B&V WASTE SCIENCE AND TECHNOLOGY CORP.
4717 Grand Avenue, Suite 500, P.O. Box 30240, Kansas City, Missouri 64112, (913) 339-2900

Site: Martha C Rose
ID #: MOD 980633069
Break: 3.1
Other:

EPA/PRC Environmental Management Inc.
TES 9
Martha C. Rose Chemicals Inc. Site

BVWST Project 45548
BVWST File C.3
January 2, 1991

U.S. Environmental Protection Agency
726 Minnesota Avenue
Kansas City, Kansas 66101

Subject: Technology Costs

Attention: Mr. Steven Kinser
Remedial Project Manager

Gentlemen:

Reference is made to your telephone conversation with our Ms. Genise Webber on December 20, 1990. As requested, information concerning costs and implementation times for landfilling and incineration of PCB-contaminated concrete and soil was compiled by the TES 9 team and is summarized in this letter. Information concerning solvent extraction of PCBs from concrete is currently being researched by the TES 9 team and will be forwarded to you upon completion. We will keep you informed of our progress on this matter.

LANDFILLING:
As requested, the following landfill facilities were contacted to determine their fee for disposal of bulk PCB-contaminated materials:

- U.S. Ecology, Beatty, Nevada.
- Chemical Waste Management, Emelle, Alabama.*

40026727
SUPERFUND RECORDS

*The Chemical Waste Management representative said that Missouri wastes are still banned from the Alabama facility by state law. However, this does not mean that the wastes cannot be disposed of at the Alabama facility, just that it is more difficult and requires more paperwork than disposal at another facility.

The disposal costs obtained from each of the facilities are listed below:

Facility	Disposal Cost per Ton
U.S. Ecology, Beatty	$110
Chemical Waste Management, Emelle	$357*

The implementation time to excavate and landfill the PCB-contaminated soil and concrete is estimated at twelve months: six months for the soil and six months for the concrete. Photocopies of the engineering calculations, including assumptions, are included in Attachment A.

INCINERATION:
The following incineration facilities were contacted to determine the cost and implementation time for incineration of the PCB-contaminated soil, concrete, and insulation:

- Chemical Waste Management, Stony Island, Illinois.
- Chemical Waste Management, Port Arthur, Texas.**
- Pyrochem/Aptus, Coffeyville, Kansas.
- Rollins, Deer Park, Texas.
- ENSCO, El Dorado, Arkansas.

The price and implementation time obtained from each of the facilities listed above are summarized in the following table:

Facility	$/ton	Total Cost (millions)	Time to Implement (months)	Shred Concrete (Yes/No)
Chemical Waste Management, Stony Island	$3500	$45.5	82	No
Chemical Waste Management, Port Arthur	$1400	$18.2	10	Yes

*Includes the $112.00 Alabama state tax which is levied on out-of-state wastes.

**Facility is not yet permitted to accept PCBs. However, it has completed its test burn and is expected to be permitted by 1992.

Facility	$/ton	Total Cost (millions)	Time to Implement (months)	Shred Concrete (Yes/No)
Pyrochem/Aptus, Coffeyville	$1500	$19.5	11	Maybe
Rollins, Deer Park	$1900	$24.7	47	No
ENSCO, El Dorado	$2500	$32.5	325	No

SSI Shredding Systems was contacted for information pertaining to shredding the concrete prior to incineration. SSI has an onsite unit capable of shredding 10 to 20 tons of concrete per hour, resulting in approximately two months to shred the concrete floors. The unit would cost approximately $100,000 including an operator. Photocopies of telephone memoranda and calculations pertaining to incineration and concrete shredding are included in Attachment B.

PCB-CONTAMINATED CONCRETE SURFACE AREA AND VOLUME:
Also as requested, the surface area and volume of PCB-contaminated concrete at PCB concentrations of greater than 500, 1000, 2500, and 10,000 ppm were calculated. Analytical results from floor wipe samples were used to calculate the surface area exceeding the various PCB concentrations and analytical results from the concrete core samples were used to calculate the volume of concrete exceeding the various PCB concentrations. Iso-concentration lines were drawn based on analytical results of the floor wipe samples and concrete core samples. The iso-concentration line plots are included in Attachment C. The surface area and volume of the concrete exceeding the various PCB-concentrations are listed below:

PCB Concentration	Area (sf)	Volume (cf)
>500	63600	5900
>1000	41400	4600
>2500	15100	1750
>10000	8600	800

ld be noted that iso-concentration lines may not be
ntative of the distribution of PCBs in the concrete since the
e floor was contaminated largely from localized spills.

Therefore, localized hot spots of high PCB concentrations would be expected. In addition, some of the PCB concentrations used to develop the iso-concentration lines were from biased samples taken in areas of obvious past spills. These samples appear to bias the iso-concentration lines toward these hot spots. Upon further consideration of methods to determine the surface area and volume of contaminated concrete, the method presented in the Feasibility Study for the Rose Site dated September 1990 submitted by the Rose Chemicals Steering Committee and prepared by Burns & McDonnell Engineers appears to be adequate to estimate the surface area and volume of PCB-contaminated concrete, based available information.

Please call should you have any questions concerning the information presented in this letter.

Very truly yours,

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

Janet S. Walstrom
Work Assignment Manager

GMW
Enclosures

cc: Ms. Martha Radke, PRC, TM, w/enclosures
File w/enclosures

U.S. Environmental Protection Agency
Mr. Steven Kinser

BVWST Project 45548
January 2, 1991

ATTACHMENT A

LANDFILL IMPLEMENTATION TIME CALCULATIONS

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT MARTHA C. ROSE

WORK ITEM 6 OF TELEPHONE MEMO: ALTERNATIVE COMPONENT COSTS FOR THE PROPOSED PLAN

PROJECT NO 45548.130 FILE NO. J.1

DATE 12/27 1990
SET UP BY R.E. FILARDI JR
COMPUTED BY
CHECKED BY DMW
PAGE NO. 1 OF 3

DO NOT WRITE IN THIS SPACE

PURPOSE

TO DETERMINE THE LENGTH OF TIME REQUIRED TO EXCAVATE AND LANDFILL THE SOIL AND THE CONCRETE AT THE SITE

ASSUMPTIONS -

(1) BULKING FACTOR FOR SOIL = 1.25

(2) BULKING FACTOR FOR CONCRETE = 1.50

(3) TWO TRUCKS PER DAY TO HAUL OF THE SOIL & CONCRETE

(4) TRUCK CAPACITY 20 CY

(5) WORK 6 DAYS A WEEK

Based on Removal Effort at the Rose Site.

WASTE-SCIENCE AND TECHNOLOGY CORP.

SUBJECT Martha C. Rose

WORK Alternative Component Costs for the Proposed Plan

PROJECT NO 45548.130 FILE NO. J.1

DATE 12/27 1990
SET UP BY REF
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CHECKED BY DMW
PAGE NO. 2 OF 3

DO NOT WRITE IN THIS SPACE

BULKING FACTORS

(a) FOR SOIL:

EARTH, DRY, PACKED - 95 #/FT³ (SEE ATTACHMENT 1)
EARTH, DRY, LOOSE - 76 #/FT³

$\frac{\text{PACKED}}{\text{LOOSE}} = \frac{95}{76} = 1.25$

(b) FOR CONCRETE:

MORTAR RUBBLE MASONRY - 150 #/FT³ (SEE ATTACHMENT 1)
CONCRETE MASONRY - 100 #/FT³

$\frac{\text{M.R. MASONRY}}{\text{CONC. MASONRY}} = \frac{150}{100} = 1.50$

ESTIMATED TIME

(a) SOIL:

TOTAL CY OF SOIL = 4800 CY (FROM TABLE II-9 OF TH FS)

$4800\ \text{CY}\ (1.25) \times \left(\frac{1}{20\ \frac{\text{CY}}{\text{TRUCK}}}\right) \times \left(\frac{1}{2\ \frac{\text{TRUCK}}{\text{DAY}}}\right) = \frac{150\ \text{DAY}}{6\ \frac{\text{DAY}}{\text{WK}}} = \boxed{25\ \text{WKS.}}$

(b) CONCRETE:

TOTAL CY OF CONCRETE = 2792 CY ≈ 2800 CY (FROM TABLE II-9 OF THE FS)

$2800\ \text{CY}\ (1.50) \times \left(\frac{1}{15\ \frac{\text{CY}}{\text{TRUCK}}}\right) \times \left(\frac{1}{2\ \frac{\text{TRUCK}}{\text{DAY}}}\right) = \frac{140\ \text{DAYS}}{6\ \frac{\text{DAY}}{\text{WK}}} = \boxed{24\ \text{WKS}}$

TRUCK CAPACITY = 40000 # → $40000\#\left(\frac{1\text{cf}}{100\#}\right)\left(\frac{\text{cy}}{27\text{cf}}\right)$ = 15 cy of conc capacity

ATTACHMENT 1

ATTACHMENT 1
p. 3 of 3

WEIGHTS AND SPECIFIC GRAVITIES

Substance	Weight Lb. per Cu. Ft.	Specific Gravity
ASHLAR MASONRY		
Granite, syenite, gneiss	165	2.3-3.0
Limestone, marble	160	2.3-2.8
Sandstone, bluestone	140	2.1-2.4
MORTAR RUBBLE MASONRY		
Granite, syenite, gneiss	155	2.2-2.8
Limestone, marble	150	2.2-2.8
Sandstone, bluestone	130	2.0-2.2
DRY RUBBLE MASONRY		
Granite, syenite, gneiss	130	1.9-2.3
Limestone, marble	125	1.9-2.1
Sandstone, bluestone	110	1.8-1.9
BRICK MASONRY		
Pressed brick	140	2.2-2.3
Common brick	120	1.8-2.0
Soft brick	100	1.5-1.7
CONCRETE MASONRY		
Cement, stone, sand	144	2.2-2.4
Cement, slag, etc.	130	1.9-2.3
Cement, cinder, etc.	100	1.5-1.7
VARIOUS BUILDING MATERIALS		
Ashes, cinders	40-45	.....
Cement, portland, loose	90	.....
Cement, portland, set	183	2.7-3.2
Lime, gypsum, loose	53-64	.....
Mortar, set	103	1.4-1.9
Slags, bank slag	67-72	.....
Slags, bank screenings	98-117	.....
Slags, machine slag	96	.....
Slags, slag sand	49-55	.....
EARTH, ETC., EXCAVATED		
Clay, dry	63	.....
Clay, damp, plastic	110	.....
Clay and gravel, dry	100	.....
Earth, dry, loose	76	.....
Earth, dry, packed	95	.....
Earth, moist, loose	78	.....
Earth, moist, packed	96	.....
Earth, mud, flowing	108	.....
Earth, mud, packed	115	.....
Riprap, limestone	80-85	.....
Riprap, sandstone	90	.....
Riprap, shale	105	.....
Sand, gravel, dry, loose	90-105	.....
Sand, gravel, dry, packed	100-120	.....
Sand, gravel, wet	118-120	.....
EXCAVATIONS IN WATER		
Sand or gravel	60	.....
Sand or gravel and clay	65	.....
Clay	80	.....
River mud	90	.....
Soil	70	.....
Stone riprap	65	.....

Substance	Weight Lb. per Cu. Ft.	Specific Gravity
MINERALS		
Asbestos	153	2.1-2.8
Barytes	281	4.50
Basalt	184	2.7-3.2
Bauxite	159	2.55
Borax	109	1.7-1.8
Chalk	137	1.8-2.6
Clay, marl	137	1.8-2.6
Dolomite	181	2.9
Feldspar, orthoclase	159	2.5-2.6
Gneiss, serpentine	169	2.4-2.7
Granite, syenite	175	2.5-3.1
Greenstone, trap	187	2.8-3.2
Gypsum, alabaster	159	2.3-2.8
Hornblende	187	3.0
Limestone, marble	165	2.5-2.8
Magnesite	187	3.0
Phosphate rock, apatite	200	3.2
Porphyry	172	2.6-2.9
Pumice, natural	40	0.37-0.90
Quartz, flint	165	2.5-2.8
Sandstone, bluestone	147	2.2-2.5
Shale, slate	175	2.7-2.9
Soapstone, talc	169	2.6-2.8
STONE, QUARRIED, PILED		
Basalt, granite, gneiss	96	.....
Limestone, marble, quartz	95	.....
Sandstone	82	.....
Shale	92	.....
Greenstone, hornblende	107	.....
BITUMINOUS SUBSTANCES		
Asphaltum	81	1.1-1.5
Coal, anthracite	97	1.4-1.7
Coal, bituminous	84	1.2-1.5
Coal, lignite	78	1.1-1.4
Coal, peat, turf, dry	47	0.65-0.85
Coal, charcoal, pine	23	0.28-0.44
Coal, charcoal, oak	33	0.47-0.57
Coal, coke	75	1.0-1.4
Graphite	131	1.9-2.3
Paraffine	56	0.87-0.91
Petroleum	54	0.87
Petroleum, refined	50	0.79-0.82
Petroleum, benzine	46	0.73-0.75
Petroleum, gasoline	42	0.66-0.69
Pitch	69	1.07-1.15
Tar, bituminous	75	1.20
COAL AND COKE, PILED		
Coal, anthracite	47-58	.....
Coal, bituminous, lignite	40-54	.....
Coal, peat, turf	20-26	.....
Coal, charcoal	10-14	.....
Coal, coke	23-32	.....

The specific gravities of solids and liquids refer to water at 4°C., those of gases to air at 0°C. and 760 mm. pressure. The weights per cubic foot are derived from average specific gravities, except where stated that weights are for bulk, heaped or loose material, etc.

WEIGHTS AND SPECIFIC GRAVITIES

Substance	Weight Lb. per Cu. Ft.	Specific Gravity
METALS, ALLOYS, ORES		
Aluminum, cast, hammered	165	2.55-2.75
Brass, cast, rolled	534	8.4-8.7
Bronze, 7.9 to 14% Sn	509	7.4-8.9
Bronze, aluminum	481	7.7
Copper, cast, rolled	556	8.8-9.0
Copper ore, pyrites	262	4.1-4.3
Gold, cast, hammered	1205	19.25-19.3
Iron, cast, pig	450	7.2
Iron, wrought	485	7.6-7.9
Iron, spiegel-eisen	468	7.5
Iron, ferro-silicon	437	6.7-7.3
Iron ore, hematite	325	5.2
Iron ore, hematite in bank	160-180	.....
Iron ore, hematite loose	130-160	.....
Iron ore, limonite	237	3.6-4.0
Iron ore, magnetite	315	4.9-5.2
Iron slag	172	2.5-3.0
Lead	710	11.37
Lead ore, galena	465	7.3-7.6
Magnesium, alloys	112	1.74-1.83
Manganese	475	7.2-8.0
Manganese ore, pyrolusite	259	3.7-4.6
Mercury	849	13.6
Monel Metal	556	8.8-9.0
Nickel	565	8.9-9.2
Platinum, cast, hammered	1330	21.1-21.5
Silver, cast, hammered	656	10.4-10.6
Steel, rolled	490	7.85
Tin, cast, hammered	459	7.2-7.5
Tin ore, cassiterite	418	6.4-7.0
Zinc, cast, rolled	440	6.9-7.2
Zinc ore, blende	253	3.9-4.2
VARIOUS SOLIDS		
Cereals, oats ..... bulk	32	.....
Cereals, barley ..... bulk	39	.....
Cereals, corn, rye ..... bulk	48	.....
Cereals, wheat ..... bulk	48	.....
Hay and Straw ..... bales	20	.....
Cotton, Flax, Hemp	93	1.47-1.50
Fats	58	0.90-0.97
Flour, loose	28	0.40-0.50
Flour, pressed	47	0.70-0.80
Glass, common	156	2.40-2.60
Glass, plate or crown	161	2.45-2.72
Glass, crystal	184	2.90-3.00
Leather	59	0.86-1.02
Paper	58	0.70-1.15
Potatoes, piled	42	.....
Rubber, caoutchouc	59	0.92-0.96
Rubber goods	94	1.0-2.0
Salt, granulated, piled	48	.....
Saltpeter	67	.....
Starch	96	1.53
Sulphur	125	1.93-2.07
Wool	82	1.32

Substance	
TIMBER, U. S. SEASONE	
Moisture Content by Weight:	
Seasoned timber 15 to 20%	
Green timber up to 50%	
Ash, white, red	
Cedar, white, red	
Chestnut	
Cypress	
Fir, Douglas spruce	
Fir, eastern	
Elm, white	
Hemlock	
Hickory	
Locust	
Maple, hard	
Maple, white	
Oak, chestnut	
Oak, live	
Oak, red, black	
Oak, white	
Pine, Oregon	
Pine, red	
Pine, white	
Pine, yellow, long-leaf	
Pine, yellow, short-leaf	
Poplar	
Redwood, California	
Spruce, white, black	
Walnut, black	
Walnut, white	
VARIOUS LIQUIDS	
Alcohol, 100%	
Acids, muriatic 40%	
Acids, nitric 91%	
Acids, sulphuric 87%	
Lye, soda 66%	
Oils, vegetable	
Oils, mineral, lubricants	
Water, 4°C. max. density	
Water, 100°C.	
Water, ice	
Water, snow, fresh fallen	
Water, sea water	
GASES	
Air, 0°C. 760 mm.	
Ammonia	
Carbon dioxide	
Carbon monoxide	
Gas, illuminating	
Gas, natural	
Hydrogen	
Nitrogen	
Oxygen	

The specific gravities of solids and liquids refer to water at 4°C., those of gases to air at 0°C. and 760 mm. pressure. The weights per cubic foot are derived from average specific gravities, except where stated that weights are for bulk, heaped or loose material, etc.

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT Martha C. Rose

WORK Alternative Component Costs for the Proposed Plan

PROJECT NO 45548.130

FILE NO. J.1

DATE 12/27 1990

SET UP BY RFF

COMPUTED BY

CHECKED BY DMW

PAGE NO. 3 OF 3

U.S. Environmental Protection Agency
Mr. Steven Kinser

BVWST Project 45548
January 2, 1991

ATTACHMENT B

INCINERATION INFORMATION

WASTE SCIENCE AND TECHNOLOGY CORP.

Owner: US EPA
Plant: Rose Chemical Unit:
Project No.: File No.: 45548.130 J.1
Title: PCB material Volume & weight Calculations

Computed By: REB
Date: 12/27 1990
Checked By: DMW
Date: 12/31 1990
Page 1 of 2

References: FS for Rose Chemical Site, June 1990, Burns & McDonnel, Table II-9

Assumptions:
1) Soil & sediment weigh 130 lb/cf.
2) 2025 cy of concrete slab weigh 4100 tons
3) High end of all soil volume ranges used
4) Volume for PCB level >10 mg/kg used

Calculations

1) Soil Volume & weight
(755 + 482 + 2600) cy = 3837 cy
3837 cy × 27 cf/cy = 103,599 cf
103,599 cf × 130 lb/cf = 13,467,870 lb
13,467,870 lb / 2000 lb/ton = 6734 tons

2) Sediments Volume & weight
(34 + 60 + 826) cy = 920 cy
(920 cy)(27 cf/cy) = 24,840 cf
(24,840 cf)(130 lb/cf) = 3,229,200 lb
3,229,200 lb / 2000 lb/ton = 1615 tons

3) Concrete Slab Volume & weight
4100 tons / 2025 cy = 2.02 ton/cy
(from table II-9)
(2025 + 211) cy = 2236 cy
(2236 cy)(2.02 ton/cy) = 4517 tons

4) Insulation weight
(10 + 2) tons = 12 tons

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P-GN-173A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

WASTE SCIENCE AND TECHNOLOGY CORP.

Owner USEPA
Plant Rose Chemical Unit
Project No. File No. 45548.130
Title PCB material volumes & J.1 weights used for pricing

Computed By REB
Date 12/27 1990
Checked By DMW
Date 12/31 1992
Page 2 of 2

A) Soil

3850 cy or 104,000 cf

13,500,000 lb or 6750 tons

B) Sediments

920 cy or 25,000 cf

3,250,000 lb or 1600 tons

C) Soil + Sediment

5000 cy or 130,000 cf

17,000,000 lb or 8500 tons

D) Concrete Slab

2250 cy or 4500 tons

E) Insulation

12 tons.

DO NOT WRITE IN THIS SPACE

P-GN-173A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

TELEPHONE MEMORANDUM

Client: USEPA

Project: Rose Chemical

Subject: Incineration of Rose materials

BVWST Project: 4558~~9~~48.130

BVWST File: D.2

Date: 12/27/90

Time: 2:30

To/From: Judy Sullivan

Company: Chem-Waste (S. Stony Island Incinerator)

Phone No.: 1-800-843-3604

Recorded by: R. Blake

Can't give a price on the insulation until they get a sample.

Unit price for cement (no larger than 6" square), soil, & sediment $1.75/lb. Can take bulk loads, but only two 20 cy rolloffs per week.

(13,000 tons)($1.75/lb)(2000 lb/ton) = $45,500,000

(13,000 tons)(40,000 lb/truck)/(2000 lb/ton) = 650 trucks

650 trucks / 2 trucks/week = 325 weeks to haul material.

325 weeks = 6.25 years.

cc: G. Webber
file

FOR HANDWRITTEN MEMORANDA ONLY

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

TELEPHONE MEMORANDUM

Client: USEPA

BVWST Project: 45548.130

Project: Rose Chemical

BVWST File: D.2

Subject: Incineration Costs of PCB materials

Date: 12/27/90

Time: 3:50

To/From: Doug Jones

Company: Chem-Waste (KC Rep)

Phone No.: (913) 681-5725

Recorded by: R. Blake

Doug Jones called to get more information about our call. He told me that if we must use the S. Stony Island Incinerator the $1.75/lb price and two rolloffs/week delivery rate are firm & ballpark quotes.

However, Chem-Waste has a permitted RCRA incinerator in Port Arthur, TX that has completed its ~~to~~ TOSCA trial burn. Chem-Waste expects Port Arthur to be TOSCA permitted early to middle 1992. The expected prices for PA are 60 - 70 ¢/lb. This incinerator could take 4-5 rolloffs/day. It has an integral shredder that can handle 1 ft square concrete flooring

(13000 tons)(2000 lb/ton)($.70/lb) = $18,200,000

(13000 tons)(2000 lb/ton)(1 truck/40000 lb) = 650 trucks

(650 trucks)(1 day/4 trucks) = 163 days = 40 weeks = 10 months

cc: G. Webber

file.

FOR HANDWRITTEN MEMORANDA ONLY

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

TELEPHONE MEMORANDUM

Client: USEPA

Project: Rose Chemical

Subject: Incineration of PCB Materials

BVWST Project: 45548.130

BVWST File: D.2

Date: 12/31/90

Time: 1:36

To/From: Dianne Shelly (after 1/1/91, call Bill Lay)

Company: Pyrochem/Aptus

Phone No.: (316) 251-6380 or (800) 292-2558.

Recorded by: R. Blake

Unapproved bid ~~base~~ PCB prices are 75¢/lb for soil/sediment/concrete 95¢/lb ~~of~~ PCB for insulation.

They may be able to accept the floor slabs without prior onsite ~~shred~~ PCB shredding.

Can take 2 roll offs/day.

~~25~~(13000 tons)(2000 lb/ton)(75¢/lb) = $19,500,000

(2 roll offs/day)(40,000 lb/roll off)/(2000 lb/ton) = 40 tons/day

13000 tons/40 tons/day = 325 days.

Randy Shaner at the P/A 800 # can confirm capacities of incinerator & shredder.

cc: G. Webber
file

FOR HANDWRITTEN MEMORANDA ONLY

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

TELEPHONE MEMORANDUM

Client: USEPA

Project: Rose Chemical

Subject: Incineration Costs for Soil Sediment, Concrete, Insulation

BVWST Project: 4554.13

BVWST File: D2

Date: 12/27/90

Time: 1:15

To/From: Bill Bradberry

Company: Rollins (Deer Park)

Phone No.: (713) 479-6001

Recorded by: R. Blake

All bulk materials would cost approx. $0.95/lb ($1900/ton).

It must all be in drums, amount of material per drum not to exceed 350 lb.

All concrete must be sized to be larger than 3" diameter.

Rollins can not prep. concrete at Deer Park.

Bill estimated that it would take 6 mo to 1 year to incinerate the material. He estimated that Rollins would be able to accept 4-5 truck loads/week. (at approx. 35,000 lbs of material per truck).

4 trucks/week × 17.5 tons/truck = 70 tons/wk

5 " / " × 17.5 " ≈ 85 " /wk

13000 tons / 70 tons/wk = 185 wks to ship = 47 months

13,000 tons / 85 tons/wk = 152 wks to ship = 38 months

(13,000 tons)(2000 lb/ton)($0.95/lb) = $24,700,000

cc: G. Webber

file

FOR HANDWRITTEN MEMORANDA ONLY

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

TELEPHONE MEMORANDUM

Client: USEPA

Project: Rose Chemical

Subject:

BVWST Project: 45548.130

BVWST File: D.2

Date: 12/27/90

Time: 2:40

To/From: Andrea Johnson

Company: Ensco

Phone No.: (504) 927-9600

Recorded by: R. Blake

Ensco only takes 1cy DOT boxes, fiber & steel drums at Eldorado. They have a repackaging plant in GA that does accept bulk loads.

Will not (unshredded) concrete, because of rebar.

May not take the insulation if it has asbestoes or if it is a fire retardant.

Soil cost is $1.25/lb.

Ensco can take 2 loads/month.

Will take concrete if shredded to 1/2" diam & 6" lenth. If we shred the concrete to a 3" diam, should be acceptable.

(13000 tons)(1.25/lb)(2000 lb/ton) = $32 500,000

(130[illegible] tons)(2000 lbs/ton)(1 truck/40000 lb) = 650 trucks

(650 trucks)(1 month/2 loads) = 325 months = 27 years

cc: G. Webber
file

FOR HANDWRITTEN MEMORANDA ONLY

B&V WASTE SCIENCE AND TECHNOLOGY CORP.

TELEPHONE MEMORANDUM

Client: USEPA

Project: ~~USEPA~~ RED Rose Chemical

Subject: Costs for shredding concrete

BVWST Project: 455048.130

BVWST File: D.2

Date: 12/27/90

Time: 2:15

To/From: SSI Shredding Systems

Company:

Phone No.: (503) 682-3633

Recorded by: R. Blake

They will get us a quote by 12/28/90. It is based on 4500 Tons of 6" deep, rebarred concrete slab to be ~~shrd~~ shredded to 3" diam or less.

They will use a model 3400.

3400 can handle 10-20 tons/hr.

4500 tons / 15 tons/hr = 300 hrs.

300 hrs / 8 hrs/day = 38 days or approx 2 months.

Cost 38729 + 16329 + (2)(5000 + 1400) + 38 (400 + 400)
= ≈ 100,000

cc: G. Webber
file.

FOR HANDWRITTEN MEMORANDA ONLY

SSI Shredding Systems
29655 SW Boones Ferry Road
P.O. Box 869
Wilsonville, OR 97070 USA
(503) 682-3633

People, Systems, Solutions

SSI

FAX NUMBERS: SALES/CORPORATE: **(503) 682-1704** ENGINEERING/PURCHASING: **(503) 682-7953**

MESSAGE TO: Robert Blake **DATE:** 12-28-90

FAX NUMBER: 913-338-6645 **TIME:** 4:00

MESSAGE FROM: Joyce Reasley **BY:**

PAGES SENT: 1 **INCLUDING COVER.** ☐ **ORIGINAL MAILED UNDER SEPARATE COVER**

IF YOU HAD TROUBLE RECEIVING THIS TRANSMISSION, PLEASE CALL (503) 682-3633

COMMENTS:

MATERIAL PREPARATION PLAN

A. SCOPE OF WORK

1. Material Description:

   SSI Shredding Systems will provide equipment for the processing of 4,500 tons of concrete to a 3" minus particle size.

B. EQUIPMENT DESCRIPTION

1. The equipment will consist of one Model 3400-H shredder and a Mark
2 powerscreen and conveyor to properly size the shredded material.

2. General System Description:

   a. Shredder: Model 3400-H, 200 HP
      75"x45" Infeed Opening
      2" Cutter Thickness

   b. Powerscreen: Standard Powerscreen Mark 2:
      Mobile 70 conveyor 6' long x 4' wide

3. Equipment Weight:

Shredder: 3400-H	36,000 Lbs.
Hydraulic Power Unit for Shredder:	10,000 Lbs.
Mark 2 Powerscreen:	12,000 Lbs.
Mobile 70 Conveyor:	6,500 Lbs.

4. General System Design:

a. Shredder:

The rotary shear shredder works on a low speed, high torque principle. Due to the low speed, extensive foundation work, noise, dust, fire, and explosion hazards are greatly minimized. These units also feature an auto-reversing, non-jamming capability. When overfeeding occurs, or non-shreddable items are introduced into the feed hopper, the machine automatically detects it by an increase in amperage draw on direct electric drive units. When amperage reaches a present level, the machine shifts into a reversing mode, clearing the cutting area. The machine then continues in the forward position and will continue this process until the material is drawn past the interfaces of the two counter-rotating blades. It is the close tolerance of these blades that performs the shearing action.

b. Powerscreen:

The powerscreen is a positive action four bearing screen operated by a diesel / hydraulic power pack. The entire system consists of a vibrating screen with a 3" square mesh and one conveyor, to take the material that is over 3" back to the shredder to be reprocessed.

C. OPERATIONAL DESCRIPTION:

1. The shredder would be fed with a front end loader.

2. The shredded material would discharge directly onto the powerscreen Mark 2 belt.

3. The belt then would feed the shredded material onto the vibrating screen which is fitted with a 3" square mesh.

4. The 3" over sized material would be directed by a fishtail chute onto a 50' radial conveyor (Mobile 70). This conveyor would feed the 3" over sized material back, and deposit into the shredder.

6. Utility Requirements:

a. Shredder:

460V, 3 Phase, 300 AMP rated load (can be operated with a diesel generator)

b. Powerscreen:

Diesel/hydraulic power pack (unless otherwise specified)

7. Noise Level:

Shredder operates at 85-90 Dba
Powerscreen operates with 85 Dba

D. **PRICING:**

1. Shredder:

Option A:	Model 3400-H	
	1st Month -	$38,729
	2nd & Subsequent Months -	$16,329

2. Powerscreen:

Mark 2 -	$ 5,000 Per Month
Mobile 70 -	$ 1,400 Per Month

3. Operator Costs

Operator (s)	$400 Per Day, Per Operator
Enroute Travel	$200 Per Day
Per Diem	$200 Per Day
Airfare	Based on available rates

Not Included: Freight (Round Trip)

U.S. Environmental Protection Agency
Mr. Steven Kinser

BVWST Project 45548
January 2, 1991

ATTACHMENT C

CONCRETE SURFACE AREA AND VOLUME CALCULATIONS

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT Volumes and Areas based on iso-concentration lines
WORK Martha C. Rose

DATE 12/27 19 90
SET UP BY DMW
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CHECKED BY R.E.F.
PAGE NO. 1 OF 6

PROJECT NO 45548.130 FILE NO. J.1

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DO NOT WRITE

Purpose: Determine volumes and areas of concrete floor with PCB-concentration exceeding 500, 1000, 2500 and 10000.

References: RI Report dated 2/90 by B&McD.
FS Report dated 2/90 by B & McD.

Iso-concentration lines are shown on Figures 1 thru 4 attached.

Surface Area is based on the floor wipe samples - Figures 1 and 2.

PCB Concentration (ug/100cm²)	Main Building (sf)	South Warehouse (sf)	Both (sf)
500	62100	1500	63600
1000	41400	900	41400
2500	15100	500	15100
10000	8500	100	8500

To determine volume - concrete core sample results were used. Two core samples were analyzed to a depth of 2", all other were analyzed in the top 0.5". PCB concentrations in the 2 deep core samples appeared to reduce at the following rates:

0-1/2" — 0%
1/2-1" — 50%
1"-1 1/2" — 11%
1 1/2"-2" — 27%

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT Volumes and Areas based on iso-concentration lines
WORK Martha C. Rose

DATE 12/27 19 90
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PAGE NO. 2 OF 6

PROJECT NO. 45548.130 FILE NO. J.1

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Therefore, PCB concentrations in the iso-concentration areas would reduce as follows

0-1/2	500	1000	2500	10000
1/2-1	250	500	1250	5000
1-1 1/2	28	55	138	550
1 1/2-2	7	15	37	150

The areas of the iso-concentrations are listed below:

PCB Conc. (mg/kg)	Main Bldg (sf)	S. Warehouse (sf)	Both (sf)
500	74700	—	74700
1000	45800	2500	48300
2500	42000	1800	43800
10000	17200	1600	18800

Volume exceeding 500 ppm:

$$\overbrace{18800\,(0.125\,ft)}^{10000} + \overbrace{[43800-18800]}^{2500}(0.083\,ft) + \overbrace{(48300-43800)}^{1000}(0.083\,f$$
$$+\underbrace{[74700-48300]}_{5000}(0.042)$$
$$= 5900\,cf = 219\,cy$$

Volume exceeding 1000 ppm

$$18800\,(0.125) + [43800-18800](0.083) + (48300-43800)(0.042)$$
$$= 4600\,cf = 170\,cy$$

Volume exceeding 2500 ppm

$$18800(0.083) + (48300-43800)(0.042) = 1749\,cf = 65\,cy$$

Volume exceeding 10000 ppm

$$18800\,(0.042) = 790\,cf = 30\,cy$$

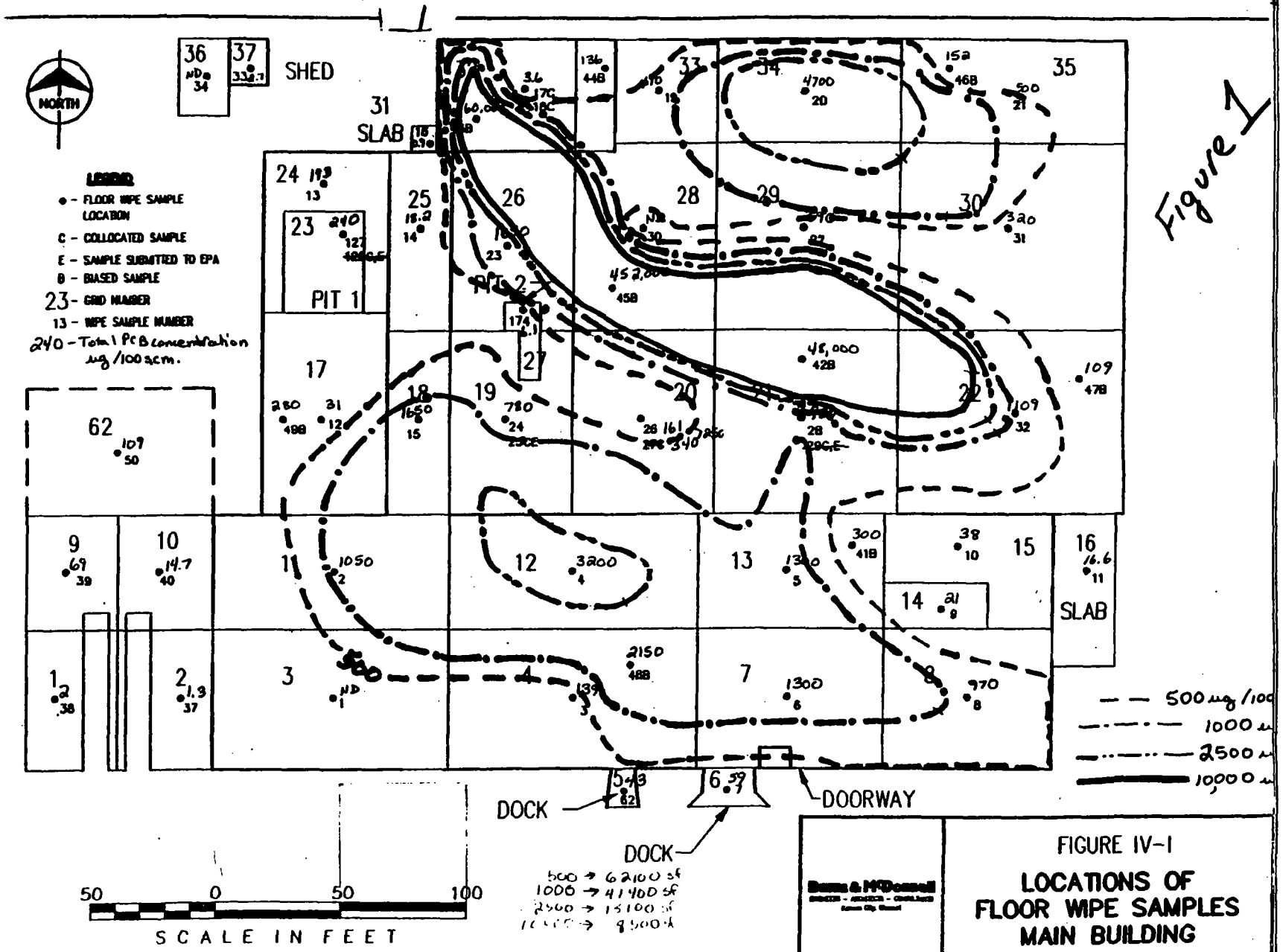

Figure 1

Burns & McDonnell

FIGURE IV-1

LOCATIONS OF FLOOR WIPE SAMPLES MAIN BUILDING

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT Volumes and Areas based on isoconcentration lines

WORK Martha C. Rose

PROJECT NO. 45548.130

FILE NO. J.1

DATE 12/27/90

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PAGE NO. 3 OF 6

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT Volumes and Areas based on non-concentration lines

WORK Martha's Cove

PROJECT NO. 455548.130

FILE NO. J.1

DATE 12/27 19 90

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COMPUTED BY [illegible]

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PAGE NO. 4 OF 6

Figure 2

NORTH

LEGEND

- ● - FLOOR WIPE SAMPLE LOCATION
- C - COLLOCATED SAMPLE
- CE - COLLOCATED SAMPLE FOR EPA
- B - BIASED SAMPLE
- 23 - GRID NUMBER
- 13 - WIPE SAMPLE NUMBER
- 240 - Total PCB concentration (ug/100 sq. cm.)

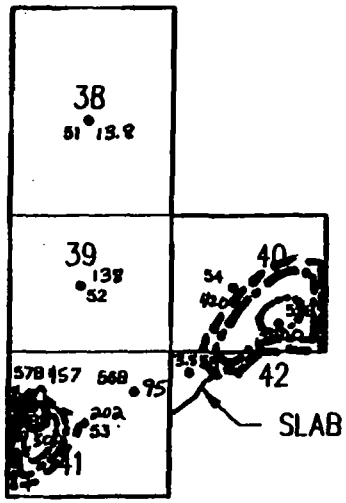
— — 500 ug/100sq.cm.

—·—·— 1000 ug/100sq.cm.

—··—··— 2500 ug/100sq.cm.

——— 10,000 ug/100sq.cm.

500 → 1500 sf
1000 → 900 sf
2500 → 500 sf
10000 → 100 sf



SOUTH WAREHOUSE

Both Buildings	
PCB	SF
500	63600
1000	42300
2500	15600
10000	8600

50 0 50 100

SCALE IN FEET

Burns & McDonnell

FIGURE IV-2

LOCATIONS OF FLOOR WIPE SAMPLES SOUTH WAREHOUSE

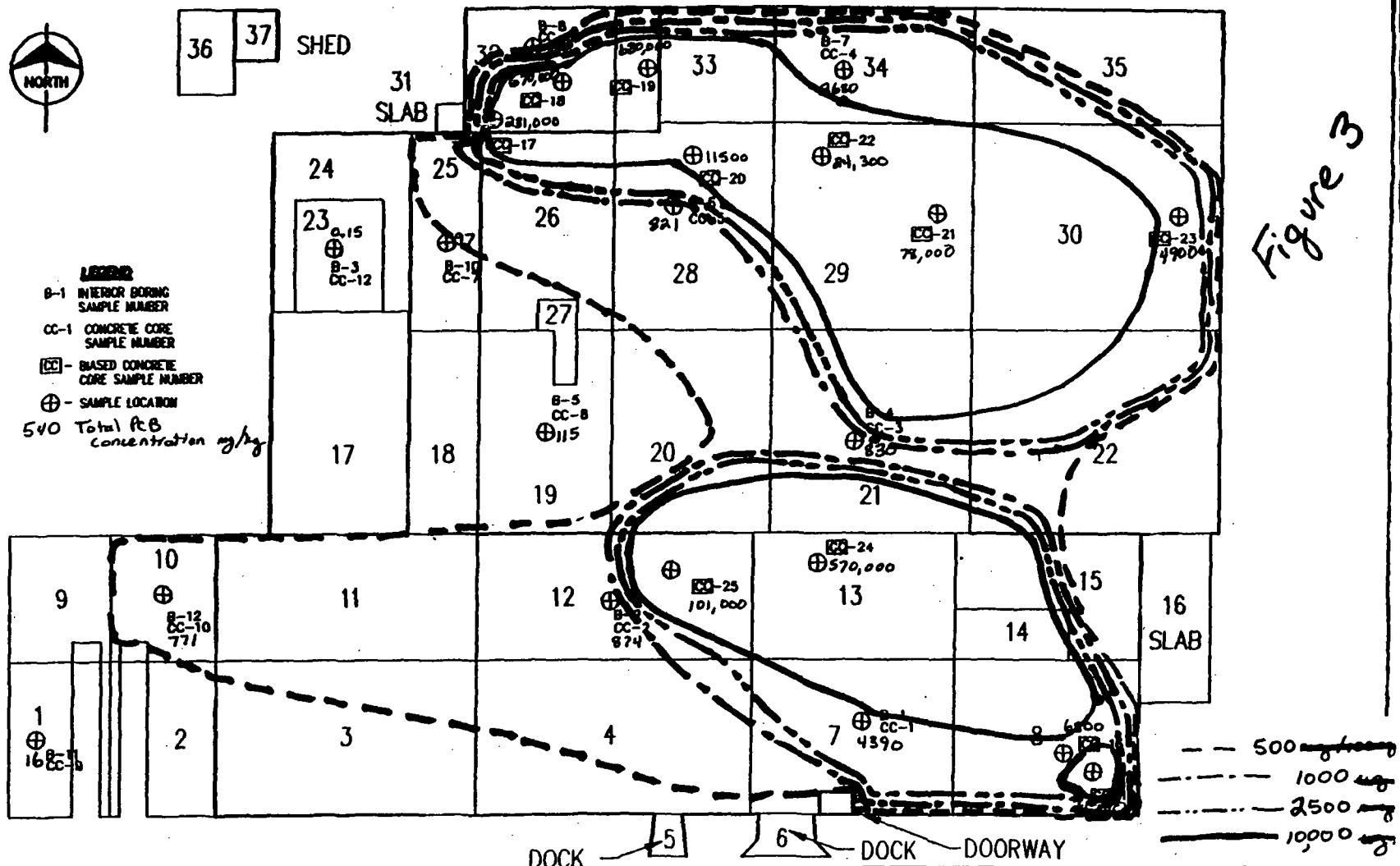


Figure 3

Burns & McDonnell

FIGURE IV-11
LOCATIONS OF CONCRETE CORE AND INTERIOR BORING SAMPLES MAIN BUILDING

WASTE SCIENCE AND TECHNOLOGY CORP.

SUBJECT Volumes and Areas based on non-concentration lines

WORK Martha C. Rose

PROJECT NO. 45548.130

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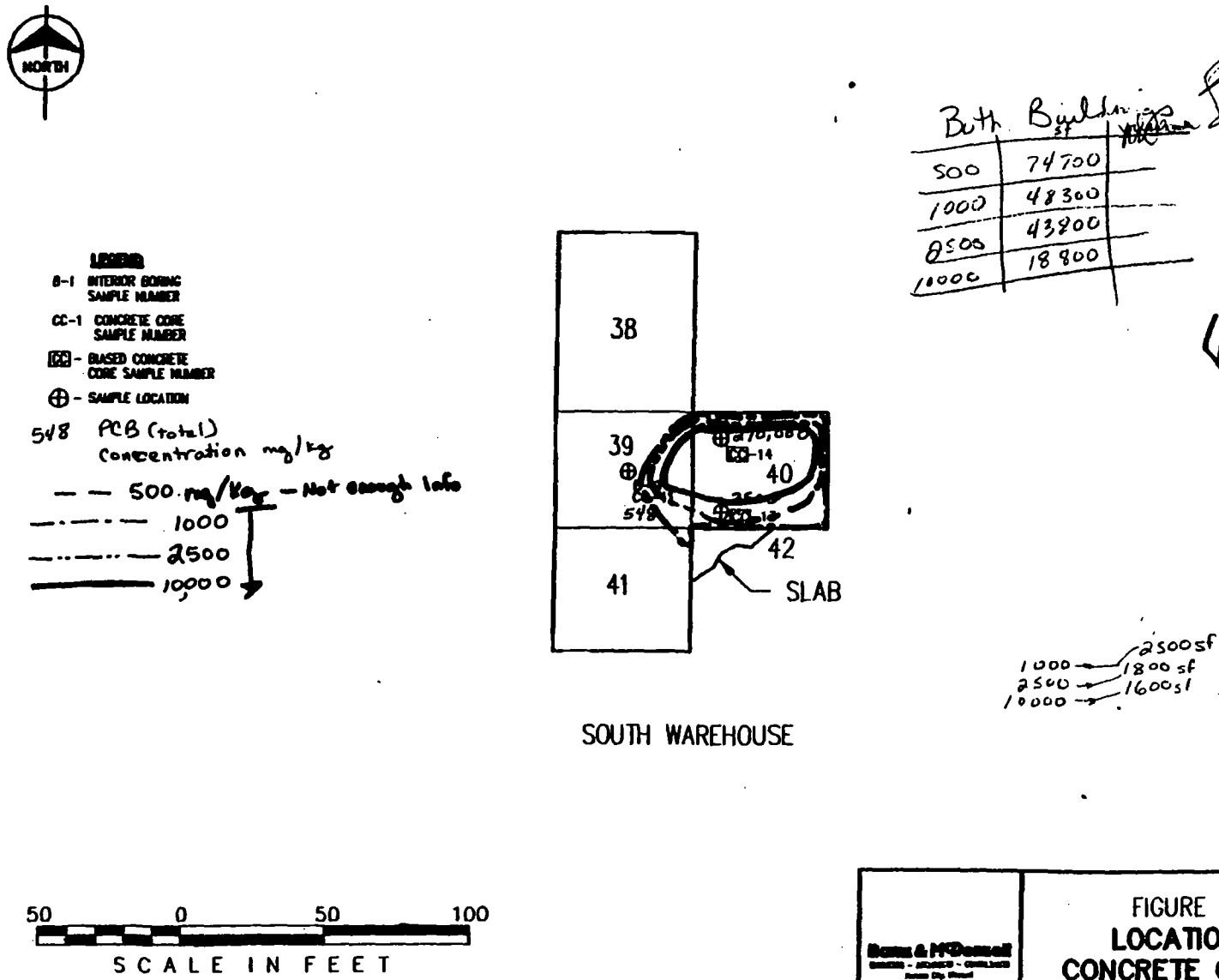
PAGE NO. 6 OF 6

6 of 6

Both Buildings

	sf	
500	74700	
1000	48300	
2500	43800	
10000	18800	

Figure 4



Burns & McDonnell

FIGURE IV-12
LOCATIONS OF CONCRETE CORE AND INTERIOR BORING SAMPLES SOUTH WAREHOUSE