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DRAFT

PA. 15

Location Number: (CA00401)

HEALTH AND SAFETY RESEARCH DIVISION

REPORT OF INCLUSION SURVEY AT LOCATION CA00401
MAYER STREET
BRIDGEVILLE, PENNSYLVANIA 15017

Investigation Team

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WORK PERFORMED AS PART OF THE
RADIOLOGICAL SURVEY ACTIVITIES PROGRAM

Prepared by the
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INTRODUCTION

An inclusion radiological survey of location CA00401 was conducted on September 27, 1985 by Oak Ridge National Laboratory. This property, located at Mayer Street, is classified as a commercial manufacturer. This survey was conducted using methods as defined in the Vicinity Properties Management and Implementation Manual, UMTRA-DOE/AL-050601 (June 1984) and the RASA UMTRA Procedures Manual (June 1985). General location information is provided in Table 1, radiological survey results are given in Table 2 and 3, and supporting graphics are provided in Figure 1. Different views of the property are provided in Figures 2 through 10. All measurements are gross readings; background has not been subtracted.

The conversion formula used is $y = x/CF$, where 'y' equals the exposure rate in $\mu R/h$, 'x' equals the scintillometer measurements in kcpm, and 'CF' equals the conversions factor determined in the field through a direct correlation between PIC and scintillometer measurements in kcpm/ $\mu R/h$. For this property, CF equals 2.

SIGNIFICANCE OF FINDINGS

The nineteen contaminated regions found outdoors in scattered areas about the vanadium parcel of the property as shown on Figure 1, encompass ~3600 m². The high outdoor gamma (300 $\mu R/h$) was measured in a 965 m² area of the large parking lot northwest of the ore storage and shipping building (building #2), Region L. Regions C, D, L, and P, as noted on Figure 1, were found to exceed the outdoor gamma inclusion criterion of background plus 25 $\mu R/h$ when averaged over an area of 100 m². Many of these regions had scattered contaminated material within its boundaries. Elevated gamma levels were also spotty in Regions A, K, and O, as noted on Figure 1. Elevated gamma levels ranging from 20 to 30 $\mu R/h$, found northwest of building #14A, are the result of natural radiation inherent in phosphate residues. In addition, gamma levels ranging from 16 to 30 $\mu R/h$, found in a slag dump west of Region D, are due to scattered pieces of ore in the pile; whereas, gamma levels south of Region P (14-18 $\mu R/h$), are the result of natural radiation inherent in gravel and rock material. Three point sources scanning 100, 80, and 70 $\mu R/h$, were found north of Region O, east of Region O, and north of Region M, respectively, as denoted by an asterisk on Figure 1. Indoor gamma scans were not conducted since outdoor contamination deemed the property includable.

The results of the radionuclide analyses demonstrate that the net area-weighted average concentration of ²²⁶Ra in the surface soil at locations S15 (Region Q) and S16 (Region M), are 25 and 5 pCi/g, respectively. Furthermore, if the mean ²²⁶Ra concentrations are calculated from surface samples taken in Regions A, D, L, and P, their respective net area-weighted averages are 20, 7.4, 54, and 14 pCi/g. These values exceed the surface soil inclusion criterion of 5 pCi/g above background when averaged over an area of 100 m².

Based on these screening results, it is recommended that location CA00401 be included for further consideration by the UMTRA Project.

Location Number: CA00401

RECOMMENDATION

RECOMMENDED FOR: Inclusion

RECOMMENDATION BASIS: Outdoor gamma is $>25 \mu\text{R/h}$ above background
averaged over 100 m^2
 ^{226}Ra is $>5 \text{ pCi/g}$ above background in surface
 15 cm soil layer averaged over 100 m^2

Location Number: CA00401

Table 1. Location Information

Property Information

LOCATION:	Mayer Street Bridgeville, PA 15017
OCCUPANT/TENANT:	Universal-Cyclops Cytemp Specialty Steel Division
TELEPHONE:	Not given

Owner Information

OWNER:	Cyclops Corporation
ADDRESS:	650 Washington Road Pittsburgh, PA 15228
TELEPHONE:	(412) 561-6300
PROPERTY CLASSIFICATION:	Commercial, Vanadium Parcel
TOTAL AREA OF PROPERTY:	~90,000 m ²
STRUCTURES ON PROPERTY:	Numerous manufacturing buildings

Table 2. Radiological Screening Survey Results

OUTDOOR SCREENING DATA

BACKGROUND EXPOSURE RATE: 9 $\mu\text{R/h}$

BACKGROUND + 1 STANDARD DEVIATION: 12 $\mu\text{R/h}$

BACKGROUND EXPOSURE RATE RANGE: 8-10 $\mu\text{R/h}$

EXPOSURE RATE RANGE IN CONTAMINATED REGIONS: A: 30-100 $\mu\text{R/h}$ G: 14-20 $\mu\text{R/h}$ M: 16-20 $\mu\text{R/h}$
 B: 30-40 $\mu\text{R/h}$ H: 30 $\mu\text{R/h}$ N: 70 $\mu\text{R/h}$
 C: 18-50 $\mu\text{R/h}$ I: 20 $\mu\text{R/h}$ O: 16-20 $\mu\text{R/h}$
 D: 20-100 $\mu\text{R/h}$ J: 70 $\mu\text{R/h}$ P: 40-120 $\mu\text{R/h}$
 E: 20-40 $\mu\text{R/h}$ K: 12-16 $\mu\text{R/h}$ Q: 16-41 $\mu\text{R/h}$
 F: 20-40 $\mu\text{R/h}$ L: 40-300 $\mu\text{R/h}$ R: 20-30 $\mu\text{R/h}$
 S: 10-40 $\mu\text{R/h}$

HIGHEST OUTDOOR GAMMA (HOG) IN CONTAMINATED REGION: 300 $\mu\text{R/h}$

LOCATION OF HOG: Region L

POINT SOURCES*: *100, 80, \neq 70 $\mu\text{R/h}$

*Point source measurements are discussed in "Significance of Findings" section.

Table 2. Radiological Screening Survey Results (Continued)

OUTDOOR SCREENING DATA

ESTIMATED AREA OF OUTDOOR
CONTAMINATION BY REGION:

A: 28 m ²	G: 17 m ²	M: 281 m ²
B: 20 m ²	H: 1 m ²	N: 2 m ²
C: 454 m ²	I: 1 m ²	O: 160 m ²
D: 799 m ²	J: 1 m ²	P: 818 m ²
E: 1 m ²	K: 5 m ²	Q: 88 m ²
F: 2 m ²	L: 965 m ²	R: 15 m ²
		S: 2 m ²

NET ESTIMATED AREA-WEIGHTED
AVERAGE BY REGION**:

A: 16 μR/h	G: 1.4 μR/h	M: 9 μR/h
B: 5.2 μR/h	H: 0.2 μR/h	N: 1.2 μR/h
C: 25 μR/h	I: 0.1 μR/h	O: 9 μR/h
D: 51 μR/h	J: 0.6 μR/h	P: 71 μR/h
E: 0.2 μR/h	K: 0.2 μR/h	Q: 17 μR/h
F: 0.4 μR/h	L: 161 μR/h	R: 2.4 μR/h
		S: 0.3 μR/h

$$\text{**Formula used: } GAW = \frac{\sum_{i=1}^n G_i A_i}{100}$$

where:

- GAW = the area-weighted exposure rate in [μR/h]
- G_i = net average exposure rate in [μR/h]
(G_i = GGross - GBackground)
- A_i = area of region involved in [m²] and,
- 100 = threshold area in [m²]

Table 3. Extended Survey Results

Outdoor Extended Data

Soil Sample Summary

Soil Sample Number	Region Sampled	Sample Depth (cm)	²²⁶ Ra Concentration (pCi/g) (Canalysis)	Representative (Biased) Sampling Area m ²	Net Estimated Area-Weighted Average* (pCi/g, CAW)
S1A	A	0-15	2.8	28	0.4
S1Z	A	0-15	140.	28	38.
S2A	B	0-15	20.	20	4.0
S2B	B	15-30	20.	20	4.0
S3A	C	0-15	2.4	>100	1.2
S3B	C	15-30	5.2	>100	4.0
S4	C	0-15	5.0	>100	4.0
S5	Rep	0-15	4.0	>100	2.8
S6	D	0-15	8.6	>100	7.4
S7Z	D	0-15	4.3	>100	3.1
S8	D	0-15	13.	>100	12.
S9	P	0-15	1.2	>100	0.0
S10	P	0-15	26.	>100	24.
S11	P	0-15	18.	>100	16.
S12	L	0-15	154.	>100	152.
S13	L	0-15	5.3	>100	4.1
S14	L	0-15	5.2	>100	4.0
S15	Q	0-15	30.	88	25.
S16	M	0-15	6.0	>100	5.0
S17	N	0-15	12.	2	0.2
S18	K	0-15	3.1	5	0.1
S19	O	0-15	1.8	>100	0.6

$$*Formula\ used:\ CAW = \frac{\sum_{i=1}^n C_i A_i D_i}{(100)(.15)}$$

where=

CAW = area-weighted ²²⁶Ra concentration in [pCi/g]

C_i = net ²²⁶Ra concentration in [pCi/g] and

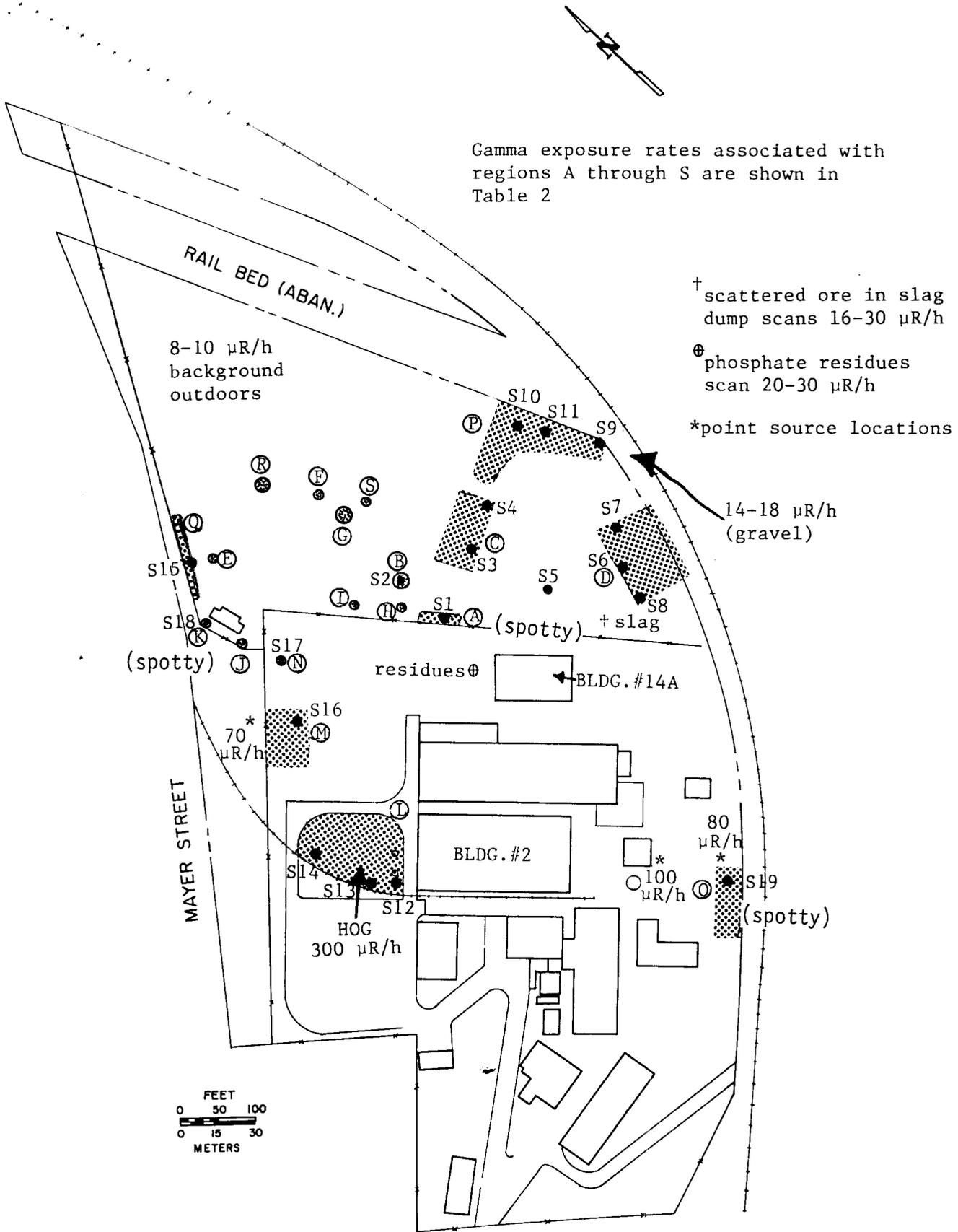
(C_i = Canalysis - Cbackground)

A_i = area of region that sample represents in [m²]

D_i = thickness of sample in [m]

100 = threshold area in [m²], and

.15 = threshold thickness in [m]



CYTEMP SPECIALTY STEEL DIVISION (Vanadium Parcel)

Fig. 1. Location CA00401 - Mayer Street, Bridgeville, Pennsylvania.



Fig. 2. Location CA00401 looking north at Region Q.



Fig. 3. Location CA00401 looking east at Region A.



Fig. 4. Location CA00401 looking northeast at Region C.



Fig. 5. Location CA00401 looking northeast the side of pile in Region D.



Fig. 6. Location CA00401 looking south at Region L.



Fig. 7. Location CA00401 looking east at Region M.



Fig. 8. Location CA00401 looking south at Region O.



Fig. 9. Location CA00401 looking east at Region P.



Fig. 10. Location CA00401 looking east at Region R.

CONSENT FOR ACCESS TO CONDUCT SURVEYS
AND ENGINEERING STUDIES

VICINITY PROPERTY NO.: Cytemp Specialty Steel Division, Bridgeville Plant

PROPERTY ADDRESS: Mayer Street, Bridgeville, PA 15017

PROPERTY PARCEL NUMBER OR DESCRIPTION: Vanadium Parcel

I (We) acknowledge that I (We) own the property described above, and grant permission to employees, contractor and subcontractor personnel, and other representatives of the U.S. Department of Energy and the State of Pennsylvania to enter upon the property at a reasonable time or times during the next 12 months to conduct at its cost and expense radiation surveys to determine the nature and extent of any radioactive material that might be present. In addition, permission is given to perform at its cost and expense engineering assessments, if necessary, to evaluate the remedial measures that might be taken, as well as to evaluate the extent of the work required and the cost.

I (We) understand that DOE's and the State's responsibility for any damage or disturbance to my (our) property caused by its activities shall be any backfilling, seeding, sodding, landscaping, rebuilding or repair of the property required to restore it to a condition comparable to its apparent physical condition immediately prior to entry upon the property.

I (We) understand that the DOE and the State of Pennsylvania are not obligated to perform remedial action upon the property. I (We) understand that no remedial action shall be performed until the DOE, the State, and the property owner have entered into a separate written agreement setting forth terms, conditions, and plans for remedial action.

I (We) understand that the DOE and the State have the right to disclose to the public, in the form of technical data and reports, the results of its data-gathering on the above-described property.

I grant access for the conduct of surveys and engineering studies as provided in this consent for access.

R. Miller
Signature of Owner(s)

September 26, 1985
Date

ASSISTANT SECRETARY

I have decided not to participate in the UMTRA Project.

Signature of Owners (s)

Date

OWNER DATA:

Cyclops Corporation

Owner(s) Name

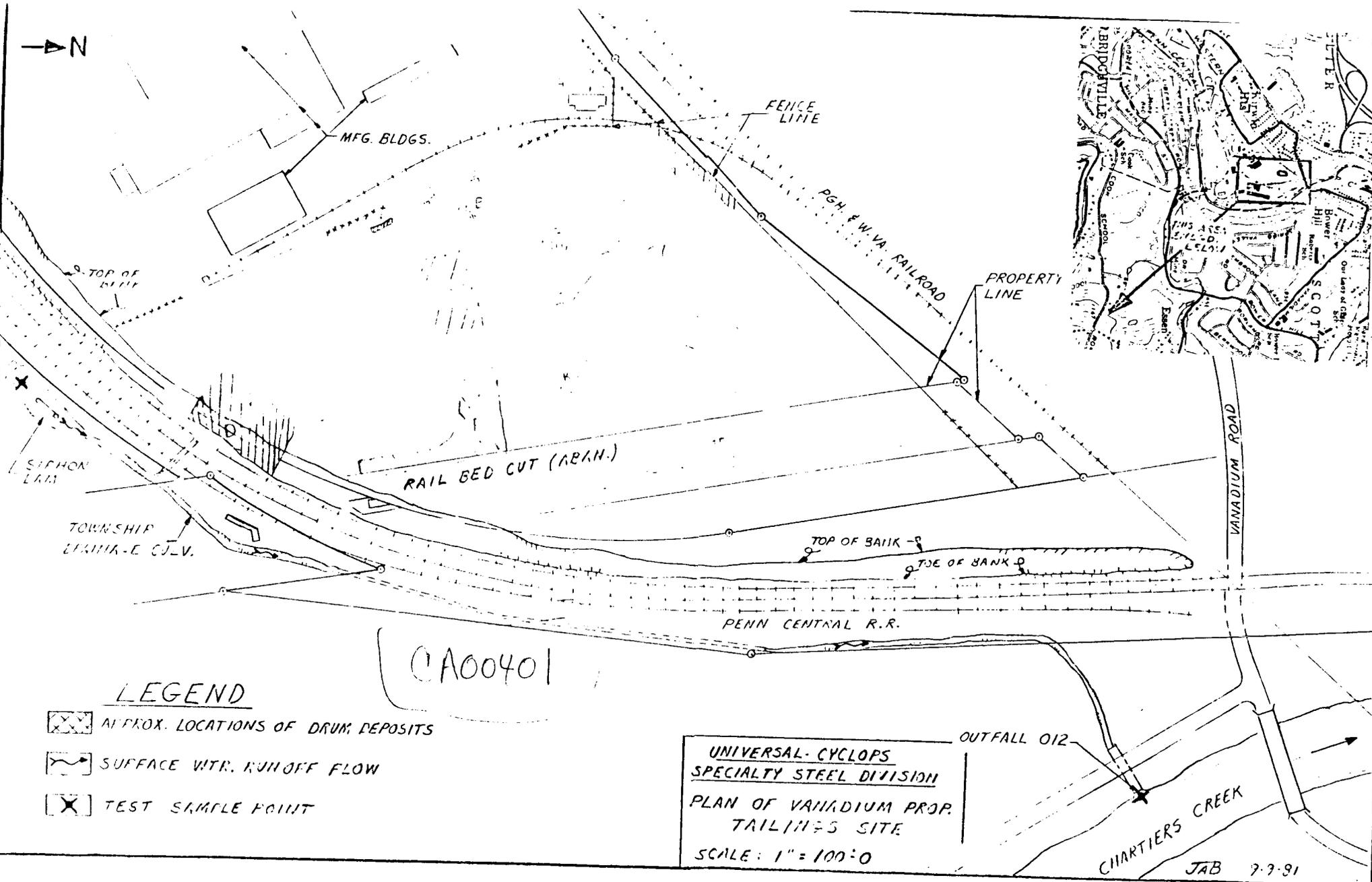
650 Washington Road, Pittsburgh, PA 15228

Owner(s) Address

Home Phone _____

Business Phone 412)561-6300

N



CA00401

LEGEND

-  APPROX. LOCATIONS OF DRUM DEPOSITS
-  SURFACE WTR. RUNOFF FLOW
-  TEST SAMPLE POINT

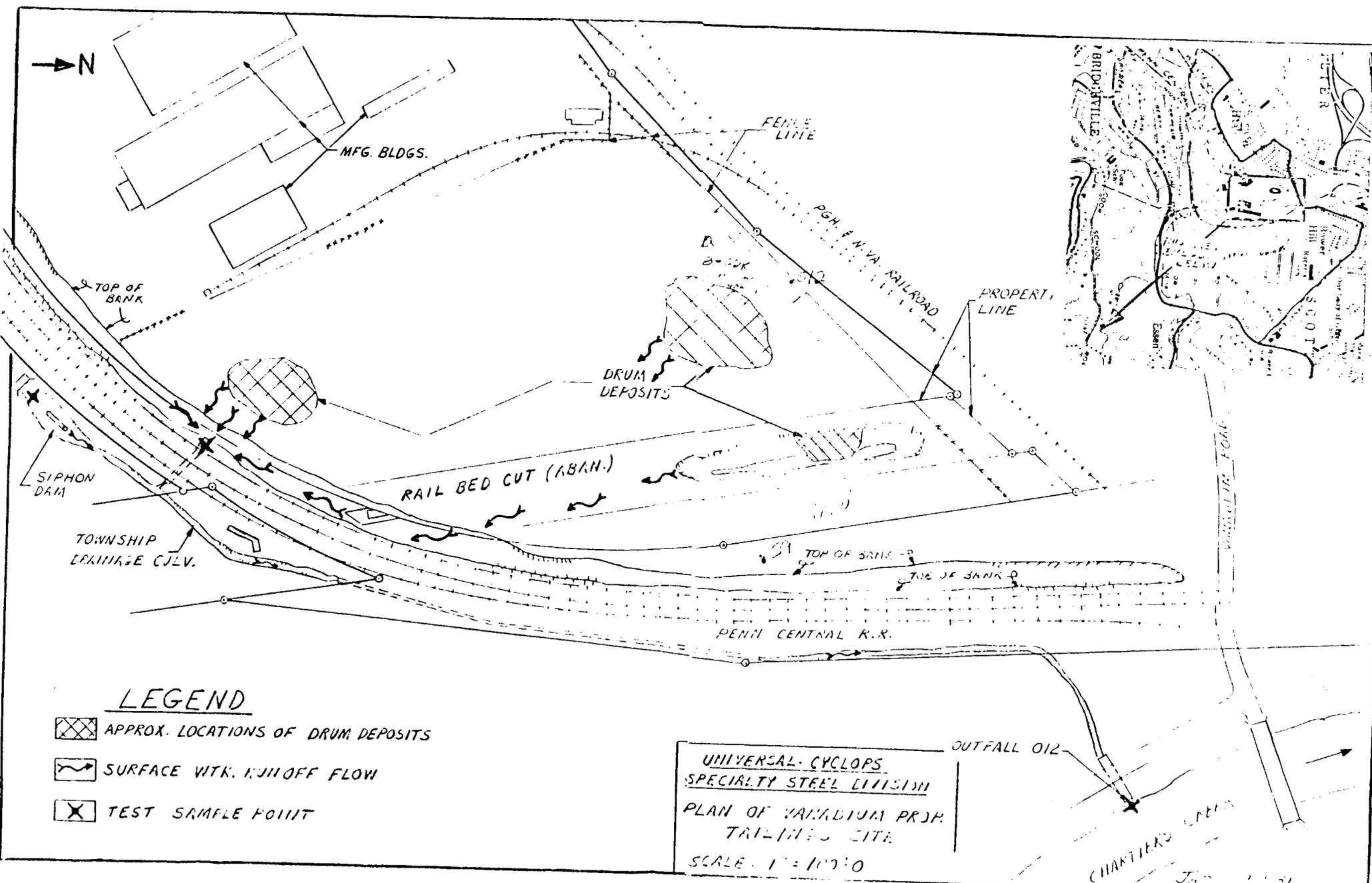
UNIVERSAL-CYCLOPS
 SPECIALTY STEEL DIVISION
 PLAN OF VANADIUM PROP.
 TAILINGS SITE
 SCALE: 1" = 100' 0

OUTFALL 012

CHARTIERS CREEK

JAB 7-7-81





LEGEND

-  APPROX. LOCATIONS OF DRUM DEPOSITS
-  SURFACE WTK. RUNOFF FLOW
-  TEST SAMPLE POINT

UNIVERSAL-CYCLOPS
 SPECIALTY STEEL DIVISION
 PLAN OF TAILINGS PROJ.
 TAILINGS SITE
 SCALE: 1" = 100'-0"

CHARTERS LAGOON