Region I

Region
40-7102

Shieldalloy Corporation

DIVISION OF METALLURG, INC.
NEWFIELD, NEW JERSEY 08344
TELEPHONE 692-4200 (AREA CODE 609)

TWX 510-687 8918
SHIDALLOY NEFD

CABLE REGISTRATION
SHIELDALOY

April 22, 1987

RECEIVED
MAY 5 1987
U. S. NUCLEAR REGULATORY COMMISSION
NMSS
Mail Section

Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle & Material Safety
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Ms. Merri Horn

Dear Merri:

As we discussed, Shieldalloy Corporation has been extremely busy conducting a comprehensive environmental assessment of an Ohio plant which we are considering purchasing. Please excuse the delay in answering your questions (letter of December 11, 1986).

Unfortunately, many of the questions require historical research as all of the personnel who managed this area have left Shieldalloy. Additional questions call for future plans, others for regulatory interpretations, etc. Therefore, I have provided answers for straight-forward questions which required little research and/or thought. I expect to complete the remaining questions within two months (7, 8, 14, 15, 16, 17, 18, 33, 39, 44, 45 and 46).

DOCKETED
USNRC
MAY 5 1987
NMSS
MAIL SECTION
DOCKET CLERK

Sincerely yours,

SHIELDALLOY CORPORATION

Michael Morgenstern

Michael R. Morgenstern
Environmental Manager

MRM/ljb

Enclosures

28163

1) Table 1 contains quantities of pyrochlore consumed during 1966 to 1984. Records have not yet been compiled for 1985 and 1986. Assume 84 = 85 = 86. D-111 was constructed in 1964; production began in 1965. Assume pyrochlore consumed in 1965 = 1966. Specifications for pyrochlore ore are less than 2.0% Th and less than 0.4% U. Actual analyses average 0.7% Th, 0.1% U. The total pyrochlore consumed from 1965 to 1986 was 4.2×10^7 lbs. Previous analyses show only 10 ppm U plus Th in the product. Therefore, all U plus Th reports to the slag and/or dust. Therefore, the maximum quantity stored at SC is:

$$(4.2 \times 10^7 \text{ lbs. pyrochlore}) \left(\frac{2 \text{ lbs. Th}}{100 \text{ lbs. pyrochlore}}\right) = 840{,}000 \text{ lbs. Th}$$

$$(4.2 \times 10^7 \text{ lbs. pyrochlore}) \left(\frac{0.4 \text{ lbs. U}}{100 \text{ lbs. pyrochlore}}\right) = 168{,}000 \text{ lbs. U}$$

Based on actual analysis versus max. specs, the actual poundage is probably:

$$(4.2 \times 10^7) \left(\frac{0.7}{100}\right) = 294{,}000 \text{ lbs. Th}$$

$$(4.2 \times 10^7) \left(\frac{0.1}{100}\right) = 42{,}000 \text{ lbs. U}$$

NOTE: Our current license application requested possession limits 165,000 lbs. U and 830,000 lbs. Th. Based upon the above data, these limits should be raised to 240,000 lbs. U and 1,200,000 lbs. Th based on pyrochlore max. specs. However, based on average pyrochlore specs, we would need only 60,000 lbs. U and 420,000 lbs. Th and, therefore, do not need to raise our limits. Slag analysis should confirm this.

2) As of Aug. 1, 1986, approximately 7,500 tons of FeCb HR slag and 110,000 tons of FeCb Std. slag existed. The density is approximately 1 ton/yd^3. Therefore, the cubic yardage is equivalent to the tonnage.

3) Yearly production of FeCb HR slag is approximately 120 tons/year. Yearly production of FeCb Std. slag is approximately 2,900 tons/year.

4a) Wind: Screen analysis on the slag has not been performed, but based upon the physical nature of the slag, only insignificant quantities of dust are observed or expected. In any event, SC has not exceeded radiation limits on dust in the processing building wherein extremely dusty pyrochlore is processed (see Screen Analysis of Table 2). Therefore, no problem is expected for outdoor areas containing little dust.

4b) Water Runoff: As shown in Appendix D of SC's Environment Information Outline (EIO), the slag is practically non-leachable even under the severe conditions of the leach tests. Therefore, water runoff control is unnecessary.

4c) Baghouse dust control Appendix D shows FeCb slag with a U plus Th content of 1,200 pCi/g whereas baghouse dust contains only 70 pCi/g;

T A B L E 1

ANNUAL PYROCHLORE CONSUMPTION (LBS.)

1965 TO 1986 GRAND TOTAL

Year	Lbs. Consumed
1986, 1985, 1984	3 - 2,805,000
1983	2,444,510
1982	2,485,488
1981	2,032,262
1980	2,516,888
1979	457,600
1978	1,873,331
1977	2,371,257
1976	3,088,438
1975	1,403,052
1974	2,280,852
1973	2,625,000
1972	1,934,973
1971	1,775,120
1970	1,489,965
1969	1,083,758
1968	827,040
1967	1,284,762
1966, 1965	2 - 726,303
Total	42,000,000

National 45-608 Eye Eaze 45-708 20-20 Buff Made in USA

Table 2

2/12/87

Pyrochlore Screen Analysis

	1	2	3	4	5	6	7	8
		+60	80	100	140	200	325	-325
1	0999							
2	67036	1 %	4 %	4 %	8 %	15 %	22 %	46 %
3	007							
4	RCM 3			LOT 2325H				
5								
6								
7	#9							
8	RCM	2 %	5 %	5 %	10 %	17 %	22 %	39 %
9								
10				LOT 2325K				
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

therefore, wind and water runoffs should be of no concern. The dust is, however, surrounded by slag as a precaution.

5) All SC slag by-products are segregated. Employees are instructed to segregate FeCb HR and FeCb Std. slags to two clearly marked radioactive piles. No materials are permitted to be removed from this pile. Other slags are not generated from source material. As a precaution, SC internally traverses all piles with a Geiger counter to insure no source material was inadvertently added.

6) See Figure 1.

9) Both tests are leach tests; sampling and analysis procedures and specifications are described in "Test Methods for Evaluating Solid Waste" (EPA SW-846) and ASTM standards, Test Method D-3987-81, "Shake Extraction of Solid Waste with Water."

10) See Figure 2. Ores are primarily stored in Warehouse G, occasionally in Warehouse D and rarely in Warehouse A.

11) The ore arrives on-site by trucks in drums only.

12) See Table 1. Uranium and thorium inputs for any year are determined by multiplying the yearly consumption by 0.1% U (average) and 0.7% Th (average), or 0.4% U (max.) and 2.0% Th (max.) respectively. Pyrochlore screen analysis is provided as Table 2.

13) As stated in the EIO, Section 3.2-3a, less than 1% of the charge goes to the furnace. Pyrochlore is 57% of the charge. Therefore, approximately 0.2 lb. U plus Th is released to the stack. With a 99% dust collector efficiency, only 0.002 lb. U plus Th would be released to the environment per heat.

19) As described in Section 3 of the EIO, p. II-2, the furnace is tilted and the slag and metal mixture pour into a pot. By the time the last pot fills, the metal and the slag have separated by density. Additional molten metal from the furnace flows into the pot and sinks to the bottom due to its velocity. Separated slag at the top of the first pot overflows into a second pot. Therefore, at the end of the pour, the first pot contains metal with slag on top. The second pot contains only slag. After both cool, they are inverted. Slag and metal in the first pot are separated. The slag from the first pot and the slag in the second pot are then transferred to the radioactive slag piles. No additional processing is done to the slag.

20) See response to 19.

21) Dept. 111 emissions were originally controlled by an American Air Filter baghouse (AAF). This unit was "grandfathered," therefore, a permit was not required. In Sept. 1985, construction began on a replacement dust collector (Flex-Kleen). Although not yet finished, in July 1986, NJDEP issued Permit #074932 and operation of both collectors began. In Aug. 1986, SC was cited for permitting fugitive particulates from Dept. 111

DEPT 119 LOCATION PLOT

REVISED 12/86

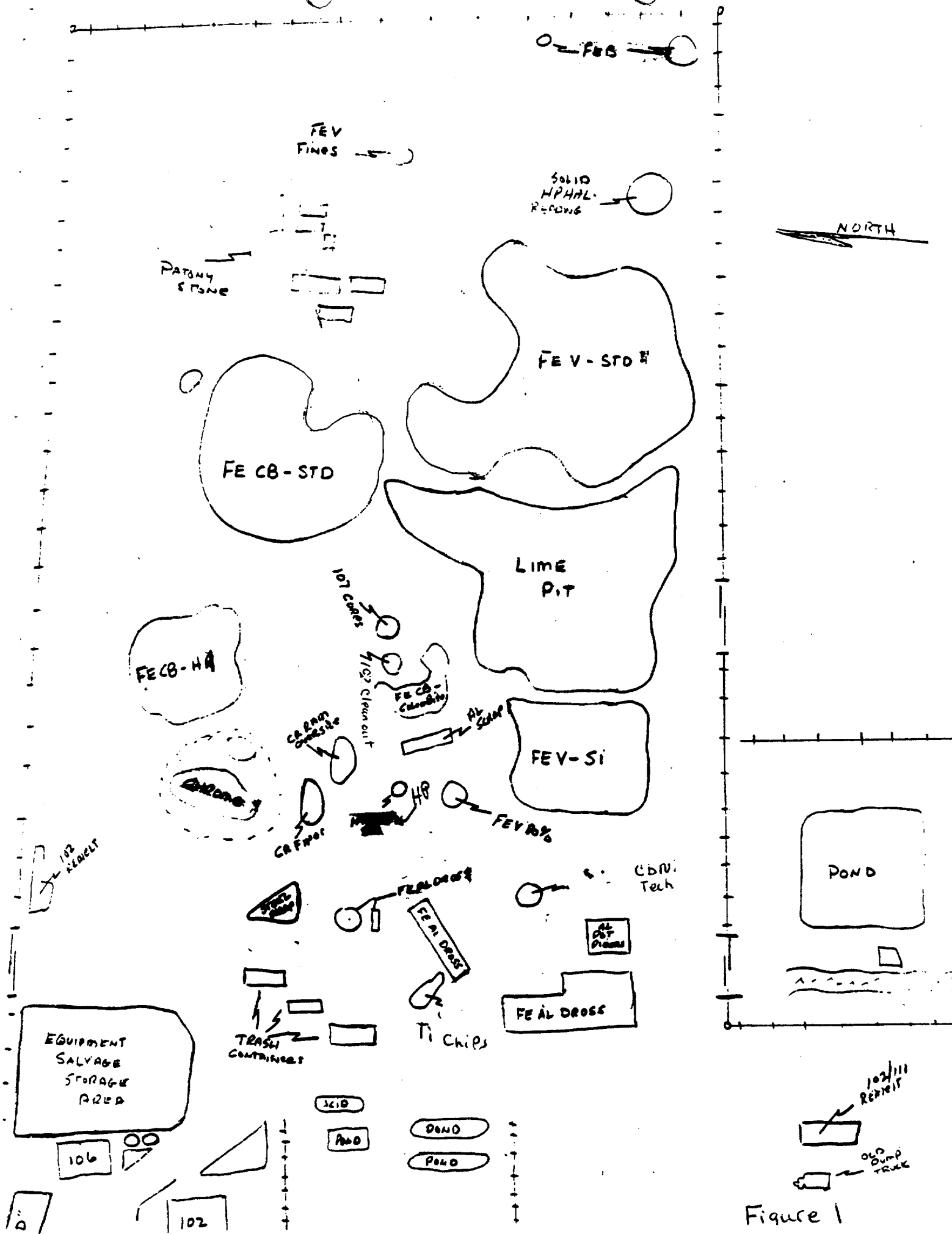
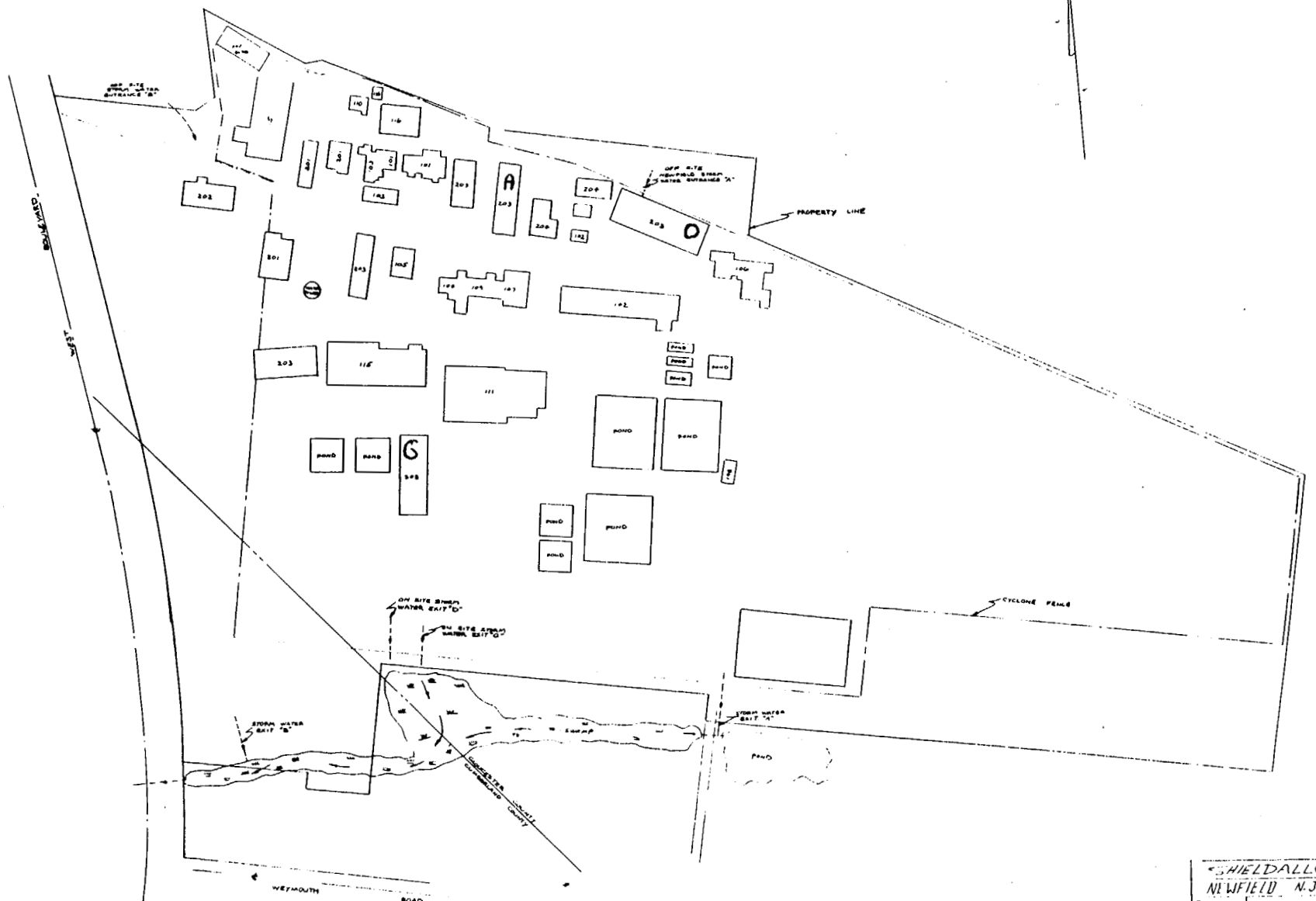


Figure 1



SHIELDALLOY CORP
NEWFIELD N.J.

during the production of non-radioactive FeV and ordered to cease the emissions. On Mar. 18, 1987, SC was granted an extension on the above order until May 1, 1987. On Mar. 23, 1987, the NJDEP conducted a site visit to inspect Dept. 111. As a result of that inspection, SC was found to be in compliance and approved the installations with both collectors operating although the Flex-Kleen was not yet completed. Although the DEP was satisfied with a partially completed installation, SC has internally decided to go one step further and complete the installation of the Flex-Kleen baghouse and run two fully operational baghouses simultaneously. A copy of the permit is included as Enclosure 1.

22) Although I have not had the time to dig out the data, apparently Dr. Silvernail analyzed the slag, the metal, the dust and the raw materials and confirmed the results by a material balance on U and Th. He found less than 10 ppm U or Th in the metal. See EIO, Section 3, p. II-2.

23) The AAF dust collector is rated for 150,000 cfm, but consists of six chambers (25,000 cfm/chamber). One is always in a cleaning cycle, therefore, the actual rating is 125,000 cfm. As of 1986, the new Flex-Kleen baghouse and the old AAF baghouse have been operating simultaneously. The Flex-Kleen baghouse utilizes continuous cleaning and is rated accordingly at 200,000 cfm. Therefore, for 1986 and the future, the baghouses will collect 325,000 cfm, a 160% improvement upon pre-1986 conditions.

24) This problem has been corrected and approved with the addition of the Flex-Kleen baghouse. All dust now enters the system.

25) FeV production.

26) No.

27) A "doghouse" has been constructed around the scales and connected to the existing baghouse/hood system to improve collection of dust generated while dumping drums of pyrochlore in a weighing and transport bin.

28) Based upon Dr. Silvernail's report, air sampling was thought unnecessary as the report showed that physical conditions (e.g., quantity of material used and going to the stack, the efficiency of the collector, etc.) made it impossible to ever exceed regulated levels.

29) See Appendix A, attached Figure 3 and Section 2.1.2.

30) No.

31) See Figure 8.1 of Appendix B. Note slags are located in the eastern third of the plant property.

32) See response to question 28.

34) See Figure 3: Aerial Photograph. Enclosed is a topographic map (topo) showing creeks, nearby residents, streets, etc. along with a delineation

Form VEM-017
1/86

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
AIR POLLUTION CONTROL PROGRAM
BUREAU OF ENGINEERING AND TECHNOLOGY

All Correspondence must indicate your APC PLANT ID NUMBER

Permit/Certificate Number 074932 LOG NUMBER 860648A APC PLANT ID 55048

(Mailing Address)

METALLURG INC
P O BOX 68
NEWFIELD NJ 08344

(Plant Location)

SHIELDALLOY DIVISION
WEST BOULEVARD
NEWFIELD

Applicant's Designation of Equipment DEPT 111 FLEX-KLEEN BAGHOUSE
N.J. Stack No. 032 No. of Stacks 001 No. of Sources 01
Original Approval 07/01/86 Effective 07/01/86 Expiration 07/01/91

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT
AND
CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

THIS PERMIT AND PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A.26:2C-9.2), AND IS BEING ISSUED WITHOUT A FIELD INSPECTION. HOWEVER, FIELD INSPECTIONS ARE SCHEDULED FOR THE FUTURE AND APPROPIATE ACTIONS WILL BE TAKEN IF SUCH INSPECTIONS DISCLOSE DEVIATIONS FROM YOUR APPLICATION.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE)

THIS DOCUMENT MUST BE READILY AVAILABLE FOR INSPECTION AT THE PLANT.

N.J. Department of Environmental Protection
Division of Environmental Quality
CN-027
Trenton, New Jersey 08625

Approved by: [signature]
Supervisor
New Source Review Section

GLOUCESTER COUNTY
DEPARTMENT OF HEALTH

07/21/86-05

Enclosure1

between restricted and unrestricted areas. A USGS Newfield quandrangle with SC plant boundry delineation is also enclosed.

35) See enclosed topo for surface runoff flow directions. SC monitors Outfall 001 for temperature (30 degrees C max.), total suspended solids (23 kg/day max.), oil and grease (10 mg/l max.), hexavalent chromium (0.1 mg/l max.), total chromium (0.13 kg/day max.), flow in conduit and total suspended solids (1,000 mg/l max.). For 1985, SC averaged 22, 3.3, 3.9, 0.013, ---, 390,000 gallons per day and 116 respectively. Radiation monitoring is not performed.

36) Dept. 111 room 290,000 air exhaust is collected by and through the Dept. 111 baghouse system.

37) Leachate analysis indicates negligible leachable radiation, therefore, with no leachate, the outfall should contain no more than background levels.

38) Based upon discussions with the Mayor of Newfield, the only public parklands and/or wildlife reserves within two miles of SC is the Newfield Park located 2,500 ft. NNE of the slag.

40) The Mayor of Newfield indicated the only places of historical significance is a library located 2,500 ft. NNE of the slags.

41) SC lies between longitudes 39 degrees-32 feet-38 inches and 39 degrees-32 feet-18 inches, and latitudes 75 degrees-1 foot-29 inches and 75 degrees-0 feet-38 inches.

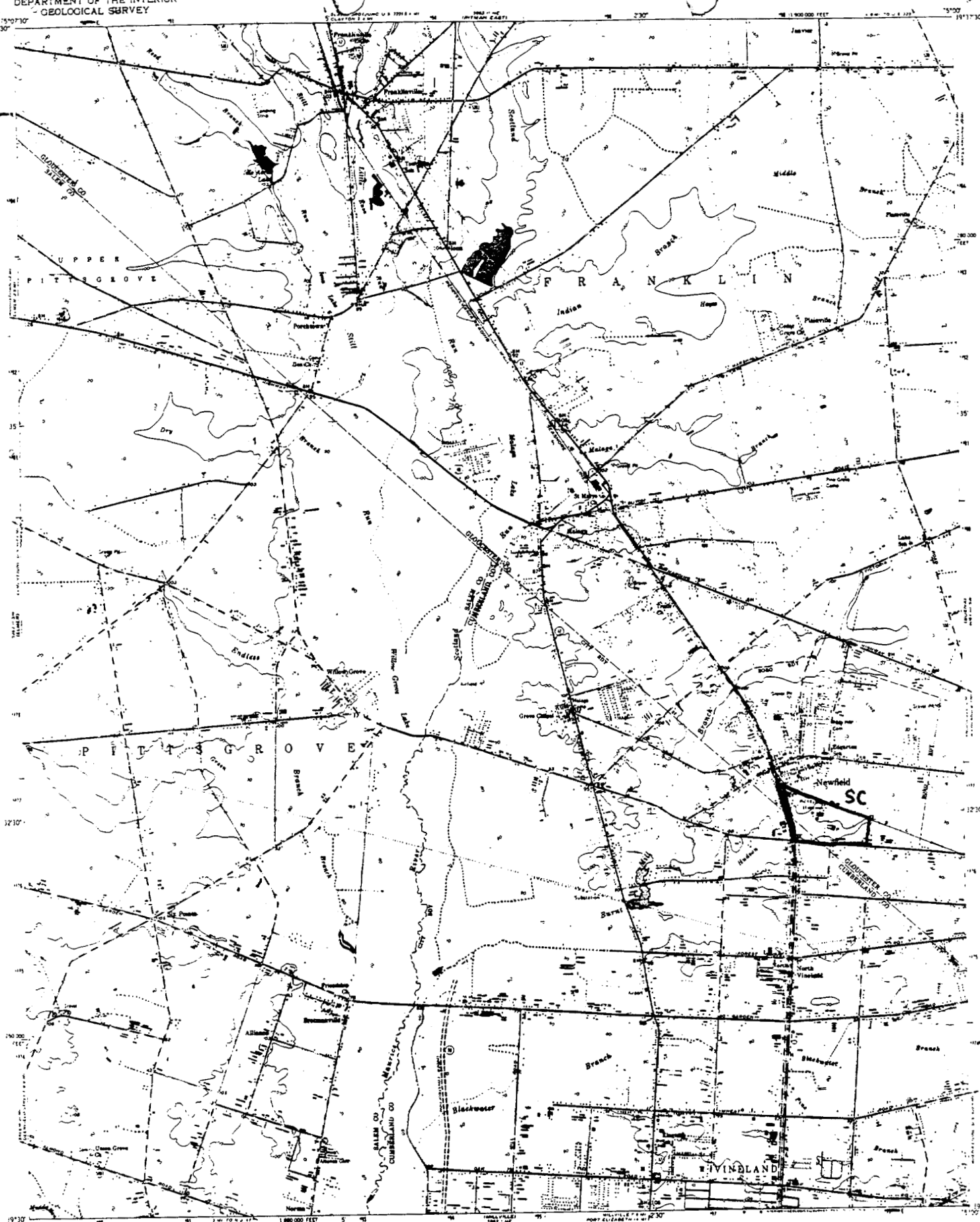
42) SC's plant occupies approximately 60 acres in south-central New Jersey in the small town of Newfield. The major population center adjacent to Newfield is Vineland, New Jersey. Land use in the vicinity of the SC plant includes residential, commercial, agricultural and light industrial use.

43) As seen in Figure 7, the entire Borough of Newfield does not lie in a 100 year flood plain. As seen in Figure 1 of the EIO, a small portion of SC lies in Cumberland County. Flood maps are unavailable for this area. It is not expected to be a flood area and in any event, no source materials are in this area.

46) Comprehensive soil, slag, sediment, water, etc. sampling has been performed by the NRC and NJDEP. SC will rely upon their expertise pending any problems.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NEWFIELD QUADRANGLE
NEW JERSEY
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USC&GS and New Jersey Geodetic Survey

Culture and drainage in part compiled from aerial photographs taken 1951. Topography by plane-table surveys 1953

Polyconic projection. 1927 North American datum

10,000-foot grid based on New Jersey coordinate system

Red tint indicates area in which only landmark buildings are shown

1,000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue

Revisions shown in purple compiled from aerial photographs taken 1972. This information not field checked

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy duty — Light duty
Medium duty — Unimproved dirt

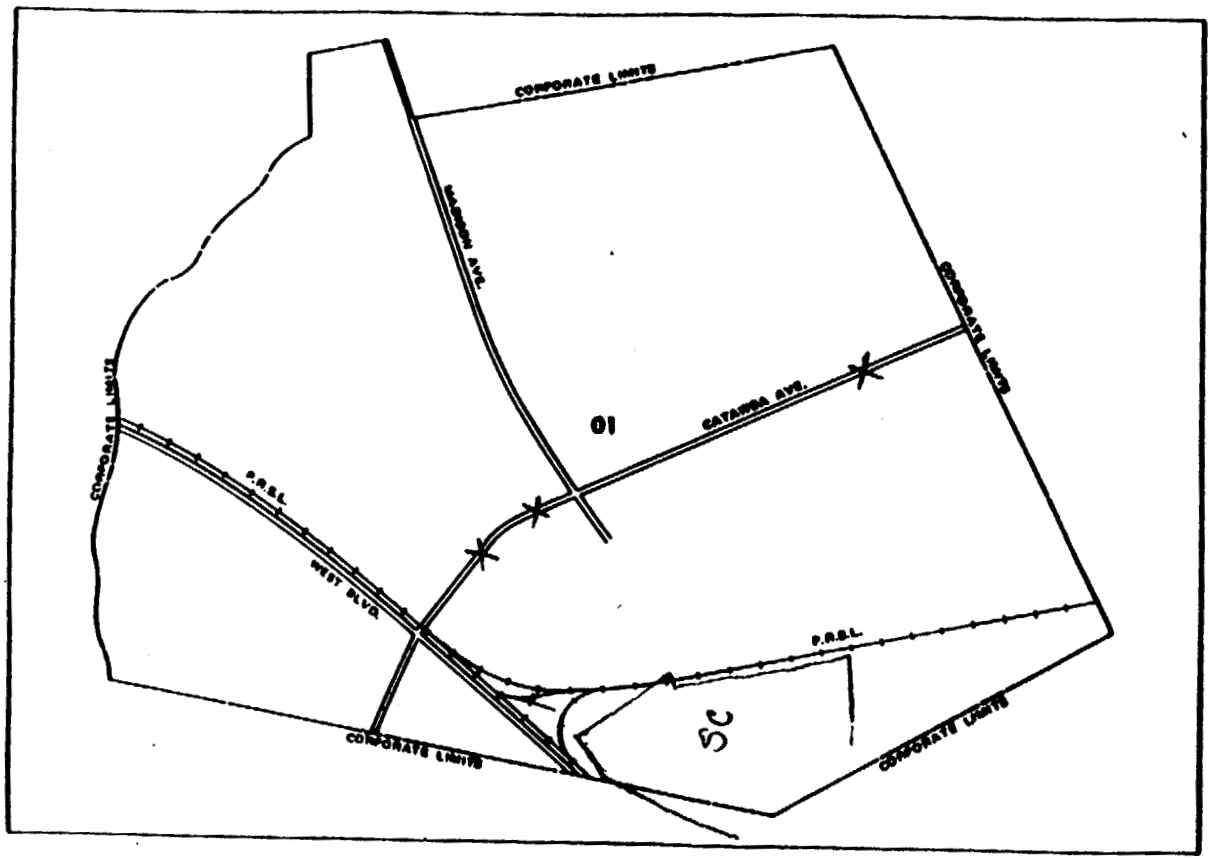
U. S. Route — State Route

QUADRANGLE LOCATION

NEWFIELD, N. J.

N3930—W7500/7.5

1953
PHOTOREVISED 1972
AMS 5963 I SE—SERIES V822



LEGEND

SPECIAL FLOOD HAZARD AREA — ZONE A

Note: These maps may not include all Special Flood Hazard Areas in the community. After a more detailed study, the Special Flood Hazard Areas shown on these maps may be modified, and other areas added.

CONSULT NFIA SERVICING COMPANY OR LOCAL INSURANCE AGENT OR BROKER TO DETERMINE IF PROPERTIES IN THIS COMMUNITY ARE ELIGIBLE FOR FLOOD INSURANCE

INITIAL IDENTIFICATION DATE
JULY 1, 1977

FIGURE 7: Newfield Flood Hazard Map

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

FLOOD HAZARD BOUNDARY MAP N - 01

MAP INDEX

BOROUGH OF NEWFIELD, NJ
(GLOUCESTER CO.)

COMMUNITY NO. 340549A