laboratory for verification that the immunoassay tests were producing reliable results and therefore usable data. All immunoassay testing was found to be reliable based on this verification method.

Surface Soil

A total of thirty-eight surface soil samples were collected during the PI an screened with immunoassay testing. Eleven of the thrity-eight exceeded the screening concentration of 1 ppm. The of the thirty-eight were sent for analsysis of dioxins with two sampleesslightly exceeding the scfeening level of 1 ppb.

A total of twenty-nine surface soil samples were collected and sent for laboratory analysis of PAHs, metals, and dioxins.

PAHs were randomly detected in twenty-three of the twenty-nine samples ranging in total concentrations from 0.038, ppm to 6.7 ppm. None of the locations exhibited total PAHs in excess of the TAGM 4046 guidance value of 500 ppm. PCP was detected above TAGM 4046 guidance values at six locations (SS-6, SS-7, SS-12, SS-16, SS-19, and SS-22). These surface soil samples are located northeast of Building 49. Detected levels of PCP in these samples ranged from 1 ppm to 6.3 ppm. All six samples exceeded the screening level of 1 ppm for the protection of groundwater.

Seventeen of the twenty-nine surface soil samples were sent for the analysis of dioxins. Although dioxins and furans were detected at low concentrations in every sample, only four samples showed 2,3,7,8-TCDD equivalence concentrations above the 1 ppb screening level.

Subsurface Soil

A total of 30 shallow test pits were installed south of Building 51 within the former lumber storage treatment area.

Several PAHs were detected in 19 of the 30 samples. Only PCP was detected above TAGM 4046 guidance values. Four shallow test pits exhibited PCP concentrations above the 1 ppm guidance value, ranging from 1.6 ppm to 26 ppm.

A total of 17 shallow test pit samples were sent for laboratory analysis of dioxins. While congeners were detected in several of the samples, only STP-17 and STP-19 exhibited a 2,3,7,8-TCDD equivalence above the 1 ppb screening level. The elevated 2,3,7,8-TCDD equivalence in STP-19 is consistent with the elevated PCP concentrations detected in this sample.

In addition to the 30 shallow test pits, a total of 48 test pits, were excavated across the site to deeper depths (e.g. top of water table). A total of 53 samples were collected and analyzed for PAHs, VOCs, metals and dioxin.

Four of the 53 samples collected were sent for laboratory analysis of VOCs. Total VOC concentrations ranged from 0.318 ppm to 58.7 ppm. Acetone, 2-butanone, methylene chloride and total xylenes were detected in TP-1 in concentrations above TAGM 4046 guidance values. Total xylenes were in exceedance of TAGM 4046 guidance values in TP-33. Test pit TP-1 is located in a former satellite disposal (ref. Figure 5) area and TP-33 is located just east of the former treatment building.

Several PAHs were detected in 35 of the 53 test pit soil samples. Total PAH concentrations ranged from 0.019 ppm to 130 ppm. No samples exceeded the TAGM 4046 guidance value of 500 ppm for total PAHs. Two locations (TP-18 and TP-32), however, possessed individual PAH analytes in excess of TAGM 4046 guidance values. PCP was detected in six test pits above the 1 ppm guidance value.

Eighteen samples collected from the former treatment areas were submitted for laboratory analysis of metals. All samples exhibited concentrations in excess of average background concentrations for several metals.

A total of 32 samples were collected and sent for the laboratory analysis of dioxins. Dioxins and furans were detected in 29 of the samples. Two of the 32 samples analyzed contained 2,3,7,8-TCDD equivalence above the 1 ppb screening level. Test pits TP-1 and TP-3 possessed a 2,3,7,8-TCDD equivalence of 7.41 ppb and 1.36 ppb respectively.

Sediments

A total of 37 sediment samples were collected from 27 sampling locations during both the PI and RI investigative activities. Sediment sample locations are identified on Figure 3.

The PAH, benzo(a) pyrene (690 ppb), was detected above the SCG of 34.64 ppb in SED-5. Di-n-octyl phthalate was detected in DSED-1, DSED-2, DSED-3 and SED-4. No comparison value could be calculated for this analyte as it is not listed in the NYSDEC Technical Guidance for Screening Contaminated Sediments document.

PCP was not detected in any sediment sample above the SCG. Sediments were also analyzed for dioxins. A 2,3,7,8-TCDD equivalence site specific benchmark was calculated for each sediment sample based on total organic carbon. Three of the 10 samples (DSED-2, DSED-3 and SED-3) possessed concentrations of 2,3,7,8-TCDD equivalence, however, none of the samples exceeded the calculated location specific benchmark.

Groundwater

Groundwater samples from on-site monitoring wells and production wells were collected in December 2001 and January 2002. Samples from the six newly installed wells were sent for laboratory analysis of PAHs, pesticides, PCBs, metals and fuel oil components. Samples collected from four monitoring wells installed during the previous investigation were sent for laboratory analysis of SVOCs, dioxins and fuel oil components. Samples collected from five decommissioned production wells were sent for laboratory analysis of PAHs, pesticides, PCBs, metals and VOCs.

VOCs and PCBs were not detected in any groundwater samples.

Diesel fuel was detected in MW-4 at 24,000 ppb.

The highest PAH concentrations (and the most analyte detections) were encountered in monitoring well MW-7. Acenaphthene, 4-chloro-3-methylphenol, 2-chlorophenol, 2,4-dinitrotoluene, 1,4-dichlorobenzene, 4-nitrophenol, N-nitroso-di-n-propylamine, phenol pyrene, and 1,2,4-trichlorobenzene were all detected above guidance values.

4-Methylphenol and naphthalene were detected above guidance values in MW-4.

PCP was detected above the guidance value of 1 ppb in MW-4 (190 ppb), MW-6 (28 ppb) and MW-7 (490 ppb).

The groundwater guidance value for 2,3,7,8-TCDD is 0.00007 ppb. This has been adopted as the groundwater screening level, with the concentrations of other forms of dioxins and furans normalized to 2,3,7,8-TCDD using toxicity equivalence factors.

Dioxins were encountered in monitoring wells MW-2 through MW-5. All dioxin water results are reported in parts per trillion (ppt). Concentrations ranged from 0.000016 ppt to 0.065403 ppt. Monitoring wells MW-3 and MW-4 exhibited a 2,3,7,8-TCDD equivalence above the 0.00007 ppt screening level.

The metals most frequently detected were aluminum, iron, manganese and sodium. These metals are not considered to be associated with treatment operations and most likely represent background conditions.

Figure 4 illustrates groundwater monitoring well locations and groundwater sampling data.

Biota

During the PI, the NYSDEC Wildlife Pathology Unit collected several fish and one snapping turtle for pentachlorophenol analysis. Snapping turtle fat and two fish (shiners) were also analyzed for dioxins and furans by DER. Dioxin results are expressed both as the concentration of the individual 2,3,7,8-TCDD congener, and as the overall TCDD equivalence (TEQ), to allow for comparison to both Division of Fish and Wildlife guidance values and to NYSDOH guidance values. The two shiner samples contained 2,3,7,8-TCDD at 2.07 ppt and 3.36 ppt, and 10.5 ppt TEQ and 19.8 ppt TEQ, respectively. The snapping turtle fat contained 2,3,7,8-TCDD at 48.6 ppt. The higher concentration in the snapping turtle fat is expected, as dioxins bio-accumulate in body fat over time. Turtles are, on average, much longer-lived than minnows, and have a larger percentage of body fat than minnows.

The 2,3,7,8-TCDD fish concentration data was compared to risk calculations which evaluate possible effects on wildlife through the consumption of fish, contained in *The Niagara River Biota Contamination Project: Fish Flesh Criteria for Piscivorous Wildlife*, A.J. Newell *et al.*, July 1987, NYSDEC Technical Report 87-3, p. 72. The criteria listed are 3 ppt for non-carcinogenic effects, and 2.3 ppt for carcinogenic risk, using a threshold of 1 in 100 risk. One fish sample was slightly under these screening levels at 2.07 ppt, and the other exceeded both screening levels, at 3.36 ppt.

During the RI a total of 30 trout samples were collected from various locations within Panther Creek, located north (down-gradient) of the site. Several dioxin and furan congeners were detected in the trout samples. However, no trout samples collected exceeded the fish and wildlife screening level of 3 ppt.

Summary

Evaluation of the analytical data generated during the PI and RI resulted in the identification of several areas of concern with soil and localized groundwater contamination exceeding the SCGs. As shown on Figure 5, those areas include:

- A satellite disposal area east of the shale quarry access road;
- An area along the quarry access road due east of the pond;
- An area southwest of Building 50 formerly used for wood storage;
- An area south of Building 50 formerly used for wood storage;
- Entire area beneath Building 50;
- Entire area beneath Building 49;
- Entire area beneath the railroad slab north of Building 49;
- Entire area beneath Building 48;
- An area north of Building 51;
- An area north of Building 52;
- An area partially below and north of Building 52;
- An area west of Building 52;
- An area of the overgrown former access road southeast of Building 52;
- An area along the wood line south of Building 52.

4.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

To help assess the nature and extent of contamination at the Camp Summit site, in Summer 2001, two of the on-site structures were demolished. The former treatment building and the former office were demolished during the Remedial Investigation to permit investigation beneath these structures. Demolition debris was disposed offsite at a permitted disposal facility. Following completion of the demolition program the concrete slab of the former treatment building was sealed.

4.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 2.2 of the RI report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

There are no complete exposure pathways currently at the site. Potential pathways of exposure include:

- Direct contact with contaminated surficial soils in the former treatment area. There is currently an institutional control, in the form of warning signs, which serves to alert personnel to avoid impacted areas.

- Direct contact with contaminated subsurface soils by construction or utility workers in the future. Ingestion of contaminated shallow groundwater in the immediate area of the former treatment building is a potential future pathway should a well be installed.

- Inhalation of volatile site contaminants that may migrate from beneath a newly constructed building to the indoor air of the structure.

4.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following potential environmental exposure pathways and ecological risks have been identified:

- Terrestrial animal contact with chemicals present in the surface soil, subsurface soil, and groundwater;

- Ingestion of chemicals from surface soil, groundwater and food sources, and;

- Direct uptake of chemicals in soil or groundwater by terrestrial and aquatic plants

Samples of the sediments and biota in the on-site pond which receives drainage from the site, contained elevated levels of site related contaminants, therefore a completed exposure pathway to fish and wildlife receptors within the pond was identified. However, aquatic invertebrate tissue analysis was conducted and dioxins were not detected above the appropriate wildlife protection criteria beyond the on-site pond.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to PCP, dioxins/furans and metals in soil and groundwater;

- Environmental exposures of flora or fauna to PCP, dioxins, and metals in surface soil and groundwater;
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and

Further, the remediation goals for the site include attaining to the extent practicable:

- Ambient groundwater quality standards, and;
- Compliance with all applicable SCGs and cleanup goals.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Camp Summit Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

6.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soil, and groundwater at the site. The alternatives below are numbered sequentially for simplicity and do not necessarily correspond to the numbering system in the FS.

Alternative 1: No Action

Present Worth: *$450,000*
Capital Cost: *$26,000*
Annual OM&M: *$28,000*

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Under this alternative soil would not be actively treated and the site conditions would remain the same. Property maintenance (security, fence repairs, etc.) currently exists and would continue to exist as part of the daily operations of Camp Summit as an incarceration facility. However, access restrictions and security operations (beyond warning signs) do not currently exist at the site to prevent contact with impacted media. Groundwater monitoring would occur annually. For cost purposes a 30 year monitoring program has been assumed.

Alternative 2: Excavation and Off-site Disposal

Present Worth: *$16,945,000*
Capital Cost: *$16,826,000*
Annual OM&M:
(Years 1-5): *$28,000*

In Alternative 2 the PCP and dioxin impacts in the soil would be addressed by excavation and off-site disposal at a permitted disposal facility.

Specifically, the source areas (Figure 5) would be excavated using conventional methods and equipment. The former railroad slab adjacent to Building 49 and the Buildings 48, 49, and 50 slabs/foundations would be demolished and disposed of off-site as part of this remedial alternative.

The total estimated removal volume of impacted soil is approximately 10,605 cubic yards, measured in place. A 20% bulking factor yields roughly 12,726 cubic yards of soil to be managed. Additionally, stabilization of saturated soils (i.e., soils removed from beneath the elevation of the groundwater table – approximately 1,800 cubic yards) would be necessary (estimated 30% by volume), which would require approximately 540 cubic yards of ash or similar product. The building slabs and foundations removed and crushed as part of this remedial alternative would produce roughly 140 cubic yards of waste that would require disposal. Consequently, the total volume that would require off-site disposal would be approximately 13,406 cubic yards. Soils at the site have been determined to be hazardous (USEPA Hazardous Waste No. F032). As such, soils would have to be managed in accordance with all pertinent State and Federal regulations.

Dewatering operations may be required during excavation operations as the water table typically occurs between 5 to 6 feet bgs. Site geologic conditions indicate that groundwater exists within the overburden across the site. Water generated during excavation activities would be managed and either sent for off-site treatment or treated on-site.

The excavation would be performed in phases to minimize exposure and construction hazards. Construction workers would wear adequate personal protective equipment (PPE). Air monitoring would be conducted during all intrusive activities. No sheeting, shoring, or bracing is expected to be required due to the dense soils at the site and the manageable size of the excavation areas. Sloping or benching would be utilized to achieve stability of excavation sidewalls. Excavated materials would be transported to a permitted off-site treatment and disposal facility. The excavated areas would be backfilled with clean fill from an off-site source.

Excavated soils would be transported to a permitted treatment and disposal facility. NYCRR Part 371 defines the contaminated soils as hazardous (F032) waste. As such, soils would have to be disposed of in an appropriate hazardous waste landfill. Some pre-treatment of the excavated soils, prior to disposal, may be necessary in accordance with USEPA Land Disposal Restrictions (LDRs).

Groundwater monitoring would occur annually for five years. Based on the results, the need for further groundwater monitoring would be evaluated, and possibly continue at a modified frequency (e.g. biannually).

Alternative 3: Excavation, Consolidation and Limited Off-site Disposal

Present Worth: *$10,607,000*
Capital Cost: *$10,165,000*
Annual OM&M:
(Years 1-30): *$29,000*

Under Alternative 3, the PCP and dioxin impacts to soil would be addressed through excavation and a combination of on-site containment and off-site disposal. The majority of the excavated material would be consolidated and covered with a modified part 360 multi-layered synthetic cap and a limited amount of the material would be disposed off-site. Segregation of material for off-site disposal would be based upon visual impacts to the soil (i.e., staining, oily sheens, etc.). Areas of concern are shown on Figure 5 .

The former railroad slab, and Buildings 48, 49, and 50 slabs/foundations would be demolished as part of this remedial alternative. The concrete rubble generated during the demolition of these building slabs and foundations would also be placed in the consolidation area.

The total estimated removal volume of impacted soil is approximately 10,605 cubic yards, measured in place. A 20% bulking factor yields roughly 12,726 cubic yards of soil to be managed. Additionally, stabilization of saturated soils (i.e., soils removed from beneath the elevation of the groundwater table – approximately 1,800 cubic yards) would be necessary (estimated 30% by volume). The building slabs and foundations removed and crushed as part of this remedial alternative would produce roughly 140 cubic yards of waste that would require disposal. Based upon review of the site data, it is estimated that approximately 2,800 cubic yards of impacted soil would be segregated and considered for disposal off-site in a permitted disposal facility. As noted in Alternative 2 pre-treatment of grossly contaminated material is likely. Consequently, the total volume of material that would be consolidated and capped at the site would be approximately 9,926 cubic yards.

Dewatering operations consistent with Alternative 2 may be required during excavation operations.

The excavation would be performed consistent with that described in Alternative 2 and the excavated areas would be backfilled with clean fill from an off-site source.

The contaminated soil to be contained on site would be consolidated on grade in the area of contamination, covered with a modified NYCRR Part 360 multi-layered geosynthetic cap. This multi-layer cap would eliminate the potential for direct contact with impacted media and prevent rainwater infiltration into the material beneath the cap.

All future site development would be required to consider the requirements of the containment area and cap in their design. Institutional controls and environmental easements would be implemented to limit site access and usage (e.g. groundwater use restriction). Groundwater monitoring would occur annually for five years. Based on the results, further groundwater monitoring would continue either annually or the sampling frequency would be modified (e.g. biannually). For cost purposes a 30 year monitoring program has been assumed.

The approximate 2,800 cubic yards that would be disposed off-site in a permitted disposal facility is regulated by NYCRR Part 371 which defines the contaminated soils as hazardous (F032) waste. As such, these soils would have to be disposed of in an appropriate hazardous waste landfill and may require treatment prior to disposal

6.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the NYSDEC has determined to be applicable on a case-specific basis.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectiveness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the NYSDEC will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

The NYSDEC is proposing Alternative **Alternative 3: Excavation, Consolidation and Capping with Limited Off-site Disposal** as the remedy for this site. The elements of this remedy are described at the end of this section.

The proposed remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

The areas of contamination are shown on Figure 5. The conceptual consolidation area is illustrated on Figure 6. This area would coincide with one or more areas of known contamination, however, the actual location would be determined during the remedial design.

The comparative evaluation of overall protection of human health and the environment evaluates attainment of SCGs, as well as the analysis of other criteria evaluated for each alternative (specifically, short- and long-term effectiveness). The evaluation of this criteria focuses on such factors as the manner in which the remedial alternatives achieve protection over time, the degree to which site risks would be reduced, and the manner in which the source of contamination would be eliminated, reduced, or controlled.

Alternative 1 (No Action) would not be protective of human health and the environment.

Alternatives 2 and 3 would involve the excavation and either limited off-site disposal or containment of surface and subsurface soil that exceed the SCGs. Excavation of the soil exceeding the SCGs would remove the source of groundwater contamination. Alternative 2 involves the placement of excavated soil in a secured, permitted, off-site hazardous waste landfill, which would effectively mitigate the potential for exposure to soil exceeding the SCGs. The on-site containment component of Alternative 3 would isolate impacted soil from the surrounding environment and would also effectively mitigate the potential for exposure to soil exceeding the SCGs. The modified part 360 multi-layered synthetic cap would serve to impede the potential for transport of contaminants into groundwater. Short-term impacts to both human health and the environment during the implementation of Alternatives 2 and 3 could be managed using appropriate controls (e.g. dust monitoring, etc.). Alternatives 2 and 3 are considered effective measures to protect against potential long-term human health risks and environmental impacts.

Alternative 1 (No Action) would not comply with the SCGs. The other alternatives under evaluation in the section would comply with SCGs via the excavation and off-site disposal (Alternative 2) or by on-site containment (Alternative 3) of surface and subsurface soil that exceed the SCGs. LDR guidelines would be applicable to Alternatives 2 and 3 because they involve the transport of impacted materials off-site (i.e. outside the area of concern) for disposal. All remedial actions would be completed in a manner compliant with action-specific standards and regulatory requirements.

The short-term effectiveness comparison includes the evaluation of the relative potential for impacts to the nearby communities, site worker exposures, environmental impacts, and the time frame for implementation of the alternatives.

The implementation of Alternative 1 (No Action) would result in the least short-term impact, because minimal action would be taken to disturb the impacted media at the site. Alternatives 2 and 3 would both involve an increased short-term risk of exposures to on-site construction workers, the community, and the environment during construction activities. These risks could be managed through the appropriate utilization of erosion and sediment controls and health and safety measures, including engineering controls, air monitoring, and use of PPE, in accordance with OSHA 1910.120. Of the alternatives that would achieve the SCGs, Alternative 2 would pose the greatest short-term risks to human health and the environment because it would involve the largest volume of impacted material to be transported off-site.

Alternative 1 (No Action) would not reduce the risk of direct contact with impacted media. Therefore, it would not be a permanent or effective remedy.

Alternatives 2 and 3 would provide an effective and long-term solution to soil impacts exceeding the SCGs. They would effectively mitigate the potential for exposure to soil exceeding the SCGs. Excavation of the soil exceeding the SCGs would remove the source of groundwater contamination. Alternatives 2 and 3 would involve the placement of excavated soil in a secured, permitted, off-site hazardous waste landfill, which would reduce the on-site volume, toxicity, and mobility of the contamination. On-site containment (Alternative 3) would isolate impacted soil from the surrounding environment and impede the potential for transport of contaminants into groundwater. The long-term effectiveness of the modified part 360 multi layered synthetic cap would be ensured through routine inspection and maintenance of the cap as well as institutional controls, restrictions on land usage and environmental easements.

Groundwater monitoring would be performed under all alternatives. Alternatives 2 and 3 are considered effective measures to protect against potential long-term human health risks and environmental impacts.

Under Alternative 1 (No Action) the volume and toxicity of soil impacted with PCP would gradually decrease over time through natural degradation; dioxin concentrations would remain unaffected. Impacted soil would remain a potential source of contamination to the groundwater, as the infiltration of precipitation, which appears to be the primary mechanism of contamination transport at the Site, would not be impeded.

Alternatives 2 and 3 would reduce the on-site volume, toxicity, and mobility of contaminants through the excavation and off-site disposal of impacted soil exceeding the SCGs; however, there would not be any expected reduction in the volume, toxicity, or mobility of the contaminants disposed of off-site. On-site containment (Alternative 3) of impacted soil would not lessen the toxicity or volume of contaminated materials remaining on-site. It would, however, consolidate the material into a manageable unit that would impede mobility by preventing the infiltration and transport of contaminants.

Alternative 1 (No Action) would require minimal planned or implemented activities.

Alternative 3 would include the construction of a modified part 360 multi-layered synthetic cap. Quality assurance/quality control parameters would have to be adhered to during construction of the cap to ensure its effectiveness. The area of consolidation and construction of the modified part 360 multi- layered synthetic cap would have to be carefully integrated into the long-range development plans for the site. The long-term effectiveness of the cap would be ensured through routine inspection and maintenance as well as institutional controls and restrictions on land usage.

Alternatives 2 and 3 could be implemented using standard construction equipment and practices. Each of these alternatives would involve excavation, and are thus equally likely to encounter limitations associated with excavation activities. Excavation and transport equipment, clean fill, synthetic liner materials, materials to complete groundwater monitoring, and other items associated with these alternatives would be readily available.

Alternatives 2 and 3 would both involve off-site disposal. Given the levels of contamination observed during sampling it is likely that soil sent off-site for disposal would require pretreatment before being sent to an appropriate disposal facility..

The comparative evaluation of the cost of remediation is based on the net present worth of each alternative. Cost estimates are provided in Table 2.

Based on the above evaluation Alternative 3 would be the most appropriate remedy for this site.

The estimated present worth cost to implement the remedy is $10,607,000. The cost to construct the remedy is estimated to be $10,165,000 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $29,000.

The elements of the proposed remedy are as follows:

- A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

- Excavate areas of contaminated soil to meet SCGs and segregate as necessary for off-site disposal and on-site consolidation.

- Transport an estimated 2,800 cubic yards of grossly contaminated soil to an appropriate hazardous waste landfill in accordance with USEPA Land Disposal Restrictions (LDRs).

- Consolidation of an estimated 9,900 cubic yards of contaminated soil for on-site containment.

- Demolition and placement in the area of consolidation of the Building 48, 49 and 50 slabs/foundations.

- Construction of an approximately 1.6 acre modified Part 360 multi- layered synthetic cap over the consolidated excavated material. The cap would consist of:

  - Low Permeability Layer
  - Synthetic Barrier
  - Vegetative Layer

- The site would be restored by grading, placement of topsoil, and seeding of excavated and/or filled areas.

- Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program would be instituted. Groundwater monitoring would occur annually for five years. Based on the results, further groundwater monitoring would continue either annually or the sampling frequency would be modified (e.g. biannually). This program would allow the effectiveness of the cap to be monitored and would be a component of the operation, maintenance, and monitoring for the site.

- Development of a site management plan to: (a) maintain the capped area (mowing, erosion repairs, etc); (b) restrict use of shallow groundwater in the area subject to long term monitoring (c) evaluate the potential for vapor intrusion for any buildings developed on the site, including provisions for mitigation of any impacts; and (d) prohibit redevelopment or use of the capped area.

- The property owner would provide an annual certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department, which would certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation an maintenance or soil management plan.

- Imposition of an institutional control in the form of an environmental easement that would: (a) require compliance with the approved site management plan, (b) prohibit use and development of the capped area; (c) restrict use of shallow groundwater as a source of potable or process water; and, (d) require the property owner to complete and submit to the NYSDEC an annual certification to insure compliance with the use restrictions.

Table 1
Nature and Extent of Contamination

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG [b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Pentachlorophenol	0.038-6.3	1	16 of 67
Inorganic Compounds	Arsenic	5.8-17.9	7.5	17 of 24
	Copper	5.9-26.5	25	4 of 24
Dioxin Compounds	2,3,7,8-TCDD TEF[c]	0.000036-3.76815	0.001	6 of 37

SUBSURFACE SOIL - Test Pits	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCGb (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	0-3200	0.2	2 of 4
	2-Butanone	0-410	0.3	3 of 4
	Ethylbenzene	33-12000	5.5	4 of 4
	Methylene Chloride	5-9	0.1	4 of 4
	Toluene	0-100	1.5	2 of 4
	Total Xylenes	280-43000	1.2	4 of 4
Semivolatile Organic Compounds (SVOCs)	Benzo{a}anthracene	0-420	0.33	1 of 80
	Chrysene	0-440	0.4	1 of 80
	2-Methylnaphthalene	0-73000	36.4	1 of 80
	Pentachlorophenol	0-130000	1	11 of 80
PCB/Pesticides	4, 4'-DDD	0-37	2.9	1 of 2
	4, 4'-DDT	0-20	2.1	1 of 2

Table 1 (cont.)
Nature and Extent of Contamination

SUBSURFACE SOIL - Test Pits	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG [b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	5.9-28.6	7.5	23 of 34
	Copper	8.7-125	25	5 of 34
Dioxin Compounds	2,3,7,8-TCDD TEF[c]	BDL[d]-7.41	0.001	5 of 49

SUBSURFACE SOIL - Soil and MW Borings	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG [b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Fluorene	0-8000	50	1 of 56
	2-Methylnaphthalene	0-63	0.1 or MDL	17 of 56
	Naphthalene	0-18	13	1 of 56
	Pentachlorophenol	0-820	1.0 or MDL	28 of 56
	Phenol	0-0.33	0.03 or MDL	2 of 28
PCB/Pesticides	4,4'-DDT	0-3000	2100	1 of 8
Inorganic Compounds	Arsenic	0-22.2	7.5	6 of 8
Dioxin Compounds	2,3,7,8-TCDD TEF[c]	BDL[d]-1.0715	0.001	1 of 28

Table 1 (cont.)
Nature and Extent of Contamination

SEDIMENTS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Benzo(a) pyrene	0-690	34.64	1 of 37
InorganicCompounds	Arsenic	6.4-12.1	6	5 of 5
	Copper	7.1-27.7	16	2 of 5

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Xylenes (total)	ND-18	5	1 of 4
Semivolatile Organic Compounds (SVOCs)	Bis (2-ethylhexyl) phthalate	3-140	5	4 of 31
	2,4,6-Trichlorophenol	0-0.7	NP	1 of 31
	Pentachlorophenol	0-810	NP	8 of 31
Dioxin Compounds	2,3,7,8-TCDD TEF[c]	0.000016-0.065403	0.0007	7 of 17

BIOTA	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Dioxin Compounds	2,3,7,8-TCDD TEF[c]	BDL[d]-.000263	0.0003	3 of 34

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
[b] SCG = standards, criteria, and guidance values
[c]TEF = toxicity equivalence factors
[d]BDL = below detection limits

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Action	$26,000	$28,000	$450,000
Alternative3: Excavation and Off-site Disposal	$16,826,000	$28,000	$16,946,000
Alternative 4: Excavation and On-site Containment with Limited Off-site Disposal	$10,165,000	$29,000	$10,607,000