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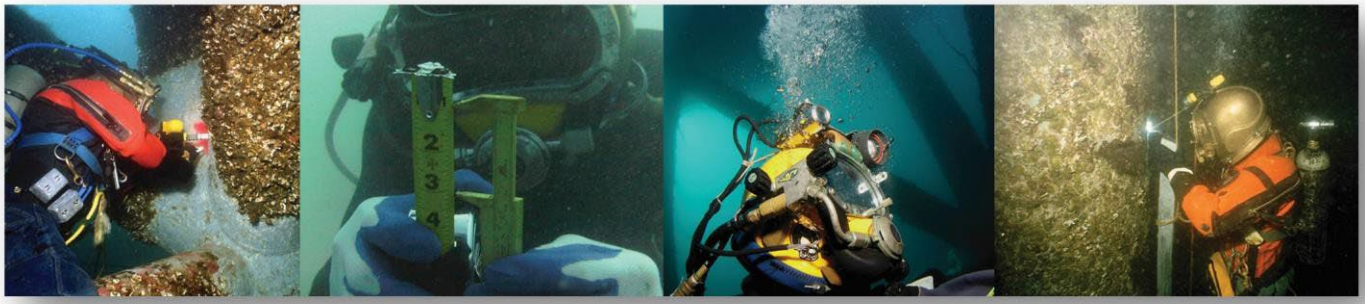

# 2025 - HAWK INLET DIFFUSER AND PIPELINE INSPECTION

**GREENS CREEK MINE**

Hawk Inlet, Admiralty Island, Alaska

**Submitted To:**

Hecla MINING COMPANY

**HECLA MINING COMPANY**
3000 Vintage Blvd #120
Juneau, Alaska 99801

Cari Atkinson, catkinson@hecla.com

**Submitted By:**
Global Diving & Salvage Inc.
5304 Eielson Street
Anchorage, AK 99518
907-563-9060

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# 1. INTRODUCTION

On November 14th, 2025, Global Diving & Salvaged mobilized a 3 man Remote Operated Vehicle (ROV) team from Juneau via fast response-chartered vessel "Ashley T" to conduct an inspection of the diffuser and pipeline inspection of the mine process outfall. The intent of the inspection was to document the annual condition of the outfall diffuser and pipeline.

The work was conducted in a single day. With the crew transiting by vessel in the morning and returning to Juneau in the late afternoon.

*SCOPE OF WORK*

- ROV Inspection of the Subsurface Portion of the diffuser and outfall pipeline
- Identify and report any abnormal operating conditions found.

All activities are in accordance with the following regulations and industry guidance publications. Global personnel and their subcontractors follow the strictest requirements on the work site.

- Occupational Safety and Health Administration (OSHA) Construction Industry Standards, 29 CFR 1926
- Occupational Safety and Health Administration (OSHA) General Industry Standards, 29 CFR 1910
- Occupational Safety and Health Administration (OSHA) Commercial Diving Standards 29 CFR Part 1910, and Subpart T
- Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response, 29 CFR 1926.65 or 29 CFR 1910.120
- United States Coast Guard (USCG), 46 CFR 197, Subpart B
- ADCI (Association of Diving Contractors International), Industry Standards, 6th Edition

Prior to beginning ROV operations, an onsite kickoff/safety meeting was held to review operational JSA's, onsite safety requirements, and operational inspection plan.

## 1.1 *Equipment Utilized*

A Deep Trekker Revolution vehicle was utilized to capture both still images and video documentation of the tank, coating, internal fittings and condition. This vehicle has a 4k high-definition color camera with tilt functions, a fixed 10 cm laser dot system for evaluation of scale in the image. The vehicle is depth rated for 305m and was supplied with 300m of tether for this project.


Figure 1 - DEEP TREKKER Revolution Remote Operated Vehicle

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## 2. SUMMARY OF INSPECTION

The diffuser is located north of Greens Creek and extends into Hawk Inlet, running north along the shore where it turns east into the mine facility. The 14" HDPE Pipeline and diffuser runs along the east side of Hawk Inlet and is generally located south of the Marine Facilities.


Figure 2 - General location of Outfall

Weather conditions for the survey were optimal this year. Winds were 5-10 knots from the Northeast in the channel during transit, with seas at 1-2 feet. The weather was slightly overcast in Hawk Inlet, with calm seas, light winds and some currents. Underwater visibility during the inspection was excellent with visibility estimated at 30'.

### 2.1 *Diffuser General Conditions*

During a slack tidal cycle, the ROV was deployed over the side of the "Ashley T" while the vessel "live boated" to hold station over the work area. The inspection findings cover the anode condition, the condition of the duckbill valves, the blind flange and associated hardware as well as the overall condition of the diffuser. Additional details related to these findings are found within the video submissions.

The amount of burial and scouring has not significantly changed with the outfall compared to previous years. It can be expected that the amount of sediment burial will change year to year. In several places, the pipeline is now buried at or above the spring line; however, this does not in any way affect the diffuser's overall function as the duckbill valves are still exposed and operating as intended.

### 2.1.1 Anodes

The anodes the ROV could access on the type-4 anchors were inspected and found to be in good shape. Many of the anodes were noted at 80% of the anode remaining. One (1) anode was replaced on the outfall flange itself during the diver phase this year. All the stainless-steel hardware appears to be in good condition, remains intact, and is functioning as designed.

For the type-2 anchors, anode nuts were changed during the diver phase, starting from the beach to 70 feet of seawater, and then from 68 feet deep to the point where the diffuser is buried in the sand bar. This diver phase followed the ROV operation completed earlier in the cycle.

### 2.1.2 Diffuser Pipe

No damage was found on the diffuser pipe, all appears to be as designed. The pipeline appears to be in very good condition, with moderate marine growth covering exposed areas. All types of anchors appear to be intact and acting as designed.


**Figure 3 - Typical Type 4 Anchor Block with Anodes, typical**

### 2.1.3 Duckbill Discharge Valves

The “duckbill” valves inspected are flowing freely without obstruction. Moderate marine growth was found on the duckbills. As seen in the video, all the duckbills are flowing and appear to be working as intended. The anodes on the duckbill flanges are intact with an estimated 85% or more remaining.


**Figure 4 - Typical Duckbill Valve Condition**

### 2.1.4 Diffuser Scour

As seen in the previous years, scouring on the East side of the diffuser remains. On the West side, the natural bottom still comes halfway up on the pipeline in some places as noted in the video above the spring line. This is a sign that the inflow of sediment is slowly covering the pipe from the Chatham Strait side. The scouring that has occurred on the Hawk Inlet side is from the back eddies as the current is disrupted by the diffuser. All scouring and back filling is minimal and does not hinder the diffuser from working at this time but should be monitored annually for change.


**Figure 5 - Diffuser end flange, as designed**


**Figure 6 - Side profile view looking South with anode**

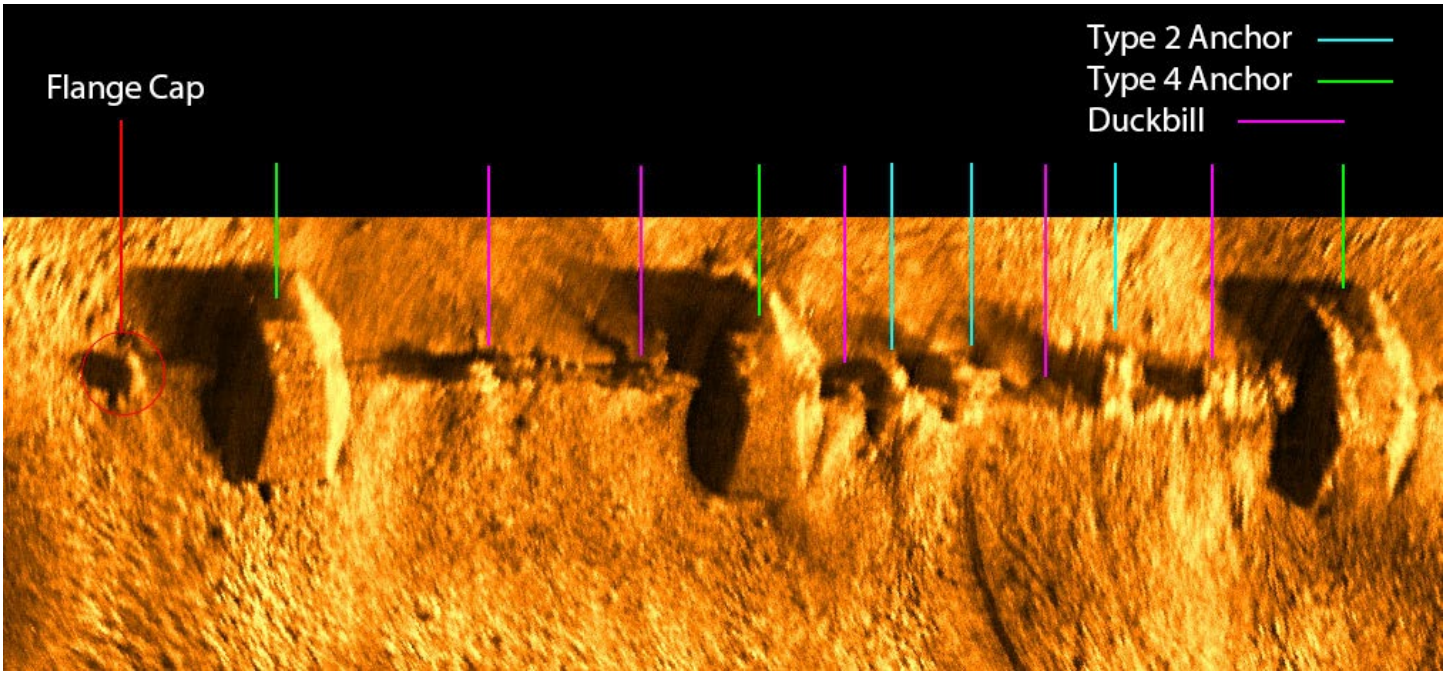


**Figure 7 – Sonar mosaic of diffuser starting from west end with flange**

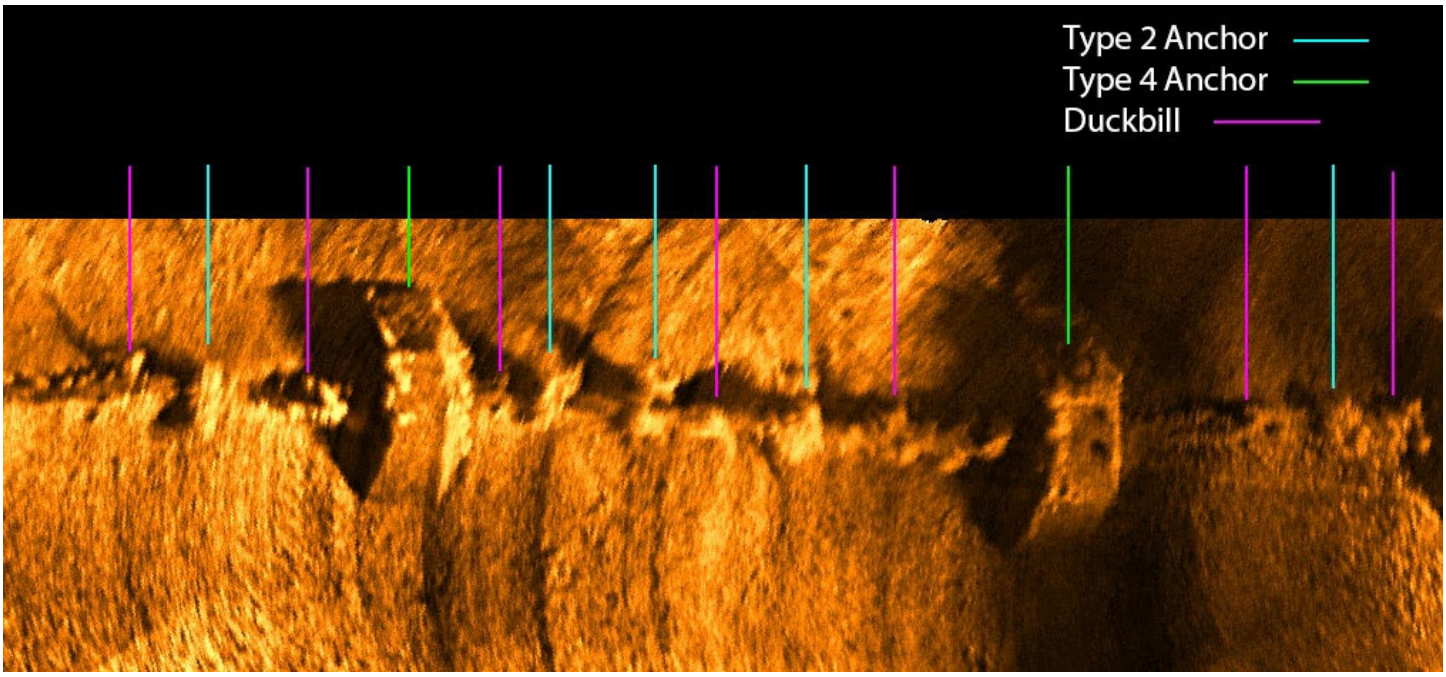


**Figure 8 – Continuation of mosaic moving east**

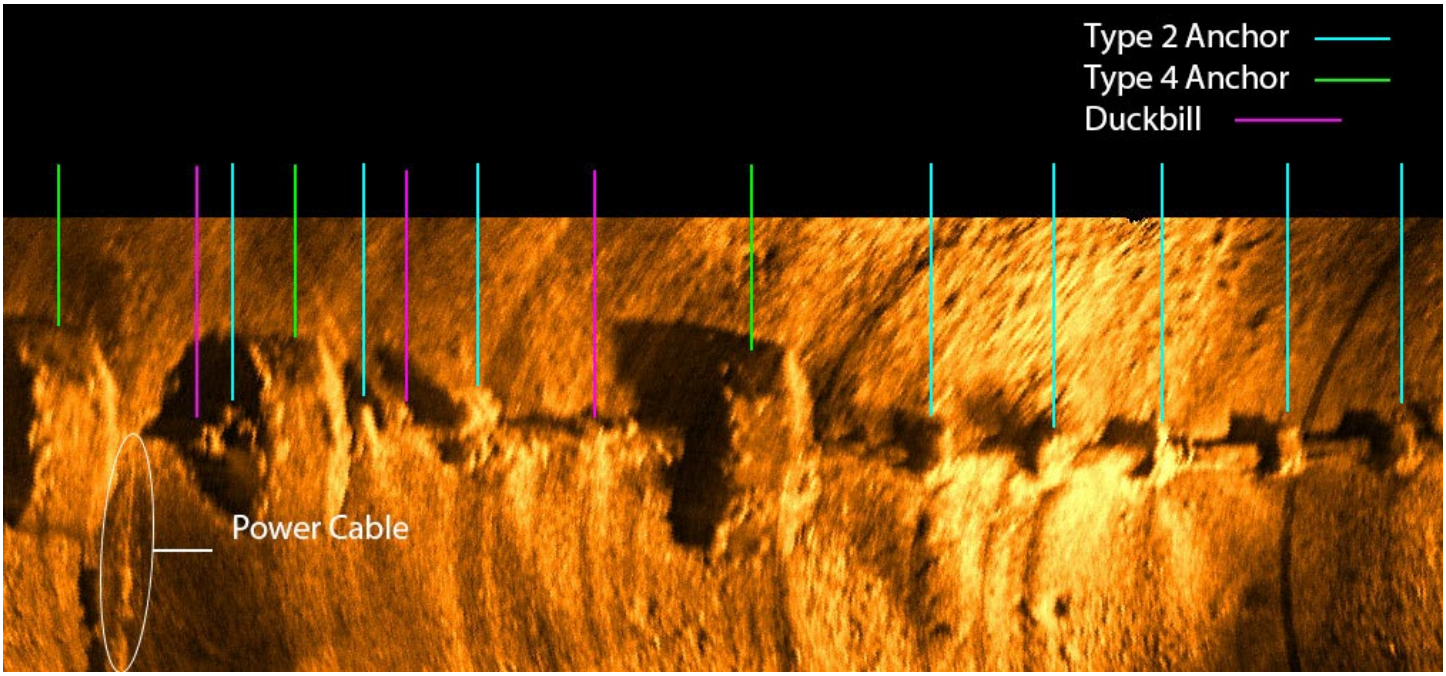


**Figure 9 – Continuation of mosaic with power cable noted, moving east**

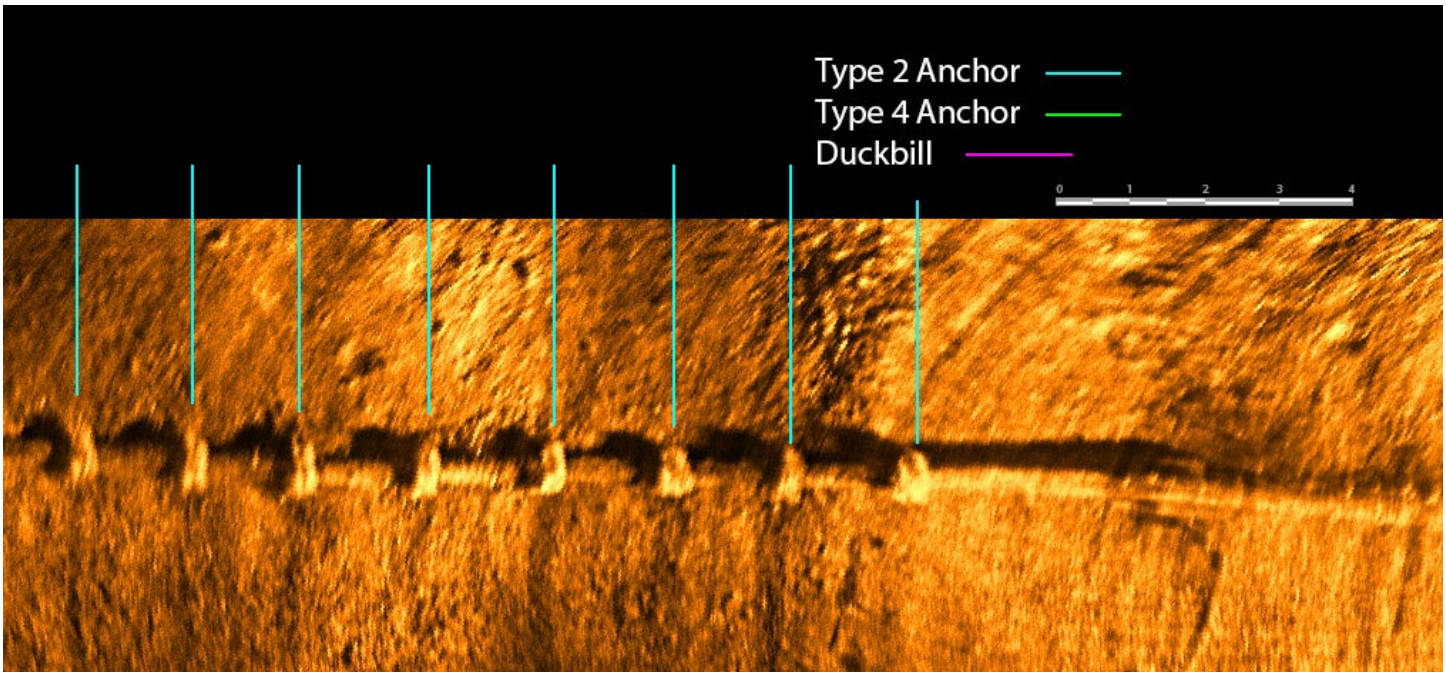


**Figure 10 – End of mosaic where punch-out in the East begins**

### 2.2 Pipeline Inspection

The pipeline was thoroughly inspected along its entire length and determined to be in excellent overall condition. Inspectors did note one abnormality: the 18th weight assembly south of flange 2 remains separated, with one half resting on the seafloor—a situation already documented in the 2024 inspection report. Adverse weather prevented divers from addressing this issue during the current inspection cycle. However, this separation does not appear to impact the line's intended function or operation. All other weight assemblies were located as designed. It was also observed that many of the anode nuts are either depleted or missing.

Due to heavy marine growth of some anchor blocks, it was difficult to see each individual nut. Divers replaced zincs during this phase in 2025 from the beach to 70’ of water and from 68’ of water to where the outfall buries into the sandbar. The three flanges in the pipeline section were found as designed with bolts tight and no leaking past the flanges. The flanges are stainless steel as is the hardware used in them. Ten-pound anodes were installed in 2021 and have an estimated 80%+ remaining. The pipeline lays on nature bottom and all the anchors appear to be evenly spaced, except as noted, where the pipeline drops into deeper water on a steep angle and these blocks are spaced more closely, and secured as intended.

Figure 11 – Flange 1 @ 67 ft, Good Condition, as designed


**Figure 12 – Flange 2 @ 69 ft, good condition, as designed**


**Figure 13 – Weight #18 South of flange 2, fallen apart 2024**


**Figure 14 – 18th weight south of Flange 2, Needs Corrected**


**Figure 15 – Typical Pipeline Weight**


**Figure 16 – Flange 3 @ 28 ft, appears good condition heavy marine growth noted, as designed**


**Figure 17 – Root ball of tree noted 5' west pipeline at 70' depth and 20' South of second flange**


**Figure 18 – Upwards view of tree reaching towards surface, construction light and work vest already in place on surface**

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## 3. EXECUTIVE SUMMARY – RECOMMENDATIONS

The Hawk Inlet pipeline outfall and diffuser are currently in good to excellent shape. Global suggests replacing the anodes once their remaining capacity drops below 40%, as anodes that fall beneath this threshold are likely to break off due to water currents, leaving the main metal exposed and unprotected—as shown in the video. The type-4 anchor blocks on the diffuser, along with their attached anodes, are still in excellent condition. Both the duckbill flanges and pipeline flange areas, including their respective anodes, are considered satisfactory.

Historical data indicates that zinc nuts typically have a lifespan of approximately 3 to 5 years, and scheduling replacements within this interval effectively aligns with their depletion cycle. Following the recent replacement of zinc nuts during this inspection cycle, it is advisable to monitor their condition regularly going forward.

- Continued annual monitoring for 2026 is recommended.
- Monitor Anode conditions on flanges and bolts
- During the next diver deployment on site, reassemble weight #18. The expected working depth is 55-70 fsw. If the existing bolts cannot be reused with additional nuts, at a minimum, position the top section over the bolts and secure the weight using a stainless-steel ratchet strap.

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## 4. VIDEO LOG

Video for this inspection is provided in 3 files. Found in the share included with this report.

- Hawk Inlet Outfall
  - Diffuser outfall visual inspection
    - 2025-11-13 Outfall Visual HECLA_HD.mp4 — (4k Video of the Diffuser Portion of outfall)
  - Pipeline Visual Inspection
    - 2025-11-14 Pipeline 1 HD.mp4 — (4k Video of the Pipeline Section, North end section)
    - 2025-11-14 Pipeline 2 HD.mp4 — (4k Video of the Pipeline Section, Middle section)
    - 2025-11-14 Pipeline 3 HD.mp4 — (4k Video of the Pipeline Section, South end section)
  - Diffuser Sonar Data
    - Diffuser Sonar Video.mp4 — (Video form of the sonar data used to create the mosaic)