ATTACHMENT 7

CLOSURE PLAN

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1.0 Closure Plans

The closure plans contained herein are intended to address the entire Clean Harbors Clive, LLC facility at Clive, Utah. Should any changes in operating plans or facility design occur, the Clean Harbors Clive, LLC facility will request the appropriate permit modifications as required by 40 CFR 264.112(c) and Condition 1.D.2. As Clean Harbors Clive, LLC Clive is not a land disposal facility, and because all waste storage on the site includes secondary containment requirements, no Post-Closure Plans or permits are required.

Clean Harbors Clive is a storage facility located in the West Desert Hazardous Industry Area of Tooele County, Utah. The site is owned and operated by Clean Harbors Clive, LLC and operates under the authority of the Utah Division of Solid and Hazardous Waste (UDSHW), the U.S. Environmental Protection Agency, Region VIII, and the Tooele County Department of Engineering.

1.1 Waste Management Units to be Closed

1.1.1 Land Disposal Units

There are no landfills, surface impoundments, land treatment areas, or any other type of land disposal units at the facility.

1.1.2 Storage Areas

There are a variety of storage units at Clean Harbors Clive facility. These may be grouped into two basic types of units: storage and processing for container management; and, container transfer and special unloading. These areas may also be involved in actual handling or processing of wastes, and are not simply "storage" units. Detailed descriptions of the various units and systems are contained in Attachment 8 of this permit. These storage areas are summarized below.

1.1.2.1 Container Storage and Processing

Storage of containers occurs in several areas of the Clive facility, including the Thaw Unit (Unit 105), the Containerized Bulk Solids Storage Unit (106), the Rail/Truck Transfer Bay (Unit 535) and the Truck Wash Bay (Unit 604).

The Thaw Unit (Unit 105) consists of a large building suitable for the inside parking of several trucks or railcars as well as containers of smaller sizes. The unit may be heated in cold weather in order to thaw frozen shipments for subsequent sampling and management. Trucks and other containers stored in the Thaw Unit may be opened for inspection, sampling, and verification of their contents, waste transfer and other management activities.

The Containerized Bulk Solids Storage Unit (Unit 106) will be used for receiving, segregating, and storing wastes in sludge boxes, intermodal containers and other large or small containers. A detailed description of the Containerized Bulk Solids Storage Unit is provided in Attachment 8.

The Rail/Truck Transfer Bay (Unit 535) provides an area where the transfer of wastes between rail cars and trucks may occur.

The Truck Wash Bay (Unit 604) is used for transferring waste between containers and the storage of containers being transferred and leaking containers being prepared for shipment to Aragonite. It is also used for washing containers and equipment.

1.1.2.2 Miscellaneous Waste Handling Areas

There are a number of other areas which are considered waste-handling areas, though they are not permitted as hazardous waste storage units. These are areas for the transfer of bulk materials from rail cars to truck trailers, a truck wash, and similar handling areas. There are also storage areas for non-waste materials such as fuel oil.

1.2 Closure Performance Standard

Clean Harbors Clive facility will be closed in a manner that: minimizes the need for further maintenance; controls, minimizes, or eliminates, to the extent necessary to protect human health and environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run off, or hazardous waste decomposition products to the ground or surface water or to the atmosphere. Clean Harbors Clive facility intends to meet this standard by performing removal of all hazardous wastes and hazardous waste constituents to background levels established at the time of construction. Nothing in this closure plan shall be interpreted to require the removal of equipment, secondary containment areas, buildings, infrastructure, etc., if it has been decontaminated pursuant to this closure plan.

1.2.1 Establishment of Cleanup Standards

Clean Harbors Clive facility intends to close all waste management units by total removal of waste and waste constituents to background levels, so that there will not be any need for post-closure monitoring and maintenance of the facility. Upon closure of The Clean Harbors Clive facility, waste handling equipment and containment areas will be decontaminated and removed, or decontaminated and left in place or removed without decontamination and managed as a hazardous waste. The decontaminated buildings, structures, equipment and secondary containment areas are all that will remain of the facility itself. The experience gained during operations will be applied to the final closure plans. All exposed soil areas which may be subject to erosion will be revegetated using native plants, to approximately the same extent as existed prior to construction. Soils will be cleaned up to the background values established prior to construction.

There was no attempt to divide the site into sub-areas or zones, with respect to soil chemistry. The results of all samples were combined, and the established background value for a given parameter was considered as the average of all background sample values, plus three standard deviations. At closure, contaminated soils areas will be removed to meet this standard.

1.2.2 Procedures at Closure

It has been assumed that waste receipts will be terminated prior to closure, and that all process units are not operational during closure, requiring all waste inventory to be transported off-site for treatment and disposal.

The facility uses a financial assurance mechanism that guarantees performance of closure, so that 40 CFR 264.112(b)(7) does not apply. Final sampling of the soils upon the closure of the Clive facility will occur after all waste management units have been fully closed and decontaminated, and all wastes removed from the site (with the possible exception of samples remaining in the office/laboratory area). At this time, the Contaminated Soils Sampling Plan, Appendix B, will be implemented. This Plan provides for a careful visual inspection of the entire facility, to try and find any areas of contamination; and, a random sampling effort along roads and around buildings. All samples collected will be analyzed as specified in the Plan, and the results compared against the Background Standards established prior to facility startup. Any soil with analytical values exceeding these Standards will be removed and disposed. Current State and Federal hazardous waste regulations will be used to determine whether the soil must be considered as hazardous or non-hazardous waste; the beginning presumption, however, will be that the soil must be considered as hazardous and must be shown otherwise if non-hazardous waste disposal is desired. All QA/QC will follow that shown in Appendix A.

1.3 Partial Closure and Final Closure Activities

The Clean Harbors Clive facility will implement steps 1 through 10, below, in order to accomplish closure of the entire facility. Steps 1 through 3 and the steps relevant to the particular unit being closed will be implemented to accomplish the partial closure of a given unit at the facility, should this be necessary. Steps 1 through 10 are:

1. A "Notice of Intent to Close the Facility" will be sent to the UDSHW and to the US EPA, Region VIII Administrator, at least 45 days prior to the date first unit closure is anticipated to begin. The notice will also be sent to the Tooele County Engineering Department. These notices will indicate the date that closure activities are expected to commence. Should the Clean Harbors Clive facility find it necessary to close a portion of the facility prior to final closure, a "Notice of Intent to Close" that portion of the facility will be filed, as previously indicated. The notice will specify the portion of the facility to be closed and the anticipated closure date. Clean Harbors Clive facility may commence closure activities in accordance with the closure plan prior to the end of the 45-day notice period.

2. If the closure plan has not been previously approved, or an amendment to the plan is requested, the requested changes to the plan will not be implemented until approval by UDSHW and/or other appropriate agencies has been received.

3. Within 90 days after receiving the final volume of hazardous wastes, Clean Harbors Clive facility must remove all hazardous wastes from the facility (or portion of the facility), in accordance with the approved closure plan, unless extensions are approved by the appropriate regulatory agencies. The estimated time requirement for total facility closure is approximately six months.

4. The waste storage buildings shall be decontaminated and may be left as constructed. All process equipment shall be decontaminated and left in place on-site or salvaged/sold for reuse, or cut apart and landfilled elsewhere. The decision on whether to salvage a piece of equipment, leave in place on-site, or simply to dispose of it will be based upon economics and regulatory procedures at the time of closure. For the purposes of estimating closure costs, however, it is assumed that all items will be disposed of.

5. All upgradient storm water diversions, dikes, and corrugated steel pipe conduits will be maintained throughout closure in order to protect the facility from surface water run-on. These structures will be left in-place at final closure for use by any subsequent tenants.

6. Decontamination or off-site disposal at an appropriately permitted facility will be provided for contaminated soils, structures, and equipment.

7. Contaminated liquids generated by the closure process shall be managed in accordance with applicable regulations at the time of closure. Management options may include: treatment on-site by filtration to remove PCBs as allowed by TSCA regulations followed by subsequent RCRA management; treatment and disposal off-site by stabilization and landfilling; deep well injection; or treatment and discharge by a properly permitted wastewater treatment system. Liquids generated by the closure process will be collected using drums, tankers, or other containers and transferred to 90-day storage containers or transport vehicles using pumps or vacuum systems.

8. The fence, gates, and warning signs will be maintained, as per Utah and Tooele County standards, throughout closure.

9. Within 60 days of completion of closure or partial closure, Clean Harbors Clive facility will submit the certification of closure to the UDSHW and the Tooele County Engineering Department. This certification by an independent, Utah Registered Professional Engineer will attest that the unit or units have been closed in accordance with the requirements of this closure plan.

10. No later than the submission of the certification of closure for the entire facility, Clean Harbors Clive facility will submit to the UDSHW and to the Tooele County Land Office, a survey plat prepared by a professional land surveyor indicating the location and

dimensions of any permanent structures with respect to permanently surveyed benchmarks. Clean Harbors Clive facility will record a notation on the property deed indicating that the facility has been used to store and treat hazardous wastes, to alert future owners.

1.4 Maximum Waste Inventory

Table 1.1 indicates the maximum inventory of wastes that could be on-site at Clive facility. The maximum inventory of wastes in storage would occur if all units were at maximum capacity yet not closed. The maximum amount of waste requiring treatment would be the capacity of the container storage areas. If any units are closed prior to total facility closure, the maximum extent of operations will decrease.

Table 1.1
Maximum Inventory of Wastes that Could Be On-Site at the Clive Facility

Facility Units	Description	Maximum Waste Capacity[1,2]
Container Management		
105	Thaw Unit	60,000 Gallons
106	Containerized Bulk Solids	1,847,871 Gallons
535	Rail/Truck Transfer Bay	23,560 Gallons

Notes

1. The Truck Wash Bay (Unit 604) is not included as having capacity in storage at closure because Unit 106 is assumed to be at full capacity. Unit 604 may only store wastes when a corresponding volume of capacity remains available at Unit 106

2. Materials in storage requiring shipment off-site/treatment.

1.5 Schedule For Closure

Partial closures and final closure will occur as described in this Closure Plan. Projected closure schedules for the Clive facility are included at the end of Section 2.3.

1.6 Time Allowed for Closure

Table 1.2 summarizes the planned closure activities of the facility with an estimated timeline, as if no partial closures are anticipated. These activities may be seen in more detail in Section 2.3, the Schedule for Closure.

Table 1.2
Projected Schedule of Events at Closure
of the Entire Facility

Elapsed Time (months)	Event(s)
-	Notification to UDSHW and Tooele County Engineering Department
1.5	Final receipt of containerized wastes at Units 535, 105 & 106, mobilize work force
4.5	Removal of wastes stored in Units 535, 105 & 106
6.0	Complete disposal or decontamination of Units 535, 105 and 106
7.5	Finish decontamination of miscellaneous areas
7.5	Finish soils investigations/sampling/reseeding
7.5	Facility closed
9.5	Certifications due to UDSHW and Tooele County Engineering Department & notice to Tooele County land records.

1.7 Closure Plan Modifications

Copies of the closure plan are maintained by Clean Harbors Clive facility management and the UDSHW. When facility operational changes dictate a modification to this plan, the facility will submit a request for permit modification to make the necessary changes to the closure plan. Copies of this revised Plan will be submitted to UDSHW in accordance with 40 CFR 264.112 and Condition 1.D.2.

1.8 Inventory Disposal, Removal, or Decontamination

Clean Harbors Clive facility has been designed to meet all existing standards regarding the containment of wastes, and any spills that may result from waste handling. This includes provisions for managing wastes only in designated areas with adequate primary and secondary containment, and the prompt cleanup of any spilled material to prevent its spread. Spills of PCB materials are cleaned up pursuant to either 40 CFR 761 Subpart G or 40 CFR 761.79 as appropriate. All areas external to the waste management units themselves are expected to be clean, except for incidental spills that might occur during closure itself. However, to ensure that this is indeed the case, a thorough visual inspection of the entire facility will be made after all waste management units are closed, and all wastes removed from the facility. This inspection will be specifically looking for standing liquids, staining, or accumulations of debris or residues that would indicate soils or pavement contamination.

The inspection will be accompanied by a series of random samples, taken from along facility roads and around the waste management units, which will be analyzed for potential contamination. Any areas found to be contaminated will be further investigated, as deemed appropriate by the circumstances, and the contamination will be removed to previously established background levels. This entire inspection and sampling effort is fully described in Appendix B, the Contaminated Soils Sampling Plan.

It is planned that once closure starts, activity will continue (except for weather and equipment delays, etc.) until closure is complete. Closure activities may or may not occur on individual units at the same time.

Equipment needing decontamination may be transported to the Truck Wash (Unit 604) or any other fixed or temporary containment area to provide working room for decontamination or staging of equipment awaiting decontamination.

The following steps will be taken to decontaminate various components of the facility:

- The tractors, forklifts, trucks and other similar mobile equipment which are known or suspected to be contaminated with hazardous waste will be decontaminated. Decontamination will require the use of water, steam, heated detergent solutions, or water-miscible solvents, whichever is most effective. The wastewaters will either be treated off-site by incineration for destruction, or transported off-site and deep well injected, treated for discharge, or stabilized for disposal off-site in a RCRA-permitted

landfill. The decontaminated mobile equipment may be transferred to another hazardous waste facility after meeting the "hard surface" decontamination standard.

- Each of the waste storage and/or transfer units being closed that have managed PCB wastes in the past will undergo a visual inspection to identify and record potential new or previously unidentified PCB spills. Potential spills will be sampled and analyzed for PCBs unless decontaminated in accordance with §761.79. Sampled spills containing PCBs > 10 μg/100 cm^2 will be decontaminated in accordance with the PCB spill cleanup policy (for spills less than 72 hours old) or §761.79 (for spills more than 72 hours old). The decontamination procedures identified in the steps below will then be performed if not already accomplished during PCB decontamination. Details on wipe sampling of a given area after cleaning are presented in the sections specific to each waste management unit that stored or processed PCB wastes.

- During closure of a given waste management unit, facility personnel will visually inspect the surrounding areas on a routine basis. These inspections will be documented and kept in the facility operating record. These inspections will be for the purpose of detecting any spills that might have occurred as a result of the on-going closure activities. Based on these visual observations, any surfaces that appear to be contaminated with hazardous wastes will be cleaned or excavated and backfilled with clean soil. Contaminated soils will be subject to the generator analysis referenced in the Waste Analysis Plan and managed accordingly or the soil will be assumed to be a hazardous waste and will be shipped off-site for treatment/disposal.

- Hard surface (concrete, steel, etc.) decontamination procedures: These procedures are intended to apply to both structures and equipment. Closure of "hard surface" items is performance based and any cleaning method may be used to achieve the standard. No actual direct testing of the surfaces is intended, as there are no general "wipe tests" which have been approved or designated by the U.S. EPA or the UDSHW. The standard for successful decontamination is a sample of the final rinse from the item or surface meeting the limits in Table 1.3 and additionally, for those areas used to manage PCBs, the final rinse sample from the containment area having a total PCB concentration of 0.5 ppb or less.

  All wash/rinse water or other cleaning residues will be collected and handled as hazardous waste. The closure cost estimate assumes that these residues will be sent for off-site incineration. However, waste water residues may also be treated via filtration to decontaminate it with respect to PCBs, sent to a facility for deep well injection, treated and discharged under the NPDES program, or stabilized for landfill disposal. The method actually used will be decided at the time of closure, based upon site availability, regulatory approvals/regulations and economics.

- The various waste items that will need to be disposed of during closure may be treated in different ways, depending upon what they are and how they were "produced." Some items will be incinerated or landfilled at RCRA-permitted hazardous waste facilities,

while others may be landfilled at non-hazardous waste facilities or other approved disposal options may be used.

- Tanks and similar items may be cleaned as hard surfaces as described above, after which they may be put to other uses, sold for salvage, or disposed of as non-hazardous waste. If a given item is not cleaned to one of the standards described above, it may be cut into manageable pieces and disposed of in a RCRA-permitted landfill, or disposed of by other RCRA treatment technology authorized at the time of closure. The decision as to whether to salvage a particular item for reuse, or sell it for scrap metal value, or to dispose of it, will be based upon the market conditions at the time of closure, and the economics of salvage versus disposal. However, as required by 40 CFR 264 Subpart H, it has been assumed that all units which have actively held wastes will be disposed of in calculating the closure costs. Certain equipment, as specifically noted elsewhere, may be assumed as salvaged following decontamination, but no positive salvage value is given to these items in the closure cost estimates.

Table 1.3
Decontamination Rinse Water Analysis

Parameters (T=Total Metals)	Maximum Concentration Increase* (mg/l)
Oil and Grease	15.0
Phenols	0.2
Arsenic - T	0.1
Barium - T	5.0
Cadmium - T	0.03
Copper - T	1.0
Lead - T	0.1
Mercury- T	0.005
Selenium - T	0.05
Silver - T	0.1
Total Organic Halides	0.5
Total Organic Carbon	40.0
Cyanides	0.2

* The values given are the maximum allowable increase in a parameter, over the level that exists in the final rinse water prior to use. This "prior existing level" shall be established as the average of at least three (3) analyses of the rinsewater, plus three (3) standard deviations. These analyses will be made at the time of closure, when a water source is known.

NOTES:

1. Many different waste codes will be handled at the Clive facility. Over its operating lifetime, it is likely that each unit will eventually handle practically all waste codes actually received, either directly or through the "mixture" and "derived from" rules. From a regulatory viewpoint, then, the potential variety of contamination at all units will be identical. Therefore, only one list of parameters will be considered. This list will be used for all waste management units throughout the facility.

   The parameters listed in Table 1.3 are intended to represent the contaminants likely to be present in the highest levels, and to give an indication of potentially toxic constituents. It must be noted that many of the constituents of concern - the organics, especially the chlorinated organics - are volatile and will likely vaporize for the most part during the cleaning process itself. The loss of these relatively small amounts of materials is considered as unavoidable and non-threatening to the environment or the general public. Any remaining heavy, residual organics will be included by the analyses for Oil and Grease, TOC, and/or TOX. All of these parameters will detect general contamination to relatively small values.

It must also be remembered that the decontamination procedures listed earlier apply only to surfaces which are relatively impermeable (designated as "hard surfaces"). They will be used only for metallic items, such as tanks, and concrete. Any porous materials, such as soils, are intended for landfilling or other EPA/State approved treatment technologies. For most of the items to be decontaminated, a visual inspection will be as useful as actual analysis of the wash; however, to provide a quantitative, objective measure of contamination (or the absence thereof), and a historical record, these analyses will be conducted as described previously for "hard surfaces."

Wide ranging analyses for specific organic chemicals, such as that achieved by GC/MS work, will not provide significantly more useful information. In addition, these analyses take considerable periods of time, during which site conditions would have changed markedly (due to continuing exposure to the elements).

The parameters chosen will adequately sample for all constituents of real concern, or for indicators of those constituents.

2. It is expected that both field and laboratory methodology will change considerably between the time of permit issuance, and the time of actual closure. However, to cover the possibility of earlier closure of some units, a sampling and analysis plan has been developed and included as Appendix A.

3. The limits chosen were based on the recognition that it will be highly impractical, if not impossible, to use "detection limits" as a cleanup standard. This is because the water used for the cleanup will likely have naturally occurring contamination that far exceeds detection limits in many cases.

   This would be the case even if potable water were used for the equipment washdown. Clean Harbors Clive facility will use process water for the decontamination of the facility; this water will not meet drinking water standards, but will be significantly cleaner for most parameters than the ground water existing under the site. To facilitate cleanup, a detergent will be added to the washwater as well; as a result, these fluids will have relatively high levels of contamination, compared to "detection limits", before any washdown occurs. The levels listed in Table 1.3 were chosen based upon these considerations.

- Following a visual inspection for cracks or other damage, containment areas are to be cleaned as hard surfaces. A sample of rinsate will be collected from sumps for analysis to determine the effectiveness of decontamination, in accordance with the hard surface cleaning method and Appendix A.

- Following the hard surface decontamination procedure, the sumps of all containment areas will be inspected for cracks in the concrete that might have occurred during the closure period. If this inspection was completed during idling for a particular unit, it does not have to be repeated. If cracks are found, and a leak or loss of integrity in containment

is suspected, core samples of the soil and/or concrete will be collected to confirm or refute the suspicion of contamination of the subsoils. If contamination is confirmed or assumed, all concrete and soil within six inches of a crack will be removed and collected for disposal as a contaminated soil, described above. Alternatively, if soil contamination is suspected in the area of a crack, core sampling may be bypassed by assuming contamination exists and Clean Harbors Clive facility may proceed directly to removal of concrete and soil as described above. The concrete will be removed by jack-hammering it out, then using either a shovel or front-end loader to pick it up. The soil from the trench left after removing the concrete will then be sampled and compared to the established background values, in accordance with Appendix B. Removal will continue both laterally and vertically until the area is clean.

- Chemicals which are still in acceptable condition (i.e., still meet applicable "Reagent" or "Technical" grade standards or are still useful for the purpose they are typically purchased) may be offered for use at other facilities, or educational or research laboratories. Samples of hazardous wastes and decontamination residuals, and remaining laboratory chemicals will be disposed of according to current regulations.

- Upon completion of final or partial closure, Clean Harbors Clive facility will submit a closure certification to the UDSHW and Tooele County Engineering Department. A certification by an independent registered professional engineer attesting that the facility or portion of the facility has been closed in accordance with this closure plan will be included with the submittal to the UDSHW and the Tooele County Engineering Department. All applicable quality assurance programs specified in this permit will be followed during closure.

1.9 Closure Plans, By Waste Management Unit

There are four areas of the facility which relate directly to receipt of waste shipments. These units are the Thaw Unit (Unit 105), the Containerized Bulk Solids Storage Area (Unit 106), the Rail/Truck Transfer Bay (Unit 535), and the Railcar to Trailer Transload Building (Unit 255). The Truck Wash Bay (Unit 604) is permitted for container storage, but for purposes of this closure plan is not assumed to be storing waste at the time of closure. This is because waste may only be stored in Unit 604 if an equivalent volume of capacity remains available in Unit 106 and Unit 106 is presumed to be full at the time of closure. Unit 604 will still undergo decontamination as described below even though no waste is assumed in storage at the time of closure. Decontamination and decommissioning of these structures will be accomplished by using the PCB decontamination standards and the RCRA "hard surface" decontamination standard as described in Section 1.8. Once these areas are decontaminated, they may be left in place/on-site.

1.9.1 Thaw Unit, Unit 105

Upon closure of Unit 105, all wastes will be removed from the unit. At closure, Unit 105 is assumed to be filled to the maximum total capacity of 60,000 gallons of waste. This is generally

anticipated to be rail tank cars, bulk solids in sludge boxes, intermodal containers and other large containers, but may also include smaller containers of waste.

Upon completion of waste removal, all containment surfaces will be visually inspected for indications of PCB contamination, i.e. stains, discolored areas, operator knowledge. Areas suspected of being contaminated with PCBs will be identified, recorded, and sampled to determine if they contain PCBs >10 µg/100 cm^2 per the standards of §761.79 and/or will be decontaminated in accordance with §761.79. The containment area of Unit 105 will be cleaned as a "hard surface" in accordance with Section 1.8 of this attachment. In addition to the wipe sampling necessary to demonstrate PCB decontamination of stained areas, wipe samples for PCBs will be taken from the containment area following cleaning, in accordance with §761.123 Definitions, *Standard Wipe Test* and the following sampling scheme. The wipes will be taken from horizontal floor and sump bottom surfaces. A total of 9 planned wipes will be taken by establishing diagonal lines from the NW to SE and from the NE to the SW corner of each containment area. Then the intersecting point (center) of the lines will be one sampling point. The other sampling points will be located at equal increments from the intersection point (center) to each of the four containment area corners. Wipe samples will be analyzed separately. Surfaces found to be above the 40 CFR 761.79 standard will be decontaminated until wipe testing confirms successful decontamination. A sample of the final rinse solution from the containment area will be analyzed for the parameters in Table 1.3 and PCBs. Decontamination will be complete when the standard in Table 1.3 is met and the total PCB concentration is 0.5 ppb or less.

Should Unit 105 be closed for used oil management, the same procedures outlined above will be followed.

1.9.2 Containerized Bulk Solids Storage Unit 106

Upon closure of Unit 106, all wastes will be removed from the unit. At closure, Unit 106 is assumed to be filled to the maximum total capacity of 1,847,871 gallons - 630,240 gallons in subunit 1, with 448,440 gallons in the enclosed area of subunit 1 and 181,800 gallons in the unenclosed portion of subunit 1; 617,463 gallons in subunit 2 and 600,168 gallons in subunit 3. For decontamination purposes, only the enclosed area of subunit 1 is assumed to contain PCB wastes. The wastes stored in Unit 106 are generally anticipated to be bulk solids in sludge boxes, intermodal containers and other large containers, but may also include smaller containers of waste.

For the enclosed portion of Subunit 1, upon completion of waste removal, all containment surfaces will be visually inspected for indications of PCB contamination, i.e. stains, discolored areas, operator knowledge. Areas suspected of being contaminated with PCBs will be identified, recorded, and sampled to determine if they contain PCBs >10 µg/100 cm^2 per the standards of §761.79 and/or will be decontaminated in accordance with §761.79. The containment area of the enclosed portion of subunit 1 will be cleaned as a "hard surface" in accordance with Section 1.8 of this attachment. In addition to the wipe sampling necessary to demonstrate PCB decontamination of stained areas, wipe samples for PCBs will be taken from the containment

area following cleaning, in accordance with §761.123 Definitions, *Standard Wipe Test* and the following sampling scheme. The wipes will be taken from horizontal floor surfaces. A total of 9 planned wipes will be taken by establishing diagonal lines from the NW to SE and from the NE to SW corner of each containment area. Then the intersecting point (center) of the lines will be one sampling point. The other sampling points will be located at equal increments from the intersection point (center) to each of the four containment area corners. Wipe samples will be analyzed separately. Surfaces found to be above the 40 CFR 761.79 standard will be decontaminated until wipe testing confirms successful decontamination. Samples of the final rinse solution from the containment areas in the enclosed portion of subunit 1 will be analyzed for the parameters in Table 1.3 and PCBs. Decontamination will be complete when the standard in Table 1.3 is met and the total PCB concentration is 0.5 ppb or less.

The containment areas of the unenclosed portion of subunit 1, subunit 2 and subunit 3 will be cleaned as "hard surfaces" in accordance with Section 1.8 of this attachment. Samples of the final rinse solution from the containment areas of the unenclosed portion of subunit 1, subunit 2 and subunit 3 will be analyzed for the parameters in Table 1.3. Decontamination will be complete when the standard in Table 1.3 is met.

Salvageable equipment will be cleaned as "hard surfaces," if required, following the requirements set forth in Section 1.8 and, if required, according to 40 CFR 761.79 (c). Equipment to be used in Unit 106 may include trucks for rolloff bins, straddle-packers, forklifts, hand tools and similar equipment. The larger mechanical equipment (the trucks, straddle-packers and forklifts) will primarily contact only the outer surfaces of the containers. The smaller equipment (hand tools such as wrenches and screwdrivers) is more likely to contact waste.

1.9.3 Unit 535, Rail Tank Car to Truck Transload Area

All waste stored in Unit 535 will be removed and disposed. As with the other buildings and containment areas on-site, it is assumed that the containment area of Unit 535 is RCRA contaminated, and no prior testing will be conducted for confirmation. At the time of closure, Unit 535 is assumed filled to the maximum total capacity of 23,560 gallons of PCB waste.

Upon completion of waste removal, all containment surfaces will be visually inspected for indications of PCB contamination, i.e. stains, discolored areas, operator knowledge. Areas suspected of being contaminated with PCBs will be identified, recorded, and sampled to determine if they contain PCBs >10 $\mu g/100\ cm^2$ per the standards at §761.79 and/or will be decontaminated in accordance with §761.79. The containment area of Unit 535 will be cleaned as a "hard surface" in accordance with Section 1.8 of this attachment. In addition to the wipe sampling necessary to demonstrate PCB decontamination of stained areas, wipe samples for PCBs will be taken from the containment area following cleaning, in accordance with §761.123 Definitions, *Standard Wipe Test* and the following sampling scheme. The wipes will be taken from horizontal floor and sump bottom surfaces. A total of 20 planned wipes will be taken from the Truck Unloading Bay secondary containment areas. The sampling points will be taken by establishing diagonal lines from the NW to SE and from the NE to the SW corner of each containment area. Then the intersecting point (center) of the lines will be one sampling point.

The other sampling points will be located at equal increments from the intersection point (center) to each of the four containment area corners. Wipe samples will be analyzed separately. Surfaces found to be above the 40 CFR 761.79 standard will be decontaminated until wipe testing confirms successful decontamination. Samples of the final rinse solution from the containment areas will be analyzed for the parameters in Table 1.3 and PCBs. Decontamination will be complete when the standard in Table 1.3 is met and the total PCB concentration is 0.5 ppb or less.

Should Unit 535 be closed for used oil management, the same procedures outlined above will be followed.

1.9.4 Miscellaneous Containment Areas, Units 255 & 604

There are two other minor waste management areas remaining to be closed, along with miscellaneous piping, hoses, portable pumps, hand tools and similar equipment. These areas are: the Railcar to Truck Transload Bay (Unit 255), and the Truck Wash Building (Unit 604). As with the other buildings and containment areas on-site, it is assumed that the containment area of Unit 255 and the interior of the truck wash are RCRA contaminated, and no prior testing will be conducted for confirmation. Both units are used to handle PCB wastes. All PCB spills are cleaned as they occur according to 40 CFR 761 Subpart G. However, before implementing the "hard surfaces" decontamination methods described in section 1.8 of this attachment, all containment surfaces will be visually inspected for indications of PCB contamination, i.e. stains, discolored areas, operator knowledge. Areas suspected of being contaminated with PCBs will be identified, recorded, and sampled to determine if they contain PCBs >10 µg/100 cm^2 per the standards at §761.79 and/or will be decontaminated in accordance with §761.79. Units 604 and 255, including the walls, floor, and ceiling (if necessary) for Unit 604 and the containment surfaces of Unit 255, will be cleaned as "hard surfaces" in accordance with the Section 1.8 of this attachment.

In addition to the wipe sampling necessary to demonstrate PCB decontamination of stained areas in both units, PCB wipe samples will be taken from the containment areas following cleaning, in accordance with §761.123 Definitions, *Standard Wipe Test* and the following sampling scheme:

Unit 255: Wipe samples will be taken from horizontal floor and sump bottom surfaces. A total of 9 planned wipes will be taken from the secondary containment areas. The sampling points will be taken by establishing diagonal lines from the NW to the SE and from the NE to the SW corners of each containment area. Then the intersecting point (center) of the lines will be one sampling point. The other sampling points will be located at equal increments from the intersection point (center) to each of the four containment area corners. Wipe samples will be analyzed separately. Surfaces found to be above the 40 CFR 761.79 standard will be decontaminated until wipe testing confirms successful decontamination. A sample of the final rinse solution from the containment area will be analyzed for the parameters in Table 1.3 and PCBs. Decontamination will be complete when the standard in Table 1.3 is met and the total PCB concentration is 0.5 ppb or less.

Unit 604: Wipe samples will be taken from horizontal floor and sump bottom surfaces. A total of 21 planned wipes will be taken from the Unit 604 containment area. The sampling points will be taken by establishing diagonal lines from the NW to the SE and from the NE to the SW corners of each containment area. Then the intersecting point (center) of the lines will be one sampling point. The other sampling points will be located at equal increments from the intersection point (center) to each of the two containment area corners. Wipe samples will be analyzed separately. Surfaces found to be above the 40 CFR 761.79 standard will be decontaminated until wipe testing confirms successful decontamination. Samples of the final rinse solution from the containment areas will be analyzed for the parameters in Table 1.3 and PCBs. Decontamination will be complete when the standard in Table 1.3 is met and the total PCB concentration is 0.5 ppb or less.

Decontaminated equipment, containment surfaces and buildings may either be removed or left in place.

1.9.5 Laboratory Closure

The majority of the laboratory has been closed. Only one room of the laboratory has not been closed and it is used to receive, store and prepare waste samples to be shipped to an off-site laboratory for analysis. The remaining laboratory room is located in the office and laboratory building complex (single story structure). The related domestic water and sewage systems will most likely remain in place during the closure period, and for some time thereafter.

The remaining waste receiving laboratory room will be closed as follows: (This excludes the two-story administration building as it is only used as office space and not as an area to handle waste. This portion of the building does not have to be closed.)

1. The laboratory furniture will be removed from the building and decontaminated by meeting the "hard surface" decontamination standard (Section 1.8). It will then be disposed of as solid (non-hazardous) waste, salvaged, or placed back into use. Alternatively, it may be disposed of as hazardous waste without decontamination at the discretion of the company.
2. Stains on walls will be identified, removed and disposed as PCB/RCRA wastes for incineration. No further sampling will be required.
3. The floor of the room will be cleaned to meet the "hard surfaces" decontamination standard.
4. All plumbing fixtures will be washed, but may otherwise remain in place.

2.0 Closure Cost Estimates

Closure Cost Estimates have been prepared for Clean Harbors Clive facility in accordance with the requirements of 40 CFR 264, Subpart H, specifically 264.142. These estimates assume that

the Clive facility is closed as detailed in the Closure Plans of this permit. These estimates assume that all wastes at the facility will be disposed of off-site at third party facilities. For purposes of calculations, it is assumed that, at the time of closure, all waste management units at the Clive facility will be at full permitted capacity. Costs are based on labor and materials rates known or estimated as of mid-2001. All costs will be adjusted periodically, as required by the rules.

2.1 Basis for Cost Estimates

The cost estimates for closure of a hazardous waste facility must consider the most expensive scenario for closure. This would occur if the facility were to begin closure while all hazardous waste storage areas were at capacity (refer to Table 1.1).

Closure costs estimates for the facility are based on published prices, where available, actual experience with similar activities at other facilities, or the judgment of company engineering staff. To allow for errors and fluctuations, a contingency of 10% was assumed. All estimates assume that closure is performed by a third party contractor, and not Clean Harbors personnel; some costs are based on those charged by Clean Harbors contractors at other facilities, however. All costs are based on 2001 dollars. The calculations are based on projected facility operations, and the assumed closure period is an estimate. The cost estimates consider only the costs imposed by the handling of hazardous wastes and TSCA-regulated wastes, and it is assumed that all general waste storage capacities are taken up by these wastes. Any non-hazardous wastes handled at the facility will be stored and treated in units which also handle hazardous wastes, hence there is no need to consider these separately.

Clean Harbors Clive facility will prepare new closure cost estimates, whenever a change in the closure plan would affect the cost of closure. Clean Harbors Clive facility will annually adjust the latest closure cost estimates by using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its Survey of Current Business. The inflation factor will be calculated by dividing the latest published annual deflator by the deflator for the previous year. The latest closure cost estimate will be multiplied by the inflation factor to determine the adjusted closure cost estimate.

For the purposes of estimating closure costs, it is assumed that all items will be disposed of. The waste storage buildings shall be decontaminated and left as constructed.

2.2 Cost Estimates by Waste Management Unit

The closure costs for specific areas are listed below. These estimates are based on assumptions regarding the actual times needed for closure, and the equipment used.

Table 2.1 shows a summary of the Closure Cost Estimates for Clean Harbors Clive facility. The total of these amounts in 2001 dollars, plus a 10% contingency allowance, is 6,439,037; at least this amount (adjusted as necessary for inflation) has been guaranteed through the Financial Assurances described in Section 3.0.

Equipment and labor costs on which the Estimates are based are shown on Table 2.2.

Individual unit closure cost estimates are shown in Table 2.3. Table 2.3 also includes closure cost estimates in 2001 dollars for closure of units 105 and 535 for used oil operations. However, these additional cost estimates do not materially add to the required financial assurance as closure under the hazardous rules also satisfies the used oil closure requirements. In the event that either or both of these units close hazardous waste operations, but continue used oil operations, the facility would be required to secure the necessary financial assurance to satisfy the used oil closure estimates.

Table 2.1
Clean Harbors Clive facility
Summary of Closure Cost Estimates

Facility Area/Waste Management Unit	Estimated Cost to Close
Thaw Shed (Unit 105)	$101,372
Rail to Truck Transload (Unit 255)	$17,242
Containerized Bulk Solids Storage (Unit 106)	$5,358,471
Rail/Truck Transfer Bay (Unit 535)	$35,936
Truck Wash (Unit 604)/Laboratory	$18,724
Soils Sampling and Analysis	$65,979
Miscellaneous Other Costs	$113,633
Labor Supervision	$156,000
Independent Certifying Engineer	$25,000
Subtotal	**$5,892,357**
10% Contingency	$589,236
Total In 2001 Dollars	**$6,481,593**

Table 2.2
Clean Harbors Clive facility
Estimated Laboratory Analysis, Labor, Treatment/Disposal, and Equipment Costs

Labor Item	Labor Cost	Per	Labor Cost	Per	Labor Cost	Per
Average Third Party Labor Rate	$40	Hour	$400	Day		
Supervisor	$60	Hour	$600	Day	$12,000	Month
Clerk	$14	Hour	$140	Day	$2,426.67	Month
Guard	$15	Hour	$180	Day	$900	Week
Facility Management	$1,500	1 week/month				

Equipment Item	Rental Rate	Per
Steam Cleaner	$35	Day
Crane	$1,000	Day
Heavy Equipment Lease	$25,000	Lump Sum

Rate	Rate	Per
Lab Analysis – Table 1.3	$291.64	Each
Lab Analysis – PCB Solids/Wipes	$100	Each
Lab Analysis – Priority Pollutants	$1,161.60	Each
Bulk Solids Incineration – Debris	$0.378	Pound
Bulk Solids Incineration < 3,000 Btu/pound	$0.380	Pound
Bulk Liquids Incineration	$0.118	Pound
Bulk Water Incineration	$0.161	Pound
PCB Water Treatment	$0.096	Gallon
Bulk Water Landfill	$0.01	Pound
Drummed Waste Incineration	$0.552 (RCRA)	Pound
	$0.616 (TSCA)	Pound
Hazardous Waste Landfill	$115	Ton
Solid Non-Hazardous Waste Disposal	$60	Cubic Yard
Surveying Costs	$5,000	Lump Sum
Closure Certification Costs	$40,000	Lump Sum

Transportation Distances	
Distance to Hazardous Waste Incinerator	20 miles
Distance to Hazardous Waste Landfill	20 miles
Distance to Solid Waste Landfill	20 miles

Fresh Water Costs	Rate	Per
Water	$0.005	Gallon
Transportation	$0.0275	Gallon
Miscellaneous	$0.05	Gallon
Total	$0.0825	Gallon

2.2.1 Closure Cost Estimate Calculations

Table 2.3
Closure Cost Estimates by Unit

CLOSURE ACTIVITY	QUANTITY	DISPOSAL/TREATMENT OPTION	FACILITY	CALCULATIONS	QUANTITY	COST/UNIT	TOTAL COSTS
UNIT 105							
Inventory Disposal (Assumed PCB Bulk Water)	60,000 Gallons	Incineration	Aragonite	60,000 gal x 8.3 lb/gal	498,000 lbs	$0.161/lb	$80,178
Transport of Unit 105 Waste (40,000 lbs per load)	13 Loads	----------	Aragonite	498,000/40,000	13 Loads	$300	$3,900
Unit 105 Decontamination Rinsate Cost	8,000 Gallons	----------	Contractor	----------	8,000 gal	$0.0825/gal	$660
Rinsate Disposal (Assumed RCRA Bulk Water)	8,000 Gallons	Incineration	Contractor	8000 gal x 8.34 lb/gal	66,720 lbs	$0.161/lb	$10,742
Rinsate Transportation (40,000 lbs per load)	2 Loads	----------	Aragonite	66,720/40,000	2 Loads	$300	$600
Labor – Operators	10 Operator-days	----------	Contractor	----------	10 Person-Days	$400	$4,000
Wipe Testing	10 Samples	----------	Contract Lab	9 Samples + 1 Field Blank	10 Samples	$100	$1,000
Water Analysis (Table 1.3)	1 Sample	----------	Contract Lab	----------	1 Sample	$291.64	$292
UNIT 105 SUBTOTAL							**$101,372**
UNIT 255							
Unit 255 Decontamination Rinsate Cost	8,000 Gallons	----------	Contractor	----------	8,000 gal	$0.0825/gal	$660
Rinsate Disposal (Assumed RCRA Bulk Water)	8,000 Gallons	Incineration	Contractor	8000 gal x 8.3 lb/gal	66,400 lbs	$0.161/lb	$10,690
Rinsate Transportation (40,000 lbs per load)	2 Loads	----------	Aragonite	66,400/40,000	2 Loads	$300	$600
Labor – Operators	10 Operator-Days	----------	Contractor	----------	10 Person-Days	$400	$4,000

CLOSURE ACTIVITY	QUANTITY	DISPOSAL/TREATMENT OPTION	FACILITY	CALCULATIONS	QUANTITY	COST/UNIT	TOTAL COSTS
Wipe Testing	10 Samples	----------	Contract Lab	9 Samples + 1 Field Blank	10 Samples	$100	$1,000
Water Analysis (Table 1.3)	1 Sample	----------	Contract Lab	----------	1 Sample	$291.64	$292
UNIT 255 SUBTOTAL							**$17,242**
UNIT 106 - SUBUNIT 1							
Inventory Disposal Enclosed Area (Assumed PCB Solids)	448,440 Gallons	Incineration	Aragonite	448,440 gal x 6.44lb/gal	2,887,954lbs	$0.378/lb	$1,091,646
Inventory Disposal Unenclosed Area (Assumed RCRA Solids)	181,800 Gallons	Incineration	Aragonite	181,800 gal x 9.28lb/gal	1,687,104lbs	$0.380/lb	$641,100
Transport of Unit 106 Waste (40,000 lbs per load)	115 Loads	----------	Aragonite	4,575,058/40,000	115 Loads	$300	$34,500
Labor – Operators	20 Operator-Days	----------	Contractor	4 persons x 5 days	20 Person-Days	$400	$8,000
Unit 106 Decontamination Scrape and Sweep – Labor	4 Operator-Days	----------	Contractor	4 persons x 1 day	4 Person-Days	$400	$1,600
Decontaminate Pad – Labor	12 Operator-Days	----------	Contractor	2 persons x 6 days	12 Person-Days	$400	$4,800
Wipe Testing	1 Operator Day	----------	Contractor	1 person x 1 day	1 Person Day	$400	$400
High Pressure Wash Rental	6 Days		Rental	----------	6 Days	$35	$210
Detergents & Other Supplies	1	----------	Supplies	----------	1	$500	$500
Wipe Sample Analysis	10 Samples	----------	Contract Lab	9 Samples + 1 Field Blank	10 Samples	$100	$1,000
Rinsate Cost	28,241 Gallons	----------	Contractor	----------	28,241 gal	$0.0825/gal	$2,330
Water Analysis (Table 1.3)	3 Samples	----------	Contract Lab	----------	3 Samples	$291.64	$875
Rinsate Transportation (40,000 lbs per load)	6 Loads	----------	Aragonite	234,400/40,000	6 Loads	$300	$1,800
Rinsate Disposal (Assumed RCRA Bulk Water)	28,241 Gallons	Incineration	Contractor	28,2451 gal x 8.3 lb/gal	234,400 lbs	$0.161/lb	$37,738

CLOSURE ACTIVITY	QUANTITY	DISPOSAL/TREATMENT OPTION	FACILITY	CALCULATIONS	QUANTITY	COST/UNIT	TOTAL COSTS
Large Equipment Decontamination	2 Operator-Days	----------	Contractor	2 persons x 1 day	2 Person-Days	$400	$800
Small Equipment Disposal	1 Drum – 500 lbs	Incineration	Aragonite	----------	1 Drum – 500 lbs	$0.552	$276
UNIT 106 - SUBUNIT 1							$1,827,575
UNIT 106 - SUBUNIT 2	For estimating the cost to close Subunit 2, assume the same costs as in Subunit 1 and ratio the capacity 617,463 gallons/630,240 gallons x $1,827,575 =						$1,790,524
UNIT 106 - SUBUNIT 3	For estimating the cost to close Subunit 3, assume the same costs as in Subunit 1 and ratio the capacity 600,168 gallons/630,240 gallons x $1,827,575 =						$1,740,372
UNIT 106 SUBTOTAL							**$5,358,471**
UNIT 535							
Inventory Disposal (Assumed TSCA Bulk Organic)	23,560 Gallons	Incineration	Aragonite	23,560 gal x 8.3lb/gal	195,548 lbs	$0.118/lb	$23,075
Transport of Unit 535 Waste	5 Loads	----------	Aragonite	195,548/40,000	5 Loads	$300	$1,500
Unit 535 Decontamination Rinsate Cost	1,188 Gallons	----------	Contractor	----------	1,188 gal	$0.0825/gal	$98
Rinsate Disposal (Assumed RCRA Bulk Water)	1,188 Gallons	Incineration	Contractor	1,188 gal x 8.3 lb/gal	9,860 lbs	$0.161/lb	$1,588
Rinsate Transportation (40,000 lbs per load)	1 Load	----------	Aragonite	9,860/40,000	1 Load	$300	$300
Wipe Testing	21 Samples	----------	Contract Lab	20 Samples + 1 Field Blank	21 Samples	$100	$2,100
Water Analysis (Table 1.3)	3 Samples	----------	Contract Lab	----------	3 Samples	$291.64	$875
Labor – Operators	16 Operator-Days	----------	Contractor	2 persons x 8 days	16 Person-Days	$400	$6,400
UNIT 535 SUBTOTAL							**$35,936**

CLOSURE ACTIVITY	QUANTITY	DISPOSAL/TREATMENT OPTION	FACILITY	CALCULATIONS	QUANTITY	COST/UNIT	TOTAL COSTS
UNIT 604							
Unit 604 decontamination Rinsate Cost	5,000 Gallons	----------	Contractor	----------	5,000 gal	$0.0825/gal	$413
Rinsate Disposal (Assumed RCRA Bulk Water)	5,000 Gallons	Incineration	Aragonite	5,000 gal x 8.3 lb/gal	41,500 lbs	$0.161/lb	$6,682
Rinsate Transportation (40,000 lbs per load)	2 Loads	----------	Aragonite	41,500/40,000	2 Loads	$300	$600
Wipe Testing	22 Samples	----------	Contract Lab	21 Samples + 1 Field Blank	22 Samples	$100	$2,200
Water Analysis (Table 1.3)	3 Samples	----------	Contract Lab	----------	3 Samples	$291.64	$875
Labor – Operators	10 Operator-Days	----------	Contractor	2 persons x 5 days	10 Person-Days	$400	$4,000
Equipment Disposal	200 cubic feet	Landfill	US Ecology	200 cubic ft of pipe/pumps	200 Cubic feet	$12.60/cubic foot	$2,520
Equipment Disposal Transportation	1 Load	----------	Contractor	Roundtrip to Beatty Nevada	1 Load	$1,434	$1,434
UNIT 604 SUBTOTAL							**$18,724**
FACILITY SOIL SAMPLING PLAN							
Supervision	1 Month		Contractor	----------	1 Month	$12,000	$12,000
Survey/Mark Sampling Grid Points	1 Unit		Contractor	----------	1 Unit	$5,000	$5,000
Sampling Labor	15 Operator-Days	----------	Contractor	----------	15 Person-Days	$400	$6,000
Sample Analysis	37 Samples		Contract Lab	----------	37 Samples	$1,161.60	$42,979
SOIL SAMPLING SUBTOTAL							**$65,979**
MISCELLANEOUS COSTS							
Electricity	6 Months	----------	Utah Power	----------	6 Months	$8,000	$48,000
Truck/Other Heavy Equipment Rental	1 Lump Sum	----------	----------	----------	1 Lump Sum	$25,000	$25,000

CLOSURE ACTIVITY	QUANTITY	DISPOSAL/TREATMENT OPTION	FACILITY	CALCULATIONS	QUANTITY	COST/UNIT	TOTAL COSTS
Clerk	5 Months	----------	Contractor	----------	5 Months	$2,426.67	$12,133
Security	5 Months	----------	Contractor	12 hrs/day, 5 days/wk	5 Months	$3,900	$19,500
Facility Management	6 Months	----------	Clean Harbors	1 week/month	6 Months	$1,500	$9,000
MISCELLANEOUS COSTS SUBTOTAL							**$113,633**
Labor – Supervision	260 Supervisor-Days	----------	Contractor	----------	260 Person-Days	$600	**$156,000**
Independent Engineering Certification	250 Hours	----------	Contractor	----------	250 Hours	$100	**$25,000**
TOTAL							**$5,892,357**
10% CONTINGENCY							**$589,236**
GRAND TOTAL							**$6,481,593**

USED OIL CLOSURE COST ESTIMATES

UNIT 105 – USED OIL

Inventory Disposal (Used Oil)	60,000 Gallons	Used Oil Marketer	Contractor	60,000 gal x 8.3 lb/gal	498,000 lbs	$0.00/lb	$0.00
Transport of Unit 105 Waste (40,000 lbs per load)	13 Loads	----------	Aragonite	498,000/40,000	13 Loads	$300	$3,900
Unit 105 Decontamination Rinsate Cost	8,000 Gallons	----------	Contractor	----------	8,000 gal	$0.0825/gal	$660
Rinsate Disposal (Assumed RCRA Bulk Water)	8,000 Gallons	Incineration	Contractor	8000 gal x 8.34 lb/gal	66,720 lbs	$0.161/lb	$10,742
Rinsate Transportation (40,000 lbs per load)	2 Loads	----------	Aragonite	66,720/40,000	2 Loads	$300	$600
Labor – Operators	10 Operator-days	----------	Contractor	----------	10 Person-Days	$400	$4,000
Wipe Testing	10 Samples	----------	Contract Lab	9 Samples + 1 Field Blank	10 Samples	$100	$1,000

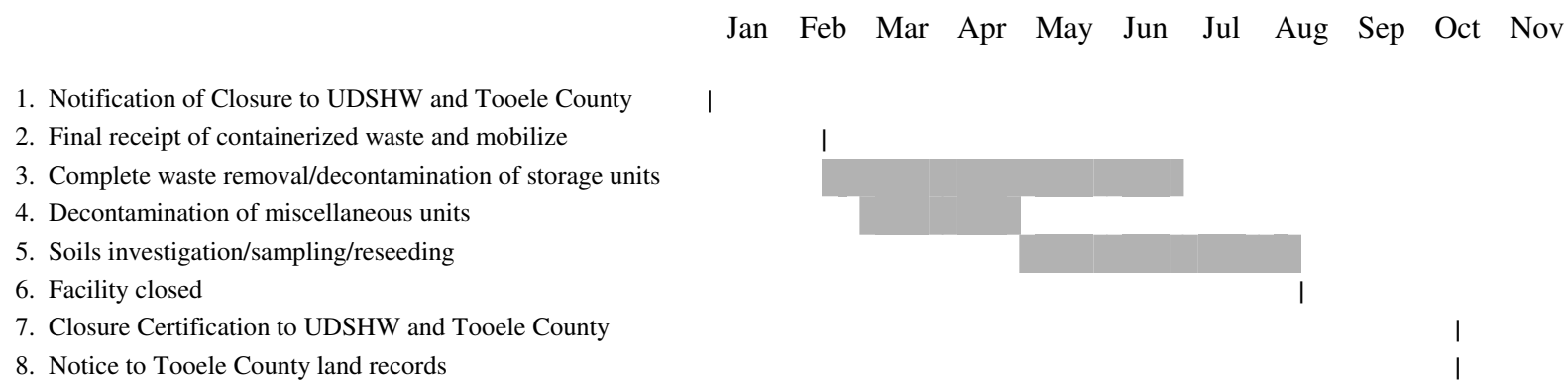
CLOSURE ACTIVITY	QUANTITY	DISPOSAL/TREATMENT OPTION	FACILITY	CALCULATIONS	QUANTITY	COST/UNIT	TOTAL COSTS
Water Analysis (Table 1.3)	1 Sample	----------	Contract Lab	----------	1 Sample	$291.64	$292
UNIT 105 SUBTOTAL –USED OIL							**$21,194**
UNIT 535 – USED OIL							
Inventory Disposal (Used Oil)	23,560 Gallons	Used Oil Marketer	Contractor	23,560 gal x 8.3lb/gal	195,548 lbs	$0.00/lb	$0.00
Transport of Unit 535 Waste	5 Loads	----------	Aragonite	195,548/40,000	5 Loads	$300	$1,500
Unit 535 Decontamination Rinsate Cost	1,188 Gallons	----------	Contractor	----------	1,188 gal	$0.0825/gal	$98
Rinsate Disposal (Assumed RCRA Bulk Water)	1,188 Gallons	Incineration	Contractor	1,188 gal x 8.3 lb/gal	9,860 lbs	$0.161/lb	$1,588
Rinsate Transportation (40,000 lbs per load)	1 Load	----------	Aragonite	9,860/40,000	1 Load	$300	$300
Wipe Testing	21 Samples	----------	Contract Lab	20 Samples + 1 Field Blank	21 Samples	$100	$2,100
Water Analysis (Table 1.3)	3 Samples	----------	Contract Lab	----------	3 Samples	$291.64	$875
Labor – Operators	16 Operator-Days	----------	Contractor	2 persons x 8 days	16 Person-Days	$400	$6,400
UNIT 535 SUBTOTAL – USED OIL							**$12,861**
TOTAL – USED OIL							**$34,055**
10% CONTINGENCY							**$3,406**
GRAND TOTAL – USED OIL							**$37,461**

2.3 Schedule for Closure

As indicated in Section 1.6, the total time for closure of Clean Harbors Clive facility (including submittal of closure certification) is estimated at 9.5 months. Assuming that the UDSHW is first notified of closure on January 1st, certification of closure is anticipated on or about October 15th of that same year.

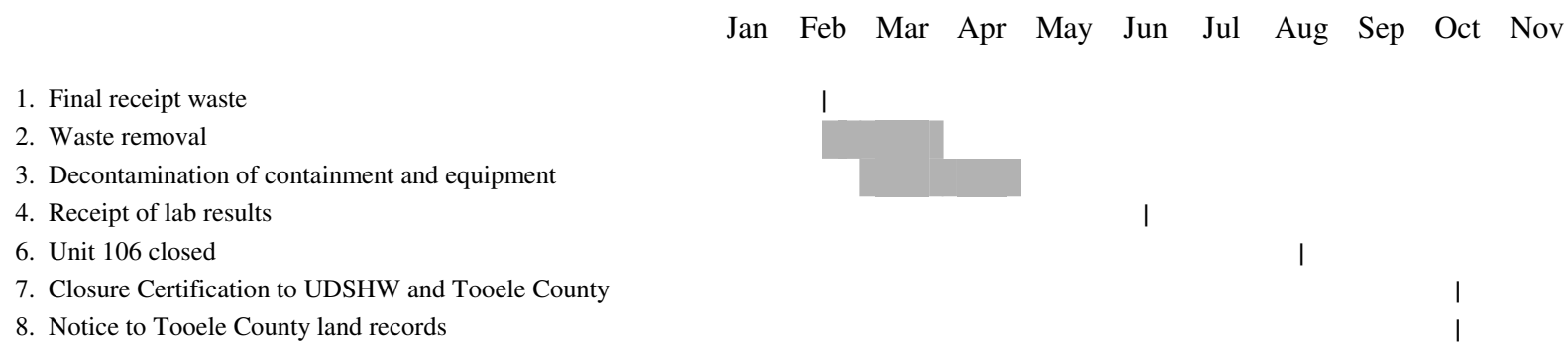
Overall Closure Schedule

Clive Facility



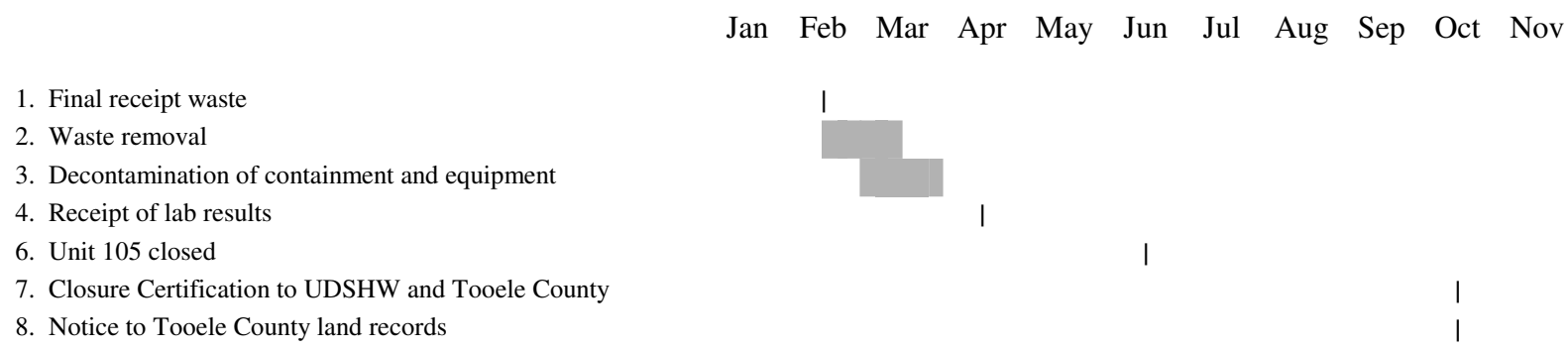
Bulk Container Storage, Unit 106

Closure Schedule



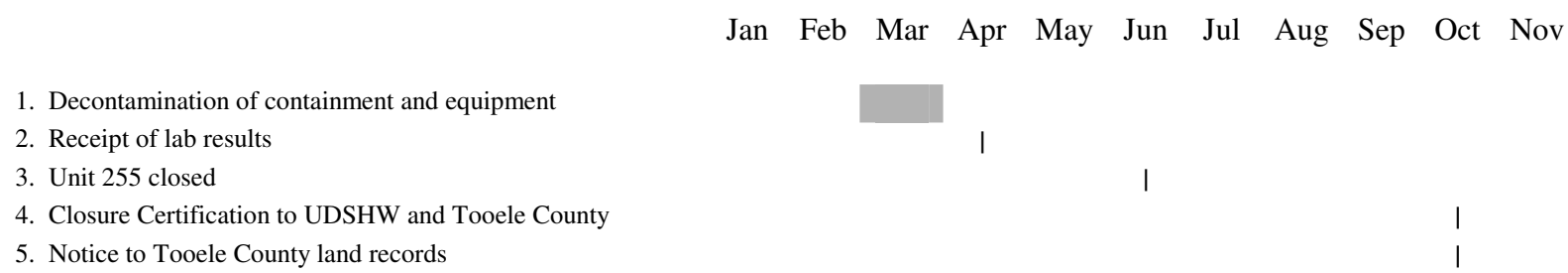
Thaw Shed, Unit 105

Closure Schedule



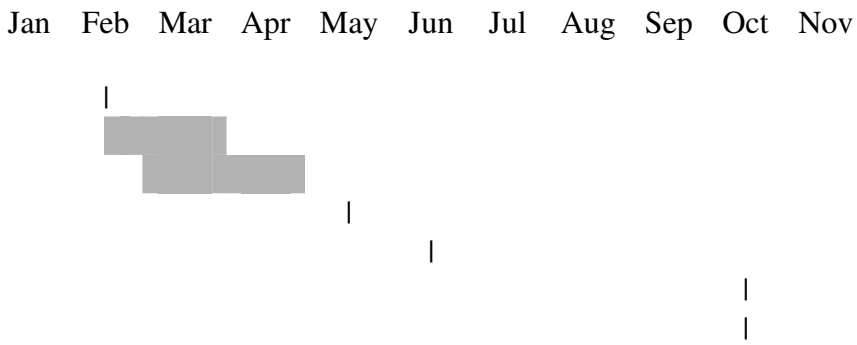
Unit 255

Closure Schedule



Unit 535

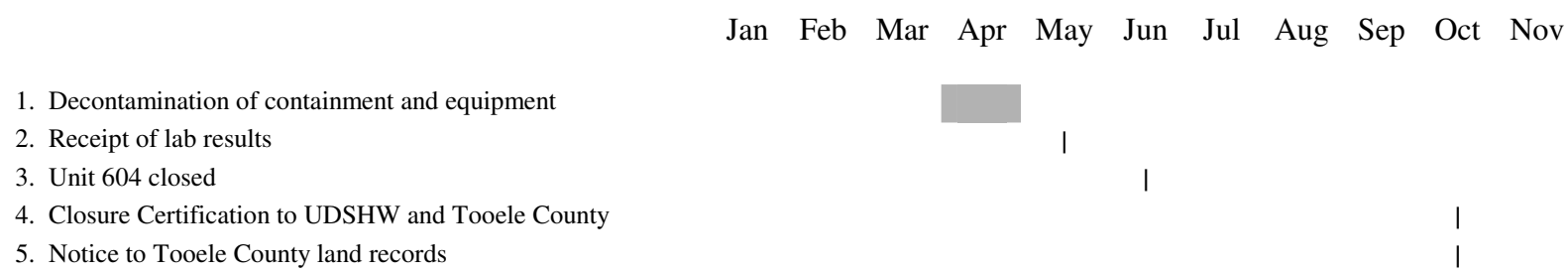
Closure Schedule



1. Final receipt waste
2. Waste removal
3. Decontamination of containment and equipment
4. Receipt of lab results
6. Unit 535 closed
7. Closure Certification to UDSHW and Tooele County
8. Notice to Tooele County land records

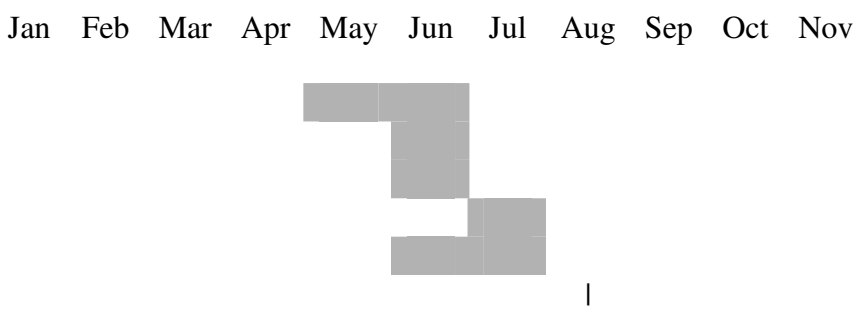
Unit 604

Closure Schedule



Soil Sampling

Closure Schedule



3.0 Financial Assurance

3.1 Financial Assurance for Closure

Clean Harbors Clive, LLC, as the owner/operator of the Clive facility, is required to provide assurances that there will be funds available to close the facility at some time in the future. The purpose of these assurances is to guarantee that closure can be performed by a third party, if for some reason Clean Harbors Clive facility is unable to do so itself at a future point in time when the cost would be maximized. As specified by Section 2.2 of this attachment, the minimum dollar amount to be guaranteed, in 2001 dollars, is $6,481,593. This figure will be updated at least annually in response to inflation, and as often as needed to reflect changes in Clean Harbors Clive facility.

There are six different methods allowed by the rules to guarantee the Closure Costs:

- Closure Trust Fund
- Surety Bond Guaranteeing Payment into a Closure Trust Fund
- Surety Bond Guaranteeing Performance of Closure
- Closure Letter of Credit
- Closure Insurance
- Financial Test and/or Corporate Guarantee.

Clean Harbors Clive facility currently uses Closure Insurance as the financial assurance mechanism for the Clive facility. The current closure insurance policy, policy number PLC 5257047-xx, is provided by Steadfast Insurance Company. The current financial assurance documentation is maintained at the office of the Division of Solid and Hazardous Waste. Clean Harbors Clive facility shall remain in compliance with the applicable provisions of the regulations for the financial assurance mechanism used for closure.

3.2 Financial Assurances for Post-Closure

Since there are no land-disposal units at the Clive facility, there is no requirement for any Post-Closure care, hence no need for any Post-Closure Financial Assurance.

3.3 Liability Requirements

Clean Harbors Clive facility maintains liability insurance for sudden accidental occurrences, as required by the rules cited and Condition 2.P. of the Permit. Currently, liability insurance for the Clive facility is provided by Steadfast Insurance Company, policy number PLC 3743936-xx. The certificate of insurance for the required liability insurance as specified by 40 CFR 264.147 is maintained on file at the office of the Division of Solid and Hazardous Waste.

APPENDIX A

BUILDING AND EQUIPMENT SAMPLING PLAN

CLEAN HARBORS CLIVE, LLC

CLIVE, UTAH

APPENDIX A

BUILDING AND EQUIPMENT SAMPLING PLAN

CLEAN HARBORS CLIVE, LLC

CLIVE, UTAH

1.0 Introduction

This Building and Equipment Sampling Plan has been developed to describe the sampling of rinse waters. The rinse waters result from decontamination of the various waste management units and pieces of machinery and equipment at the Clean Harbors Clive facility facility as provided for in this closure plan. This is one of the methods provided to establish that the item in question has been sufficiently decontaminated that it may be declared as "closed" under UDSHW authority, as well as RCRA and HSWA, and be released from regulation by these programs. A series of samples will be taken of the rinse waters resulting from the cleaning of various items, over the closure period. Samples of the rinse waters will be analyzed for the parameters listed in Table 1.3, which is included in this Appendix. The parameters listed in the Table are those that are expected to be most prevalent on the surfaces being cleaned. Analyses for specific organic compounds are not included as these are, for the most part, relatively volatile compounds that are not expected to be present following closure activities. Any heavier compounds which are not expected to volatilize will be measured by the indicators of contamination which are included on the Table. The rinse waters will be produced from the decontamination of so-called "hard surfaces" only, representing the contamination of a relatively impervious surface. Any porous surfaces suspected of being contaminated may be disposed of or decontaminated in accordance with the Hazardous Debris Treatment Standard (40 CFR 268.45).

This Plan is intended to outline the sampling methods and procedures to be used, and analytical protocols. Any proposed changes to this Plan will be prepared and submitted to the Division of Solid and Hazardous Waste for approval, prior to actual sampling.

It is presumed that any spills of waste which occurred during the operation of the Clive facility will be cleaned up at the time the spill occurred. This Plan may be used to determine whether such spills have indeed been totally removed and if decontamination of equipment has been successful.

Table 1.3
Decontamination Rinse Water Analysis

Parameters	Maximum Concentration Increase*
(T=Total Metals)	(mg/l)
Oil and Grease	15.0
Phenols	0.2
Arsenic - T	0.1
Barium - T	5.0
Cadmium - T	0.03
Copper - T	1.0
Lead - T	0.1
Mercury- T	0.005
Selenium - T	0.05
Silver - T	0.1
Total Organic Halides	0.5
Total Organic Carbon	40.0
Cyanides	0.2

*The values given are the maximum allowable increase in a parameter, over the level that exists in the final rinse water prior to use. This "prior existing level" shall be established as the average of at least three (3) analyses of the rinsewater, plus three (3) standard deviations. These analyses will be made at the time of closure, when a water source is known.

2.0 Rationale

This plan is intended to provide for the representative sampling of rinse water produced during the decontamination of specific items at the Clive facility. This testing, when conducted, demonstrates that the item in question has been decontaminated to the standards of the Closure Plan, and may be released from regulation under RCRA and related Utah State law.

It is assumed that the parameters listed in Table 1.3 will represent the most likely and highest quantity contaminants likely to be present at closure. If these constituents are not found at levels above those listed in Table 1.3, then other hazardous compounds are not likely to be present either.

3.0 Sampling Locations

Samples will be obtained from the immediate area of the item being decontaminated, and will represent only a single class of material or equipment. For example, during the cleaning of the interior of a piece of equipment, the sample will be obtained by catching a grab sample drained from the lowest of the piece of equipment; for the exterior, however, the sample would be taken from the sump which caught the rinsewater as it drained off of the equipment. It is intended that samples represent only a single waste management unit (e.g., a single piece of equipment, or a single container management area). When auxiliary equipment such as forklifts from a single management unit, etc., is cleaned, several may be combined in one sample. Further, all handtools and related small items in a particular waste management unit may be combined in one sample.

All samples taken will be grab samples, intended to represent the entire volume of the final rinsewater used to clean an item. All workers involved in the cleaning process will be instructed to not attempt to influence the sample results by adding extra water for dilution. The bulk of the rinsewater will be allowed to drain from the surfaces of the item being cleaned, and to collect in the sump or other sampling point, prior to sampling, to attempt to assure a representative sample.

Samples will be placed in glass containers which will be placed in iced coolers for storage and transportation to the laboratory.

Samples will be taken from essentially two types of locations: for interior cleaning, the sample will be taken from a drain line or pipe; whereas for exterior cleaning, the sample will be taken from the sump where the rinse water collects. Samples from interior cleaning will be taken, wherever possible, by draining the rinsewater directly into the sample container. Where it is not possible to drain the rinsewater directly into the sample container, and for rinsewaters contained in the sumps, samples will be obtained by a method such as dipping a clean glass jar into the sump, or using a weighted bottle, or similar means. Any of the various methods described in SW-846 and the Waste Analysis Plan may be used, depending upon equipment availability and convenience. The goal of the sampling will be to obtain a representative sample, free from

external contamination, from an area where the rinse naturally collects, and prior to its being vacuumed or pumped into temporary storage for eventual treatment or disposal.

4.0 Time of Sampling

Sampling will occur as soon as possible after the second rinse has been performed, and the bulk of the water has been allowed to drain from the item in question. As the closure of Clean Harbors Clive facility will be a dynamic process, sampling will occur on a continuing basis over the closure period.

Clean Harbors Clive facility will notify the Utah Department of Environmental Quality, Division of Solid and Hazardous Waste, of the anticipated times and dates for the sampling of the rinse water from the decontamination processes. The DSHW may take split samples of rinse water at their discretion.

5.0 Constituent Analysis

All samples will be analyzed for the parameters listed in Table 1.3. The variety of constituents listed is extensive enough to provide for the detection of the most predominant and potentially most hazardous constituents that are likely to be in the waste materials received at the Clive facility and remain on non-porous surfaces.

All sample analyses will be conducted in accordance with the standards set by SW-846. QA/QC will be in accordance with SW-846, and the WAP or the WAP of the Utah certified lab being used. All analyses that Utah certifies will be conducted by a Utah certified laboratory. Holding times and analytical methods are summarized in Appendix D. Appropriate methods listed in the Clean Harbors Clive facility WAP and/or equivalent EPA Clean Water Act methods may also be used.

6.0 Sampling Procedure

The Sampling Procedure has been developed to result in samples representative of each individual "batch" of final rinsewater produced during the closure of Clean Harbors Clive facility. All sampling will be coordinated by the Closure Project Manager. The sampling activities will be in accordance with the following procedures:

6.1 Planning the Sampling Event

These are guidelines, not requirements, except where noted.

1. Sampling must be anticipated as an on-going task, and not as a single event or short-term task. Therefore, all preparations must be made on a more-or-less continuous basis. The following tasks will be addressed before the actual sampling event:
    1. Sample containers will be prepared and labeled.

2. The designated personnel will gather all required equipment for the sampling events which may include but not be limited to:
    a. Sampling cups, bailers, or sampling bottles.
    b. Measuring Tape, if needed.
    c. Ground Cloth, if needed to lay equipment on to prevent contamination.
    d. Safety equipment.
    e. Sample jars should be labeled to identify the sample number, and type of item or equipment being cleaned.
    f. Sample vehicle: for transportation of the Sampling Team and the soil samples between the closure area and the laboratory. (Not necessarily motorized-may be a cart or dolly.)
    g. Field Log Book: Information to be recorded in this book (required) will include, but is not limited to, the following:
        i. Project Title
        ii. Sample Identification Number
        iii. Sample Location
        iv. Sample Type
        v. Sample Description (include any appropriate visual evidence of contamination)
    h. Supply of Kimwipes, deionized water and water bottles to be used for decontaminating sampling equipment between samples.
    i. Copy of the Closure Plan and this Appendix.

When the equipment is gathered each piece will be inspected. Any equipment needing repair or replacement of parts will be repaired at this time. All required equipment will be operational on the day of sampling (required).

2. Actual Sampling Preparation (required)
    1. Field Sampling Equipment -- Equipment will be decontaminated prior to use in the field.
    2. Health and Safety -- Prior to leaving the laboratory, each piece of safety equipment must be checked for fit and applicability.
    3. Sample containers -- Prior to sampling, sample containers will be rechecked to assure that there is a full set. The sampling containers will be carried to the field in pre-iced chests.
    4. Documentation Package -- The following list will be checked for the sampling event to assure proper documentation:
        a. Field Log Book
        b. Sample Forms
        c. Chain-of-Custody forms
        d. Writing tools (pencil, pen and permanent marker)

6.2 Sampling Plan

1. The plan for each sampling event will be determined prior to sampling and will be based on the following considerations:
    1. The Sampling Schedule specified by the Closure Project Manager.
    2. Due to the individual nature of the samples being taken, and the nature of the sample site, a designated Sampling Route and Strategy will not be necessary.

6.3 Field Sampling Protocol

1. The samples obtained for analysis during a sampling event will be grab samples. The Sampling Team will return to the laboratory after the samples have been obtained and prepare them for shipping.
    1. Each sample will be securely packaged and the necessary data from the field log book will be transferred to the report sheets and placed in a shipping container.
    2. Appropriate personnel will verify that all analytical request sheets specify the correct analysis, review the Chain-of-Custody forms and sign the sheets before they are placed inside the cooler. Once all the items have been placed with the packaged sample containers, the cooler will be sealed with a custody seal and secured ready for shipment to the laboratory.
    3. The analytical procedure to be performed on the samples will be total concentration parameters listed on Table 1.3.

6.4 Certification of Completion

The Sampling Team Leader will inform the Closure Project Manager daily of problems encountered during the sampling event or any deviations from the Sampling Procedures. The Utah Department of Environmental Quality, Division of Solid and Hazardous Waste will also be kept informed on a monthly basis, and certifications of all acceptable sample results (those demonstrating acceptable decontamination) will be submitted when Closure is certified. The certification will contain all relevant data.

APPENDIX B

CONTAMINATED SOILS SAMPLING PLAN

CLEAN HARBORS CLIVE, LLC

CLIVE, UTAH

APPENDIX B

CONTAMINATED SOILS SAMPLING PLAN

CLEAN HARBORS CLIVE, LLC

CLIVE, UTAH

1.0 Introduction

This Contaminated Soils Sampling Plan has been developed to describe the sampling of soils in the vicinity of the Clean Harbors Clive facility at the time of facility closure. This is being done in order to investigate the possibility of contamination of nearby soils as a result of the operation of the facility. A series of near-surface soil samples are proposed over various parts of Section 36, T1S, R12W, SLB&M, Tooele County, for this purpose. This will be combined with a visual examination of the area for obvious staining or deposits which would also indicate contamination.

The soils beneath the waste containment areas will also be evaluated under this plan if, upon final closure, a close examination of the sumps and containment indicates cracking or other deterioration that would be indicative of a leak or loss of integrity. If a leak or loss of integrity in containment is suspected, core samples of the soil and/or concrete will be collected to confirm or refute the suspicion of contamination of the subsoils. If contamination is confirmed, both concrete and soils will be removed as needed until all contamination is at or below the "background" levels established prior to facility operations. Alternatively, if soil contamination is suspected in the area of a crack, core sampling may be bypassed by assuming contamination exists and the facility may proceed directly to removal of concrete and soil. If a unit had been previously idled and not reactivated prior to closure, and a close examination of the sumps and containment at that time indicated no cracking or other deterioration that would be indicative of a leak or loss of integrity, this exercise does not have to be repeated.

Samples will be analyzed for parameters listed in 40 CFR 122, Appendix D, Tables II and III, which are commonly referred to as "Priority Pollutants", (see Appendix C) as well as several indicators of contamination and compounds or elements known to naturally occur at relatively high levels. This Plan is intended to outline the procedure to determine sampling locations, methods and procedures to be used, and analytical parameters.

The Plan concentrates on the sampling of soils in the vicinity of the facility itself, and the haul roads used for waste transport into and out of the facility. A series of samples will be taken and analyzed using a numbered grid pattern, with actual locations determined by random methods. These locations are not specified at this time, to prevent any bias in treatment, but the method for location selection is described.

Any proposed changes to this Plan will be prepared and submitted to the Division of Solid and Hazardous Waste, Utah Department of Environmental Quality for approval, prior to actual sampling. It is presumed that any spills of waste which occurred during the operation of the Clive were completely cleaned up at the time. However, to verify that no spills occurred which were not cleaned up, this sampling program will be conducted.

2.0 Rationale

This plan is intended to accomplish the goal of providing a reasonable examination of the soils in the vicinity of Clean Harbors Clive facility to detect the presence of certain specified contaminants known to be constituents of hazardous waste. The presence of these contaminants is considered an indication of a spill, leak, or discharge of hazardous waste which warrants further investigation and cleanup to remove this contamination. The data gathered at this time will be compared against data gathered prior to facility startup.

This plan attempts to provide a realistic cross-section of any soil contamination which may exist in the vicinity of Clean Harbors Clive facility at the time of closure. Thirty-two sampling points are chosen in the area of Clean Harbors Clive facility, to represent possible spatial variations. The parameters chosen for analysis are the ones analyzed for during the Background Soils Sampling program conducted during facility construction. At the time, these were presumed to be the most common and largest volume constituents among the literally thousands of various compounds that were to be received at the Clive facility over its lifetime. It is assumed that at the time of closure that, if these more common constituents are not found at increased levels, then less common compounds are likely not present either.

Prior to beginning closure of the Clive facility, Clean Harbors Clive will review waste receipts at the facility, to determine if there might be cause to analyze for parameters in addition to those described above. If this review indicates that additional analyses are needed, a specific plan will be developed for establishing background and clean-up levels for the new parameters. The UDSHW will be consulted regarding this review, and any subsequent sampling and analysis plans will be subject to UDSHW approval before implementation.

Random sampling will be combined with a thorough visual search of Clean Harbors Clive, looking specifically for areas that appear to be contaminated.

3.0 Sampling Locations

In the selection of sampling locations, the extent of any geographical variation in contaminant levels is unknown. The goal of this plan is to provide a representative picture of constituent levels in the vicinity of The Clean Harbors Clive facility, and to determine if Clean Harbors Clive has contributed any contamination. Rather than limiting the Plan to the facility proper, samples will be taken over areas within 300 feet of the facility and the main access road (See Figures I-C-1, I-C-2, I-C-3, I-C-4). Operating units at the Clive facility are concentrated in the Southeast Quarter of Section 36, T1S, R12W, Tooele County. To provide the desired

representative picture, three different sample protocols are used: one for the facility proper, and one for the area external to the facility, and one for the area surrounding the main access road and rail area. As described later in this Appendix, each of these three areas will be divided into grids, with each grid node numbered sequentially. Numbering will be re-started for each area. Using either random number tables, or similar means, several grid nodes will be randomly chosen for sampling to determine if contamination exists.

Additional samples will be taken if any of these areas are found to be contaminated. All samples will be analyzed independently, and the results compared against the Background Levels established by the Background Soils Sampling Plan.

Samples will be taken from the surface to a depth of four inches and will be representative of the interval.

In areas where rock is present, and samples cannot be obtained with soil sampling equipment, the sample will be collected as close to the designated location as possible. Changes in sampling location will be documented.

3.1 Visual Inspection

Facility personnel will visually inspect the roadways, sampling areas, unloading areas, and the area within 300 feet of all portions of the facility. Based on these visual observations, any soil surfaces that appear to be contaminated with hazardous wastes will be excavated and backfilled with clean soil. A simple random sampling strategy will be utilized to determine the cleanliness of any areas which appear to be contaminated. These areas will be divided into numbered grids; the grid size and total number of grids will naturally depend upon the size and shape of the area suspected of contamination, but in general, grids will be square, and will cover between 250 and 1000 square feet. The total area will be divided into sub-areas of 30 to 50 grids each, based upon a subjective determination by the Closure Project Manager considering likely sources of contamination, areas of contamination, the means to be used for removing any contamination actually found, visual clues, etc. From each sub-area so identified, five grids will be randomly chosen; a sample will then be taken from the approximate center of each chosen grid, and these five samples will then be composited and mixed for analysis. The results from this single composite sample will be assumed to represent the entire sub-area from which it was taken, to whatever depth was sampled.

Depending upon the size of the area, this approach may be more extensive than necessary. If the area is relatively small, the Closure Project Manager may elect to take a few samples equally spaced throughout the area, as sufficient to represent the visual contamination. This process will be repeated for each depth of soil removal until the sample analyses are at or below the Background Level established for all parameters. Uncontaminated soil will be backfilled into any excavated portions. Backfilling should not take place until all samples are at background levels.

The discrete samples from which the composite was made will also be retained. Clean Harbors Clive may be required to analyze each individual sample, to localize the area of contamination, if determined necessary by the DSHW.

3.2 Random Samples -- Facility Proper -- Unpaved Areas

The Clive facility proper measures approximately 1200 feet square, although there are a number of irregularities in the facility boundary. A grid will be superimposed over the facility, with spacing of 100 feet by 100 feet, resulting in 169 grid nodes (see Figure I-C-2). Some of these nodes will fall over specific waste management units, while others will fall on parking, drives, or open areas. All nodes falling on waste units or paved areas will be discarded; the remainder - those nodes on unpaved areas - will be numbered sequentially. From these, a total of ten nodes will be randomly selected for sampling as described in 7.3 below.

Each grid node selected and sampled will be analyzed for the parameters listed, and the results compared to Background Levels. If all parameters are below the Levels, then the area represented by that sample is declared as clean. If the parameters are above the Levels, then a supplemental grid using 50 foot spacing will be imposed over the suspect grid node, extending one space (50 feet) in all directions. This 100 foot by 100 foot supplemental grid will contain nine grid points; all of these will be sampled and analyzed to determine the areal extent of contamination. If needed, this grid will be extended laterally until a sample is obtained that meets Background Levels.

For grid nodes which test "positive," soil will be removed in two foot increments, and the area resampled until that node meets Background Levels. Again, clean soils will be backfilled into any excavated area.

3.3 Random Samples -- Facility Proper -- Paved Areas

For the paved areas of the facility, a thorough visual inspection will be made to check for visible contamination. Any found on concrete will be removed as described in the Closure Plan, Section 1.8, for "hard surfaces." Contamination on areas paved with asphalt will be excavated. Sampling and analysis will be conducted to confirm that the contamination was removed.

3.4 Random Samples -- External to the Facility Proper

As discussed above, the Clive facility measures roughly 1200 feet square, with a number of irregularities in the boundary. Extending this area 300 feet to each side, yields an area about 1800 feet square. The grid that was originally superimposed over the facility proper will be extended to the outer area, again using a spacing of 100 feet by 100 feet, resulting in 361 grid nodes (see Figure I-C-3). The 169 nodes of the facility proper will be discarded, as they have already been considered, leaving 192 nodes in a square border surrounding the facility. Certain of these nodes will duplicate those of the Access Road investigation described in Section 3.5, below, and these will be discarded as well.

All remaining grids will be numbered sequentially. Of these grids, 12 will be randomly selected for sampling. As the entire grid is external to the facility and any roads, no grid node will fall on a paved or hard surface. If contamination is found, additional sampling will be conducted in the area in order to determine the extent of the contamination.

Sampling and analysis will proceed as described for Section 3.2, above. Areas found to be contaminated will be excavated and backfilled with clean soil.

3.5 Random Samples -- Access Roads and Rail Areas -- All Areas

The main access road into the Clive facility, along with the rail switchyard, measures approximately 400 feet wide by 1200 feet long. Again, there are a number of irregularities in the boundary of this area. Extending this area 300 feet to each side, and 300 feet to the Northeast (the Southwest end abuts the Clive facility itself) yields an area 1000 feet wide by 1500 feet long. A grid will be superimposed over this area, with spacing of 100 feet by 100 feet, resulting in 176 grid nodes (see Figure I-C-4). Some of these nodes will fall over on parking, drives, or rail areas. All grids will be numbered sequentially. Of these grids, ten will be randomly selected for sampling. Any node selected that falls on a paved or hard surface will be moved to the nearest unpaved area, and the sample taken there.

Sampling and analysis will proceed as described for Section 3.2, above. Areas found to be contaminated will be excavated and backfilled with clean soil. All paved areas will be visually inspected as described in Section 3.3, and decontaminated as needed.

3.6 Random Samples -- Soils Beneath Containment Areas

The containment areas at the Clive facility are designed to totally contain any materials which are spilled or leaked during the operation of the facility. All such areas will be of Portland Cement concrete construction, and will be coated to prevent liquid seepage. However, it is possible that the containment may be compromised by cracking of, or other damage to, the concrete. Such cracking would be especially critical in the sumps which collect rainfall which falls on the area, as well as any spilled material. Although all sumps will be regularly inspected and emptied as part of the facility operations plan, the sumps will not be totally cleaned until closure. Therefore, it is possible that cracks will exist which are not found until closure. If such is the case, then evaluation of the soils beneath the cracked area will be needed.

As described in Section 1.8 of the Closure Plan, all concrete and soil within six inches of a crack where contamination is confirmed or assumed by Clean Harbors Clive, will be removed and managed as hazardous waste until the results of the analysis of underlying soils is obtained. Final disposition of these materials will depend upon the results of the analysis. Concrete will be broken for removal by jackhammers or other conventional means, and the broken concrete and soils will be shoveled into drums or gondolas for temporary storage.

The exposed area will then be sampled in accordance with TSCA regulation 40 CFR 761 Subpart O. This is an EPA sampling method for sampling porous surfaces and is applicable for the

sampling of small areas and thus is appropriate for selecting samples from areas which may be no more than one foot wide.

The discrete samples from which the composite was made will also be retained. Clean Harbors Clive may elect to analyze each individual sample, to localize the area of contamination.

3.7 Procedures for Soils Removal -- All Areas

As each grid is sampled and analyzed, the analytical results will be compared to the "background" values previously established. Any grid with a value exceeding the background (mean plus three standard deviations) is considered as contaminated, and the soils represented by that grid will be removed for a depth of two feet. The grid will then be re-sampled and analyzed as before; if still found to exceed background, another two feet will be removed. This process will continue until the analysis shows that the grid area is below background values.

All excavations will be conducted with side slopes in conformance with OSHA standards. Consequently, the excavation will grow larger laterally as it is deepened, to account for both possible lateral as well as vertical spread of waste constituents. Once all contamination has been removed, the area will be backfilled with soil to the surrounding grade level.

Based upon the analytical results, several options are possible for disposal: disposal in a solid (non-hazardous) waste landfill; disposal in a hazardous waste landfill, in accordance with the Land Band Restrictions; and, treatment (e.g., incineration) to meet a Land Band standard, prior to disposal. All decisions on disposition of removed soils and concrete will be made after testing in accordance with the Waste Analysis Plan and/or this Closure Plan.

4.0 Time of Sampling

Sampling will occur at two distinct times during closure of the Clive facility. The visual inspection of the entire area will take place at the start of Closure, and any suspicious areas will be investigated concurrently with Closure activities. At least every month, the Closure Project Manager will re-inspect to see if there have been any spills or leaks during Closure. The regular inspections performed in accordance with the operating permit and this closure plan will be continued as scheduled; each unit will be regularly inspected until that unit is finally closed. Finally, after all waste management units are closed at the facility, the Closure Project Manager will make a final visual inspection of the area, again checking for spills occurring during closure.

After all units at the facility are closed, the random sampling procedures will be instituted. These will take several months, mainly due to the wait for sample analyses. Any areas identified as contaminated will be promptly excavated and backfilled with clean soil.

The Utah Department of Environmental Quality, Division of Solid and Hazardous Waste, will be notified, in writing, of the anticipated time(s) and date(s) for all closure soil sampling event(s) discussed in this Appendix at least 14 days in advance. The UDSHW will be notified of final

schedules for sampling via telephone at least 72 hours in advance. At their discretion, the UDSHW may take split samples of all soil samples.

5.0 Constituent Analysis

For the purposes of establishing levels of contamination, it is proposed to follow the analytical procedures used for the Background samples, namely to analyze all samples for the total concentration of the 125 "priority pollutants" established by the U.S. EPA.

The variety of constituents listed is extensive enough to provide for the detection of the most predominant and potentially most hazardous constituents that may be in the waste materials received at the Clive facility. At closure, if these compounds are shown to be at or below the levels established by the Background Sampling Plan, then there is reasonable assurance that no other compounds will be present.

All analyses for which certification is possible will be conducted by a Utah certified laboratory. All sample analyses will be conducted in accordance with the standards set by SW 846 or equivalent EPA Clean Water Act methods. QA/QC will be in accordance with SW 846 or equivalent EPA Clean Water Act methods, and the procedures/protocol (or WAP if applicable) of the Utah certified laboratory performing the analysis. Holding times and analytical methods in effect at the time of this submittal are summarized in Appendix D and/or the facility WAP. If there is a difference between the holding times/methods summarized in Appendix D and/or the facility WAP and holding times/methods in effect at the time of sampling for closure, the most current holding times/methods will be used.

6.0 Comparison to Established Background Values

As each set of analyses is completed, the results of each will be examined for any that appear to be an anomaly (a single sample that varies significantly from all others, for instance). Any sample noted will first be re-analyzed to rule out any laboratory error; if the anomaly still exists, the sample will be retaken and analyzed in the same fashion as the original samples.

Once the anomaly is resolved (which may be the acceptance of the initial value as true and accurate for a given location), then the sample results will be compared against the Background Levels established by the Background Soils Sampling Plan. If the sample value for any parameter is above the Background, then soils must be removed. If all parameters are below the Background, then the area is declared as clean.

The Background Level for all constituents is the Mean value, plus three Standard Deviations. At closure, any area yielding an analytical value below this Background Level for all constituents will be considered as clean, and no further soil removal or decontamination will be necessary.

An exception to the above standard has been established to account for BDL values in the background sampling. For a given constituent, if the Background Level calculated (Mean + 3 sigma) is <u>less</u> than the stated Detection Limit, then the Background Level shall be taken as the

Detection Limit. This will prevent establishing Background Levels lower than the analytical methodology can reliably measure.

7.0 Soil Sampling Procedure

The Soil Sampling Procedure has been developed to result in samples representative of the soils at the location to be examined, in the vicinity of the Clive facility. All soil sampling will be coordinated by the Closure Project Manager. The sampling activities will be in accordance with the following procedures:

7.1 Planning the Sampling Event

1. Pre-event Preparation -- The following tasks will be addressed before the day of the sampling event.
    1. Sample containers will be prepared and labeled. Sample containers for all soils samples will be wide-mouth glass jars with a minimum capacity of one quart. Soils samples (or sub-samples) will have a weight of two to four pounds each. The jar lids will be lined with Teflon (R) seals.

       Sample containers will also be available for water samples, should sampling of ground or surface water become necessary. Samples for metals analysis will be at least 500 ml in volume, and stored in glass jars. Samples for any organics analyses, except as noted below, will be at least one liter in volume and will also be stored in glass jars. Samples for purgeable organics will be placed in three, 40 ml glass vials and filled so that there is zero headspace in the vials. All container lids for water samples shall be lined with Teflon (R) seals.

       No field blanks will be taken when sampling of soils occurs. Both field and trip blanks will be prepared and used if it should become necessary to sample ground or surface waters. The requirements of SW-846 will be followed in the preparation and handling of any such blanks.

    2. The designated personnel will gather all required equipment for the sampling event which may include but not be limited to:
        a. Soil-Sampling Hand Spade or Auger, or Mechanized Auger
        b. Soil Sampling Knife
        c. Measuring Tape
        d. Ground Cloth
        e. Safety equipment
        f. Sample jars should be labeled to identify the sample number, depth and type.
        g. Sample vehicle: for transportation of the Sampling Team and the soil samples between the closure area and the laboratory.

h. Field Log Book: Information to be recorded in this book will include, but is not limited to, the following:
    i. Project Title
    ii. Sample Identification Number
    iii. Sample Location
    iv. Sample Type
    v. Sample Description (include any appropriate geologic terms and any visual evidence of contamination)
i. Supply of Kimwipes, deionized water and water bottles to be stored in the laboratory for decontamination.
j. Copy of the Clive Closure Plan and this Appendix.

When the equipment is gathered each piece will be inspected. Any equipment needing repair or replacement of parts will be repaired at this time. All required equipment will be operational on the day of sampling.

2. Day of Sampling Preparation
    1. Field Sampling Equipment -- Equipment will be decontaminated prior to use in the field.
    2. Health and Safety -- Prior to leaving the laboratory, each piece of safety equipment must be checked for fit and applicability.
    3. Sample containers -- Prior to sampling, sample containers will be rechecked to assure that there is a full set. The sampling containers will be carried to the field in pre-iced chests.
    4. Documentation Package -- The following list will be checked for the sampling event to assure proper documentation:
        a. Field Log Book
        b. Checklist for sampling protocol
        c. Chain-of-Custody forms
        d. Analytical request form
        e. Writing tools (pencil, pen and permanent marker)
    5. Vehicle Loading -- The designated sampling vehicle will be loaded so that each piece of equipment is readily available during soil sampling.

7.2 Sampling Plan

1. The plan for the soil sampling event will be determined prior to sampling and will be based on the following considerations:
    1. The Soil Sampling Schedule specified by the Closure Project Manager.
    2. Based upon the procedures specified in this Plan, a designated Sampling Route and Strategy will be formulated to allow a smooth and logical progression of sampling.

7.3. Field Sampling Protocol

1. The samples obtained for analysis during a sampling event will be representative of the top four inches of the soil profile. The Sampling Team will return to the laboratory after the samples have been obtained and prepare them for shipping. Soil samples will be taken by one of several methods, depending upon equipment availability and sample timing. Samples may be taken using shovels, trowels, or Shelby push-tubes.
    1. As the soil is being removed for sampling, it will be placed upon a clean ground cloth, or placed directly into the sample container.
    2. After each sample is obtained from a given location, all tools and instruments that may have come into contact with the soils, as well as the ground cloth, will first be brushed or wiped clean of any loose soils or other obvious contamination. They will then be wiped with disposable toweling, to remove any visible traces of contamination, thoroughly wiped with toweling wetted with deionized water, and finally rinsed with deionized water, to insure that they are decontaminated. Solvent rinses, such as Acetone or Hexane, will not be taken into the field for decontamination purposes, as their presence could affect sample results.
    3. Each soil sample will be securely packaged and the necessary data from the field logbook will be transferred to the report sheets and placed in a shipping container.
    4. Appropriate personnel will verify that all analytical request sheets specify the correct analysis, review the Chain-of-Custody forms and sign the sheets before they are placed inside the cooler. Once all the items have been placed with the packaged sample containers, the cooler will be sealed with a custody seal and secured ready for shipment to the laboratory.
    5. The analytical procedure to be performed on the samples will be total concentration of the 125 "priority pollutants", as well as TOC, TOX, Oil and Grease, and cyanides.

7.4 Certification of Completion

The Sampling Team Leader will notify the Closure Project Manager that the scheduled sampling event has been completed. This will include problems encountered during the sampling event or any deviations from the Soil Sampling Procedures. The Utah Department of Environmental Quality, Division of Solid and Hazardous Waste will also be notified of the beginning of each phase of sampling. A brief report will be submitted to the UDSHW, describing any cleanup efforts undertaken, and containing the final results.

insert Figure I-C-1

insert Figure I-C-2

insert Figure I-C-3

insert Figure I-C-4

APPENDIX C

"PRIORITY POLLUTANTS" LIST

(From 40 CFR Part 122, Appendix D, Tables II and III)

"PRIORITY POLLUTANTS" LIST

From 40 CFR Part 122, Appendix D

TABLE II - ORGANIC TOXIC POLLUTANTS IN EACH OF FOUR FRACTIONS IN ANALYSIS BY GAS CHROMATOGRAPHY/MASS SPECTROSCOPY (GS/MS)

Volatiles

1V acrolein	9V chloroethane	17V 1,2-dichloropropane	24V tetrachloroethylene
2V acrylonitrile	10V 2-chloroethylvinyl ether	18V 1,3-dichloropropylene	25V toluene
3V benzene	11V chloroform	19V ethylbenzene	26V 1,2-trans-dichloroethylene
5V bromoform	12V dichlorobromomethane	20V methyl bromide	27V 1,1,1-trichloroethane
6V carbon tetrachloride	14V 1,1-dichloroethane	21V methyl chloride	28V 1,1,2-trichloroethane
7V chlorobenzene	15V 1,2-dichloroethane	22V methylene chloride	29V trichloroethylene
8V chlorodibromomethane	16V 1,1-dichloroethylene	23V 1,1,2,2-tetrachloroethane	31V vinyl chloride

Acid Compounds

1A 2-chlorophenol	4A 4,6-dinitro-o-cresol	7A 4-nitrophenol	10A phenol
2A 2,4-dichlorophenol	5A 2,4-dinitrophenol	8A p-chloro-m-cresol	11A 2,4,6-trichlorophenol
3A 2,4-dimethylphenol	6A 2-nitrophenol	9A pentachlorophenol	

Base/Neutral

1B acenaphthene	13B bis (2-ethylhexyl)phthalate	25B dimethyl phthalate	37B indeno(1,2,3-cd)pyrene
2B acenaphthylene	14B 4-bromophenyl phenyl ether	26B di-n-butyl phthalate	38B isophorone
3B anthracene	15B butylbenzyl phthalate	27B 2,4-dinitrotoluene	39B napthalene
4B benzidine	16B 2-chloronaphthalene	28B 2,6-dinitrotoluene	40B nitrobenzene
5B benzo(a)anthracene	17B 4-chlorophenyl phenyl ether	29B di-n-octyl phthalate	41B N-nitrosodimethylamine
6B benzo(a)pyrene	18B chrysene	30B 1,2-diphenylhydrazine (as azobenzene)	42B N-nitrosodi-n-propylamine
7B 3,4-benzofluoranthene	19B dibenzo(a,h)anthracene	31B fluroranthene	43B N-nitrosodiphenylamine
8B benzo(ghi)perylene	20B 1,2-dichlorobenzene	32B fluorene	44B phenanthrene
9B benzo(k)fluoranthene	21B 1,3-dichlorobenzene	33B hexachlorobenzene	45B pyrene
10B bis(2-chloroethoxy)methane	22B 1,4-dichlorobenzene	34B hexachlorobutadiene	46B 1,2,4-trichlorobenzene
11B bis(2-chloroethyl)ether	23B 3,3´-dichlorobenzidine	35B hexachlorocyclopentadiene	
12B bis(2-chloroisopropyl)ether	24B diethyl phthalate	36B hexachloroethane	

Pesticides

1P aldrin	7P 4,4´-DDT	13P endosulfan sulfate	19P PCB-1254
2P alpha-BHC	8P 4,4´-DDE	14P endrin	20P PCB-1221
3P beta-BHC	9P 4,4´-DDD	15P endrin aldehyde	21P PCB-1232
4P gamma-BHC	10P dieldrin	16P heptachlor	22P PCB-1248
5P delta-BHC	11P alpha-endosulfan	17P heptachlor epoxide	23P PCB-1260
6P chlordane	12P beta-endosulfan	18P PCB-1242	24P PCB-1016
25P toxaphene			

TABLE III - OTHER TOXIC POLLUTANTS (METALS AND CYANIDE) AND TOTAL PHENOLS

Antimony, Total	Chromium, Total	Nickel, Total	Zinc, Total
Arsenic, Total	Copper, Total	Selenium, Total	Cyanide, Total
Beryllium, Total	Lead, Total	Silver, Total	Phenols, Total
Cadmium, Total	Mercury, Total	Thallium, Total	

APPENDIX D

HOLDING TIMES AND ANALYTICAL METHODS

(Summarized from SW-846)

TABLE I

SAMPLE PRESERVATION AND HOLDING TIMES

Parameter	Method[1]	Container	Holding Time
Volatiles	SW 8260B	4 oz G	14 days
Semi-Volatiles (BNA)	SW 8270C	32 oz G*	14 days/40 days
Organochloride Pesticides	SW 8081A	32 oz G*	14 days/40days
PCB	SW 8082	32 oz G*	14 days/40 days
Herbicides	SW 8151A	32 oz G*	14 days/40 days
Organophosphorus Pesticides	SW 8141A	32 oz G*	14 days/40 days
Metals (Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, Tl, Zn)	SW 6010B	32 oz G**	6 months
Mercury	SW 7471A	32 oz G**	28 days
Cyanide	SW 9010B SW 9014	32 oz G**	N/A
Oil & Grease	SW 9071A	32 oz G**	N/A
Phenols	SW 9065	32 oz G**	N/A

[1] Equivalent EPA Clean Water Act Methods or the SW-846 method for liquids or solids may be use even if not shown on this list.

All containers are glass with Teflon liner in the lid.

* Used for all organic parameters, except Volatiles.

** Used for inorganic analytes.

All samples preserved at 4˚C.