State of Washington Department of Ecology

Cruise Ship Memorandum of Understanding, Cruise Operations in Washington State Inspection Report

Northwest Regional Office

P.O. Box 330316
Shoreline, WA 98133

Phone: (425) 213-4230

Inspection Date	Permit Number	County	Receiving Waters	Ecology Inspector
October 1, 2024	NA	King	Marine Waters	Evan Dobrowski
Entry Time 9:20 am **Exit Time** 11:45 am	**Photos Taken** ☒ Yes ☐ No	**Samples Taken** ☐ Yes ☒ No	**Inspection Announced** ☒ Yes ☐ No	**Discharges to:** ☒ Surface Water ☐ Ground Water ☐ Dewater ☐ POTW

Name and Location of Site Inspected:
NORWEGIAN JEWEL, Norwegian Cruise Lines
Pier 66, Seattle, Washington

Additional Participants/Inspectors:

On-Site Representative(s): ***Name/Title/Phone/e-mail***
Juan Garcia, Environmental Officer
e: env21@NCL.com

Responsible Official(s): ***Name/Title/Address/Phone/e-mail***
Sarah Brown, Sr. Director, Environmental Operations
Norwegian Cruise Lines

e: sbrown@nclcorp.com

Other Facility Data:
Notification made to Sarah Brown and Robert Wilkinson on September 15, 2024

Flag: Bahamas

Section A: Areas Evaluated

☒ Black/Gray Wastewater System	☒ Residual Solids	☒ Records/Reports	☒ Hazardous Waste/ Solid Waste	☐ Sampling/Monitoring
☒ Discharge Locations	☒ Operation & Maintenance	☒ Sludge Handling/ Disposal	☒ Oily Bilge Water	☒ Other

Section B: For Vessels Discharging ≥ 1nm from Berth and ≥ 6 Knots Only [2.1.3(A)]

☐	Schematics Match Black/Gray Wastewater System	
☐	Operations as Described in Submitted Documentation	
☐	Daily 24-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
☐	Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
☐	Auto Shut Down or Operational Controls to Insure System Shut Down if High Turbidity Occurs	
	Turbidity or Equivalent: Last Calibration: Trigger Level for Early Alarm: Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers:	
☐	Daily 24-hour Continuous Monitoring for Disinfection Effectiveness	
☐	Disinfection Effectiveness Monitoring Equipment Functioning Properly	
	Disinfection Effectiveness Monitoring:	
☐	Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	
☐	Disinfection System Operated and Maintained Properly	
	Disinfection System:	

Section C: For Vessels Discharging Continuously [2.1.3(B)]		
☐	Schematics Match Black/Gray Wastewater System	
☐	Operations as Described in Submitted Documentation	
☐	Daily 24-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
☐	Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
☐	Auto Shut Down or Operational Controls to Insure System Shut Down if High Turbidity Occurs	
	Turbidity or Equivalent: Last Calibration: Trigger Level for Early Alarm: Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers:	
☐	Daily 24-hour Continuous Monitoring for Disinfection Effectiveness	
☐	Disinfection Effectiveness Monitoring Equipment Functioning Properly	
	Disinfection Effectiveness Monitoring: NOT APPLICABLE	
☐	Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	
☐	Disinfection System Operated and Maintained Properly	
	Disinfection System:	
	Section D: General (Approved to Discharge)	
☐	No Discharges Within ½ Miles From Shellfish Beds/ Protocol (President's Point, Apple Tree Cove, Tyee Shoal, Middle Point (near Pt Townsend))	
☐	Discharges Immediately Stopped When High Turbidity Occurs	
☐	Discharges Immediately Stopped When Disinfection System Upset Occurs	
☐	Immediate Notifications Made to WA Department of Health for Disinfection System Upset	
☐	Sampling Conducted 2/month, 1/month in Seattle (BOD, TSS, Fecal Coliform, pH, Chlorine Residual)	
☐	Whole Effluent Toxicity Testing 1 per 2 Years (homeported) or 1/40 Calls for Continuous	

Section E: General		
☒	Wastewater Discharge Records Review	Discharge records were reviewed (blackwater/graywater/residual solids) and are maintained properly. No discharges found to be in the OCNMS, MOU waters or Washington state waters (MOU related waters).
☒	Wastewater Discharges protocol per MOU and managed properly	The discharge protocols are consistent with MOU requirements to not occur in MOU related waters.
☒	Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids protocols are consistent with MOU requirements.
☒	Hazardous Waste Managed Properly	Hazardous protocols are consistent with MOU requirements.
☒	WA Hazardous Waste Guidelines Followed (Appendix vii)	Hazardous waste protocols are consistent with MOU requirements.
☒	Solid Waste Managed Properly (zero garbage discharge)	Solid waste protocols are consistent with MOU requirements.

☒	Photo/X-Ray Waste Managed Properly (fluids, cartridges,…) and landed ashore	Photo and x-ray waste is not generated on this vessel as everything is digital. Protocols are consistent with MOU requirements
☒	Dry-Cleaning Wastes and Byproducts (fluids, sludge, filter materials…) Managed Properly (PERC – haz waste – landed ashore)	Dry cleaning protocols are consistent with MOU requirements.
☒	Unused/Outdated Pharmaceuticals Managed Properly (safely disposed of)	Unused or outdated pharmaceuticals management protocols are consistent with MOU requirements.
☒	Fluorescent and Mercury Vapor Lamp Bulbs Managed Properly (prevent release of mercury)	Fluorescent and mercury vapor lamp bulbs protocols for management are consistent with MOU requirements.
☒	Waste Reduction/Reuse/Recycling Opportunities Maximized (glass, cardboard, aluminum & steel cans)	Waste reduction/reuse/recycling opportunities appear to be maximized per MOU requirements.
☒	Batteries Managed Properly (recycled, reclaimed, disposed of properly)	Batteries management protocols are consistent with MOU requirements.
☒	Incinerator Ash Managed Properly and minimized volume (haz waste segregation and annual testing)	Incinerator ash management is consistent with MOU requirements.
☒	Oily Bilge Water Managed Properly (<15 ppm, no visible sheen and underway)	Oily bilge water protocols are consistent with MOU requirements.
☒	Ballast Water Managed Properly (per Wash regs –reporting, treated or if open sea exchange >200 nm from outside EEZ, 50nm if not EEZ)	When needed the vessel employs ballast water exchange outside 200 nm and treatment.
☒	OCNMS rules and regs followed	The discharge protocols are consistent with MOU requirements and are not to occur in OCNMS waters.
	Additional General Questions	
☒	How is deck runoff and hull cleaning handled (scuppers…) (non-toxic/phosphate free cleaners, biodegradable)	Deck runoff and hull cleaning protocols are consistent with MOU requirements.
☒	How is maintenance performed on the outside of the vessel (paint chipping, painting, etc)	Outside vessel maintenance protocols are consistent with MOU requirements.
☒	Sculleries and Galleys – type of detergents and degreasers used (phosphate free and non-toxic)?	Restaurants and galleys use detergents and degreasers that are non-toxic and phosphate free.
☒	How are food waste discharges handled (prevention of erroneous materials)?	Food waste discharge protocols are consistent with MOU requirements and records reviewed show no discharges in MOU related waters.
☒	Medical sinks/floor drains, chem. stor areas wastes go where (plugged, blackwater, bilge)?	Medical sinks/floor drains were reported by the environmental officer as going to graywater tanks but was later corrected as going to blackwater tanks by engineering officer.
☒	Where is pool and spa water discharged? Dechlorinated/debrominated and underway?	Pool and spa water protocols are consistent with MOU requirements.
☒	What type of fuel is used and percent sulfur content?	<0.1% sulfur fuel content used when in MOU waters or EGCS treated equivalent is used throughout the route.

Other:

Section F: Sampling Results

Parameter	Results
Biochemical Oxygen Demand 5-Day (BOD_5)	
Total Suspended Solids (TSS)	
Fecal Coliform	
Residual Chlorine	
pH	
Ammonia, Nitrogen	

NOT APPLICABLE

Section G: Summary of Findings/Comments

Introduction

Evan Dobrowski, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program (NWRO-WQ) conducted the inspection of the Norwegian Cruise Line's NORWEGIAN JEWEL on October 1, 2024. The main contact on board the NORWEGIAN JEWEL was Juan Garcia, Environmental Officer (EO) for the vessel. Prior notification of the visit was given on September 15, 2024, for security protocol. The purpose of the inspection was to evaluate compliance with the *Memorandum of Understanding Cruise Operations in Washington State* (MOU), as amended. The NORWEGIAN JEWEL is not approved to discharge wastewater in MOU waters.

The NORWEGIAN JEWEL launched in 2005 and is 965 feet long with about a 28-foot draft. The passenger capacity is approximately 2,376 with a crew capacity of about 1,100. The vessel has five engines and two azipods. NORWEGIAN JEWEL was scheduled for 4 port calls in Seattle for cruises to Alaska between October 1, 2024 and October 28, 2024.

Inspection

I arrived and boarded the ship at 9:20 am and began with introductions and a plan for the day with Juan Garcia, EO. We headed to the Environmental Officers office and began the inspection by discussing the various waste streams and looked at electronic records. We then headed to the Engine Control Room and discussed the vessel itinerary and locations where discharges and fuel transitions occur. We reviewed electronic logs and logbooks for various waste streams and went over the plan for the day with NORWEGIAN JEWEL engineering staff. After this we discussed various waste streams and discharge protocols as well as fuel transfer protocols. We then toured the blackwater marine sanitation devices, the oily bilge treatment, and the Exhaust Gas Cleaning Systems with the Alvaro Sanchez (3rd engineer) and the environmental officer. We then headed to the incinerator room and then to the garbage room. We finished with a debrief in the Environmental Officers office reviewing discharge and offload protocols we disembarked the vessel at 11:30 am.

Discharge Types and Protocols in MOU waters, Washington State waters or the Olympic Coast National Marine Sanctuary (OCNMS) (MOU related waters):

The discharge protocols start with voyage plans for each itinerary prior to that route. A matrix is developed for each route upon a detailed review of locations for allowed discharges. The matrix for the Seattle/Alaska route details no discharges in MOU related waters, for

- bilge water;
- blackwater;
- graywater;
- food waste;
- ballast water; and
- pool and spa water.

The matrix also shows that Puget Sound is a designated No Discharge Zone for sewage with a link to our website. The matrix is overlaid onto the navigational screen to show the location where fuel switch overs and discharges stop just before the OCNMS and start upon entering Canadian waters when leaving Seattle.

The protocol for discharges is a closed-loop process. There is communication between the ECR Officer on Watch and the Bridge staff for approval from the Bridge that the vessel is in an area authorized for discharge. The overboard valves have a lock which has to be manually controlled. The keys for the locks are found in the engine control room and are controlled by a badge. The badge control will only allow that person to access certain keys allowed to them. For the discharge valves only engineering and environmental officers have access to these keys. The discharge valves are then controlled electronically after the locks are removed and the discharges are logged into the NAPA system. Any change to the logs shows who made the change by staff passcode. Any changes are reviewed by the Bridge. The GPS system is connected to the log for accurate logging of the discharge location. The discharges all to occur outside of MOU related waters (Washington State waters, the Strait of Juan de Fuca up to the border with Canada and the OCNMS). For black water and gray water, the latitude and longitude coordinates are recorded in the NAPA system along with all other logs. The date, time and location of both the start and the stop of the discharges are recorded, along with port location, effluent type, speed, tank name and volume, valve name, and status of valve. The maker of the entry and reviewer/signer is also included, along with any notes. Navigation on the bridge shows clearly marked electronic maps indicating discharges to stop 13 miles outside the OCNMS (12 miles from shore and a one mile buffer).

Discharge Types:

Blackwater includes toilet waste and medical drains and is sent by vacuum/jet to the Scanship marine sanitation devices. Description paraphrased from the schematic on the MSD system: Black water enters from the inlet into the aeration tank

where the bacteria present in this section decomposes the blackwater in the presence of oxygen which is supplied by the aeration nozzles. A continuous supply of oxygen is necessary. The blackwater then enters into the settling section where settling takes place and flocs of activated sludge settles down along with other settleable matter. Sludge is returned back to the aeration section. The settled blackwater then enters into the disinfection section where chlorine is added. Flow then goes to dedicated holding tanks if not in an area of discharge. Blackwater is not discharged in MOU related waters and all blackwater is treated. Settleable solids are monitored periodically and chlorine availability checked. Once per year, each MSD is taken off-line for a full maintenance cleaning. Solids are removed at this time, drummed and sent ashore.

Graywater, which includes accommodation and crew sink and shower water, galley water, laundry and possibly spa water is held treated discharged outside of MOU related waters.

Dirty bilge water collected and is sent to one of two oily bilge tanks. Liquid moves to one centrifugal oily water separators (OWS).. The system includes two stages of filtration and recirculates at >5 parts per million (ppm) oil content with the oily content meter. Oily sludge is collected from the system and sent ashore by truck. Maintenance on the OWS's includes regular cleaning of the filters and other regular checks and maintenance. Prior to discharge, the liquid is sent through a white box which only allows discharges <15 ppm. The discharge protocol for this route is outside the MOU related waters. The Chief Engineer and the EO have the two separate keys and both need to be present to open the white box. There is a record each time the white box door is opened and a video camera on OWS equipment. The chief Engineer and the EO have the ability to review camera recordings. All portable pumps are logged and only used for certain equipment. The EO confirmed that he is not aware of any rerouting of oily bilge. The OWS was off and recirculating during the inspection and not discharging. If graywater tanks overflow or come in contact with oily bilge, the content is considered as oily bilge and treated through the OWS and the Captain and Chief Engineer are notified.

The NORWEGIAN JEWEL uses graywater in various tanks for ballast and therefore does not do ballast water exchanges. Stability has not been an issue.

The NORWEGIAN JEWEL has 2 fresh water pools, 2 salt water pools, and 10 jacuzzies/spas which are also fresh water. The pools are discharged >12nm and outside of MOU related waters and the water can be sent to the graywater collection tanks for discharge outside of MOU related waters.

Food waste is segregated into soft and hard foods. Soft foods are fed into a pulper. The effluent from the food waste pulper is deposited into the grey water tanks and is discharged outside of MOU related waters. Hard foods are either incinerated or landed ashore as USDA waste. Used cooking oil is sent ashore for recycling. The EO and Food Operations staff inspect the biodigesters typically daily.

Deck runoff goes directly overboard. The VGP requirements are followed for prevention of any materials off the deck. Only non-toxic, phosphate free cleaners are used. Outside vessel maintenance is not being done at the Port of Seattle.

Laundry water is sent to the graywater collection tanks and discharged outside MOU related waters. Dry cleaning is not done on the vessel.

No photo waste is generated onboard this vessel. X-rays are done digitally without any waste. Fluorescent bulbs are crushed on board and held for offloading ashore as hazardous waste. Hazardous waste materials are stored separately in various dedicated locations throughout the vessel and include items such as paints, thinners, oily rags and debris, incinerator ash, chemicals, aerosols photo waste, and some batteries. Bio-medical waste is incinerated with sharps being offloaded as biomedical waste ashore. Hazardous waste is not being offloaded in Seattle. The Hazardous Waste Storage on this vessel did not have accurate logs regarding what was coming and going inside the hazardous waste storage locker. Hazardous waste tracking could be improved onboard.

Unused or outdated pharmaceuticals and narcotics are either destroyed onboard through incineration or are landed ashore via red medical bag waste. When medical waste is incinerated the Lead Nurse is required to transport the medical waste and witness incineration. Expired IV fluids, saline solution, and injectables are discarded down medical drains. When originally asked where medical sinks drain the environmental officer explained he believed they go to greywater. The engineering staff present said no they drain to blackwater.

Garbage such as domestic and operational waste is offloaded in Seattle. Some USDA wastes, some food waste, biomedical bagged waste, some plastics, food contaminated cardboard, and some paper is incinerated. Ash is tested annually and offloaded as hazardous waste. The garbage record book was reviewed and showed consistency with requirements.

Glass, heavier plastics, most cardboard, aluminum, tin and steel cans, batteries, used cooking oil and other items are recycled in Seattle.

A hybrid scrubber for exhaust is installed on the NORWEGIAN JEWEL. The hybrid scrubbers use bag filters and press filters that are disposed of as needed with use. While in MOU waters the vessel is switching over to MGO fuel < 0.1% sulfur. The hybrid scrubbers use filters and discharges are diluted and monitored before discharge. The vessel does have the capability to hold scrubber water except minimal bleed off.

The vessel has a clear process for notifications for any non-compliance incident.

Conclusions and Recommendations

The protocols for discharges are clear. Records were orderly and appeared consistent with the MOU. The Environmental Officer onboard this vessel when asked was unaware of the WA MOU and mentioned he had heard of it but had not read the materials. Some of the environmental officer's answers were inconsistent with WA MOU requirements; but engineering staff corrected during conversation. The Hazardous Waste tracking aboard the vessel could be improved as hazardous waste volumes were not clearly identified in the hazardous waste storage locker.

Copies to:
Juan Garcia, Environmental Officer, NORWEGIAN JEWEL
Alex Adams, Port of Seattle
Amy Jankowiak, Ecology
Central Files: Norwegian Cruise Line – NORWEGIAN JEWEL; WQ 6.1

Section H: Signatures

Name and Signature of Inspector:	Agency/Office/Telephone:	Date
	Department of Ecology Northwest Regional Office Water Quality Program 206-594-0175	January 30, 2025

PHOTO ADDENDUM – NORWEGIAN JEWEL
NORWEGIAN CRUISE LINES OCTOBER 1, 2024

Photo # 1 Image: IMG_2123 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of M/V NORWEGIAN JEWEL

Photo # 2 Image: IMG_2064 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of recycling sorting station.

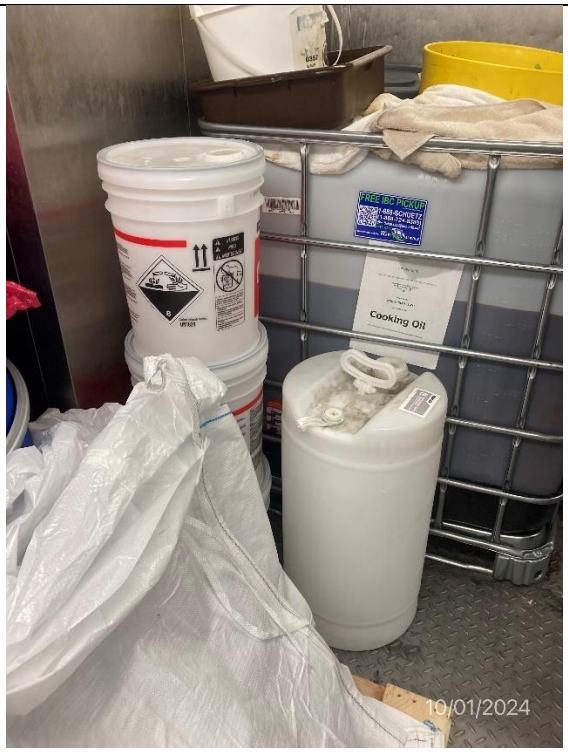

Photo # 3 Image: IMG_2069 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Used cooking oil and hazardous chemical storage area.

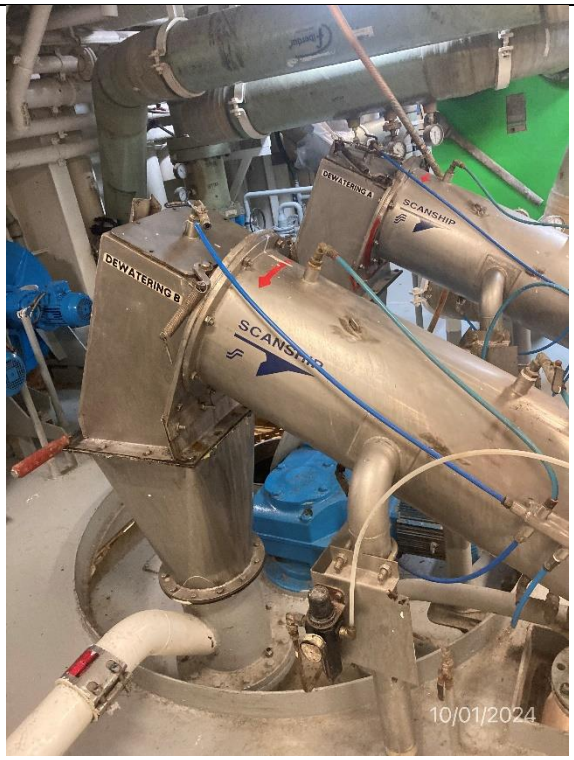

Photo # 4 Image: IMG_2070 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Scanship Dewatering equipment

Photo # 5 Image: IMG_2074 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of incinerator and ash collection bag.

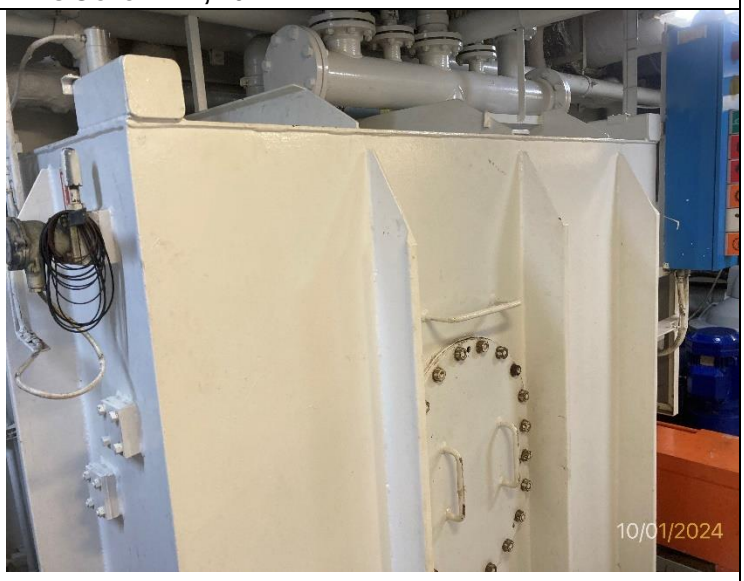

Photo # 6 Image: IMG_2076 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Greywater transfer/collection tank.

Photo # 7 Image: IMG_2079 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of vacuum collection control panel.

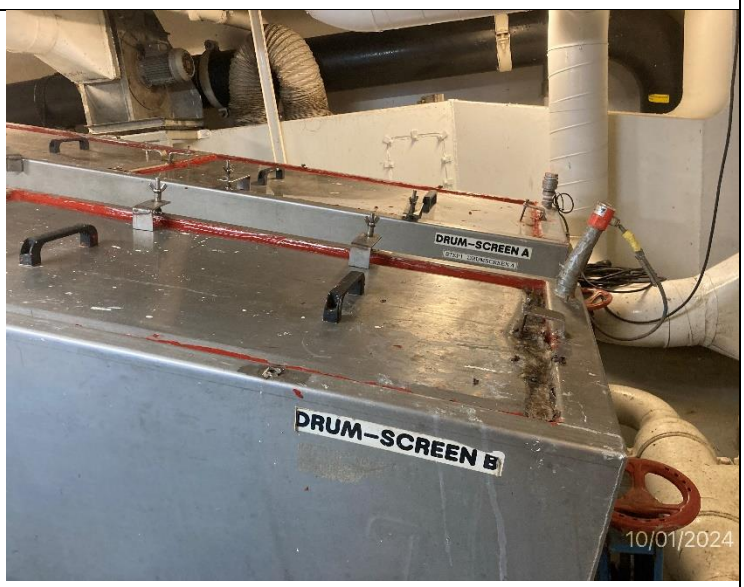

Photo # 8 Image: IMG_2080 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Drum screen blackwater filters.

Photo # 9 Image: IMG_2081 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Bioreactor blackwater filtration system.

Photo # 10 Image: IMG_2084 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of interior of flocculation tank B.

Photo # 11 Image: IMG_2088 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Polymer tank.

Photo # 12 Image: IMG_2089 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of blackwater overboard discharge shut and locked manually.

Photo # 13 Image: IMG_2090 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Polishing filter A

Photo # 14 Image: IMG_2091 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of UV Filter

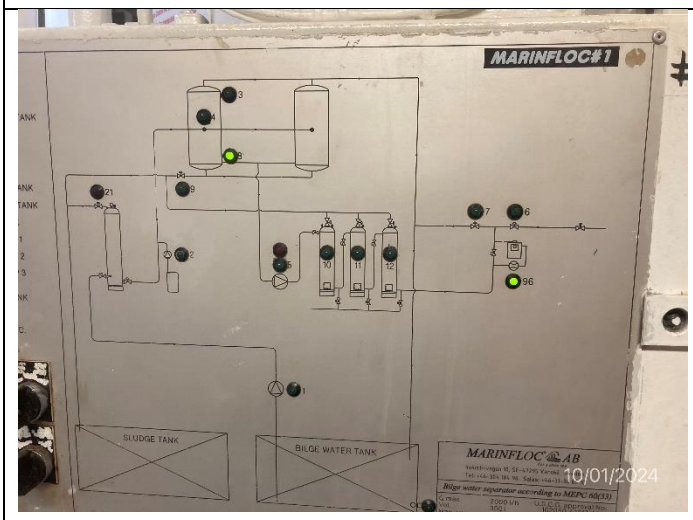

Photo # 15 Image: IMG_2102 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Marinfloc bilge water separator system schematics.

Photo # 16 Image: IMG_2108 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo of Bulb Crusher.

PHOTO ADDENDUM – NORWEGIAN JEWEL
NORWEGIAN CRUISE LINES OCTOBER 1, 2024

Photo # 17 Image: IMG_2109 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing Aerosol can crusher

Photo # 18 Image: IMG_2112 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing hazardous waste storage locker.

Photo # 19 Image: IMG_2105 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing double locked marinfloc white box system.

Photo # 20 Image: IMG_2115 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing housekeeping chemical storage area.

PHOTO ADDENDUM – NORWEGIAN JEWEL
NORWEGIAN CRUISE LINES OCTOBER 1, 2024

Photo # 21 Image: IMG_2119 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing laundry chemicals in use.

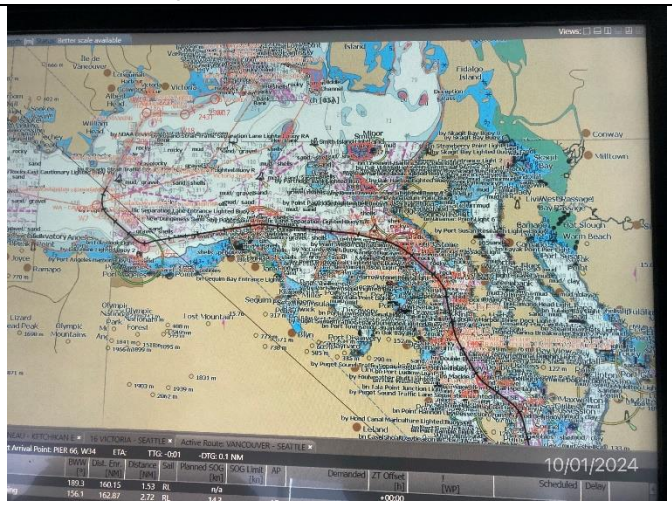

Photo # 22 Image: IMG_2120 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing environmental control areas map.

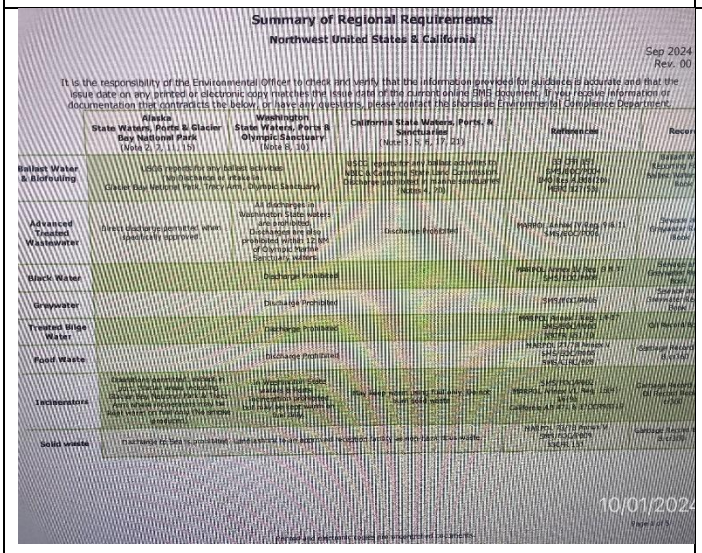

Photo # 23 Image: IMG_2121 Date: 10/1/2024
Taken by: Evan Dobrowski
Description: Photo showing Summer of Regional Requirements.

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