

NOAA Final Report for the M/V Kuroshima Response

Incident Name: M/V Kuroshima

Subject: Report - Final

Incident Date: 11/26/1997

Incident Location: Unalaska Island, Alaska

Author: John W. Whitney

Latitude: 53°55' N

Longitude: 166°25' W

USCG District: 17

Product: IFO 380

Type: 4

Volume: 47,000 gallons were released; 69,600 gallons were lightered to temporary storage

Source: non-tank vessel

RAR: Habitat: salmon spawning in freshwater lake and feeder stream Marine Mammals: sea otters, sea lions, and seals Birds: gulls, eagles, murre, emperor geese, eiders, and other seabirds Intertidal Community: sea urchins, mussels, chitons, limpets, etc. Subsistence Use: Aleut native collection and consumption of invertebrates, some sea ducks, and edible plants Recreation: Summer Bay Lake and beach are major summer recreation use areas Cultural: archaeological site

Dispersants: Y

Bioremediation: N

In-Situ Burning: Y

Special Interest Topic(s): unusual cleanup technique

Shoreline Type(s) Impacted: Coarse-sand and gravel beaches, exposed bedrock cliffs, exposed rocky shores, freshwater marshes, sheltered sandy beaches, sheltered rocky shores

Summary: The Japanese cargo vessel, M/V Kuroshima, had been anchored outside Summer Bay near Dutch Harbor, Alaska for over 3 weeks waiting to take on fishery's cargo when a powerful storm hit on November 26. Northerly winds built to 40 to 50 knots with gusts up to 90 knots and seas of 28 to 30 feet. After dragging both anchors, the captain decided to weigh anchor and move the ship. Residents reported seeing the vessel pitching severely in the water starting the morning of November 26: "...from the front beach in Unalaska, we could see

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her stern rise so sharply as to expose her props and rudder." (The Dutch Harbor Fisherman, December 18, 1997). The vessel broke anchor and ran aground near Second Priest Rock the afternoon of November 26. During the grounding, there were two fatalities. The ship ran aground on the beach in Summer Bay just west of the outlet of Summer Bay Lake, with the port side to the beach. The huge storm waves caused a surge that propagated up the stream channel, under the bridge, carrying oil all the way into the south end of the lake. A city of Unalaska employee obtained heavy equipment to build an earthen dike at the lake outlet to prevent more oil from entering the lake. On March 1, 1998, salvors refloated the Kuroshima. It took three salvage companies three months to free the hard-aground vessel. After securing and cleaning the vessel, Crowley Marine Company, the original contractor, used shore-based excavators, a series of beach-gear anchors, winches mounted on the Kuroshima's deck, and the line pull from Crowley's salvage vessel American Salvor, to turn the Kuroshima 90 degrees and pull it several meters out to sea, before the contract with the ship owner expired on February 15. Smit Americas won the second salvage contract and succeeded in freeing the Kuroshima using two barge-mounted excavators, the prop wash from several tugs to dig the vessel from the sand, and the Kuroshima's anchor winch and engines. Substantial work was subcontracted to Magone Marine of Dutch Harbor. No pollution occurred during the salvage operation.

Behavior: The spilled material was an IFO-380 oil, which is roughly 25 percent diesel and 75 percent Bunker C. The lighter component evaporated rapidly as evidenced by a petroleum aroma during the first week. During the initial release, nearly all the oil was driven onshore and deposited as very thick, viscous, stable mats and patches of mousse. Chemical analysis by LSU revealed a very stable emulsion with a highly retarded weathering rate and pronounced wax component suggesting a strong similarity to oil classified as low-API gravity fuel oils (LAPIO). The oil moved on the water for a week after the stream dike was breached, washing a considerable amount of previously beached heavy, thick mouse oil patches back into Summer Bay. A small additional leak from the vessel may have occurred during this period. Prevailing winds carried the oil offshore and to the north where it was blown ashore into Humpy and Morris coves and onto the intervening rocky headlands. A small amount of the oil blown into Summer Bay Lake took on sand and sediment and sank to the bottom mostly along the northern portion and some in the southeast portions of the lake. Thick stable mousse coated the perimeter of Summer Bay Lake, becoming matted into vegetation and then covered by frozen-over lake water. The heaviest oiling was at the southeast and northwest corners. Sunken oil patties observed under the bridge and on the bottom of the lake were confirmed after a spring diving survey. There were surface and buried oil layers 5 to 7 centimeters thick in sand at Summer Bay Beach. Wild rye grass and sand surfaces on dunes were lightly oiled. A coat of oil up to several centimeters thick was seen on cut bank along a streamlet leading from lake to bay. Morris and Humpy coves and rocky shorelines east of Summer Bay had mats, tarballs, and oiled debris wash up on their beaches. Very important archaeological resources and sites exist near the spill. An important unexcavated early man/pre-Aleut dwelling location is in a dune valley near Summer Bay, just upland of the grounding. Large globs of oil were reported to have blown into and contaminated this site. There are also archaeological sites in Humpy Cove. These sites were not contaminated by the spill. An archaeologist from Anchorage worked under the FOSC and participated in the SCAT surveys of all areas containing archaeological resources. Summer Bay Lake and the stream flowing into it are important anadromous fish spawning and rearing habitats for limited numbers of sockeye, pinks, dolly varden, and silver salmon. Generally, the cleanup period from late November through May does not coincide with the active spawning period for these fish. As a result, impacts should be minimal, but that remains to be seen. July 1998 reports indicate that salmon returns and fishing have been outstanding. Less than 150 oiled birds were collected. Of these, 18 were shipped live to Homer for rehabilitation, but only two survived. Oiled birds included eagles, gulls, murrelets, and other seabirds.

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Countermeasures/Mitigation: Winter response progress is retarded by working in snow, ice, and high-winds. The cleanup of Kuroshima was interrupted on December 20 by cold weather and was not started again until April. Cleanup at Summer Bay Lake involved manual removal with shovels, rakes, pitch forks, and clippers. There was minor mechanical cleanup and power washing in northeast and northwest corners of the lake. Divers picked up the sunken oil from the lake bottom with bags and hand implements. Cleanup at Summer Bay beach was done by mechanical excavation and manual removal of surface and buried-oil layers with thermal treatment at formerly used defense sites (FUDS). The oiled logs were removed and burned. At Morris and Humpy coves and other rocky shorelines the oiled mats and debris were sacked and then transported to Oregon for disposal. More than 500 supersacks were filled and removed. The oiled archaeological site at Summer Bay was not cleaned by the response workers. An agreement between the RP and the Unalaska Native Corporation was struck to provide funds to further excavate this site. Information provided to cleanup workers regarding procedures for archaeological sites and any artifacts found during the cleanup was very effective. The RP established a full incident command system and had over 100 cleanup personnel working on the spill. ERST/O'Brien's was hired to manage the spill and Beak Environmental was hired to handle scientific and technical response questions including leading the SCAT team. Federal and State responders were fully integrated into this command structure, and despite differing roles, everyone worked as a team. A temporary tank farm was established onshore to lighter the remaining fuel in the vessel. Final lightering was not completed until two weeks after the incident because weather, wind, and tank clingage hampered lightering operations. There were 69,600 gallons of IFO-380 pumped off the ship into the temporary tank farm. No observations or reports of oiled marine mammals occurred.

Other Special Interest(s): An unusual cleanup technique involved taking advantage of a thermal treatment unit located in Dutch Harbor by the U.S. Army Corps of Engineers (USCOE) that has a contract for treating petroleum-contaminated soil from FUDS. Approximately 2000 tons of oiled beach sand were treated in this FUDS facility before returning the "cleaned" sand to Summer Bay beach.

NOAA Activities: NOAA was notified of this incident on Thanksgiving Day, November 27, 1997, by the USCG. The SSC accompanied the first contingent of responders aboard a USCG C-130 to Dutch Harbor to respond to the Kuroshima oil spill. Within several days NOAA's support was augmented with an information manager and a member of BAT. From the onset to the winter stand-down on December 20, NOAA's support included: Mapping the impacted shoreline areas. Mapping floating oil and providing trajectories based on differing wind conditions. Providing weather forecasts. Establishing SCAT protocols and representation. Meeting with land owners/managers including the Native Corporation and the City of Unalaska. Providing chemical analysis of the fresh and beached oil. Assisting NOAA Damage Assessment personnel sample subsistence resources in the rocky area immediately east of Summer Bay for chemical analysis. Obtaining local knowledge regarding the use of the Summer Bay/Lake area for subsistence, fishing, hiking, skiing, bird watching, and other recreational purposes. Preparations were made during the winter to restart the cleanup around the middle of April. The largest NOAA effort continued into the spring as a member of SCAT. Over the winter several meetings were held with the RP-SCAT leader to finish forms, procedures, personnel, and methods for the spring startup. As the federal representative on the SCAT, NOAA journeyed to Dutch Harbor during the first week in April to recommence the Kuroshima cleanup. For 10 days before the spring cleanup, the SCAT re-surveyed all the oiled shorelines and prepared work orders for all the oiled shoreline segments. The dominant cleanup technique involved manual labor with shovels, rakes, and clippers, although minor amounts of mechanical, power washing, and in-situ burning of oiled debris were also used. More than 500 super sacks of oiled rock and debris were collected and shipped by barge to an Oregon hazardous waste disposal site. Because the oiled areas were primarily public-use beaches, the cleanup standards were quite high. The

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SCAT acknowledged that the weathered Bunker C was not toxic and posed little threat to the environment. Instead, the standard followed was cleaning to a level where human visual and physical interaction with the oil had a very low probability. This resulted in a very labor-intensive cleanup, and in some cases 10-man crews would complete only 30 feet of lake shoreline in a 10-hour working day. NOAA also helped decide how to remove oiled sand from Summer Bay beach for thermal treatment and how to determine the optimum times for returning the clean sand to the beach to prevent major beach erosion. A small-scale test of "Sphag Sorb" indicated that it would still stick to the bunker C oil within the first few weeks after release. NOAA consulted with local plant experts, University of Alaska experts, and other plant ecology experts in Alaska regarding the Summer Bay Lake plant communities and their sensitivity to cleanup activity. Generally the plant community, dominated by wild rye grass, is fairly hardy and oiling of the dead shoots and stocks in the middle of winter would be fairly inconsequential. When the cleanup ended, abundant new growth and regeneration were already underway. Final shoreline cleanup and SCAT sign off occurred the end of May; however, minor additional cleaning during the month of June was necessary because minor amounts of oil surfaced. There were eight NOAA people on-scene for the Kuroshima response and at least that many supporting the cleanup from outside organizations. Other agencies on-scene with NOAA were the National Weather Service in Anchorage, the Auke Bay NMFS laboratory, and the Anchorage NMFS office.

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Shoreline Oiling Map

prepared by NOAA

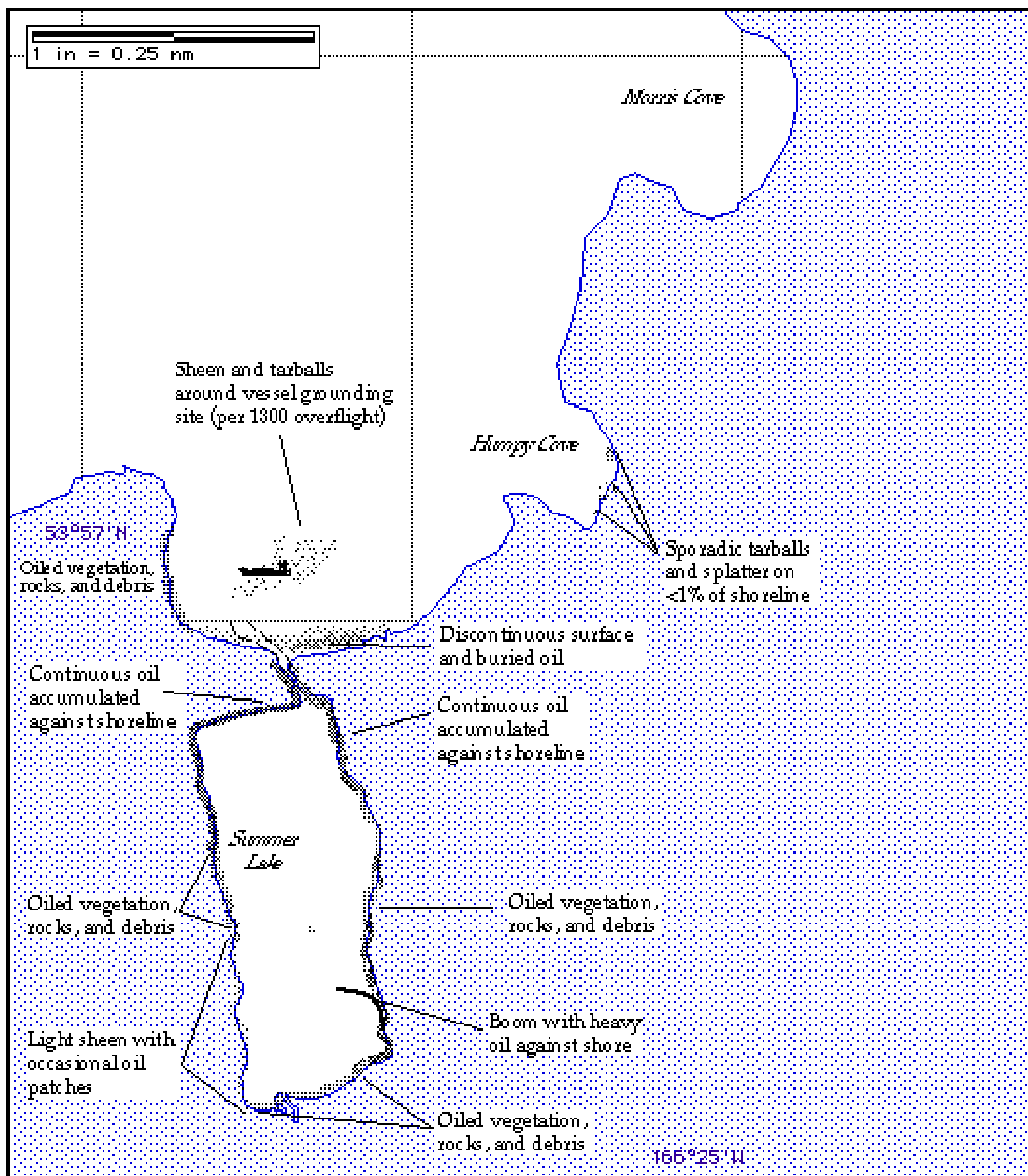
Date/Time: 02 DEC 97, 1500

Platform: Foot survey

Observers: O'Brien, Kane (EMCON
AK), Wooley (CHUMIS)

USE ONLY AS A GENERAL REFERENCE

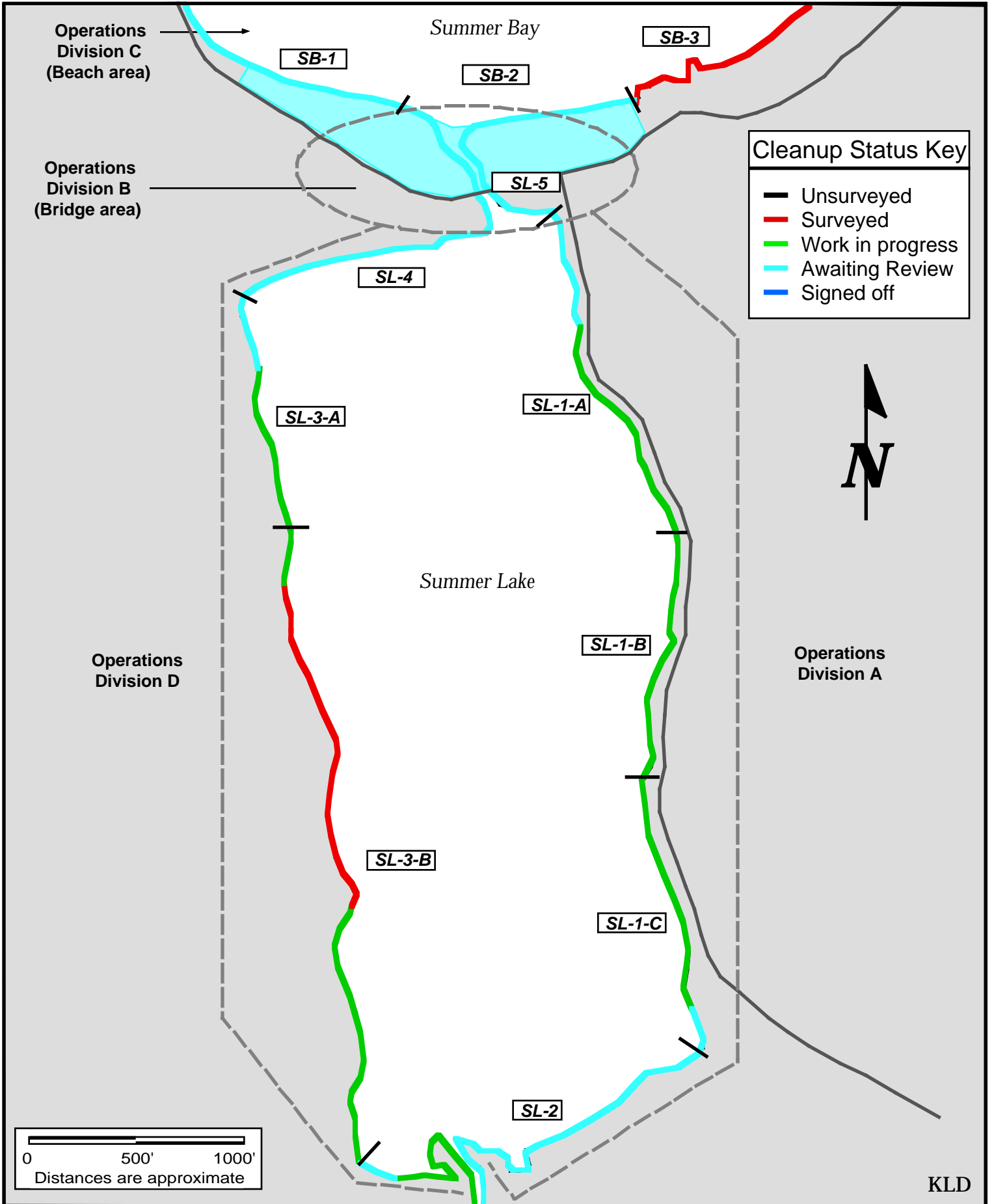
Graphics do not represent precise amounts or locations of oil.



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Shoreline Cleanup Status - Detail

Date: 4/20/98



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Pictorial Map

Date: 4/22/98



Cleanup along the rocky shoreline



Disposing of PPE in smart-ash burners



Slinging waste into roll-off container



Workers in decon area



Security check-in



Inspecting berm fill



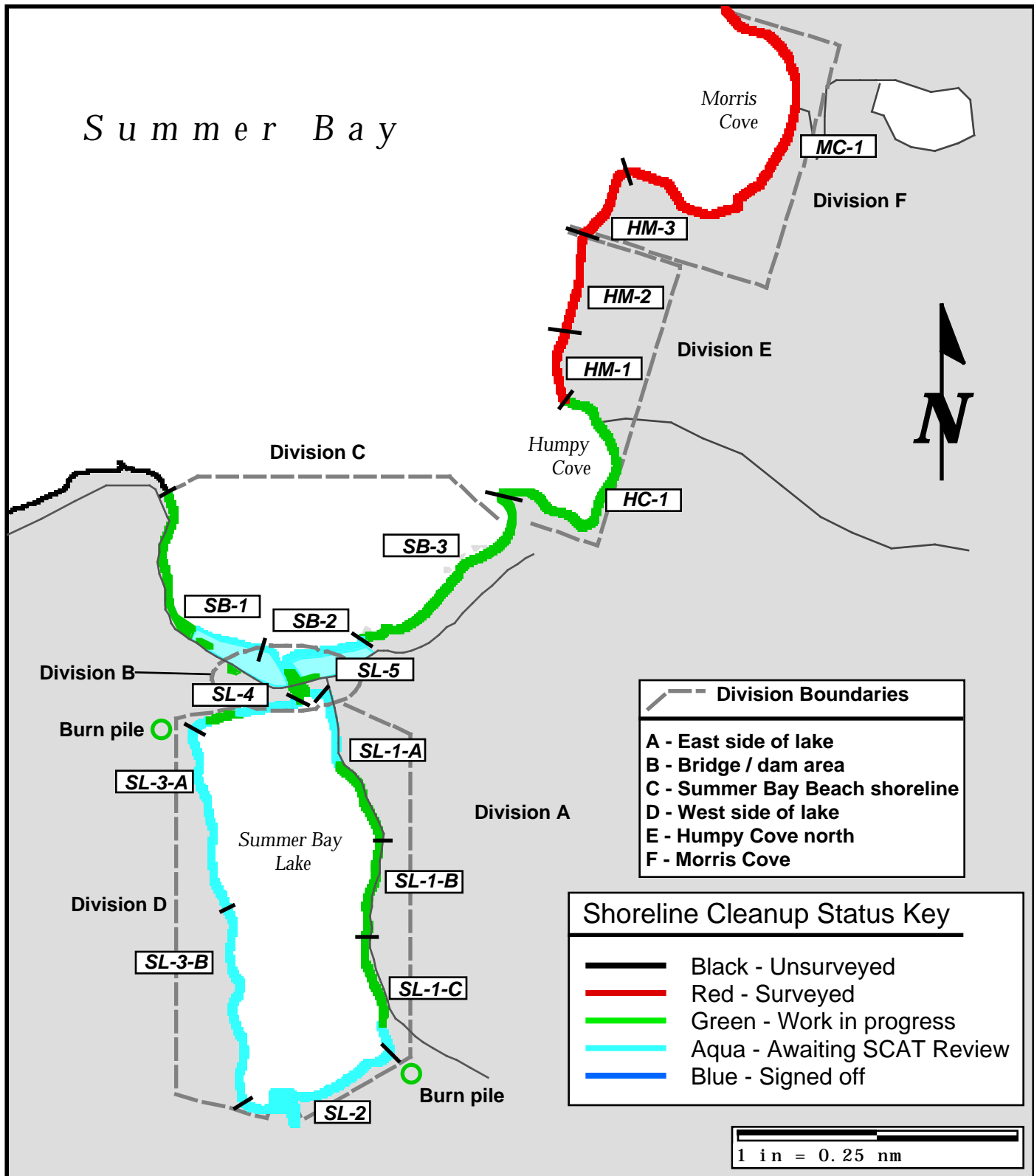
Site Safety Officer in 1st aid trailer

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Shoreline Cleanup Status

Date: 4/25/98

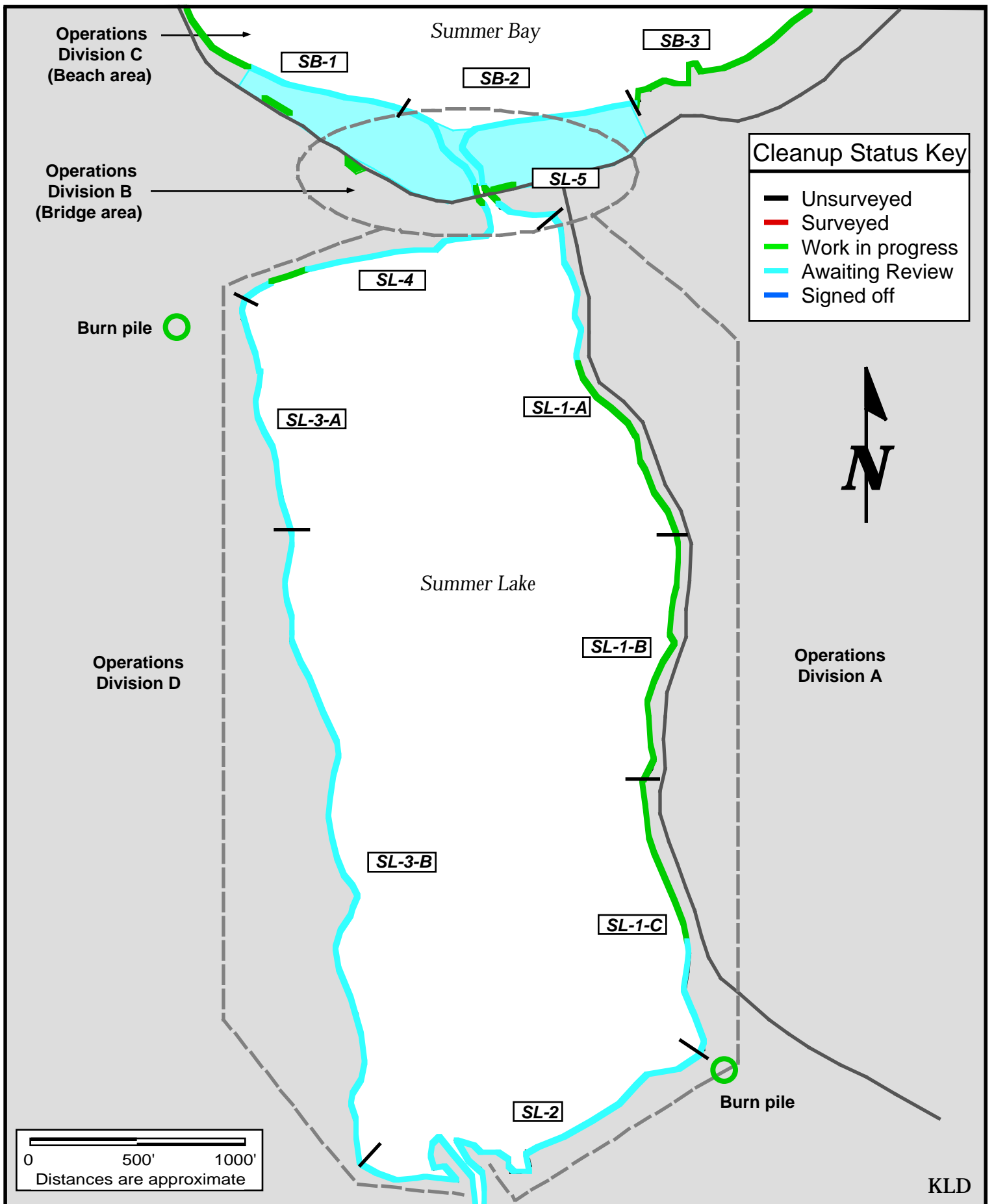
Prepared by: Unified Command



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Shoreline Cleanup Status - Detail

Date: 4/25/98

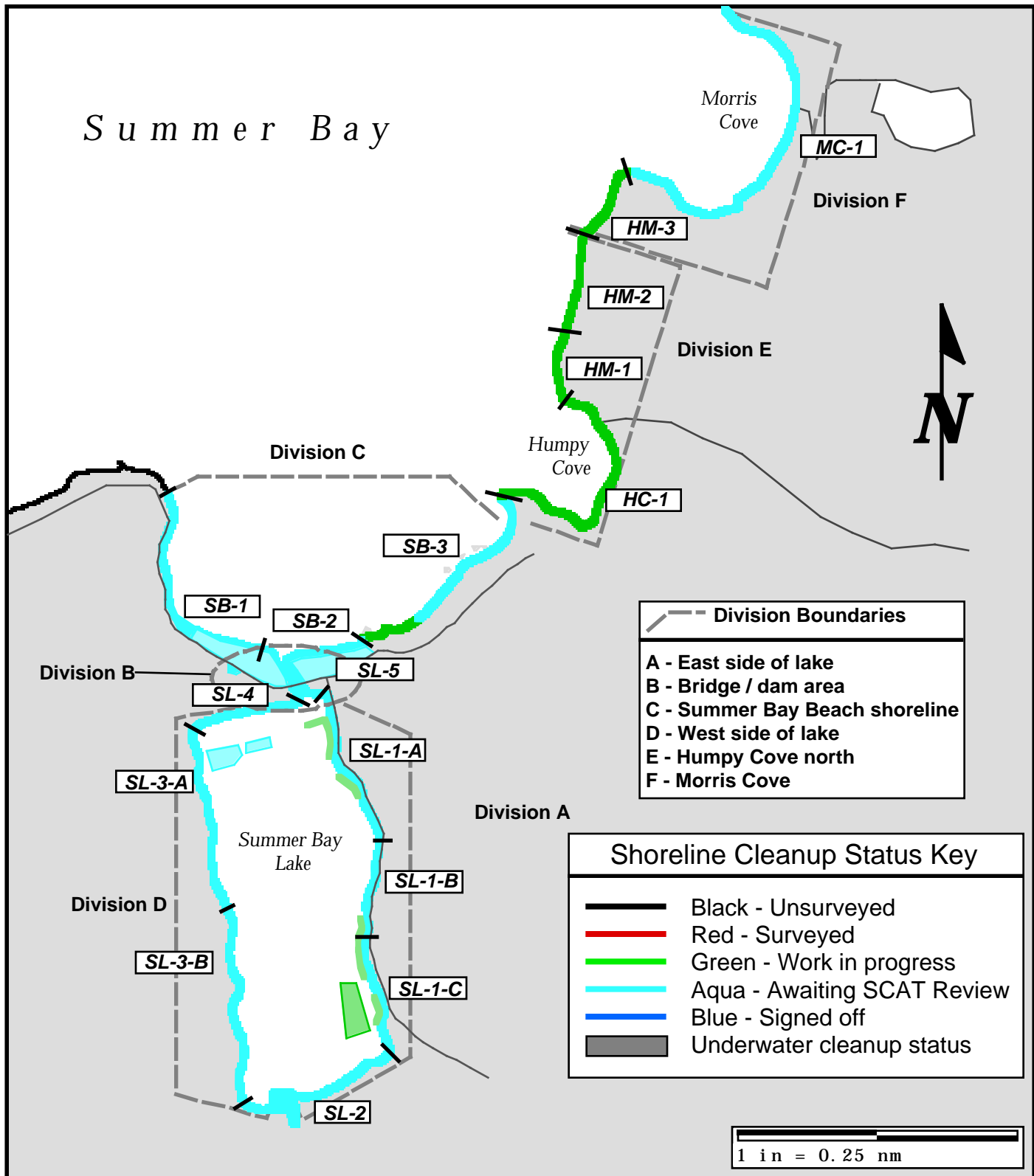


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Shoreline Cleanup Status

Date: 5/7/98

Prepared by: Unified Command



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