UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

JUN 27 1963

Honorable Robert E. Jones, Chairman
Natural Resources and Power Subcommittee
Committee on Government Operations
House of Representatives

Dear Mr. Jones:

Reference is made to your May 24, 1963, letter to Dr. Seaborg concerning the 58 volume study "Waste Water Disposal Practices at Federal Installations", recently compiled by the Department of Health, Education, and Welfare, and the General Services Administration.

The pertinent volume, No. 57, of the report you mentioned was transmitted by Mr. Celebrezze to Dr. Seaborg on February 13, 1963. Mr. Quigley, DHEW, and I have been designated to serve our agencies as headquarters contacts on pollution problems. The bulk of the work, of course, is done at the field level by our respective field offices. The AEC field offices are in very close contact with not only the PHS field units, but also the various state and regional groups who have an interest in the AEC's various process effluent treatment and discharge practices.

Most of the information you requested is attached. The remainder will require additional time for evaluation. However, we expect to complete our reply by July 3, 1963.

In some respects, the enclosed table in your letter, which is taken from Volume 57 of Waste Water Disposal Practices at Federal Installations, would be very misleading to the casual reader. Of the thirty-four AEC installations listed, the table indicates that many of these facilities are discharging large volumes of untreated industrial wastes. This is not true. Liquid effluents from these plants are routinely monitored for radioactivity and treated as required, prior to discharge to the environment. Apparently some of the remarks on the GSA forms which were used to accumulate the data were either not fully complete when forwarded by the AEC or the substance of the remarks was lost during tabulation. Enclosure 1 provides additional information on waste management operational practices at these sites. In all cases, AEC basic policy requires appropriate management of all industrial waste effluents and no radioactive effluents are discharged which can

result in exposures to the public which are above acceptable health and safety standards. We believe that our present operations and practices support this policy.

It is noted that the penultimate column of the Extract attached to your letter of May 24 is labeled "Type". The information entered in this column seems to imply that a substantial portion of the AEC industrial waste effluents are radioactive. However, Item 21 of GSA Form 1166C, from which this information was taken, was only a list of various types of activities generating industrial wastes. Code 18 "Radioactive Materials Operations" was indicated on most of the AEC forms as the type of industrial operation involved at various locations. The selection of this code by AEC was not intended to imply that the industrial waste effluent generated from these activities is radioactive. Most of the effluents from these facilities are normal industrial wastes which can on occasion have radioactivity in detectable but still insignificant quantities. On those occasions they are diverted and/or delayed to ensure that they can be released or, if necessary, processed as required for acceptable release. One example is the last item on page one of your staff's Extract, which lists 360,770,000 gallons per day (gpd) of industrial wastes from the K-25 Gaseous Diffusion Plant and, as indicated, most of this is cooling water. This type of plant does process uranium, which is mildly radioactive, but even in the highly unlikely, though possible release of process uranium into this cooling water, the resulting concentrations of radioactivity would be insignificant and it would therefore be misleading to imply that they are radioactive wastes.

We trust that this will be of help to your subcommittee's staff and, as previously stated, the remaining information will be forthcoming shortly.

Sincerely yours,

(Signed) Dwight A. Ink

Assistant
General Manager

cc: General Manager w/encl.
AGMO w/o encl.
AGMRD w/encl.
General Counsel w/encl.
Dir., Div. of Prod. w/encl.
Dir., Div. of Mil. Appl. w/encl.
Dir., Div. of Reactor Dev. w/encl.
Dir., Div. of Oper. Safety w/o encl.
Congressional (2) w/encl.
OS Subject
OS Reader

AFPerge/cma/Ink/cvf 6/26/63

Enclosures:
1. Forms - GSA 1166C
2. Enclosure 1

cc: Honorable Anthony J. Celebrezze
Secretary of Health, Education, and Welfare

Enclosure I

The following comments are numbered according to their order in the tabulation of selected entries attached to the referenced letter of May 24, 1963, (R. E. Jones to G. T. Seaborg).

1. Items 5, 6, and 8 are covered first since they were listed for receiving official notifications regarding their waste disposal practices and pollution conditions. The following comments concern the two facilities responsible for these three items.

   a. Items 5 and 6 - Iowa Ordnance Plant

      Error in transcribing data resulted in incorrect data being submitted for inclusion in Volume 57. In fact, 100% and/not 0 % of the sewage is treated and there have been no water pollution problems of this type. As regards industrial waste, the contaminant of concern is TNT, which at times has caused "red" water in Brush Creek. This hasn't been considered a severe problem but it has been a nuisance. A letter, dated September 2, 1959, from the Iowa State Department of Health enclosed an engineering report on water conditions in the vicinity of the plant indicating that the present TNT waste treatment and the structure of methods for improvement should be continued. It was not a notice to discontinue pollution of the stream.

      This plant is actually operated by the Department of the Army. The AEC connected work at the site is only a portion of the plants' activity. The AEC's responsibility for waste disposal at the site has been limited to the disposal of radioactive materials, and there have been no problems in this regard. However, the AEC through its Albuquerque Operations Office will continue to work with the Army, the state, and the regional PHS in improving the waste disposal situation at this site.

   b. Item 8 - Bendix Plant

      The Bendix Plant has lacked adequate industrial waste treatment facilities in the past. The effluent has at times contained chromium ions, cyanide, and pH values in excess of the objectives recommended by the Missouri State Water Pollution Board.

      The new waste treatment facility under construction is scheduled for completion within 6 months and will correct this problem.

2. Items 1 and 2 are concerned with the AEC's Grand Junction Assay Laboratory. The 6,000 gpd industrial waste is discharged to a sewage lagoon (for ground leaching) since the water must percolate through a minimum of 250 ft. of gravel and earth to reach the Gunnison River. The 7,200 gpd is actually the septic tank effluent which also must percolate (ground leaching) through 250 ft. of gravel and earth to reach the Gunnison River. Samples of the river water both upstream and downstream do not indicate any influence by these effluents.

   The activities of this laboratory are to be curtailed starting July 1, 1963, and by December, 1963, these waste effluents should have been reduced to a small fraction of these stated volumes.

3. Item 3 is concerned with the Rocky Flats Plant. As indicated, only 30 per cent of the 20,000 gpd of industrial waste is treated. The remarks section of the GSA form (attached) noted that this treatment consisted of chemical co-precipitation. Actually, it could have added for clarification, that treatment is performed as required for meeting the industrial waste effluent release requirements. This is not a radioactive waste, though it is possible for this industrial waste effluent to contain negligible, though still detectable radioactivity. This would be the result of a system which in general is typical of a number of the other situations covered by this summarized explanation. The radioactive waste treatment systems, ion exchange and/or evaporation, produce an end stream which is chemically and radioactively acceptable for discharge to the environment. This endstream is then added to the industrial waste as a plant effluent.

4. Item 4 is concerned with the Pinellas Plant. The remarks section of the GSA form (attached) noted that the 40 per cent portion of the 25,000 gpd portion of the industrial wastes are chemical wastes which are neutralized with lime. It was also noted that the process waste is diluted. Additional clarification of this latter point is added. This process waste is water which does contain detectable tritium. The tritium concentrations in this process waste effluent are below MPC even before dilution with the cooling water prior to discharge into the Cross Bayan Canal System. The notations also meant to imply that the 15 per cent, or 3800 gpd, of the industrial waste not treated, actually doesn't require treatment.

5. Item 7 is concerned with the Paducah Plant. That 50% of the 200,000 gpd which is not treated consists of mostly steam condensate plus items such as lavatory drains, sprinkler testing, miscellaneous laboratory wastes, plant rinse wastes, and runoff drains. This effluent is monitored continuously and meets requirements of American Waterworks Association, PHS, Ohio River Sanitary Commission, and AEC for cloride ions, flouride ions, chromium ions, and beta activity.

6. Item 9 is concerned with the Weldon Springs Plant. The remarks on the GSA form (attached) indicated that the 20% non-cooling water industrial wastes were treated as required by neutralization and sedimentation.

7. Item 10 is concerned with a portion of the Sandia Operations. The remarks section of the GSA form (attached) noted that this 140,000 gpd industrial waste is discharged to a dry stream bed (for ground leaching) and it must seep through the ground before it reaches a flowing stream. This is within the plant site. The wastes are byproducts of laboratory and photographic type operations. Actually, the seepage basin could have been considered as a treatment of the industrial waste since its effluent has negligible if any affect on the flowing stream.

8. Item 11 is concerned with the Mound Laboratory. The remarks on the GSA form (attached) indicated that the 15% non-cooling water industrial wastes were chemically treated by co-precipitation.

9. Item 12 is concerned with the Portsmouth Plant. The remarks on the GSA form (attached) indicated that both the 80% which is cooling water and the other 20%, which is Hydrogen and Sodium Zeolite water softening waste, both go to a retention pond for controlled discharge. This controlled discharge is to the Scioto River along with 4,000,000 gallons of cooling water.

10. Items 13, 14, and 15 are concerned with the Bettis Atomic Power Laboratory. The statements in the remarks section of the GSA form (attached) for these three effluents indicated that the figure for "% treated" represented that percentage usually requiring treatment. These numbers could actually vary since treatment is made to the wastes as required for acceptable releases. *

11. Items 16, 17, 18, and 19 are concerned with the Savannah River Plant.

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* If the "% treated" were to be considered not on total waste volume but on volume of waste requiring treatment, this figure would be 100%.

a. The item 16 effluents of 4,100 gpd are from an unirradiated uranium manufacturing system which could have uranium in the effluents. These effluents are discharged through a clay, combination seepage-delaying basin into an old mill-pond on Tim's Branch. The outlet of this pond is monitored and sampled since Tim's Branch runs into Upper Three Runs Creek which then empties into the Savannah River upstream of the cooling water intakes for the heavy water plant and also the five reactors. The Branch and the Creek are both within the Savannah River Plant site. To date the Mill Pond effluent has not indicated any pollution problem.

b. The items 17 and 18 are essentially the same and are effluents from the two radiochemical processing plant systems. These effluents consist of the following: condensate from low-level radioactive waste evaporators; steam condensate from process cooling systems, which could possible get radioactively contaminated; laundry wastes; and water used for sluicing coal ashes to disposal pits. The first three feed into specially prepared clay, combination seepage-delaying basins. The ground water seepage from these basins is into Pen Branch which 10 miles later combined with non-radioactive reactor c cooling water flows into the Savannah River. These waters are continuously monitored. The basins were installed as a safety factor backup to the primary processing system because the clay has certain ion-exchange capability for radioisotopes which could get into the system due to equipment failures. The basins delaying function permits identification and isolation of the radioactivition source due to such failures obviating the need for full plant shutdown. On several occasions the basins have been called upon and have fulfilled their backup functions. Actually, the plant effluent going into the basin is routinely monitored and very rarely does even it approach MPC limits.

c. The item 19 is concerned with the Heavy Water Plant. The 25 million gpd untreated effluent is process water from the heavy water extraction system. The process involves the use of hydrogen sulfide gas at elevated temperatures and pressures, with the hydrogen sulfide serving to exchange its own hydrogen for the heavy hydrogen in the incoming process water. The last stage of each extraction unit involves the stripping of the heavy hydrogen enriched gas from the water. The 25 million

gallons of process water are then combined with the 25 million gallons of cooling water and sent back to the Savannah River. The last process step could actually have been considered a treatment step since the hydrogen sulfide gas removal is essentially complete. The residual gas concentrations are inconsequential even though detectable, but do not involve radioactivity.

12. Items 20 and 21 are both concerned with the Oak Ridge Y-12 operations.

a. The item 20 industrial wastes include process effluents as well as wastes from decontamination or cleaning operations and housekeeping procedures. They are discharged via process sewers to the East Fork of Poplar Creek and are diluted by cooling water and the stream with the control area. This stream flows for about 10 miles through Oak Ridge to the K-25 area (Item 24). This stream's sampling program and the sample results have been acceptable to both the local PHS and the state health authorities. As part of the AEC's continual upgrading program, Y-12 has added a large delaying-mixing basin on the plant site to help even out the flow and to reduce fluctuations of the pH as the effluent is discharged to the creek.

b. Item 21 wastes are the more concentrated chemical or acid solutions such as spent, pickling, and plating solutions which are discharged to a settling basin. This basin could actually have been considered as a treatment. Evaporation controls the liquid level and the only other release is by seepage into the ground. This ground water is drained by Bear Creek, which flows about 7 miles through the Oak Ridge site before joining the previously mentioned E. Fork of Poplar Creek near the K-25 area. Routine monitoring of Bear Creek has not indicated any problem.

13. Items 22 and 23 are both concerned with the Oak Ridge National Laboratory.

a. Item 22 is the effluent from the basic ORNL facilities. It flows into a diversion box discriminator which diverts the water to the waste processing system or the seepage basin as required. Both streams actually combine in the White Oak Creek Basin which is within the plant site and which is discharged into the Clinch River. This creek has a dam which can be closed automatically should the monitors indicate

activity exceeding the control point limits. Actually the 20% non-cooling water wastes were treated if or as required.

Within the last two years, the ORNL collection system has been divided into 5 separated systems to allow for easier discrimination and segregation, and source identification should contamination occur. In addition, the seepage system was changed from an open trench to a closed or covered trench system.

Additional significant improvements are being made to the Laboratory waste handling system under a 1.7 million dollar construction project at ORNL for the installation of two stainless steel storage tanks and an evaporator system. Intermediate level wastes (which at present are processed along with low level wastes) will no longer be discharged to seepage basins, but will be retained.

b. In item 23, the 15% non-cooling water portion of this 85,000 gpd effluent is water used for radiation shielding and poses neither a contamination nor pollution problem. It is discharged along with the cooling water to the ground for drainage into the Clinch River.

14. Item 24 is concerned with the Oak Ridge K-25 Gaseous Diffusion Plant. This item was apparently rounded off and should have been 99.5% cooling and 0.5% treated. This 0.5%, of 360,770,000 gpd, is the non-cooling water effluent. It is made up of mostly acid wastes which are always neutralized in limestone pits, caustic pits, dilution pits, and holding ponds prior to discharge to Poplar Creek.