

**OCEAN DUMPING OF RADIOACTIVE
WASTE OFF THE PACIFIC COAST**

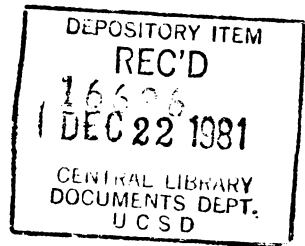
**HEARING
BEFORE A
SUBCOMMITTEE OF THE
COMMITTEE ON
GOVERNMENT OPERATIONS
HOUSE OF REPRESENTATIVES
NINETY-SIXTH CONGRESS**

SECOND SESSION

OCTOBER 7, 1980

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and Natural Resources Committee.



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COMMITTEE TO BRIDGE THE GAP

1637 BUTLER AVENUE #203
LOS ANGELES, CALIFORNIA 90025
(213) 478-0829

October 7, 1980

STATEMENT BY DANIEL HIRSCH, SPOKESPERSON FOR THE COMMITTEE TO BRIDGE THE GAP,
ON RELEASING LIST OF 50 OCEAN NUCLEAR WASTE DUMPS

"It has been a practice on the Pacific Coast to dispose of low-level waste by jettisoning containers of it onto the bottom of the sea in designated disposal areas. There is no evidence that this disposal practice has resulted in any inimical effect upon the environment; but neither is there evidence that harmful effects cannot eventually result from it.

"The concern here is not with any magnitudes of disposal already undertaken, but rather with understanding the implications of the continuing and increasing use of the oceans as a receptacle for disposal. History is replete with cases in which unrestricted pollution of various kinds, rapidly developing from innocuous beginnings, has subtly damaged or destroyed resources before understanding and controls could be developed." [emphasis added]

National Academy of Sciences, 1962¹

Today the Committee to Bridge the Gap, a Los Angeles-based environmental research organization, is releasing a list of 50 former U.S. ocean dumpsites for nuclear wastes, including one in the Santa Cruz Basin just 33 miles off the Southern California coast. We believe this list to be far more extensive than that available from any single federal agency; nonetheless, the information we have pieced together in a year's worth of searching through old records is vastly incomplete, indicating a major need for a responsible agency to fill in the missing gaps in information and undertake serious monitoring of the sites to determine if there is any hazard posed by the radioactive wastes that government officials admit are leaching out of the containers in which they were dumped.² It seems incomprehensible that an independent public interest group like Bridge the Gap has to piece together this information rather than a responsible federal agency.

In fact, we find the various agencies we contacted, each of whom had a list of dumpsites that disagreed with each other agency's list, have been asking us for information! As one EPA official wrote us ³, "Answers to some of your specific questions you must realize, then, are not known by us. It is more likely that you could provide us with information..."

And when we sent a Freedom of Information request to the Navy about their involvement in dumping radioactive wastes from Atomics International, then a division of North American Aviation, at the dumpsite off Los Angeles, we got back the following response:

...the Navy does not have or has never been involved with North American or any other company to dump radioactive materials at the site identified above.⁴

Nevertheless, the Navy's Freedom of Information officer requested that we provide him with any proof we might have to the contrary.

Of course, we do have such proof. A 1973 report for the National Oceanic and Atmospheric Administration⁵ about an inspection of the Santa Cruz Channel site—near the Santa Cruz Island, part of the newly designated Channel Islands National Park—expressed surprise at finding the radioactive waste site littered also with dumped munitions. However, according to the report, "subsequent conversation with AEC personnel revealed that the common occurrence of both radioactive barrels and munitions was due to the fact that the U.S. Navy conducted the radioactive disposal operation in Santa Cruz Basin."

This is confirmed by a 1954 report by Atomics International to the Atomic Energy Commission ⁶, a report, by the way, which we were able to obtain only on microcard, an early predecessor to the microfilm process, and for which there are only a handful of reading machines still operating in the country, and from which copies are virtually impossible to make. These are the kinds of records that remain of what was dumped and where. It is no wonder that the Navy thinks it never dumped the stuff there, and EPA doesn't know where all the

the other dumps are and exactly what was dumped where.

As an EPA official wrote us, there could be substantial error in estimates of how much radioactivity was actually dumped, because, as she put it⁷,

effort at the time of the dumping was not put into extremely accurate measurement and recording of wastes, as they were seen as just that - something to throw away. In addition, many existing records, estimates though they were, were periodically destroyed with other file records as they attained twenty-five years of age.

The guesstimate nature of the locations and size of the dumps is confirmed in another document we uncovered from the old AEC⁸:

All of the other numbers are judgmental estimates. The categorized number of drums are probably close to actuality whereas the estimated curie content [a measure of the amount of radioactivity contained] could be off as much as a factor of 10.

Our own research indicates that the error could be even greater.

Thus, when we are told, for example, not to worry about the Santa Cruz Channel site because it is smaller than the more famous Farallon Islands site (about 1/10 the number of 55-gallon concrete-weighted drums dumped and even a smaller percentage of radioactivity estimated), one cannot be very confident that that is correct. A case in point: a spokesperson for the NRC said recently⁹ that there was nothing to worry about regarding the Santa Cruz Channel site because no radioactive substances of the nature of plutonium were dumped there. Yet the Atomics International document mentioned above indicates that plutonium and mixed fission products were indeed dumped there¹⁰; this is confirmed by other documents. No one in any government agency seems to know what is really going on with these dumps; and what they know, they seem to be reluctant to disclose to the public and the media.

At one of the East Coast dumpsites, 150 miles or so from the Delaware-Maryland line, the U.S. Navy dumped an entire nuclear reactor vessel-- described by a reporter for the Boston Globe as "believed to be the largest,

single radioactive item deliberately dumped into the sea"¹¹—and when they went back to monitor it twenty years later, couldn't find it! The Navy has been very closed-mouthed about why they dumped the reactor, which was taken from an early nuclear submarine called the *Seawolf*, as well as why they went looking for it and why they couldn't find it, so we decided to ask the one person in government who should have the answers, President Carter. Carter, it turns out, says in his book, Why Not the Best?, that he was senior officer of the crew of the *Seawolf* and helped in the construction of the prototype reactor for that sub.¹² Although Carter left the Navy long before the reactor was dumped, he is likely to know what happened to the reactor whose early construction he was involved in for the sub he once served; so we asked. And once again, we got a non-answer from someone in the Navy Department.¹³

We've gone to the agencies that should know, including those involved originally in the dumping; we've gone to the top; and in July we travelled to San Francisco to ask the U.S. Radiation Policy Council, created earlier in the year by Executive Order to attempt to coordinate radiation policy questions among the various agencies; but all we have gotten is reluctance to release information and a request that we provide these governmental agencies with whatever we have uncovered.

It is clear that no one is keeping an adequate eye on these dumpsites, that no one is doing adequate monitoring of them, and that no one is even making sure we know where they all are.

Every official study of ocean dumping we have seen¹⁴ has concluded that there is a major need for routine, careful monitoring of these sites and careful compilation of information about them. The National Academy of Sciences twenty years ago concluded, and their conclusion is more important today than

when it was written¹⁵;

There must be sufficient monitoring of disposal sites to ensure public health and safety, and to protect marine resources. Such monitoring should not be performed solely by the regulating agency. Records of the quantity and type of radioactive wastes and the areas in which they are disposed of should be maintained in a national center. These records should be available to interested groups, and periodic summaries should be issued. J. A. P. D.

An increasing concern about the introduction of radioactive wastes into the sea is apparent at all levels, from local communities to international organizations. . . . The problems involved are complex and can be solved only through the joint efforts of all agencies: local, national, and international. The future will bring new and unanticipated problems, and differing interpretations of incomplete information may lead to controversy. Joint efforts to meet present problems will depend upon available knowledge and its interpretation. A full and free exchange of basic information is necessary.

That is the situation we find ourselves in today, "differing interpretations of incomplete information leading to controversy." And the solution remains the one recommended 20 years ago by the National Academy, "a full and free exchange of basic information." And yet the agencies who have the power to obtain and release that information seem not to be doing their job.

None of us know whether there is any substantial hazard from these radioactive waste dumps. That is precisely why EPA and other agencies should obtain and release the information necessary to make that determination. With the Department of Energy seriously considering a massive revival of ocean dumping of nuclear wastes—outlawed by the U.S. for the last decade—when there is such a paucity of information available about the effects of previous dumping seems especially irresponsible.

As the National Academy of Sciences report said regarding the many uncertainties about possible harm to the environment and the public from not-well-thought-out major reliance of the ocean dumping "option," "It therefore behooves us to examine carefully the capacity of the oceans to receive this waste."¹⁶

Footnotes

- 1) National Academy of Sciences-National Research Council, 1962 report: Disposal of Low-Level Radioactive Waste into Pacific Coastal Waters
- 2) EPA's Dyer and NRC's Hanchett both make this admission in the Ventura Star Free Press of August 1, 1980; also see Dyer, "Environmental Surveys of Two Deepsea Radioactive Waste Disposal Sites Using Submersibles", USEPA Office of Radiation Programs, March 1976: "Data is presented showing the presence of plutonium contamination in sediments collected within a cluster of both intact and breached packages at the 900 meter dumpsite area in the Pacific." Dyer goes on to report plutonium levels in sediments 2-25 times higher than the maximum expected concentration that could have resulted from weapons testing fallout; and cesium-137 levels 3-70 times higher.
- 3) letter from Marilyn Varela, USEPA Office of Radiation Programs, March 5, 1980
- 4) letter from Donald Carr, FOIA Coordinator, Department of the Navy, Jan. 23, 1980
- 5) p. 30, "Submersible Inspection of Deep Ocean Waste Disposal Sites off Southern California" by Robert Brown and Edward Shenton, Plessey Environmental Systems, for the National Oceanic and Atmospheric Administration, April, 1973
- 6) p. 6-7, NAA-SR-MEMO-886, "Radioactive Waste Disposal at North American Aviation, Inc." by J.C. Lang, written for the AEC, February 8, 1954 (North American Aviation was the parent company for Atomics International; Rockwell is now). Atomics International's involvement in dumping at the Santa Cruz Channel site is further confirmed in a letter by J.D. Gylfe, Director of External Affairs for AI, to the Ventura County Board of Supervisors, dated March 4, 1980.
- 7) Varela letter, referenced in footnote three
- 8) p. 2, WASH-734, "United States' Sea Disposal Operations: A Summary to December 1956", written for the U.S. Atomic Energy Commission by Arnold Joseph.
- 9) to the Ventura Star Free Press
- 10) item referenced in footnote 6, p. 4-5, "The principal contaminant is mixed fission products, while others would include: natural uranium...thorium... artificial separated isotopes, plutonium, polonium." The fact that mixed fission products are included is confirmed, along with "miscellaneous pile-produced isotopes" on p. 19 of item referenced in item 5.
- 11) AP wire item 5/17/80
- 12) p. 58-60, Why Not the Best?; for further information, a packet is available from Bridge the Gap.
- 13) available from Bridge the Gap
- 14) The 1960 and 1972 monitoring of the Santa Cruz Channel dump, botched though they were, both came to that conclusion; as did the 1960 and 1962 National Academy of Sciences studies.
- 15) NAS, p. 72-73, 1960, Biological Effects of Atomic Radiation
- 16) p. vii, NAS 1962 report, referenced in footnote #1.

COMMITTEE TO BRIDGE THE GAP

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TABLE
OF 50
FORMER OCEAN DUMPSITES
FOR
NUCLEAR WASTES

October 7, 1980

Years used	Approximate Locations	Depth	# of Pack-ages	Approx Curies	Common Name of Site	Miles to Land	Sources for Data	Years sites were monitored
	52°05'N 140°00'W (1)	2030			Cape Scott Canada	430 (230)	4	
	51°30'N 136°31'W (2)	1965			"	320 (170)	4	
	50°56'N 136°03'W (3)	2040			"	285 (167)	4	
	40°07'N 135°24'W (4)	1090			Cape Mendocino California	500 (337)	4	
1951-53	37°38'N 123°08'W (5)	492	3,500	1,100	Farallon Islands Farallon Islands subsite A California	30	1-6	1957, 1960 1974
1946-50 1954-55	37°37'N 123°18'W (6)	929	44,000	13,400	Farallon Islands subsite B California	38	1-6	1957, 1960 1974
1946			3 Tug-loads		Farallon Islands 1st Dumpsite		6	
1953-61	33°39'N 119°28'W (8)	1060	3,000+	108	Santa Cruz Island Basin California (off LA)	33	1,4,5 6,7	1957, 1960 1972
	32°00'N 121°30'W (7)	1207	4,415	33.6	San Diego California	215 (145)	4	
	30°43'N 139°06'W (10)	2500			Los Angeles California	850 (400)	4	
	21°28'N 157°25'W (11)	2000			Oahu Hawaii	70 (40)	4	
	34°58'N 174°52'W (12)	3055			Midway Island	425 (370)	4	

* Miles Depth in Columns distance to land in nautical miles (distance from nearest shore). Curies per centimeter is cur figure without measurement. For Pacific sites only - from nearest shore. Curies per centimeter is cur figure without measurement.

Years used		Approximate Locations		Depth	# of Pack-ages	Approx Curies	Common Name of Site	Miles to Land	Sources for Data	Years sites were Monitored
Years used	Approximate Locations	Depth	# of Pack-ages							
1951-58	42°25'N 70°35'W (13)	52	4,008	2,440	Massachusetts Bay	10	1&5	1959		
	41°33'N 65°30'W (14)	~1000	~1000?				6			
1951-56	38°30'N 72°06'W	1530	14,300	68,500 41,400	Sandy Hook	12.1	2&3	1974		
1959-62	(15)									
1957-59	37°50'N 70°35'W (16)	2077	14,500	2,100	Sandy Hook	208	2&3			
1951-67	36°56'N 74°23'W (17)	945	639	60.5	Cape Henry Virginia	78	1&5			
1959-60	36°44'N 45°00'W (18)		228	456			5			
1959-60	36°50'N 74°23'W (19)		204	24.5			5			
	36°30'N 74°13'W (20)	~1000	~150				6			
1951-58	(21)		97	.1	Midcocean		5			
1959-60	(22)		22	.1	Midcocean		5			

Atlantic Ocean		Approximate Locations	Depth	# of Pack-ages	Approx Curies	Common Name of Site	Miles to Land	Sources for Data	Years sites were Monitored
Years used	Approximate Locations								
	43°49'N 45°00'W (45)	2000			Central Atlantic	800	4		
	42°07'N 45°00'W (45)	2000			Central Atlantic	800	"		
	41°33'N 65°33'W (48)	1305			Cape Cod Mass.	196	"		
	38°41'N 45°00'W (46)	2000			Central Atlantic	800	"		
	37°07'N 45°00'W (22)	2000			Central Atlantic	800	"		
	36°20'N 45°00'W (40)	2000			Central Atlantic	800	"		
	34°32'N 76°40'W (42)	10			Beaufort, N.C.	10	"		
	31°15'N 76°35' (40)	14				27	"		
	33°55'N 75°11'W (42)	1897			Cape Lookout, N.C.	83	"		
	31°52'N 75°52'W (41)	1600			Charleston, SC.	205	"		
	33°50'N 75°20'W (43)	2125			"	230	"		
	32°33'N 75°54'W (42)	1650			"	230	"		

Atlantic Ocean		Approximate Locations	Depth	# of Pack-ages	Approx Curies	Common Name of Site	Miles to Land	Sources for Data	Years since were collected
Years used	Approximate Locations								
	(35)	32° 30' N 75° 45' W	1606			Charleston, S.C.	140	4	
	(36)	31° 53' N 76° 28' W	1340			Savannah, Ga.	220	"	
	(37)	31° 35' N 76° 12' W	1440			"	235	"	
	(38)	31° 32' N 76° 30' W	1460			"	220	"	
	(39)	31° 27' N 81° 10' W	(10)			Sapelo Is., Ga.		"	
	(40)	31° 27' N 76° 48' W	1350			Savannah, Ga.	215	"	
	(41)	31° 10' N 76° 31' W	1550			Jacksonville, Fla.	257	"	
	(42)	31° 05' N 76° 35' W	1600			"	250	"	
	(43)	29° 38' N 77° 27' W	495			St. Augustine, Fla.	200	"	

ADDENDUM

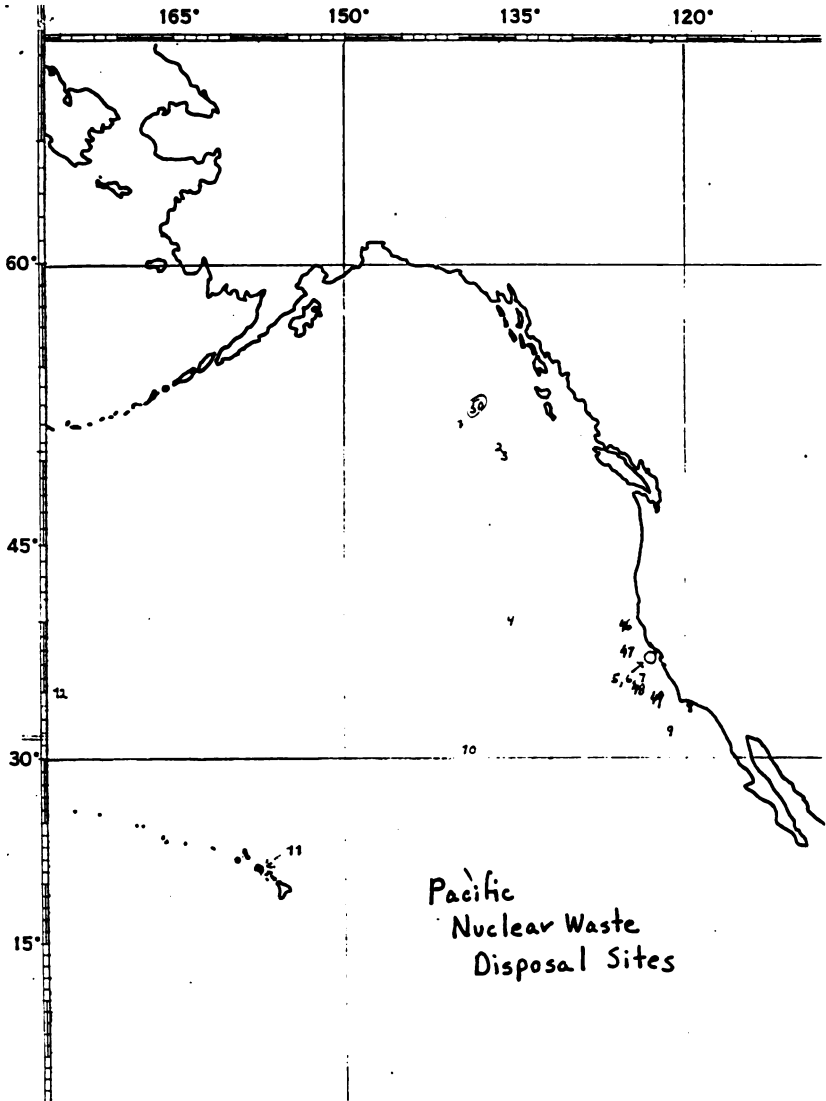
Since this list of nuclear waste dumpsites in the ocean was first compiled, several additional sites have been called to our attention.

Four sites from a May 13, 1958, agreement between State of California official agencies and firms licensed by the AEC to dispose of radioactive wastes at sea:

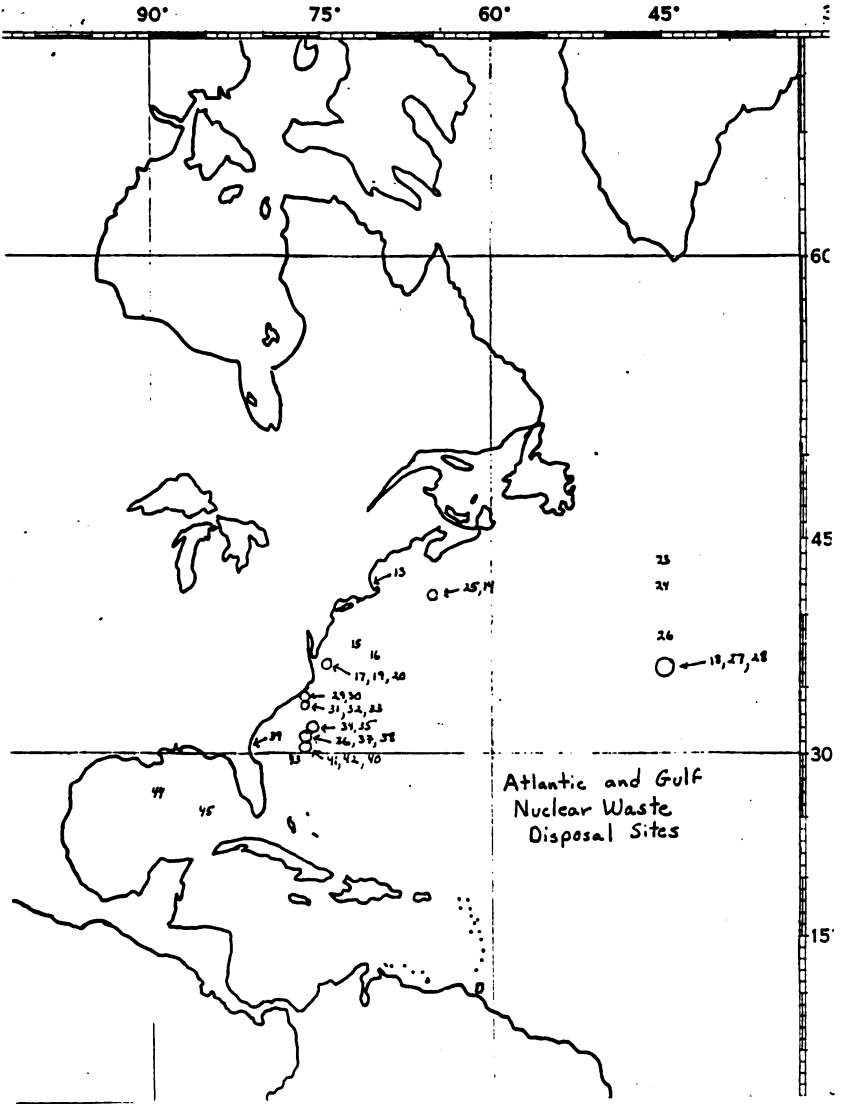
- 46.) $39^{\circ} 30' N$, $124^{\circ} 40' W$ - a point 88 miles west of Fort Bragg, California
- 47.) $37^{\circ} 40' N$, $124^{\circ} 50' W$ - a point 88 miles west of Southeast Farallon Island
- 48.) $36^{\circ} N$, $124^{\circ} W$ - a point 103 miles west-southwest of Point Sur, California.
- 49.) $34^{\circ} 30' N$, $122^{\circ} 50' W$ - a point 106 miles west of Point Arguello, California.
- 50.)

In addition, we have seen a recent press item indicating the EPA's Robert Dyer has located through a search of the records 4 disposal sites off the Canadian coast that were used by companies in the Pacific Northwest. As our chart only indicates three such sites, it would appear that a fourth site not included in our original chart exists. (Note that we do not have exact coordinates for this site, so the position on the enclosed map is not precise.)

If one considers the three subsites in the immediate vicinity of the Farallon Islands as three sites, that brings the total number of radioactive waste dumpsites in the ocean that we have been able to identify to 50.



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From Dept of Navy # 5760 - soundings in fathoms

DUNSMUIRE DIRECTRY

118° 30'

119°

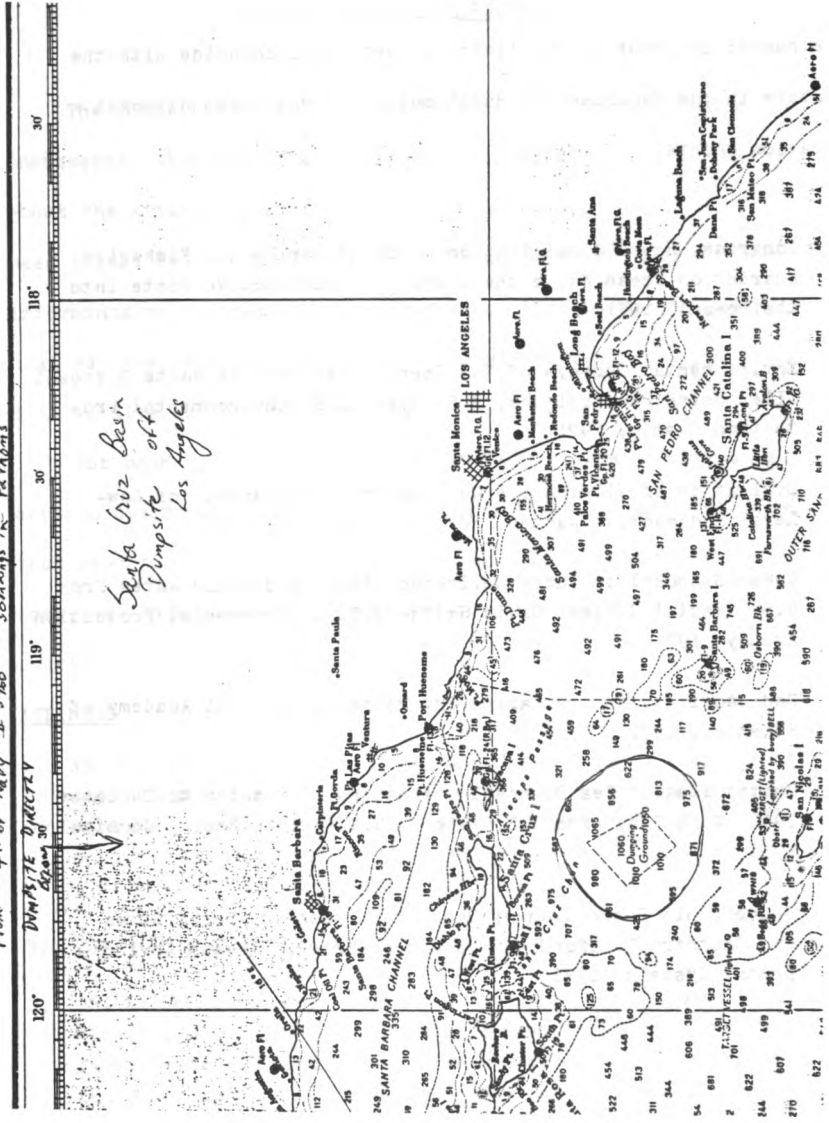
30'

118° 30'

120°

30'

Santa Cruz Basin
Dumpsite off
Los Angeles



SOURCES

The number in front of the listed reports will coincide with the numbers in the "sources for data" column on the ocean disposal location charts.

1. Congress, House Committee on Merchant Marine and Fisheries hearing on Ocean Waste the Dumping of Radioactive Waste into the Oceans 1971
2. Environmental Surveys of Two Deepsea Radioactive Waste Disposal Sites Using Submersibles, R.S. Dyer- U.S. Environmental Protection Agency, 1971
3. Evaluation of Alternative Methods For the Disposal of Low-Level Radioactive Wastes, NUREG/CR0688, 1979, (NRC)
4. Ocean Disposal of Barge Delivered Liquid and Solid Wastes From U.S. Coastal Cities, David Smith- U.S. Environmental Protection Agency, 1971
5. Radioactivity in the Marine Environment, National Academy of Sciences, 1971
6. United States' Sea Disposal Operations, A Summary to December 1956 WASH 734, Arnold B. Joseph- U.S. Atomic Energy Commission 1956
7. Submersible Inspection of Deep Ocean Waste Disposal Sites Off Southern California, Robert P. Brown, Plessey Environmental Systems, 1972

Appendix to Charts

The compiling of this information has left many questions unanswered. Initially it was difficult finding anyone who knew about the sites in question. This problem remains but has been joined by the problems posed by inadequate and conflicting informants or sources. The open boxes on the charts are areas that we have been unable to find information about but even that data we site is open to question.

For both the Atlantic and the Pacific oceans we have found certain discrepancies in the available data and a number of areas that need to be explored in more detail. In relationship to the charts we have prepared we have had to omit some data from the charts.

ATLANTIC

- A. At the 1530 fathom site there is a dispute concerning the exact figure for the number of curies. We supplied both on our chart but are ourselves unsure about the totals and would like to know more about the Seawolf reactor vessel that supplied a major portion of these curies.
- B. The WASH 734 report lists two sites that no other report lists
- C. The National Academy of Sciences and the Nuclear Regulatory Commission reports differ on the curie counts for the 2077 fathom site off Sandy Hook. The NAS report combines both sites but comes up with a different figure than one would from combining the figures from the sites as listed in the NRC report.

Appendix cont.Pacific ocean

A. For the sites listed as being near Cape Scott Canada there is some question about the totals for the number of packages and for the curie counts. The NAS report #5 on the sources page lists a total of 391 for packages and a total of 97.4 for curies for an area between $40^{\circ}07'N$ $135^{\circ}24'W$ and $54^{\circ}10'N$ $141^{\circ}09'W$. This listing encompasses the Cape Mendocino California site as well as those listed as Canadian. The NAS report also shows the sites as being used from 1946 to 1966. This is later than most sites but it doesn't specify which of the sites out of this broad area were used or when they were used.

B. There are a number of different locations given for the Farallons sites and for the number of packages and total curie counts.

The NAS report lists these figures:

1946-65 $37^{\circ}39'N$ $123^{\circ}26'W$ 47,541 packages 14,468.3 curies

1966 $37^{\circ}12'N$ $123^{\circ}55'W$ 3 " 15.3 "

The Congressional testimony cited these boundaries for the Farallons:

$37^{\circ}38'N$ $123^{\circ}18'W$ & $37^{\circ}38'N$ $123^{\circ}30'W$

$37^{\circ}43'N$ $123^{\circ}24'W$ & $37^{\circ}43'N$ $123^{\circ}30'W$

C. The E.P.A. report by Bob Dyer doesn't complete the location reference for the Farallons subsite B. This is carried over to the NRC study.

D. A third Farallons site is discussed in WASH 734 as having been used as the first site there in 1946 but used only for "three tugloads" of waste.

E. The curie figures and package counts for the Santa Cruz Basin site differ in two reports.

NAS places the package count at 164 and curies at 47.9. This is clarified by Flessey; the 164 containers were part of a 1961 experiment by the AEC involving approximately that curie

Appendix cont.

- count and that exact number of containers. Prior to that experiment an estimated 2,950 containers containing 60 curies of activity had been dumped at the Santa Cruz Basin. The two combine for the over 3,000 containers and 100 curies.
- F. WASH 734 mentions that a few drums of waste went out of the University of Washington and I speculate that this might be the source for the wastes off Cape Scott Canada. No other mention is found concerning the source of wastes in the Pacific Northwest.
- G. WASH 734 also discusses a practice known as "shortdumping." This means wastes would be tossed out early due to inclement weather which meant that the boats transporting the wastes to the dumping grounds were unable to make the complete trip.
- H. The NRC report states that there were 5 sites in the Pacific, 11 in the Atlantic and 1 in the Gulf. We have 10 in the Pacific 31 in the Atlantic and 2 in the Gulf. (We have counted the three Farallons subsites--numbered 5-7 on chart--as one site). There are thus 43 sites that we know of.
- I. EPA's Robert Dyer has suggested that some of the sites on the chart may be of dumpsites that were identified for use or approved for use but nonetheless never used; he was, however, unable to identify which those were likely to be. It is quite possible that among the 43 are sites that were never used, but that is something that should be cleared up definitively. Each document we have cited gave the clear impression they were listing radioactive waste disposal sites that had been used.
- J. The column marked "approximate curies" is a measure of how much radioactivity was contained in the material dumped. A curie corresponds to the radioactivity of one gram of fresh radium; it represents the quantity of a radioactive isotope which undergoes 37 billion nuclear disintegrations per second.