Clean Harbors Aragonite, LLC
11600 North Aptus Road
Aragonite, UT 84029

435.884.8100
www.cleanharbors.com

August 26, 2019

Sent Via FedEx #7760 6417 8836

Mr. Ty L. Howard, Director
Division of Waste Management & Radiation Control
Department of Environmental Quality
195 North 1950 West
P.O. Box 144880
Salt Lake City, UT 84114-4880

RE: Class 3 Modification Request for Acceptance of 1.3G Explosives
Clean Harbors Aragonite, LLC. (CHA)
EPA ID No. UTD981552177

Dear Mr. Howard,

On May 28, 2019, UDEQ approved a Temporary Authorization that allows the facility to accept, store, and process low grade explosive flares with a hazard class of 1.3G. CHA is submitting the associated RCRA class 3 modification request per Appendix I to R315-270-42(F)(3)(a).

1) For Class 3 modifications listed in appendix I of Section R315-270-42, the permittee shall submit a modification request to the Director that:

(i) Describes the exact change to be made to the permit conditions and supporting documents referenced by the permit;

Upon approval of this permit modification, CHA will receive and accept flares shipped under hazard class 1.3G, packaged in ammo cans and palletized. Waste Profiles have been generated based upon generator knowledge, analysis, and SDS, and a burn chemistry has been developed based upon this information. Personnel who have received an ATF Notice of Clearance will off load the pallets onto the receiving floors or bays, open a palletized ammo can and QC the contents for confirmatory purposes in accordance with the facility Waste Analysis Plan. Waste type and count discrepancies,

and rejections if applicable will be managed in accordance with Section 3.2 of the facility Waste Analysis Plan.

CHA intends to treat these shipments as live offloads. CHA will schedule shipments in order to offload, inspect, accept, break down/repack from pallets into individual ammo cans/containers, stage, and incinerate these flares upon arrival at the facility, but no longer than 48 hours after receiving. The ammo cans will be shipped as pallets, one bar code tracking number representing the pallet will be affixed to the pallet. After acceptance the palletized ammo cans will each be labeled with a bar code label. All tracking will be done in accordance with the tracking requirements of the RCRA Part B Attachment 8. The pallets will be taken to a repack area to be broken down and from there they will be taken to a staging area in ABC to await loading onto the incineration belt.

27 CFR Subpart K 555.205 requires that explosives be stored in a magazine unless being handled in the operating process. CHA will only store the materials in Type 4 Magazines as described below, in the event of an unexpected stoppage of the incinerator which would delay the operating process by more than 24 hours. Otherwise CHA will physically handle in the operating process as described in the paragraph above.

In the event storage is needed CHA will store these in three Type 4 Magazines in accordance with the requirements of 27 CFR Part 555 Subpart K. 27 CFR Part 555 Subpart K defines a Type 4 magazine as a building, igloo or "Army-type structure", tunnel, dugout, box, trailer, or a semitrailer or other mobile magazine. CHA will use metal boxes fitted with hinges and hasps with two padlocks fastened in separate hasps and staples. The padlocks will be protected with not less than ¼ inch steel hoods. These magazines will be placed via roll off truck in the maintenance storage area west of the maintenance building at a distance of no less than 50 feet from the facility fence line, 190 feet from inhabited buildings and 125 feet from other magazines in accordance with the Table of Distances requirements found in 27 CFR part Subpart K 555.219 and as shown in the attached drawing D-034-M-001, MK966, Rev 5 with Magazines PDF. The magazines will be placed on rail ties to elevate off the ground in case of a precipitation event, the ground will be slopped for drainage. CHA will track the movements of each pallet, and each broken down ammo can in and out of the magazines.

According to generator knowledge of how these are palletized, each pallet will weigh a maximum of 2,958 lbs., inclusive of the ammo cans. The pallets of ammo cans will be stored in the middle of the magazine, not placed directly against interior walls to allow for inspection. The containers will be inspected daily when the magazine is in use as a container storage building. Each magazine will be inspected weekly to determine whether there has been unauthorized entry or attempted entry in the magazines, or unauthorized removal of the contents of the magazines.

Only CHA personnel who are trained on the requirements of 27 CFR Part 555 Subpart K and who have obtained a Notice of Clearance as an Employee Possessor or Responsible Person will handle and store these containers.

A procedure has been developed in conjunction with a JHA to ensure the ammo cans can be opened immediately prior to incineration, in order to ensure complete combustion of the flares, and travel up the barrel feed elevator without spilling the contents. This procedure was previously submitted with the TA request.

(ii) Identifies that the modification is a Class 3 modification;

Per R315-270-42 Appendix I.F.3.a;

Storage of different wastes in containers, except as provided in (F)(4) below:

a. That require additional or different management practices from those authorized in the permit

(iii) Explains why the modification is needed; and

Pursuant to R315-270-42(c) this permit modification is requested to enable the permittee to accept and/or store flares shipped as DOT 1.3G hazard class in containers. Disposal will be by incineration.

(iv) Provides the applicable information required by Sections R315-270-13 through 22, 62, 63, and 66.

The facility has reviewed the RCRA Part B Permit and has proposed, in redline-strikeout format, draft language for those sections that are affected by this modification. Final versions of each page are also enclosed.

This includes:

- Module 2,
- Module 3,
- Attachment 1-Waste Analysis Plan,
- Attachment 3- Inspections,
- Attachment 7-Closure Plan and
- Appendix 1 – Closure Cost Estimates
- Drawing D-034-M-001, MK966, Rev 5

The closure/financial assurance requirements are addressed in changes made to Appendix 1 of the facility's closure plan. These changes are addressed under separate cover. The decontamination standards will be added to the facility's closure plan as section 6.11 as seen below, these are the same methods used to decontaminate the storage magazines in

the Clean Harbors Colfax facility which currently manage these types of explosives. The financial assurance mechanism was updated in response to the TA approval.

It is assumed that all 3 magazines will be full at the time of closure. 88,740 total lbs. (29,580 lbs. per magazine). The waste will be shipped off site to a facility such as Clean Harbors Colfax. The increase to the closure cost estimate is based on the disposal cost of these wastes provided by Clean Harbors Colfax.

6.11 Closure of Type 4 Storage Magazines

a. Once all of the waste has been removed from the storage magazines, the interior will be manually swept to remove any loose debris. This material will be collected and disposed. All three magazines (storage units) will be swept/vacuumed to remove any trace of reactive material which will be shipped off-site for disposal. The interior will then be pressure washed with fresh water.

b. The final rinse water for each magazine shall be sampled (one sample per magazine) within the unit and analyzed for VOCs (SW846 Method 8260), total metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag, Cu, Ni, V, Zn, Sb, Tl, and Be) using Sw-846 Method 6010B and SW-846 Method 7470A. and extractable explosives (SW846 Method 8330).

c. If extractable explosives or volatile organic compounds are detected based upon the lower detectable limits established by the analytical method, or if the concentrations of metals exceed background levels as established through analysis of source water, a decision will be made to repeat decontamination procedures or to declare the unit hazardous and dispose in a permitted facility. It is anticipated that one decontamination event will be required per unit in order to clean close. If the rinse water clean closure criteria constituents are below background levels, the facility will dispose off-site as non-hazardous.

Once decontamination is complete, the magazine's metal exterior shell may be left in place and/or scrapped, or repurposed.

The following notice and public meeting requirements will be met.

(2) The permittee shall send a notice of the modification request to all persons on the facility mailing list maintained by the Director and to the appropriate units of State and local government as specified in Subsection R315-124-10(c)(1)(ix) and shall publish this notice in a major local newspaper of general circulation. This notice shall be mailed and published within seven days before or after the date of submission of the modification request, and the permittee shall provide to the Director evidence of the mailing and publication. The notice shall include:

(i) Announcement of a 60-day comment period, and a name and address of the Director to whom comments shall be sent;

(ii) Announcement of the date, time, and place for a public meeting on the modification request, in accordance with Subsection R315-270-42(c)(4);

(iii) Name and telephone number of the permittee's contact person;

(iv) Name and telephone number of a Division contact person;

(v) Location where copies of the modification request and any supporting documents can be viewed and copied; and

(vi) The following statement: "The permittee's compliance history during the life of the permit being modified is available from the Division's contact person."

(3) The permittee shall place a copy of the permit modification request and supporting documents in a location accessible to the public in the vicinity of the permitted facility.

(4) The permittee shall hold a public meeting no earlier than 15 days after the publication of the notice required in Subsection R315-270-42(c)(2) and no later than 15 days before the close of the 60-day comment period. The meeting shall be held to the extent practicable in the vicinity of the permitted facility.

(5) The public shall be provided at least 60 days to comment on the modification request. The comment period shall begin on the date the permittee publishes the notice in the local newspaper. Comments should be submitted to the Director.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Should you have any questions please contact me at the number found below.

Sincerely,

Tyson Hone
Environmental Compliance Manager
Clean Harbors Aragonite, LLC
11600 North Atpus Road
PO Box 1339
Grantsville, Utah 84029-1339
(o) 435.844.8122
(c) 435.579.5389
hone.tyson @cleanharbors.com
www.cleanharbors.com

Cc:
Michael Crisenbery
William Simmons

Module 2

The Permittee may accept for management at the facility, wastes identified by the waste code P999 as listed in UAC R315-261-33(e) on a case-by-case basis with prior Director approval. Prior to accepting any waste identified by the waste code P999, the Permittee must provide the Director, in writing, a detailed description of the waste and proposed procedures for management of the waste at Aragonite. Details outlining how Aragonite will determine acceptability of the waste upon arrival and how the waste will be characterized for the storage and incineration parameters must also be provided. The Permittee shall not manage the waste at the facility until written approval is received from the Director.

Chemical agent-related waste generated outside of Utah that meets the definition of F999 or P999 is subject to Utah rules and regulations when the waste is managed in Utah. The requirements specified in this permit for F999 and P999 wastes apply to all wastes meeting applicable definitions in this permit and Utah rule regardless of location where generated.

The Permittee may also accept for management at the facility, subject to the conditions of this permit, infectious waste, industrial waste, household hazardous waste, site-generated waste, regulated and non-regulated PCB waste and waste codes identified in the HSWA permit.

Materials in compressed gas cylinders that the Permittee may accept for management at the facility include flammable gases and corrosive materials as defined by the International Fire Code. Compressed gas cylinders containing cryogenic fluids, as defined by the International Fire Code, may be accepted but may not be fed to the incinerator until the Permittee has replaced the necessary valves in the compressed gas feed system with those required by the International Fire Code and provided written notification to the Director.

2.C.2. The following shall not be accepted for management at the facility at any time (regardless of the waste codes identified in Condition 2.C.1.):

a. Water reactive wastes or materials (defined as DOT Division 4.3, and in UAC R315-261-23(a)(2)-(4)). However, small quantities (less than four liters) may be accepted in lab packs as described in Attachment 1.
b. Pyrophoric wastes or materials (defined as DOT Division 4.2(1)).
c. Explosive wastes or materials (defined as DOT Forbidden, DOT Division 1.1, and 1.2 explosives, DOT Division 4.1(2) Type A and Type B materials, and in UAC R315-261-23(a)(6)-(8)).
d. Shock sensitive wastes or materials.
e. Radioactive wastes or materials that do not meet one or more of the exemptions listed in UAC R313-19-13 or that have a count rate greater than three times the background value as determined by the Aragonite Radioactivity Screen (Aragonite-6).
f. Any waste or material exhibiting the property identified in UAC R315-261-23(a)(1).

The Permittee may accept for management at the facility, wastes identified by the waste code P999 as listed in UAC R315-261-33(e) on a case-by-case basis with prior Director approval. Prior to accepting any waste identified by the waste code P999, the Permittee must provide the Director, in writing, a detailed description of the waste and proposed procedures for management of the waste at Aragonite. Details outlining how Aragonite will determine acceptability of the waste upon arrival and how the waste will be characterized for the storage and incineration parameters must also be provided. The Permittee shall not manage the waste at the facility until written approval is received from the Director.

Chemical agent-related waste generated outside of Utah that meets the definition of F999 or P999 is subject to Utah rules and regulations when the waste is managed in Utah. The requirements specified in this permit for F999 and P999 wastes apply to all wastes meeting applicable definitions in this permit and Utah rule regardless of location where generated.

The Permittee may also accept for management at the facility, subject to the conditions of this permit, infectious waste, industrial waste, household hazardous waste, site-generated waste, regulated and non-regulated PCB waste and waste codes identified in the HSWA permit.

Materials in compressed gas cylinders that the Permittee may accept for management at the facility include flammable gases and corrosive materials as defined by the International Fire Code. Compressed gas cylinders containing cryogenic fluids, as defined by the International Fire Code, may be accepted but may not be fed to the incinerator until the Permittee has replaced the necessary valves in the compressed gas feed system with those required by the International Fire Code and provided written notification to the Director.

2.C.2. The following shall not be accepted for management at the facility at any time (regardless of the waste codes identified in Condition 2.C.1.):

a. Water reactive wastes or materials (defined as DOT Division 4.3, and in UAC R315-261-23(a)(2)-(4)). However, small quantities (less than four liters) may be accepted in lab packs as described in Attachment 1.
b. Pyrophoric wastes or materials (defined as DOT Division 4.2(1)).
c. Explosive wastes or materials (defined as DOT Forbidden, DOT Division 1.1, and 1.2 ~~, and 1.3~~ explosives, DOT Division 4.1(2) Type A and Type B materials, and in UAC R315-261-23(a)(6)-(8)).
d. Shock sensitive wastes or materials.
e. Radioactive wastes or materials that do not meet one or more of the exemptions listed in UAC R313-19-13 or that have a count rate greater than three times the background value as determined by the Aragonite Radioactivity Screen (Aragonite-6).
f. Any waste or material exhibiting the property identified in UAC R315-261-23(a)(1).

Module 3

t. Cylinder storage area and cylinder feed station combined -- 800 9" diameter by 52" high, compressed gas cylinders or equivalent;

u. Cylinder feed station -- 20 9" diameter by 52" high, compressed gas cylinders or equivalent. This capacity does not include a cylinder or cylinders in the glove box. The glove box at the cylinder feed station will only be used in emergency situations (i.e., leaking cylinders). The glove box will remain empty at all other times;

v. Drum pumping storage on slag pad east of the bulk solids maintenance bay -- 24 55-gallon containers or 1,320 gallons; equipped with portable secondary containment;

w. Drum pumping station -- 4 55-gallon containers or 220 gallons;

x. Bulk solids/sludge pad/sludge pad direct burn station with the direct burn tanker designated as T-412 -- 144 55-gallon containers or 7,920 gallons in containers on pallets; 23,760 gallons in large or bulk containers;

y. Laboratory Cooler -- 2 55-gallon containers or 110 gallons equipped with portable secondary containment.

z. Building 68 -- 56 55-gallon containers or 3,080 gallons;

aa. Building 69-North -- 32 55-gallon containers or 1,760 gallons;

bb. Building 69-South -- 32 55-gallon containers or 1,760 gallons;

cc. ATF Magazines – 3 magazines that hold 29,580 lbs. each for a total of 88,740 lbs.

3.A.3. The Permittee may treat or process wastes in containers in the container management areas listed below. The treatment or other processing operations that may occur include decanting and repacking (including lab pack inspection, lab pack repacking, lab pack solidification, liquid bulk-up, compatibility testing and ignitability screen, container repacking, and debris processing) as described in Attachment 8.

a. Repack area in building E-4.

b. Decant area in building E-4 (decanting only).

c. Workstations WS1, WS2, and WS3 in building E-2.

d. Drive through direct burn station (decanting only).

t. Cylinder storage area and cylinder feed station combined -- 800 9" diameter by 52" high, compressed gas cylinders or equivalent;

u. Cylinder feed station -- 20 9" diameter by 52" high, compressed gas cylinders or equivalent. This capacity does not include a cylinder or cylinders in the glove box. The glove box at the cylinder feed station will only be used in emergency situations (i.e., leaking cylinders). The glove box will remain empty at all other times;

v. Drum pumping storage on slag pad east of the bulk solids maintenance bay -- 24 55-gallon containers or 1,320 gallons; equipped with portable secondary containment;

w. Drum pumping station -- 4 55-gallon containers or 220 gallons;

x. Bulk solids/sludge pad/sludge pad direct burn station with the direct burn tanker designated as T-412 -- 144 55-gallon containers or 7,920 gallons in containers on pallets; 23,760 gallons in large or bulk containers;

y. Laboratory Cooler -- 2 55-gallon containers or 110 gallons equipped with portable secondary containment.

z. Building 68 -- 56 55-gallon containers or 3,080 gallons;

aa. Building 69-North -- 32 55-gallon containers or 1,760 gallons;

bb. Building 69-South -- 32 55-gallon containers or 1,760 gallons;

cc. ATF Magazines – 3 magazines that hold 29,580 lbs. each for a total of 88,740 lbs.

3.A.3. The Permittee may treat or process wastes in containers in the container management areas listed below. The treatment or other processing operations that may occur include decanting and repacking (including lab pack inspection, lab pack repacking, lab pack solidification, liquid bulk-up, compatibility testing and ignitability screen, container repacking, and debris processing) as described in Attachment 8.

a. Repack area in building E-4.

b. Decant area in building E-4 (decanting only).

c. Workstations WS1, WS2, and WS3 in building E-2.

d. Drive through direct burn station (decanting only).

Attachment 1 – Waste Analysis Plan

Table 2 Waste Categories			
Category	Category Code	Definition	Examples
Debris	4	Debris means a homogeneous or heterogeneous solid material exceeding a 60 mm particle size that is intended for disposal and that is: a manufactured object; or plant or animal matter; or natural geologic material. However, the following materials are not debris: any material for which a specific treatment standard is provided in R315-268-40 through 49, namely lead acid batteries, cadmium batteries, and radioactive lead solids; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues; and intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume.	Debris contains a wide variety of materials. Examples include steel plates, glass, rocks, and small identical empty containers or objects, mixtures of spill absorbent, Tyvek® suits, rubber booties and gloves, bricks, rocks, metal, and paper towels. Items that may not be part of a debris profile include containers containing any liquid.
Consumer Products (includes Flares, Pharmaceuticals and Gas Cylinders)	5	Material that is in its original unopened packaging (as a product) and compressed gas cylinders with contents still under pressure. For consumer products and pharmaceuticals, the packaging is still in good condition so that the contents are easily identified. SDS may or may not be available for this material. For gas cylinders, each cylinder, as it arrives at the facility, is in good condition with all required markings, tags or labels identifying the gas contents intact, in accordance with IFC 3003.2.2.	Examples of consumer products and pharmaceuticals include personal care products and over-the-counter or prescription medications. Examples of gas cylinders include butane, ethane and acetylene
Controlled Substances	6	Containerized material that is defined as a controlled substance by the DEA, the FDA, or both (e.g., cocaine, etc.). Aragonite has a permit, issued through the DEA, allowing generators of these controlled substances to relinquish control to specific personnel at the Aragonite facility, who in turn, maintain control of the shipment from the point of its arrival at the facility until it enters the incinerator.	Schedule I-V Controlled Substances

Table 2 Waste Categories			
Category	Category Code	Definition	Examples
Debris	4	Debris means a homogeneous or heterogeneous solid material exceeding a 60 mm particle size that is intended for disposal and that is: a manufactured object; or plant or animal matter; or natural geologic material. However, the following materials are not debris: any material for which a specific treatment standard is provided in R315-268-40 through 49, namely lead acid batteries, cadmium batteries, and radioactive lead solids; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues; and intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume.	Debris contains a wide variety of materials. Examples include steel plates, glass, rocks, and small identical empty containers or objects, mixtures of spill absorbent, Tyvek® suits, rubber booties and gloves, bricks, rocks, metal, and paper towels. Items that may not be part of a debris profile include containers containing any liquid.
Consumer Products (includes Flares, Pharmaceuticals and Gas Cylinders)	5	Material that is in its original unopened packaging (as a product) and compressed gas cylinders with contents still under pressure. For consumer products and pharmaceuticals, the packaging is still in good condition so that the contents are easily identified. SDS may or may not be available for this material. For gas cylinders, each cylinder, as it arrives at the facility, is in good condition with all required markings, tags or labels identifying the gas contents intact, in accordance with IFC 3003.2.2.	Examples of consumer products and pharmaceuticals include personal care products and over-the-counter or prescription medications. Examples of gas cylinders include butane, ethane and acetylene
Controlled Substances	6	Containerized material that is defined as a controlled substance by the DEA, the FDA, or both (e.g., cocaine, etc.). Aragonite has a permit, issued through the DEA, allowing generators of these controlled substances to relinquish control to specific personnel at the Aragonite facility, who in turn, maintain control of the shipment from the point of its arrival at the facility until it enters the incinerator.	Schedule I-V Controlled Substances

Attachment 3 – Inspections

- Inspect incinerator and associated equipment (e.g., pumps, valves, conveyors, pipes, etc.) for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering.
- Visually inspect the incinerator monitoring instrumentation for out of tolerance and/or recorded operational data.
- Kiln combustion air system.
- Continuous Emissions Monitoring System.
- Temperature in refrigerated trailers when in use.
- Cylinder storage area when in use.
- Cylinder feed station when in use.
- Drum pumping storage area when in use.
- Drum pumping station when in use.
- Shred Equipment when in use
- ATF Storage Magazines when in use

2.2 Weekly

- Carbon vent systems
- Condensation traps
- Fire pump check
- Emergency generator check
- Eyewash and showers
- Perimeter lights, signs on fence, fence
- Containers and containment systems
- Test alarm system
- Carbon vent systems
- ATF Storage Magazines when in use

2.3 Monthly

- Fire Extinguishers
- Tank secondary containment system for indications of cracks, gaps, and peeling of the epoxy sealant.

2.4 Quarterly

- Potable water system check must be done for the Utah Division of Drinking Water.
- Spill kit inspection. The required spill kits and contents of each kit are outlined in the Preparedness and Prevention Plan (Attachment 5). If used, the kits must be fully restored prior to being placed in-service. The kits will also be inspected once per quarter to insure their integrity.
- Evacuation drills.

- Inspect incinerator and associated equipment (e.g., pumps, valves, conveyors, pipes, etc.) for leaks, spills, fugitive emissions, deterioration, excessive wear, and signs of tampering.
- Visually inspect the incinerator monitoring instrumentation for out of tolerance and/or recorded operational data.
- Kiln combustion air system.
- Continuous Emissions Monitoring System.
- Temperature in refrigerated trailers when in use.
- Cylinder storage area when in use.
- Cylinder feed station when in use.
- Drum pumping storage area when in use.
- Drum pumping station when in use.
- Shred Equipment when in use
- ATF Storage Magazines when in use
- ~~Shred equipment when in use~~

2.2 Weekly

- Carbon vent systems
- Condensation traps
- Fire pump check
- Emergency generator check
- Eyewash and showers
- Perimeter lights, signs on fence, fence
- Containers and containment systems
- Test alarm system
- Carbon vent systems
- ATF Storage Magazines when in use

2.3 Monthly

- Fire Extinguishers
- Tank secondary containment system for indications of cracks, gaps, and peeling of the epoxy sealant.

2.4 Quarterly

- Potable water system check must be done for the Utah Division of Drinking Water.
- Spill kit inspection. The required spill kits and contents of each kit are outlined in the Preparedness and Prevention Plan (Attachment 5). If used, the kits must be fully restored prior to being placed in-service. The kits will also be inspected once per quarter to insure their integrity.
- Evacuation drills.

Inspection Item	Minimum Frequency	Types of Problems
Shred equipment and piping integrity	Daily (when in use)	Leaking, deterioration
Shred tower eyewash and safety showers	Weekly	Operable
Sump SP-624	Daily	Empty
Shred Tower O2 instrumentation/alarm	Monthly	Calibrate, alarm audible
Shred Tower O2 instrumentation/alarm	Weekly	Instrument operable
Shred Tower LEL instrumentation	Monthly	Calibrate, alarm audible
Shred Tower LEL instrumentation	Weekly	Instrument operable
ATF Storage Magazines	Daily	Closed container; label is current; no leaks.
ATF Storage Magazines	Weekly	Unit secure. Locks secure. No unauthorized access

Inspection Item	Minimum Frequency	Types of Problems
Shred equipment and piping integrity	Daily (when in use)	Leaking, deterioration
Shred tower eyewash and safety showers	Weekly	Operable
Sump SP-624	Daily	Empty
Shred Tower O2 instrumentation/alarm	Monthly	Calibrate, alarm audible
Shred Tower O2 instrumentation/alarm	Weekly	Instrument operable
Shred Tower LEL instrumentation	Monthly	Calibrate, alarm audible
Shred Tower LEL instrumentation	Weekly	Instrument operable
ATF Storage Magazines	Daily	Closed container; label is current; no leaks.
ATF Storage Magazines	Weekly	Unit secure. Locks secure. No unauthorized access

ATTACHMENT 7

CLOSURE PLAN

a. Inspect all exterior areas for contamination such as yards, driveways, and loading/unloading bays;

b. Sample (by wipe test or soil scoop) any areas where the visual inspection indicates possible contamination;

c. Verify extent of contamination if any sample indicates the presence of RCRA or TSCA regulated waste above background;

d. A random pattern for site area sampling will be designed using a computer program to prepare a grid system over the site plan. Five percent of all sample points will be sampled and analyzed. Any locations where contamination is discovered will be further investigated to identify the extent of contamination;

e. Once the extent of contamination is determined, cleanup techniques will be reviewed and implemented after approval by the appropriate regulatory agencies.

6.11 Closure of Type 4 Storage Magazines

a. Once all of the waste has been removed from the storage magazines, the interior will be manually swept to remove any loose debris. This material will be collected and disposed of. All three magazines (storage units) will be swept/vacuumed to remove any trace of reactive material which will be shipped off-site for disposal. The interior will then be pressure washed with fresh water.

b. The final rinse water for each magazine shall be sampled (one sample per magazine) within the unit and analyzed for VOCs (SW846 Method 8260), total metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag, Cu, Ni, V, Zn, Sb, Tl, and Be) using Sw-846 Method 6010B and SW-846 Method 7470A. and extractable explosives (SW846 Method 8330).

c. If extractable explosives or volatile organic compounds are detected based upon the lower detectable limits established by the analytical method, or if the concentrations of metals exceed background levels as established through analysis of source water, a decision will be made to repeat decontamination procedures or to declare the unit hazardous and dispose in a permitted facility. It is anticipated that one decontamination event will be required per unit in order to clean close. If the rinse water clean closure criteria constituents are below background levels, the facility will dispose off-site as non-hazardous.

d. Once decontamination is complete, the magazine's metal exterior shell may be left in place and/or scrapped, or repurposed.

7.0 Sampling and Analysis

a. Inspect all exterior areas for contamination such as yards, driveways, and loading/unloading bays;

b. Sample (by wipe test or soil scoop) any areas where the visual inspection indicates possible contamination;

c. Verify extent of contamination if any sample indicates the presence of RCRA or TSCA regulated waste above background;

d. A random pattern for site area sampling will be designed using a computer program to prepare a grid system over the site plan. Five percent of all sample points will be sampled and analyzed. Any locations where contamination is discovered will be further investigated to identify the extent of contamination;

e. Once the extent of contamination is determined, cleanup techniques will be reviewed and implemented after approval by the appropriate regulatory agencies.

6.11 Closure of Type 4 Storage Magazines

a. Once all of the waste has been removed from the storage magazines, the interior will be manually swept to remove any loose debris. This material will be collected and disposed of. All three magazines (storage units) will be swept/vacuumed to remove any trace of reactive material which will be shipped off-site for disposal. The interior will then be pressure washed with fresh water.

b. The final rinse water for each magazine shall be sampled (one sample per magazine) within the unit and analyzed for VOCs (SW846 Method 8260), total metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag, Cu, Ni, V, Zn, Sb, Tl, and Be) using Sw-846 Method 6010B and SW-846 Method 7470A. and extractable explosives (SW846 Method 8330).

c. If extractable explosives or volatile organic compounds are detected based upon the lower detectable limits established by the analytical method, or if the concentrations of metals exceed background levels as established through analysis of source water, a decision will be made to repeat decontamination procedures or to declare the unit hazardous and dispose in a permitted facility. It is anticipated that one decontamination event will be required per unit in order to clean close. If the rinse water clean closure criteria constituents are below background levels, the facility will dispose off-site as non-hazardous.

d. Once decontamination is complete, the magazine's metal exterior shell may be left in place and/or scrapped, or repurposed.

7.0 Sampling and Analysis

Appendix 1 – Closure Cost Estimates

Closure Cost Estimate
Clean Harbors Aragonite
Incineration Facility
Aragonite, Utah

Prepared By:

Americon, Inc.
Salt Lake City, UT Boulder, CO

Table of Contents

SECTION I

EXECUTIVE SUMMARY

I. Executive Summary

At the request of Safety-Kleen, Inc, now Clean Harbors Aragonite, LLC, Americon, Inc. has prepared the following closure cost estimate for the Aragonite incineration facility. This estimate is based on the eventual closure of the entire facility by a third party.

This revised closure cost estimate totals $11,739,658. In Section II of this document, tables are provided which summarize the total closure cost estimates broken out by closure activity and area. In Section III, detailed closure cost estimates are provided for each major process area. These estimates indicate costs by area closure activity. Additionally, a table is provided for each of these major process areas, which tabulates the closure activity total for that process area.

Costs associated with the removal and disposal of waste in storage were calculated by using 2001 gate rates for waste disposal at the Clean Harbors Deer Park, TX facility. Costs associated with sampling and analyses were calculated by utilizing the sampling and analytical methods for decontamination verification approximating the methodology used in the Northeast Casualty Real Property Clive facility closure efforts. All costs have been adjusted for inflation to make current as of 2012.

This closure cost estimate is based upon the assumption that all areas are full to their permitted capacities, off-site transportation and disposal costs are calculated using commercially available rates, independent third party closure, analytical costs are quoted by Utah certified commercial laboratories, and closure certification is made by a Utah registered Professional Engineer. All cost estimates use available 2001 pricing adjusted for inflation using the U.S. Department of Commerce Implicit Price Deflators for the Gross Domestic Product to make the prices current as of 2012. The adjustment to 2012 prices was calculated by multiplying the 2001 cost estimates by the 2011 Implicit Price Deflator for the Gross Domestic Product divided by the 2001 Implicit Price Deflator for the Gross Domestic Product as released by the U.S. Department of Commerce, January 27, 2012, i.e., 113.327/90.727. Sampling and closure standards for verification of decontamination are assumed to be consistent with those applicable to the Northeast Casualty Real Property Clive incineration facility closure.

SECTION II

CLOSURE COST SUMMARIES

AREA SUMMARY TABLE (includes costs from all areas)	
Activity	**Cost**
Removal of Waste	$1,004,432
Decontamination	$ 989,509
Sampling and Analysis	$ 238,937
Transportation	$ 1,389,433
Treatment and Disposal	$ 7,128,917
Subtotal of Closure Costs	**$ 10,751,228**
Engineering Expenses	$ 537,563
Certification of Closure	$ 87,720
Subtotal of Closure Costs	**$ 11,376,491**
Contingency Allowance	$ 1,137,650
TOTALS	**$ 12,514,141**

Clean Harbors Aragonite Incineration Facility
Closure Cost Estimate by Area

Area	Activity	Cost	Area Subtotal
Container Storage	Decontamination	$ 200,395	
	Sampling and Analysis	$57,630	
	Transportation	$984,375	
	Treatment and Disposal	$3,835,326	
	Subtotal	**$5,077,726**	
	Engineering	$ 253,886	
	Certification	$18,173	
	Subtotal	**$5,349,785**	
	Contingency	$ 534,979	
	Area Total	**$ 5,884,764**	**$5,884,764**
Tank Farm	Waste Removal	$13,097	
	Decon (including flush, purge)	$ 261,849	
	Sampling and Analysis	$27,110	
	Transportation	$244,185	
	Treatment and Disposal	$894,351	
	Subtotal	**$ 1,440,592**	
	Engineering	$ 72,030	
	Certification	$18,173	
	Subtotal	**$ 1,530,795**	
	Contingency	$ 153,080	
	Area Total	**$ 1,683,875**	**$ 1,683,875**
Bulk Solids	Waste Removal	$6,498	
	Decontamination	$ 113,112	
	Sampling and Analysis	$22,026	
	Transportation	$107,415	
	Treatment and Disposal	$1,406,724	
	Subtotal	**$ 1,655,775**	

	Engineering	$ 82,789	
	Certification	$10,484	
	Subtotal	**$ 1,749,048**	
	Contingency	$ 174,905	
	Area Total	**$ 1,923,953**	**$ 1,923,953**
Sludge Tanks	Waste Removal	$9,326	
	Decon (including flush)	$57,892	
	Sampling and Analysis	$5,622	
	Transportation	$14,606	
	Treatment and Disposal	$220,405	
	Subtotal	**$307,851**	
	Engineering	$15,393	
	Certification	$4,543	
	Subtotal	**$ 327,787**	
	Contingency	$ 32,779	
	Area total	**$ 360,566**	**$ 360,566**
Kiln	Removal of Waste Residue	$975,511	
	Decon (including disassembly)	$ 278,775	
	Sampling and Analysis	$119,520	
	Transportation	$31,790	
	Treatment and Disposal	$164,918	
	Subtotal	**$ 1,570,514**	
	Engineering	$ 78,526	
	Certification	$18,174	
	Subtotal	**$1,667,214**	
	Contingency	$ 166,721	
	Area Total	**$ 1,833,935**	**$1,833,935**

Area	Activity	Cost	Area Subtotal
Type 4 Magazine Storage	Decontamination	$77,486	
	Sampling and Analysis	$7,029	
	Transportation	$7,062	
	Treatment and Disposal	$607,193	
	Subtotal	**$698,770**	
	Engineering	$34,939	
	Certification	$18,173	
	Subtotal	**$751,882**	
	Contingency	$75,188	
	Area Total	**$827,070**	**$827,070**
	Total Cost Estimates		**$12,514,141**

SECTION III

CLOSURE COSTS BY AREA

Container Storage Area - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Demolition and Removal of Containment System	$0
2	Removal of Soil	$0
3	Backfill	$0
4	Decontamination	$ 200,395
5	Sampling and Analysis	$57,630
6	Monitoring Well Installation	$0
7	Transportation	$984,375
8	Treatment and Disposal	$3,835,326
9	SUBTOTAL OF CLOSURE COSTS	$ 5,077,726
10	Engineering Expenses	$ 253,886
11	Certification of Closure	$18,173
12	SUBTOTAL OF CLOSURE COSTS	$ 5,349,785
13	Contingency Allowance	$ 534,797
14	Landfill Closure	$0

	TOTALS	**$ 5,884,764**

Container Storage

Activity Number

4. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination:

Costs detailed in Section V. Decontamination Cost by Area and Task **$200,395** This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

5. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Container Management areas are comprised of several storage units. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples each Bays 1, 2, 3, 4, 5, 6, Buildings 68 and 69	= 120 samples
25 samples each E1, E2, E3, E4, E5, E6, E7	= 175
35 samples from breezeway	= 35
Total Wipe samples	330

330 wipe sample locations x $125/wipe = **$41,250**

B. Rinse Samples (for RCRA confirmation)

1 sample each Bays 1, 2, 3, 4, 5, 6, Building 68 and 69	= 8 samples
2 samples each E1, E2, E3, E4, E5, E6, E7	= 14
3 samples from breezeway	= 3
2 samples from bulk solids pad	= 2
3 samples from slag pad	= 3
1 sample each E-1, E-5, E-4 docks	= 3
2 samples from truck unloading direct burn	= 2
Total rinsewater samples	35

35 sample locations x $468/sample = **$16,380**

C. Total Sampling Cost

$41,250 wipe samples + $16,380 rinse samples = **$57,630**

7. Transportation of Waste in Storage

Note 1:

Mileage rates based on $3.75 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

11, 967 drums of waste/80 drums per truck = 150 truckloads of drums

150 drum loads x 1,750 miles from Aragonite, UT to Deer Park, TX x $3.75/mile = **$984,375**

8. Treatment and Disposal

Note 1:

Waste volumes and containment surfaces are based on permitted capacities and areas. The Container Storage Areas(s) have a combined maximum permitted capacity of 11,967 drums (55-gal). This capacity includes an equivalent of 213 55-gallon containers for the compressed gas cylinder capacity, and an additional 12 55-gallon containers for the capacity of one direct burn vessel on the direct burn pad, but does not include any capacity from the bulk solids/sludge pad, truck unloading or drive through/drive through corrosive direct burn stations as the capacity for these units is considered as bulk solids and bulk liquids and is included in the cost estimate for closure of the bulk solids tanks and the tank farm. The total cumulative containment surface area of all of the container storage areas is 116,332 sq.ft.

Note 2:

Disposal rate for material in storage calculated at $0.55/lb (or $1,099/ton) based on a weighted average of gate rates of similar drummed waste at the CH-Deer Park, TX incineration facility.

Note 3:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Disposal of Waste in Drums

11,967 drums x 55 gal/drum/7.48 gal/ft^3/27 ft^3/yd = 3,259 cu.yd waste
3,259 cu.yd waste for disposal x 1.00775 tons/cu.yd = 3,285 tons of waste in drums for disposal
3,285 tons x $1,099/ton disposal cost = **$3,610,215**

B. Transportation and Disposal of Decontamination Fluid

116,332 sq. ft containment x 1.0 gal/sq. ft decon fluid = 116,332 gallons
116,332 gal x $1.89/gal disposal cost = **$219,867**

C. Tank Rental

three 20,000 gallon frac tanks required for two months
3 tanks x $874/month x 2 months = **$5,244**

D. Total Treatment and Disposal Cost

$3,610,215 + $219,867 + $5,244 = **$3,835,326**

9. Sub-Total of Area Closure Costs

$200,395 + $57,630 + $984,375 + $3,835,326 = **$5,077,726**

10. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **$253,886**

11. Certification of Closure

A. Engineering Certification - Professional Engineer

100 hours x $156/hr = **$15,600**

B. Engineering Certification - Direct costs = **$2,573**

C. Total Engineering Certification

$15,600 + $2,573 = **$18,173**

12. Sub-Total of Area Closure Costs

$5,077,726 + $253,886 + $18,173 = **$5,349,785**

13. Contingency Allowance

A. Contingency Allowance equal to 10% of Subtotal = **$534,979**

Total Area Closure Cost = $5,884,764

Tank Farm - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste	$13,097
2	Tank System Purging	Incl w/decon
3	Flushing Tank and Piping	Incl w/decon
4	Excavation, Disassembly, and Loading	$0
5	Demolition and Removal of Containment System	$0
6	Removal of Soil	$0
7	Backfill	$0
8	Decontamination	$ 261,849
9	Sampling and Analysis	$27,110
10	Monitoring Well Installation	$0
11	Transportation	$244,185
12	Treatment and Disposal	$894,351
13	SUBTOTAL OF CLOSURE COSTS	$ 1,440,592
14	Engineering Expenses	$72,030
15	Certification of Closure	$18,173
16	SUBTOTAL OF CLOSURE COSTS	$ 1,530,795
17	Contingency Allowance	$ 153,080
18	Landfill Closure	$0

	TOTALS	**$ 1,683,875**

Tank Farm

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity of 461,504 gallons. Additionally, the capacity from the drive through/drive through corrosive and truck unloading direct burn stations adds four 7500 gallon tankers or 30,000 additional gallons of waste for a total of 491,504 gallons. The tank farm has 18,900 sq.ft. of surface area. This area does not include the drive through/drive through corrosive and truck unloading direct burn station surface areas as they are included in the container storage area closure.

A. Remove Tank Farm Inventory

Remove 491,504 gallons from storage - 30 mandays
30 mandays x $31/hr x 8 hrs/day = $7,440
Equipment - lump sum = $5,657
Labor plus equipment total = **$13,097**

2. Tank System Purging

Included in Decontamination Costs

3. Flush Tank and Piping

Included in Decontamination Costs

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities,

including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Tanks and piping will be emptied, flushed, then rinsed prior to dismantling. Tanks and piping will then be cut up for disposal as RCRA waste. Volume of waste based on tank volumes, and pipe system lineal footage.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **$261,849**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2.

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3.

The Tank Farm is comprised of four identical containment areas, and two pump houses. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 samples per containment area	= 100 samples
10 samples per pump house	= 20 samples
10 miscellaneous structural steel samples	= 10 samples
12 miscellaneous piping, strainer, pump samples	= 12 samples
Total wipe samples	142

142 wipe sample locations x $125/wipe = **$17,750**

B. Rinse Samples (for RCRA confirmation)

4 samples each for four containment areas	= 16 samples
2 samples each for two pump houses	= 4 samples
Total rinsewater samples	20

20 sample locations x $468/sample = **$9,360**

C. Total Sampling Cost

$17,750 wipe samples + $9,360 rinse samples = **$27,110**

11. Transportation

Note 1:

Mileage rates based on $3.75 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

It is expected that approximately 34 drums of waste from the tank farm will be removed.
34 drums of waste/80 drums per truck = 1 truckload of drums
1 drum load x 1750 miles from Aragonite, UT to Deer Park, TX x $3.75/mile = **$6,562**

B. Transportation of Bulk Liquid in Storage, and Flush (by Rail tanker)

461,504 gallon tank farm capacity + 30% flush to remove PCBs + 30,000 gallons from direct burn stations = 629,955 gallons total
629,955 gal/20,000 gal per railcar = 32 railcars
32 railcars x $7,303 per load from Aragonite, UT to Deer Park, TX = **$233,696**

C. Transportation of Bulk Waste (tank scrap in roll-off boxes)

16 tanks x 10,000 lb per tank = 160,000 lb steel scrap from tank dismantling
160,000/15,000 per box = 10.5 loads
assume same weight, volume in pipe, pumps and strainers = 10.5 loads
total number of roll-off box loads = 21 boxes
21 roll-off boxes x $187 per load to transport 25 miles to Grassy Mountain = **$3,927**

D. Total Transportation Costs

$6,562 + $233,696 + $3,927 = **$244,185**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity, plus piping capacity, totaling 461,504 gallons. Additionally, 30,000 gallons of direct burn tanker station capacity will be included as waste to be managed under tank farm closure. The tank farm has 18,900 sq.ft. of surface area.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste, plus 10,000 gallons rinsate generated from rinse of tank interiors prior to dismantling. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Volume of waste for disposal includes permitted capacity of tank system (including pipe) plus 30% by volume to account for flush of system to remove TSCA designation plus 30,000 gallons of the direct burn stations capacity. Three (3) flushes of 10% by volume are assumed, although some flush may be re-used if tested to contain less than 50 ppm PCB.

Note 4:

Disposal prices calculated at $0.14/lb ($280/ton) for organic waste, and $0.184/lb ($368/ton) for aqueous waste, based on gate rate at CH-Deer Park, TX incineration facility.

Note 5:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 6:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Aqueous Waste in Bulk

114,755 gallons capacity + 30 % flush by volume + 15,000 gal from direct burn = 164,182 gal total

164,182 gal/7.48 gal/ft^3/27 cu ft/cu. yd = 812.9 cu. yd.

812.9 cu. yd waste for disposal (including flush) x 0.843 tons/cu. yd = 685.3 tons for disposal

685.3 tons x $368/ton disposal cost = **$252,190**

B. Treatment and Disposal of High BTU Waste in Bulk

346,749 gallons capacity + 30% flush by volume + 15,000 gal from direct burn = 465,774 gal

465,774 gal/7.48 gal/ft^3/27 cu ft./cu. yd = 2,306.3 cu. yd.

2,306.3 cu. yd waste for disposal (including flush) x 0.843 tons/cu.yd = 1,944.2 tons for disposal

1,944.2 tons x $280/ton disposal cost = **$544,376**

C. Treatment and Disposal of Tank and Pipe Scrap Metal

16 tanks at 10,000 per tank plus same weight in pipe, pumps = 320,000 lbs

320,000 lbs/2,000 lb per ton = 160 tons for disposal (landfill)

160 tons x $237/ton disposal cost = **$37,920**

D. Transportation and Disposal of Decontamination Fluid

18,900 sq.ft tank farm containment x 1.0 gal./ft^2 rinsate	= 18,900 gal
rinsate generated from tank rinseout prior to dismantling	= 10,000 gal
total decontamination fluid volume	28,900 gal

28,900 gal x $1.89/gal transportation and disposal = **$54,621**

E. Tank Rental

three 20,000 gallon frac tanks required for two months

3 tanks x $874/month x 2 months = **$5,244**

F. Total Cost of Treatment and Disposal (including decontamination fluid T&D)

$252,190 + $544,376 + $37,920 + $54,621 + $5,244 = **$894,351**

13. Subtotal of Closure Costs

$13,097 + $261,849 + $27,110 + $244,185 + $894,351 = **$1,440,592**

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **$72,030**

15. Certification of Closure

A. Engineering Certification - Professional Engineer

100 hours x $156/hr = **$15,600**

B. Engineering Certification - Direct Costs = **$2,573**

C. Total Engineering Certification
$15,600 + $2,573 = **$18,173**

16. Subtotal of Closure Costs

$1,440,592 +$72,030 + $18,173 = **$1,530,795**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **$153,080**

Total Area Closure Cost = $1,683,875

Bulk Solids - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste	$6,498
2	Tank System Purging	$0
3	Flushing Tank and Piping	$0
4	Excavation, Disassembly, and Loading	$0
5	Demolition and Removal of Containment System	$0
6	Removal of Soil	$0
7	Backfill	$0
8	Decontamination	$ 113,112
9	Sampling and Analysis	$22,026
10	Monitoring Well Installation	$0
11	Transportation	$107,415
12	Treatment and Disposal	$1,406,724
13	SUBTOTAL OF CLOSURE COSTS	$ 1,655,775
14	Engineering Expenses	$82,789
15	Certification of Closure	$10,484
16	SUBTOTAL OF CLOSURE COSTS	$ 1,749,048
17	Contingency Allowance	$ 174,905
18	Landfill Closure	$0

	TOTALS	**$ 1,923,953**

Bulk Solids

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted bulk tank capacity of 229,000 gallons. Also included as bulk solids capacity is the capacity in bulk containers of the bulk solids/sludge pad. This adds an additional 23,760 gallons of waste to be managed for a combined total of 252,760 gallons. The tanks have 7,057 sq.ft. of surface area. This area does not include the bulk solids/sludge pad surface areas as they are included in the container storage area closure.

A. Remove equivalent of 229,000 gallons of waste from bulk solids tanks and 23,760 gallons from the bulk solids/sludge pad - 20 mandays
20 mandays x $31/hr x 8 hrs/day = $4,960
Equipment - lump sum = $1,538
Labor plus equipment total = **$6,498**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination
Costs detailed in Section V. Decontamination Cost by Area and Task **$113,112**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Bulk Solids Building is comprised of three tanks, and one containment area. These tanks and containment area will be wipe sampled individually. Additionally, core samples will be taken from the concrete walls of the building. Rinsate samples will be taken from tanks, and containment. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples per tank	= 45 samples
5 samples from containment/vault	= 5 samples
total wipe samples	= 50

50 wipe sample locations x $125/wipe = **$6,250**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample per tank	= 4 samples
3 rinse samples from containment	= 3 samples
total rinse samples	= 7

7 sample locations x $468/sample = **$3,276**

C. Concrete Core Samples (for PCB Confirmation)

20 samples per wall	= 80 core samples
20 samples from various floor surfaces	= 20 core samples
total core samples	= 100

100 core sample locations x $125/sample = **$12,500**

D. Total Sampling Cost

$6,250 wipe samples + $3,276 rinse samples + $12,500 core samples = **$22,026**

11. Transportation

Note 1:

Bulk solids wastes will be bulked into 20 cu yd roll-off boxes, and transported by rail to Deer Park, TX for disposal. A transportation cost of $1,705 per box is used as per transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

252,760 gallons permitted capacity
252,760 gallons/7.48 gal per cu.ft. = 33,792 cu. ft. waste
33,792 cu. ft. waste/27 cu.ft. per cu.yd. = 1,252 cu.yd.
1,252 cu.yd/20 cu. yd. per roll-off box = 63 roll-off boxes
63 roll-off boxes x $1,705 per load to transport by rail to Deer Park, TX = **$107,415**

12. Treatment and Disposal

Note 1:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 2:

Disposal of bulk solids removed from inventory is calculated at $0.408/lb ($816/ton) based on gate rates at the CH - Deer Park incineration facility.

Note 3:

Walls and ceiling will be rinsed to remove visible dust, and contaminants. Tank liners (metal) will be decontaminated using ultra high pressure water blasting, or other suitable methods. All visible waste residues will be removed.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage
252,760 gallons/7.48 gal/cu ft/27 cu.ft/cu.yd. = 1,252 cu.yd.
1,252 cu.yd x 1.318 ton per cu.yd. = 1,651 tons for disposal
1,651 tons x $816/ton disposal cost = **$1,347,216**

B. Transportation and Disposal of Decontamination Fluid
Estimated volume of decontamination fluid generated - 30,000 gallons
30,000 gal x $1.89/gal disposal cost (incl. Transportation) = **$56,700**

C. Tank Rental
two 20,000 gallon frac tanks required for one months
2 tanks x $874/month x 1 month = **$1,748**

D. Cost to Pump Fluid to Frac Tanks
Labor - 30 hrs x $31/hr = $930
Equipment - lump sum $130
Total Cost to Pump Fluid $930 + $130 = **$1,060**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
$1,347,216 + $56,700 + $1,748 + $1,060 = **$1,406,724**

13. Subtotal of Closure Costs

$6,498 + $113,112 + $22,026 + $107,415 + $1,406,724 = **$1,655,775**

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **$ 82,789**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
60 hours x $156/hr = **$9,360**

B. Engineering Certification - Direct Costs = **$1,124**

C. Total Engineering Certification
$9,360 + $1,124 = **$10,484**

16. Subtotal of Closure Costs

$1,655,775 +$82,789 + $10,484 = **$1,749,048**

17. <u>Contingency Allowance</u>

A. Contingency allowance equal to 10% of Subtotal = **$174,905**

Total Area Closure Cost = $1,923,953

Sludge Tanks - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste	$9,326
2	Tank System Purging	$0
3	Flushing Tank and Piping	$0
4	Excavation, Disassembly, and Loading	$0
5	Demolition and Removal of Containment System	$0
6	Removal of Soil	$0
7	Backfill	$0
8	Decontamination	$57,892
9	Sampling and Analysis	$5,622
10	Monitoring Well Installation	$0
11	Transportation	$14,606
12	Treatment and Disposal	$220,405
13	SUBTOTAL OF CLOSURE COSTS	$ 307,851
14	Engineering Expenses	$15,393
15	Certification of Closure	$4,543
16	SUBTOTAL OF CLOSURE COSTS	$ 327,787

17	**Contingency Allowance**	**$32,779**
18	**Landfill Closure**	**$0**
	TOTALS	**$ 360,566**

Sludge Tanks

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity of 38,570 gallons. The tanks have 2,903 sq.ft. of surface area.

A. Remove 38,570 gallons of waste from bulk sludge tanks - 30 mandays
30 mandays x $31/hr x 8 hrs/day = $7,440
Equipment - lump sum = $1,886
Labor plus equipment total = **$9,326**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination
Costs detailed in Section V. Decontamination Cost by Area and Task **$57,892**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of

this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Sludge Tank Area is comprised of two tanks and one containment vault. The tanks and vault will be wipe sampled individually, with ancillary equipment sampled as necessary. Rinsate samples will be taken from the tanks, and vault. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

5 wipe samples on tanks	= 5 samples
20 wipes on containment vault	= 20 samples
5 samples on ancillary equipment	= 5 samples
Total wipe samples	30

30 wipe sample locations x $125/wipe = **$3,750**

B. Rinse Samples (for RCRA confirmation)

2 rinse samples from tank system	= 2 samples
2 samples from vault area	= 2 samples
total samples	4

4 sample locations x $468/sample = **$1,872**

C. Total Sampling Cost

$3,750 wipe samples + $1,872 rinse samples = **$5,622**

11. Transportation

Note 1:

Sludge will be bulked into 20,000 gallon rail cars, and transported by rail to Deer Park, TX for disposal. A transportation cost of $7,303 per tanker is used as per the transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

38,570 gallons permitted capacity

38,570 gallons/20,000 gallons per rail tanker load = 2 rail tanker loads

2 rail tanker loads x $7,303 per load to Deer Park Texas = **$14,606**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity and truck unloading direct burn station capacity of 38,570 gallons. The tanks and piping have a surface area of 2903 sq ft with the containment vault having 1,173 sq ft of surface area.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. It is estimated that 1,500 gallons of rinsate will be generated from cleaning vault surfaces, and 14,500 gallons will be generated from cleaning the tank interior due to high solids build-up. This rate is based primarily on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Disposal of bulk sludge removed from inventory is calculated at $0.49/lb ($980/ton) based on gate rates at the CH Deer Park incineration facility.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage

38,570 gallons permitted capacity/7.48 cu.ft./gal/27 cu.ft./cu.yd. = 191 cu.yd.
191 cu.yd x 1.0135 ton per cu.yd. = 193.6 tons for disposal
193.6 tons x $980/ton disposal cost = **$189,728**

B. Transportation and Disposal of Decontamination Fluid

Estimated volume of decontamination fluid generated - 16,000 gallons
16,000 gal x $1.89/gal disposal cost (incl. Transportation) = **$30,240**

C. Tank Rental

one 20,000 gallon frac tanks required for one-half month
1 tank x $874/month x 0.5 months = **$437**

D. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
$189,728 + $30,240 + $437 = **$220,405**

13. Subtotal of Closure Costs

$9,326 + $57,892 + $5,622 + $14,606 + $220,405 = **$307,851**

14. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **$15,393**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
24 hours x $156/hr = **$3,744**

B. Engineering Certification - Direct Costs = **$799**

C. Total Engineering Certification
$3,744 + $799 = **$4,543**

16. Subtotal of Closure Costs

$307,851 + $15,393 + $4,543 = **$327,787**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = $**32,779**

Total Area Closure Cost $360,566

Kiln - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste Residue	$975,511
2	Decontamination of the Unit	Incl in decon
3	Disassembly of Ancillary Piping	Incl in decon
4	Demolition and Removal	$0
5	Removal of Soil	$0
6	Backfill	$0
7	Decontamination	$278,775
8	Sampling and Analysis	$119,520
9	Monitoring Well Installation	$0
10	Transportation	$31,790
11	Treatment and Disposal	$164,918
12	SUBTOTAL OF CLOSURE COSTS	$ 1,570,514
13	Engineering Expenses	$78,526
14	Certification of Closure	$18,174
15	SUBTOTAL OF CLOSURE COSTS	$ 1,667,214
16	Contingency Allowance	$166,721
17	Landfill Closure	$0

	TOTALS	**$ 1,833,935**

Kiln System

Activity Number

1. Inventory Removal

A. Remove and dispose of liquid from scrubber

Scrubber liquid volume made up of:

4 tanks at 14,000 each	= 56,000 gal
1 WESP tank	= 1,000 gal
Total scrubber liquid volume	**57,000 gal**

Labor - 30 mandays x $31/hr x 8 hrs/day = **$7,440**
Equipment - lump sum = **$1,608**
Disposal of Liquid - 57,000 gal x $1.89/gal (T&D) = **$107,730**

B. Remove 4,700 cu.yd. of non-liquid waste residues

Non-liquid waste residue volume made up of :

112 boxes slag at 30 yd^3 each (normal operations inventory)	= 3,360 yd^3
18 boxes brick at 30 yd^3 each (from turn-around records)	= 540 yd^3
31 boxes of ash at 20 yd^3 each (normal operations inventory)	= 620 yd^3
9 boxes at 20 yd^3 each from baghouse, spray drier cleanout	= 180 yd^3
Total volume of non-liquid waste residues (170 boxes)	**4,700 yd^3**

Labor - 300 mandays x $31/hr x 8 hrs/day = **$74,400**
Equipment - lump sum **$32,332**

C. Dispose of 4,700 cu.yd of non-liquid waste (volume estimated above)

4,700 cu.yd x 0.675 tons per cu.yd = 3,173 tons.
3,173 tons x $237/ton disposal cost = **$752,001**

D. Total Inventory Removal and Treatment Cost

$7,440 + $1,608 + $107,730 + $74,400 + $32,332 + $752,001 = **$975,511**

7. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **$278,775** This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall. For this task however, the labor and equipment charges for the scrubber liquid and non-liquid residue removal are already included in Activities 1.A. and 1.B. above and should deducted from the calculation using the numbers in Section V in order to avoid duplicating the cost, i.e., 443 mandays/1241 mandays x $1,105,289 = $394,555; $394,555 - $7,440 - $1,608 - $74,400 - $32,332 =$278,775.

8. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

Due to the large surface area of the units comprising the Kiln Area, several units, and corresponding containment areas will be wipe sampled. Sample quantities by area location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 each for kiln and afterburner feed skids, slag discharge, "A" damper	= 100
10 each for the 8 kiln area units	= 80
10 for each of 6 kiln area containment area	= 60
30 for direct burn area	= 30
30 for random structural wipes in area	= 30
Total number of wipe samples from Kiln area	**300**

300 wipe sample locations x $125/wipe = **$37,500**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample from each of the 6 containment berms in kiln area	= 6
1 rinse sample from each of the 8 kiln area units	= 8
1 rinse from the direct burn area containment	= 1
Total number of aqueous samples from kiln area	**15**

15 sample locations x $468/sample = **$7,020**

C. Non-aqueous Samples (concrete cores, brick samples)

200 brick samples from kiln, "a" damper	= 200
150 brick samples from SCC	= 150
20 samples from deslagger	= 20
20 samples from each of 5 pant leg sections	= 100
80 samples from spray drier	= 80
20 samples from accumulation areas	= 20
20 from parking area	= 20
10 random samples from kiln area	= 10
Total non-aqueous samples	**600**

600 samples x $125/sample = **$75,000**

D. Total Sampling Cost

$37,500 wipe samples + $7,020 rinse samples + $75,000 non-aqueous samples = **$119,520**

10. Transportation

A. Transportation of Bulk Liquids (scrubber water)
included in Task 1 - Inventory Removal

B. Transportation of Bulk Waste Residue (ash, brick)
170 debris boxes (from inventory) x $187/ box to Grassy Mtn, UT = **$31,790**

C. Total Cost of Transportation of Waste
$31,790

11. Treatment and Disposal

Note 1:

Brick removal labor is included in the costs for inventory removal. These costs are detailed in Section V of this document.

Note 2:

An area of 82,899 sq ft requires decontamination. Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 4:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage
included in Task 1 - Inventory Removal

B. Transportation and Disposal of Decontamination Fluid
Estimated volume of decontamination fluid generated - 82,899 gallons
82,899 gal x $1.89/gal disposal cost (incl. Transportation) = **$156,679**

C. Tank Rental
four 20,000 gallon frac tanks required for two months
4 tanks x $874/month x 2 months = **$6,992**

D. Cost to Pump Liquid to Frac Tank
labor- 4 mandays x $31/hr x 8 hrs/day = **$992**
equipment - lump sum **$255**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
$156,679 + $6,992 + $992 + $255 = **$164,918**

12. Subtotal of Closure Costs

$975,511 + $278,775 + $119,520 + $31,790 + $164,918 = **$1,570,514**

13. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **$78,526**

14. Certification of Closure

A. Engineering Certification - Professional Engineer
96 hours x $156/hr = **$14,976**

B. Engineering Certification - Direct Costs = **$3,198**

C. Total Engineering Certification
$14,976 + $3,198 = **$18,174**

15. Subtotal of Closure Costs

$1,570,514 + $78,526 + $18,174 = **$1,667,214**

16. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **$166,721**

Total Area Closure Cost = $1,833,935

Type 4 Magazine Container Storage Units

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Demolition and Removal of Containment System	$0
2	Removal of Soil	$0
3	Backfill	$0
4	Decontamination	$77,486
5	Sampling and Analysis	$7,029
6	Monitoring Well Installation	$0
7	Transportation	$7,062
8	Treatment and Disposal	$607,193
9	SUBTOTAL OF CLOSURE COSTS	$698,770
10	Engineering Expenses	$34,939
11	Certification of Closure	$18,173
12	SUBTOTAL OF CLOSURE COSTS	$751,882
13	Contingency Allowance	$75,188
14	Landfill Closure	$0
	TOTALS	$827,070

Type 4 Magazine Container Storage Units

Activity Number

4. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination:

Costs detailed in Section V. Decontamination Cost by Area and Task **$77,486** This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

5. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Container Management areas are comprised of several storage units. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples each Magazine	= 45 samples
Total Wipe samples	45

45 wipe sample locations x $125/wipe = **$5,625**

B. Rinse Samples (for RCRA confirmation)

1 sample each Magazine	= 3 samples
Total rinsewater samples	3

3 sample locations x $468/sample = **$1,404**

C. Total Sampling Cost

$5,625 wipe samples + $1,404 rinse samples = **$7,029**

7. Transportation of Waste in Storage

Note 1:

Rates based on millage and fuel costs to transport 30 pallets of palletized ammo cans from Clean Harbors Aragonite to Clean Harbors Colfax facility located in Colfax LA. Quote provided by the Clean Harbors Central Logistics Group. Included mileage of 1,596 from Aragonite, UT to Colfax, LA. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste on Pallets

Millage and fuel = **$7,062**

8. Treatment and Disposal

Note 1:

Waste volumes and containment surfaces are based on permitted capacities and areas. The Container Storage Areas(s) have a combined maximum permitted capacity of 30 pallets (2,875 lbs/pallet). The total cumulative containment surface area of all of the container storage areas is 897 sq.ft.

Note 2:

Disposal rate for material in storage calculated at $7.00/lb based on a weighted average of gate rates of similar waste at the CH-Colfax, LA incineration facility.

Note 3:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Disposal of Palletized Waste
2,875 lbs/pallet x 10 Pallets per storage magazine = 28,750 x 3 storage magazines = 86,250 lbs waste
86,250 lbs x $7.00/lb disposal cost = **$603,750**

B. Transportation and Disposal of Decontamination Fluid
897 sq. ft containment x 1.0 gal/sq. ft decon fluid = 897 gallons
897 gal x $1.89/gal disposal cost = **$1,695**

C. Tank Rental
three 20,000 gallon frac tanks required for two months
1 tank x $874/month x 2 months = **$1,748**

D. Total Treatment and Disposal Cost
$603,750 + $1,695 + $1,748 = **$607,193**

9. Sub-Total of Area Closure Costs

$7,029 + $7,062 + $607,193 + $77,486 = **$698,770**

10. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **$34,939**

11. Certification of Closure

A. Engineering Certification - Professional Engineer
100 hours x $156/hr = **$15,600**

B. Engineering Certification - Direct costs = **$2,573**

C. Total Engineering Certification
$15,600 + $2,573 = **$18,173**

12. Sub-Total of Area Closure Costs

$698,770 + $34,939+ $18,173 = **$751,882**

13. Contingency Allowance

A. Contingency Allowance equal to 10% of Subtotal = **$75,188**

Total Area Closure Cost = $827,070

SECTION IV

QUOTES/COST BACKUP

2001 Transportation and Disposal Rates

1. Bulk Liquid Waste by Rail Tanker Car to Deer Park, Texas

Cost to transload from Aragonite to Clive 4 tankers, $300/load:	$1,200
Cost to move by rail tanker, Clive UT to Deer Park, TX:	$4,584
Tank car rental cost $400/month (1 month round trip):	$400
Total cost for one load:	**$5,847**
20,000 gallon capacity tankers/$5,847	
Cost per gallon for rail transport	$0.29/gal
Cost per gallon for water disposal ($0.147/lb x 8.3 lb/gal)	$1.22/gal
Total Transportation and Disposal Cost - Aqueous Waste	**$1.51/gal**

2. Roll-Off Boxes by Rail Car to Deer Park, Texas

Cost to Transload from Aragonite to Clive (per box)	$150/box
Cost to Load onto rail car	$ 75/box
Cost to Transport by rail from Clive, UT to Deer Park, TX	$1,065/box
Cost to Unload box at Deer Park plant	$ 75/box
Total Transportation Cost by Rail for Solids in Roll-offs	**$1,365/box**

3. Roll-Off Boxes by Truck to Grassy Mountain

Truck Cost of $600/day, 4 loads per day	**$150/box**

Average Incineration Prices utilized in Estimates:

Bulk Water:	$0.147/lb
Bulk Organics:	$0.110/lb
Bulk Solids:	$0.327/lb
Bulk Debris:	$0.378/lb
Sludge:	$0.397/lb
Drums:	

Using a weighted average of the various waste types $0.44/lb

Average landfill disposal prices utilized in estimates: $190/ton

Over the road transportation cost: $3.00/loaded mile
Road mileage to Deer Park, Texas: 1,750 miles

SEVERN
TRENT
SFR\fGF.S

Price Quotation for Analytical Services

Americon Inc. / Safety-Kleen Ltd.

\ trUe		M<1had	!1!!Uilil
W.,.	fO!s		•1100
Solid(Pil	PC&	1012	11.00
Solid<S.,;o	PC&	1012	57.00
\Vara W,..	PC&	1OC2	S7.00
	'TaW t.tecab	60JOS.'7470A	60.00
WIl<	Mdlls IA.sCiloo F011		),00
W.t«	r...tQp>i llol_,.(T()X)	!10208 [redacted]	4500
W[redacted]	"-Gloli.cs		12.00
w-	T"" Orp>iccwtooJ{l'OC)		23.00
W....	TouiCyanM:	9012A	1700
	Q;I&Q,ax	166-IIA HEM	

SII..I)e-.r

.. 11>iJ — .... —ddMrina m r— ' s..................... pk ....k
stmdud a ad1 QC) aod dec.-onic ddh•Cl1lbte 21 etkn_.d.,ıdcrSmlple Ocilvcry ADOq)LU'ICC

> \Jpm teqlalll, Sn. DmVO" whJ JII'CWide &II EX'p PC cd •Cf*1(ft*"llti;:;rmr)c ('CfUlu,, !ft.l.n .d l;ltkt, IJ(. a»ociated AlWdr G. duon run logs, ac). A)%ll'l"ChugcofthetOC 181111}ticel QCIII WUJ be applied sl>o<Jd""'IIJ>0o/bo puo;-

)I- Slandard S.ADph CIOII taill•t wich ve&. labds, cbtln of o,aocty SC8bm MippoooJa'l will be cd IIIooadditkNl c hupghom ClflCW'tfl's nolloc lh sl\ppiDJd'181ge5ofiSO pet cooltl'w01 apply if """.Woo'-J"G"dod.

)o Sanaplc dis;potlt is at DOcbUJ.& AU SL I lpla wlll\able level! of PCB, diQ (i o oIII- iud wJ Mt Of "";ct, ...ibi< W10...11oatioy.. ...,d.. .,;t.,..• ,,wilt...-...d..,.,. .O .t

Qc:,..,._ blal. c S-,..(1 CS) .4 __,- lpibo(NS)\fil< du;>J'-U) I S!!)fir all.1 ,.....lpO<i&cQC"""""(MSIMSIY)

...,.:...

> S..,..-.,..,Af"AMI)<eLilluod1"Q1&

ATTACHMtJIITA

SEVERN TRENT

Asl I)'t'litb/ STL Otnwr Pnaical Quantitlltioo Umiu (PQLs}

Wipe	PC!ls	1012	CQ!,	Ilniu
	Nodor IOJ		1.0	•Voil><
	Atodor IZZJ		1.0	
	Arodor 1n2		1.0	ulfwipe
	1\rotlcr !242		1.0	ug.ipc
	AJ«-lor I24S		1.0	ugivripc
	Anoci«J !$4		1.0	usf.Mpe
	Anlclot)260		1.0	uJ'Iwip<
So&!	I'CU.	ton		
	Arodort 1016		33	
	Arockv 1221		33	g'ka
	ATodor IlA2		33	uwq
	Ab:hw 1244		IJ	U&'kl
	Aroclor 12,S4			
	Arodor 1600		.»	
W–	PC8I	fOU		
	M>cl«1016		1.0	"'I'L
	1221		1.0	"&'!-
	Abett.r 1232		1.0	IIS'L
	M>cl«ll-<2		1.0	IIS'L
	Atoclor 1248		1.0	Ils/1-
	Nodor 1254		1 0	•Sil
	Alodor 1260		1.0	ug/1
W....	Tot>JM<Iah			
	Ar&alic	GOIOB	0.01	..aiL
	Bari tm	60101	0.01	Jn&ll
	c ctmlte	GOIOB	0.005	MsIt
	eq,,...	GOIOB	0.01	maiL
	lAd	60108	0 003	
	-...y	7f78A	• o 00GI	
	Stteft-.	60101	0.00S	Jn&lL
	Sihu	[redacted]	001	..sit
W...	HaCl'IIIliCJ		0.020	Jn&lL
W...	To<a!C)uidt.	902A	0.010	..sit
W...	Oiii:O.-	HEM	S.0	Jll&lL
W–	r..., a... .0.an.m	9060	1.0	
Wotcr	TObitOrt,anicHaJoaeos	90208	0.01	m&'L

Analyte Fraction	Method	STL UNIT COST	STL UNIT COST WASTE	MSAI	McCampbell Analytical, Inc.	Liphville Analytical, Inc.	Sequoia Analytical	Ave % more of the 3 closest Labs	STL adjusted for competition
VOLATILE ORGANICS	8260	$97.00	$121.25	$162.00	$125.00	$145.00	$175.00		$134.29
SEMIVOLATILE COMPOUNDS	8270	$200.00	$250.00	$346.50	$250.00	$290.00	$350.00		$276.88
OCP	8081	$103.00	$128.75	$189.00	$75.00	$120.00	$125.00		$142.59
PCBs	8082	$57.00	$71.25	$80.50	$50.00	$80.00	Included in OCPs		$78.91
HERBICIDES	8151	$109.00	$136.25	$189.00	$150.00	$150.00	$135.00		$150.50
OPP	8141	$103.00	$128.75	$140.00	$95.00	$145.00	$125.00		$142.59
TOTAL METALS	6010	$112.00	$140.00	$168.00	$125.00	$170.00	$135.00		$155.05
SULFIDE	376.1	$8.00	$10.00	$14.00	$40.00	$40.00	$25.00		$11.08
MERCURY	7470	$11.00	$13.75	$31.50	$25.00	Included in Total Metals	Included in Total Metals		$15.23
TOC	9060 / 415.1	$23.00	$28.75	$49.00	$40.00	$40.00	$40.00		$31.84
PH	150.1	$6.00	$7.50	$5.60	$10.00	$10.00	$10.00		$8.31
TDS	160.1	$8.00	$10.00	$10.50	$20.00	$15.00	$15.00		$11.08
TSS	160.2	$8.00	$10.00	$10.50	$20.00	$15.00	$15.00		$11.08
BICARB ALK.	310.1	$8.00	$10.00	$11.90	$20.00	$15.00	$10.00		$11.08
ANIONS	300.0	$26.00	$32.50	$42.00	$140.00	$45.00	$105.00		$35.92
Subtotal		$679.00	$1,098.75	$1,470.00	$1,185.00	$1,280.00	$1,285.00		$1,216.89
Data Package		$43.95		$147.00	$0.00	$0.00	$109.20		$60.94
Total		$922.95		$1,617.00	$1,185.00	$1,280.00	$1,368.20		$1,277.73
% more than STL		0.00%		75.20%	28.39%	38.69%	48.24%	38.44%	38.44%
Cyanide, Total	9010A	$17.00	$21.25	$38.50	$70.00	$40.00	$50.00		$23.53
Dioxins (Sub)		$458.00	$572.50	$1,650.00	$900.00	$500.00	$1,000.00		$604.06
		$475.00	$593.75	$1,688.50	$970.00	$540.00	$1,050.00		$627.59
% more than STL		0.00%		255.47%	104.21%	13.68%	121.05%	79.65%	38.44%

Kelly Clark
FAX (801) 508-7817

UPAA

UNION PACIFIC RAILROAD
CONFIDENTIAL PRICE QUOTE

iMoC c4n.

-..06

FROM: IIIIII .III

SERVING RR: UP

Houston, TX (rwmp)

SERVING RR: UP

ROUTE:

THRU RATE: ..,,016 S$11

Please call with any questions.

** TOTAL PAGE.003 **

II . 3J.•e:. 13:l(7 F1) Sill11
AJ 3= 81 11'4',_..,_ [redacted] 5104 !0 9 1Blse9?'61':

TO, -Qoo'l
.. -(H11111 J3

1J

[redacted] nool<Nolooo
\II'U
<Gl'-G1Dol oiQW'r14l$0

DATe J16/!,J2001

UNION PACIFIC RAILROAD

CONFIDENTIAL PRICE QUOTE

o:olIloiOIIm'•	lquid
sr<:e	••••
[redacted]	CM.IIT
IEIMIIG RR:	UP
1O'	O–p....II(
SERWII3 IRK,	UP
[redacted]	II'
IMJIIUTSJ	$4,247
EQUPOiafr.	[redacted]

Please call with any questions.

** TOTAL PAGE.00 **

SAFETY-KLEEN, INC. CLOSURE PROJECTS
CONTAINMENT AREA DECONTAMINATION

FACILITY NAME	NO.	EPA ID #	STATE	YEAR	CONTAINMENT AREA (S.F.)	DECON FLUIDS (GALS.)	RATE GALS./S.F.	CLOSURE STANDARD ACHIEVED
Safety-Kleen (Crowley), Inc. 1)	550	LAD 079 464 095	LA.	2000	35,440	28,173		YES
S-K Indianapolis, IN	894	IND 000815686	IN	1995	1231	1700		YES
S-K Portage, IN (1)	907	IND 000714428	IN	1994	3862	5242		YES
S-K South Bend, IN (1)	917	IND 000715474	IN	1995	8232	2775		YES
S-K Southaven, MS (1)	952	MSD 981030984	MS	1999	8995	7710		YES
S-K Edwardsville, KS (1)	918	KSD 980979515	KS	2001	3076	3685		YES
		Project Averages			**58,836**	**49,285**	**0.9**	

Notes: 1) Volume of decon fluids is total volume generated. Includes decon of equipment, tanks, walls, etc.

SECTION V

DECONTAMINATION COSTS BY AREA AND TASK

Section V Decontamination Costs by Area and Task

Note:

The costs detailed in this section represent Engineering Estimates for the tasks described. The tasks, and associated durations, equipment, and project management requirements were determined after a facility walk through with compliance personnel, an examination of relevant closure and permit documents, and follow-up discussions. Some assumptions were made with respect to decontamination of surfaces and equipment with which Americon has specific experience. Recent experience includes closure of the Clive Incineration Facility, which has very similar process units, storage areas, and infrastructure. This facility is also within the Utah Department of Environmental Quality's jurisdiction, so consistent closure standards were assumed (see Section VI).

Pricing is representative of that generally available in the industry, and would currently be available from Americon, Inc. for a project of similar scope, complexity and duration.

Clean Harbors Aragonite
Plant Decontamination Task Duration Summary

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
1. Container Storage				
	Drum Storage Buildings (2) and Buildings 68 and 69-North/South			
	Dismantle drum storage racks	11		
	Wash ceilings (concrete)	31		
	Wash Walls (concrete)	41		
	Wash front loading bays (both buildings)	10		
	Wash interior storage cells/secondary containment	29		
	Sample	9		
			131	
	Container Processing Area			
	Remove area equipment	4		
	Wash ceiling	8		
	Wash walls	12		
	Wash floor	8		
	Dismantle, wash decant area	12		
	Sample	4		
			48	
	Dock/Breezeway			
	Remove elevator/rollers	10		
	Lower level hoist decontamination	8		
	Sump cleanout	2		
	Dock wash	8		
	Breezeway Wash	6		
	Electrical isolation of conveyors	1		

	Ceiling wash	6		
	Miscellaneous demolition	3		
	Sample	2		
			46	
	Container Storage Subtotal		**225**	
Type 4 Magazine Container Storage				
	Type 4 Magazine Storage			
	Wash ceilings (Metal) x 3	10		
	Wash Walls (Metal) x 3	10		
	Sample x 3	9		
			87	
	Type 4 Magazine Subtotal			**87**
2. Tank Farm				
	Sample Station			
	Wash structure	3		
			3	
	Unload Building			
	Triple rinse pumps, piping	3		
	Isolate, pull pumps	4		
	Isolate, pull piping	6		
	Clean containment	4		
	Sample	2		
			19	
	Waste Tanks			
	Triple rinse tanks, piping	6		
	Isolate piping	3		
	Pull piping	2		
	Purge tanks	8		
	Muck out interior	40		

	Remove exterior structural	20		
	Remove tanks	8		
	Cut-up tanks for disposal	45		
	Clean containment	9		
			141	

	Pump Houses (2)			
	Triple rinse pumps, piping	4		
	Isolate, pull pumps	10		
	Isolate, pull piping	12		
	Clean containment	10		
	Sample	2		
			38	
	Blend Tanks			
	Triple rinse tanks, piping	3		
	Isolate, purge	5		
	Isolate, remove pumps	2		
	Remove piping	3		
	Muck out interior	8		
	Remove mixers (sectioned)	4		
	Top valves and piping	2		
	Remove exterior structural steel	6		
	Pull tanks	4		
	Cut-up tanks	10		
	Remove unload rack piping	2		
	Containment	3		
	Purge, pull O/H lines to incin feed rack	7		
			59	
	Carbon Adsorber			
	Remove packing for disposal	6		
	Remove tanks, piping, for disposal	8		
	Sample	2		
			16	
	Direct Burn Area			
	Purge piping, pull	4		

	Clean containment	4		
	Pull unloading pipes	2		
	Pull pumps	2		
	Wash bay	4		
	Sample	2		
			18	
	Tank Farm, Piping Subtotal			**294**
3. Bulk Solids				
	Bulk Solids Building			
	Rinse down ceiling, upper walls	10		
	Clean walls	28		
	Clean tanks	35		
	Sample	8		
			81	
	Shredder Area			
	Clean hopper, shelf	8		
	disassemble, clean shredder	8		
	sample	2		
			18	
	Drag Conveyor			
	Disassemble conveyor	6		
	Clean conveyor interior	6		
	Clean hopper, knife gates	6		
	Sample	2		
			20	
	Clean hpu mains	2		
	Pull small lines	2		

	Drain hpus, isolate	2		
	Isolate electrical	2		
			8	
	Bulk Solids Subtotal			**127**
4. Sludge Tanks				
	Sludge Tank – Small			
	Triple rinse	2		
	Muck out interior	6		
	Remove valves and piping	2		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	6		
	sample	2		
			26	
	Sludge Tank - Large			
	Triple rinse	3		
	Muck out interior	6		
	Wash interior	6		
	Remove valves and piping	4		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	10		
	Sample	2		
			39	
	Sludge Tanks Subtotal			**65**
5. Incineration Train				

	Deslagger			
	Pull out	2		
	Isolate, disconnect	4		
	Open housing, pull headgear	4		
	Pull head pulley	4		
	Pull belt, dispose	3		
	Cut-up shell for disposal	20		
	Gross area decontamination	4		
	Surrounding sump area decontamination	4		
	sample	2		
			47	
	Kiln Exterior			
	Clean exterior kiln drive	2		
	Clean ring gear	2		
	Clean from discharge to deslagger	2		
	Remove piping	16		
	Pull kiln face feed points	6		
			28	
	Kiln Interior			
	Remove brick, containerize	35		
	Clean interior	8		
	Sample	2		
			45	
	SCC			
	Clean area exterior	2		
	Remove feed piping	6		
	Remove burners	15		
	Remove SCC exterior sheathing	20		

	Push in SCC brick	35		
	Muck out brick into rolloffs	20		
	Clean structure	8		
	Sample	2		
			108	
	Kiln Feed Piping			
	Isolate, purge	2		
	Pull, cut piping	10		
			12	
	Ducting from SCC to Saturator			
	Cut refractory to release joints	8		
	Crane out ducts, including thermal vent	4		
	Remove duct refractory	20		
	Wash duct to scrap	4		
	Sample	4		
			40	
	Saturator			
	Pull packing, containerize	2		
	Pump solids, muck out bottom	4		
	Scaffold interior	4		
	Sample	2		
			12	
	Scrubber			
	Pull packing, muck out bottom	8		
	Scaffold interior	4		
	Clean interior	10		
	Sample	2		
			24	

	Spray Dryer			
	Remove residue	6		
	Isolate, remove piping	6		
	Remove, clean ducting	10		
	Clean discharge area	4		
	Sample	2		
			28	
	Baghouse			
	Clean inlet, outlet duct	6		
	Remove bags, cages	8		
	Clean/remove screw conveyors	12		
	Clean interior	10		
	Sample	2		
			38	
	Baghouse Residue Loadout Bldg			
	Clean conveyors	8		
	Clean loadout hoppers	4		
	Clean building structure	6		
	Clean containment	6		
	Sample	2		
			26	
	ESP			
	Isolate	1		
	Clean inlet, discharge ducting	4		
	Clean interior	6		
	Sample	2		
			13	
	ID Fans, Stack Inlet Ducting			

	Clean ID #1 fan inlet	2		
	Clean transition to ID fan # 2	2		
	Clean fan #2, outlet to sack	2		
	Clean bottom section of stack	2		
			8	
	Stack			
	Check condition of interior	1		
	De-erect	2		
	Clean interior	2		
	Sample	1		
			6	
	pH Adjustment Tanks			
	Isolate, drain	2		
	Clean, rinse	4		
	Remove piping, pumps	2		
			8	
	Incineration System Subtotal			**443**
	Area Totals	**1241**	**1241**	**1,241**

Decontamination Equipment and Supplies

Unit	Unit Qty	Item Description	Item Qty	Rate	Extension
		General Equipment			
Week	19	Pressure Washers w/Trailers	4	$475	$36,100
Week	9	Sand Blasting	2	$525	$9,450
Week	19	High Reach Fork Lift	1	$1,149	$21,831
Week	19	Fork Lifts (5,000 lbs)	2	$275	$10,450
Week	19	Shooting Boom Lift	1	$1,343	$25,517
Month	3	Vactor Truck (up to 176 hrs/mo)	1	$9,993	$29,979
Week	12	Vacuum Boxes	2	$468	$11,232
Hour	200	50-Ton Crane w/operator	1	$75	$15,000
Hour	200	100-Ton Crane w/operator	1	$112	$22,400
Week	18	Welding/Cutting and Supplies	2	$219	$7,884
Week	19	Trailers for Transporting Equipment on-site	1	$75	$1,425
Week	19	Storage Trailers for Equipment on-site	2	$69	$2,622
Month	3	Hydroblaster, 30,000 psi	1	$12,491	$37,473
LS	1	Mob, Demob, Permits and Misc Expenses	1	$2,498	$2,498
Week	19	Air Compressors	2	$381	$14,478
Week	19	Trucks	2	$344	$13,072
Week	12	Koppus Blowers	2	$75	$1,800
Week	19	Scaffolding	1	$187	$3,553
		Subtotal			$266,764
		Supplies			
Manday	1	PPE	1,400	$25	$35,000
Drums	20	Drums of Detergents	1	$625	$12,500
Week	18	Small Tools	1	$250	$4,500
Week	19	Sampling Supplies	1	$156	$2,964
Bag	1	Bag Grit for Sand Blasting	700	$10	$7,000
Roll	1	Absorbent Mats	40	$137	$5,480
Roll	1	Plastic	200	$75	$15,000
Case	1	Duct Tape	20	$156	$3,120
Each	1	Drums	250	$37	$9,250
Roll	1	Drum Liner	50	$87	$4,350
		Subtotal			$99,164

		Total			$365,928

Decontamination Project Administration

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension
		Project Management Personnel			
Hourly	700	Project Manager	1	$81	$56,700
Hourly	900	Field Supervisor	1	$40	$36,000
Hourly	900	Quality Assurance Officer	1	$37	$33,300
Hourly	500	Clerical	1	$19	$9,500
		Subtotal			$135,500
		Administrative Equipment/Supplies			
Month	6	Project Office	1	$999	$5,994
Month	6	Fax, Copier	1	$312	$1,872
Month	6	Phone	1	$250	$1,500
Week	18	Postage	1	$37	$666
Month	6	Utilities	2	$125	$1,500
Month	6	Supplies	1	$312	$1,872
Month	6	Cleaning and Disposal	1	$312	$1,872
Day	80	PPE for Administrative Personnel	2	$25	$4,000
Week	18	Administrative Truck	1	$281	$5,058
		Subtotal			$24,334
		Incidental Costs			
Each	1	Travel	20	$625	$12,500
Day	80	Subsistence	4	$94	$30,080
		Subtotal			$42,580
		Total			**$202,414**

Decontamination Cost Summary

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension	Totals
		Direct Costs				
Mandays	1	Labor				
		Direct Labor Cost	1,241	$350	$ 434,350	
						$ 434,350
		Equipment				
		Direct Equipment			$266,764	
		Supplies			$99,164	
						$365,928
		Project Overhead				
		Project Management Personnel			$135,500	
		Admin Equipment/Supplies			$24,334	
		Incidental Costs			$42,580	
						$202,414
LS	1	Mobilization	1	$37,473	$37,473	
LS	1	Demobilization	1	$12,491	$12,491	
						$49,964
Subtotal						$ 1,052,656
LS	5%	Contingency	1	$ 1,052,656	$ 52,633	
						$ 52,633

		Total				**$ 1,105,289**

SECTION VI

DECONTAMINATION STANDARDS/ANALYTICAL PARAMETERS

Table I-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.

Table I-1.3 (Continued)
Decontamination Rinse Water Analysis

NOTE:

1. Many different waste codes will be handled through-out 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 I-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 in the application 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 material, 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.

Closure Cost Estimate
Clean Harbors Aragonite
Incineration Facility
Aragonite, Utah

Prepared By:

Americon, Inc.
Salt Lake City, UT Boulder, CO

Table of Contents

SECTION I

EXECUTIVE SUMMARY

I. Executive Summary

At the request of Safety-Kleen, Inc, now Clean Harbors Aragonite, LLC, Americon, Inc. has prepared the following closure cost estimate for the Aragonite incineration facility. This estimate is based on the eventual closure of the entire facility by a third party.

This revised closure cost estimate totals $11,739,658. In Section II of this document, tables are provided which summarize the total closure cost estimates broken out by closure activity and area. In Section III, detailed closure cost estimates are provided for each major process area. These estimates indicate costs by area closure activity. Additionally, a table is provided for each of these major process areas, which tabulates the closure activity total for that process area.

Costs associated with the removal and disposal of waste in storage were calculated by using 2001 gate rates for waste disposal at the Clean Harbors Deer Park, TX facility. Costs associated with sampling and analyses were calculated by utilizing the sampling and analytical methods for decontamination verification approximating the methodology used in the Northeast Casualty Real Property Clive facility closure efforts. All costs have been adjusted for inflation to make current as of 2012.

This closure cost estimate is based upon the assumption that all areas are full to their permitted capacities, off-site transportation and disposal costs are calculated using commercially available rates, independent third party closure, analytical costs are quoted by Utah certified commercial laboratories, and closure certification is made by a Utah registered Professional Engineer. All cost estimates use available 2001 pricing adjusted for inflation using the U.S. Department of Commerce Implicit Price Deflators for the Gross Domestic Product to make the prices current as of 2012. The adjustment to 2012 prices was calculated by multiplying the 2001 cost estimates by the 2011 Implicit Price Deflator for the Gross Domestic Product divided by the 2001 Implicit Price Deflator for the Gross Domestic Product as released by the U.S. Department of Commerce, January 27, 2012, i.e., 113.327/90.727. Sampling and closure standards for verification of decontamination are assumed to be consistent with those applicable to the Northeast Casualty Real Property Clive incineration facility closure.

SECTION II

CLOSURE COST SUMMARIES

AREA SUMMARY TABLE (includes costs from all areas)	
Activity	**Cost**
Removal of Waste	$1,004,432
Decontamination	~~$957,536~~ 989,509
Sampling and Analysis	~~$231,908~~ 238,937
Transportation	~~$1,382,371~~ 1,389,433
Treatment and Disposal	~~$6,521,724~~ 7,128,917
Subtotal of Closure Costs	**~~$10,097,971~~ 10,751,228**
Engineering Expenses	~~$504,898~~ 537,563
Certification of Closure	~~$69,547~~ 87,720
Subtotal of Closure Costs	**~~$10,672,416~~ 11,376,491**
Contingency Allowance	~~$1,067,242~~ 1,137,650
TOTALS	**~~$11,739,658~~ 12,514,141**

Clean Harbors Aragonite Incineration Facility
Closure Cost Estimate by Area

Area	Activity	Cost	Area Subtotal
Container Storage	Decontamination	~~$209,269~~ 200,395	
	Sampling and Analysis	$57,630	
	Transportation	$984,375	
	Treatment and Disposal	$3,835,326	
	Subtotal	**~~$5,086,600~~5,077,726**	
	Engineering	~~$254,330~~ 253,886	
	Certification	$18,173	
	Subtotal	**~~$5,359,103~~5,349,785**	
	Contingency	~~$535,910~~ 534,979	
	Area Total	**~~$5,895,013~~ 5,884,764**	**~~$5,895,013~~5,884,764**
Tank Farm	Waste Removal	$13,097	
	Decon (including flush, purge)	~~$273,444~~ 261,849	
	Sampling and Analysis	$27,110	
	Transportation	$244,185	
	Treatment and Disposal	$894,351	
	Subtotal	**~~$1,452,187~~ 1,440,592**	
	Engineering	~~$72,609~~ 72,030	
	Certification	$18,173	
	Subtotal	**~~$1,542,969~~ 1,530,795**	
	Contingency	~~$154,297~~ 153,080	
	Area Total	**~~$1,697,266~~ 1,683,875**	**~~$1,697,266~~ 1,683,875**
Bulk Solids	Waste Removal	$6,498	
	Decontamination	~~$118,121~~ 113,112	
	Sampling and Analysis	$22,026	
	Transportation	$107,415	
	Treatment and Disposal	$1,406,724	
	Subtotal	**~~$1,660,784~~ 1,655,775**	

	Engineering	~~$83,039~~ 82,789	
	Certification	$10,484	
	Subtotal	**~~$1,754,307~~ 1,749,048**	
	Contingency	~~$175,431~~ 174,905	
	Area Total	**~~$1,929,738~~ 1,923,953**	**~~$1,929,738~~ 1,923,953**
Sludge Tanks	Waste Removal	$9,326	
	Decon (including flush)	~~$60,455~~57,892	
	Sampling and Analysis	$5,622	
	Transportation	$14,606	
	Treatment and Disposal	$220,405	
	Subtotal	**~~$310,414~~307,851**	
	Engineering	~~$15,521~~15,393	
	Certification	$4,543	
	Subtotal	**~~$330,478~~ 327,787**	
	Contingency	~~$33,048~~ 32,779	
	Area total	**~~$363,526~~ 360,566**	**~~$363,526~~ 360,566**
Kiln	Removal of Waste Residue	$975,511	
	Decon (including disassembly)	~~$296,247~~ 278,775	
	Sampling and Analysis	$119,520	
	Transportation	$31,790	
	Treatment and Disposal	$164,918	
	Subtotal	**~~$1,587,986~~ 1,570,514**	
	Engineering	~~$79,399~~ 78,526	
	Certification	$18,174	
	Subtotal	**~~$1,685,559~~1,667,214**	
	Contingency	~~$168,556~~ 166,721	
	Area Total	**~~$1,854,115~~ 1,833,935**	**~~$1,854,115~~1,833,935**
	~~Total Cost Estimates~~		**~~$11,739,658~~**

Area	Activity	Cost	Area Subtotal
Type 4 Magazine Storage	Decontamination	$77,486	
	Sampling and Analysis	$7,029	
	Transportation	$7,062	
	Treatment and Disposal	$607,193	
	Subtotal	**$698,770**	
	Engineering	$34,939	
	Certification	$18,173	
	Subtotal	**$751,882**	
	Contingency	$75,188	
	Area Total	**$827,070**	**$827,070**
	Total Cost Estimates		**$12,514,141**

SECTION III

CLOSURE COSTS BY AREA

Container Storage Area - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Demolition and Removal of Containment System	$0
2	Removal of Soil	$0
3	Backfill	$0
4	Decontamination	~~$209,269~~ 200,395
5	Sampling and Analysis	$57,630
6	Monitoring Well Installation	$0
7	Transportation	$984,375
8	Treatment and Disposal	$3,835,326
9	SUBTOTAL OF CLOSURE COSTS	~~$5,086,600~~ 5,077,726
10	Engineering Expenses	~~$254,330~~ 253,886
11	Certification of Closure	$18,173
12	SUBTOTAL OF CLOSURE COSTS	~~$5,359,103~~ 5,349,785
13	Contingency Allowance	~~$535,910~~ 534,797
14	Landfill Closure	$0

	TOTALS	~~**$5,895,013**~~ **5,884,764**

Container Storage

Activity Number

4. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination:

Costs detailed in Section V. Decontamination Cost by Area and Task
~~$209,269~~200,395

This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

5. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in

Section IV of this document. Sample locations are indicated below.

Note 3:

The Container Management areas are comprised of several storage units. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples each Bays 1, 2, 3, 4, 5, 6, Buildings 68 and 69	= 120 samples
25 samples each E1, E2, E3, E4, E5, E6, E7	= 175
35 samples from breezeway	= 35
Total Wipe samples	330

330 wipe sample locations x $125/wipe = **$41,250**

B. Rinse Samples (for RCRA confirmation)

1 sample each Bays 1, 2, 3, 4, 5, 6, Building 68 and 69	= 8 samples
2 samples each E1, E2, E3, E4, E5, E6, E7	= 14
3 samples from breezeway	= 3
2 samples from bulk solids pad	= 2
3 samples from slag pad	= 3
1 sample each E-1, E-5, E-4 docks	= 3
2 samples from truck unloading direct burn	= 2
Total rinsewater samples	35

35 sample locations x $468/sample = **$16,380**

C. Total Sampling Cost

$41,250 wipe samples + $16,380 rinse samples = **$57,630**

7. Transportation of Waste in Storage

Note 1:

Mileage rates based on $3.75 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

11, 967 drums of waste/80 drums per truck = 150 truckloads of drums

150 drum loads x 1,750 miles from Aragonite, UT to Deer Park, TX x $3.75/mile = **$984,375**

8. Treatment and Disposal

Note 1:

Waste volumes and containment surfaces are based on permitted capacities and areas. The Container Storage Areas(s) have a combined maximum permitted capacity of 11,967 drums (55-gal). This capacity includes an equivalent of 213 55-gallon containers for the compressed gas cylinder capacity, and an additional 12 55-gallon containers for the capacity of one direct burn vessel on the direct burn pad, but does not include any capacity from the bulk solids/sludge pad, truck unloading or drive through/drive through corrosive direct burn stations as the capacity for these units is considered as bulk solids and bulk liquids and is included in the cost estimate for closure of the bulk solids tanks and the tank farm. The total cumulative containment surface area of all of the container storage areas is 116,332 sq.ft.

Note 2:

Disposal rate for material in storage calculated at $0.55/lb (or $1,099/ton) based on a weighted average of gate rates of similar drummed waste at the CH-Deer Park, TX incineration facility.

Note 3:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Disposal of Waste in Drums
11,967 drums x 55 gal/drum/7.48 gal/ft^3/27 ft^3/yd = 3,259 cu.yd waste
3,259 cu.yd waste for disposal x 1.00775 tons/cu.yd = 3,285 tons of waste in drums for disposal
3,285 tons x $1,099/ton disposal cost = **$3,610,215**

B. Transportation and Disposal of Decontamination Fluid
116,332 sq. ft containment x 1.0 gal/sq. ft decon fluid = 116,332 gallons
116,332 gal x $1.89/gal disposal cost = **$219,867**

C. Tank Rental
three 20,000 gallon frac tanks required for two months
3 tanks x $874/month x 2 months = **$5,244**

D. Total Treatment and Disposal Cost
$3,610,215 + $219,867 + $5,244 = **$3,835,326**

9. Sub-Total of Area Closure Costs

$~~209,269~~200,395 + $57,630 + $984,375 + $3,835,326 = **~~$5,086,600~~5,077,726**

10. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **~~$254,330~~253,886**

11. Certification of Closure

A. Engineering Certification - Professional Engineer
100 hours x $156/hr = **$15,600**

B. Engineering Certification - Direct costs = **$2,573**

C. Total Engineering Certification
$15,600 + $2,573 = **$18,173**

12. Sub-Total of Area Closure Costs

$~~5,086,600~~5,077,726 + $~~254,330~~253,886 + $18,173 = **~~$5,359,103~~5,349,785**

13. Contingency Allowance

A. Contingency Allowance equal to 10% of Subtotal = ~~$535,910~~**534,979**

Total Area Closure Cost = ~~$5,895,013~~5,884,764

Tank Farm - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste	$13,097
2	Tank System Purging	Incl w/decon
3	Flushing Tank and Piping	Incl w/decon
4	Excavation, Disassembly, and Loading	$0
5	Demolition and Removal of Containment System	$0
6	Removal of Soil	$0
7	Backfill	$0
8	Decontamination	~~$273,444~~ 261,849
9	Sampling and Analysis	$27,110
10	Monitoring Well Installation	$0
11	Transportation	$244,185
12	Treatment and Disposal	$894,351
13	SUBTOTAL OF CLOSURE COSTS	~~$1,452,187~~ 1,440,592
14	Engineering Expenses	~~$72,609~~ 72,030
15	Certification of Closure	$18,173
16	SUBTOTAL OF CLOSURE COSTS	~~$1,542,969~~ 1,530,795
17	Contingency Allowance	~~$154,297~~ 153,080
18	Landfill Closure	$0

	TOTALS	~~**$1,697,266**~~ **1,683,875**

Tank Farm

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity of 461,504 gallons. Additionally, the capacity from the drive through/drive through corrosive and truck unloading direct burn stations adds four 7500 gallon tankers or 30,000 additional gallons of waste for a total of 491,504 gallons. The tank farm has 18,900 sq.ft. of surface area. This area does not include the drive through/drive through corrosive and truck unloading direct burn station surface areas as they are included in the container storage area closure.

A. Remove Tank Farm Inventory

Remove 491,504 gallons from storage - 30 mandays
30 mandays x $31/hr x 8 hrs/day = $7,440
Equipment - lump sum = $5,657
Labor plus equipment total = **$13,097**

2. Tank System Purging

Included in Decontamination Costs

3. Flush Tank and Piping

Included in Decontamination Costs

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities,

including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Tanks and piping will be emptied, flushed, then rinsed prior to dismantling. Tanks and piping will then be cut up for disposal as RCRA waste. Volume of waste based on tank volumes, and pipe system lineal footage.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task
~~$273,444~~261,849

This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2.

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3.

The Tank Farm is comprised of four identical containment areas, and two pump houses. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 samples per containment area	= 100 samples
10 samples per pump house	= 20 samples
10 miscellaneous structural steel samples	= 10 samples
12 miscellaneous piping, strainer, pump samples	= 12 samples
Total wipe samples	142

142 wipe sample locations x $125/wipe = **$17,750**

B. Rinse Samples (for RCRA confirmation)

4 samples each for four containment areas	= 16 samples
2 samples each for two pump houses	= 4 samples
Total rinsewater samples	20

20 sample locations x $468/sample = **$9,360**

C. Total Sampling Cost

$17,750 wipe samples + $9,360 rinse samples = **$27,110**

11. Transportation

Note 1:

Mileage rates based on $3.75 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

It is expected that approximately 34 drums of waste from the tank farm will be removed.
34 drums of waste/80 drums per truck = 1 truckload of drums
1 drum load x 1750 miles from Aragonite, UT to Deer Park, TX x $3.75/mile = **$6,562**

B. Transportation of Bulk Liquid in Storage, and Flush (by Rail tanker)

461,504 gallon tank farm capacity + 30% flush to remove PCBs + 30,000 gallons from direct burn stations = 629,955 gallons total
629,955 gal/20,000 gal per railcar = 32 railcars
32 railcars x $7,303 per load from Aragonite, UT to Deer Park, TX = **$233,696**

C. Transportation of Bulk Waste (tank scrap in roll-off boxes)

16 tanks x 10,000 lb per tank = 160,000 lb steel scrap from tank dismantling
160,000/15,000 per box = 10.5 loads
assume same weight, volume in pipe, pumps and strainers = 10.5 loads
total number of roll-off box loads = 21 boxes
21 roll-off boxes x $187 per load to transport 25 miles to Grassy Mountain = **$3,927**

D. Total Transportation Costs

$6,562 + $233,696 + $3,927 = **$244,185**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity, plus piping capacity, totaling 461,504 gallons. Additionally, 30,000 gallons of direct burn tanker station capacity will be included as waste to be managed under tank farm closure. The tank farm has 18,900 sq.ft. of surface area.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste, plus 10,000 gallons rinsate generated from rinse of tank interiors prior to dismantling. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Volume of waste for disposal includes permitted capacity of tank system (including pipe) plus 30% by volume to account for flush of system to remove TSCA designation plus 30,000 gallons of the direct burn stations capacity. Three (3) flushes of 10% by volume are assumed, although some flush may be re-used if tested to contain less than 50 ppm PCB.

Note 4:

Disposal prices calculated at $0.14/lb ($280/ton) for organic waste, and $0.184/lb ($368/ton) for aqueous waste, based on gate rate at CH-Deer Park, TX incineration facility.

Note 5:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 6:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Aqueous Waste in Bulk

114,755 gallons capacity + 30 % flush by volume + 15,000 gal from direct burn = 164,182 gal total

164,182 gal/7.48 gal/ft^3/27 cu ft/cu. yd = 812.9 cu. yd.

812.9 cu. yd waste for disposal (including flush) x 0.843 tons/cu. yd = 685.3 tons for disposal

685.3 tons x $368/ton disposal cost = **$252,190**

B. Treatment and Disposal of High BTU Waste in Bulk

346,749 gallons capacity + 30% flush by volume + 15,000 gal from direct burn = 465,774 gal

465,774 gal/7.48 gal/ft^3/27 cu ft./cu. yd = 2,306.3 cu. yd.

2,306.3 cu. yd waste for disposal (including flush) x 0.843 tons/cu.yd = 1,944.2 tons for disposal

1,944.2 tons x $280/ton disposal cost = **$544,376**

C. Treatment and Disposal of Tank and Pipe Scrap Metal

16 tanks at 10,000 per tank plus same weight in pipe, pumps = 320,000 lbs

320,000 lbs/2,000 lb per ton = 160 tons for disposal (landfill)

160 tons x $237/ton disposal cost = **$37,920**

D. Transportation and Disposal of Decontamination Fluid

18,900 sq.ft tank farm containment x 1.0 gal./ft^2 rinsate	= 18,900 gal
rinsate generated from tank rinseout prior to dismantling	= 10,000 gal
total decontamination fluid volume	28,900 gal

28,900 gal x $1.89/gal transportation and disposal = **$54,621**

E. Tank Rental

three 20,000 gallon frac tanks required for two months

3 tanks x $874/month x 2 months = **$5,244**

F. Total Cost of Treatment and Disposal (including decontamination fluid T&D)

$252,190 + $544,376 + $37,920 + $54,621 + $5,244 = **$894,351**

13. Subtotal of Closure Costs

$13,097 + ~~$273,444~~261,849 + $27,110 + $244,185 + $894,351 = ~~**$1,452,187**~~**1,440,592**

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = ~~$72,609~~72,030

15. Certification of Closure

A. Engineering Certification - Professional Engineer

100 hours x $156/hr = **$15,600**

B. Engineering Certification - Direct Costs = **$2,573**

C. Total Engineering Certification
$15,600 + $2,573 = **$18,173**

16. Subtotal of Closure Costs

$~~1,452,187~~1,440,592 +$~~72,609~~72,030 + $18,173 = **~~$1,542,969~~1,530,795**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **~~$154,297~~153,080**

Total Area Closure Cost = ~~$1,697,266~~1,683,875

Bulk Solids - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste	$6,498
2	Tank System Purging	$0
3	Flushing Tank and Piping	$0
4	Excavation, Disassembly, and Loading	$0
5	Demolition and Removal of Containment System	$0
6	Removal of Soil	$0
7	Backfill	$0
8	Decontamination	~~$118,121~~ 113,112
9	Sampling and Analysis	$22,026
10	Monitoring Well Installation	$0
11	Transportation	$107,415
12	Treatment and Disposal	$1,406,724
13	SUBTOTAL OF CLOSURE COSTS	~~$1,660,784~~ 1,655,775
14	Engineering Expenses	~~$83,039~~ 82,789
15	Certification of Closure	$10,484
16	SUBTOTAL OF CLOSURE COSTS	~~$1,754,307~~ 1,749,048
17	Contingency Allowance	~~$175,431~~ 174,905
18	Landfill Closure	$0

	TOTALS	~~**$1,929,738**~~ **1,923,953**

Bulk Solids

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted bulk tank capacity of 229,000 gallons. Also included as bulk solids capacity is the capacity in bulk containers of the bulk solids/sludge pad. This adds an additional 23,760 gallons of waste to be managed for a combined total of 252,760 gallons. The tanks have 7,057 sq.ft. of surface area. This area does not include the bulk solids/sludge pad surface areas as they are included in the container storage area closure.

A. Remove equivalent of 229,000 gallons of waste from bulk solids tanks and 23,760 gallons from the bulk solids/sludge pad - 20 mandays
20 mandays x $31/hr x 8 hrs/day = $4,960
Equipment - lump sum = $1,538
Labor plus equipment total = **$6,498**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination
Costs detailed in Section V. Decontamination Cost by Area and Task
~~$118,121~~113,112
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Bulk Solids Building is comprised of three tanks, and one containment area. These tanks and containment area will be wipe sampled individually. Additionally, core samples will be taken from the concrete walls of the building. Rinsate samples will be taken from tanks, and containment. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples per tank	= 45 samples
5 samples from containment/vault	= 5 samples
total wipe samples	= 50

50 wipe sample locations x $125/wipe = **$6,250**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample per tank	= 4 samples
3 rinse samples from containment	= 3 samples
total rinse samples	= 7

7 sample locations x $468/sample = **$3,276**

C. Concrete Core Samples (for PCB Confirmation)

20 samples per wall	= 80 core samples
20 samples from various floor surfaces	= 20 core samples
total core samples	= 100

100 core sample locations x $125/sample = **$12,500**

D. Total Sampling Cost

$6,250 wipe samples + $3,276 rinse samples + $12,500 core samples = **$22,026**

11. Transportation

Note 1:

Bulk solids wastes will be bulked into 20 cu yd roll-off boxes, and transported by rail to Deer Park, TX for disposal. A transportation cost of $1,705 per box is used as per transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

252,760 gallons permitted capacity
252,760 gallons/7.48 gal per cu.ft. = 33,792 cu. ft. waste
33,792 cu. ft. waste/27 cu.ft. per cu.yd. = 1,252 cu.yd.
1,252 cu.yd/20 cu. yd. per roll-off box = 63 roll-off boxes
63 roll-off boxes x $1,705 per load to transport by rail to Deer Park, TX = **$107,415**

12. Treatment and Disposal

Note 1:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 2:

Disposal of bulk solids removed from inventory is calculated at $0.408/lb ($816/ton) based on gate rates at the CH - Deer Park incineration facility.

Note 3:

Walls and ceiling will be rinsed to remove visible dust, and contaminants. Tank liners (metal) will be decontaminated using ultra high pressure water blasting, or other suitable methods. All visible waste residues will be removed.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage
252,760 gallons/7.48 gal/cu ft/27 cu.ft/cu.yd. = 1,252 cu.yd.
1,252 cu.yd x 1.318 ton per cu.yd. = 1,651 tons for disposal
1,651 tons x $816/ton disposal cost = **$1,347,216**

B. Transportation and Disposal of Decontamination Fluid
Estimated volume of decontamination fluid generated - 30,000 gallons
30,000 gal x $1.89/gal disposal cost (incl. Transportation) = **$56,700**

C. Tank Rental
two 20,000 gallon frac tanks required for one months
2 tanks x $874/month x 1 month = **$1,748**

D. Cost to Pump Fluid to Frac Tanks
Labor - 30 hrs x $31/hr = $930
Equipment - lump sum $130
Total Cost to Pump Fluid $930 + $130 = **$1,060**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
$1,347,216 + $56,700 + $1,748 + $1,060 = **$1,406,724**

13. Subtotal of Closure Costs

$6,498 + ~~$118,121~~113,112 + $22,026 + $107,415 + $1,406,724 =
~~$1,660,784~~1,655,775

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **~~$83,039~~ 82,789**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
60 hours x $156/hr = **$9,360**

B. Engineering Certification - Direct Costs = **$1,124**

C. Total Engineering Certification
$9,360 + $1,124 = **$10,484**

16. Subtotal of Closure Costs

~~$1,660,784~~1,655,775 +~~$83,039~~82,789 + $10,484 = **~~$1,754,307~~1,749,048**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **~~$175,431~~174,905**

Total Area Closure Cost = ~~$1,929,738~~1,923,953

Sludge Tanks - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste	$9,326
2	Tank System Purging	$0
3	Flushing Tank and Piping	$0
4	Excavation, Disassembly, and Loading	$0
5	Demolition and Removal of Containment System	$0
6	Removal of Soil	$0
7	Backfill	$0
8	Decontamination	~~$60,455~~ 57,892
9	Sampling and Analysis	$5,622
10	Monitoring Well Installation	$0
11	Transportation	$14,606
12	Treatment and Disposal	$220,405
13	SUBTOTAL OF CLOSURE COSTS	~~$310,414~~ 307,851
14	Engineering Expenses	~~$15,521~~ 15,393
15	Certification of Closure	$4,543
16	SUBTOTAL OF CLOSURE COSTS	~~$330,478~~ 327,787

17	**Contingency Allowance**	~~$33,048~~ 32,779
18	**Landfill Closure**	$0
	TOTALS	~~$363,526~~ 360,566

Sludge Tanks

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity of 38,570 gallons. The tanks have 2,903 sq.ft. of surface area.

A. Remove 38,570 gallons of waste from bulk sludge tanks - 30 mandays

30 mandays x $31/hr x 8 hrs/day = $7,440
Equipment - lump sum = $1,886
Labor plus equipment total = **$9,326**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task
~~$60,455~~57,892
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of

this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Sludge Tank Area is comprised of two tanks and one containment vault. The tanks and vault will be wipe sampled individually, with ancillary equipment sampled as necessary. Rinsate samples will be taken from the tanks, and vault. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

5 wipe samples on tanks	= 5 samples
20 wipes on containment vault	= 20 samples
5 samples on ancillary equipment	= 5 samples
Total wipe samples	30

30 wipe sample locations x $125/wipe = **$3,750**

B. Rinse Samples (for RCRA confirmation)

2 rinse samples from tank system	= 2 samples
2 samples from vault area	= 2 samples
total samples	4

4 sample locations x $468/sample = **$1,872**

C. Total Sampling Cost

$3,750 wipe samples + $1,872 rinse samples = **$5,622**

11. Transportation

Note 1:

Sludge will be bulked into 20,000 gallon rail cars, and transported by rail to Deer Park, TX for disposal. A transportation cost of $7,303 per tanker is used as per the transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

38,570 gallons permitted capacity

38,570 gallons/20,000 gallons per rail tanker load = 2 rail tanker loads

2 rail tanker loads x $7,303 per load to Deer Park Texas = **$14,606**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity and truck unloading direct burn station capacity of 38,570 gallons. The tanks and piping have a surface area of 2903 sq ft with the containment vault having 1,173 sq ft of surface area.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. It is estimated that 1,500 gallons of rinsate will be generated from cleaning vault surfaces, and 14,500 gallons will be generated from cleaning the tank interior due to high solids build-up. This rate is based primarily on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Disposal of bulk sludge removed from inventory is calculated at $0.49/lb ($980/ton) based on gate rates at the CH Deer Park incineration facility.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage

38,570 gallons permitted capacity/7.48 cu.ft./gal/27 cu.ft./cu.yd. = 191 cu.yd.
191 cu.yd x 1.0135 ton per cu.yd. = 193.6 tons for disposal
193.6 tons x $980/ton disposal cost = **$189,728**

B. Transportation and Disposal of Decontamination Fluid

Estimated volume of decontamination fluid generated - 16,000 gallons
16,000 gal x $1.89/gal disposal cost (incl. Transportation) = **$30,240**

C. Tank Rental

one 20,000 gallon frac tanks required for one-half month
1 tank x $874/month x 0.5 months = **$437**

D. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
$189,728 + $30,240 + $437 = **$220,405**

13. Subtotal of Closure Costs

$9,326 + $~~60,455~~57,892 + $5,622 + $14,606 + $220,405 = **$~~310,414~~307,851**

14. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **$~~15,521~~15,393**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
24 hours x $156/hr = **$3,744**

B. Engineering Certification - Direct Costs = **$799**

C. Total Engineering Certification
$3,744 + $799 = **$4,543**

16. Subtotal of Closure Costs

$~~310,414~~307,851 + $~~15,521~~15,393 + $4,543 = **$~~330,478~~327,787**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = $~~33,048~~32,779

Total Area Closure Cost $~~363,526~~360,566

Kiln - General Summary Sheet

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Removal of Waste Residue	$975,511
2	Decontamination of the Unit	Incl in decon
3	Disassembly of Ancillary Piping	Incl in decon
4	Demolition and Removal	$0
5	Removal of Soil	$0
6	Backfill	$0
7	Decontamination	~~$296,247~~278,775
8	Sampling and Analysis	$119,520
9	Monitoring Well Installation	$0
10	Transportation	$31,790
11	Treatment and Disposal	$164,918
12	SUBTOTAL OF CLOSURE COSTS	~~$1,587,986~~ 1,570,514
13	Engineering Expenses	~~$79,399~~ 78,526
14	Certification of Closure	$18,174
15	SUBTOTAL OF CLOSURE COSTS	~~$1,685,559~~ 1,667,214
16	Contingency Allowance	~~$168,556~~166,721
17	Landfill Closure	$0

	TOTALS	~~**$1,854,115**~~ **1,833,935**

Kiln System

Activity Number

1. Inventory Removal

A. Remove and dispose of liquid from scrubber

Scrubber liquid volume made up of:

4 tanks at 14,000 each	= 56,000 gal
1 WESP tank	= 1,000 gal
Total scrubber liquid volume	**57,000 gal**

Labor - 30 mandays x $31/hr x 8 hrs/day = **$7,440**
Equipment - lump sum = **$1,608**
Disposal of Liquid - 57,000 gal x $1.89/gal (T&D) = **$107,730**

B. Remove 4,700 cu.yd. of non-liquid waste residues

Non-liquid waste residue volume made up of :

112 boxes slag at 30 yd^3 each (normal operations inventory)	= 3,360 yd^3
18 boxes brick at 30 yd^3 each (from turn-around records)	= 540 yd^3
31 boxes of ash at 20 yd^3 each (normal operations inventory)	= 620 yd^3
9 boxes at 20 yd^3 each from baghouse, spray drier cleanout	= 180 yd^3
Total volume of non-liquid waste residues (170 boxes)	**4,700 yd^3**

Labor - 300 mandays x $31/hr x 8 hrs/day = **$74,400**
Equipment - lump sum **$32,332**

C. Dispose of 4,700 cu.yd of non-liquid waste (volume estimated above)

4,700 cu.yd x 0.675 tons per cu.yd = 3,173 tons.
3,173 tons x $237/ton disposal cost = **$752,001**

D. Total Inventory Removal and Treatment Cost

$7,440 + $1,608 + $107,730 + $74,400 + $32,332 + $752,001 = **$975,511**

7. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task
~~$296,247~~278,775
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall. For this task however, the labor and equipment charges for the scrubber liquid and non-liquid residue removal are already included in Activities 1.A. and 1.B. above and should deducted from the calculation using the numbers in Section V in order to avoid duplicating the cost, i.e., 443 mandays/~~1154~~ 1241 mandays x ~~$1,073,316~~1,105,289 = ~~$412,027~~394,555; ~~$412,027~~394,555 - $7,440 - $1,608 - $74,400 - $32,332 =
~~296,247~~$278,775.

8. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

Due to the large surface area of the units comprising the Kiln Area, several units, and corresponding containment areas will be wipe sampled. Sample quantities by area location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 each for kiln and afterburner feed skids, slag discharge, "A" damper	= 100
10 each for the 8 kiln area units	= 80
10 for each of 6 kiln area containment area	= 60
30 for direct burn area	= 30
30 for random structural wipes in area	= 30
Total number of wipe samples from Kiln area	**300**

300 wipe sample locations x $125/wipe = **$37,500**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample from each of the 6 containment berms in kiln area	= 6
1 rinse sample from each of the 8 kiln area units	= 8
1 rinse from the direct burn area containment	= 1
Total number of aqueous samples from kiln area	**15**

15 sample locations x $468/sample = **$7,020**

C. Non-aqueous Samples (concrete cores, brick samples)

200 brick samples from kiln, "a" damper	= 200
150 brick samples from SCC	= 150
20 samples from deslagger	= 20
20 samples from each of 5 pant leg sections	= 100
80 samples from spray drier	= 80
20 samples from accumulation areas	= 20
20 from parking area	= 20
10 random samples from kiln area	= 10
Total non-aqueous samples	**600**

600 samples x $125/sample = **$75,000**

D. Total Sampling Cost

$37,500 wipe samples + $7,020 rinse samples + $75,000 non-aqueous samples = **$119,520**

10. Transportation

A. Transportation of Bulk Liquids (scrubber water)
included in Task 1 - Inventory Removal

B. Transportation of Bulk Waste Residue (ash, brick)
170 debris boxes (from inventory) x $187/ box to Grassy Mtn, UT = **$31,790**

C. Total Cost of Transportation of Waste
$31,790

11. Treatment and Disposal

Note 1:

Brick removal labor is included in the costs for inventory removal. These costs are detailed in Section V of this document.

Note 2:

An area of 82,899 sq ft requires decontamination. Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 4:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage
included in Task 1 - Inventory Removal

B. Transportation and Disposal of Decontamination Fluid
Estimated volume of decontamination fluid generated - 82,899 gallons
82,899 gal x $1.89/gal disposal cost (incl. Transportation) = **$156,679**

C. Tank Rental
four 20,000 gallon frac tanks required for two months
4 tanks x $874/month x 2 months = **$6,992**

D. Cost to Pump Liquid to Frac Tank
labor- 4 mandays x $31/hr x 8 hrs/day = **$992**
equipment - lump sum **$255**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
$156,679 + $6,992 + $992 + $255 = **$164,918**

12. Subtotal of Closure Costs

$975,511 + ~~$296,247~~278,775 + $119,520 + $31,790 + $164,918 =
~~$1,587,986~~1,570,514

13. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = ~~$79,399~~**78,526**

14. Certification of Closure

A. Engineering Certification - Professional Engineer
96 hours x $156/hr = **$14,976**

B. Engineering Certification - Direct Costs = **$3,198**

C. Total Engineering Certification
$14,976 + $3,198 = **$18,174**

15. Subtotal of Closure Costs

~~$1,587,986~~1,570,514 + ~~$79,399~~78,526 + $18,174 = **~~$1,685,559~~1,667,214**

16. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **~~$168,556~~166,721**

Total Area Closure Cost = ~~$1,854,115~~1,833,935

Type 4 Magazine Container Storage Units

SUMMARY TABLE		
Activity Number	**Activity**	**Activity Cost**
1	Demolition and Removal of Containment System	$0
2	Removal of Soil	$0
3	Backfill	$0
4	Decontamination	$77,486
5	Sampling and Analysis	$7,029
6	Monitoring Well Installation	$0
7	Transportation	$7,062
8	Treatment and Disposal	$607,193
9	SUBTOTAL OF CLOSURE COSTS	$698,770
10	Engineering Expenses	$34,939
11	Certification of Closure	$18,173
12	SUBTOTAL OF CLOSURE COSTS	$751,882
13	Contingency Allowance	$75,188
14	Landfill Closure	$0
	TOTALS	$827,070

Type 4 Magazine Container Storage Units

Activity Number

4. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination:

Costs detailed in Section V. Decontamination Cost by Area and Task **$77,486** This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

5. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Container Management areas are comprised of several storage units. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples each Magazine	= 45 samples
Total Wipe samples	45

45 wipe sample locations x $125/wipe = **$5,625**

B. Rinse Samples (for RCRA confirmation)

1 sample each Magazine	= 3 samples
Total rinsewater samples	3

3 sample locations x $468/sample = **$1,404**

C. Total Sampling Cost

$5,625 wipe samples + $1,404 rinse samples = **$7,029**

7. Transportation of Waste in Storage

Note 1:

Rates based on millage and fuel costs to transport 30 pallets of palletized ammo cans from Clean Harbors Aragonite to Clean Harbors Colfax facility located in Colfax LA. Quote provided by the Clean Harbors Central Logistics Group. Included mileage of 1,596 from Aragonite, UT to Colfax, LA. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste on Pallets

Millage and fuel = **$7,062**

8. Treatment and Disposal

Note 1:

Waste volumes and containment surfaces are based on permitted capacities and areas. The Container Storage Areas(s) have a combined maximum permitted capacity of 30 pallets (2,875 lbs/pallet). The total cumulative containment surface area of all of the container storage areas is 897 sq.ft.

Note 2:

Disposal rate for material in storage calculated at $7.00/lb based on a weighted average of gate rates of similar waste at the CH-Colfax, LA incineration facility.

Note 3:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of $874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of $1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Disposal of Palletized Waste

2,875 lbs/pallet x 10 Pallets per storage magazine = 28,750 x 3 storage magazines = 86,250 lbs waste

86,250 lbs x $7.00/lb disposal cost = **$603,750**

B. Transportation and Disposal of Decontamination Fluid

897 sq. ft containment x 1.0 gal/sq. ft decon fluid = 897 gallons

897 gal x $1.89/gal disposal cost = **$1,695**

C. Tank Rental

three 20,000 gallon frac tanks required for two months

1 tank x $874/month x 2 months = **$1,748**

D. Total Treatment and Disposal Cost

$603,750 + $1,695 + $1,748 = **$607,193**

9. Sub-Total of Area Closure Costs

$7,029 + $7,062 + $607,193 + $77,486 = **$698,770**

10. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **$34,939**

11. Certification of Closure

A. Engineering Certification - Professional Engineer

100 hours x $156/hr = **$15,600**

B. Engineering Certification - Direct costs = **$2,573**

C. Total Engineering Certification

$15,600 + $2,573 = **$18,173**

12. Sub-Total of Area Closure Costs

$698,770 + $34,939+ $18,173 = **$751,882**

13. Contingency Allowance

A. Contingency Allowance equal to 10% of Subtotal = **$75,188**

Total Area Closure Cost = $827,070

SECTION IV

QUOTES/COST BACKUP

2001 Transportation and Disposal Rates

1. Bulk Liquid Waste by Rail Tanker Car to Deer Park, Texas

Cost to transload from Aragonite to Clive 4 tankers, $300/load:	$1,200
Cost to move by rail tanker, Clive UT to Deer Park, TX:	$4,584
Tank car rental cost $400/month (1 month round trip):	$400
Total cost for one load:	**$5,847**
20,000 gallon capacity tankers/$5,847	
Cost per gallon for rail transport	$0.29/gal
Cost per gallon for water disposal ($0.147/lb x 8.3 lb/gal)	$1.22/gal
Total Transportation and Disposal Cost - Aqueous Waste	**$1.51/gal**

2. Roll-Off Boxes by Rail Car to Deer Park, Texas

Cost to Transload from Aragonite to Clive (per box)	$150/box
Cost to Load onto rail car	$ 75/box
Cost to Transport by rail from Clive, UT to Deer Park, TX	$1,065/box
Cost to Unload box at Deer Park plant	$ 75/box
Total Transportation Cost by Rail for Solids in Roll-offs	**$1,365/box**

3. Roll-Off Boxes by Truck to Grassy Mountain

Truck Cost of $600/day, 4 loads per day	**$150/box**

Average Incineration Prices utilized in Estimates:

Bulk Water:	$0.147/lb
Bulk Organics:	$0.110/lb
Bulk Solids:	$0.327/lb
Bulk Debris:	$0.378/lb
Sludge:	$0.397/lb
Drums:	

Using a weighted average of the various waste types $0.44/lb

Average landfill disposal prices utilized in estimates: $190/ton

Over the road transportation cost: $3.00/loaded mile
Road mileage to Deer Park, Texas: 1,750 miles

SEVERN
TRENT
SF R\ fGF.S

Price Quotation for Analytical Services

Americon Inc. / Safety-Kleen Ltd.

\\trUe W.,.	fO!s	M<1had	!l!!Uilil •n00
Solid(Pil."''"'''	PC&	1012	11.00
Solid<S.,;o	PC&	1012	57.00
W\\ara W,..	PC&	IOC2	S7.00
	'TaW t.tecab	60JOS.'7470A	60.00 - ·
Wll<	Mdlls IA.sCilioo F011		).00
W.t«	r. . .tQp>i llol_,.(T()X)	!10208 [redacted]	4500
W[redacted]	"-Gloli.cs		11.00 12.00
W-	T'''''Orp>iccwtooJ{l'OC)		23.00
W....	TouiCyanM:	9012A	1700
	Q;l&Q,ax	166-llA HEM	

SlI..l)e-.r

.. 11>lJ — .. .. —ddMrina m r— ' s......................- ___- , ______ — pk ....k
stmdud a ad1 QC) aod dec.-onic ddh•C1l1ble 21 etkn_.d.,ıdcrSmlple Ociivcry ADOq)LU'ICC

)> \\Jpm teqlalll, Sn. DmVO" wIiJ JIl'CWide &ll EX'p PC cd •Cf*1(ft*"llti;:;rmr)c ('CfUlu,, 'ft l n.,d l;ltkt, IJ(. a»ociated AIWdr.G duon run logs, ac). A)%ll'l"ChugcofthetOC 181111}ticel QCIII wUJ be applied sl>o<Jd''''''ll'J>0o/bo puo;-

)l- Slandard S.ADph C1O1l taill•t wich ve&. labds, cbtln of o,aocty SC8bm MippoooJa'l will be cd lll ooadditkNl c hupghom ClfICW'tfl's nolloc. lh sl\\ppiDJd'181ge5ofiSO pet cooltl'w01 apply if """.Woo'-J"G"dod.

)o Sanaplc dis,potlt is a t DOchUJ,& AU SU11pla will\\able level! of PCB, diQ (1 o o, ıud wJ Mt Of "";ct, ...ibi< Wl10 . . .11oatioy ... .,d....;t.,..• ,,wilt...-...d..,,.. .O .t

••••••• Qc:,..,_ """"""" blal. c.... S-,••(1 CS). 4 __,-lpibo(NS)\\fil<
du;iirk'-lor) l Sl!)fir '''''''al.l., — ,.....lpO<i&cQC """""""(MSIMSIY)

> S..,..-.,..,Af'' AMl)<eLilluod1"Q1&

ATTACHMtJIITA

SEVERN TRENT SifR\ ICF'I

Asl I)'t'litb/STL Otnwr Pnaical Quantitllioo Umiu (PQLs)

!·!JJl:ill	fl£!!nmr		CQ!,	llniu
Wipe	PC!ls	1012		
	Nodor I0!		1.0	•Voil><
	Atodor IZZJ		1.0	
	Arodor In2		1.0	ulfwpe
	1\rotlcr '242		1.0	ug.ipc
	AJ«-lor I24S		1.0	ugivripc
	Anoci«J:!$4		1.0	usf.Mpe
	Anlclot)260		1.0	uJ!lwip<
So&!	I'CU.	ton		
	Arodort 1016		33	
	Arockv 1221		33	g'ka
	..... III2		33	
	ATodor IIA2		33	uwq
	Alo:hw 1244		IJ	U&'kl
	Aroclor L2,S4			
	Arodor 1610		.»	
W-	PC8I	fOU		
	M>cl«lO16		1.0	"'I'L
	1221		1.0	"&'!-
	AJbett.r 1232		1.0	IIS'L
	M>cl«lI-<2		1.0	IIS'L
	Atoclor 1248		1.0	Ils/1-
	Nodor 1254		1.0	•Sil
	Alodor 1260		1.0	ug/1
W....	Tot>JM<Iah			
	Ar&alic	GOIOB	0.01	..aiL
	Bari tm	601O1	0 01	Jn&IL
	c.ctmIte	GO.CB	0.005	Mslt
	eq,,...	GOIOB	0.01	maiL
	lAd	60108	0.003	
	-...y	7f78A	• o OOGI	
	Stteft-.	60I011	0.00S	Jn&IL
	Sihu	[redacted]	001	..sit
W...	llaCl'lllhCJ		0.020	Jn&IL
W...	To<a'C)uidt	9012A	0.010	..sit
W...	Oiii: O.-	HEM	S.0	JIl&!L
W-	r..., a... .0.an.m	9060	1.0	[redacted]
Wotcr	TObit Ort,anic HaJoaeos	90208	0.01	m&'L

Analyte Fraction	Method	STL UNIT COST	STL UNIT COST WASTE	MSAI	McCampbell Analytical, Inc.	Livermie Analytical, Inc.	Sequoia Analytical	Ave % more of the 3 closest Labs	STL adjusted for competition
VOLATILE ORGANICS	8260	$97.00	$121.25	$182.00	$125.00	$145.00	$175.00		$134.29
SEMIVOLATILE COMPOUNDS	8270	$200.00	$250.00	$346.50	$250.00	$290.00	$350.00		$276.88
OCP	8081	$103.00	$128.75	$189.00	$75.00	$120.00	$125.00		$142.59
PCBs	8082	$57.00	$71.25	$80.50	$50.00	$80.00	Included in OCPs		$78.91
HERBICIDES	8151	$109.00	$136.25	$189.00	$150.00	$150.00	$135.00		$150.50
OPP	8141	$103.00	$128.75	$140.00	$95.00	$145.00	$125.00		$142.59
TOTAL METALS	6010	$112.00	$140.00	$168.00	$125.00	$170.00	$135.00		$155.05
SULFIDE	376.1	$8.00	$10.00	$14.00	$40.00	$40.00	$25.00		$11.08
MERCURY	7470	$11.00	$13.75	$31.50	$25.00	Included in Total Metals	Included in Total Metals		$15.23
TOC	9060 / 415.1	$23.00	$28.75	$49.00	$40.00	$40.00	$40.00		$31.84
PH	150.1	$6.00	$7.50	$5.60	$10.00	$10.00	$10.00		$8.31
TDS	160.1	$8.00	$10.00	$10.50	$20.00	$15.00	$15.00		$11.08
TSS	160.2	$8.00	$10.00	$10.50	$20.00	$15.00	$15.00		$11.08
BICARB ALK	310.1	$8.00	$10.00	$11.90	$20.00	$15.00	$10.00		$11.08
ANIONS	300.0	$26.00	$32.50	$42.00	$140.00	$45.00	$105.00		$35.99
Subtotal		$879.00	$1,098.75	$1,470.00	$1,185.00	$1,280.00	$1,285.00		$1,216.89
Data Package		$43.95		$147.00	$0.00	$0.00	$103.20		$60.84
Total		$922.95		$1,617.00	$1,185.00	$1,280.00	$1,388.20		$1,277.73
% more than STL		0.00%		75.20%	28.39%	38.69%	48.24%	38.44%	38.44%
Cyanide, Total	9010A	$17.00	$21.25	$38.50	$70.00	$40.00	$50.00		$23.53
Dioxins (Sub)		$458.00	$572.50	$1,650.00	$900.00	$500.00	$1,000.00		$634.06
		$475.00	$593.75	$1,688.50	$970.00	$540.00	$1,050.00		$657.58
% more than STL		0.00%		255.47%	104.21%	13.68%	121.06%	79.65%	38.44%

Kelly Clark
FAX (801) 526-7617

UPAA

UNION PACIFIC RAILROAD

CONFIDENTIAL PRICE QUOTE

iMoC c4n.

	06
FROM:	
SERVING RR:	UP
	Houston, TX (rwmp)
SERVING RR:	UP
ROUTE:	
THRU RATE:	,016
	S$11

Please call with any questions.

TOTAL PAGE.003

11.3J •e:. 13:1(7F11 SilI11
AJ 3: 81 11'4',_..,_ [redacted] 5104 10 9 1Blse9?'61':

TO. -Qoo'l

[redacted] nool<Nolooo 1J
\II'U
<Gl -G1Dol oiQW'14l$0

DATe J16/!,12001

UNION PACIFIC RAILROAD

CONFIDENTIAL PRICE QUOTE

o:olIloiOIIm'•	lquid
sr<:e	••••
[redacted]	CM.IIT
IEIMIIG RR:	UP
IO'	O–p....II(
SERWII3 IRK,	UP
[redacted]	11'
IMJIIUTSJ	$4,247
EQUPOiafr.	[redacted] •......

Please call with any questions.

*** TOTAL PAGE.00 ***

SAFETY-KLEEN, INC. CLOSURE PROJECTS
CONTAINMENT AREA DECONTAMINATION

FACILITY NAME	NO	EPA ID #	STATE	YEAR	CONTAINMENT AREA (S.F.)	DECON FLUIDS (GALS.)	RATE GALS./S.F.	CLOSURE STANDARD ACHIEVED
Safety-Kleen (Crowley), Inc. 1)	550	LAD 079 464 095	LA.	2000	35,440	25,173		YES
S-K Indianapolis, IN	894	IND 000815896	IN	1995	1231	1700		YES
S-K Portage, IN (1)	907	IND 000714428	IN	1994	3862	5242		YES
S-K South Bend, IN (1)	917	IND 000715474	IN	1995	8232	2775		YES
S-K Southaven, MS (1)	952	MSD 981030984	MS	1999	8995	7710		YES
S-K Edwardsville, KS (1)	918	KSD 980973515	KS	2001	3079	3685		YES
		Project Averages			**58,836**	**49,285**	**0.9**	

Notes: 1) Volume of decon fluids is total volume generated. Includes decon of equipment, tanks, walls, etc.

SECTION V

DECONTAMINATION COSTS BY AREA AND TASK

Section V Decontamination Costs by Area and Task

Note:

The costs detailed in this section represent Engineering Estimates for the tasks described. The tasks, and associated durations, equipment, and project management requirements were determined after a facility walk through with compliance personnel, an examination of relevant closure and permit documents, and follow-up discussions. Some assumptions were made with respect to decontamination of surfaces and equipment with which Americon has specific experience. Recent experience includes closure of the Clive Incineration Facility, which has very similar process units, storage areas, and infrastructure. This facility is also within the Utah Department of Environmental Quality's jurisdiction, so consistent closure standards were assumed (see Section VI).

Pricing is representative of that generally available in the industry, and would currently be available from Americon, Inc. for a project of similar scope, complexity and duration.

Clean Harbors Aragonite
Plant Decontamination Task Duration Summary

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
1. Container Storage				
	Drum Storage Buildings (2) and Buildings 68 and 69-North/South			
	Dismantle drum storage racks	11		
	Wash ceilings (concrete)	31		
	Wash Walls (concrete)	41		
	Wash front loading bays (both buildings)	10		
	Wash interior storage cells/secondary containment	29		
	Sample	9		
			131	
	Container Processing Area			
	Remove area equipment	4		
	Wash ceiling	8		
	Wash walls	12		
	Wash floor	8		
	Dismantle, wash decant area	12		
	Sample	4		
			48	
	Dock/Breezeway			
	Remove elevator/rollers	10		
	Lower level hoist decontamination	8		
	Sump cleanout	2		
	Dock wash	8		
	Breezeway Wash	6		
	Electrical isolation of conveyors	1		

	Ceiling wash	6		
	Miscellaneous demolition	3		
	Sample	2		
			46	
	Container Storage Subtotal		**225**	
Type 4 Magazine Container Storage				
	Type 4 Magazine Storage			
	Wash ceilings (Metal) x 3	10		
	Wash Walls (Metal) x 3	10		
	Sample x 3	9		
			87	
	~~**Container Storage Subtotal**~~**Type 4 Magazine Subtotal**			~~**225**~~ **87**
2. Tank Farm				
	Sample Station			
	Wash structure	3		
			3	
	Unload Building			
	Triple rinse pumps, piping	3		
	Isolate, pull pumps	4		
	Isolate, pull piping	6		
	Clean containment	4		
	Sample	2		
			19	
	Waste Tanks			
	Triple rinse tanks, piping	6		
	Isolate piping	3		
	Pull piping	2		
	Purge tanks	8		
	Muck out interior	40		

	Remove exterior structural	20		
	Remove tanks	8		
	Cut-up tanks for disposal	45		
	Clean containment	9		
			141	

	Pump Houses (2)			
	Triple rinse pumps, piping	4		
	Isolate, pull pumps	10		
	Isolate, pull piping	12		
	Clean containment	10		
	Sample	2		
			38	
	Blend Tanks			
	Triple rinse tanks, piping	3		
	Isolate, purge	5		
	Isolate, remove pumps	2		
	Remove piping	3		
	Muck out interior	8		
	Remove mixers (sectioned)	4		
	Top valves and piping	2		
	Remove exterior structural steel	6		
	Pull tanks	4		
	Cut-up tanks	10		
	Remove unload rack piping	2		
	Containment	3		
	Purge, pull O/H lines to incin feed rack	7		
			59	
	Carbon Adsorber			
	Remove packing for disposal	6		
	Remove tanks, piping, for disposal	8		
	Sample	2		
			16	
	Direct Burn Area			
	Purge piping, pull	4		

	Clean containment	4		
	Pull unloading pipes	2		
	Pull pumps	2		
	Wash bay	4		
	Sample	2		
			18	
	Tank Farm, Piping Subtotal			**294**
3. Bulk Solids				
	Bulk Solids Building			
	Rinse down ceiling, upper walls	10		
	Clean walls	28		
	Clean tanks	35		
	Sample	8		
			81	
	Shredder Area			
	Clean hopper, shelf	8		
	disassemble, clean shredder	8		
	sample	2		
			18	
	Drag Conveyor			
	Disassemble conveyor	6		
	Clean conveyor interior	6		
	Clean hopper, knife gates	6		
	Sample	2		
			20	
	Clean hpu mains	2		
	Pull small lines	2		

	Drain hpus, isolate	2		
	Isolate electrical	2		
			8	
	Bulk Solids Subtotal			**127**
4. Sludge Tanks				
	Sludge Tank – Small			
	Triple rinse	2		
	Muck out interior	6		
	Remove valves and piping	2		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	6		
	sample	2		
			26	
	Sludge Tank - Large			
	Triple rinse	3		
	Muck out interior	6		
	Wash interior	6		
	Remove valves and piping	4		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	10		
	Sample	2		
			39	
	Sludge Tanks Subtotal			**65**
5. Incineration Train				

	Deslagger			
	Pull out	2		
	Isolate, disconnect	4		
	Open housing, pull headgear	4		
	Pull head pulley	4		
	Pull belt, dispose	3		
	Cut-up shell for disposal	20		
	Gross area decontamination	4		
	Surrounding sump area decontamination	4		
	sample	2		
			47	
	Kiln Exterior			
	Clean exterior kiln drive	2		
	Clean ring gear	2		
	Clean from discharge to deslagger	2		
	Remove piping	16		
	Pull kiln face feed points	6		
			28	
	Kiln Interior			
	Remove brick, containerize	35		
	Clean interior	8		
	Sample	2		
			45	
	SCC			
	Clean area exterior	2		
	Remove feed piping	6		
	Remove burners	15		
	Remove SCC exterior sheathing	20		

	Push in SCC brick	35		
	Muck out brick into rolloffs	20		
	Clean structure	8		
	Sample	2		
			108	
	Kiln Feed Piping			
	Isolate, purge	2		
	Pull, cut piping	10		
			12	
	Ducting from SCC to Saturator			
	Cut refractory to release joints	8		
	Crane out ducts, including thermal vent	4		
	Remove duct refractory	20		
	Wash duct to scrap	4		
	Sample	4		
			40	
	Saturator			
	Pull packing, containerize	2		
	Pump solids, muck out bottom	4		
	Scaffold interior	4		
	Sample	2		
			12	
	Scrubber			
	Pull packing, muck out bottom	8		
	Scaffold interior	4		
	Clean interior	10		
	Sample	2		
			24	

	Spray Dryer			
	Remove residue	6		
	Isolate, remove piping	6		
	Remove, clean ducting	10		
	Clean discharge area	4		
	Sample	2		
			28	
	Baghouse			
	Clean inlet, outlet duct	6		
	Remove bags, cages	8		
	Clean/remove screw conveyors	12		
	Clean interior	10		
	Sample	2		
			38	
	Baghouse Residue Loadout Bldg			
	Clean conveyors	8		
	Clean loadout hoppers	4		
	Clean building structure	6		
	Clean containment	6		
	Sample	2		
			26	
	ESP			
	Isolate	1		
	Clean inlet, discharge ducting	4		
	Clean interior	6		
	Sample	2		
			13	
	ID Fans, Stack Inlet Ducting			

	Clean ID #1 fan inlet	2		
	Clean transition to ID fan # 2	2		
	Clean fan #2, outlet to sack	2		
	Clean bottom section of stack	2		
			8	
	Stack			
	Check condition of interior	1		
	De-erect	2		
	Clean interior	2		
	Sample	1		
			6	
	pH Adjustment Tanks			
	Isolate, drain	2		
	Clean, rinse	4		
	Remove piping, pumps	2		
			8	
	Incineration System Subtotal			**443**
	Area Totals	~~1154~~ <u>1241</u>	~~1154~~ <u>1241</u>	~~1154~~ <u>1,241</u>

Decontamination Equipment and Supplies

Unit	Unit Qty	Item Description	Item Qty	Rate	Extension
		General Equipment			
Week	19	Pressure Washers w/Trailers	4	$475	$36,100
Week	9	Sand Blasting	2	$525	$9,450
Week	19	High Reach Fork Lift	1	$1,149	$21,831
Week	19	Fork Lifts (5,000 lbs)	2	$275	$10,450
Week	19	Shooting Boom Lift	1	$1,343	$25,517
Month	3	Vactor Truck (up to 176 hrs/mo)	1	$9,993	$29,979
Week	12	Vacuum Boxes	2	$468	$11,232
Hour	200	50-Ton Crane w/operator	1	$75	$15,000
Hour	200	100-Ton Crane w/operator	1	$112	$22,400
Week	18	Welding/Cutting and Supplies	2	$219	$7,884
Week	19	Trailers for Transporting Equipment on-site	1	$75	$1,425
Week	19	Storage Trailers for Equipment on-site	2	$69	$2,622
Month	3	Hydroblaster, 30,000 psi	1	$12,491	$37,473
LS	1	Mob, Demob, Permits and Misc Expenses	1	$2,498	$2,498
Week	19	Air Compressors	2	$381	$14,478
Week	19	Trucks	2	$344	$13,072
Week	12	Koppus Blowers	2	$75	$1,800
Week	19	Scaffolding	1	$187	$3,553
		Subtotal			$266,764
		Supplies			
Manday	1	PPE	1,400	$25	$35,000
Drums	20	Drums of Detergents	1	$625	$12,500
Week	18	Small Tools	1	$250	$4,500
Week	19	Sampling Supplies	1	$156	$2,964
Bag	1	Bag Grit for Sand Blasting	700	$10	$7,000
Roll	1	Absorbent Mats	40	$137	$5,480
Roll	1	Plastic	200	$75	$15,000
Case	1	Duct Tape	20	$156	$3,120
Each	1	Drums	250	$37	$9,250
Roll	1	Drum Liner	50	$87	$4,350
		Subtotal			$99,164

		Total			$365,928

Decontamination Project Administration

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension
		Project Management Personnel			
Hourly	700	Project Manager	1	$81	$56,700
Hourly	900	Field Supervisor	1	$40	$36,000
Hourly	900	Quality Assurance Officer	1	$37	$33,300
Hourly	500	Clerical	1	$19	$9,500
		Subtotal			$135,500
		Administrative Equipment/Supplies			
Month	6	Project Office	1	$999	$5,994
Month	6	Fax, Copier	1	$312	$1,872
Month	6	Phone	1	$250	$1,500
Week	18	Postage	1	$37	$666
Month	6	Utilities	2	$125	$1,500
Month	6	Supplies	1	$312	$1,872
Month	6	Cleaning and Disposal	1	$312	$1,872
Day	80	PPE for Administrative Personnel	2	$25	$4,000
Week	18	Administrative Truck	1	$281	$5,058
		Subtotal			$24,334
		Incidental Costs			
Each	1	Travel	20	$625	$12,500
Day	80	Subsistence	4	$94	$30,080
		Subtotal			$42,580
		Total			**$202,414**

Decontamination Cost Summary

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension	Totals
		Direct Costs				
Mandays	1	Labor				
		Direct Labor Cost	~~1154~~ 1,241	$350	~~$403,900~~ 434,350	
						~~$403,900~~ 434,350
		Equipment				
		Direct Equipment			$266,764	
		Supplies			$99,164	
						$365,928
		Project Overhead				
		Project Management Personnel			$135,500	
		Admin Equipment/Supplies			$24,334	
		Incidental Costs			$42,580	
						$202,414
LS	1	Mobilization	1	$37,473	$37,473	
LS	1	Demobilization	1	$12,491	$12,491	
						$49,964
Subtotal						~~$1,022,206~~ 1,052,656
LS	5%	Contingency	1	~~$1,022,206~~ 1,052,656	~~$51,110~~ 52,633	
						~~$51,110~~ 52,633

		Total				~~**$1,073,316**~~ **1,105,289**

SECTION VI

DECONTAMINATION STANDARDS/ANALYTICAL PARAMETERS

Table I-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.

Table I-1.3 (Continued)
Decontamination Rinse Water Analysis

NOTE:

1. Many different waste codes will be handled through-out 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.

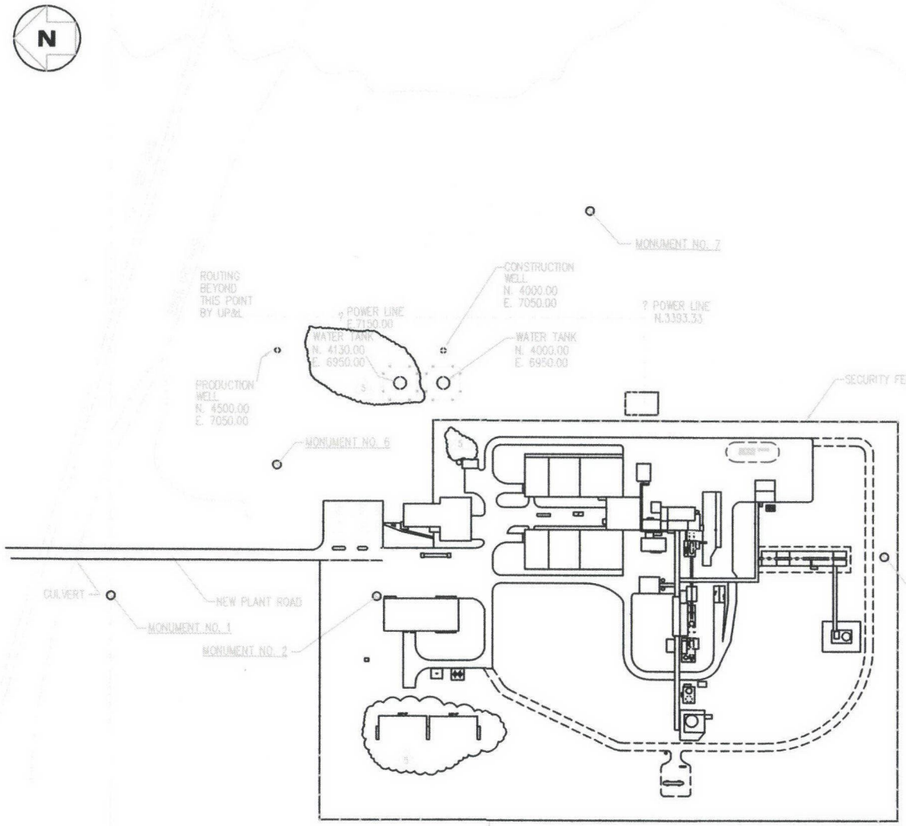
   The parameters listed in Table I-1.3 are intended to represent the contaminants likely to be present in the highest levels, and to give an indication of potentially toxic constituents. It must be noted that many of the constituents of concern - the organics, especially the chlorinated organics - are 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.

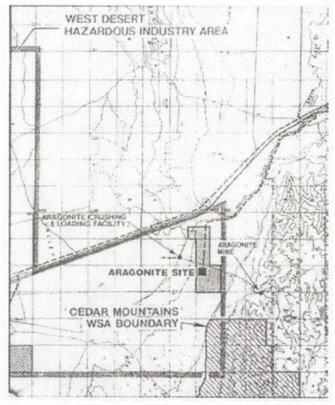
   It must also be remembered that the decontamination procedures listed in the application apply only to surfaces which are relatively impermeable (designated as "hard surfaces"). They will be used only for metallic items, such as tanks, and concrete. Any porous material, such as soils are intended for 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).

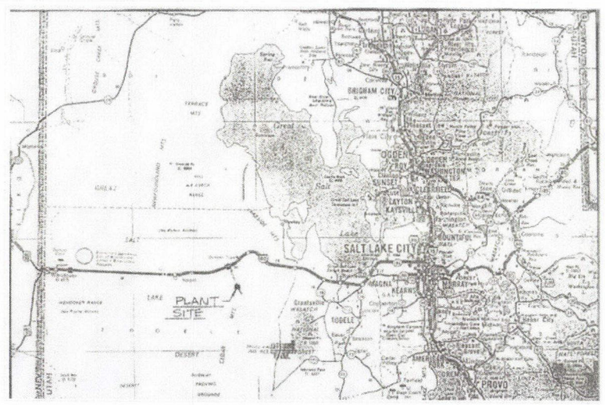
   The parameters chosen will adequately sample for all constituents of real concern, or for indicators of those constituents.

Drawing

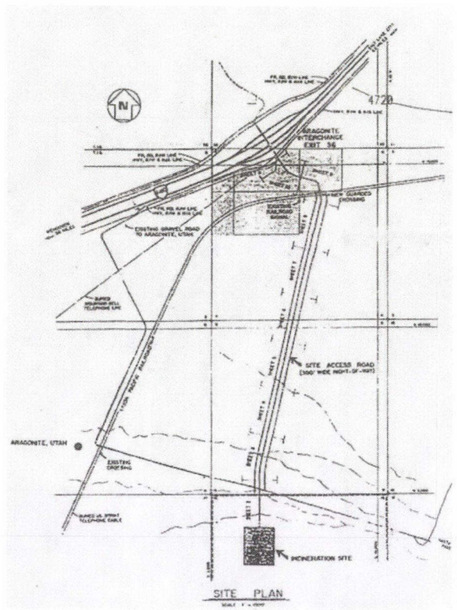




LOCAL AREA



HIGHWAY MAP



SITE PLAN

NOTES:

1. TOPOGRAPHY SHOWN WAS TAKEN FROM U.S.G.S. QUADRANGLE "HASTINGS PASS, UTAH, 1979".
2. NOT IN 100 YEAR FLOOD PLAIN. HIGHEST RECORDED LEVEL OF GREAT SALT LAKE, ELEVATION 4,217 FEET MEAN SEA LEVAL.
3. BASIS OF BEARINGS IS EAST FROM NORTHWEST CORNER OF SECTION 16, T.1 S., R. 10 W., S.L.B.&M. TO THE NORTHEAST CORNER OF SAID SECTION 16.
4. BENCHMARK IS APPROXIMATE ASSUMED U.S.G.S. DATUM FROM NORTHWEST CORNER OF SAID SECTION 16.
5. PLANT ELEVATION DATUM 100'-0" EQUALS U.S.G.S ELEVATION DATUM 4,682'-0".
6. FOR SURVEY CONTROL MONUMENT DATA, SEE R&M DRAWING NUMBER 8836-1.
7. LAND DESCRIPTION:

   A TRACT OF LAND LYING IN TOOELE COUNTY, STATE OF UTAH, SECTION 16, TOWNSHIP ONE (1) SOUTH, RANGE TEN WEST, SALT LAKE MERIDIAN AND BASE LINE, CONTAINING 640 ACRES MORE OR LESS, ACCORDING TO THE UNITED STATES SURVEY.

SCALE

100 200 400 600

(FEET)

1" = 200'

S.W. COR. SEC. 16, T.1S., R.10W., S.L.B.& M.

REGISTERED PROFESSIONAL ENGINEER
No. 7207431-2202
JOHN WILLIAM CALDWELL
08/23/19
STATE OF UTAH

REVISIONS										REVISIONS									
NO	DESCRIPTION	DATE	BY	CHK	ELEC	MECH	STR	PROJ MGR	NO	DESCRIPTION	DATE	BY	CHK	ELEC	MECH	STR	PROJ MGR
1	APPROVED FOR CONSTRUCTION	7-20-89							1								
2	ADDED MONUMENTS	1-5-90	RJH					W	2								
3	AS-BUILT	07-01-91	DCP						3								
4	ADDED NEW BUILDINGS	05-06-16	MM						4								
5	ADDED NEW WATER TANK	12-6-17	SBS						5								
6	ADD NEW RAW WTR TK/RMV POT WTR TK	02-15-19	MM					MR	6								
7	CLASS A MAGAZINE STORAGE								7								
8									8								

REFERENCE DRAWINGS	
DRAWING NO	TITLE
D-034-M-002	PLANT PLOT PLAN
8836-1 (R&M)	OFF SITE FACILITIES

REGISTERED PROFESSIONAL ENGINEER
DATE:

APPROVALS		
	BY	DATE
DRAWN		
CHECKED		
LEAD ENG		
ELEC ENGR		
MECH ENGR		
STRUCT ENGR		
PROJECT ENG		
PROJECT MGR		

CURRENT DRAWING STATUS	BY	DATE
PRELIMINARY OR PLANNING		
APPROVED FOR FINAL DESIGN		
APPROVED FOR QUOTE/PURCH		
APPROVED FOR CONSTRUCTION		
AS-BUILT		

CleanHarbors
ARAGONITE LLC

TITLE: UTAH ENVIRONMENTAL SERVICE CENTER
INCINERATION PLANT FOR INDUSTRIAL WASTES
SITE PLAN

FOR: TOOELE SITE | CAD DISK FILE: MK966

SCALE	JOB NO	ENG. DWG NO	ARTUS DWG NO	REV
1"=200'			D-034-M-001	5