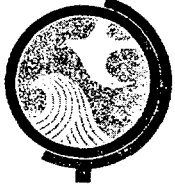


Let's protect our earth



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF ENVIRONMENTAL QUALITY  
BUREAU OF ENVIRONMENTAL RADIATION

CN 411  
TRENTON, NEW JERSEY 08625  
(609) 530-4001

October 20, 1986

W. T. Crow, Acting Chief  
Uranium Field License Branch  
Division of Fuel Cycle and Material Safety  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Crow:

The Bureau of Environmental Radiation (BER) appreciates the opportunity to provide input in the U.S. Nuclear Regulatory Commission's (NRC) license renewal process for Shieldalloy. The BER has regarded this site with some concern due to the nature of activities performed. As a result of its minerals processing activities, large quantities of ore and residues are stored onsite which have potential offsite consequences. Also, liquid discharge from the facility as well as surface runoff from the stored residue could enter the local stream.

It is our understanding that the NRC has requested Oak Ridge Associated Universities (ORAU) to perform an environmental survey of the Shieldalloy site. According to ORAU, this survey is scheduled for FY87. It is the Department of Environmental Protection's (DEP) position that a thorough environmental survey is crucial to provide the NRC, DEP and the facility operator with adequate information on the environmental impact of the site. DEP has analyzed some offsite water and sediment samples and found that they contained thorium and radium concentrations above normal background levels. These data are contained in Tables I and II. Consequently, BER would like to see the ORAU examine the potential offsite impact resulting from routine facility operations since there are a number of streams and private wells in the vicinity, as shown in Figure I. The survey also showed exposure levels at the facility fenceline were significantly above background levels, up to 800 uR/hr (Figure II). These highest fenceline values may have been reduced when the facility moved the storage piles away from the fenceline. With respect to other offsite impact, during a 1985 site visit by DEP, a representative of Shieldalloy stated that crushed ferrovanadium slag waste is transported offsite for subsequent use as road construction material (Attachment I).

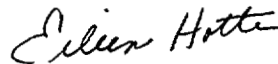
Also of concern is the future impact of this facility, if and when licensed operations cease and the facility is released for unrestricted use. BER recommends that the NRC examine the ability of the licensee to decontaminate and decommission the site. This recommendation results from the Department's previous experience with other NRC sites in New Jersey which processed and stored large quantities of ore and residue.

Mr. W. T. Crow, Acting Chief  
Page 2

October 20, 1986

The BER would like to see the license require annual reports summarizing environmental monitoring results and any significant activities which influence radiological conditions on or off the site. Environmental monitoring should include, at a minimum, quarterly surface and groundwater monitoring, soil sampling and sediment sampling at offsite locations above and below discharge areas, and routine fenceline radon and external exposure evaluation as well as air particulate monitoring. Should the results of environmental monitoring demonstrate that the environment is adversely affected by the facility's operation, then appropriate measures should be taken by the licensee to reduce the impact and remediate the affected area.

Sincerely,



Eileen Hotte, Ph.D.  
Bureau Chief

EH:JE:dag

Enclosures:    Tables I, II  
                 Figures I, II  
                 Attachment I

c:    J. Kinneman, NRC - Region I  
      J. Berger, ORAU

October 20, 1986

Table I: Gamma Ray Spectroscopy Results of Soil Samples  
Collected on April 2, 1985 from the  
Vicinity of Shieldalloy

<u>Sample Location</u>	<u>Ra-226 (pCi/g)<sup>a</sup></u>	<u>Th-232 (pCi/g)<sup>b</sup></u>
S-1: Offsite soil, 25-feet from fenceline just before trees	2.1 ± 0.2	6.6 ± 0.4
S-2: Offsite soil, 20-feet from fenceline, 100-feet from dead trees	1.9 ± 0.2	7.2 ± 0.4
S-3: Offsite soil, 75-feet from fenceline, 100-feet from dead trees	6.2 ± 0.4	23.3 ± 0.8
S-4: Offsite soil, 350-feet from fenceline, 250-feet from dead trees	2.0 ± 0.2	4.3 ± 0.4
S-5: Offsite soil, 30-feet from fenceline, 250-feet from Gate W sign	2.4 ± 0.2	8.2 ± 0.2
Ferrovanadium pile 1	17.6 ± 0.5	29.7 ± 0.8
Ferrovanadium pile 2	4.3 ± 0.4	3.2 ± 0.2

Explanation

- a: Ra-226 based on Bi-214 609 keV peak  
b: Th-232 based on Tl-208 583 keV peak

Cont ORAU  
Environment / Air Sampling  
Core Burins

Ran. of  
Well Water  
Pond Water

Fe V<sub>2</sub>  
Fe C<sub>6</sub>  
Road Material  
Black Material

October 20, 1986

Table II: Water Samples from Shieldalloy

<u>Sample Location</u>	<u>Gross-Alpha (pCi/l)</u>	<u>Gross-Beta (pCi/l)</u>	<u>Ra-226 (pCi/l) by chemistry</u>	<u>Th-232 (pCi/l) by gamma spec</u>
W-1, Well 9	$5.31 \pm 2.83$	$8.68 \pm 1.35$	$0.49 \pm 0.18$	$26 \pm 5$
W-2, Layne Well	$-2.40 \pm 4.24$	$23.45 \pm 2.93$	--	$21 \pm 6$
W-3, Facility Outfall	$14.26 \pm 5.03$	$273.93 \pm 5.98^*$	$1.78 \pm 0.28$	$< 5$
W-4, H-Well	$2.43 \pm 1.59$	$15.17 \pm 0.46$	--	$5 \pm 3$
W-5, DW-2	$5.79 \pm 0.98$	$4.37 \pm 0.46$	--	$< 12$

\*This water sample had significant K-40 concentration of  $270 \pm 60$  pCi/l.


**EXPLANATION:**

- MONITORING OR SUPPLY WELL
- MONITORING OR SUPPLY WELL (NOT IN USE)
- DOMESTIC WELL
- DOMESTIC WELL (NOT IN USE)
- ⊙ IRRIGATION WELL
- ⊙ IRRIGATION WELL (NOT IN USE)
- X STREAM ELEVATION STAKE
- SHIEDALLOY PROPERTY BOUNDARY
- HYDROGEOLOGIC PROFILE LOCATION

**LOCATION MAP**

SHIEDALLOY CORP., NEWFIELD N.J.

Prepared By RIH Date 9/22/64  
Job No. 83C152 FIGURE 1

 Dan Raviv Associates, Inc.	
568 Eagle Rock Avenue, West Orange, New Jersey 07052	
LOCATION MAP	
SHIELDALLOY CORP. NEWFIELD N.J.	
Prepared By RHH	Date 9/22/84
Job No. 83C152	FIGURE 1

Identification of Sampling Locations

S-1 }  
S-2 } Offsite  
S-3 } Soil Samples  
S-4 }  
S-5 }

W-1 Well 9  
W-2 Layne Well  
W-3 Facility Outfall  
W-4 H-Well  
W-5 DW-2

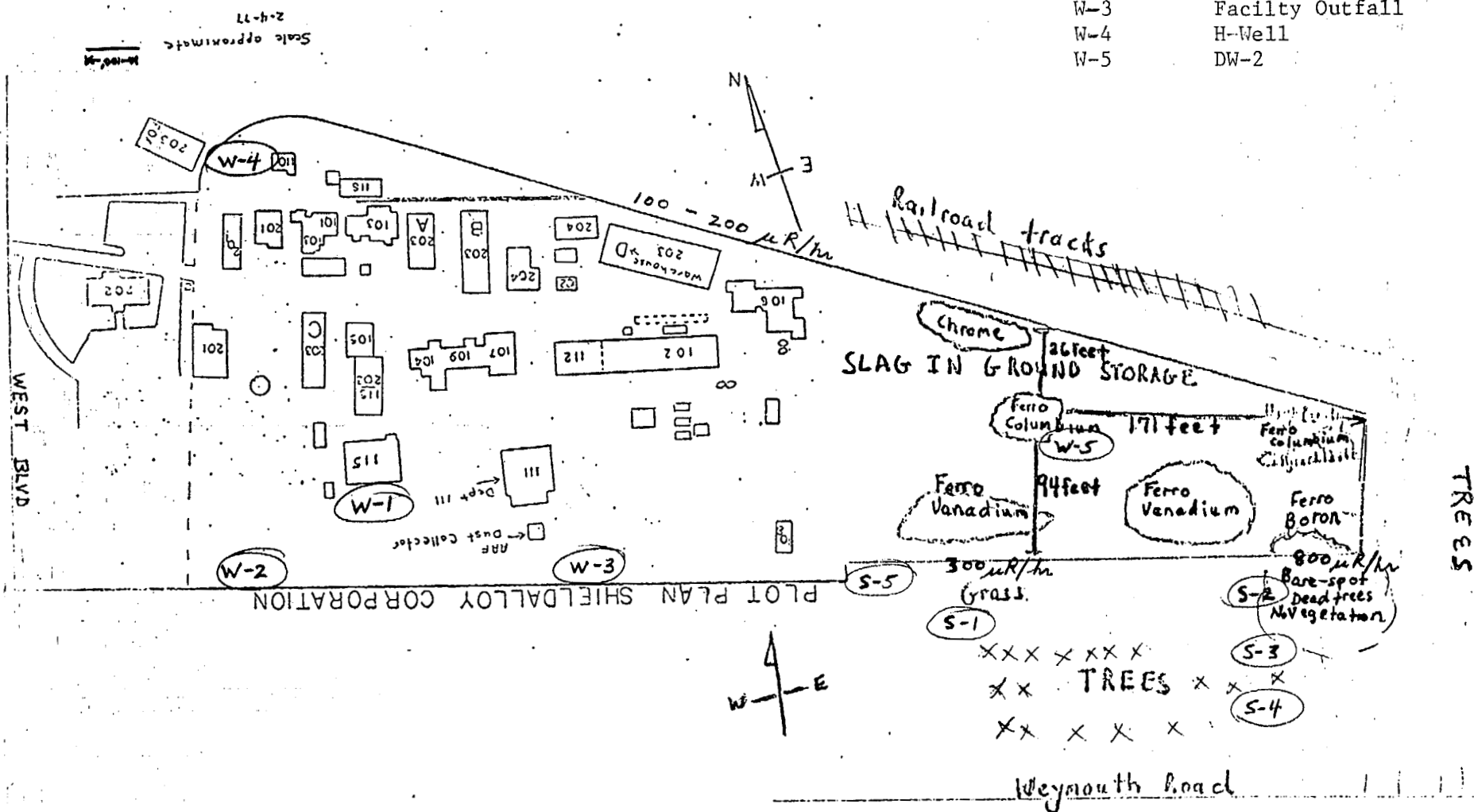


FIGURE II: Shieldalloy Site Map Identifying Fenceline Exposure Rate Measurements and Soil/Water Sampling Locations



**State of New Jersey**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**OFFICE OF REGULATORY SERVICES**  
 CN 402  
 TRENTON, N.J. 08625  
 609 - 292 - 2906

GERARD BURKE  
 DIRECTOR

BARBARA M. GREER  
 DEPUTY DIRECTOR  
 GEORGE F. SCHLOSSER  
 ASSISTANT DIRECTOR

June 30, 1986

Charles L. Harp, Jr., Esq.  
 Archer and Greiner  
 One Centennial Square  
 P.O. Box 3000  
 Haddonfield, New Jersey 08033-0968

RE: Shieldalloy and Metallurg

Dear Mr. Harp:

This is to advise you that the Department remains of the opinion that the slag piles at Sheildalloy's Newfield facility are solid wastes, as defined in N.J.S.A. 13:1E-3 and N.J.A.C. 7:26-1.4. Therefore, it will be necessary for these wastes to be sampled and analyzed to determine whether they are hazardous (N.J.A.C. 7:26-8.5).

Hazardous/non-hazardous classification tests should be performed on the following stockpiled materials:

- Chromium slag
- Ferrocolumbium high ratio slag ✓
- Ferrocolumbium high purity slag ✓
- Columbium nickel slag
- Ferroboration slag
- Ferrovandium slag
- Lime pit contents
- Furnace cleanout
- Ferroaluminum dross
- Titanium scrap
- Unidentified dark slag

The hazardous/non-hazardous classification tests include EP toxicity, reactivity, ignitability and corrositivity. The samples to be analyzed should be a composite of three discrete samples. Shieldalloy indicated it has a small grinder on site which can easily crush the slag material. All the above samples should be taken, composited, and split with NJDEP in the presence of an NJDEP representative.

Further, Hudson's Branch appears to diverge toward the ferroboration slag pile although it dries up before this point is reached. Presently, there is a large corridor devoid of vegetation emanating from the ferroboration slag pile

area which cuts a path directly towards the point at which Hudson's Branch surfaces. It appears that, at times, large volumes of surface runoff flow through this corridor to Hudson's Branch. The indication is that periodic surface runoff is fatal to vegetation. It is felt that a minimum of three composite samples should be taken from this area and analyzed for EP toxicity metals. For comparison purposes, one composite upgradient background soil sample should also be taken and analyzed for EP toxicity metals.


It will also be necessary for Shieldalloy and Metallurg to determine, by soil analysis (on and off-site) and off-site surface water analysis, whether the slag piles have caused other contamination (see N.J.S.A. 58:10A-1 et seq. and 58:10-23.11 et seq.).

Within twenty (20) calendar days of your receipt of this letter, Shieldalloy and Metallurg are directed, pursuant to regulation and paragraph 31 of the September 5, 1984 Administrative Consent Order, to submit to the Department for its review and approval a sampling and analysis plan which addresses the above items and a proposed time schedule for implementation. All analyses shall be performed by a laboratory certified by the Department for the appropriate parameter in accordance with N.J.A.C. 7:18-1 et seq. Within ten (10) calendar days after receipt of the Department's written comments on the proposed sampling and analysis plan, Shieldalloy and Metallurg shall modify it to conform to the Department's comments and submit the modified plan to the Department. Shieldalloy and Metallurg shall implement the approved sampling and analytical plan in accordance with the approved time schedule. Based on the results of the sampling and analysis, Shieldalloy and Metallurg will be required to comply with the closure and remediation requirements of N.J.A.C. 7:14A-1 et seq. and N.J.A.C. 7:26-1 et seq. If you have any questions on these sampling and analytical requirements, please contact Kathy Van Hook at (609) 633-6801.

Be also advised that Shieldalloy and Metallurg continue to be in violation of the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., by its operation of a solid waste facility without the approval of this Department.

During a site inspection on May 29, 1985, a Shieldalloy representative stated that Shieldalloy is crushing the ferrovanadium slag waste and transporting it off-site for subsequent use as road construction material. Be advised that this activity is regulated by N.J.A.C. 7:26-1 et seq. Please contact Shirlee Schiffman at (609) 292-8341 immediately to discuss this matter.

Sincerely,



Susan Savoca

SS/dy



bcc: Ron Corcory, DWM  
Susan Savoca, ORS  
Dave Zervas, DWR  
Rosemary DiCandilo  
Frank Coolick, DWM  
Jerry Hartig, DWM  
Kathy Van Hook, DWM  
Shirlee Schiffman, DWM  
Walter Burshtin, DWM  
John Feeny, DEQ

Gerard Burke  
George Schlosser

Meeting with Shieldalloy & State

12/13/86

<u>Name</u>	<u>Organization</u>	<u>Telephone</u>
Edward Shum	NRC - NMSS	301-4274570
U. T. Crow	NRC - NMSS	301-427-4100
Merri Horn	NRC - NMSS	301-427-4510
John R White	NRC Region I	215-337-55102
Laurence F. Friedman	NRC - Region I	215-337-5276
Scott W. DENNERLEIN	N.J. DEP	(609) 530-4168
Jeanette Eng	N.J. DEP	609/530-4049
John Freney	N.J. D.E.P.	609-530-4023
John Langdon	Shieldalloy	609-692-4200