

EXECUTIVE OFFICER SUMMARY REPORT
MEETING DATE: September 21, 1983

ITEM: 16

SUBJECT: U.S. Navy - Alameda Naval Air Station Class II-2 Solid Waste Disposal Site, Alameda, Alameda County - Closure Requirements

CHRONOLOGY: The Board has not previously considered Waste Discharge Requirements for this site

DISCUSSION: The U.S. Navy owns and operated a 110 acre waste disposal site at the southwest corner of the Alameda Naval Air Station (location map in Appendix A). Of the 110 acres, approximately 63 acres were used for the disposal of wastes that were predominantly Group 2 and 3. Some Group 1 materials may also have been disposed. The remainder of the site was used for dredge spoil disposal. Disposal operations ceased in 1978.

The Navy submitted a site assessment report in March 1978, a closure report in June 1980, and a supplementatl site assessment report in April 1983. The proposed closure plan does not completely conform to minimize closure requirements with respect to final cover, leachate containment and seismic hazard. In addition, the Navy is proposing to use the surface of the closed landfill as a dredge spoil dewatering area sometime after 1985.

Funds for the Closure project were originally appropriated by Congress in October 1979. They must be committed for expenditure by October 1, 1983 to avoid possible loss. Due to the time constraints regarding the expenditure of appropriated funds, and the uncertainty regarding several aspects of this project, the Navy's proposal is acceptable as an interim closure only. A more detailed discussion is contained in the attached staff report (Appendix B). The Tentative Order (Appendix A) requires that the site be closed in accordance with the closure plan. In addition, it requires the submittal of supplemental information to assess the effectiveness of interim closure measures. The results of these submittals may require additional measures to affect a final closure.

RECOMMEN-
DATION: Adoption of the Tentative Order prescribing waste discharge requirements for closure of the U.S. Navy - Alameda Naval Air Station solid waste disposal site.

File No. 2199.9080

Appendices

- A. Tentative Order
- B. Staff Report
- C. Correspondence

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

1 JACKSON STREET, ROOM 6040
OAKLAND 94607Phone: Area Code 415
464-1255

Date: August 19, 1983

File: 2199.9080A (RAS)ej

Department of the Navy
Western Division
Naval Facilities Engineering Command
P.O. Box 727
San Bruno, CA 94066

Attn: James Washington, Engineer in Charge

NOTICE
OF

TENTATIVE ORDER

FOR

U.S. NAVY, ALAMEDA NAVAL AIR STATION

CLASS II-2 SOLID WASTE DISPOSAL SITE

ALAMEDA AND SAN FRANCISCO COUNTIES

Comments or recommendations you may have concerning the
Tentative Order should be submitted in writing to this
Regional Board by September 9, 1983. Comments re-
ceived after this date cannot be given full consideration.

Sincerely,

Handwritten signature of Richard J. Condit in cursive script.

RICHARD J. CONDIT
Section Leader

Enclosure: Tentative Order

N00236.000115
ALAMEDA POINT
SSIC NO. 5090.3

APPENDIX A – TENTATIVE ORDER
CLASS II-2 SOLID WASTE DISPOSAL
SITE CLOSURE REQUIREMENTS
DATED 21 SEPTEMBER 1983

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

TENTATIVE ORDER
CLOSURE REQUIREMENTS FOR

U.S. NAVY,
ALAMEDA NAVAL AIR STATION CLASS II
SOLID WASTE DISPOSAL SITE
ALAMEDA AND SAN FRANCISCO COUNTIES

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. The disposal site is owned and was operated by the United States Navy, who will be referred to hereinafter as the discharger.
2. The disposal site occupies approximately 110 acres, at the Alameda Naval Air Station's southwest corner. Of the 110 acres, approximately 63 acres have been filled with refuse. The site is bordered on the south and west by both the San Francisco Bay and a dredge spoils disposal area, and on the north and east by runways, as shown in Attachments A and B to this order.
3. Prior to 1925, the U.S. Naval Air Station at Alameda was an area of tidal marsh and sloughs. It is underlain by bay mud which is a soft, gray silty clay containing minor amounts of sand and shells. The bay mud tends to become firmer with depth. Sand and clay fill were placed over the mud during the period 1925 to 1929. The bottom of the younger bay mud is as deep as 80 to 100 feet. Usable groundwater aquifers in the area are artesian and are located below the Bay Mud in the lower sections of the Alameda formation. The top of bedrock is approximately 300-400 feet deep.
4. Filling began in 1956 with construction of the sea wall on the south and west sides and hydraulic placement of 15 to 20 feet of sand fill. Former landfill operations consisted of excavating 10-20 feet of hydraulic sand fill, backfilling the excavation with solid waste and the excavated sand, and covering the fill with the remaining excavated sand. Disposal of refuse ceased in 1978.
5. There is no evidence of any fault traversing the site. However, the site is located approximately six miles west of the Hayward Fault and about 12.5 miles east of the San Andreas Fault. These faults are known to be active and have been the cause of major earthquakes in the past.
6. During the landfills later years of operation only group 2 and group 3 materials were accepted. However, no records were kept during the early years of operation making it possible that some group 1 wastes were disposed on site.

A U.S. Navy authorized Initial Assessment Study of Naval Air Station, Alameda, California dated April 1983, indicates that it is highly probable group 1 waste were disposed at this site. The report indicates that the site may contain a maximum of 1.6 million tons of municipal refuse and 30,000 to 500,000 tons of hazardous waste. Naval Air Station personnel however, have indicated that they believe the group 1 wastes comprise an insignificant portion of the solid waste disposed on site. The discharger has initiated an investigation to better clarify this issue and to determine the effect or potential effect of these hazardous wastes on the shallow groundwater and water quality in San Francisco Bay. Past groundwater monitoring was not sufficient to determine if groundwater contamination from group I wastes exists.

7. In March 1978 the discharger submitted a "Sanitary Landfill Site Study" which has been augmented and updated by a June 1980 submittal entitled "Sanitary Landfill Closure Plan Naval Air Station, Alameda, California" and an April 1983 supplemental. These reports address such items as closure schemes, future uses, site geology, environmental impacts, landfill history, leachate discharges, monitoring program, and landfill management.
8. The above submittals indicate that tidal fluctuations are occurring up to 150 feet inland of the seawall, and that a discharge of 7,000 to 13,000 gallons per day of return water is occurring. This infiltration has the potential to carry leachate into waters of the State. The discharger proposes to construct as a part of closure, a slurry trench cut-off wall along the west shoreline, where the majority of the infiltration and discharge is believed to be occurring. The discharger acknowledges that the cut-off wall may not provide complete leachate containment and that further work may be necessary.
9. The Board will consider a proposal by the discharger to use the site as a dredge disposal area once the discharger has demonstrated that such operations would have no significant impacts on water quality.
10. The reports referenced in Finding 7 indicate some failure of the rock sea wall is likely to occur during a moderate earthquake. The discharger acknowledges further work may be necessary to alleviate this condition.
11. The beneficial uses of San Francisco Bay are:
 - a. Wildlife habitat
 - b. Marine habitat
 - c. Recreation
 - d. Preservation of rare and endangered species
 - e. Fish migration and spawning
 - f. Shellfish harvesting
 - g. Industrial water supply
 - h. Navigation
 - i. Commercial and sport fishing

12. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on July 21, 1982, and this order implements the water quality objectives in that Plan.
13. Subsequent to the modifications necessary to comply with this Order, this disposal site will meet the criteria contained in the California Administrative Code, Title 23, Chapter 3, Subchapter 15 for classification as a closed Class II disposal site.
14. The Board, has notified the discharger and interested agencies and persons of its intent to issue closure requirements for the discharger and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
15. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.
16. This project involves the closure of a Federally owned Class II facility with minor alterations to the land. Consequently, this project will not have a significant effect on the environment pursuant to the exemption provided in Section 15101, Title 14, California Administrative Code.

IT IS HEREBY ORDERED THAT the U.S. Navy Alameda Naval Air Station comply with the following:

A. Prohibitions

1. The discharge of any wastes or water that has contacted waste material to surface water or groundwater is prohibited.
2. No additional group 1 and group 2 wastes shall be stored or deposited on this site.
3. Use of this site for disposal of maintenance dredge spoils shall not commence until it is determined by the Regional Board that all measures necessary to protect water quality have been taken.
4. The treatment or storage of wastes shall not cause pollution or a nuisance as defined in Section 13050(m) of the California Water Code.

B. Interim Closure Specifications

1. (a) The disposal areas shall be provided and maintained with a final cover of at least three feet of clean soil.
(b) At least one foot of the final cover shall be compacted to attain a permeability no greater than 1×10^{-6} cm/sec.
2. All disposal areas shall be graded and maintained to prevent ponding and to provide slopes of at least three percent. Lesser slopes may be allowed if an effective system is provided for carrying off surface drainage. Steep areas, surface drainage

courses, or other areas subject to erosion by water and/or wind shall be provided with a lining, planted with vegetation, or otherwise designed and constructed to prevent such erosion.

3. A leachate cut-off barrier on the west side, as designed in the closure plan, dated June 6, 1980, shall be installed to prevent infiltration of bay waters and discharge of leachate from waste materials to waters of the state and United States.
4. The migration of methane gas from waste shall be controlled as necessary to prevent creation of a nuisance or hazard.
5. Site closure shall be designed to minimize damage to the sea wall or to the structures which control leachate, surface drainage, erosion, and due to a maximum probable earthquake.
6. The disposal areas shall be protected from any washout or erosion from inundation, which could occur as a result of tides, rainfall, or floods having a predicted frequency of once in 100 years.

C. Final Closure Specifications

1. All necessary facilities shall be provided to ensure that leachate and gases from refuse and hazardous wastes and ponded water containing leachate or in contact with refuse or hazardous wastes is not discharged to surface water or groundwaters.

D. Provisions

1. This disposal site shall be closed in compliance with this Board's Resolution No. 77-7 and in accordance with closure plans and supplemental materials indicated in Finding 7 and with any other plans required under time schedules established in this permit.
2. The discharger shall comply with all prohibitions and specifications of this Order immediately upon adoption, except for Prohibition A.1 and Specifications B.1, B.2, B.3, B.6 and C.1.
3. Compliance with selected specifications may not be necessary if future dredge spoil disposal is approved by the Board.
4. The discharger shall comply with the following time schedules to assure compliance with interim closure specifications B.1, B.2, B.3, and B.6.
 - a. To assure compliance with B.1(b):

<u>Task</u>	<u>Complete Task</u>	<u>Report of Compliance Due</u>
Complete placement of 1 foot impermeable cover	October 1, 1984	October 15, 1984

- b. To assure compliance with B.1(a) and B.2:

<u>Task</u>	<u>Complete Task</u>	<u>Report of Compliance Due</u>
Complete final cover and grading	October 1, 1986	October 15, 1986

- c. To assure compliance with B.3:

<u>Task</u>	<u>Complete Task</u>	<u>Report of Compliance Due</u>
Complete the west side cut-off barrier	October 1, 1984	October 15, 1984

- d. To assure compliance with B.6:

<u>Task</u>	<u>Completion Date</u>	<u>Report of Compliance Due</u>
Complete sea wall repairs as described in "Sanitary Landfill Closure Plan" dated June 6, 1980	October 1, 1984	October 15, 1984

5. The discharger shall comply with the following time schedule to assure compliance with Prohibition A.1 and final closure specification C.1.

- a. To assure compliance with A.1 and C.1.

<u>Task</u>	<u>Report Due</u>
Submit a detailed technical report (including the results of a dynamic analysis) outlining methods used to determine the stability of the rock sea wall.	December 1, 1983
Determine need for a cut-off wall or similar containment structure around the remainder of the site as well as any other site improvements which may be necessary. Report is to contain time schedule for funding and completion, for improvements determined to be necessary.	December 15, 1984

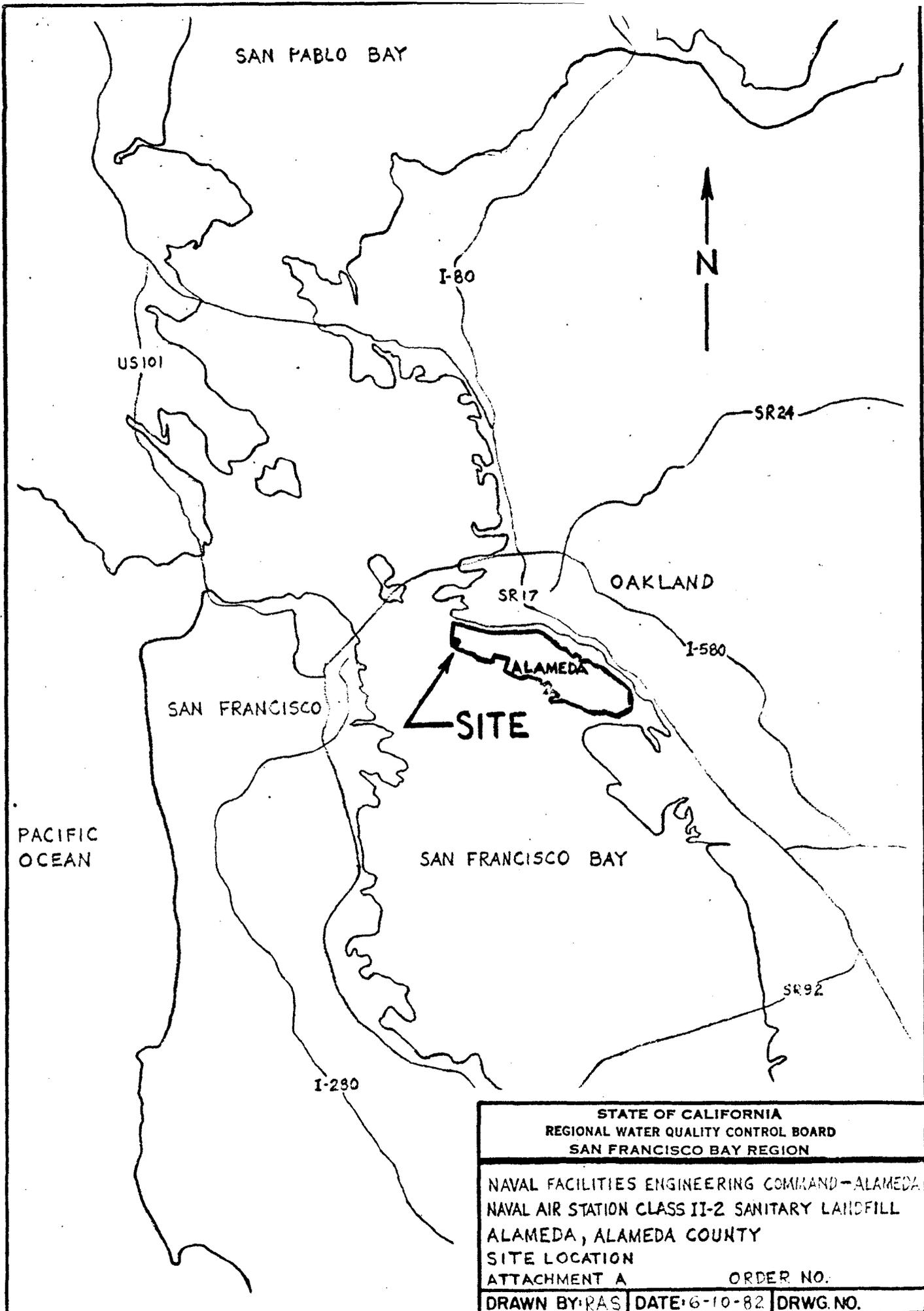
6. Any modification in the method of closure of the landfill from that contained in the reports described in Finding No. 7 above shall be approved by this Board unless the modification provide for direct compliance with the provisions of Resolution 77-7. Such determination of direct compliance shall be made by the Executive Officer.
7. This Board considers the current property owners or any new owner to have a continuing responsibility for correcting any problems associated with this solid waste disposal site during subsequent use of the land for other purposes.
8. The discharger shall notify this Board in writing of any proposed change in ownership of this site. The current owners shall notify and provide a copy of this Order to any subsequent owner of this property or portion thereof prior to sale and submit documentation to the Board that the new owner is aware of this Order.
9. The discharger shall file with the Board any monitoring program which may be directed by the Executive Officer.
10. The discharger shall permit the Regional Board or its authorized representatives in accordance with California Water Code Section 13267(c).
 - a. Entry upon premises on which waste are located or in which any required records are kept,
 - b. Access to copy any records required to be kept under terms and conditions of this Order,
 - c. Inspection of monitoring equipment or records, and
 - d. Sampling of any discharge.

I, Fred H. Dierker, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on

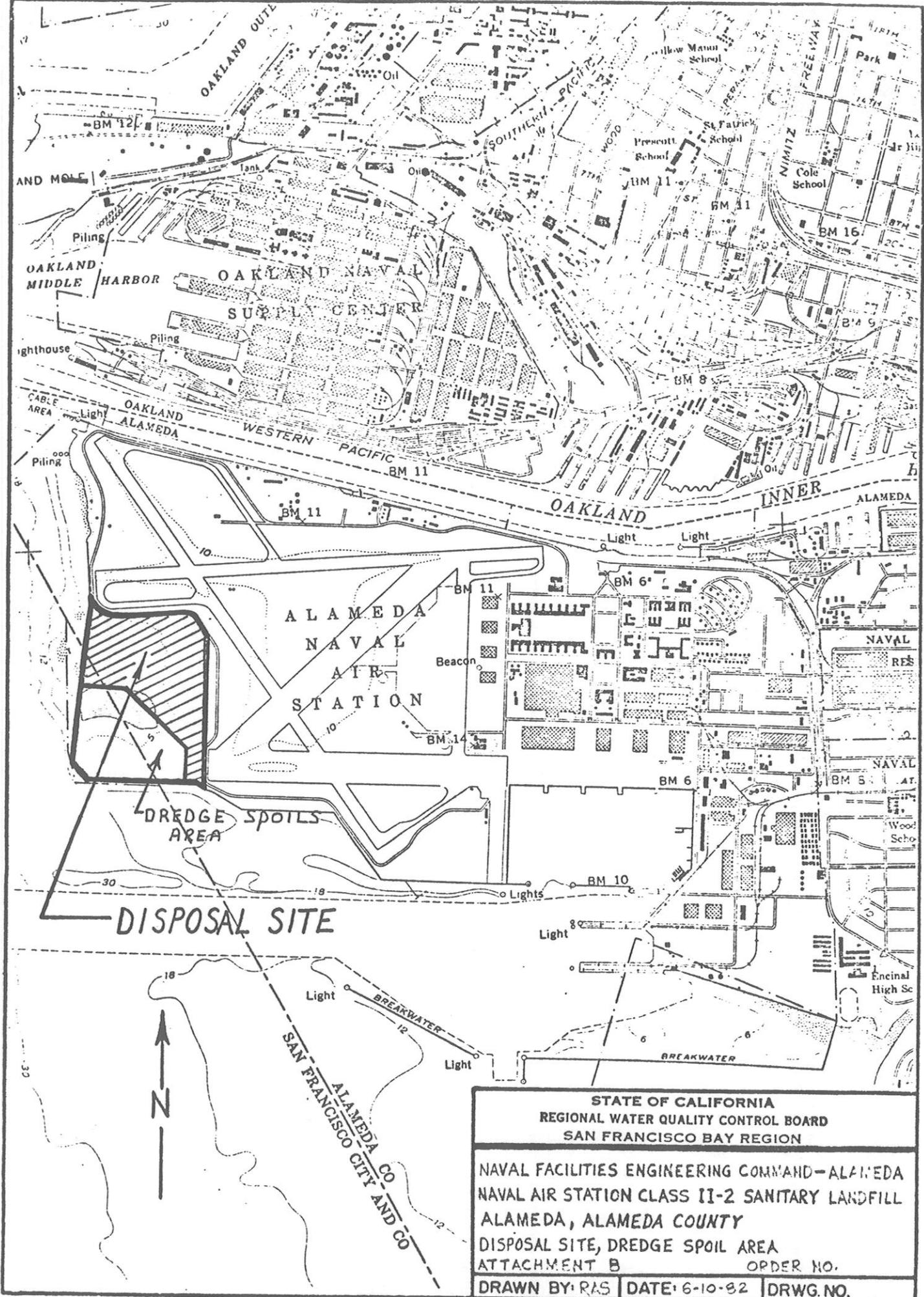
FRED H. DIERKER
Executive Officer

Attachments:

- A-Location Map
- B-Site Map
- C-Resolution 77-7



STATE OF CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN FRANCISCO BAY REGION	
NAVAL FACILITIES ENGINEERING COMMAND - ALAMEDA NAVAL AIR STATION CLASS II-2 SANITARY LANDFILL ALAMEDA, ALAMEDA COUNTY SITE LOCATION ATTACHMENT A	
ORDER NO.	
DRAWN BY: RAS	DATE: 6-10-82
DRWG. NO.	



STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

NAVAL FACILITIES ENGINEERING COMMAND-ALAMEDA
NAVAL AIR STATION CLASS II-2 SANITARY LANDFILL
ALAMEDA, ALAMEDA COUNTY
DISPOSAL SITE, DREDGE SPOIL AREA
ATTACHMENT B ORDER NO.

DRAWN BY: RAS DATE: 6-10-82 DRWG. NO.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESOLUTION NO. 77-7

MINIMUM CRITERIA FOR PROPER CLOSURE OF
CLASS II SOLID WASTE DISPOSAL SITES

- I. WHEREAS, experience has shown that Class II solid waste disposal sites can be sources of serious water pollution problems even after their use has been terminated, unless properly closed, and
- II. WHEREAS, these problems may include: odors, discharge of leachate, exposed refuse due to inadequate cover, and ponding of refuse-polluted water on the site, and
- III. WHEREAS, Section 2535 of the California Administrative Code provides as follows:

Completion of Disposal Operations. (a) Prior to cessation of disposal operations at a waste disposal site, the operator shall submit a technical report to the appropriate regional board describing the methods and controls to be used to assure protection of the quality of surface and groundwaters of the area during final operations and with any proposed subsequent use of the land. This report shall be prepared by or under the supervision of a registered engineer or a certified engineering geologist.

(b) The methods used to close a site and assure continuous protection of the quality of surface and groundwater shall comply with waste discharge requirements established by the regional board.

(c) The owner of the waste disposal site shall have a continuing responsibility to assure protection of useable waters from the waste discharge, and from gases and leachate that are caused by infiltration of precipitation or drainage waters into the waste disposal areas or by infiltration of water applied to the waste disposal areas during subsequent use of the property for other purposes, and

- IV. WHEREAS, the establishment of minimum criteria for proper closure of Class II solid waste disposal sites is desirable to protect the quality of waters of the State and to alert site owners and operators as to their specific responsibilities, and

V. WHEREAS, pursuant to Section 15104 of the California Environmental Quality Act Guidelines, this Resolution applies to minor alterations to land which do not have significant adverse effects on the environment and is therefore exempt from the provisions of the Act.

VI. THEREFORE BE IT RESOLVED that this Regional Board establishes the following minimum criteria for proper closure and subsequent maintenance of Class II solid waste disposal site:

1. All completed disposal areas shall be compacted and provided with a final cover of at least three feet of clean soil. A lesser thickness of final cover may be allowed upon a demonstration that, due to thorough compaction of refuse or other factors, differential settlement is likely to be minimal. At least one foot of the final cover shall be compacted to attain a permeability no greater than 10^{-6} cm/sec. Exceptions to this requirement may be granted upon a demonstration that equivalent protection against water penetration may be provided by other means.
2. Completed disposal areas shall be graded and maintained to prevent ponding and to provide slopes of at least three percent. Lesser slopes may be allowed if a sewer system or other equivalent means of carrying off surface drainage is provided. Steep areas, surface drainage courses, or other areas subject to erosion shall be provided with a lining, or planted with vegetation, or otherwise designed to prevent such erosion.
3. Slopes shall be designed to minimize the potential for sliding by control of grades, drainage, or other means. Any slides observed within the disposal area shall be promptly stabilized, and the Executive Officer shall be notified immediately upon discovery of a slide.
4. All necessary facilities shall be provided to ensure that leachate from group 2 waste and ponded water containing leachate or in contact with refuse is not discharged to surface waters of the State.
5. The disposal area(s) shall be protected from any washout or erosion and from inundation, which could occur as a result of tides or of floods having a predicted frequency of once in 100 years.
6. All necessary facilities shall be provided to protect usable groundwaters from degradation as a result of leachate discharges or carbon dioxide migration.
7. The migration of methane gas from group 2 waste shall be controlled as necessary to prevent creation of a nuisance.

VII. BE IT FURTHER RESOLVED that this Board's Executive Officer will request that closure plans be submitted by operators of all Class II sites at the earliest practicable date. Closure plans will be approved by this Board by inclusion in waste discharge requirements. The Board will amend closure plans as necessary to provide for conformance with the above minimum criteria. Site closure plans shall include the following:

- a. The boundaries of areas used for waste disposal.
- b. Method of control of surface drainage flow from the site.
- c. Evaluation of the anticipated settlement due to decomposition and consolidation of the wastes.
- d. Thickness of cover and physical properties including permeability, expansion characteristics and erodibility.
- e. Relationship of waste disposal area to underlying groundwater quality.
- f. Location of groundwater monitoring points.
- g. Method for control of methane.
- h. Proposed subsequent use of the land.

VIII. BE IT FURTHER RESOLVED that this Board will normally require implementation of the site closure plan as rapidly as possible after completion of group 2 waste disposal operations at a site or portion thereof. The Board may authorize delays of specified duration in meeting final slope requirements pending determination of subsequent land use, provided interim measures are taken to protect water quality.

IX. BE IT FURTHER RESOLVED that it is the intention of this Board to take all measures practicable to ensure that subsequent owners of sites are made aware of site closure requirements.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on July 19, 1977.

FRED H. DIERKER
Executive Officer

APPENDIX B – STAFF REPORT

CLASS II-2 SOLID WASTE DISPOSAL
SITE CLOSURE REQUIREMENTS

DATED 21 SEPTEMBER 1983

cover of minimum permeability 1×10^{-6} cm/sec does not meet the requirement of a total of three feet of final cover. The Navy is proposing to use the top of the closed landfill as a dredge spoil dewatering area (the perimeter dikes mentioned above will contain the spoils). The spoils would eventually provide the landfill with six to eight feet of a low permeability cover. However, should the Navy decide not to pursue this proposal, or if the feasibility of this proposal cannot be demonstrated to the satisfaction of the Board, the final two feet of cover will be applied. This proposal will be discussed further in a separate section.

The installation of a bentonite slurry wall along most of the western perimeter is designed to control bay water infiltration and discharge from the site estimated to be between 7,000 and 13,000 gallons/day. This was required in a letter to the Navy from Regional Board staff dated July 11, 1980. However, based on comments from the State Board geologist as well as subsequent information, staff feels this measure alone may not be effective in eliminating all potential water quality impacts. The results of the site assessment as well as future monitoring will determine whether or not additional perimeter containment will be necessary.

The Navy acknowledges that some failure of the rock sea wall is likely to occur during a moderate earthquake. However, they feel the damage would not constitute a complete failure but would be limited to manageable proportions. There is disagreement between the Navy and the State Board geologist in this matter. A provision has been included in the Tentative Order requiring the submittal of a detailed technical report (to include the results of a dynamic analysis) describing the methods used by the Navy to arrive at their conclusions. This submittal as well as the results of the site assessment will determine whether or not additional shoring of the sea wall will be necessary.

Final Closure

If the Navy does not commence dredge spoil dewatering prior to October 1, 1986 (or if their proposal with a time schedule is not approved by this Board) the remaining two feet of final cover will be applied by that time. Additional measures may be required for a final closure, such as additional perimeter containment, shoring of the rock sea wall or any other measures which may be needed based on the results of a site assessment (required under time schedule) and future site monitoring.

Dredge Spoil Dewatering

The Navy is proposing to utilize the closed landfill as a dredge spoil dewatering area. They have demonstrated analytically that it is possible to manage the application of the dredge spoils such that the water will not penetrate the relatively impermeable landfill cover in the time required for dewatering. However, it is unknown at this time whether they can meet the above requirement in addition to meeting the effluent limitations of an NPDES permit for the discharge of the return water. It is the opinion of the State Board geologist that the additional load placed on the landfill by the dredge operation may decrease the stability of the sea wall. This matter has not been resolved. However, the Navy will address all of the above concerns in their formal application for an NPDES permit. The feasibility of using the landfill as a dredge spoil dewatering area will be evaluated by the staff at that time. The Tentative Order contains a prohibition with respect to using the landfill as a dredge spoil dewatering area until this proposal has been submitted and, if acceptable approved by the Regional Board.

APPENDIX C – CORRESPONDENCE

CLASS II-2 SOLID WASTE DISPOSAL
SITE CLOSURE REQUIREMENTS

DATED 21 SEPTEMBER 1983

APPENDIX C – CORRESPONDENCE

**CLASS II-2 SOLID WASTE DISPOSAL
SITE CLOSURE REQUIREMENTS**

**THE ABOVE IDENTIFIED APPENDIX IS NOT
AVAILABLE.**

**EXTENSIVE RESEARCH WAS PERFORMED BY
SOUTHWEST DIVISION TO LOCATE THIS
APPENDIX. THIS PAGE HAS BEEN INSERTED AS
A PLACEHOLDER AND WILL BE REPLACED
SHOULD THE MISSING ITEM BE LOCATED.**

QUESTIONS MAY BE DIRECTED TO:

**DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132**

TELEPHONE: (619) 532-3676