

Solar Ponds Debris Characterization and Removal
History & Current Status as of March 17, 1998
By - Bob Cathel

Initial Project Set-Up

This project was set up to characterize and remove the debris in and around the solar ponds. The characterization of the debris was to include the chemical (i.e. RCRA) and radiological data. The characterization was captured in a document entitled Solar Ponds Debris Characterization Study. This was produced November 4, 1997 and subsequently submitted to CDPH&E. Determinations were made based primarily on process knowledge and visual inspection. The debris can be broken-down into 4 basic categories with associated subsets as follows:

Low Level Mixed Waste (LLM)

- LLM to be packaged directly with some disassembly / size-reduction
 - Combustibles (wood, paper, PPE)
 - Light Metal
 - Plastics (mainly hoses)

- LLM to be deferred to decontamination (which would then be a Low Level Waste)

Low Level Waste (LLW)

- Combustibles (wood, paper, PPE)
- Light Metal (probably for Low Level Metal Melt Operations)
- Plastics (mainly hoses)

PU&D Items

These are items for which a P/WRE can be obtained and may have a potential for re-use

Sanitary Landfill Items

These are items for which a P/WRE can be obtained and the landfill can accept

Chemical Characterization

The chemical characterization was established using three assumptions. First that the material in question was in direct contact (i.e. submerged, floated-on-top-of, etc.) the pond water/sludge. Second that the materials were utilized to transfer the pond water/sludge (i.e. hoses). Third that materials such as wood boxes, pallets and the like were potentially contaminated with the pond water/sludge by usage. There are several sets of data relating the chemical constituents of the pond water/sludge and it was this data that was used to establish upper and lower contamination limits and non-LDR compliance.

Radiological Characterization

The radiological characterization began with the assumption that the materials in and around the solar ponds were presumed radiologically contaminated to some extent. Radiological characterization was carried on as the debris waste size-reduced and packaged. This was

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performed by radiological control technicians (RCTs) and included a surveys of the outside surface areas and swipes at the ends (inside) of hoses/pipes (usually when the material was size-reduced). This was performed only on materials amenable to hand held surveys, such as hoses and metal pieces, and not porous items such as wood. To date this has produced data that has been below Minimum Detectable Activity (MDA). On January 22, 1998 I met with Rad Engineering (Scott Newsom) and Rad Ops (Gary Chavez and Mark Addis) to discuss radiological characterization of the waste stream. It was determined that the current rad survey data is adequate to meet Rad Eng's needs for calculating the total activity of the material in each crate. Also the radiological survey sheets would only be generated for each "type" of debris and not for each and every piece. This survey form would be updated if and when the rad data indicated any change (i.e. some detectable activity).

Using the survey and some physical measurement data (I weighed and measured a piece of hose and some pieces of metal) I was able to calculate some preliminary activity per mass for the plastics (hoses) and light metals. I began with the data from the hoses and this gave me values between 0.9 and 5 nCi/g (see Table 1). This was not at all what I had anticipated. Therefore I met with Rad Engineering (Scott Newsom and Mark Richards) regarding these preliminary calculations using RCT surveys along with surface area / weight data to calculate activity levels in each crate. Due to the high surface area / density ratio of the waste (namely Plastics and Combustibles), we determined that sampling and analysis of the waste types for gross α/β would be prudent. The MDA for this analysis is approximately 1000 times less than that of the RCT surveys. The gross α/β data results could be applied directly to each waste type to determine DOT category (this data would probably indicate that the material is a non-DOT radiological material and the only DOT application would be due to the hazardous or RCRA components). Also we would be able to ensure that the EnviroCare Waste Acceptance Criteria (WAC) is being met. Furthermore the results could be multiplied by the total net weight of each crate and the total activity of each crate could then be ascertained.

Object	4" Hose	Flange	Elbow	Coupling	Metal Total
Length cm	152.40	33.02	53.34	25.40	N/A
Wt lbs	21.00	N/A	N/A	N/A	50.00
Wt g	9534.00	N/A	N/A	N/A	22700.00
ID cm (Contaminated Area)	7.62	5.08	9.53	5.08	N/A
Inner Surface Area cm ²	3648.30	526.98	1596.13	405.37	2528.48
Contaminated Surface Area cm ²	3648.30	526.98	1596.13	405.37	2528.48
Contaminated Surface Area 100 cm ²	36.48	5.27	15.96	4.05	25.28
Total Alpha dpm/100 cm ²	60.00	N/A	N/A	N/A	60.00
Total Alpha Bq/100 cm ²	3600.00	N/A	N/A	N/A	3600.00
Total Beta/Gamma dpm/100 cm ²	455.00	N/A	N/A	N/A	455.00
Total Beta/Gamma Bq/100 cm ²	27300.00	N/A	N/A	N/A	27300.00
Total Activity / Object Bq	1127325.44	N/A	N/A	N/A	781299.16
Total Activity / Object nCi	30468.26	N/A	N/A	N/A	21116.19
Activity / Mass Bq/g	118.24	N/A	N/A	N/A	34.42
Activity / Mass nCi/g	3.20	N/A	N/A	N/A	0.93

NOTE: The Metal Total data is from the summation of the 3 metal pieces (Flange, Elbow & Coupling. The Total Activities (α/β & γ) values used are the MDAs for the survey instruments).

The radiological isotopic data breakdown assumptions currently reside with Horne Engineering, utilized to profile the waste. This data was gathered from previous sampling events of the Solar Ponds water and sludge.

Current Sampling Efforts and Data Comparison

The current set of samples for radiological characterization are as follows: 98A1015-001.001 (Light Metals), 98A1015-002.002 (Combustibles), 98A1015-003.003 (Plastics). These samples were taken from materials in the A/B Ponds corridor. These sample results will be used to for all the material in this corridor with the exception of the six large submersible pumps inside of perforated "drums" (fabricated basket strainers). The reason is that due to the amount of surface rust on these items an RCT survey would not be very reliable. Therefore it was determined that additional coupons would be taken from these items and sampled by the Analytical Projects Office (APO) for gross α/β analysis. The data from this sample would then be applied only to the crates containing these pumps.

Where conditions change, as in the case of the six large submersible pumps, which is a significant subset of the LLM waste, additional coupons should be taken, sampled and analyzed for gross α/β . The data from this set of sampling should only be applied to materials represented by this sampling.

Following is a chart relating current sample data to container number to ensure that the appropriate results are applied to the correct materials.

Container #	Waste Type	Sample ID	Gross α (pCi/g)	Gross β (pCi/g)
P02945	Light Metal	98A1015-001.001	1.6	0.4
P02947	Plastics	98A1015-003.003	1.4	0.3
P02944	Plastics	98A1015-003.003	1.4	0.3
P02943	Plastics	98A1015-003.003	1.4	0.3
P02940	Plastics	98A1015-003.003	1.4	0.3
P02941	Plastics	98A1015-003.003	1.4	0.3
P02942	Plastics	98A1015-003.003	1.4	0.3
P02946	Plastics	98A1015-003.003	1.4	0.3
P02938	Plastics	98A1015-003.003	1.4	0.3
P02939	Plastics	98A1015-003.003	1.4	0.3
P03039	Combustibles	98A1015-002.002	1.5	1.9
P03037	Light Metal	98A1015-001.001	1.6	0.4
P03041	Light Metal	98A1015-001.001	1.6	0.4
P03038	Combustibles	98A1015-002.002	1.5	1.9
P03040	Combustibles	98A1015-002.002	1.5	1.9

Waste Packaging / DOT Classification

The waste was packaged by a crew of Waste Generator Qualified individuals following instructions in the Waste Generating Instructions and under the supervision of a Waste Generator Qualified Supervisor. Therefore during the only Waste Inspector inspections occurred during the nail & glue stage of the crates and a final dock inspection prior to the crates leaving the 90 day accumulation area. Furthermore, based on the above and since this waste is not destined for NTS, no RTR is necessary.

Note that the radiological contamination levels for these waste streams has not exceeded Low Level or SCO II Object limits. Therefore items for which the radiological contamination survey are less than values (i.e. below MDA for that instrument) will be packed/shipped as LSA type waste or once the calculations are complete may leave the site as a Non-Rad DOT waste. Items for which surface contamination is detected will be packaged/shipped as SCO II.

Time Frames

The schedule includes dates for completing necessary packaging of low-level mixed debris and the treatment of any hazardous debris resulting from the cleanup of the Solar Ponds.

- The anticipated completion date for packaging of low-level mixed debris is April 30, 1998.*
- The anticipated completion date for the treatment of any hazardous debris resulting from the cleanup of the Solar Ponds is August 30, 1998.*
- The anticipated completion for the packaging of the balance of the debris (i.e. Sanitary Landfill and PU&D items) is September 30, 1998.

* NOTE: These dates may be modified during the course of the project based upon on-going negotiations with CDPH&E.

Decon Process

The permit modification is currently in progress. Gary Konwinski is heading up the submittal. To date he is waiting for "as-builts" from Russ Cirillo for the PA Decon Pad. Once Gary has this information he will be able to submit the permit modification through the on-site companies and then on to CDPH&E. In order to respond to the Compliance Advisory we have identified several pieces of equipment (namely the 3 front end loaders on the C Pond and any other pieces that may be decontaminated) that we intend to decontaminate (i.e. remove from RCRA). This will allow us to size-reduce the equipment and package, probably in Sea-Land cargo containers, and ship off-site to a Low Level Metal Melt facility. The appropriate contracting of resources to mobilize the equipment for decon and profiles to the Low Level Metal Melt facility still need to put in place.

Project Folder

Six project folders have been established for this project. Two are kept with the project manager, one with Pete Sauer, one with Gary Konwinski, one with John Wrapp and one with CDPH&E. All the folders are set up with the following information with the exception of the CDPH&E copy: 1) Initial Characterization Study 11/4/97 - This is the original waste determination and process knowledge documentation. It also includes several diagrams relating debris locations. Also included are the initial photographs showing the beginning status of the project. There are no updates regarding this document currently. NOTE: This is the only section that has been provided to CDPH&E. 2) Weekly Status Data & Project Notes - This is where weekly project notes and/or milestone data have been placed. Typically updated on a weekly to bi-weekly basis. 3) In Process Documentation A/B Ponds Corridor - This is where in process photos are placed and notation made to relate the in process photo back to a beginning photo for comparison. This is typically updated every two to four weeks depending on progress made. Also the Radiological Contamination Survey Forms for the area may also be included here. 4) In Process Documentation C Pond Area - Same as #3 above except for the location of interest. 5) In Process Documentation Clarifier Area - Same as #3 above except for the location of interest. 6) RCRA Operating Record Data - Here is where items such as Waste Generating Instructions, 90 Day Accumulation set-up and close-out documentation, 90 Day Area Inspections and Waste Inventory Sheets, and any other pertinent information is kept. 7) Other Chronological Project Information (Memos, Letters, Etc.) - Internal Memos, State or other correspondence, etc. in chronological order. The folders at the project managers' area consist of original photos while all other updated copies contain color reproductions. Otherwise the five on-site folders should all be the same.

Below are some notes regarding a few of the finer points of the project including contacts and numbers where available:

Waste Generating Instructions (WGIS)

Six WGIS have been established for this project one Low Level Mixed (LLM) and one straight Low Level (LLW) for each identified waste type. The identified waste types are; plastics (i.e. rubber hoses), combustibles (i.e. wood, PPE) and light metals (obvious). The current contact for this is Craig Smith at X 6530, Pgr 212-6247.

90 Day Accumulation Areas

90 day accumulation areas must be established at the job site prior to packaging waste. This is accomplished by completing the "Authorization/Modification for Satellite and 90-Day Accumulation Areas" from the HWRM or Veronica Orozco. Once this form is completed inform Veronica about the situation and fax a copy to her. She will assign the RFP Tracking # and (it has been my experience) ensure that WEMS has this information available to set up the area in the WEMS database. Once this form is received back from Veronica and the proper physical set-up of the 90-day area is complete then waste packaging operations can begin. Note that this is a very important step in the overall process.

Ordering Crates

Prior to packaging any waste the crate(s) need to be ordered and received. One can order crates by completing an M&S Card, one card for each item. The items to be ordered for full crates are typically as follows:

Stock #	Description	Units
525-930011	Box, Plywood, 4'X4'X7', Full Size	Each
525-030019	PVC, Size 2, Full Crate	Each
525-930042	Cardboard Assembly, For Full Size Crates	Each

Once the card is completed it needs to be signed by management and the Customer Service Representative. After this the card(s) is taken to B551 Warehouse for submittal.

Photography

There is a standing order in with photography in B111. This order is for the Solar Ponds Debris Removal Project. To set up photography services just call Photography at X2658 and let them know that this is for the above referenced standing order. You should try to schedule about 3-5 working days ahead of time. Once the photos are developed they will call, usually on the order of 1-2 weeks. To make the color copies the photos are mounted by the project manager on a 8-1/2 X 11" sheet with a header indicating the negative number and the date. This sheet(s) is then submitted to photography in B111 for 3 sets of color copies using the same standing order. The copies usually take about 1 week to process.

Weekly Management Status

On a weekly basis a graphic (Excel Chart) is generated depicting crate-equivalents packed versus the projected goal. Management personnel most interested in this information is Martin Wheeler. This graphic is generally posted directly outside the project managers cube. A copy can be given to Martin.

Final Packaging Sign-Off / Shipment (Out of the Zone)

Once the waste has been packaged it is ready to be inspected and nailed & banded. These services inspection services can be procured through the appropriate contact as listed in the

Contacts Table for Waste Inspectors, Customer Service Representative (CSR) and Carpenters. Note that all three groups must be informed in order that all groups arrive at the appropriate times in the process and get the information they need. Once the final inspections are complete (both Waste Inspectors and CSR) and the appropriate RCRA Unit Custodian has been contacted, to ensure that the waste can be received in the RCRA Unit, then traffic services are procured through the traffic contact.

CONTACTS

Contact / Title	Ext / Pager	Location	Radio	Function
Bob Allen	3237 / 212-6283	T893A	N/A	Maintenance
Bob Cathel	6880 / 212-3098	T130C	N/A	Previous Project Mgr.
Craig Smith	6530 / None	T130J	4802	Customer Service Rep
Dave Preston	5527 / 212-6312	T893A	3153	Sanitary Landfill
Fred White	5386 / 212-6370	T893A	3807	Unit Custodian
Gary Chavez	6071 / 7203	750 Pad	3720	RCT Foreman
Gary Konwinski	2729 / 6139	B116	N/A	RMRS Env Mgr
Gene Brienza	7063 / 212-6227	T893A	2626	Traffic
John Wrapp	5883 / 212-3067	T130C	N/A	K-H Compliance
Kathy Abeyta	2658 / 5981	B111	N/A	Photography
Mark Davidson	None / 212-6154	B991	N/A	Waste Inspectors
Martin Wheeler	9878 / 5324	T893A	N/A	Waste Ops VP
Millie Gleason	4540 / 212-4034	PU&D	N/A	PU&D Operations
Pete Sauer	5957 / 4227	T893A	3127	Waste Ops Mgr
Randy Leitner	3537 / 1378	T130C	N/A	K-H RCRA Program
Rich Garcia	5755 / 212-6305	750 Pad	3126	750 Pad Foreman
Rick Dunn	7729 / 1165	T893A	N/A	Waste Ops Mgr
Russ Cirillo	5876 / 212-6192	T891B	N/A	RTG - Decon Pad
Scott Anderson	9645 / 212-1977	T130C	N/A	EnviroCare CTR
Scott Newsom	8148 / 212-5364	T130B	N/A	Rad Engineer
Steve DeWitt	3324 / 212-6178	T893A	3137	Building Manager
Susan Weaver	5407 / None	T893A	N/A	WEMS Support
Veronica Orozco	4493 / 5936	B116	N/A	90 Day Areas

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