Manhattan Project Era Military Presence at Hanford and Surrounding Environs

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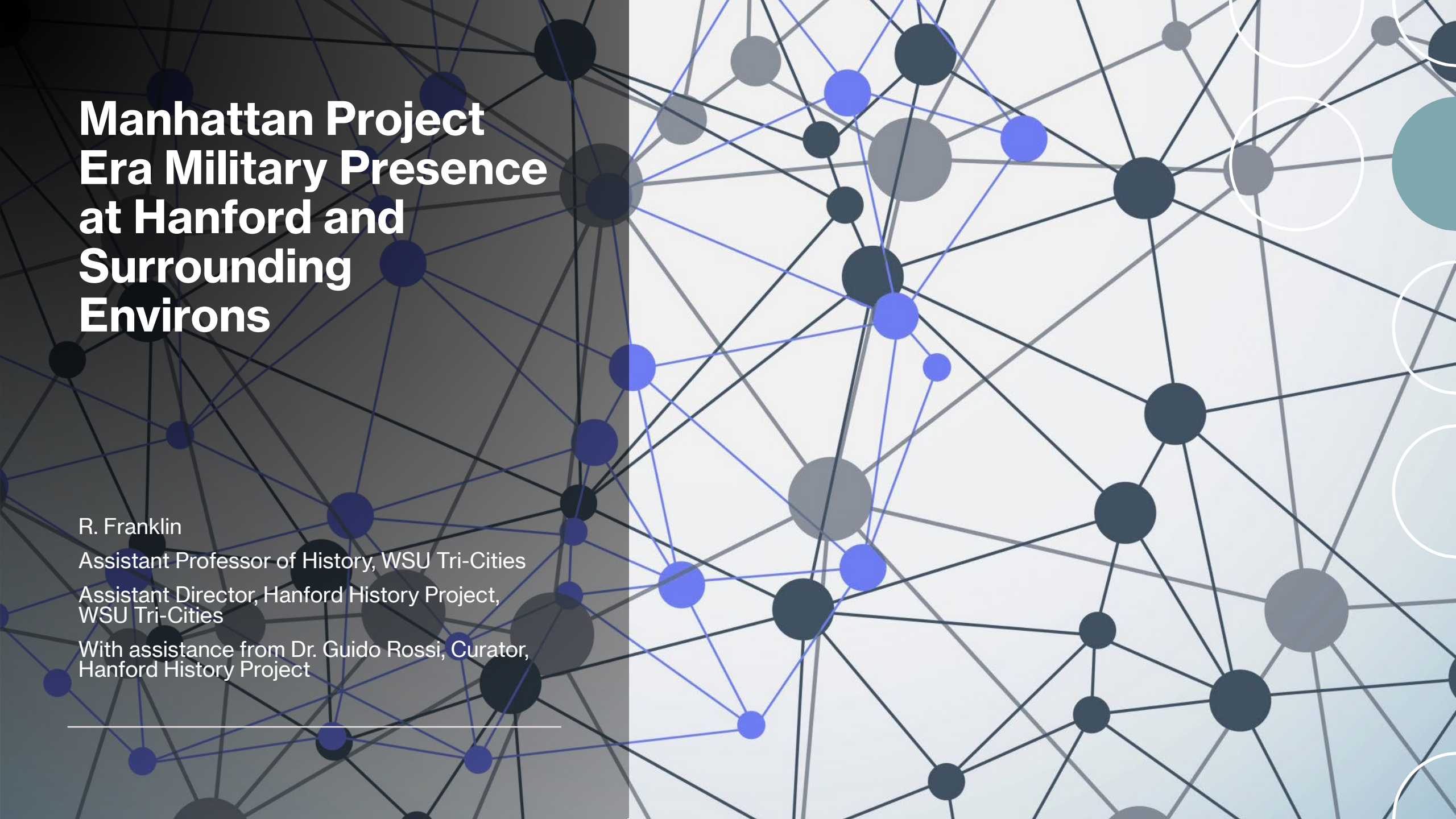
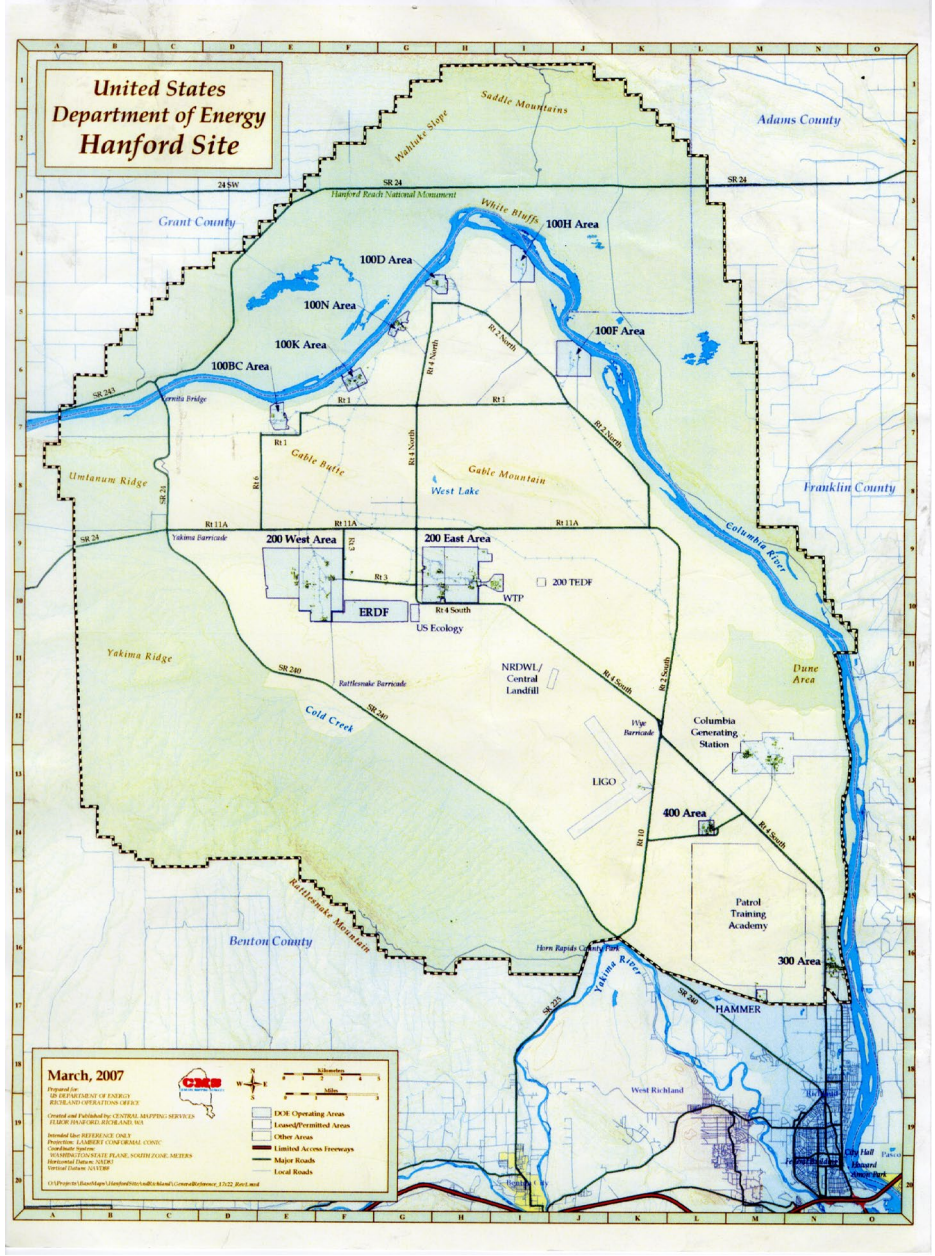
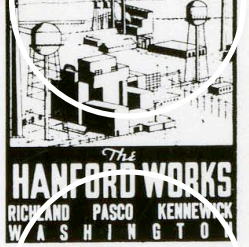
With assistance from Dr. Guido Rossi, Curator, Hanford History Project




United States
Department of Energy
Hanford Site
Saddle Mountains
Wahluke Slope
Adams County
Hanford Reach National Monument
White Bluffs
100H Area
Grant County
100D Area
100N Area
100F Area
100K Area
100BC Area
Gable Butte
Gable Mountain
West Lake
Umtanum Ridge
Franklin County
Columbia River
200 West Area
200 East Area
200 TEDF
WTP
ERDF
US Ecology
Yakima Ridge
NRDWL/
Central
Landfill
Dune
Area
Rattlesnake Barricade
Cold Creek
Wye
Barricade
Columbia
Generating
Station
LIGO
400 Area
Patrol
Training
Academy
Rattlesnake Mountain
Benton County
300 Area
Yakima River
HAMMER
West Richland
March, 2007
DOE Operating Areas
Leased/Permitted Areas
Other Areas
Limited Access Freeways
Major Roads
Local Roads

Reactors

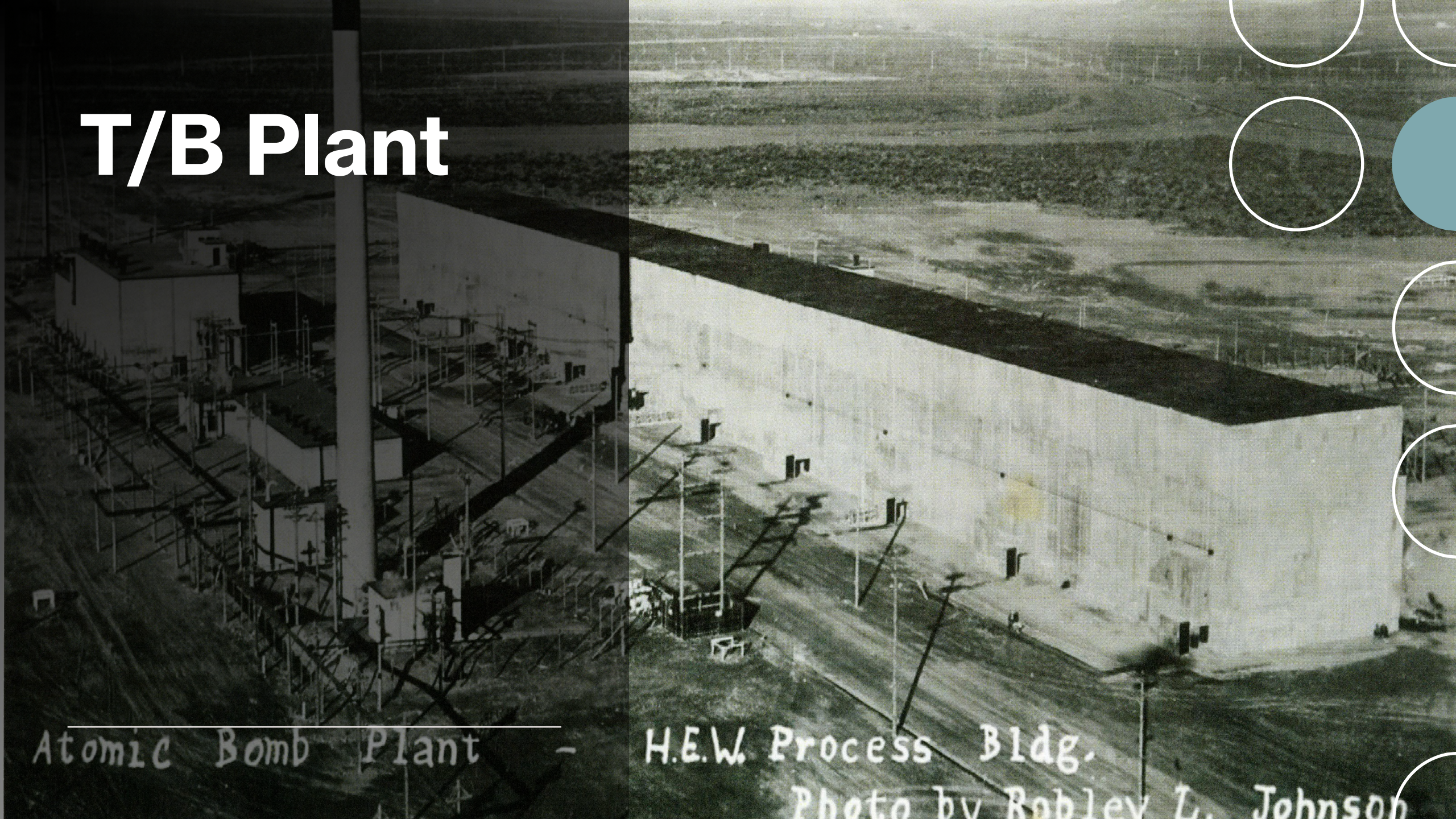


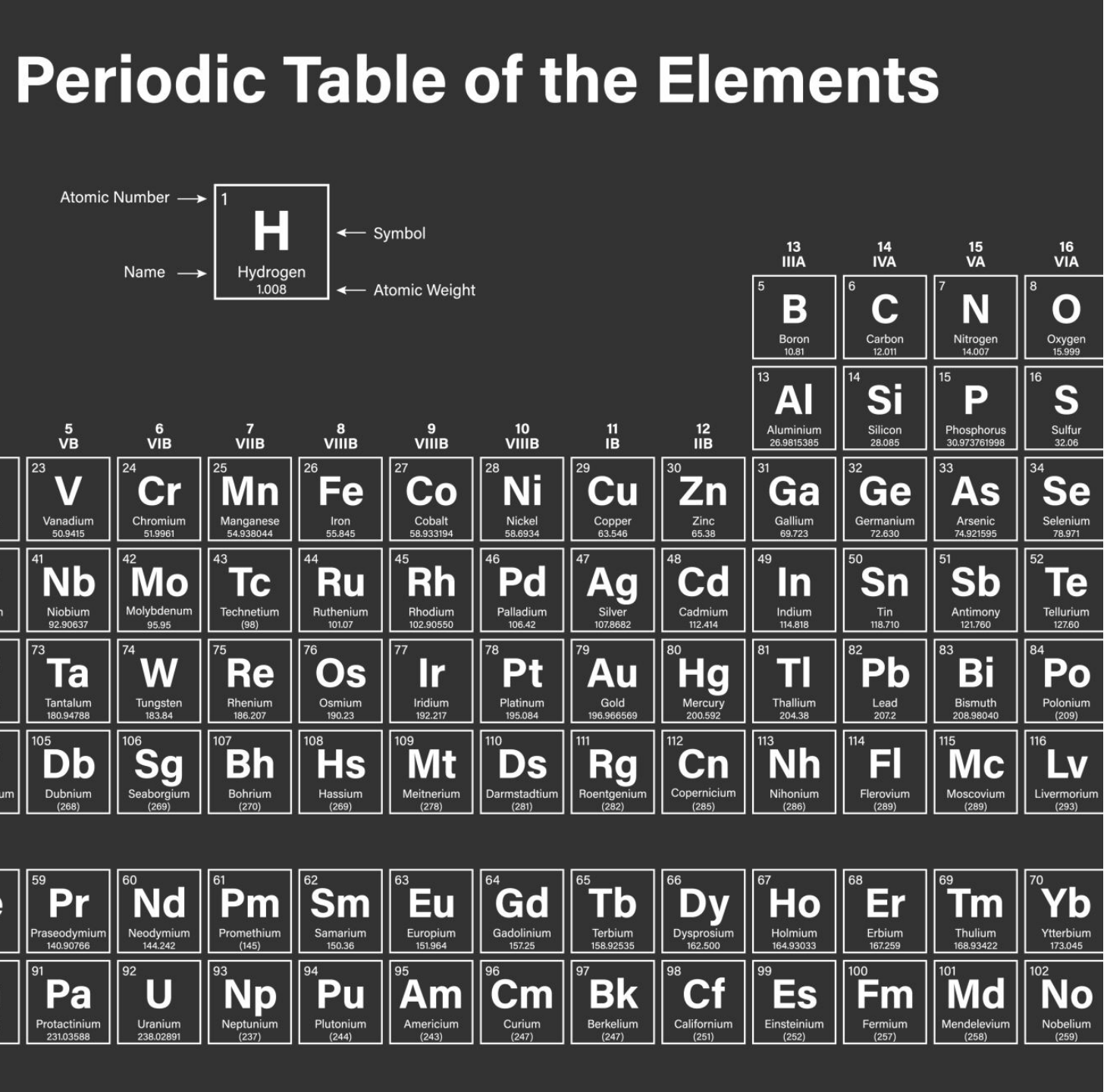
The U. S. Atomic Energy Commission has undertaken a long-range program for the development of atomic energy for military and peace-time applications. This view shows a portion of the war-time **ATOMIC BOMB PLANT** in southern Washington. The Columbia River can be seen in the background.

[Photo by Rob Johnson]

608-H

T/B Plant


Atomic Bomb Plant –
H.E.W. Process Bldg.
Photo by Robley L. Johnson



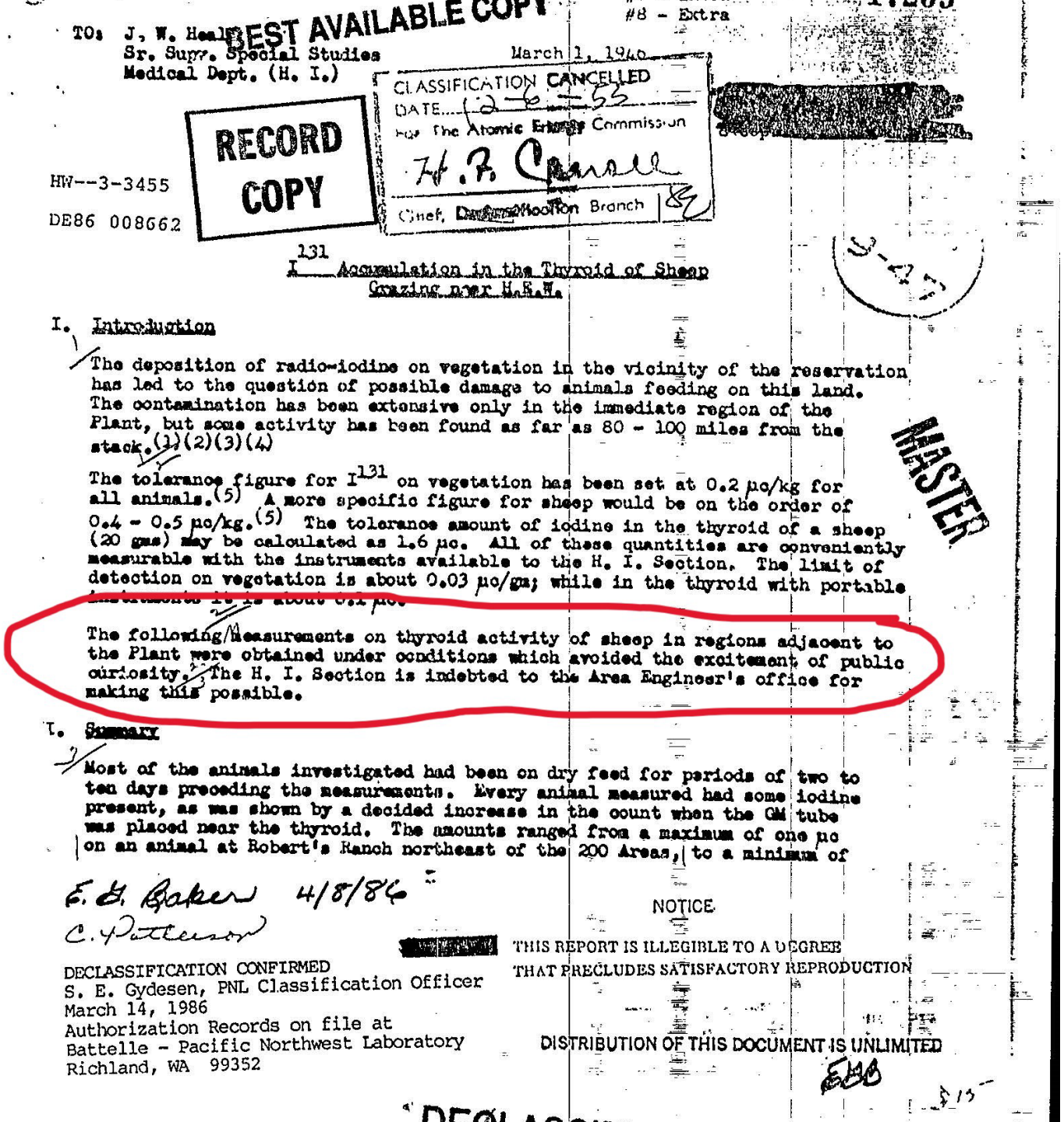
Releases

- Reactors
  - 12 million curies from “stack”, 110 million curried into Columbia River, between 1944-1970
  - Stack 99% argon-41
  - River 94% activation products
- Processing
  - 20 million curies between 1944-1972
  - I-131, ruthenium 103/6, Sr-90, Pu-239, Ce-144
  - Most iodine releases between 1944-1947

Active-Duty Potential Exposures

- Initially little concern for surrounding populations

- Corps of Engineers Hanford (~300)
- Pasco Naval Air Station
- Reports detail areas of concern from 80-150 miles radius.
- Later (1948) monitoring stations in PNW region



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#8 - Extra

TO: J. W. Healy
Sr. Supv. Special Studies
Medical Dept. (H. I.)

March 1, 1946

CLASSIFICATION CANCELLED
DATE 12-6-55
For The Atomic Energy Commission
H. P. Carroll
Chief, Declassification Branch

RECORD COPY

HW--3-3455

DE86 008662

I^{131} Accumulation in the Thyroid of Sheep Grazing near H.E.W.

MASTER

I. Introduction

The deposition of radio-iodine on vegetation in the vicinity of the reservation has led to the question of possible damage to animals feeding on this land. The contamination has been extensive only in the immediate region of the Plant, but some activity has been found as far as 80 - 100 miles from the stack.(1)(2)(3)(4)

The tolerance figure for I^{131} on vegetation has been set at 0.2 μc/kg for all animals.(5) A more specific figure for sheep would be on the order of 0.4 - 0.5 μc/kg.(5) The tolerance amount of iodine in the thyroid of a sheep (20 gms) may be calculated as 1.6 μc. All of these quantities are conveniently measurable with the instruments available to the H. I. Section. The limit of detection on vegetation is about 0.03 μc/gm; while in the thyroid with portable instruments it is about 0.1 μc.

The following measurements on thyroid activity of sheep in regions adjacent to the Plant were obtained under conditions which avoided the excitement of public curiosity. The H. I. Section is indebted to the Area Engineer's office for making this possible.

I. Summary

Most of the animals investigated had been on dry feed for periods of two to ten days preceding the measurements. Every animal measured had some iodine present, as was shown by a decided increase in the count when the GM tube was placed near the thyroid. The amounts ranged from a maximum of one μc on an animal at Robert's Ranch northeast of the 200 Areas, to a minimum of

E. G. Baker 4/8/86
C. Patterson

DECLASSIFICATION CONFIRMED
S. E. Gydesen, PNL Classification Officer
March 14, 1986
Authorization Records on file at
Battelle - Pacific Northwest Laboratory
Richland, WA 99352

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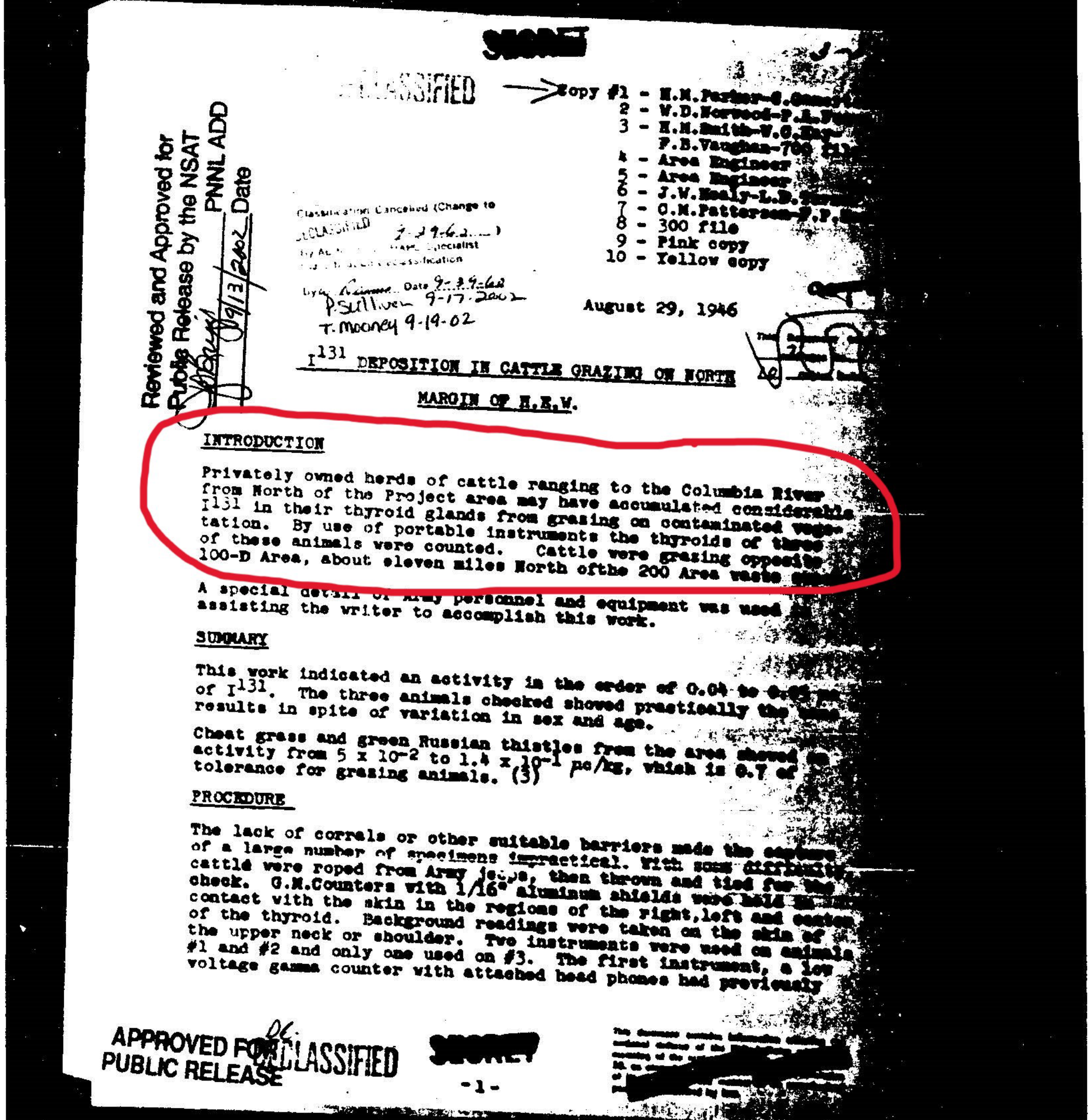
EHB

THIS DOCUMENT IS PUBLICLY AVAILABLE

- *The following measurements on thyroid activity of sheep in regions adjacent to the Plant[Hanford] were obtained under conditions which avoided the excitement of public curiosity.*

--K. E. Herde (1946)



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F.B.Vaughan-700 Bldg.
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5 - Area Engineer
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By Authority of ... Specialist
By ... Date 9-29-62
P. Sullivan 9-17-2002
T. Mooney 9-19-02

Reviewed and Approved for Public Release by the NSAT PNNL ADD 9/13/2002 Date

August 29, 1946

I^{131} DEPOSITION IN CATTLE GRAZING ON NORTH MARGIN OF H.E.W.

INTRODUCTION

Privately owned herds of cattle ranging to the Columbia River from North of the Project area may have accumulated considerable I^{131} in their thyroid glands from grazing on contaminated vegetation. By use of portable instruments the thyroids of three of these animals were counted. Cattle were grazing opposite 100-D Area, about eleven miles North ofthe 200 Area waste ...

A special detail of Army personnel and equipment was used assisting the writer to accomplish this work.

SUMMARY

This work indicated an activity in the order of 0.04 to 0.0... of I^{131}. The three animals checked showed practically the same results in spite of variation in sex and age.

Cheat grass and green Russian thistles from the area showed an activity from 5×10^{-2} to 1.4×10^{-1} μc/kg, which is 0.7 of ... tolerance for grazing animals. (3)

PROCEDURE

The lack of corrals or other suitable barriers made the ... of a large number of specimens impractical. With some difficulty cattle were roped from Army jeeps, then thrown and tied for the check. G.M.Counters with 1/16" aluminum shields were held in ... contact with the skin in the regions of the right, left and center of the thyroid. Background readings were taken on the skin of the upper neck or shoulder. Two instruments were used on animals #1 and #2 and only one used on #3. The first instrument, a low voltage gamma counter with attached head phones had previously

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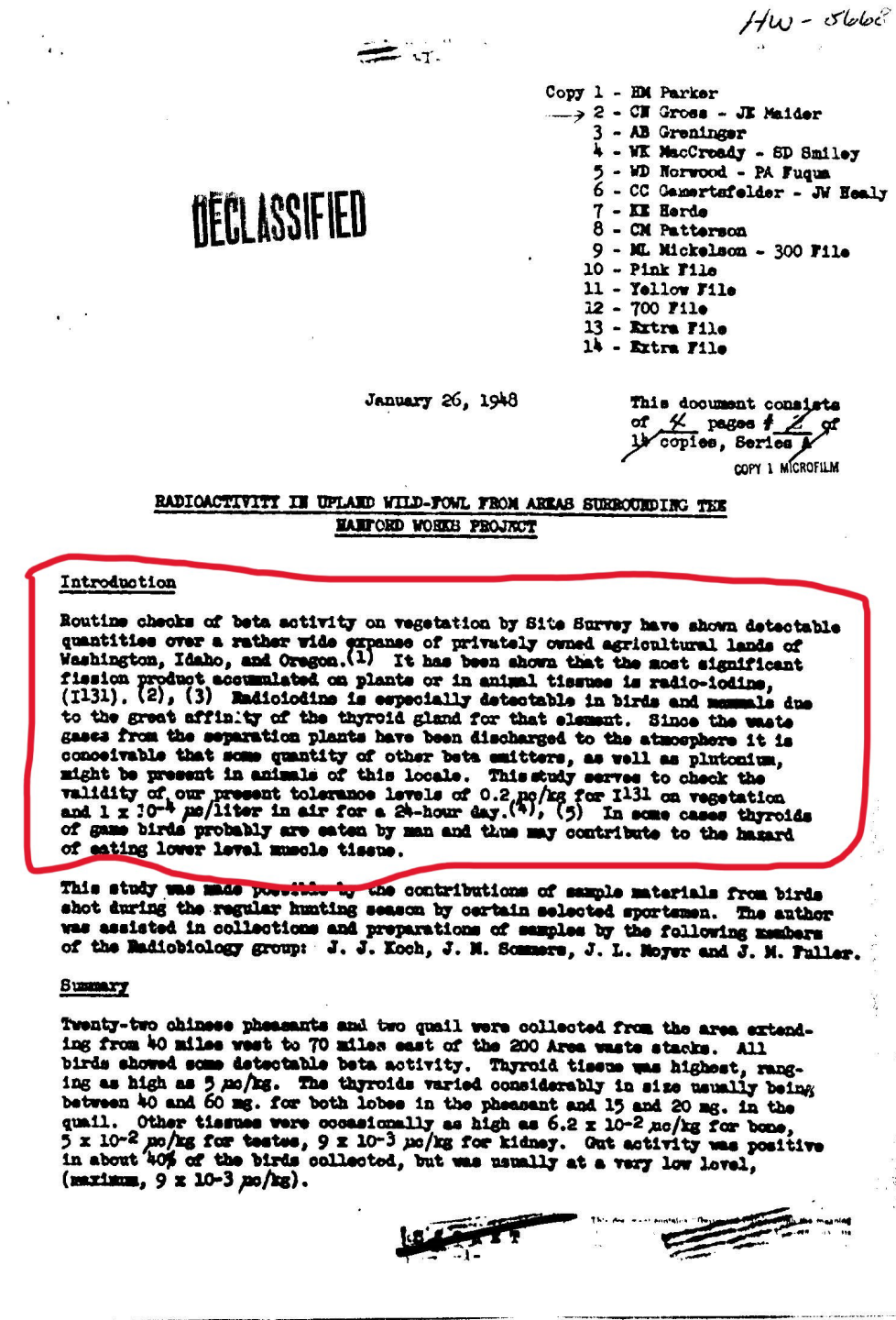
[redacted]

“Privately owned herds of cattle ranging to the Columbia River from North of the Project [Hanford] area may have accumulated considerable I-131 in their thyroid glands.”

- K. E. Herde (1946)

- *“Routine checks of beta activity on vegetation [have] shown detectable quantities over a rather wide expanse of privately owned agricultural lands of WA, ID, and OR...in some cases thyroids of game birds probably are eaten by man.”*
- K. E. Herde (1948)



HW - 5666

Copy 1 - HM Parker
→ 2 - CN Gross - JE Maider
3 - AB Greninger
4 - WK MacCready - SD Smiley
5 - WD Norwood - PA Fuqua
6 - CC Gamertsfelder - JW Healy
7 - KE Herde
8 - CM Patterson
9 - ML Mickelson - 300 File
10 - Pink File
11 - Yellow File
12 - 700 File
13 - Extra File
14 - Extra File

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January 26, 1948

This document consists of 4 pages # 2 of 14 copies, Series A

COPY 1 MICROFILM

RADIOACTIVITY IN UPLAND WILD-FOWL FROM AREAS SURROUNDING THE HANFORD WORKS PROJECT

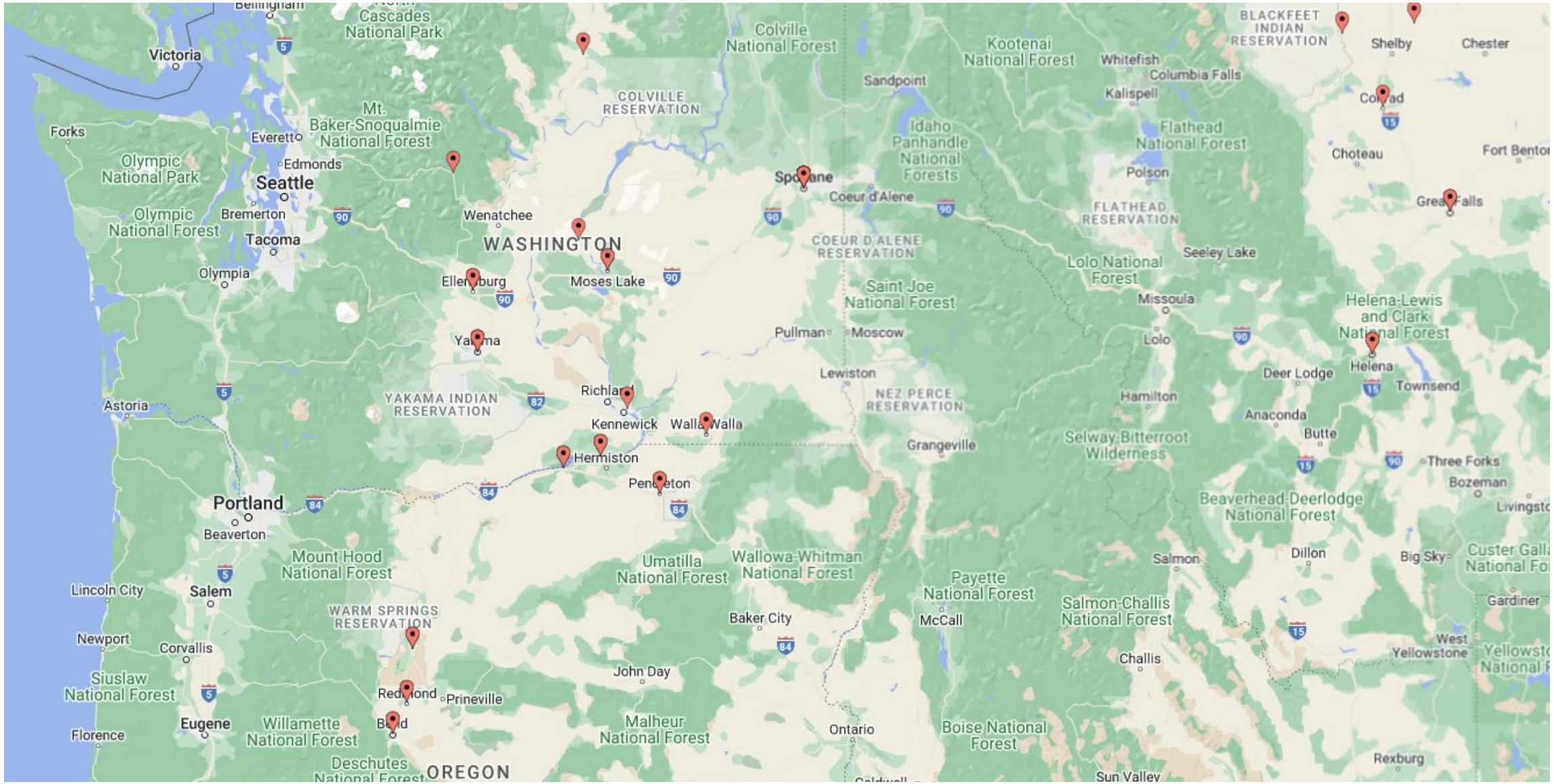
Introduction

Routine checks of beta activity on vegetation by Site Survey have shown detectable quantities over a rather wide expanse of privately owned agricultural lands of Washington, Idaho, and Oregon.(1) It has been shown that the most significant fission product accumulated on plants or in animal tissues is radio-iodine, (I^{131}). (2), (3) Radioiodine is especially detectable in birds and mammals due to the great affinity of the thyroid gland for that element. Since the waste gases from the separation plants have been discharged to the atmosphere it is conceivable that some quantity of other beta emitters, as well as plutonium, might be present in animals of this locale. This study serves to check the validity of our present tolerance levels of 0.2 μc/kg for I^{131} on vegetation and 1×10^{-4} μc/liter in air for a 24-hour day.(4), (5) In some cases thyroids of game birds probably are eaten by man and thus may contribute to the hazard of eating lower level muscle tissue.

This study was made possible by the contributions of sample materials from birds shot during the regular hunting season by certain selected sportsmen. The author was assisted in collections and preparations of samples by the following members of the Radiobiology group: J. J. Koch, J. M. Sommers, J. L. Moyer and J. M. Fuller.

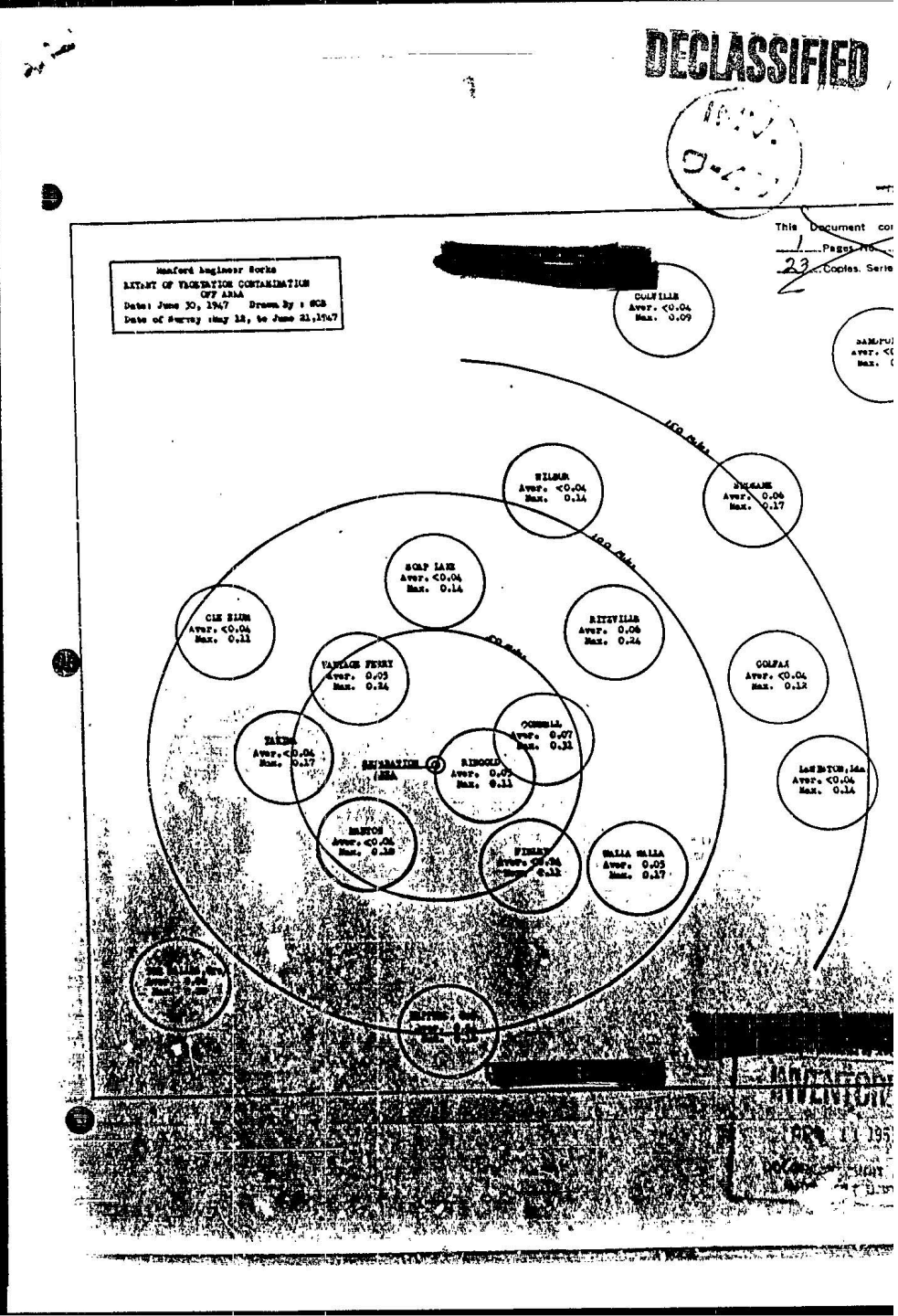
Summary

Twenty-two chinese pheasants and two quail were collected from the area extending from 40 miles west to 70 miles east of the 200 Area waste stacks. All birds showed some detectable beta activity. Thyroid tissue was highest, ranging as high as 5 μc/kg. The thyroids varied considerably in size usually being between 40 and 60 mg. for both lobes in the pheasant and 15 and 20 mg. in the quail. Other tissues were occasionally as high as 6.2×10^{-2} μc/kg for bone, 5×10^{-2} μc/kg for testes, 9×10^{-3} μc/kg for kidney. Gut activity was positive in about 40% of the birds collected, but was usually at a very low level, (maximum, 9×10^{-3} μc/kg).


Victoria
Cascades National Park
Colville National Forest
Kootenai National Forest
BLACKFEET INDIAN RESERVATION
Shelby
Chester
Whitefish
Columbia Falls
Kalispell
Sandpoint
COLVILLE RESERVATION
Forks
Mt. Baker-Snoqualmie National Forest
Everett
Idaho Panhandle National Forests
Flathead National Forest
Choteau
Fort Benton
Olympic National Park
Edmonds
Seattle
Spokane
Coeur d'Alene
Polson
Great Falls
Olympic National Forest
Bremerton
Wenatchee
FLATHEAD RESERVATION
Tacoma
WASHINGTON
COEUR D'ALENE RESERVATION
Seeley Lake
Olympia
Ellensburg
Moses Lake
Lolo National Forest
Saint Joe National Forest
Missoula
Helena-Lewis and Clark National Forest
Pullman
Moscow
Lolo
Yakima
Lewiston
Helena
Deer Lodge
Townsend
Richland
YAKAMA INDIAN RESERVATION
NEZ PERCE RESERVATION
Hamilton
Astoria
Kennewick
Walla Walla
Anaconda
Butte
Grangeville
Selway-Bitterroot Wilderness
Hermiston
Three Forks
Pendleton
Bozeman
Portland
Beaverton
Beaverhead-Deerlodge National Forest
Mount Hood National Forest
Umatilla National Forest
Wallowa-Whitman National Forest
Salmon
Dillon
Big Sky
Custer Gallatin National Forest
Lincoln City
Salem
Payette National Forest
Gardiner
WARM SPRINGS RESERVATION
Baker City
McCall
Salmon-Challis National Forest
Newport
Corvallis
West Yellowstone
Challis
Siuslaw National Forest
John Day
Redmond
Prineville
Eugene
Willamette National Forest
Malheur National Forest
Ontario
Boise National Forest
Florence
Deschutes National Forest
OREGON
Rexburg
Sun Valley

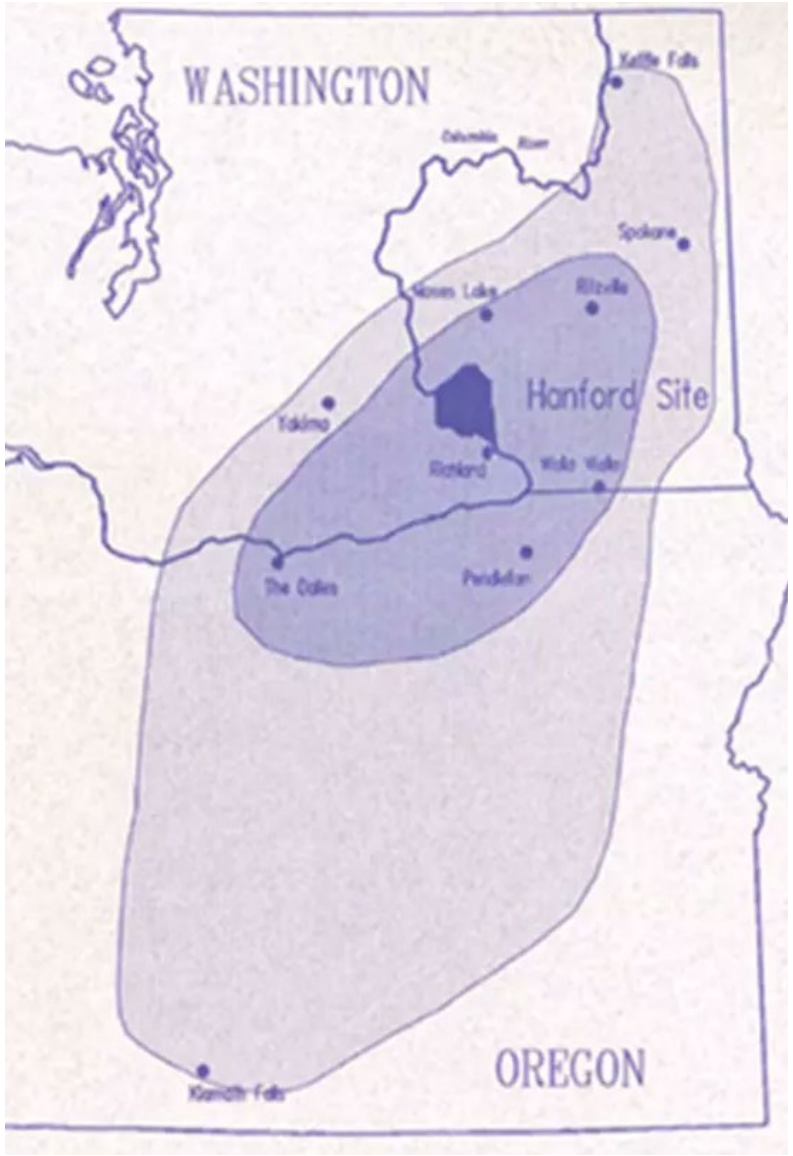
Bases/Stations in monitoring vicinity from 1944-1947

Naval Surface Warfare Center Acoustic Research Detachment	Bayview,Idaho,US	1942-1946
Camp Rimini	Helena,Montana,US	1942-1945
Conrad Airport	Conrad,Montana,US	1943-1945
Cut Bank Army Airfield	Cut Bank,Montana,US	1943-1944
Great Falls Air National Guard Base	Great Falls,Montana,US	1943-9999
Helena Army Airfield	Helena,Montana,US	1941-1945
Malmstrom AFB	Great Falls,Montana,US	1941-9999
Shelby Airport	Toole County,Montana,US	1941-1945
Boardman Bombing Range	Boardman,Oregon,US	1943-2000
Camp Abbot	Bend,Oregon,US	1942-1945
Madras Army Airfield	Madras,Oregon,US	1942-1945
Pendleton Army Air Base	Pendleton,Oregon,US	1941-1945
Redmond Army Airfield	Redmond,Oregon,US	1943-1945
Umatilla Chemical Depot	Umatilla,Oregon,US	1941-9999
Camp Abbot	Bend,Oregon,US	1942-1945
Madras Army Airfield	Madras,Oregon,US	1942-1945
Pendleton Army Air Base	Pendleton,Oregon,US	1941-1945
Redmond Army Airfield	Redmond,Oregon,US	1943-1945
Umatilla Chemical Depot	Umatilla,Oregon,US	1941-9999
Air Force Plant 53	Moses Lake,Washington,US	1942-1962
Ellensburg AAF	Ellensburg,Washington,US	1943-1945
Ellensburg AAF Auxiliary #1	Ellensburg,Washington,US	1943-1945
Ephrata Army Airfield	Ephrata,Washington,US	1939-1945
Fairchild AFB	Spokane,Washington,US	1942-9999
Felts Field	Spokane,Washington,US	1942-1945
Fort George Wright	Spokane,Washington,US	1896-1957
Fort Simcoe	Yakima,Washington,US	1856-1859
Geiger Field	Spokane,Washington,US	1941-1945
Moses Lake Army Air Base (1942–1948)	Moses Lake,Washington,US	1942-1966
NAS Pasco	Spokane,Washington,US	1941-1999
Navy Operation Support Center Spokane / Velox Naval Supply Depot	Spokane,Washington,US	1942-1958
Omak Airport	Riverside,Washington,US	1942-1954
Pasco Holding and Reconsignment Point	Pasco,Washington,US	1942-1958
Radar site L-63	Baleville,Washington,US	1943-1944
Walla Walla Army Airbase	Walla Walla,Washington,US	1942-1947
Yakima Air Base	Yakima,Washington,US	1942-1945
Yakima Training Center	Yakima,Washington,US	1942-9999



HEW Extent of Vegetation Contamination Off Area, 1947

- Surveyed area includes:
- Yakima, Walla Walla (WA)
- The Dalles, OR
- Lewiston and Sandpoint, ID



1949 Green Run

Records?

- National Archives, St. Louis
- National Personnel Records (NPRC), St. Louis
- Archival to Access Database (AAD)
  - Basic enlistment information
- VA
- Units' Local Archives