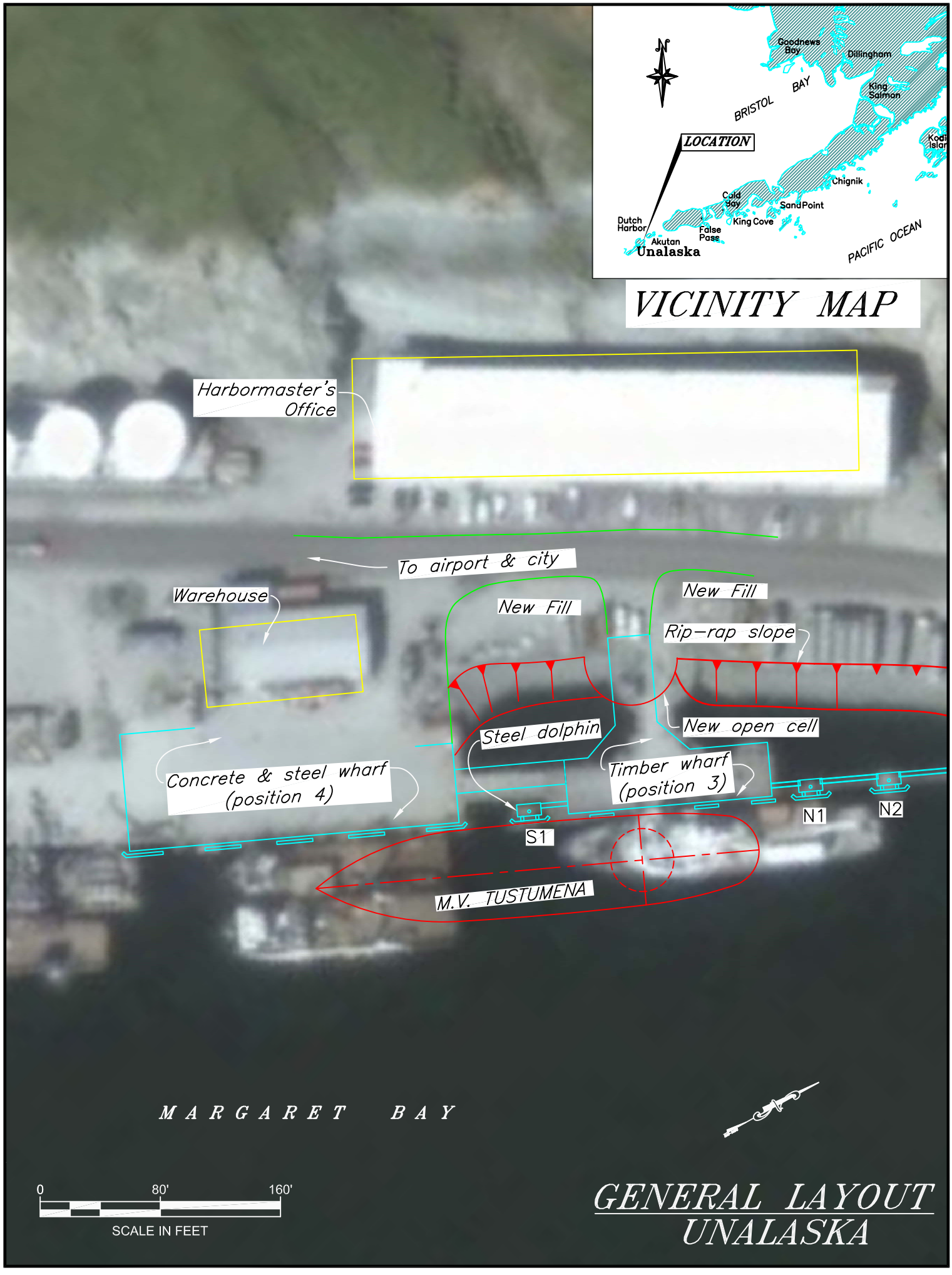

N
Goodnews Bay
Dillingham
BRISTOL
BAY
King Salmon
LOCATION
Kodiak Island
Chignik
Cold Bay
Sand Point
Dutch Harbor
King Cove
False Pass
Akutan
Unalaska
PACIFIC OCEAN
VICINITY MAP
Harbormaster's Office
To airport & city
Warehouse
New Fill
New Fill
Rip–rap slope
New open cell
Steel dolphin
Concrete & steel wharf (position 4)
Timber wharf (position 3)
N1
N2
S1
M.V. TUSTUMENA
MARGARET BAY
0
80'
160'
SCALE IN FEET
GENERAL LAYOUT
UNALASKA

Unalaska/Dutch Harbor Dock

Owner: City of Unalaska

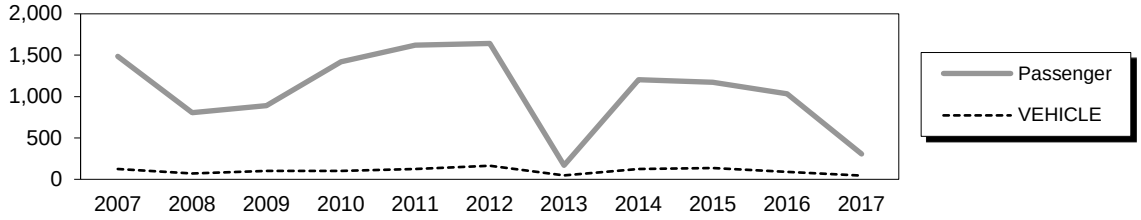
Contact: John Days, Harbormaster, City of Unalaska 907-581-1254

Terminal Description: The M/V Tustumena's last stop on its westward route is at Dutch Harbor where it serves the City of Unalaska. The ferry berth occupies portions of two City owned docks; the entire face of a timber dock and a portion of an adjoining concrete platform dock. The City of Unalaska designates these docks as Position 3 and Position 4 respectively.

Position 3 is a T-shaped timber dock, approximately 160' long and 31' wide, and timber approach supported by closely spaced timber piles and a heavy timber superstructure. The Corps of Engineers built the facility in the 1960's to be used as a freight wharf. There are two steel pile fender units along the dock face and three steel pile mooring dolphins in line with the face of the timber dock; two lie to the north and one to the south of the dock. Catwalks span between the dolphins and dock. The original shore-side approach abutment has been replaced with an earth filled sheet pile cell.

The city subsequently constructed Position 4, a freight wharf, to the southwest of the timber dock. This is a concrete platform dock supported by steel pipe piles. A precast concrete vehicle bridge spans between the concrete and timber docks. The bridge between the two berths is posted for a 16-ton axle load.

These are multi-purpose facilities utilized by other vessels. AMHS is not in control of operation or maintenance of these facilities. The past 10 years of total passenger and vehicle traffic is shown below. The M/V Tustumena was out of service most of 2013, causing a steep dropoff in traffic at the terminal.



The most recent above water survey was completed on September 9, 2016. The underwater inspection occurred on July 18, 2014. The most recent fracture critical inspection was on September 19, 2012.

Vessels	
Name	Berthing, Alignment
Tustumena	Starboard

Tidal Data (MLLW=0.0 feet)	
Highest Observed	6.4
MHHW	3.7
MHW	3.4
Lowest Observed	0.9

Terminal Building
This facility does not have a terminal building.

Generator & Building
This facility does not have a generator on-site.

Utilities @ Dock	
Water:	Yes

Uplands	
Short-Term Parking:	N/A
Long-Term Parking:	N/A
Staging Area:	N/A

City Dock - #1824	
Year Built:	ca. 1960
Coating:	Creosote
Fenders:	Steel pile fender units on dock; three steel pile mooring dolphins
Mooring bollards/cleats:	Cleats mounted along edge of dock
Lighting:	Light posts mounted on dock
Condition:	Good
Load Posting Sign:	N/A
Original Design Load:	Unknown. Plans not on file.

Dolphins							
Dolphins	**Dolphin Piles**	**Fender Support**	**Fender Face**	**Anodes**	**Built**	**Cond.**	**Notes**
N1	2B, 2V	5V	Timber	No	N/A	Fair	
S1	2B, 2V	5V	Timber	No	N/A	Fair	

Observations

1. The most recent Fracture Critical inspection found the Position 3 timber dock to be in satisfactory condition. Several deficiencies were found to characterize this rating:
    - An asphalt overlay prevents inspection of the top of the timber deck, and overlays are known to retain moisture next to the surface – promoting rot. But the bottom of the deck was sounded and found to be satisfactory.
    - There are several notches 4" deep near beam ends and discoloration from moisture is typical. Sounding indicated that the wooden core of the beams is intact.
    - Pile caps are typically notched up to 1.5 x 5" full width at tie-rod locations for pile/cap connections.
    - The piles exhibit moderate abrasion damage in some locations and there are several loose tie-rod connection bolts between the piles and bent caps.
2. The most recent Fracture Critical inspection found the concrete bridge to the Position 4 concrete dock to be in satisfactory condition. Findings that characterize this rating:
    - There are intermittent areas of pop-outs and rust staining on the underside of the precast deck panels due to rusting of steel rebar support chairs and occasional rebar.
    - There is occasional insufficient concrete cover on the bottom of the CIP concrete pile caps for the shear steel, with minor steel showing and minor surface delamination.
    - There is typical rust staining occurring on the bottom of the CIP concrete pile caps from steel rebar chairs.
    - There is moderate to severe corrosion occurring on the 16"ϕ steel pipe piling.

    Also found on the most recent Fracture Critical inspection:
    - There is severe scouring up to 30" below the concrete abutment cap extending back to 48"behind the back face of the cap
    - In one place between pile cap Beams 5 and 6, a manhole is completely unsupported
3. A load rating study by the DOT&PF bridge department, completed in 2015, found that the dock has the capacity for carrying standard highway vehicle loads. The City should hire an Engineering firm to evaluate the dock for heavier freight loading.
4. The most recent underwater inspection found the timber superstructure and timber piling of the Position 3 dock to be in good condition. Minor splits and cracks were noted in two piles. The timber bullrails are worn but remain sound. The safety ladder at the northwest end, near the oil response skiff, is unusable. The ladder is not secured at the bottom and the side rails are bent together at the top.
5. The most recent underwater inspection found the average Cathodic Protection (CP) readings for the steel support piles of the concrete bridge was -0.99 V, indicating these piles are protected from corrosion. The amount of anodes remaining were estimated to be 75%. Ultrasonic thickness (UT) measurements for steel piles indicated that section loss varied from 3 – 15%. Original plans of the project are not available to cross-reference the design wall thickness, so estimates were made. There were no anodes installed on the steel support piles of the Position 4 dock. Depth measurements to mudline, from the deck, along the face of the dock average 40'.
6. Potholes in the asphalt overlay on Position 3 have developed at areas of underlying rotten timber deck boards, most notably in front of the concrete bridge to Position 4, which warranted the temporary closure of the structure to vehicle traffic in 2012. The most recent inspection found that the asphalt had been removed and replaced with timber deck boards roughly 50-feet from the bridge.

    Asphalt topping is not a preferred way of capping a timber deck. Inspection of the top of the deck is not possible, while moisture is retained between the bottom of the overlay and top of the deck, which promotes rot. An asphalt overlay increases the dead load on the structure without increasing the load carrying capacity.

Observations (continued)

7. Several rubber donut fender mount brackets are heavily bent on fender units mounted along the face of Position 3, likely from vessel mooring line loads.
8. The fender panel on dolphin N1 has minor damage. The stiffener plate, between the pipe pile and bottom flange of the upper fender wale, welded connection has cracked approx. 1" long, from right to left. One timber is missing from the fender face of dolphin N1.
9. The tops of some timber fender piles on the south corner of the timber dock are rotting.
10. The sheet pile wharf approach to Position 3 is in good condition. Two anodes are welded to the sheets. The anodes have 90% remaining and they are providing adequate protection below the waterline. The sheet piles are uncoated and have moderate surface scale and rust in the splash and atmospheric zones.
11. The mooring dolphins and catwalks are in good condition. The zinc paint coating is exhausted over several of the field welds of the dolphin piles. The hot-dipped galvanizing above the water line appears thin on many of these piles. The studs for the catwalk slide-plates are welded too close to the edges of the pile caps, and the plate looks undersized. There are no anodes on any of the steel mooring piles, the steel fender piles or the steel support piles of the concrete dock.
12. Depth to mudline elevations, taken with leadline readings at locations along the fender face in 2016, average -33' MLLW.
13. The seaward rail of the short catwalk to dolphin S1 has been damaged.
14. A guardrail post on the seaward side and about midspan of the concrete bridge has been overloaded. The concrete curb is cracked where the post mounts to the bridge deck.
15. An electrical utility line, running along the north side of the concrete dock, is hanging in the water. The last section of protective conduit is also missing.
16. The city constructed an open cell bulkhead to the north of the timber dock, Positions 1 & 2. As part of this new construction, fill was placed on the seaward side of the highway, thus expanding the roadside parking area between the bulkhead and the timber dock. Catwalks connect this facility to the timber dock. The faces of the new bulkhead and timber dock do not align. This bulkhead is not part of the current ferry berthing system.
17. Long-term City plans may include replacing Position 3 with a steel-pile supported concrete dock spanning between Positions 2 & 4. The expanded facility would satisfy the need for additional staging/parking, but status or schedule for such a project is not known.

Inspection Summary

Structure	Priority	Recommendations
Category I - Safety Issues		
Dock (Position 3)	1	Remove the asphalt topping lift & replace the timber deck boards.
Category II - Rehabilitation Work		
Dock / Fender Units	2	Install cross chains between the top fender panel and the dock to properly transfer mooring line loads. Also, replace damaged fender mount brackets. Treat & cap the tops of rotten timber fender piles on the south corner of the timber dock.
Catwalk	3	Repair the bent seaward rail of the short catwalk to dolphin S1.
Dolphins	4	Replace the missing timber on the fender face of dolphin N1.
Utilities	5	Replace the electrical utility line that's hanging in the water, running along the north side of the concrete dock. Remove it it's abandoned.
Safety Ladders	6	Repair or replace safety ladders on north end of concrete freight dock and northwest end of timber dock, near old response skiff.
Category III - Upgrades Needed		
Uplands	7	Investigate plan to reconfigure the nearby uplands and/or construct improvements to provide a dedicated staging/parking area and visitor waiting amenitie suited to AMHS needs.