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NAS PENSACOLA
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SOIL SAMPLING/EVALUATION FOR DRMO STORAGE COMPOUND NAS PENSACOLA FL
10/1/1987
ENSAFE/ALLEN AND HOSHALL

SOIL SAMPLING/EVALUATION
DRMO STORAGE COMPOUND
NAVAL AIR STATION
PENSACOLA, FL

Prepared for
Southern Division
Naval Facilities Engineering Command
Charleston, SC

Prepared by
Environmental and Safety Designs, Inc. (EnSafe)
Memphis, TN

October 1987

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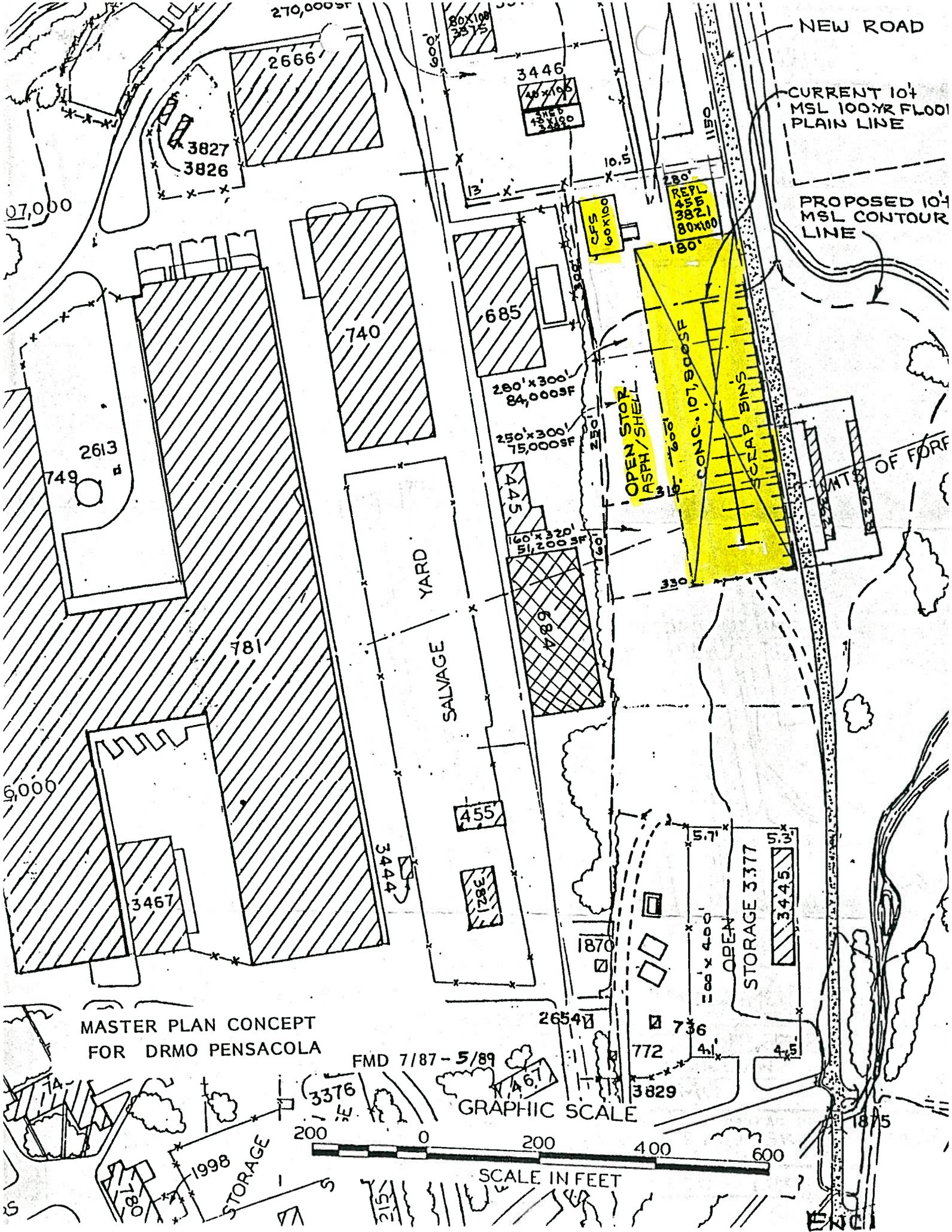
to SO

Metals

Halide

PCB-co

analyz



NEW ROAD

CURRENT 10' MSL 100YR FLOOD PLAIN LINE

PROPOSED 10' MSL CONTOUR LINE

SALVAGE YARD

OPEN STOR. ASPH / SHELL

CONC. 107,900SF

SCRAP BINS

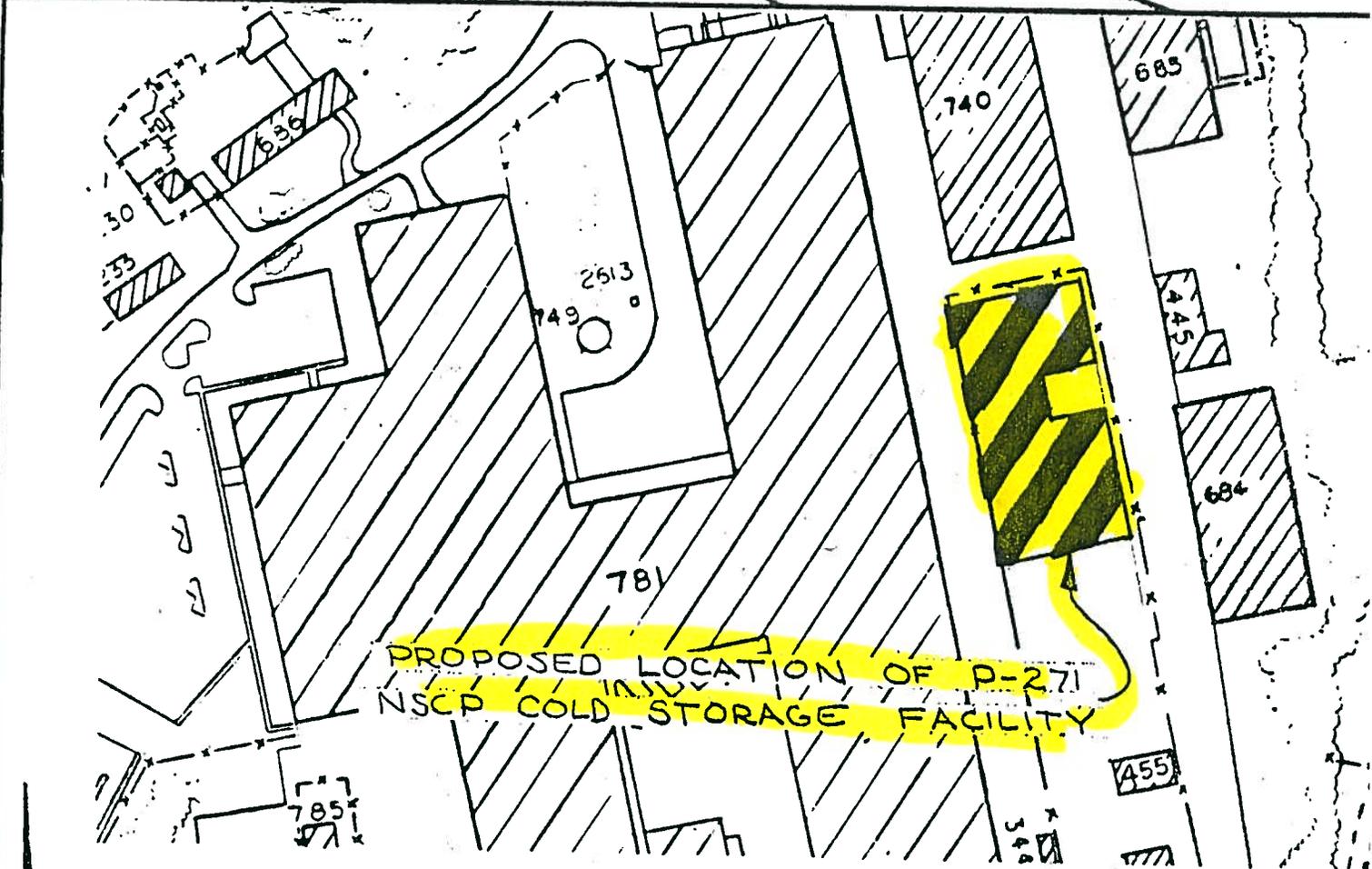
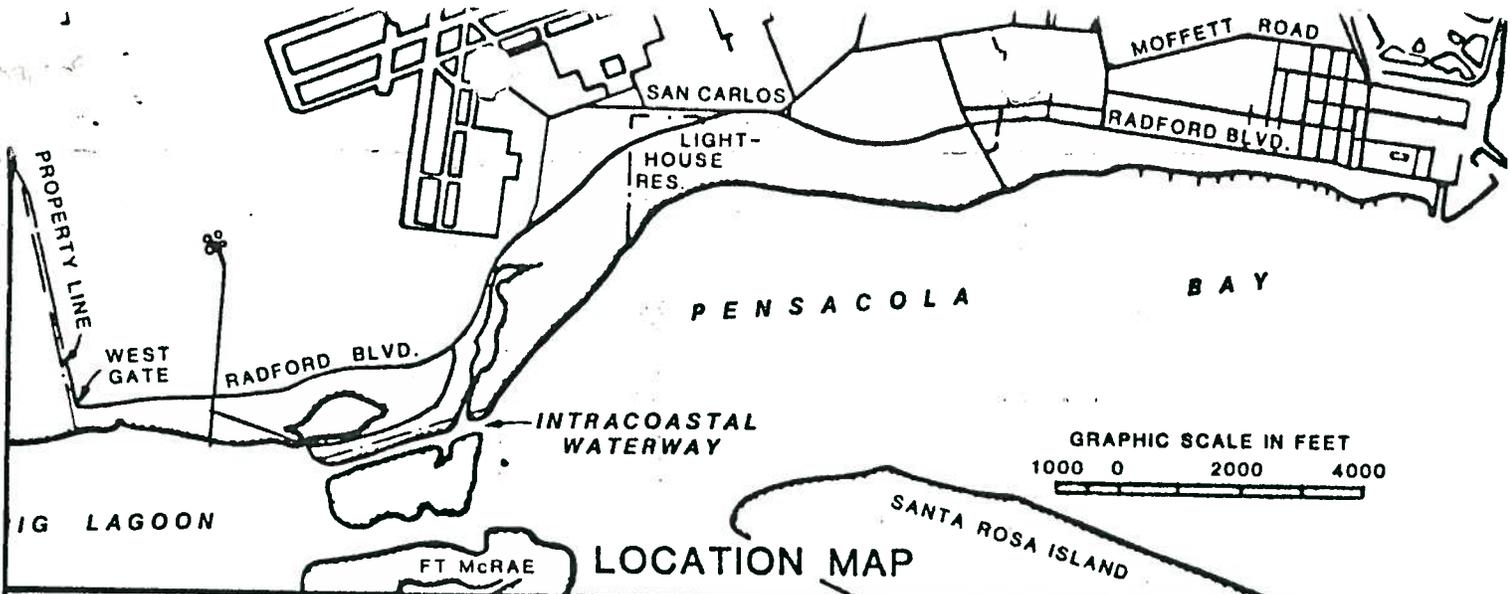
MASTER PLAN CONCEPT FOR DRMO PENSACOLA

FMD 7/87 - 5/89

GRAPHIC SCALE



ENCLOSURE



NORTH
SCALE:
1" = 200'

REF: P-271		DEPARTMENT OF THE NAVY	
DRAWN S. KOEPEL		NAVAL SUPPLY CENTER	
CHECKED S. MIX		NAVAL AIR STATION	
		PENSACOLA, FLORIDA	
P-271 NSCP COLD STORAGE FACILITY SITE PLAN (REVISED)			
APPROVED _____	DATE _____	SIZE _____	CODE IDENT. NO. 80091
APPROVED _____	DATE _____	DRAWING NO. NSCP P271-1	
SCALE SHOWN		24 SEPT 86	SHEET 1 OF

22 March 1989
updated 31 March 1989

MEMORANDUM

From: Code 1143

To: Code 11_____

Via: Code 114_____

Subj: Extension of Golf Course onto NIRP Site 1 at NAS Pensacola

Ref (a) Foncon btwn Capt Hefferman and myself on this date

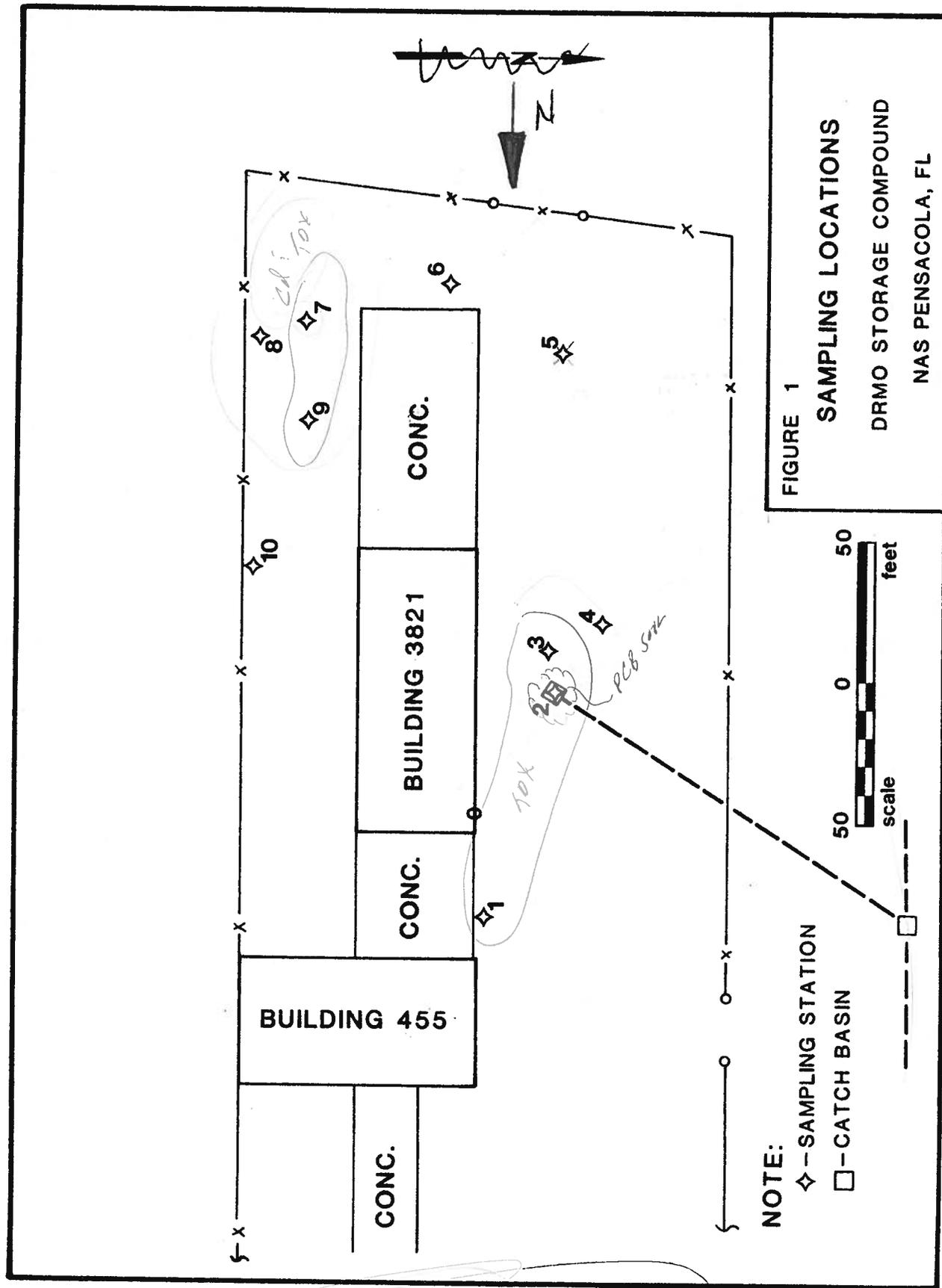
1. During reference (a) Capt Hefferman requested we reexamine our objections to construction of a golf course on site 1. As you may remember we fought this issue approximately one year ago. One of our objections at that time was site 1 being a primary reason that EPA may propose Pensacola for the NPL.

2. Our latest information indicates Pensacola will not be proposed in the April Federal Register with other Federal Facilities. If Pensacola is proposed in the future, it will probably not be until the new HRS is finalized and Pensacola is scored under it. This will probably take at least a year.

3. Regardless of NAS being proposed for the NPL, site 1 should not be developed into a golf course until more is known about the level of contamination present. The site is still an IRP site and a SWMU. We expect to submit a workplan to EPA on 21 April and hopefully start the field work 3-4 months later. Once we have the info from Phases I & II field work (4-6 months after start) we will be in a better position to tell the activity if/how/where to put the golf course. Performing work on a golf course prior to then is premature and full of liabilities including exposing workers to excessive levels of contaminants with resulting claims.

4. Based on the above, I believe we need to reiterate our position to Capt Hefferman and explain that regardless of being on the NPL, the site should remain undisturbed until we complete our Phase I work. At that time we will be in a better position to decide about the future use of this site.

Very respectfully,



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Before arrival at the compound, SOUTHDIV personnel indicated that the southern portion of the compound, used as a hazardous waste container storage area, had been surfaced with an impermeable layer, believed to be asphalt. As the PWC employee provided by the NAS to excavate through the overlay, cut through the gravel surface layer, an overlay of compacted clay was discovered. The variation in thickness of that layer is demonstrated in Table 2.

DATA INTERPRETATION

The presence/level of contamination at each test sampling station was determined by statistically comparing its characterization to a threshold level defined by the three background sample results.

Threshold Levels

SOUTHDIV selected these parameters for the preliminary assessment of contamination at DRMO's hazardous waste storage compound:

Arsenic	Barium
Cadmium	Chromium
Lead	Mercury
Selenium	Total Organic Halides
PCBs (at selected stations)	

Except for PCBs, each parameter is naturally occurring; therefore, an acceptable threshold level for each was determined by statistical methods. That "z-statistic" method was developed for SOUTHDIV, in cooperation with the South Carolina Department of Health and Environmental Conservation, relative to the closure of interim status storage compounds at the Charleston, SC Naval Shipyard. The application of the statistical method is summarized in Table 1, with the resulting threshold levels.

TABLE 1
ACCEPTABLE RESIDUAL HEAVY METALS CONCENTRATIONS
DETERMINED BY 'Z' STATISTIC METHOD

SAMPLE ID	ARSENIC CONC	
BK1	0.002	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.002	
BK3	0.066	
MEAN	0.023	
STDEV	0.037	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.023 + (2.920)*(0.037) = 0.131 mg/kg ARSENIC
VARIANCE	0.0014	
SAMPLE ID	BARIUM CONC	
BK1	0.09	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.03	
BK3	0.03	
MEAN	0.05	
STDEV	0.03	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.05 + (2.920)*(0.03) = 0.15 mg/kg BARIUM
VARIANCE	0.001	
SAMPLE ID	CADMIUM CONC	
BK1	0.002	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.002	
BK3	0.002	
MEAN	0.002	
STDEV	0.000	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.002 + (2.920)*(0.000) = 0.002 mg/kg CADMIUM
VARIANCE	0.0000	
SAMPLE ID	CHROMIUM CONC	
BK1	0.02	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.02	
BK3	0.02	
MEAN	0.02	
STDEV	0.00	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.02 + (2.920)*(0.00) = 0.020 mg/kg CHROMIUM
VARIANCE	0.000	

ACCEPTABLE RESIDUAL HEAVY METALS CONCENTRATIONS
 DETERMINED BY 'Z' STATISTIC METHOD
 (CONTINUED)

SAMPLE ID	LEAD CONC	
BK1	0.05	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.05	
BK3	0.61	
MEAN	0.24	
STDEV	0.32	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.24 + (2.920)*(0.32) = 1.18 mg/kg LEAD
VARIANCE	0.105	

SAMPLE ID	MERCURY CONC	
BK1	0.001	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.002	
BK3	0.001	
MEAN	0.001	
STDEV	0.001	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.001 + (2.920)*(0.001) = 0.003 mg/kg MERCURY
VARIANCE	0.0000	

SAMPLE ID	SELENIUM CONC	
BK1	0.002	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	0.002	
BK3	0.002	
MEAN	0.002	
STDEV	0.000	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 0.002 + (2.920)*(0.000) = 0.002 mg/kg SELENIUM
VARIANCE	0.0000	

SAMPLE ID	TOX CONC	
BK1	10	USING STUDENTS' t DISTRIBUTION, WITH (3-1) DEGREES OF FREEDOM A CONCENTRATION GREATER THAN THE THRESHOLD HAS A 5% PROBABILITY OF NOT BELONGING TO THE SAME POPULATION AS THE BACKGROUND SAMPLES
BK2	10	
BK3	10	
MEAN	10	
STDEV	0	LIMIT = MEAN + (t THRESHOLD)*(STDEV) = 10 + (2.920)*(0) = 10 mg/kg TOX
VARIANCE	0.0	

Test Sample Comparisons

Table 2 presents the comparison of the concentration of each parameter with the acceptable threshold level. Each concentration exceeding the threshold is noted as "High." Table 3 identifies all stations containing excessive concentrations of any constituent(s). All sampling stations exhibit cadmium concentrations exceeding the threshold limit; stations 1, 2, 3, 7, and 9 exhibit excessive TOXIC concentrations and stations 7, 8, 9 and 10 contain excessive concentrations of three or more parameters.

PCB Results

Soil samples from Stations 2, 3 and 4 were analyzed for PCB concentrations. Reportedly, an electrical transformer, containing PCBs leaked (and was cleaned up) in the vicinity of Station 4; runoff from that area drains across the area of Station 3, to the stormwater catch basin, Station 2. The PCB concentrations at stations 3 and 4 are well within acceptable levels applied to spill clean-up projects. Conversely, the PCB concentration in the soil within the catch basin exceeds 500 mg/kg, classifying that soil as "PCB-Containing;" requiring immediate corrective actions.

TABLE 2

COMPARISONS: SAMPLE CONCENTRATIONS VS. BACKGROUND RANGE

PARAMETER	LIMIT	STA 1	STA 2	STA 3	STA 4	STA 5	STA 6	STA 7	STA 8	STA 9	STA 10
ARSENIC	0.131	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK
BARIUM	0.15	0.03 OK	0.03 OK	0.03 OK	0.03 OK	0.03 OK	0.03 OK	0.1 OK	0.32 HIGH	0.74 HIGH	0.26 HIGH
CADMIUM	0.002	0.018 HIGH	0.062 HIGH	0.019 HIGH	0.015 HIGH	0.027 HIGH	0.02 HIGH	0.429 HIGH	0.063 HIGH	1.35 HIGH	0.414 HIGH
CHROMIUM	0.02	0.02 OK	0.02 OK	0.02 OK	0.02 OK	0.02 OK	0.02 OK	0.02 OK	0.02 OK	0.05 HIGH	0.03 HIGH
LEAD	1.18	0.05 OK	0.05 OK	0.05 OK	0.05 OK	0.05 OK	0.05 OK	0.05 OK	0.22 OK	3.9 HIGH	0.5 OK
MERCURY	0.003	0.001 OK	0.001 OK	0.001 OK	0.001 OK	0.001 OK	0.001 OK	0.001 OK	0.001 OK	0.001 OK	0.001 OK
SELENIUM	0.002	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK	0.002 OK
TOX	10	1000 HIGH	362 HIGH	180 HIGH	10 OK	10 OK	10 OK	457 HIGH	10 OK	853 HIGH	10 OK
CLAY LAYER THICKNESS/ CONDITION		3 in.	4 in.	N/A	2 in.	<1 in.	<1 in.	MIXED W/ SAND	NONE	NONE	NONE

Appendix A

PHOTO INDEX

SOIL SAMPLING
DRMO HAZARDOUS WASTE STORAGE COMPOUND
NAS PENSACOLA, FL

PHOTO INDEX

SOIL SAMPLING LOCATIONS, DRMO STORAGE COMPOUND
NAS PENSACOLA, FL

<u>Photo Number</u>	<u>Caption</u>
1&2	Sampling station Number 1, looking north. Station located between building 455 and 3821. Sample collected at edge of concrete pad sloping from former location of silver recovery unit.
3	Sample Number 2 was collected from the bottom of the stormwater catch basin. Sediment (containing many scrap metal bits) was collected after removal of the grating. Sampling station Number 3 is in the background, looking south.
4&5	Looking northeast, sampling stations 2, 3 and 4. Station 4 is in foreground, station 3 at right edge of photo and station 2 beneath storm grating.
6	Looking northeast at Sampling station Number 5.
7	Looking north at Sampling station Number 6. Portable building is at top of photo.
8	Sampling station 7.
9	Sampling station 8, looking east. This station is close to the compound fence.
10&11	Closeups of Sampling station Number 3, illustrating the clay layer present at some stations, underlain by the sand/shell material.

