



July 2022



Skagway Ore Terminal Sediment Remediation Project
Alaska Department of Environmental Conservation, File No. 1526.38.004
Hazard Identification No. 401

Construction Summary Report

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Prepared for White Pass & Yukon Route

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Prepared for
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ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
CWP	Construction Work Plan
CY	cubic yards
H&A	Hughes and Associates
kg	kilogram
kg/cf	Kilograms per cubic foot
mg/kg	Milligrams per kilogram
mg/L	milligrams per liter
RCRA	Resource Conservation and Recovery Act
TCLP	toxicity characteristic leaching procedure
TMC	Turnagain Marine Construction
TMC Final Package	<i>Skagway Ore Dock Dredging Final Project Package</i>
WPYR	White Pass & Yukon Route

1 Introduction

In March and April 2022 White Pass & Yukon Route (WPYR) implemented the Skagway Ore Terminal Sediment Remediation Project (Project), located in Skagway, Alaska (Figure 1). The Project focused on removal of contaminated sediment within accessible areas of the Skagway Ore Basin (referred herein as the Work Site [also in Figure 1]), adjacent to the Skagway Ore Terminal facility. The Project was completed in coordination with the Alaska Department of Environmental Conservation (ADEC) who approved the contractor's Construction Work Plan (CWP; TMC 2022a) prior to the start of construction. This Project corresponds with ADEC File No. 1526.38.004 and ADEC Hazard Identification No. 401.

Construction was awarded to Turnagain Marine Construction (TMC) as the prime contractor. TMC and several subcontractors completed the construction activities at the Work Site and at off-site facilities, as follows:

- TMC (dredging, stabilization, and sand cover placement)
- Boyer Logistics (in-water towing)
- Waste Management (upland transportation and disposal)
- Hughes and Associates (H&A; hydrographic surveyor)

During implementation, WPYR's supporting consultant team was as follows:

- Anchor QEA (Designers of Record and technical consultant for remediation aspects)
- KPFF (technical consultant for structural engineering aspects)
- Hart Crowser (technical consultant for geotechnical engineering aspects)

This Construction Summary Report, prepared by Anchor QEA on behalf of WPYR, is intended to provide a general overview of the completed construction activities as part of the Project and presents documentation generated to document the work completed and materials used.

The appendices to the Construction Summary Report provide compiled documentation collected as part of inspection, oversight, and tracking, as well as Project information. The information provided in the appendices is listed below:

- Appendix A Treatment, Testing, and Disposal Forms and Associated Laboratory Analytical Reports
- Appendix B Disposal Facility Documentation
- Appendix C Sand Cover Material Chemistry Documentation
- Appendix D Turnagain Marine Construction Letter Regarding Sand Placement Quantities
- Appendix E Water Quality Monitoring Daily Reports
- Appendix F Post-Construction Structural Monitoring Results
- Appendix G Marine Mammal Monitoring Summary Memorandum

2 Summary of Work

Work performed by TMC and their subcontractors for the Project included removal of contaminated sediment from the Work Site by mechanical dredging, dredged sediment dewatering, stabilization of the dredge material using Portland Cement, post-stabilization verification testing and reporting, transportation of stabilized dredged material off site by barge, offloading and transferring dredged material to railcars in Seattle, off-site disposal of the stabilized material at a permitted disposal facility, and clean sand cover placement over the dredge footprint after dredging was completed. In addition, environmental monitoring activities consisting of water quality and marine mammal monitoring were conducted during implementation of the Project.

Table 1 presents the key pre-construction, construction, and closeout activities and corresponding dates completed as part of the Project.

Table 1
Summary Timeline of Key Construction Activities

Date	Activity
Pre-Construction Activities	
2021 November 5– 2022 February 10	Pre-construction submittals, including CWP, Environmental Protection Plan, and Health and Safety Plan, completed by TMC
2022 February 11	ADEC approval of TMC's CWP
2022 February 21	Kickoff pre-construction meeting: WPYR, SSA Marine, Anchor QEA, KPFF, Hart Crowser, TMC, H&A
2022 February 28	Mobilization to Work Site by TMC
2022 February 28	Pre-construction bathymetric survey conducted by H&A
2022 March 1–2022 March 2	Pre-construction conditions inspection conducted by TMC
Construction Activities (TMC, H&A, Waste Management)	
2022 March 4–2022 April 1	Dredging of contaminated sediment from Dredge Units 1, 2, and 3
2022 March 4–2022 April 1	Water quality monitoring
2022 March 4–2022 April 6	Marine mammal monitoring
2022 March 5–2022 April 1	Stabilization of dredge material and verification testing
2022 April 4–2022 April 6	Clean sand cover placement
2022 March 24	First barge leaves Work Site for Seattle
2022 April 13	First barge received by Waste Management
2022 April 11	Second barge leaves Work Site for Seattle
2022 May 23	Second barge received by Waste Management
Closeout Activities	
2022 April 6	Post-construction bathymetric survey conducted by H&A
2022 April 7	Post-construction conditions inspection conducted by TMC
2022 April 18	Final package of compiled progress submittals provided by TMC to WPYR

3 Project Results and Documentation

In compliance with Project specifications, documents were completed and maintained to record and document the construction activities, and to keep WPYR, the consultant team, and the contractor informed of progress throughout performance of the work.

Key completed monitoring records are attached for reference as appendices to this Construction Summary Report.

3.1 Contractor Pre- and Post-Construction Document Submittal

On behalf of WPYR, relevant members of the consultant team reviewed contractor pre-construction, construction progress, and post-construction submittals to verify compliance with the Project specifications and the ADEC-approved CWP. The pre-construction submittals, including the CWP (TMC 2022a), Environmental Protection Plan (TMC 2022b), and Health and Safety Plan (TMC 2022c) underwent several rounds of consultant review toward development of a final submittal package for review by ADEC. The CWP was formally accepted by ADEC on February 11, 2022, after responses to comments by TMC.

After construction was completed, TMC submitted the *Skagway Ore Dock Dredging Final Project Package* (TMC Final Package; TMC 2022d) on April 18, 2022, which consisted of a compilation of contractor submittals during construction, including daily construction reports, pre- and post-dredge bathymetric surveys, a post-sand cover placement bathymetric survey, final calculated dredging, slough, and sand cover quantities, the final structural monitoring report, compiled daily water quality monitoring reports, marine mammal monitoring reports, and the signed ADEC treatment, transportation, and disposal forms. Much of the documentation provided by TMC as part of the TMC Final Package is appended to or has been incorporated into this Construction Summary Report.

3.2 Daily Construction Reports

During construction, TMC completed daily construction reports to document activities completed each day, including dredging, stabilization, verification testing of the stabilized material, sand cover placement, water quality monitoring, bathymetric progress surveying, and structural monitoring. In addition, these reports contain notes regarding conditions observed during the work, equipment used, a crew list, progress volumes, and identified issues of potential non-compliance with the contract design documents. Daily reports also include limited photographic documentation of the work. Contractor daily construction reports are included in TMC Final Package (TMC 2022d).

3.3 Final Construction Quantities

This section summarizes the final construction volumes for dredging and sand cover placement. Dredging volumes were calculated by Hughes & Associates on behalf of TMC by comparing pre- and post-dredge and post-sand cover surveys.

Figure 2 presents pre-construction seabed conditions, based on the pre-construction bathymetric survey conducted by H&A on February 28, 2022. Figure 3 presents the post-dredge contours achieved within the Work Site, based on the post-dredge bathymetric survey conducted by H&A on April 2, 2022. Finally, Figure 4 presents the extent of sand cover placement, conducted after dredging was completed, and is based on the post-sand cover bathymetric survey conducted by H&A on April 6, 2022 for areas within and adjacent to the sand placement footprint. The April 2, 2022 survey was used in areas outside of the footprint that did not have bathymetric coverage during the April 6 survey.

The following subsections summarize the final quantities for each of the primary construction activities completed by TMC and describe the rationale where actual construction quantities varied from quantities estimated during design.

3.3.1 Dredging

Dredging activities were tracked by TMC to determine the volume of contaminated sediment removed. The dredging volume was determined by comparing the pre-construction survey with the post-dredge survey and included slough material that entered the dredge footprint from the slope under the Ore Dock and was removed as part of the dredging work.

A summary of total dredge volume (including slough volume) removed by TMC is presented in Table 2. The total volume removed from the combined Dredge Units 1, 2, and 3 was 3,277 cubic yards (CY), including daylight side-slopes, removed slough material, and overdredge allowance volumes. The bid volume for this first round of dredge passes was 3,700 CY; TMC achieved removal of 89% of the dredging bid volume. This was as much as could be safely accessed and removed and it accomplished the project goal of completing a mass removal of contaminated sediment from the harbor in the area identified in the Options Analysis and refined in the Basis of Design Report. The primary reason for the difference between the bid and actual dredging volumes is that the bid volume assumed that sloughing from the adjacent slope under the Ore Dock would occur over the entire length of the extents of the dredge footprint; however, only a limited extent of the slope area sloughed into the dredge prism, as can be observed in Figure 2. This slough material was removed as part of the dredging work and is included in the payable volume.

**Table 2
Dredging Volume Summary**

Actual Quantities vs. Bid Quantities	Dredging Volumes		
	Dredge Unit Volume (CY)	Slough Volume (CY)	Total Volume (CY)
Total actual quantities	2,812 ¹	465 ¹	3,277
Total bid volume	3,700		
Difference	-423		

Note:

1. As reported in 4/3/2022 TMC Daily Construction Report.

It should be noted that “additional dredging,” defined as conducting a second and third round of dredge passes to remove material below the initial round of dredging grades, was not conducted as part of the Project. This is because sloughing from underneath the Ore Dock structures was not observed in sufficient quantity during construction to warrant dredging deeper. There were concerns that dredging deeper at the toe of the slope adjacent to the Ore Dock would lead to a greater potential for uncontrolled slope movement and potential structural damage to the Ore Dock. This was anticipated and accounted for during remedial design, which is why the dredge cut thicknesses were limited adjacent to the Ore Dock and were required to be completed in a sequential fashion if sufficient sloughing of sediment from under the dock occurred. As such, there is no volume associated with the Additional Dredging bid item.

3.3.2 *Pre-Disposal Stabilization and Verification Sampling and Testing of Leachable Metals Dredge Material*

During pre-construction characterization, the dredge material was determined to exceed the toxicity characteristic leaching procedure (TCLP) criteria of the Resource Conservation and Recovery Act (RCRA) metals* for lead as described in the *Basis of Design Report - Skagway Ore Terminal Sediment Remediation Project* (Anchor QEA 2020). Pre-construction measured values for leachability, as documented through TCLP testing, ranged from 5.1 to 27.8 milligrams per liter (mg/L) for lead (Anchor QEA 2015). This indicated that the untreated material would be classified as hazardous waste for transport and disposal. To address this concern, the contractor was required to stabilize all dredged sediment on site and conduct in situ verification sampling and testing of the stabilized dredge material.

TMC conducted sediment stabilization within a watertight mixing area on the barge (located within the Work Site). Portland cement was delivered to the site in supersacs and mixed using an excavator on

* RCRA lists a group of eight heavy metals (commonly referred to as the RCRA 8), which include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

the barge. Based on the CWP (TMC 2022a), it is assumed that the cement was mixed at a ratio that varied between 3% to 5% (by weight) to stabilize the material, as no additional as-built information was provided by TMC.

Prior to transport from the Work Site, verification sampling and testing was performed over six separate events with each sampling event consisting of three samples collected to represent approximately 500 CY batches of stabilized material, as described in the CWP (TMC 2022a). The analytical testing was performed by SGS Laboratory in Anchorage, an ADEC-certified laboratory. Analytical testing consisted of bulk metals and TCLP testing for RCRA metals to demonstrate that the stabilized sediment TCLP concentrations were below hazardous waste thresholds (U.S. Environmental Protection Agency's Maximum Concentrations of Contaminants for Toxicity Characteristic [Table 1, 40 Code of Federal Regulations 261.24 – Toxic Characteristic]). The analytical results were submitted by TMC for ADEC approval through the completion of ADEC's "Contaminated Media Transport and Treatment, or Disposal Approval Form" with attached post-stabilization verification analytical results. These forms were submitted to ADEC on March 22 and April 11, 2022. The forms and analytical results were approved by ADEC on March 24 and April 11, 2022, respectively, prior to transportation of the stabilized sediment from the Work Site. The Transport and Treatment or Disposal Approval forms signed by ADEC and the associated analytical results for bulk chemistry and TCLP analyses conducted on the stabilized material are presented in Appendix A.

3.3.3 Mass of Lead Contaminated Sediment Removed

The dredge footprint for this Project was developed with the objective of removing a mass of legacy sediment contamination, based on the recommendations of the site-specific Risk Assessment (Golder 2018). This approach was consistent with Remedial Action Objective 1 in the Options Analysis (Anchor QEA 2019), which stated that the objective of the remediation was to remove the majority of the mass of sediment contamination associated with historical ore handling operations in accessible areas of the harbor. As described in the Options Analysis, lead was used as a surrogate for all legacy ore contamination because lead was determined to include the largest area that exceeded screening levels compared to other ore-related contaminants and the lead exceedance areas encompassed exceedances from all other ore-related contaminants. This approach was incorporated into the dredge prism design for the removal action, as described in the Basis of Design Report (Anchor QEA 2020). The dredge prism boundaries were set to remove most of the accessible footprint of lead contaminated sediment in the Ore Basin.

Dredging was completed within the removal action footprint consistent with the dredge prism design. As previously noted, due to limited sloughing of the slope areas during construction leading to structural concerns, only one round of dredging passes was conducted within the Project footprint. The mass of lead associated with the contaminated sediment removed from the design footprint was estimated using lead concentrations from the ex situ samples that were collected for

stabilization verification during construction and the volume of dredged material (Table 3). The minimum, average, and maximum concentrations of lead in the dredged sediment were calculated based on 18 ex situ samples, as summarized in Table 3. The range of lead mass removed by the dredging was then calculated using the range of lead concentrations in the ex situ sediment samples multiplied by the dry-weight total actual sediment mass (estimated at 45 kilograms per cubic foot conversion factor for dry-weight sediment). Table 3 presents the estimated range of lead mass removed by the dredging. The average lead contaminated sediment mass removed was calculated as 22,761 kilograms (kg), with minimum and maximum lead contaminated sediment mass removed of 3,500 kg and 88,391 kg, respectively.

Table 3
Range of Mass of Lead Contaminated Sediment Removed

Sample Batch ID	Sample ID	Sample Date	Sediment Lead Concentration ¹ (mg/kg)	Lead Concentrations in Ex Situ Sediment Samples			Mass of Lead Contaminated Sediment Removed ^{2,3}		
				Minimum (mg/kg)	Average (mg/kg)	Maximum (mg/kg)	Minimum (kg)	Average (kg)	Maximum (kg)
1	1	3/4/2022	4,830	879	5,717	22,200	3,500	22,761	88,391
	2		10,400						
	3		5,710						
2	S2 D	3/15/2022	14,000						
	S2 E		5,890						
	S2 F		9,400						
3	S3 D	3/16/2022	7,600						
	S3 E		22,200						
	S3 F		10,600						
4	S4 D	3/18/2022	879						
	S4 E		1,500						
	S4 F		1,330						
5	S5 D	3/20/2022	1,680						
	S5 E		1,320						
	S5 F		972						
6	S6 D	4/1/2022	1,600						
	S6 E		1,530						
	S6 F		1,460						

Notes:

1. Sediment lead concentrations derived from the SGS Laboratory reports for sample batches 1 to 6 (see Appendix A).
2. A mass conversion factor of 45 kilograms per cubic foot was calculated assuming a conversion factor of 1.8 g/cm³ for sediment (dredge) material.
3. The total actual dredge volume used in the lead contaminated sediment mass calculation includes the dredge volume from the dredge footprints (2,812 CY) and slough volume (465 CY).

In the Options Analysis, the mass of lead associated with the sediment in the removal footprint was estimated to be approximately 78,500 kg. The difference with the pre-construction estimated mass of lead and that calculated in Table 3 is primarily due to the difference in the concentrations of lead measured in historical sediment samples and the ex situ concentrations collected during construction. The average concentration of lead in the historical samples collected within the dredge design footprint was 20,525 milligrams per kilograms (mg/kg), compared to an average lead concentration of 5,717 mg/kg in ex situ samples collected during construction. If the historical lead concentration were applied to the volume of material actually dredged, this would correlate to a lead mass of 81,720 kg.

While the mass of lead removed in the dredged sediment may be lower than the Options Analysis estimate (based on the sensitivity to the difference in historical measured lead concentration versus the ex situ measured concentration), the area of dredging achieved removal of the targeted accessible area of lead contaminated sediment mass, consistent with the Project dredging design plans.

3.3.4 Off-Site Disposal

Stabilized dredge material was disposed of at the Columbia Ridge Subtitle D Landfill Disposal Facility, located in Arlington, Oregon. The dredged material was loaded into 2 CY supersacs after stabilization verification on the barge in Skagway. The barges were then transported to Seattle where material was offloaded at the 8th Avenue Transload Facility on the Duwamish River and transferred to the custody of Waste Management, who then transferred the sediment and any associated debris to railcars and delivered the material to the Columbia Ridge Disposal Facility. The quantity of stabilized material brought to the Columbia Ridge Landfill was established through in situ bathymetric survey measurements and verified using barge displacement load calculations included with the final certificates of disposal. Based on the final certificates of disposal issued by Waste Management, 6052 tons of stabilized dredge material were received at the Seattle Offloading Facility and then disposed of at the Columbia Ridge Subtitle D Landfill Disposal Facility. For comparison, using a typical conversion for sediment of 1.5 tons/CY, this is equivalent to a volume of 4,035 CY[†] of sediment. The final certificates of disposal were provided by TMC upon completion of the Project and are included as Appendix B.

3.3.5 Sand Cover Placement

A clean sand cover was placed in all dredged areas after dredging was completed, with the intent of preventing exposure to potential generated residuals. Clean sand material was imported to the Work Site by barge on February 21, 2022, from a quarry located in Haines, Alaska. As required by the

[†] Calculated disposed sediment of 4,035 CY differs from the dredged sediment volume of 3,277 CY (Section 3.3.1) due to estimation of the conversion rate between tonnage and volume and inherent inaccuracies in barge displacement measurements.

specifications, physical and chemical testing of the clean sand material was conducted by TMC (through SGS Laboratory), and results are included as Appendix C.

A summary of the total sand cover placement volume completed by TMC is presented in Table 2. This is based on the reported tonnage of sand material imported to the site and placed by TMC: 753 tons. This is equivalent to 538 CY, based on an assumed conversion factor of 1.4 CY/ton for sand material. For comparison purposes, it was estimated during design that the required sand cover volume would range between 422 and 633 CY, corresponding with the required minimum placement thickness of 1 foot and the allowable total thickness of 1.5 feet, respectively. Since the imported sand cover placement volume was within this range, it was accepted by WPYR as sufficient to meet Project requirements. Using the volume of material imported and the area of the dredge prism, it is estimated that the average thickness of sand cover would be approximately 1.27 feet over the dredge footprint, exceeding the minimum required thickness of 1 foot. As shown in Figure 4, sand cover material was placed throughout the full extent of the dredge footprint, with some minor placement of the sand cover material outside of the dredge boundary.

The actual placed sand cover volume was reviewed by comparing the post-dredge survey with the post-sand cover placement survey; however, based on the nature of the sand material and post-dredge surface conditions, and due to survey accuracy, the total thickness of the placed material was difficult to observe through the survey comparison. This is thought to be due to the soft nature of the surface material after dredging was completed, particularly in the slope area where additional soft slough area was documented in final dredge passes. It is thought that due to the soft nature of this material, the placed sand may have consolidated the soft surface material, or some of the placed sand may have settled into the surficial material and as a result, the measured volume through survey comparison did not match the amount of material imported to the site and placed by TMC. TMC confirmed during placement and after construction that they had placed the full volume of imported sand evenly throughout the dredge footprint. TMC's letter, dated April 7, 2022 (Appendix D) documents TMC's methods, while noting the discrepancy between the volume of material imported to the site and that documented by bathymetric surveys.

Table 4
Sand Cover Placement Volume Summary

Actual Quantities vs. Bid Quantities	Sand Cover Placement	
	Reported Tonnage (Tons)	Volume (CY)
Total actual quantities	753	538 ¹
Total bid volumes	--	422–633 ²

Notes:

1. Calculated sand placement volume assumes a conversion factor of 1.4 CY/ton for sand material and includes material placed outside of the dredge footprint, as shown in Figure 4.
2. The range of sand cover placement bid volumes is based on the design dredge footprint surface area (11,400 square feet) multiplied by 1-foot minimum sand cover thickness (422 CY) or by 1.5-foot maximum sand cover thickness (which includes a 0.5-foot maximum overplacement allowance, 633 CY).

3.4 Water Quality Monitoring Summary

As required in the Project permitting documents, specifically the ADEC Water Quality Certification, water quality monitoring was performed by TMC to monitor for potential water quality impacts caused by resuspension or discharge of suspended solids during dredging and barge dewatering activities. TMC followed the water quality monitoring protocols and procedures, in accordance with those described in the ADEC-approved Water Quality Monitoring Plan (Anchor QEA 2022). Water quality monitoring was performed over six events, consisting of three initial daily monitoring events at the start of dredging and three weekly monitoring events for the duration of the dredging work. Water quality monitoring forms were provided in the contractor daily construction reports and are included in this report as Appendix E.

TMC implemented appropriate environmental management measures and controls and met the water quality criteria requirements. No exceedances were documented during the water quality monitoring.

3.5 Structural Monitoring

Structural monitoring was performed during the work to monitor for potential movement of the Ore Dock structures (e.g., Ore Loader Platform and Timber Dock) adjacent to the dredge footprint due to the dredging work potentially causing unstable differential forces on the piling support of these structures. Structural monitoring included the following activities:

- A pre-construction conditions inspection was conducted by TMC on March 1 to 2, 2022. This included visual observations of the condition of the structures above and below water as documented by photographs. A report was submitted on March 9, 2022, to serve as a baseline reference for construction (TMC 2022e).
- Daily monitoring of movement for both lateral and vertical deflections at seven monitoring point locations on the Ore Dock structures adjacent to the dredging, with a summary provided in the contractor's daily construction reports

Throughout the Project, some movement was observed that was greater than 3/4 inch, which was the threshold value for stopping work. These movements were discussed with KPFF and Hart Crowser and determined to be a function of the measuring equipment accuracy not actual movement of the structure. As such, work continued and the movement continued to range up and down relative to

the baseline, indicating that the measured movement was resulting from reduced survey accuracy rather than structure movements.

The structural monitoring results for the duration of the Project, conducted by H&A through April 5, 2022, plus vertical, horizontal, and lateral movement charts developed by KPFF based on the data measurements are included in Appendix F.

3.6 Marine Mammal Monitoring Summary

As required in the Project permitting documents, specifically the National Marine Fisheries Service letter of concurrence to the U.S. Army Corps of Engineers, marine mammal monitoring was required to be conducted at all times during in-water activities to observe for the presence of marine mammals and ensure their protection by temporarily stopping work if marine mammals entered the shutdown zone within 200 meters of the dredging. Observations from the marine mammal monitoring observer were submitted as part of the contractor's daily construction reports. No marine mammals were observed to enter the shutdown zone during active dredging or sand cover placement work. The Marine Mammal Monitoring Summary Memorandum, presented in Appendix G, includes additional details of the marine mammal observations during the Project.

4 Conclusion

Removal of contaminated sediment and placement of clean sand cover within the Work Site was completed by TMC in March and April 2022. The work was completed to meet the Project Remedial Action Objectives described in the Options Analysis (Anchor QEA 2019). Specifically, the remedial actions successfully reduced the mass of legacy contaminants in accessible sediment of the Skagway Ore Basin, while not adversely impacting existing or reasonably anticipated future harbor uses. This reduction in the mass of legacy contaminants reduced potential human health risks associated with the consumption of resident Skagway shellfish, reduced the potential risks to benthic invertebrates, and remediated source areas of metals contamination that could potentially spread to adjacent areas that currently are not contaminated and/or have lower risks for benthic and human receptors.

As described in this report, the targeted area of mass removal was completed according to the dredging design plan, while the calculated mass of lead removed in the dredged sediment during construction varied from the predicted mass in the Options Analysis due to the difference between the measured historical versus ex situ lead concentrations. Due to the limited slope sloughing from under and behind the Ore Dock and associated structural considerations, only the first passes of dredging were necessary, as per the design. Although a portion of the previously identified sediment remains along the toe of the slope and the slope under and behind the Ore Dock, the flat portions of the dredge units, which constitute the majority of the overall dredge footprint area, were dredged to full required grades (Figure 3). All sediment was stabilized as per the design and material sampling results were below hazardous waste thresholds. All stabilized sediment was successfully transported and disposed of at the Columbia Ridge Subtitle D Landfill. Finally, the volume of sand material placed to address residuals was considered to meet the placement thickness requirements based on the contractor's reported placement volume.

Anchor QEA understands sampling may occur in the harbor in the future and recommends ADEC, as part of an approved sampling program, require sampling within this remediation footprint to verify the success of the cover placement. Because the sand placed was intended to mix with underlying residuals and sediment, future sampling would be representative of this mixed condition and would not be expected to represent solely the sand material placed. Concentrations of contaminants of concern in surficial sediment are expected to be significantly lower than pre-construction surficial concentrations, barring any change of conditions in the interim. This would provide a measure of success of the cover placement, in that it would demonstrate the reduced potential for legacy contaminants to be present in the surface sediment and therefore the reduction of the exposure pathway to benthic invertebrates and shellfish in the harbor.

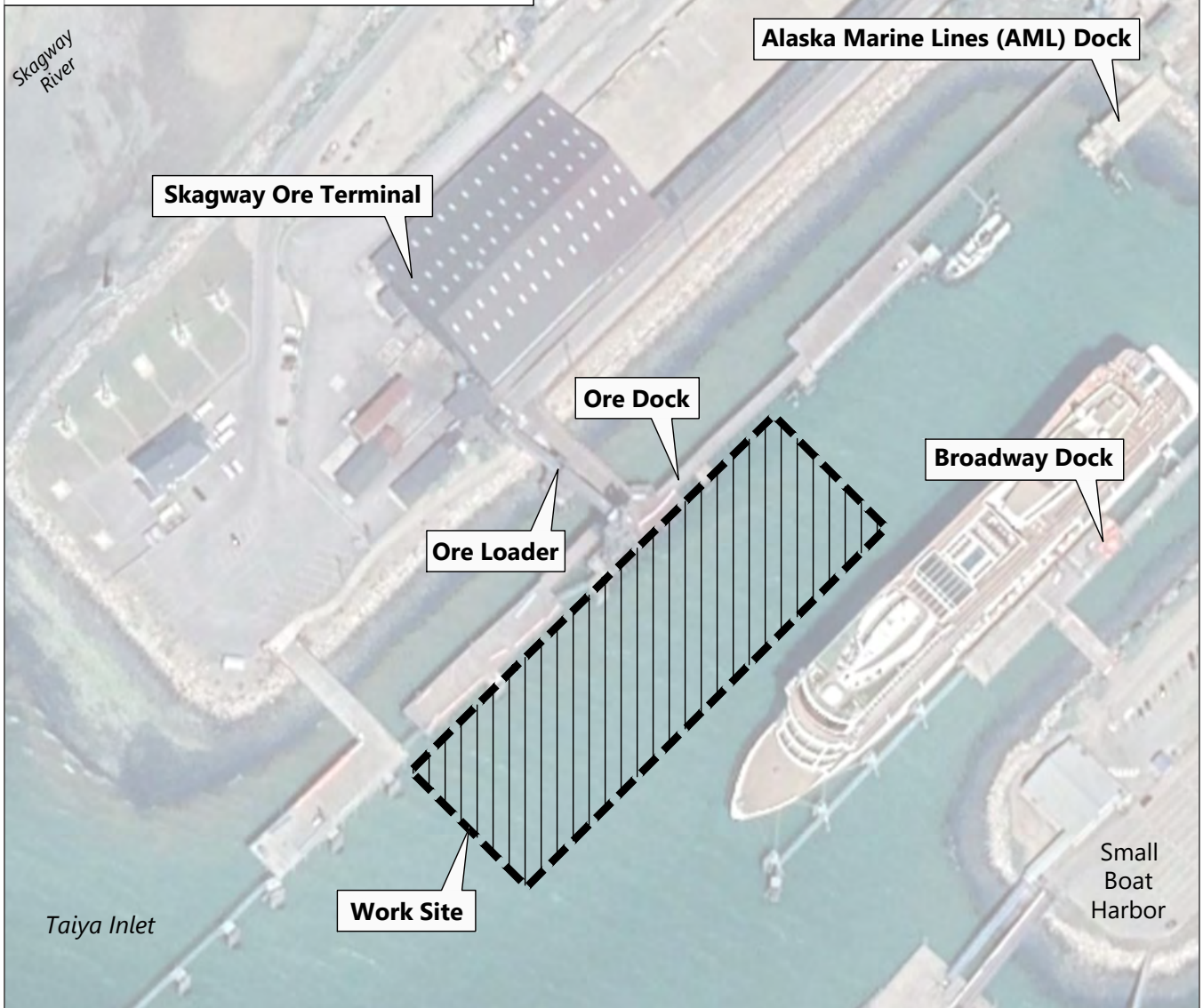
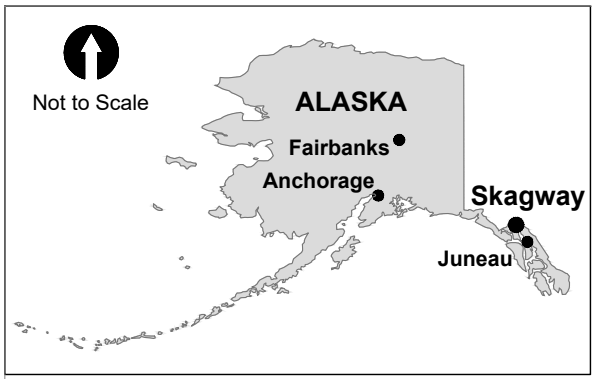
Overall, the remediation activities were completed in accordance with contract design documents to address the area of highest surface sediment concentrations and the greatest concentration of mass

of metals in the Ore Basin. In addition, the remediation activities met the Project Remedial Action Objectives and fulfilled the conclusion of the Risk Assessment (Golder 2018) that removal of a portion of the mass of metals related to ore concentrations would be expected to further reduce the uptake by shellfish (and thus, reduce the potential hazards related to shellfish consumption). The completion of this remedial action should be considered a step towards closure of the Site.

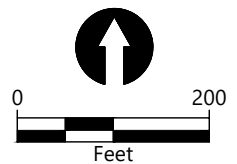
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- TMC, 2022b. *Skagway Ore Dock Dredging Environmental Protection Plan*. February 11, 2022.
- TMC, 2022c. *Skagway Ore Dock Dredging Health and Safety Plan*. February 11, 2022.
- TMC, 2022d. *Skagway Ore Dock Dredging Final Project Package*. April 18, 2022.
- TMC, 2022e. *Pre-Construction Condition Inspection Report*. Skagway Ore Sediment Remediation Project. March 9, 2022.

Figures



SOURCE: Google Earth Pro, 2019
HORIZONTAL DATUM: Alaska State Plane, Zone 1, North American Datum of 1983 (NAD83), U.S. Survey Feet
VERTICAL DATUM: Mean Lower Low Water (MLLW)

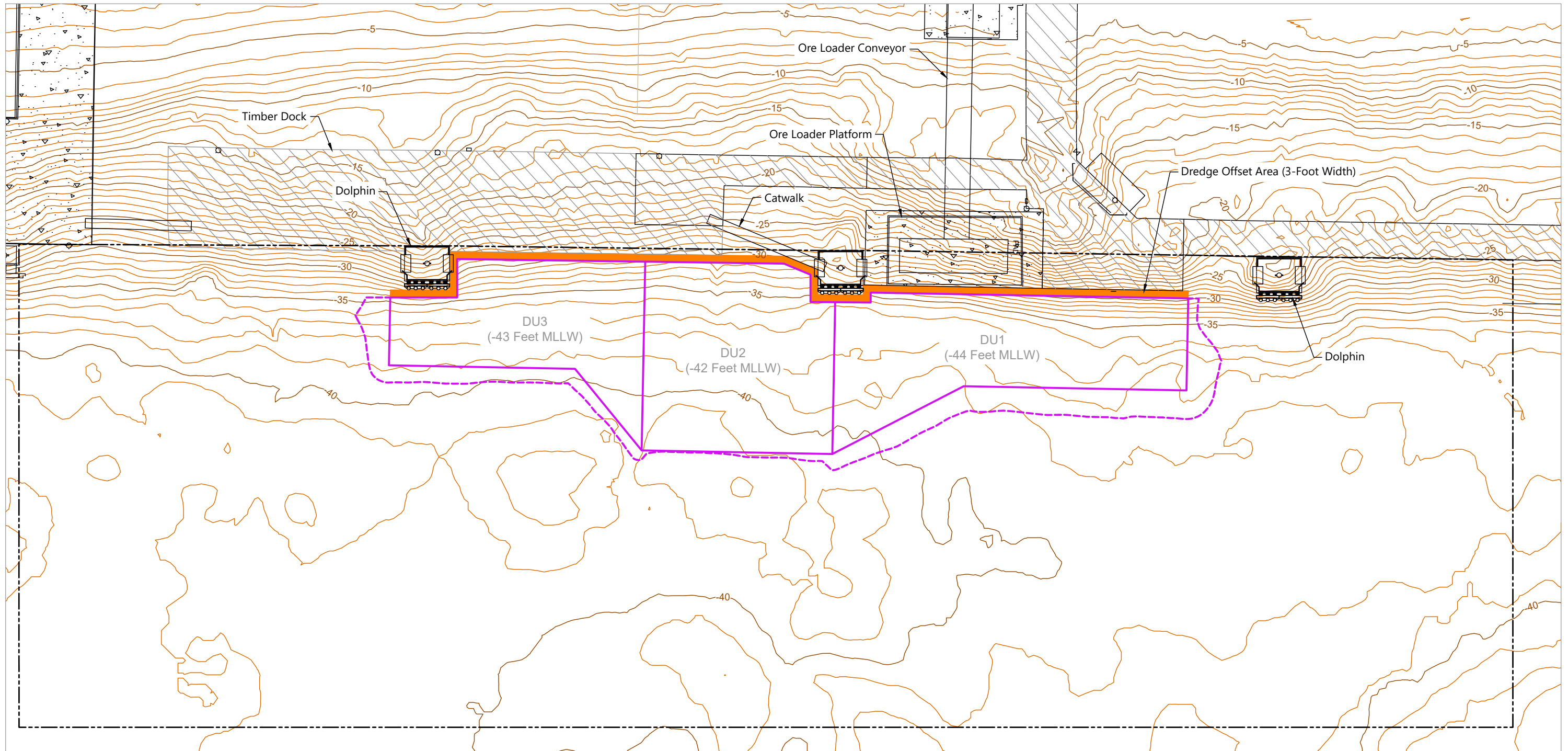


Publish Date: 2022/05/25 10:16 AM | User: dholmer
 Filepath: k:\Projects\0159-kpff consulting engineers\ore terminal remediation support\construction plans\0159-CCR-001 (VICINITY).dwg Figure 1



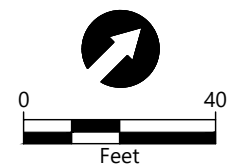
Figure 1
Vicinity Map

Construction Summary Report
 Skagway Ore Terminal Sediment Remediation Project



SOURCES: Base files provided by KPFF. Bathymetric survey performed by Hughes and Associates dated February 28, 2022.
HORIZONTAL DATUM: Alaska State Plane Zone 1, NAD83 2011, U.S. Survey Feet
VERTICAL DATUM: Mean Lower Low Water (MLLW)

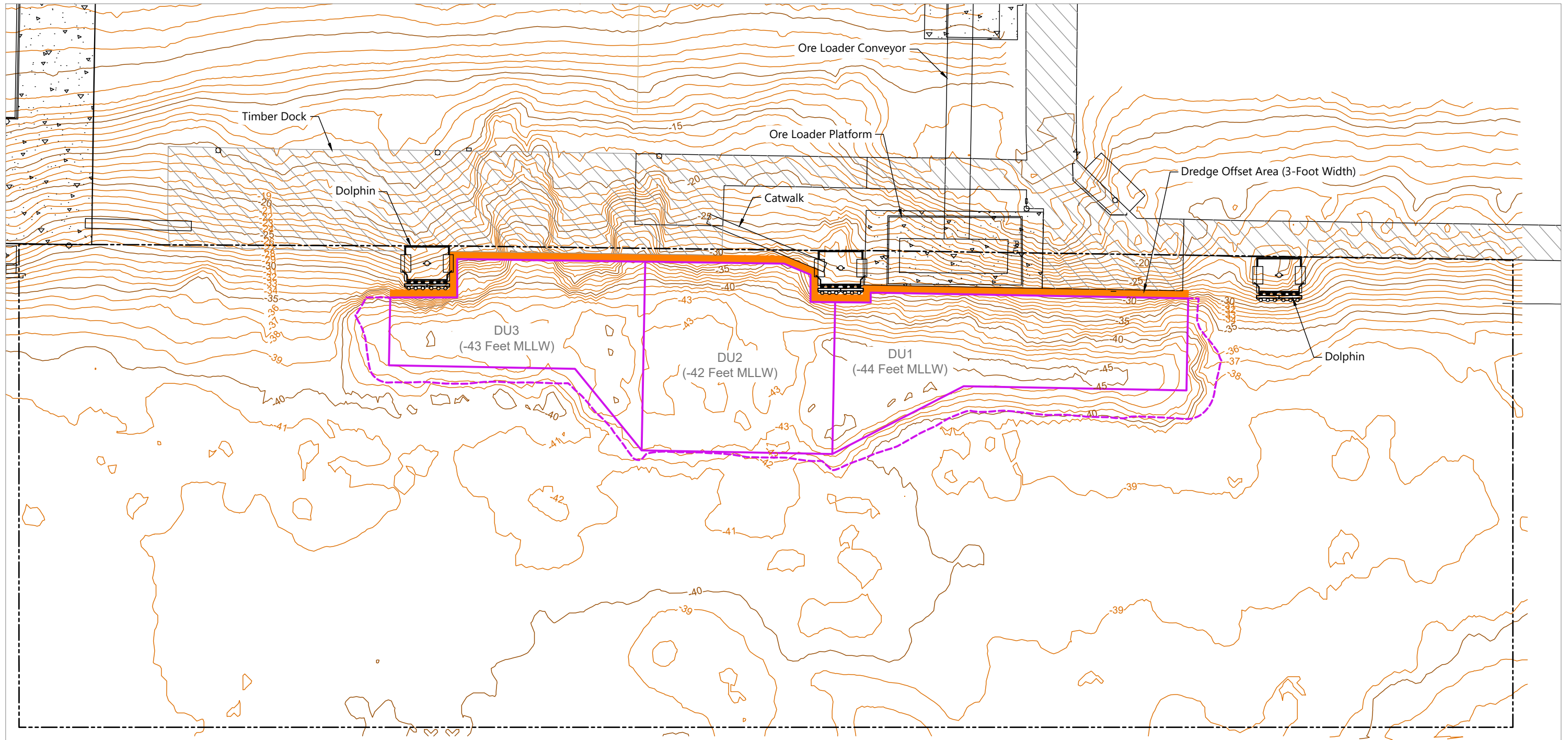
- LEGEND:**
- Pre-Construction Bathymetry (1' and 5' Interval)
 - Dredge Unit Boundary
 - Side Slope Boundary
 - Dredge Offset Area
 - Structures
 - Work Site Boundary



Publish Date: 2022/05/25 10:16 AM | User: dholmer
 Filepath: k:\Projects\0159-kpff consulting engineers\ore terminal remediation support\construction plans\0159-CCR-004.dwg Figure 2

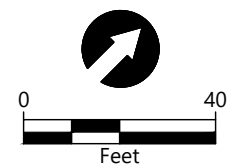


Figure 2
Pre-Construction Conditions



SOURCES: Base files provided by KPFF. Bathymetric survey performed by Hughes and Associates dated April 2, 2022.
HORIZONTAL DATUM: Alaska State Plane Zone 1, NAD83 2011, U.S. Survey Feet
VERTICAL DATUM: Mean Lower Low Water (MLLW)

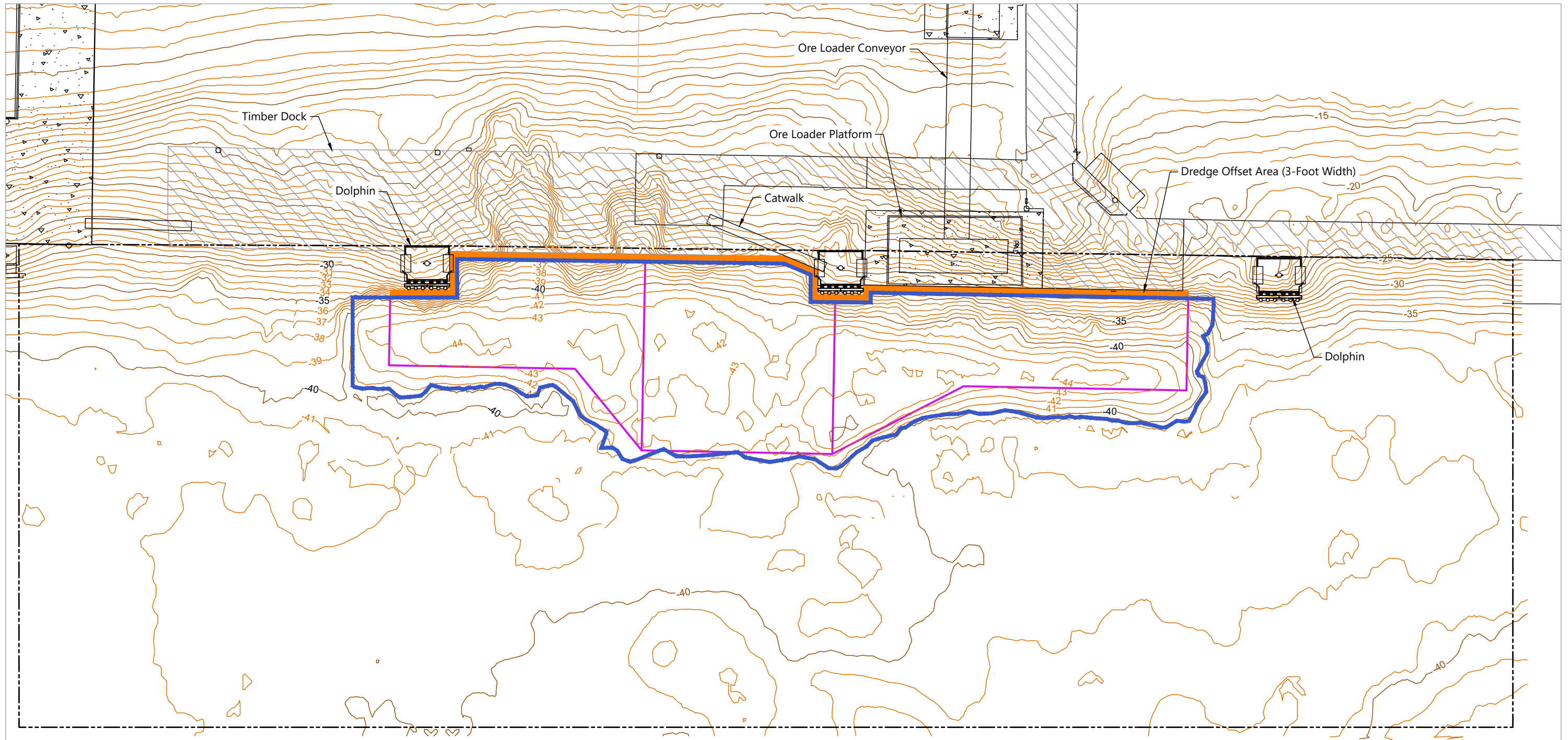
- LEGEND:**
- Post-Dredge Bathymetry (1' and 5' Interval)
 - Dredge Unit Boundary
 - - - Side Slope Boundary
 - Dredge Offset Area
 - Structures
 - Work Site Boundary



Publish Date: 2022/05/25 10:17 AM | User: dholmer
 Filepath: k:\Projects\0159-kpff consulting engineers\ore terminal remediation support\construction plans\0159-CCR-002.dwg Figure 3

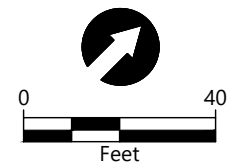


Figure 3
Post-Dredge Conditions



SOURCES: Base files provided by KPFF. Bathymetric survey performed by Hughes and Associates dated April 2 and 6, 2022.
HORIZONTAL DATUM: Alaska State Plane Zone 1, NAD83 2011, U.S. Survey Feet
VERTICAL DATUM: Mean Lower Low Water (MLLW)

- LEGEND:**
- Post-Sand Cover Bathymetry (1' and 5' Interval)
 - Sand Cover Placement Boundary
 - Dredge Offset Area
 - Dredge Unit Boundary
 - Structures
 - Work Site Boundary



Publish Date: 2022/05/25 10:17 AM | User: dholmer
 Filepath: k:\Projects\0159-kpff consulting engineers\ore terminal remediation support\construction plans\0159-CCR-003.dwg Figure 4



Figure 4
Post-Sand Cover Placement Conditions
 Construction Summary Report
 Skagway Ore Terminal Sediment Remediation Project

Appendix A
Treatment, Testing, and Disposal Forms
and Associated Laboratory Analytical
Reports



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #		NAME OF CONTAMINATED SITE OR SPILL	
AKR000200030		Skagway Ore Terminal Sediment Remediation Project	
CONTAMINATED SITE OR SPILL LOCATION - ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
Skagway, Alaska			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Skagway, Alaska		Skagway Ore Loader	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
Lead	1500 yards	3/1/22-3/15/22	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
TCLP testing for RCRA 8 Metals			
COMMENTS OR OTHER IMPORTANT INFORMATION			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
Columbia ridge Commercial Landfill & Recycling	18177 Cedar Springs Ln, Arlington, OR 97812
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
White Pass Yukon Route	800-343-7373
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
Waste Management	38208 SE 35th St Washougal, WA 98671 - (360)-507-6613

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Tyler Rose
Name of the Person Requesting Approval (printed)

WP&YR / Executive Director
Title/Association

TJR
Signature

3/22/22 (907) 612-0175
Date Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Nick Waldo
DEC Project Manager Name (printed)

Environmental Program Manager 1
Project Manager Title

Nick Waldo
Signature

3/24/2022 907-465-5270
Date Phone Number



Laboratory Report of Analysis

To: Turnagain Marine Construction
9330 Vanguard, Suite 100
Anchorage, AK 99507
907-201-1043

Report Number: **1220983**

Client Project: **Skagway Ore Dock Sediment**

Dear Josh Janssen,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Cameron at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Cameron Murphy
Project Manager
Cameron.Murphy@sgs.com

Date

Print Date: 03/14/2022 5:10:03PM

Case Narrative

SGS Client: **Turnagain Marine Construction**
SGS Project: **1220983**
Project Name/Site: **Skagway Ore Dock Sediment**
Project Contact: **Josh Janssen**

Refer to sample receipt form for information on sample condition.

LB1 for HBN 1832550 [TCLP/1166 (1656856) LB1

6020B- Lead is detected in the LB above half of the LOQ. The associated sample concentrations are less than the regulatory limit.

LLIQC3 for HBN 1832638 (MMS/11 (1656914) LLIQC3

6020B- LLIQCS recovery for selenium does not meet the QC criteria. The associated sample concentrations are less than the LOQ.

MB for HBN 1832554 [MXT/6209] (1656863) MB

6020B- Lead is detected in the MB above half of the LOQ. The associated sample concentrations are less than the regulatory limit.

1220983004(1656815MS) (1656816) MS

6020B- MS recoveries for multiple analytes do not meet the QC criteria. The post digestion spike was successful.

1220983004(1656815MSD) (1656817) MSD

6020B- MSD recoveries for multiple analytes do not meet the QC criteria. The post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/14/2022 5:10:05PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry (Provisionally Certified as of 2/15/2022 for 200.8 Metals) & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
1	1220983001	03/06/2022	03/10/2022	Solid/Soil (Wet Weight)
2	1220983002	03/06/2022	03/10/2022	Solid/Soil (Wet Weight)
3	1220983003	03/06/2022	03/10/2022	Solid/Soil (Wet Weight)
1	1220983004	03/06/2022	03/10/2022	Soil/Solid (dry weight)
2	1220983005	03/06/2022	03/10/2022	Soil/Solid (dry weight)
3	1220983006	03/06/2022	03/10/2022	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
SW6020B TCLP	Metals by ICP-MS
SW6020B	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 03/14/2022 5:10:08PM

Detectable Results Summary

Client Sample ID: 1
 Lab Sample ID: 1220983001
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.287	mg/L
Lead	1.45	mg/L

Client Sample ID: 2
 Lab Sample ID: 1220983002
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.331	mg/L
Lead	1.41	mg/L

Client Sample ID: 3
 Lab Sample ID: 1220983003
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.265	mg/L
Lead	0.274	mg/L

Client Sample ID: 1
 Lab Sample ID: 1220983004
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	8.73	mg/kg
Barium	367	mg/kg
Cadmium	10.7	mg/kg
Chromium	19.0	mg/kg
Lead	4830	mg/kg
Mercury	4.18	mg/kg
Silver	5.65	mg/kg

Client Sample ID: 2
 Lab Sample ID: 1220983005
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	15.1	mg/kg
Barium	413	mg/kg
Cadmium	18.8	mg/kg
Chromium	20.3	mg/kg
Lead	10400	mg/kg
Mercury	6.99	mg/kg
Silver	11.9	mg/kg

Client Sample ID: 3
 Lab Sample ID: 1220983006
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	8.48	mg/kg
Barium	369	mg/kg
Cadmium	10.9	mg/kg
Chromium	19.8	mg/kg
Lead	5710	mg/kg
Mercury	4.32	mg/kg
Silver	5.16	mg/kg



Results of 1

Client Sample ID: 1
Client Project ID: **Skagway Ore Dock Sediment**
Lab Sample ID: 1220983001
Lab Project ID: 1220983

Collection Date: 03/06/22 17:30
Received Date: 03/10/22 08:35
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/12/22 17:07
Barium	0.287	0.150	0.0470	mg/L	25	(<100)	03/12/22 17:07
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/12/22 17:07
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/12/22 17:07
Lead	1.45	0.0500	0.0155	mg/L	25	(<5)	03/12/22 17:07
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/12/22 17:07
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/12/22 17:07
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/12/22 17:07

Batch Information

Analytical Batch: MMS11489
Analytical Method: SW6020B TCLP
Analyst: DMM
Analytical Date/Time: 03/12/22 17:07
Container ID: 1220983001-A

Prep Batch: MXT6209
Prep Method: SW3010A
Prep Date/Time: 03/11/22 13:00
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/14/2022 5:10:11PM



Results of 2

Client Sample ID: 2
 Client Project ID: **Skagway Ore Dock Sediment**
 Lab Sample ID: 1220983002
 Lab Project ID: 1220983

Collection Date: 03/06/22 17:32
 Received Date: 03/10/22 08:35
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/12/22 17:10
Barium	0.331	0.150	0.0470	mg/L	25	(<100)	03/12/22 17:10
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/12/22 17:10
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/12/22 17:10
Lead	1.41	0.0500	0.0155	mg/L	25	(<5)	03/12/22 17:10
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/12/22 17:10
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/12/22 17:10
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/12/22 17:10

Batch Information

Analytical Batch: MMS11489
 Analytical Method: SW6020B TCLP
 Analyst: DMM
 Analytical Date/Time: 03/12/22 17:10
 Container ID: 1220983002-A

Prep Batch: MXT6209
 Prep Method: SW3010A
 Prep Date/Time: 03/11/22 13:00
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 03/14/2022 5:10:11PM

Results of 3

Client Sample ID: 3
 Client Project ID: **Skagway Ore Dock Sediment**
 Lab Sample ID: 1220983003
 Lab Project ID: 1220983

Collection Date: 03/06/22 17:35
 Received Date: 03/10/22 08:35
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/12/22 17:13
Barium	0.265	0.150	0.0470	mg/L	25	(<100)	03/12/22 17:13
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/12/22 17:13
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/12/22 17:13
Lead	0.274	0.0500	0.0155	mg/L	25	(<5)	03/12/22 17:13
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/12/22 17:13
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/12/22 17:13
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/12/22 17:13

Batch Information

Analytical Batch: MMS11489
 Analytical Method: SW6020B TCLP
 Analyst: DMM
 Analytical Date/Time: 03/12/22 17:13
 Container ID: 1220983003-A

Prep Batch: MXT6209
 Prep Method: SW3010A
 Prep Date/Time: 03/11/22 13:00
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL



Results of 1

Client Sample ID: 1
 Client Project ID: **Skagway Ore Dock Sediment**
 Lab Sample ID: 1220983004
 Lab Project ID: 1220983

Collection Date: 03/06/22 17:30
 Received Date: 03/10/22 08:35
 Matrix: Soil/Solid (dry weight)
 Solids (%):65.7
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	8.73	1.48	0.458	mg/kg	10		03/12/22 15:45
Barium	367	0.444	0.139	mg/kg	10		03/12/22 15:45
Cadmium	10.7	0.296	0.0917	mg/kg	10		03/12/22 15:45
Chromium	19.0	1.48	0.458	mg/kg	10		03/12/22 15:45
Lead	4830	29.6	9.17	mg/kg	1000		03/12/22 16:25
Mercury	4.18	0.444	0.148	mg/kg	10		03/12/22 15:45
Selenium	2.96 U	2.96	0.917	mg/kg	10		03/12/22 15:45
Silver	5.65	0.739	0.222	mg/kg	10		03/12/22 15:45

Batch Information

Analytical Batch: MMS11489
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/12/22 15:45
 Container ID: 1220983004-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.029 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11489
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/12/22 16:25
 Container ID: 1220983004-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.029 g
 Prep Extract Vol: 50 mL

Print Date: 03/14/2022 5:10:11PM



Results of 2

Client Sample ID: 2
 Client Project ID: **Skagway Ore Dock Sediment**
 Lab Sample ID: 1220983005
 Lab Project ID: 1220983

Collection Date: 03/06/22 17:32
 Received Date: 03/10/22 08:35
 Matrix: Soil/Solid (dry weight)
 Solids (%):66.5
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	15.1	1.42	0.439	mg/kg	10		03/12/22 15:59
Barium	413	0.425	0.133	mg/kg	10		03/12/22 15:59
Cadmium	18.8	0.283	0.0878	mg/kg	10		03/12/22 15:59
Chromium	20.3	1.42	0.439	mg/kg	10		03/12/22 15:59
Lead	10400	28.3	8.78	mg/kg	1000		03/14/22 10:14
Mercury	6.99	1.06	0.354	mg/kg	25		03/14/22 09:57
Selenium	2.83 U	2.83	0.878	mg/kg	10		03/12/22 15:59
Silver	11.9	7.91	2.37	mg/kg	10		03/14/22 13:47

Batch Information

Analytical Batch: MMS11491
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/14/22 09:57
 Container ID: 1220983005-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.061 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11491
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/14/22 10:14
 Container ID: 1220983005-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.061 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11491
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/14/22 13:47
 Container ID: 1220983005-A

Prep Batch: MXX35010
 Prep Method: SW3050B
 Prep Date/Time: 03/14/22 11:23
 Prep Initial Wt./Vol.: 0.095 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11489
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/12/22 15:59
 Container ID: 1220983005-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.061 g
 Prep Extract Vol: 50 mL

Print Date: 03/14/2022 5:10:11PM



Results of 3

Client Sample ID: 3
 Client Project ID: **Skagway Ore Dock Sediment**
 Lab Sample ID: 1220983006
 Lab Project ID: 1220983

Collection Date: 03/06/22 17:35
 Received Date: 03/10/22 08:35
 Matrix: Soil/Solid (dry weight)
 Solids (%):67.1
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	8.48	1.41	0.437	mg/kg	10		03/12/22 16:02
Barium	369	0.423	0.133	mg/kg	10		03/12/22 16:02
Cadmium	10.9	0.282	0.0875	mg/kg	10		03/12/22 16:02
Chromium	19.8	1.41	0.437	mg/kg	10		03/12/22 16:02
Lead	5710	28.2	8.75	mg/kg	1000		03/14/22 10:17
Mercury	4.32	0.423	0.141	mg/kg	10		03/12/22 16:02
Selenium	2.82 U	2.82	0.875	mg/kg	10		03/12/22 16:02
Silver	5.16	0.705	0.212	mg/kg	10		03/12/22 16:02

Batch Information

Analytical Batch: MMS11491
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/14/22 10:17
 Container ID: 1220983006-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.057 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11489
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/12/22 16:02
 Container ID: 1220983006-A

Prep Batch: MXX35008
 Prep Method: SW3050B
 Prep Date/Time: 03/11/22 11:19
 Prep Initial Wt./Vol.: 1.057 g
 Prep Extract Vol: 50 mL

Print Date: 03/14/2022 5:10:11PM



Method Blank

Blank ID: LB1 for HBN 1832550 [TCLP/1166]
Blank Lab ID: 1656856

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1220983001, 1220983002, 1220983003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.250U	0.500	0.155	mg/L
Barium	0.0750U	0.150	0.0470	mg/L
Cadmium	0.0500U	0.100	0.0300	mg/L
Chromium	0.250U	0.500	0.155	mg/L
Lead	0.0338J	0.0500	0.0155	mg/L
Mercury	0.0125U	0.0250	0.00900	mg/L
Selenium	0.500U	1.00	0.310	mg/L
Silver	0.0500U	0.100	0.0310	mg/L

Batch Information

Analytical Batch: MMS11489
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 5:22:00PM

Prep Batch: MXT6209
Prep Method: SW3010A
Prep Date/Time: 3/11/2022 1:00:48PM
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Analytical Batch: MMS11490
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 5:22:00PM

Prep Batch: MXT6209
Prep Method: SW3010A
Prep Date/Time: 3/11/2022 1:00:48PM
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/14/2022 5:10:12PM



Method Blank

Blank ID: MB for HBN 1832554 [MXT/6209]
Blank Lab ID: 1656863

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1220983001, 1220983002, 1220983003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0250U	0.0500	0.0155	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.0250U	0.0500	0.0155	mg/L
Lead	0.00263J	0.00500	0.00155	mg/L
Mercury	0.00125U	0.00250	0.000900	mg/L
Selenium	0.0442J	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS11489
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 5:02:14PM

Prep Batch: MXT6209
Prep Method: SW3010A
Prep Date/Time: 3/11/2022 1:00:48PM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 03/14/2022 5:10:12PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1220983 [MXT6209]

Blank Spike Lab ID: 1656864

Date Analyzed: 03/12/2022 17:05

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1220983001, 1220983002, 1220983003

Results by SW6020B TCLP

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1	0.962	96	(84-116)
Barium	1	0.996	100	(86-114)
Cadmium	0.1	0.0990	99	(87-115)
Chromium	0.4	0.394	99	(85-116)
Lead	1	0.976	98	(88-115)
Mercury	0.01	0.00985	99	(70-124)
Selenium	1	0.996	100	(80-120)
Silver	0.1	0.100	100	(85-116)

Batch Information

Analytical Batch: **MMS11489**

Analytical Method: **SW6020B TCLP**

Instrument: **P7 Agilent 7800**

Analyst: **DMM**

Prep Batch: **MXT6209**

Prep Method: **SW3010A**

Prep Date/Time: **03/11/2022 13:00**

Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1656865
MS Sample ID: 1656867 MS
MSD Sample ID: 1656868 MSD

Analysis Date: 03/12/2022 17:24
Analysis Date: 03/12/2022 17:27
Analysis Date: 03/12/2022 17:30
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1220983001, 1220983002, 1220983003

Results by SW6020B TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.250U	10.0	9.74	97	10.0	10.0	100	84-116	2.64	(< 20)
Barium	0.197	10.0	10.5	103	10.0	10.6	104	86-114	1.44	(< 20)
Cadmium	0.0500U	1.00	.978	98	1.00	0.970	97	87-115	0.79	(< 20)
Chromium	0.250U	4.00	4.05	101	4.00	4.17	104	85-116	2.93	(< 20)
Lead	0.0195J	10.0	9.72	97	10.0	10.0	100	88-115	2.98	(< 20)
Mercury	0.0125U	0.100	.0957	96	0.100	0.0989	99	70-124	3.27	(< 20)
Silver	0.0500U	1.00	.986	99	1.00	0.996	100	85-116	1.04	(< 20)
Selenium	0.500U	10.0	10	100	10.0	10.0	100	80-120	0.09	(< 20)

Batch Information

Analytical Batch: MMS11489
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 5:27:00PM

Prep Batch: MXT6209
Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
Prep Date/Time: 3/11/2022 1:00:48PM
Prep Initial Wt./Vol.: 2.50mL
Prep Extract Vol: 25.00mL

Analytical Batch: MMS11490
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 5:27:00PM

Prep Batch: MXT6209
Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
Prep Date/Time: 3/11/2022 1:00:48PM
Prep Initial Wt./Vol.: 2.50mL
Prep Extract Vol: 25.00mL

Print Date: 03/14/2022 5:10:16PM



Method Blank

Blank ID: MB for HBN 1832542 [MXX/35008]
Blank Lab ID: 1656813

Matrix: Soil/Solid (dry weight)

QC for Samples:
1220983004, 1220983005, 1220983006

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.500U	1.00	0.310	mg/kg
Barium	0.150U	0.300	0.0940	mg/kg
Cadmium	0.100U	0.200	0.0620	mg/kg
Chromium	0.500U	1.00	0.310	mg/kg
Lead	0.100U	0.200	0.0620	mg/kg
Mercury	0.150U	0.300	0.100	mg/kg
Selenium	1.00U	2.00	0.620	mg/kg
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11489
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 3:39:38PM

Prep Batch: MXX35008
Prep Method: SW3050B
Prep Date/Time: 3/11/2022 11:19:20AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 03/14/2022 5:10:17PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1220983 [MXX35008]

Blank Spike Lab ID: 1656814

Date Analyzed: 03/12/2022 15:42

Matrix: Soil/Solid (dry weight)

QC for Samples: 1220983004, 1220983005, 1220983006

Results by SW6020B

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Arsenic	50	50.2	100	(82-118)
Barium	50	51.5	103	(86-116)
Cadmium	5	5.09	102	(84-116)
Chromium	20	20.3	102	(83-119)
Lead	50	50.4	101	(84-118)
Mercury	0.5	0.493	99	(74-126)
Selenium	50	50.4	101	(80-119)
Silver	5	5.15	103	(83-118)

Batch Information

Analytical Batch: **MMS11489**

Analytical Method: **SW6020B**

Instrument: **P7 Agilent 7800**

Analyst: **DMM**

Prep Batch: **MXX35008**

Prep Method: **SW3050B**

Prep Date/Time: **03/11/2022 11:19**

Spike Init Wt./Vol.: 50 mg/kg Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1656815
MS Sample ID: 1656816 MS
MSD Sample ID: 1656817 MSD

Analysis Date: 03/12/2022 15:45
Analysis Date: 03/12/2022 15:48
Analysis Date: 03/12/2022 15:51
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1220983004, 1220983005, 1220983006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	5.74	48.4	52.3	96	47.9	51.3	95	82-118	2.07	(< 20)
Barium	241	48.4	306	134 *	47.9	294	110	86-116	4.05	(< 20)
Cadmium	7.05	4.84	9.33	47 *	4.79	8.94	39 *	84-116	4.27	(< 20)
Chromium	12.5	19.4	32.3	103	19.2	32.2	103	83-119	0.51	(< 20)
Lead	3180	48.4	2580	-1230 *	47.9	2450	-1520 *	84-118	5.33	(< 20)
Mercury	2.75	0.484	2.29	-94 *	0.479	2.14	-127 *	74-126	7.03	(< 20)
Selenium	0.929J	48.4	46.8	95	47.9	46.4	95	80-119	0.84	(< 20)
Silver	3.72	4.84	7.39	76 *	4.79	7.18	72 *	83-118	2.81	(< 20)

Batch Information

Analytical Batch: MMS11489
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/12/2022 3:48:10PM

Prep Batch: MXX35008
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/11/2022 11:19:20AM
Prep Initial Wt./Vol.: 1.03g
Prep Extract Vol: 50.00mL

Print Date: 03/14/2022 5:10:20PM

Bench Spike Summary

Original Sample ID: 1656815
 MS Sample ID: 1656818 BND
 MSD Sample ID:

Analysis Date: 03/12/2022 15:45
 Analysis Date: 03/12/2022 15:53
 Analysis Date:
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1220983004, 1220983005, 1220983006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Barium	241	243	488	101			75-125			
Cadmium	7.05	121	124	97			75-125			
Lead	3180	12100	14400	92			75-125			
Mercury	2.75	2.43	5.17	100			75-125			
Silver	3.72	2.43	6.13	100			75-125			

Batch Information

Analytical Batch: MMS11489
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DMM
 Analytical Date/Time: 3/12/2022 3:53:00PM

Prep Batch: MXX35008
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/11/2022 11:19:20AM
 Prep Initial Wt./Vol.: 1.03g
 Prep Extract Vol: 50.00mL

Print Date: 03/14/2022 5:10:20PM



Method Blank

Blank ID: MB for HBN 1832643 [MXX/35010]
Blank Lab ID: 1656945

Matrix: Soil/Solid (dry weight)

QC for Samples:
1220983005

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11491
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/14/2022 1:38:32PM

Prep Batch: MXX35010
Prep Method: SW3050B
Prep Date/Time: 3/14/2022 11:23:24AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 03/14/2022 5:10:21PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1220983 [MXX35010]
 Blank Spike Lab ID: 1656946
 Date Analyzed: 03/14/2022 13:41

Spike Duplicate ID: LCSD for HBN 1220983 [MXX35010]
 Spike Duplicate Lab ID: 1656947
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1220983005

Results by SW6020B

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Silver	5	4.90	98	5	4.91	98	(83-118)	0.06	(< 20)

Batch Information

Analytical Batch: **MMS11491**
 Analytical Method: **SW6020B**
 Instrument: **P7 Agilent 7800**
 Analyst: **DMM**

Prep Batch: **MXX35010**
 Prep Method: **SW3050B**
 Prep Date/Time: **03/14/2022 11:23**
 Spike Init Wt./Vol.: 5 mg/kg Extract Vol: 50 mL
 Dupe Init Wt./Vol.: 5 mg/kg Extract Vol: 50 mL

Print Date: 03/14/2022 5:10:23PM



Method Blank

Blank ID: MB for HBN 1832532 [SPT/11480]
Blank Lab ID: 1656770

Matrix: Soil/Solid (dry weight)

QC for Samples:
1220983004, 1220983005, 1220983006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	99.9			%

Batch Information

Analytical Batch: SPT11480
Analytical Method: SM21 2540G
Instrument:
Analyst: DBR
Analytical Date/Time: 3/10/2022 4:40:00PM

Print Date: 03/14/2022 5:10:25PM



Duplicate Sample Summary

Original Sample ID: 1220980004

Duplicate Sample ID: 1656771

QC for Samples:

1220983004, 1220983005, 1220983006

Analysis Date: 03/10/2022 16:40

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	97.8	98.0	%	0.18	(< 15)

Batch Information

Analytical Batch: SPT11480

Analytical Method: SM21 2540G

Instrument:

Analyst: DBR

Print Date: 03/14/2022 5:10:27PM



Instructions: Sections 1 - 5 must be filled out.
 Omissions may delay the onset of analysis.

CLIENT: Turnagain Marine Construction

CONTACT: Josh Janssen **PHONE #:** 9072011043

PROJECT NAME: Skagway Ore Dock Sediment Remediation **PROJECT/PWSID/PERMIT#:** 22-001

REPORTS TO: Joshua Janssen **E-MAIL:** jjanssen@turnagain.us **Profile #:** #378573 JH

INVOICE TO: Turnagain Marine Construction **QUOTE #:** 376373 **P.O. #:** 22-001

Section 3

Preservative

Section 1

REPORTS TO: Joshua Janssen **E-MAIL:** jjanssen@turnagain.us **Profile #:** #378573 JH

INVOICE TO: Turnagain Marine Construction **QUOTE #:** 376373 **P.O. #:** 22-001

#	CONTAINERS	Comp	Grab	MI (Multi-incremental)	TCLP	Total RCRA (6020)	Analysis*										REMARKS/LOC ID	
1	1	Grab	x	x	x	x												
2	1	Grab	x	x	x	x												
3	1	Grab	x	x	x	x												

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE
(1A/4A)	1	03/06/22	1730	S
(2A/2)	2	03/06/22	1732	S
(3A/6A)	3	03/06/22	1735	S

Section 5

Relinquished By: (1) Joshua Janssen **Date:** 3/6/2022 **Time:** 530PM **Received By:**

Relinquished By: (2) **Date:** **Time:** **Received By:**

Relinquished By: (3) **Date:** **Time:** **Received By:**

Relinquished By: (4) **Date:** 3/10/22 **Time:** 8:25 **Received For Laboratory By:** [Signature]

Section 4 **DOD Project?** Yes No **Data Deliverable Requirements:** Level 2

Cooler ID:

Requested Turnaround Time and/or Special Instructions:
 RUSH → TCLP-3day } per quote
 Total-24hr }

Temp Blank °C: _____ **Chain of Custody Seal: (Circle)**
 or Ambient [] **INTACT BROKEN ABSENT**

Delivery Method: Hand Delivery [] Commercial Delivery []

RJC J/10/22

Characterization of TCLP Samples for LIMS Login


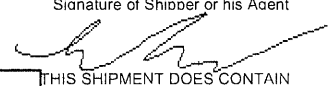
Date Characterized: _____

Analyst: _____

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
1	Xylene miscible (Top layer * = matrix 3 **)	—	Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: <u>Sludge</u> **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)	—		
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
2	Xylene miscible (Top layer * = matrix 3 **)	—	Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: <u>Sludge</u> **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)	—		
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
3	Xylene miscible (Top layer * = matrix 3 **)	—	<u>Yes</u> / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: <u>Sludge</u> **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)	—		
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.

codev

Shipper's Name and Address Turnagain Marine Constru 8241 Dimond Hook Drive Unit A Anchorage, AK 99507 USA Tel: 907-261-8960		Shipper's Account Number 27442485480 Customer's ID Number 48806		Not Negotiable Air Waybill Issued By <div style="text-align: right;">  P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM </div>					
Consignee's Name and Address Sgs environmental Hfpu Anchorage, AK 9 USA Tel: 907-562-2343		Consignee's Account Number		Also notify <i>N L MTC</i> Tel:					
Issuing Carrier's Agent and City Agent's IATA Code Account No. Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau International Airport				Accounting Information Turnagain Marine Construction Compa 8241 Dimond Hook Drive Unit A Anchorage, AK 99507 USA GoldStreak 48806					
To By First Carrier ANC Alaska Airlines		To / By	To / By	Currency USD PX	WT/VAL X	Other X	Declared Value For Carriage NVD	Declared Value For Customs NCV	
Airport of Destination Anchorage		Flight/Date AS 065/09	Flight/Date	Amount of Insurance XXX					
Handling Information NOA 907-562-2343								SCI	
No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)	
1	4.0				4.0		AS AGREED	DIRTY SAMPLES	
								Dims: 9 x 12 x4 x 1	
1	4.0						AS AGREED	GSX Volume: 0.250	
Prepaid AS AGREED		Weight Charge Collect		Other Charges XBC 12.50					
Valuation Charge									
Tax									
Total Other Charges Due Agent				Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.					
Total Other Charges Due Carrier				For: Turnagain Marine Construction Compa Signature of Shipper or his Agent 					
Total Prepaid AS AGREED		Total Collect		<input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS					
				Executed On (Date) 09 Mar 2022 08:57		at (Place) Juneau International		Signature of Issuing Carrier or its Agent Alaska Airlines	
								26 of 28 027-9192 9445	

Alert Expeditors Inc.

#417905

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 3-10-22
From Tenagain Marine Co.
To 565

Collect <input type="checkbox"/>	Prepay <input type="checkbox"/>	Advance Charges <input type="checkbox"/>
Job #	PO#	

9192-7445

Shipped Signature _____

Received By: _____ Total Charge _____ 27 of 29

AIRBILL 4644525

Alaska Seaplanes

Juneau, Alaska

Phone: (907) 789-3331

Freephone: (907) 789-3331

Email: info@flyalaskaseaplanes.com

Web: http://www.flyalaskaseaplanes.com



I hereby declare that the goods contained herein do not contain dangerous goods.

Signed.....

Date

FREIGHT DETAILS

FROM/TO: Skagway -> Juneau

Flight Departs: Mar 8 22 9:15 AM

Receiver: SGS North America Inc
907-562-2343

Sender: Turnagain Marine

Accepted: Mon, Mar 7 22 3:22:00 PM

Description & Comment	Quan.	Wgt.	Handle Fee	Hazmat Fee	Total
brown box	1	4	-	-	\$11.76
TAX: Federal Freight Excise Tax					\$0.74
Total Payments made:					\$0.00
Total Unpaid:					\$12.50

TERMS AND CONDITIONS

Limitation of Liability

- By tendering this shipment to Alaska Seaplanes, the shipper agrees to these conditions for transportation, and guarantees that an accurate description of the contents of the shipment is furnished.
- Alaska Seaplanes shall not be liable for damages to, or failure to transport, goods which are not acceptable for air transportation due to governmental regulations.
- Although Alaska Seaplanes will attempt to provide care of all shipments, Alaska Seaplanes will not be liable for loss due to: Improper or insufficient packing, the nature of the shipment or any defect thereof which would render it unsuitable for air transportation; goods received damaged from shipper, damage to fragile items or other items which Alaska Seaplanes accepts for shipment at "shipper's risk"; damages, delays, or other results caused by other carriers; and spoilage of perishable items.
- Ice cream is only accepted at the shippers' risk. Alaska Seaplanes will in no way be responsible for melted ice cream.
- Alaska Seaplanes will not accept any liability whatsoever for shipments said to contain cash.
- Unless the shipper declares a higher value on a shipment and pays excess valuation charges, the total liability of Alaska Seaplanes shall not exceed the lesser of: one hundred dollars (\$100.00) per shipment, or the amount of damage sustained; or the value of the shipment.

Excess Valuation Charges

- If a higher value is declared by the shipper, an additional transportation charge will be assessed. This charge is one dollar (\$1.00) per one hundred (\$100.00) of declared value or fraction thereof for any amount in excess of one hundred (\$100.00).
- The maximum declared value per shipment and the maximum value per shipment that Alaska Seaplanes shall be liable for is three thousand (\$3,000.00).
- Regardless of the valuation declared and the excess valuation charges paid, Alaska Seaplanes will only be liable for the actual amount of the damages or the replacement value of any shipment.
- The shipper of a C.O.D. must declare the value of the shipment for collection purposes. However, if the shipper does not agree to accept any applicable excess valuation charges, Alaska Seaplanes will be liable only to the extent named in the limitation of liability.



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1220983001-A	No Preservative Required	OK			
1220983002-A	No Preservative Required	OK			
1220983003-A	No Preservative Required	OK			
1220983004-A	No Preservative Required	OK			
1220983005-A	No Preservative Required	OK			
1220983006-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Laboratory Report of Analysis

To: Turnagain Marine Construction
9330 Vanguard, Suite 100
Anchorage, AK 99507
907-201-1043

Report Number: **1221082**

Client Project: **SOD Sediment Remediation**

Dear Josh Janssen,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Cameron at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Cameron Murphy
Project Manager
Cameron.Murphy@sgs.com

Date

Print Date: 03/21/2022 4:13:00PM

Case Narrative

SGS Client: **Turnagain Marine Construction**
SGS Project: **1221082**
Project Name/Site: **SOD Sediment Remediation**
Project Contact: **Josh Janssen**

Refer to sample receipt form for information on sample condition.

1221082010(1657302MS) (1657303) MS

6020B- MS recoveries for multiple analytes do not meet the QC criteria. The post digestion spike was successful.

1221082010(1657302MSD) (1657304) MSD

6020B- MSD recoveries for multiple analytes do not meet the QC criteria. The post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/21/2022 4:13:01PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
S2 A	1221082001	03/15/2022	03/17/2022	Solid/Soil (Wet Weight)
S2 B	1221082002	03/15/2022	03/17/2022	Solid/Soil (Wet Weight)
S2 C	1221082003	03/15/2022	03/17/2022	Solid/Soil (Wet Weight)
S2 D	1221082010	03/15/2022	03/17/2022	Soil/Solid (dry weight)
S2 E	1221082011	03/15/2022	03/17/2022	Soil/Solid (dry weight)
S2 F	1221082012	03/15/2022	03/17/2022	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
SW6020B TCLP	Metals by ICP-MS
SW6020B	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 03/21/2022 4:13:04PM

Detectable Results Summary

Client Sample ID: **S2 A**
 Lab Sample ID: 1221082001
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.360	mg/L
Lead	1.14	mg/L

Client Sample ID: **S2 B**
 Lab Sample ID: 1221082002
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.352	mg/L
Lead	1.74	mg/L

Client Sample ID: **S2 C**
 Lab Sample ID: 1221082003
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.322	mg/L
Lead	1.42	mg/L

Client Sample ID: **S2 D**
 Lab Sample ID: 1221082010
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	14.0	mg/kg
Barium	377	mg/kg
Cadmium	22.4	mg/kg
Chromium	19.0	mg/kg
Lead	14000	mg/kg

Client Sample ID: **S2 E**
 Lab Sample ID: 1221082011
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	8.35	mg/kg
Barium	396	mg/kg
Cadmium	9.50	mg/kg
Chromium	20.6	mg/kg
Lead	5890	mg/kg
Mercury	3.85	mg/kg
Silver	5.33	mg/kg

Client Sample ID: **S2 F**
 Lab Sample ID: 1221082012
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	10.9	mg/kg
Barium	365	mg/kg
Cadmium	14.0	mg/kg
Chromium	18.6	mg/kg
Lead	9400	mg/kg
Mercury	6.12	mg/kg



Results of S2 A

Client Sample ID: **S2 A**
Client Project ID: **SOD Sediment Remediation**
Lab Sample ID: 1221082001
Lab Project ID: 1221082

Collection Date: 03/15/22 14:30
Received Date: 03/17/22 08:58
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:31
Barium	0.360	0.150	0.0470	mg/L	25	(<100)	03/20/22 11:31
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/20/22 11:31
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:31
Lead	1.14	0.0500	0.0155	mg/L	25	(<5)	03/20/22 11:31
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/20/22 11:31
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/20/22 11:31
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/20/22 11:31

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Analyst: DMM
Analytical Date/Time: 03/20/22 11:31
Container ID: 1221082001-A

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 03/18/22 14:13
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:13:07PM



Results of S2 B

Client Sample ID: **S2 B**
 Client Project ID: **SOD Sediment Remediation**
 Lab Sample ID: 1221082002
 Lab Project ID: 1221082

Collection Date: 03/15/22 14:35
 Received Date: 03/17/22 08:58
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:43
Barium	0.352	0.150	0.0470	mg/L	25	(<100)	03/20/22 11:43
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/20/22 11:43
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:43
Lead	1.74	0.0500	0.0155	mg/L	25	(<5)	03/20/22 11:43
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/20/22 11:43
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/20/22 11:43
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/20/22 11:43

Batch Information

Analytical Batch: MMS11497
 Analytical Method: SW6020B TCLP
 Analyst: DMM
 Analytical Date/Time: 03/20/22 11:43
 Container ID: 1221082002-A

Prep Batch: MXT6212
 Prep Method: SW3010A
 Prep Date/Time: 03/18/22 14:13
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:13:07PM



Results of S2 C

Client Sample ID: **S2 C**
Client Project ID: **SOD Sediment Remediation**
Lab Sample ID: 1221082003
Lab Project ID: 1221082

Collection Date: 03/15/22 14:40
Received Date: 03/17/22 08:58
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:45
Barium	0.322	0.150	0.0470	mg/L	25	(<100)	03/20/22 11:45
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/20/22 11:45
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:45
Lead	1.42	0.0500	0.0155	mg/L	25	(<5)	03/20/22 11:45
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/20/22 11:45
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/20/22 11:45
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/20/22 11:45

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Analyst: DMM
Analytical Date/Time: 03/20/22 11:45
Container ID: 1221082003-A

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 03/18/22 14:13
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:13:07PM



Results of S2 D

Client Sample ID: **S2 D**
Client Project ID: **SOD Sediment Remediation**
Lab Sample ID: 1221082010
Lab Project ID: 1221082

Collection Date: 03/15/22 14:45
Received Date: 03/17/22 08:58
Matrix: Soil/Solid (dry weight)
Solids (%):69.2
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	14.0	1.38	0.429	mg/kg	10		03/17/22 13:54
Barium	377	0.415	0.130	mg/kg	10		03/17/22 13:54
Cadmium	22.4	0.277	0.0857	mg/kg	10		03/17/22 13:54
Chromium	19.0	1.38	0.429	mg/kg	10		03/17/22 13:54
Lead	14000	27.7	8.57	mg/kg	1000		03/18/22 09:31
Mercury	41.5 U	41.5	13.8	mg/kg	1000		03/18/22 09:31
Selenium	2.77 U	2.77	0.857	mg/kg	10		03/17/22 13:54
Silver	6.75 U	6.75	2.03	mg/kg	10		03/18/22 08:46

Batch Information

Analytical Batch: MMS11496
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/18/22 08:46
Container ID: 1221082010-A

Prep Batch: MXX35020
Prep Method: SW3050B
Prep Date/Time: 03/17/22 15:02
Prep Initial Wt./Vol.: 0.107 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11496
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/18/22 09:31
Container ID: 1221082010-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.045 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 13:54
Container ID: 1221082010-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.045 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:13:07PM



Results of S2 E

Client Sample ID: **S2 E**
Client Project ID: **SOD Sediment Remediation**
Lab Sample ID: 1221082011
Lab Project ID: 1221082

Collection Date: 03/15/22 14:50
Received Date: 03/17/22 08:58
Matrix: Soil/Solid (dry weight)
Solids (%):60.9
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	8.35	1.57	0.487	mg/kg	10		03/17/22 14:28
Barium	396	0.471	0.148	mg/kg	10		03/17/22 14:28
Cadmium	9.50	0.314	0.0974	mg/kg	10		03/17/22 14:28
Chromium	20.6	1.57	0.487	mg/kg	10		03/17/22 14:28
Lead	5890	6.28	1.95	mg/kg	200		03/17/22 16:21
Mercury	3.85	0.471	0.157	mg/kg	10		03/17/22 14:28
Selenium	3.14 U	3.14	0.974	mg/kg	10		03/17/22 14:28
Silver	5.33	0.785	0.236	mg/kg	10		03/17/22 14:28

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 14:28
Container ID: 1221082011-A

Prep Batch: MX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.046 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 16:21
Container ID: 1221082011-A

Prep Batch: MX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.046 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:13:07PM



Results of S2 F

Client Sample ID: **S2 F**
Client Project ID: **SOD Sediment Remediation**
Lab Sample ID: 1221082012
Lab Project ID: 1221082

Collection Date: 03/15/22 14:55
Received Date: 03/17/22 08:58
Matrix: Soil/Solid (dry weight)
Solids (%):66.9
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	10.9	1.39	0.430	mg/kg	10		03/17/22 14:31
Barium	365	0.416	0.130	mg/kg	10		03/17/22 14:31
Cadmium	14.0	0.277	0.0859	mg/kg	10		03/17/22 14:31
Chromium	18.6	1.39	0.430	mg/kg	10		03/17/22 14:31
Lead	9400	13.9	4.30	mg/kg	500		03/17/22 16:29
Mercury	6.12	0.416	0.139	mg/kg	10		03/17/22 14:31
Selenium	2.77 U	2.77	0.859	mg/kg	10		03/17/22 14:31
Silver	13.3 U	13.3	4.00	mg/kg	10		03/18/22 08:49

Batch Information

Analytical Batch: MMS11496
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/18/22 08:49
Container ID: 1221082012-A

Prep Batch: MXX35020
Prep Method: SW3050B
Prep Date/Time: 03/17/22 15:02
Prep Initial Wt./Vol.: 0.056 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 14:31
Container ID: 1221082012-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.078 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 16:29
Container ID: 1221082012-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.078 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:13:07PM



Method Blank

Blank ID: LB1 for HBN 1832778 [TCLP/1167]
Blank Lab ID: 1657476

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1221082001, 1221082002, 1221082003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.250U	0.500	0.155	mg/L
Barium	0.0750U	0.150	0.0470	mg/L
Cadmium	0.0500U	0.100	0.0300	mg/L
Chromium	0.250U	0.500	0.155	mg/L
Lead	0.0250U	0.0500	0.0155	mg/L
Mercury	0.0125U	0.0250	0.00900	mg/L
Selenium	0.500U	1.00	0.310	mg/L
Silver	0.0500U	0.100	0.0310	mg/L

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/20/2022 11:28:47AM

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 3/18/2022 2:13:07PM
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:13:09PM



Method Blank

Blank ID: MB for HBN 1832794 [MXT/6212]
Blank Lab ID: 1657549

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1221082001, 1221082002, 1221082003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0250U	0.0500	0.0155	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.0250U	0.0500	0.0155	mg/L
Lead	0.00250U	0.00500	0.00155	mg/L
Mercury	0.00125U	0.00250	0.000900	mg/L
Selenium	0.0500U	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/20/2022 11:23:04AM

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 3/18/2022 2:13:07PM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:13:09PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1221082 [MXT6212]

Blank Spike Lab ID: 1657550

Date Analyzed: 03/20/2022 11:25

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221082001, 1221082002, 1221082003

Results by SW6020B TCLP

Blank Spike (mg/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1	0.967	97	(84-116)
Barium	1	1.00	100	(86-114)
Cadmium	0.1	0.0993	99	(87-115)
Chromium	0.4	0.402	100	(85-116)
Lead	1	1.02	102	(88-115)
Mercury	0.01	0.0100	100	(70-124)
Selenium	1	0.981	98	(80-120)
Silver	0.1	0.101	101	(85-116)

Batch Information

Analytical Batch: **MMS11497**

Analytical Method: **SW6020B TCLP**

Instrument: **P7 Agilent 7800**

Analyst: **DMM**

Prep Batch: **MXT6212**

Prep Method: **SW3010A**

Prep Date/Time: **03/18/2022 14:13**

Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 03/21/2022 4:13:11PM



Matrix Spike Summary

Original Sample ID: 1657553
MS Sample ID: 1657555 MS
MSD Sample ID: 1657556 MSD

Analysis Date: 03/20/2022 11:31
Analysis Date: 03/20/2022 11:34
Analysis Date: 03/20/2022 11:37
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221082001, 1221082002, 1221082003

Results by SW6020B TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.250U	10.0	9.74	97	10.0	9.59	96	84-116	1.61	(< 20)
Barium	0.360	10.0	10.4	100	10.0	10.3	100	86-114	0.71	(< 20)
Cadmium	0.0500U	1.00	1	100	1.00	0.998	100	87-115	0.36	(< 20)
Chromium	0.250U	4.00	4.01	100	4.00	3.97	99	85-116	0.92	(< 20)
Lead	1.14	10.0	11.4	102	10.0	11.3	102	88-115	0.70	(< 20)
Mercury	0.0125U	0.100	.104	104	0.100	0.103	103	70-124	1.10	(< 20)
Selenium	0.500U	10.0	9.89	99	10.0	9.43	94	80-120	4.79	(< 20)
Silver	0.0500U	1.00	.999	100	1.00	0.989	99	85-116	0.94	(< 20)

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/20/2022 11:34:28AM

Prep Batch: MXT6212
Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
Prep Date/Time: 3/18/2022 2:13:07PM
Prep Initial Wt./Vol.: 2.50mL
Prep Extract Vol: 25.00mL

Print Date: 03/21/2022 4:13:12PM

Method Blank

Blank ID: MB for HBN 1832736 [MXX/35018]
Blank Lab ID: 1657300

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221082010, 1221082011, 1221082012

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.500U	1.00	0.310	mg/kg
Barium	0.112J	0.300	0.0940	mg/kg
Cadmium	0.100U	0.200	0.0620	mg/kg
Chromium	0.500U	1.00	0.310	mg/kg
Lead	0.100U	0.200	0.0620	mg/kg
Mercury	0.150U	0.300	0.100	mg/kg
Selenium	1.00U	2.00	0.620	mg/kg
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/17/2022 1:48:00PM

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1221082 [MXX35018]
Blank Spike Lab ID: 1657301
Date Analyzed: 03/17/2022 13:51

Matrix: Soil/Solid (dry weight)

QC for Samples: 1221082010, 1221082011, 1221082012

Results by SW6020B

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Arsenic	50	50.5	101	(82-118)
Barium	50	50.7	101	(86-116)
Cadmium	5	5.11	102	(84-116)
Chromium	20	20.2	101	(83-119)
Lead	50	51.7	103	(84-118)
Mercury	0.5	0.508	102	(74-126)
Selenium	50	50.8	102	(80-119)
Silver	5	5.07	101	(83-118)

Batch Information

Analytical Batch: **MMS11495**
Analytical Method: **SW6020B**
Instrument: **P7 Agilent 7800**
Analyst: **DSD**

Prep Batch: **MXX35018**
Prep Method: **SW3050B**
Prep Date/Time: **03/17/2022 10:38**
Spike Init Wt./Vol.: 50 mg/kg Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 03/21/2022 4:13:16PM



Matrix Spike Summary

Original Sample ID: 1657302
MS Sample ID: 1657303 MS
MSD Sample ID: 1657304 MSD

Analysis Date: 03/17/2022 13:54
Analysis Date: 03/17/2022 13:57
Analysis Date: 03/17/2022 14:00
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221082010, 1221082011, 1221082012

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	9.71	46.5	53.7	95	48.4	56.5	97	82-118	5.11	(< 20)
Barium	261	46.5	308	102	48.4	320	123 *	86-116	3.94	(< 20)
Cadmium	15.5	4.65	20.7	112	4.84	18.4	59 *	84-116	11.90	(< 20)
Chromium	13.1	18.6	31.5	99	19.4	34.1	108	83-119	7.90	(< 20)
Selenium	1.06J	46.5	43.5	91	48.4	44.6	90	80-119	2.56	(< 20)
Lead	9660	46.5	8440	-2630 *	48.4	9940	582 *	84-118	16.40	(< 20)
Mercury	14.4U	0.465	14.4U	0 *	0.484	14.4U	0 *	74-126	0.00	(< 20)
Silver	23.9U	4.65	23.9U	0 *	4.84	23.9U	0 *	83-118	0.00	(< 20)

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/17/2022 1:57:00PM

Prep Batch: MXX35018
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1.08g
Prep Extract Vol: 50.00mL

Analytical Batch: MMS11496
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/18/2022 9:34:17AM

Prep Batch: MXX35018
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1.08g
Prep Extract Vol: 50.00mL

Print Date: 03/21/2022 4:13:17PM



Bench Spike Summary

Original Sample ID: 1657302
MS Sample ID: 1657305 BND
MSD Sample ID:

Analysis Date: 03/17/2022 13:54
Analysis Date: 03/17/2022 14:02
Analysis Date:
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221082010, 1221082011, 1221082012

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Barium	261	239	494	98				75-125		
Cadmium	15.5	120	126	92				75-125		
Lead	9660	12000	21000	95				75-125		
Mercury	14.4U	239	240	100				75-125		
Silver	23.9U	239	235	98				75-125		

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/17/2022 2:02:00PM

Prep Batch: MXX35018
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1.05g
Prep Extract Vol: 50.00mL

Analytical Batch: MMS11496
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/18/2022 9:39:00AM

Prep Batch: MXX35018
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1.05g
Prep Extract Vol: 50.00mL

Print Date: 03/21/2022 4:13:17PM



Method Blank

Blank ID: MB for HBN 1832764 [MXX/35020]
Blank Lab ID: 1657409

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221082010, 1221082012

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11496
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/18/2022 8:38:06AM

Prep Batch: MXX35020
Prep Method: SW3050B
Prep Date/Time: 3/17/2022 3:02:45PM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:13:19PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1221082 [MXX35020]
 Blank Spike Lab ID: 1657410
 Date Analyzed: 03/18/2022 08:40

Spike Duplicate ID: LCSD for HBN 1221082 [MXX35020]
 Spike Duplicate Lab ID: 1657411
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1221082010, 1221082012

Results by SW6020B

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Silver	5	4.88	98	5	4.95	99	(83-118)	1.50	(< 20)

Batch Information

Analytical Batch: **MMS11496**
 Analytical Method: **SW6020B**
 Instrument: **P7 Agilent 7800**
 Analyst: **DMM**

Prep Batch: **MXX35020**
 Prep Method: **SW3050B**
 Prep Date/Time: **03/17/2022 15:02**
 Spike Init Wt./Vol.: 5 mg/kg Extract Vol: 50 mL
 Dupe Init Wt./Vol.: 5 mg/kg Extract Vol: 50 mL

Print Date: 03/21/2022 4:13:20PM



Method Blank

Blank ID: MB for HBN 1832773 [SPT/11484]
Blank Lab ID: 1657462

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221082010, 1221082011, 1221082012

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT11484
Analytical Method: SM21 2540G
Instrument:
Analyst: DBR
Analytical Date/Time: 3/17/2022 5:00:00PM

Print Date: 03/21/2022 4:13:23PM



Duplicate Sample Summary

Original Sample ID: 1221082011

Duplicate Sample ID: 1657463

QC for Samples:

1221082010, 1221082011, 1221082012

Analysis Date: 03/17/2022 17:00

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	60.9	68.4	%	11.60	(< 15)

Batch Information

Analytical Batch: SPT11484

Analytical Method: SM21 2540G

Instrument:

Analyst: DBR

Print Date: 03/21/2022 4:13:24PM



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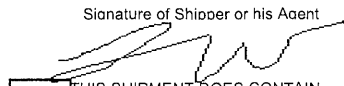
#378573 CM

CLIENT: Turnagain Marine Construction		CONTACT: Josh Janssen		PHONE #: 9072011043		PROJECT: Skagway Ore Dock		NAME: Sediment Remediation		PERMIT#: 22-001		REPORTS TO: E-MAIL: janssen@turnagain.us		PROFILE #: Joshua Janssen		QUOTE #: 378573		INVOICE TO: Turnagain Marine Construction		P.O. #: 22-001																																																																																					
PROJECT: Skagway Ore Dock		PROJECT/ PWSID/ PERMIT#: 22-001		CONTACT: Josh Janssen		PHONE #: 9072011043		Section 3		Preservative		NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS		REMARKS/LOC ID		RESERVED for lab use		SAMPLE IDENTIFICATION		DATE mm/dd/yy		TIME HH:MM		MATRIX CODE		#																																																																															
S2 A		3/15/2022		2:30PM		Grab		1		x		x		x		S2 A		3/15/2022		2:30PM		Grab		1		S2 B		3/15/2022		2:35PM		Grab		1		x		x		x		S2 C		15-Mar		2:40PM		Grab		1		x		x		x		S2 D		3/15/2022		2:45PM		Grab		1		x		x		x		S2 E		3/15/2022		2:50PM		Grab		1		x		x		x		S2 F		3/15/2022		2:55PM		Grab		1		x		x		x	
Section 1		Section 2		Section 3		Section 4		Section 5		Section 6		Section 7		Section 8		Section 9		Section 10		Section 11		Section 12		Section 13		Section 14		Section 15		Section 16		Section 17		Section 18		Section 19		Section 20		Section 21		Section 22		Section 23		Section 24		Section 25		Section 26		Section 27		Section 28		Section 29		Section 30																																															
Relinquished By: (1) Joshua Janssen		Date 3/15/2022		Time 5:04PM		Received By:		Relinquished By: (2)		Date		Time		Received By:		Relinquished By: (3)		Date		Time		Received By:		Relinquished By: (4)		Date 3/17/22		Time 8:58		Received For Laboratory By:		Temp Blank C: or Ambient []		Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT		Delivery Method: Hand Delivery [] Commercial Delivery [] Air																																																																					
Requested Turnaround Time and/or Special Instructions: 3 Day TCIP RCRA 24 hr Total RCRA RUSH		Cooler ID: Level 2		DOD Project? Yes No		Data Deliverable Requirements: Level 2		Section 4		DOD Project? Yes No		Data Deliverable Requirements: Level 2		Section 5		Requested Turnaround Time and/or Special Instructions: 3 Day TCIP RCRA 24 hr Total RCRA RUSH		Temp Blank C: or Ambient []		Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT		Delivery Method: Hand Delivery [] Commercial Delivery [] Air																																																																																			

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

1221082



Shipper's Name and Address Turnagain Marine Constru 8241 Dimond Hook Drive Unit A Anchorage, AK 99507 USA Tel: 907-261-8960		Shipper's Account Number 27442485480 Customer's ID Number 48806		Not Negotiable Air Waybill Issued By <div style="text-align: center;">  P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM </div>					
Consignee's Name and Address SGS North America 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343		Consignee's Account Number 27400215947		Also notify Tel:					
Issuing Carrier's Agent and City Agent's IATA Code Account No.		Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau International Airport		Accounting Information Turnagain Marine Construction Compa 8241 Dimond Hook Drive Unit A Anchorage, AK 99507 USA GoldStreak 48806					
To By First Carrier ANC Alaska Airlines		To / By	To / By	Currency USD PX	WT/VAL X	Other X	Declared Value For Carriage NVD	Declared Value For Customs NCV	
Airport of Destination Anchorage		Flight/Date AS 065/16	Flight/Date	Amount of Insurance XXX					
Handling Information NOA 907 562 2343								SCI	
No of Pieces 1	Gross Weight 4.0	kg L	Commodity Item No.	Chargeable Weight 4.0	Rate / Charge	Total AS AGREED	Nature and Quantity of Goods (Incl. Dimensions or Volume) SOIL SAMPLES Dims: 7 x 7 x6 x 1 GSX Volume: 0.170		
1	4.0	L		4.0		AS AGREED			
Prepaid AS AGREED		Weight Charge Collect		Other Charges XBC 12.50					
		Valuation Charge							
		Tax							
Total Other Charges Due Agent				Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.					
Total Other Charges Due Carrier				For: Turnagain Marine Construction Compa Signature of Shipper or his Agent 					
				<input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS					
Total Prepaid AS AGREED		Total Collect							
				16 Mar 2022 11:10 Juneau International Alaska Airlines Executed On (Date) at (Place) Signature of Issuing Carrier or its Agent					

Characterization of TCLP Samples for LIMS Login

Date Characterized: 3/17/22

Analyst: RJC

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
S2A	Xylene miscible (Top layer * = matrix 3 **)	—	Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: <u>sediment</u> **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)	—		
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S2B	Xylene miscible (Top layer * = matrix 3 **)	—	Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: <u>sediment</u> **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)	—		
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S2C	Xylene miscible (Top layer * = matrix 3 **)	—	Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: <u>sediment</u> **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)	—		
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.

Alert Expeditors Inc.

#416917

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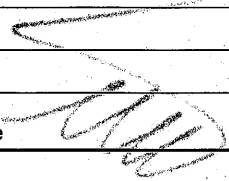
Date: 3-17-22
From: Tumagala Marine Const

To: SBS Labs Inc

Collect Prepay Advance Charges

Job # JNU PO# AS 9195-6093

Samples

Shipped Signature 

Received By: _____ Total Charge _____ 27 of 29



e-Sample Receipt Form

SGS Workorder #:

1221082

1221082

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below																																			
Chain of Custody / Temperature Requirements																																					
Were Custody Seals intact? Note # & location	Yes	N/A Exemption permitted if sampler hand carries/delivers.																																			
COC accompanied samples?	No	Client sent COC through email after samples were received.																																			
DOD: Were samples received in COC corresponding coolers?	N/A																																				
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required																																					
Temperature blank compliant* (i.e., 0-6 °C after CF)?	N/A	<table border="1"> <tr> <td>Cooler ID:</td> <td>1</td> <td>@</td> <td>ambient</td> <td>°C</td> <td>Therm. ID:</td> <td>N/A</td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> </table>	Cooler ID:	1	@	ambient	°C	Therm. ID:	N/A	Cooler ID:		@		°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:	
Cooler ID:	1	@	ambient	°C	Therm. ID:	N/A																															
Cooler ID:		@		°C	Therm. ID:																																
Cooler ID:		@		°C	Therm. ID:																																
Cooler ID:		@		°C	Therm. ID:																																
Cooler ID:		@		°C	Therm. ID:																																
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.																																					
*If >6°C, were samples collected <8 hours ago?	N/A																																				
If <0°C, were sample containers ice free?	N/A																																				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.																																					
Holding Time / Documentation / Sample Condition Requirements																																					
Note: Refer to form F-083 "Sample Guide" for specific holding times.																																					
Were samples received within holding time?	Yes																																				
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes																																				
**Note: If times differ <1hr, record details & login per COC.																																					
***Note: If sample information on containers differs from COC, SGS will default to COC information																																					
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	No	Client did not specify which samples needed TCLP and regular RCRA metals																																			
N/A ***Exemption permitted for metals (e.g.200.8/6020A).																																					
Were proper containers (type/mass/volume/preservative***)used?	Yes																																				
Volatile / LL-Hg Requirements																																					
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A																																				
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A																																				
Were all soil VOAs field extracted with MeOH+BFB?	N/A																																				
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.																																					
Additional notes (if applicable):																																					



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221082001-A	No Preservative Required	OK			
1221082002-A	No Preservative Required	OK			
1221082003-A	No Preservative Required	OK			
1221082010-A	No Preservative Required	OK			
1221082011-A	No Preservative Required	OK			
1221082012-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Laboratory Report of Analysis

To: Turnagain Marine Construction
9330 Vanguard, Suite 100
Anchorage, AK 99507
907-201-1043

Report Number: **1221083**

Client Project: **Skagway Ore Dock Sediment Reme**

Dear Josh Janssen,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Cameron at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Cameron Murphy
Project Manager
Cameron.Murphy@sgs.com

Date

Print Date: 03/21/2022 4:15:25PM

Case Narrative

SGS Client: **Turnagain Marine Construction**
SGS Project: **1221083**
Project Name/Site: **Skagway Ore Dock Sediment Reme**
Project Contact: **Josh Janssen**

Refer to sample receipt form for information on sample condition.

1221082010(1657302MS) (1657303) MS

6020B- MS recoveries for multiple analytes do not meet the QC criteria. The post digestion spike was successful.

1221082010(1657302MSD) (1657304) MSD

6020B- MSD recoveries for multiple analytes do not meet the QC criteria. The post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/21/2022 4:15:26PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
S3 A	1221083001	03/16/2022	03/17/2022	Solid/Soil (Wet Weight)
S3 B	1221083002	03/16/2022	03/17/2022	Solid/Soil (Wet Weight)
S3 C	1221083003	03/16/2022	03/17/2022	Solid/Soil (Wet Weight)
S3 D	1221083004	03/16/2022	03/17/2022	Soil/Solid (dry weight)
S3 E	1221083005	03/16/2022	03/17/2022	Soil/Solid (dry weight)
S3 F	1221083006	03/16/2022	03/17/2022	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
SW6020B TCLP	Metals by ICP-MS
SW6020B	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 03/21/2022 4:15:29PM

Detectable Results Summary

Client Sample ID: **S3 A**
 Lab Sample ID: 1221083001
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	0.183	mg/L

Client Sample ID: **S3 B**
 Lab Sample ID: 1221083002
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.319	mg/L
Lead	1.33	mg/L

Client Sample ID: **S3 C**
 Lab Sample ID: 1221083003
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.319	mg/L
Lead	0.617	mg/L

Client Sample ID: **S3 D**
 Lab Sample ID: 1221083004
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	8.96	mg/kg
Barium	376	mg/kg
Cadmium	11.5	mg/kg
Chromium	18.2	mg/kg
Lead	7600	mg/kg
Mercury	4.72	mg/kg
Silver	6.80	mg/kg

Client Sample ID: **S3 E**
 Lab Sample ID: 1221083005
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	18.6	mg/kg
Barium	359	mg/kg
Cadmium	27.3	mg/kg
Chromium	18.0	mg/kg
Lead	22200	mg/kg
Silver	18.1	mg/kg

Client Sample ID: **S3 F**
 Lab Sample ID: 1221083006
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	12.3	mg/kg
Barium	385	mg/kg
Cadmium	17.3	mg/kg
Chromium	20.3	mg/kg
Lead	10600	mg/kg
Silver	21.0	mg/kg



Results of S3 A

Client Sample ID: **S3 A**
Client Project ID: **Skagway Ore Dock Sediment Reme**
Lab Sample ID: 1221083001
Lab Project ID: 1221083

Collection Date: 03/16/22 08:00
Received Date: 03/17/22 08:58
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:57
Barium	0.150 U	0.150	0.0470	mg/L	25	(<100)	03/20/22 11:57
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/20/22 11:57
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 11:57
Lead	0.183	0.0500	0.0155	mg/L	25	(<5)	03/20/22 11:57
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/20/22 11:57
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/20/22 11:57
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/20/22 11:57

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Analyst: DMM
Analytical Date/Time: 03/20/22 11:57
Container ID: 1221083001-A

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 03/18/22 14:13
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:15:31PM



Results of S3 B

Client Sample ID: **S3 B**
 Client Project ID: **Skagway Ore Dock Sediment Reme**
 Lab Sample ID: 1221083002
 Lab Project ID: 1221083

Collection Date: 03/16/22 08:05
 Received Date: 03/17/22 08:58
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 12:00
Barium	0.319	0.150	0.0470	mg/L	25	(<100)	03/20/22 12:00
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/20/22 12:00
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 12:00
Lead	1.33	0.0500	0.0155	mg/L	25	(<5)	03/20/22 12:00
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/20/22 12:00
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/20/22 12:00
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/20/22 12:00

Batch Information

Analytical Batch: MMS11497
 Analytical Method: SW6020B TCLP
 Analyst: DMM
 Analytical Date/Time: 03/20/22 12:00
 Container ID: 1221083002-A

Prep Batch: MXT6212
 Prep Method: SW3010A
 Prep Date/Time: 03/18/22 14:13
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:15:31PM



Results of S3 C

Client Sample ID: **S3 C**
Client Project ID: **Skagway Ore Dock Sediment Reme**
Lab Sample ID: 1221083003
Lab Project ID: 1221083

Collection Date: 03/16/22 08:10
Received Date: 03/17/22 08:58
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 12:02
Barium	0.319	0.150	0.0470	mg/L	25	(<100)	03/20/22 12:02
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	03/20/22 12:02
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	03/20/22 12:02
Lead	0.617	0.0500	0.0155	mg/L	25	(<5)	03/20/22 12:02
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	03/20/22 12:02
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	03/20/22 12:02
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	03/20/22 12:02

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Analyst: DMM
Analytical Date/Time: 03/20/22 12:02
Container ID: 1221083003-A

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 03/18/22 14:13
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:15:31PM



Results of S3 D

Client Sample ID: **S3 D**
Client Project ID: **Skagway Ore Dock Sediment Reme**
Lab Sample ID: 1221083004
Lab Project ID: 1221083

Collection Date: 03/16/22 08:15
Received Date: 03/17/22 08:58
Matrix: Soil/Solid (dry weight)
Solids (%):67.0
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	8.96	1.45	0.449	mg/kg	10		03/17/22 14:34
Barium	376	0.435	0.136	mg/kg	10		03/17/22 14:34
Cadmium	11.5	0.290	0.0899	mg/kg	10		03/17/22 14:34
Chromium	18.2	1.45	0.449	mg/kg	10		03/17/22 14:34
Lead	7600	14.5	4.49	mg/kg	500		03/17/22 16:32
Mercury	4.72	0.435	0.145	mg/kg	10		03/17/22 14:34
Selenium	2.90 U	2.90	0.899	mg/kg	10		03/17/22 14:34
Silver	6.80	0.725	0.217	mg/kg	10		03/17/22 14:34

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 14:34
Container ID: 1221083004-A

Prep Batch: MX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.03 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 16:32
Container ID: 1221083004-A

Prep Batch: MX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.03 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:15:31PM



Results of S3 E

Client Sample ID: **S3 E**
Client Project ID: **Skagway Ore Dock Sediment Reme**
Lab Sample ID: 1221083005
Lab Project ID: 1221083

Collection Date: 03/16/22 08:20
Received Date: 03/17/22 08:58
Matrix: Soil/Solid (dry weight)
Solids (%):67.5
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	18.6	1.39	0.430	mg/kg	10		03/17/22 14:37
Barium	359	0.416	0.130	mg/kg	10		03/17/22 14:37
Cadmium	27.3	0.278	0.0860	mg/kg	10		03/17/22 14:37
Chromium	18.0	1.39	0.430	mg/kg	10		03/17/22 14:37
Lead	22200	27.8	8.60	mg/kg	1000		03/17/22 16:35
Mercury	41.6 U	41.6	13.9	mg/kg	1000		03/17/22 16:35
Selenium	2.78 U	2.78	0.860	mg/kg	10		03/17/22 14:37
Silver	18.1	6.94	2.08	mg/kg	100		03/18/22 09:25

Batch Information

Analytical Batch: MMS11496
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/18/22 09:25
Container ID: 1221083005-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.067 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 14:37
Container ID: 1221083005-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.067 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 16:35
Container ID: 1221083005-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.067 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:15:31PM



Results of S3 F

Client Sample ID: **S3 F**
Client Project ID: **Skagway Ore Dock Sediment Reme**
Lab Sample ID: 1221083006
Lab Project ID: 1221083

Collection Date: 03/16/22 08:25
Received Date: 03/17/22 08:58
Matrix: Soil/Solid (dry weight)
Solids (%):68.0
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	12.3	1.42	0.441	mg/kg	10		03/17/22 14:40
Barium	385	0.427	0.134	mg/kg	10		03/17/22 14:40
Cadmium	17.3	0.285	0.0883	mg/kg	10		03/17/22 14:40
Chromium	20.3	1.42	0.441	mg/kg	10		03/17/22 14:40
Lead	10600	14.2	4.41	mg/kg	500		03/17/22 16:38
Mercury	21.4 U	21.4	7.12	mg/kg	500		03/17/22 16:38
Selenium	2.85 U	2.85	0.883	mg/kg	10		03/17/22 14:40
Silver	21.0	7.66	2.30	mg/kg	10		03/18/22 08:55

Batch Information

Analytical Batch: MMS11496
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/18/22 08:55
Container ID: 1221083006-A

Prep Batch: MXX35020
Prep Method: SW3050B
Prep Date/Time: 03/17/22 15:02
Prep Initial Wt./Vol.: 0.096 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 14:40
Container ID: 1221083006-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.033 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11495
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/17/22 16:38
Container ID: 1221083006-A

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 03/17/22 10:38
Prep Initial Wt./Vol.: 1.033 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:15:31PM



Method Blank

Blank ID: LB1 for HBN 1832778 [TCLP/1167]
Blank Lab ID: 1657476

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1221083001, 1221083002, 1221083003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.250U	0.500	0.155	mg/L
Barium	0.0750U	0.150	0.0470	mg/L
Cadmium	0.0500U	0.100	0.0300	mg/L
Chromium	0.250U	0.500	0.155	mg/L
Lead	0.0250U	0.0500	0.0155	mg/L
Mercury	0.0125U	0.0250	0.00900	mg/L
Selenium	0.500U	1.00	0.310	mg/L
Silver	0.0500U	0.100	0.0310	mg/L

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/20/2022 11:28:47AM

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 3/18/2022 2:13:07PM
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:15:33PM



Method Blank

Blank ID: MB for HBN 1832794 [MXT/6212]

Blank Lab ID: 1657549

QC for Samples:

1221083001, 1221083002, 1221083003

Matrix: Water (Surface, Eff., Ground)

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0250U	0.0500	0.0155	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.0250U	0.0500	0.0155	mg/L
Lead	0.00250U	0.00500	0.00155	mg/L
Mercury	0.00125U	0.00250	0.000900	mg/L
Selenium	0.0500U	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS11497
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/20/2022 11:23:04AM

Prep Batch: MXT6212
Prep Method: SW3010A
Prep Date/Time: 3/18/2022 2:13:07PM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 03/21/2022 4:15:33PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1221083 [MXT6212]

Blank Spike Lab ID: 1657550

Date Analyzed: 03/20/2022 11:25

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221083001, 1221083002, 1221083003

Results by SW6020B TCLP

Blank Spike (mg/L)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	1	0.967	97	(84-116)
Barium	1	1.00	100	(86-114)
Cadmium	0.1	0.0993	99	(87-115)
Chromium	0.4	0.402	100	(85-116)
Lead	1	1.02	102	(88-115)
Mercury	0.01	0.0100	100	(70-124)
Selenium	1	0.981	98	(80-120)
Silver	0.1	0.101	101	(85-116)

Batch Information

Analytical Batch: MMS11497

Analytical Method: SW6020B TCLP

Instrument: P7 Agilent 7800

Analyst: DMM

Prep Batch: MXT6212

Prep Method: SW3010A

Prep Date/Time: 03/18/2022 14:13

Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 03/21/2022 4:15:35PM



Matrix Spike Summary

Original Sample ID: 1657553
 MS Sample ID: 1657555 MS
 MSD Sample ID: 1657556 MSD

Analysis Date: 03/20/2022 11:31
 Analysis Date: 03/20/2022 11:34
 Analysis Date: 03/20/2022 11:37
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221083001, 1221083002, 1221083003

Results by SW6020B TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.250U	10.0	9.74	97	10.0	9.59	96	84-116	1.61	(< 20)
Barium	0.360	10.0	10.4	100	10.0	10.3	100	86-114	0.71	(< 20)
Cadmium	0.0500U	1.00	1	100	1.00	0.998	100	87-115	0.36	(< 20)
Chromium	0.250U	4.00	4.01	100	4.00	3.97	99	85-116	0.92	(< 20)
Lead	1.14	10.0	11.4	102	10.0	11.3	102	88-115	0.70	(< 20)
Mercury	0.0125U	0.100	.104	104	0.100	0.103	103	70-124	1.10	(< 20)
Selenium	0.500U	10.0	9.89	99	10.0	9.43	94	80-120	4.79	(< 20)
Silver	0.0500U	1.00	.999	100	1.00	0.989	99	85-116	0.94	(< 20)

Batch Information

Analytical Batch: MMS11497
 Analytical Method: SW6020B TCLP
 Instrument: P7 Agilent 7800
 Analyst: DMM
 Analytical Date/Time: 3/20/2022 11:34:28AM

Prep Batch: MXT6212
 Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
 Prep Date/Time: 3/18/2022 2:13:07PM
 Prep Initial Wt./Vol.: 2.50mL
 Prep Extract Vol: 25.00mL

Print Date: 03/21/2022 4:15:37PM



Method Blank

Blank ID: MB for HBN 1832736 [MXX/35018]
Blank Lab ID: 1657300

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221083004, 1221083005, 1221083006

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.500U	1.00	0.310	mg/kg
Barium	0.112J	0.300	0.0940	mg/kg
Cadmium	0.100U	0.200	0.0620	mg/kg
Chromium	0.500U	1.00	0.310	mg/kg
Lead	0.100U	0.200	0.0620	mg/kg
Mercury	0.150U	0.300	0.100	mg/kg
Selenium	1.00U	2.00	0.620	mg/kg
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/17/2022 1:48:00PM

Prep Batch: MXX35018
Prep Method: SW3050B
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:15:38PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1221083 [MXX35018]
Blank Spike Lab ID: 1657301
Date Analyzed: 03/17/2022 13:51

Matrix: Soil/Solid (dry weight)

QC for Samples: 1221083004, 1221083005, 1221083006

Results by SW6020B

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Arsenic	50	50.5	101	(82-118)
Barium	50	50.7	101	(86-116)
Cadmium	5	5.11	102	(84-116)
Chromium	20	20.2	101	(83-119)
Lead	50	51.7	103	(84-118)
Mercury	0.5	0.508	102	(74-126)
Selenium	50	50.8	102	(80-119)
Silver	5	5.07	101	(83-118)

Batch Information

Analytical Batch: **MMS11495**
Analytical Method: **SW6020B**
Instrument: **P7 Agilent 7800**
Analyst: **DSD**

Prep Batch: **MXX35018**
Prep Method: **SW3050B**
Prep Date/Time: **03/17/2022 10:38**
Spike Init Wt./Vol.: 50 mg/kg Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 03/21/2022 4:15:40PM



Matrix Spike Summary

Original Sample ID: 1657302
MS Sample ID: 1657303 MS
MSD Sample ID: 1657304 MSD

Analysis Date: 03/17/2022 13:54
Analysis Date: 03/17/2022 13:57
Analysis Date: 03/17/2022 14:00
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221083004, 1221083005, 1221083006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	9.71	46.5	53.7	95	48.4	56.5	97	82-118	5.11	(< 20)
Barium	261	46.5	308	102	48.4	320	123 *	86-116	3.94	(< 20)
Cadmium	15.5	4.65	20.7	112	4.84	18.4	59 *	84-116	11.90	(< 20)
Chromium	13.1	18.6	31.5	99	19.4	34.1	108	83-119	7.90	(< 20)
Selenium	1.06J	46.5	43.5	91	48.4	44.6	90	80-119	2.56	(< 20)
Lead	9660	46.5	8440	-2630 *	48.4	9940	582 *	84-118	16.40	(< 20)
Mercury	14.4U	0.465	14.4U	0 *	0.484	14.4U	0 *	74-126	0.00	(< 20)
Silver	23.9U	4.65	23.9U	0 *	4.84	23.9U	0 *	83-118	0.00	(< 20)

Batch Information

Analytical Batch: MMS11495
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/17/2022 1:57:00PM

Prep Batch: MXX35018
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1.08g
Prep Extract Vol: 50.00mL

Analytical Batch: MMS11496
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DMM
Analytical Date/Time: 3/18/2022 9:34:17AM

Prep Batch: MXX35018
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/17/2022 10:38:33AM
Prep Initial Wt./Vol.: 1.08g
Prep Extract Vol: 50.00mL

Print Date: 03/21/2022 4:15:42PM

Bench Spike Summary

Original Sample ID: 1657302
 MS Sample ID: 1657305 BND
 MSD Sample ID:

Analysis Date: 03/17/2022 13:54
 Analysis Date: 03/17/2022 14:02
 Analysis Date:
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221083004, 1221083005, 1221083006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Barium	261	239	494	98				75-125		
Cadmium	15.5	120	126	92				75-125		
Lead	9660	12000	21000	95				75-125		
Mercury	14.4U	239	240	100				75-125		
Silver	23.9U	239	235	98				75-125		

Batch Information

Analytical Batch: MMS11495
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 3/17/2022 2:02:00PM

Prep Batch: MXX35018
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/17/2022 10:38:33AM
 Prep Initial Wt./Vol.: 1.05g
 Prep Extract Vol: 50.00mL

Analytical Batch: MMS11496
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DMM
 Analytical Date/Time: 3/18/2022 9:39:00AM

Prep Batch: MXX35018
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/17/2022 10:38:33AM
 Prep Initial Wt./Vol.: 1.05g
 Prep Extract Vol: 50.00mL

Print Date: 03/21/2022 4:15:42PM

Method Blank

Blank ID: MB for HBN 1832764 [MXX/35020]

Blank Lab ID: 1657409

QC for Samples:

1221083006

Matrix: Soil/Solid (dry weight)

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11496

Analytical Method: SW6020B

Instrument: P7 Agilent 7800

Analyst: DMM

Analytical Date/Time: 3/18/2022 8:38:06AM

Prep Batch: MXX35020

Prep Method: SW3050B

Prep Date/Time: 3/17/2022 3:02:45PM

Prep Initial Wt./Vol.: 1 g

Prep Extract Vol: 50 mL

Print Date: 03/21/2022 4:15:43PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1221083 [MXX35020]
Blank Spike Lab ID: 1657410
Date Analyzed: 03/18/2022 08:40

Spike Duplicate ID: LCSD for HBN 1221083 [MXX35020]
Spike Duplicate Lab ID: 1657411
Matrix: Soil/Solid (dry weight)

QC for Samples: 1221083006

Results by SW6020B

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Silver	5	4.88	98	5	4.95	99	(83-118)	1.50	(< 20)

Batch Information

Analytical Batch: **MMS11496**
Analytical Method: **SW6020B**
Instrument: **P7 Agilent 7800**
Analyst: **DMM**

Prep Batch: **MXX35020**
Prep Method: **SW3050B**
Prep Date/Time: **03/17/2022 15:02**
Spike Init Wt./Vol.: 5 mg/kg Extract Vol: 50 mL
Dupe Init Wt./Vol.: 5 mg/kg Extract Vol: 50 mL

Print Date: 03/21/2022 4:15:45PM



Method Blank

Blank ID: MB for HBN 1832773 [SPT/11484]
Blank Lab ID: 1657462

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221083004, 1221083005, 1221083006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT11484
Analytical Method: SM21 2540G
Instrument:
Analyst: DBR
Analytical Date/Time: 3/17/2022 5:00:00PM

Print Date: 03/21/2022 4:15:48PM



Duplicate Sample Summary

Original Sample ID: 1221082011

Duplicate Sample ID: 1657463

QC for Samples:

1221083004, 1221083005, 1221083006

Analysis Date: 03/17/2022 17:00

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	60.9	68.4	%	11.60	(< 15)

Batch Information

Analytical Batch: SPT11484

Analytical Method: SM21 2540G

Instrument:

Analyst: DBR

Print Date: 03/21/2022 4:15:49PM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1221083



Q# 378573 CPM

Section 1	CLIENT: Turnagain Marine Construction					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u> </u> of <u> </u>				
	CONTACT: Josh Janssen		PHONE #: 9072011043			Section 3		Preservative												
	PROJECT NAME: Skagway Ore Dock Sediment Remediation		PROJECT/PWSID/PERMIT#: 22-001			CONTAINER	Comp Grab MI (Multi-incremental)	Analysis*										NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS		
	REPORTS TO: Joshua Janssen		E-MAIL: jjanssen@turnagain.us					TCLP	Total RCRA											
INVOICE TO: Turnagain Marine Construction		QUOTE #: 378573																		
		P.O. #: 22-001																		
Section 2	RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	#	Grab	TCLP	Total RCRA											REMARKS/LOC ID
	1A	S3 A	3/16/2022	8:00AM		1	Grab	x	x											
	2A	S3 B	3/16/2022	8:05AM		1	Grab	x	x											
	3A	S3 C	16-Mar	8:10AM		1	Grab	x	x											
	4A	S3 D	3/16/2022	8:15AM		1	Grab	x	x											
	5A	S3 E	3/16/2022	8:20AM		1	Grab	x	x											
	6A	S3 F	3/16/2022	8:25AM		1	Grab	x	x											
Section 5	Relinquished By: (1) Joshua Janssen		Date: 3/16/2022	Time: 9:01AM	Received By:		Section 4		DOD Project? Yes No		Data Deliverable Requirements:									
	Relinquished By: (2)		Date:	Time:	Received By:		Cooler ID:		Level 2											
	Relinquished By: (3)		Date:	Time:	Received By:		Requested Turnaround Time and/or Special Instructions: <i>3 Day TCLP RCRA</i> <i>24 hour total RCRA</i> RUSH													
	Relinquished By: (4)		Date: 3/17/22	Time: 8:58	Received For Laboratory By: <i>Lin Janssen</i>		Temp Blank °C: or Ambient <input checked="" type="checkbox"/>		Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT											
										Delivery Method: Hand Delivery <input type="checkbox"/> Commercial Delivery <input checked="" type="checkbox"/> <i>Air</i>										

Characterization of TCLP Samples for LIMS Login

Date Characterized: 3/17/22

Analyst: Carla Jones ASD

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
S3 A	Xylene miscible (Top layer * = matrix 3 **)		<input checked="" type="checkbox"/> Yes / No	If multiple jars were received, were they consistent? Yes / No / <input checked="" type="checkbox"/> NA If biphasic, was there only one layer with sufficient sample? Yes / No / <input checked="" type="checkbox"/> NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S3 B	Xylene miscible (Top layer * = matrix 3 **)		<input checked="" type="checkbox"/> Yes / No	If multiple jars were received, were they consistent? Yes / No / <input checked="" type="checkbox"/> NA If biphasic, was there only one layer with sufficient sample? Yes / No / <input checked="" type="checkbox"/> NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S3 C	Xylene miscible (Top layer * = matrix 3 **)		<input checked="" type="checkbox"/> Yes / No	If multiple jars were received, were they consistent? Yes / No / <input checked="" type="checkbox"/> NA If biphasic, was there only one layer with sufficient sample? Yes / No / <input checked="" type="checkbox"/> NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S3 D	Xylene miscible (Top layer * = matrix 3 **)		<input checked="" type="checkbox"/> Yes / No	If multiple jars were received, were they consistent? Yes / No / <input checked="" type="checkbox"/> NA If biphasic, was there only one layer with sufficient sample? Yes / No / <input checked="" type="checkbox"/> NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S3 E	Xylene miscible (Top layer * = matrix 3 **)		<input checked="" type="checkbox"/> Yes / No	If multiple jars were received, were they consistent? Yes / No / <input checked="" type="checkbox"/> NA If biphasic, was there only one layer with sufficient sample? Yes / No / <input checked="" type="checkbox"/> NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.

Characterization of TCLP Samples for LIMS Login

Date Characterized: 3/17/22

Analyst: [Signature]

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
53 F	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA <u>CJS</u> Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.

027 JNU 9065 8035

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027-9065 8035

Shipper's Name and Address Turnagain Marine Constru 8241 Dimond Hook Drive Unit A Anchorage, AK 99507 USA Tel: 907-261-8960		Shipper's Account Number 27442485480 Customer's ID Number 48806		Not Negotiable Air Waybill Issued By Alaska. AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM				
Consignee's Name and Address Sgc north america incorpo HFPU ANC, AK 99999 USA Tel: 9075622343		Consignee's Account Number SGS		Also notify Tel:				
Issuing Carrier's Agent and City Agent's IATA Code Account No. Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau International Airport		Accounting Information Turnagain Marine Construction Compa 8241 Dimond Hook Drive Unit A Anchorage, AK 99507 USA GoldStreak		48806				
To By First Carrier ANC Alaska Airlines		To / By	To / By	Currency USD PX	WT/VAL X	Other X	Declared Value For Carriage NVD	Declared Value For Customs NCV
Airport of Destination Anchorage		Flight/Date AS 065/16	Flight/Date	Amount of Insurance XXX				
Handling Information PUT ON 48806 ACCT								
SCI								
No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	4.0	L			4.0		AS AGREED	SOIL SAMPLES Dims: 11 x 8 x4 x 1
1	4.0						AS AGREED	GSX Volume: 0.204
Prepaid		Weight Charge		Collect		Other Charges		
AS AGREED						XBC 12.50		
		Valuation Charge						
		Tax						
Total Other Charges Due Agent						Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.		
Total Other Charges Due Carrier						For: Turnagain Marine Construction Compa Signature of Shipper or his Agent		
						<input checked="" type="checkbox"/> THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS <input type="checkbox"/> THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS		
Total Prepaid		Total Collect						
AS AGREED								
						16 Mar 2022 11:18 Juneau International Alaska Airlines		
						Executed On (Date) at (Place) Signature of Issuing Carrier or its Agent		
						27 of 30 027-9065 8035		

Alert Expeditors Inc.

#416915

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 3-17-22

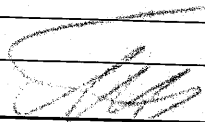
From Turnagain Marine Coast

To SGS Labs Inc

Collect Prepay Advance Charges

Job # JNU PO# AS 9065-8035

Samples

Shipped Signature 

Received By: _____ Total Charge _____ 28 of 30



e-Sample Receipt Form

SGS Workorder #:

1221083

1221083

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	No	Samples received without COC
DOD: Were samples received in COC corresponding coolers?	N/A	
<input checked="" type="checkbox"/> Yes **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	N/A	Cooler ID: Ambient @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	No	Client did not specify which containers needed TCLP metals and RCRA metals.
Were proper containers (type/mass/volume/preservative***)used?	Yes	N/A ***Exemption permitted for metals (e.g.200.8/6020B).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221083001-A	No Preservative Required	OK			
1221083002-A	No Preservative Required	OK			
1221083003-A	No Preservative Required	OK			
1221083004-A	No Preservative Required	OK			
1221083005-A	No Preservative Required	OK			
1221083006-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs**

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL		
AKR000200030	Skagway Ore Terminal Sediment Remediation Project		
CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
Skagway, Alaska			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)	
Skagway, Alaska		Skagway Ore Loader	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
Lead	1500 yards	03/16/2022-04/01/2022	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
TCLP testing for RCRA 8 Metals			
COMMENTS OR OTHER IMPORTANT INFORMATION			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
Columbia Ridge Commercial Landfill & Recycling	18177 Cedar Springs Ln, Arlington, OR 97812
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
White Pass Yukon Route	800-343-7373
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
Waste Management	38208 SE 35th St Washougal, WA 98671 - (360)-507-6613

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.

Tyler Rose

 Name of the Person Requesting Approval (printed)


 Signature

WP & YR/Executive Director

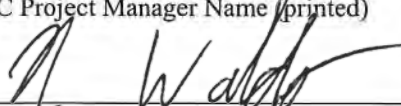
 Title/Association
04/11/2022 **(907)612-0175**

 Date Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Nick Waldo

 DEC Project Manager Name (printed)


 Signature

Environmental Program Manager

 Project Manager Title
4/11/22 **907-465-5270**

 Date Phone Number



Laboratory Report of Analysis

To: Turnagain Marine Construction
9330 Vanguard, Suite 100
Anchorage, AK 99507
907-201-1043

Report Number: **1221265**

Client Project: **Skagway Ore Dock Sediment Rem**

Dear Josh Janssen,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Cameron at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Cameron Murphy
Project Manager
Cameron.Murphy@sgs.com

Date

Print Date: 04/04/2022 3:36:57PM

Case Narrative

SGS Client: **Turnagain Marine Construction**
SGS Project: **1221265**
Project Name/Site: **Skagway Ore Dock Sediment Rem**
Project Contact: **Josh Janssen**

Refer to sample receipt form for information on sample condition.

1221265004(1658479MS) (1658482) MS

6020B - Metals MS recoveries for several analytes do not meet QC criteria. The post digestion spike was successful.

1221265004(1658479MSD) (1658483) MSD

6020B - Metals MSD recoveries for several analytes do not meet QC criteria. The post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 04/04/2022 3:36:58PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
S4 A	1221265001	03/18/2022	03/29/2022	Solid/Soil (Wet Weight)
S4 B	1221265002	03/18/2022	03/29/2022	Solid/Soil (Wet Weight)
S4 C	1221265003	03/18/2022	03/29/2022	Solid/Soil (Wet Weight)
S4 D	1221265004	03/18/2022	03/29/2022	Solid/Soil (Wet Weight)
S4 E	1221265005	03/18/2022	03/29/2022	Solid/Soil (Wet Weight)
S4 F	1221265006	03/18/2022	03/29/2022	Solid/Soil (Wet Weight)

<u>Method</u>	<u>Method Description</u>
SW6020B TCLP	Metals by ICP-MS
SW6020B	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 04/04/2022 3:37:01PM

Detectable Results Summary

Client Sample ID: **S4 A**
 Lab Sample ID: 1221265001
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.473	mg/L
Lead	1.87	mg/L

Client Sample ID: **S4 B**
 Lab Sample ID: 1221265002
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.378	mg/L
Lead	0.276	mg/L

Client Sample ID: **S4 C**
 Lab Sample ID: 1221265003
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.373	mg/L
Lead	0.355	mg/L

Client Sample ID: **S4 D**
 Lab Sample ID: 1221265004
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	1.18	mg/kg
Barium	78.8	mg/kg
Cadmium	1.32	mg/kg
Chromium	5.31	mg/kg
Lead	879	mg/kg
Mercury	0.528	mg/kg
Silver	0.785	mg/kg

Client Sample ID: **S4 E**
 Lab Sample ID: 1221265005
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	2.97	mg/kg
Barium	127	mg/kg
Cadmium	2.32	mg/kg
Chromium	7.29	mg/kg
Lead	1500	mg/kg
Mercury	0.904	mg/kg
Silver	1.29	mg/kg

Client Sample ID: **S4 F**
 Lab Sample ID: 1221265006
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	1.76	mg/kg
Barium	136	mg/kg
Cadmium	1.91	mg/kg
Chromium	7.29	mg/kg
Lead	1330	mg/kg
Mercury	0.810	mg/kg
Silver	1.18	mg/kg



Results of S4 A

Client Sample ID: **S4 A**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221265001
 Lab Project ID: 1221265

Collection Date: 03/18/22 07:30
 Received Date: 03/29/22 15:45
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:33
Barium	0.473	0.150	0.0470	mg/L	25	(<100)	04/04/22 10:33
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/04/22 10:33
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:33
Lead	1.87	0.0500	0.0155	mg/L	25	(<5)	04/04/22 10:33
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/04/22 10:33
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/04/22 10:33
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/04/22 10:33

Batch Information

Analytical Batch: MMS11513
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/04/22 10:33
 Container ID: 1221265001-A

Prep Batch: MXT6215
 Prep Method: SW3010A
 Prep Date/Time: 04/01/22 07:25
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:37:04PM



Results of S4 B

Client Sample ID: **S4 B**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221265002
 Lab Project ID: 1221265

Collection Date: 03/18/22 07:35
 Received Date: 03/29/22 15:45
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:36
Barium	0.378	0.150	0.0470	mg/L	25	(<100)	04/04/22 10:36
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/04/22 10:36
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:36
Lead	0.276	0.0500	0.0155	mg/L	25	(<5)	04/04/22 11:38
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/04/22 10:36
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/04/22 10:36
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/04/22 10:36

Batch Information

Analytical Batch: MMS11513
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/04/22 10:36
 Container ID: 1221265002-A

Prep Batch: MXT6215
 Prep Method: SW3010A
 Prep Date/Time: 04/01/22 07:25
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Analytical Batch: MMS11513
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/04/22 11:38
 Container ID: 1221265002-A

Prep Batch: MXT6215
 Prep Method: SW3010A
 Prep Date/Time: 04/01/22 07:25
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:37:04PM



Results of S4 C

Client Sample ID: **S4 C**
Client Project ID: **Skagway Ore Dock Sediment Rem**
Lab Sample ID: 1221265003
Lab Project ID: 1221265

Collection Date: 03/18/22 07:40
Received Date: 03/29/22 15:45
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:47
Barium	0.373	0.150	0.0470	mg/L	25	(<100)	04/04/22 10:47
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/04/22 10:47
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:47
Lead	0.355	0.0500	0.0155	mg/L	25	(<5)	04/04/22 11:41
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/04/22 10:47
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/04/22 10:47
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/04/22 10:47

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Analyst: DSD
Analytical Date/Time: 04/04/22 10:47
Container ID: 1221265003-A

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 04/01/22 07:25
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Analyst: DSD
Analytical Date/Time: 04/04/22 11:41
Container ID: 1221265003-A

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 04/01/22 07:25
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:37:04PM



Results of S4 D

Client Sample ID: **S4 D**
Client Project ID: **Skagway Ore Dock Sediment Rem**
Lab Sample ID: 1221265004
Lab Project ID: 1221265

Collection Date: 03/18/22 07:45
Received Date: 03/29/22 15:45
Matrix: Solid/Soil (Wet Weight)
Solids (%):80.4
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	1.18	1.00	0.310	mg/kg	10		03/31/22 10:42
Barium	78.8	0.300	0.0940	mg/kg	10		03/31/22 10:42
Cadmium	1.32	0.200	0.0620	mg/kg	10		03/31/22 10:42
Chromium	5.31	1.00	0.310	mg/kg	10		03/31/22 10:42
Lead	879	2.00	0.620	mg/kg	100		03/31/22 12:20
Mercury	0.528	0.300	0.100	mg/kg	10		03/31/22 10:42
Selenium	2.00 U	2.00	0.620	mg/kg	10		03/31/22 10:42
Silver	0.785	0.500	0.150	mg/kg	10		03/31/22 10:42

Batch Information

Analytical Batch: MMS11510
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/31/22 10:42
Container ID: 1221265004-A

Prep Batch: MXX35041
Prep Method: SW3050B
Prep Date/Time: 03/30/22 08:27
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11508
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/31/22 12:20
Container ID: 1221265004-A

Prep Batch: MXX35041
Prep Method: SW3050B
Prep Date/Time: 03/30/22 08:27
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:37:04PM



Results of S4 E

Client Sample ID: **S4 E**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221265005
 Lab Project ID: 1221265

Collection Date: 03/18/22 07:50
 Received Date: 03/29/22 15:45
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):84.9
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.97	0.941	0.292	mg/kg	10		03/31/22 10:56
Barium	127	0.282	0.0884	mg/kg	10		03/31/22 10:56
Cadmium	2.32	0.188	0.0583	mg/kg	10		03/31/22 10:56
Chromium	7.29	0.941	0.292	mg/kg	10		03/31/22 10:56
Lead	1500	1.88	0.583	mg/kg	100		03/31/22 12:41
Mercury	0.904	0.282	0.0941	mg/kg	10		03/31/22 10:56
Selenium	1.88 U	1.88	0.583	mg/kg	10		03/31/22 10:56
Silver	1.29	0.470	0.141	mg/kg	10		03/31/22 10:56

Batch Information

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 03/31/22 10:56
 Container ID: 1221265005-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.063 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/31/22 12:41
 Container ID: 1221265005-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.063 g
 Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:37:04PM



Results of S4 F

Client Sample ID: **S4 F**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221265006
 Lab Project ID: 1221265

Collection Date: 03/18/22 07:55
 Received Date: 03/29/22 15:45
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):82.5
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	1.76	0.955	0.296	mg/kg	10		03/31/22 10:59
Barium	136	0.287	0.0898	mg/kg	10		03/31/22 10:59
Cadmium	1.91	0.191	0.0592	mg/kg	10		03/31/22 10:59
Chromium	7.29	0.955	0.296	mg/kg	10		03/31/22 10:59
Lead	1330	1.91	0.592	mg/kg	100		03/31/22 12:45
Mercury	0.810	0.287	0.0955	mg/kg	10		03/31/22 10:59
Selenium	1.91 U	1.91	0.592	mg/kg	10		03/31/22 10:59
Silver	1.18	0.478	0.143	mg/kg	10		03/31/22 10:59

Batch Information

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 03/31/22 10:59
 Container ID: 1221265006-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.047 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/31/22 12:45
 Container ID: 1221265006-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.047 g
 Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:37:04PM



Method Blank

Blank ID: LB1 for HBN 1833547 [TCLP/1169]
Blank Lab ID: 1658713

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1221265001, 1221265002, 1221265003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.100U	0.200	0.0620	mg/L
Barium	0.0274J	0.0600	0.0188	mg/L
Cadmium	0.0200U	0.0400	0.0120	mg/L
Chromium	0.100U	0.200	0.0620	mg/L
Lead	0.0100U	0.0200	0.00620	mg/L
Mercury	0.00500U	0.0100	0.00360	mg/L
Selenium	0.200U	0.400	0.124	mg/L
Silver	0.0200U	0.0400	0.0124	mg/L

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/4/2022 10:19:15AM

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 4/1/2022 7:25:22AM
Prep Initial Wt./Vol.: 6.25 mL
Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:37:06PM



Method Blank

Blank ID: MB for HBN 1833648 [MXT/6215]
Blank Lab ID: 1658851

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1221265001, 1221265002, 1221265003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0250U	0.0500	0.0155	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.0250U	0.0500	0.0155	mg/L
Lead	0.00250U	0.00500	0.00155	mg/L
Mercury	0.00125U	0.00250	0.000900	mg/L
Selenium	0.0500U	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/4/2022 10:13:34AM

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 4/1/2022 7:25:22AM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:37:06PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1221265 [MXT6215]
 Blank Spike Lab ID: 1658852
 Date Analyzed: 04/04/2022 10:16

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221265001, 1221265002, 1221265003

Results by SW6020B TCLP

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1	0.965	97	(84-116)
Barium	1	0.967	97	(86-114)
Cadmium	0.1	0.0971	97	(87-115)
Chromium	0.4	0.380	95	(85-116)
Lead	1	0.986	99	(88-115)
Mercury	0.01	0.00990	99	(70-124)
Selenium	1	0.975	98	(80-120)
Silver	0.1	0.0978	98	(85-116)

Batch Information

Analytical Batch: **MMS11513**
 Analytical Method: **SW6020B TCLP**
 Instrument: **P7 Agilent 7800**
 Analyst: **DSD**

Prep Batch: **MXT6215**
 Prep Method: **SW3010A**
 Prep Date/Time: **04/01/2022 07:25**
 Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1658850
MS Sample ID: 1658853 MS
MSD Sample ID: 1658854 MSD

Analysis Date: 04/04/2022 10:22
Analysis Date: 04/04/2022 10:24
Analysis Date: 04/04/2022 10:27
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221265001, 1221265002, 1221265003

Results by SW6020B TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.250U	10.0	9.7	97	10.0	9.69	97	84-116	0.08	(< 20)
Barium	0.110J	10.0	9.73	96	10.0	9.67	96	86-114	0.67	(< 20)
Cadmium	0.0500U	1.00	.997	100	1.00	0.979	98	87-115	1.79	(< 20)
Chromium	0.250U	4.00	3.8	95	4.00	3.73	93	85-116	1.85	(< 20)
Lead	1.22	10.0	11.2	100	10.0	11.1	99	88-115	0.96	(< 20)
Mercury	0.0125U	0.100	.1	100	0.100	0.101	101	70-124	0.24	(< 20)
Selenium	0.500U	10.0	9.48	95	10.0	9.71	97	80-120	2.43	(< 20)
Silver	0.0500U	1.00	.962	96	1.00	0.953	95	85-116	1.03	(< 20)

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/4/2022 10:24:56AM

Prep Batch: MXT6215
Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
Prep Date/Time: 4/1/2022 7:25:22AM
Prep Initial Wt./Vol.: 2.50mL
Prep Extract Vol: 25.00mL

Print Date: 04/04/2022 3:37:09PM



Method Blank

Blank ID: MB for HBN 1833276 [MXX/35041]
Blank Lab ID: 1658480

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221265004, 1221265005, 1221265006

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.500U	1.00	0.310	mg/kg
Barium	0.150U	0.300	0.0940	mg/kg
Cadmium	0.100U	0.200	0.0620	mg/kg
Chromium	0.500U	1.00	0.310	mg/kg
Lead	0.100U	0.200	0.0620	mg/kg
Mercury	0.150U	0.300	0.100	mg/kg
Selenium	1.00U	2.00	0.620	mg/kg
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11510
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/31/2022 10:36:00AM

Prep Batch: MXX35041
Prep Method: SW3050B
Prep Date/Time: 3/30/2022 8:27:30AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:37:11PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1221265 [MXX35041]

Blank Spike Lab ID: 1658481

Date Analyzed: 03/31/2022 10:39

Matrix: Soil/Solid (dry weight)

QC for Samples: 1221265004, 1221265005, 1221265006

Results by SW6020B

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Arsenic	50	50.9	102	(82-118)
Barium	50	52.1	104	(86-116)
Cadmium	5	5.14	103	(84-116)
Chromium	20	20.8	104	(83-119)
Lead	50	51.9	104	(84-118)
Mercury	0.5	0.505	101	(74-126)
Selenium	50	50.3	101	(80-119)
Silver	5	5.26	105	(83-118)

Batch Information

Analytical Batch: **MMS11510**

Analytical Method: **SW6020B**

Instrument: **P7 Agilent 7800**

Analyst: **DSD**

Prep Batch: **MXX35041**

Prep Method: **SW3050B**

Prep Date/Time: **03/30/2022 08:27**

Spike Init Wt./Vol.: 50 mg/kg Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1658479
 MS Sample ID: 1658482 MS
 MSD Sample ID: 1658483 MSD

Analysis Date: 03/31/2022 12:20
 Analysis Date: 03/31/2022 12:24
 Analysis Date: 03/31/2022 12:28
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1221265004, 1221265005, 1221265006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	879	46.8	1300	901 *	45.9	1510	1380 *	84-118	15.00	(< 20)
Arsenic	1.18	46.8	49.1	102	45.9	48.0	102	82-118	2.33	(< 20)
Barium	78.8	46.8	178	212 *	45.9	207	279 *	86-116	14.90	(< 20)
Cadmium	1.32	4.68	6.75	116	4.59	6.84	120 *	84-116	1.21	(< 20)
Chromium	5.31	18.7	26.2	112	18.3	28.7	127 *	83-119	8.91	(< 20)
Selenium	1.00U	46.8	46.3	99	45.9	44.2	96	80-119	4.58	(< 20)
Silver	0.785	4.68	5.82	108	4.59	5.98	113	83-118	2.72	(< 20)

Batch Information

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DMM
 Analytical Date/Time: 3/31/2022 12:24:00PM

Prep Batch: MXX35041
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/30/2022 8:27:30AM
 Prep Initial Wt./Vol.: 1.07g
 Prep Extract Vol: 50.00mL

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 3/31/2022 10:44:00AM

Prep Batch: MXX35041
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/30/2022 8:27:30AM
 Prep Initial Wt./Vol.: 1.07g
 Prep Extract Vol: 50.00mL

Bench Spike Summary

Original Sample ID: 1658479
 MS Sample ID: 1658484 BND
 MSD Sample ID:

Analysis Date: 03/31/2022 12:20
 Analysis Date: 03/31/2022 12:32
 Analysis Date:
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1221265004, 1221265005, 1221265006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	879	1250	2180	104			75-125			
Barium	78.8	250	281	81			75-125			
Cadmium	1.32	125	141	112			75-125			
Chromium	5.31	125	143	110			75-125			

Batch Information

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DMM
 Analytical Date/Time: 3/31/2022 12:32:00PM

Prep Batch: MXX35041
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/30/2022 8:27:30AM
 Prep Initial Wt./Vol.: 1.00g
 Prep Extract Vol: 50.00mL

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 3/31/2022 10:50:00AM

Prep Batch: MXX35041
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/30/2022 8:27:30AM
 Prep Initial Wt./Vol.: 1.00g
 Prep Extract Vol: 50.00mL

Print Date: 04/04/2022 3:37:14PM



Method Blank

Blank ID: MB for HBN 1833540 [SPT/11492]
Blank Lab ID: 1658685

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221265004, 1221265005, 1221265006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	98.6			%

Batch Information

Analytical Batch: SPT11492
Analytical Method: SM21 2540G
Instrument:
Analyst: DBR
Analytical Date/Time: 3/30/2022 5:05:00PM

Print Date: 04/04/2022 3:37:15PM

Duplicate Sample Summary

Original Sample ID: 1221265005

Duplicate Sample ID: 1658686

QC for Samples:

1221265004, 1221265005, 1221265006

Analysis Date: 03/30/2022 17:05

Matrix: Solid/Soil (Wet Weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	84.9	84.3	%	0.79	(< 15)

Batch Information

Analytical Batch: SPT11492

Analytical Method: SM21 2540G

Instrument:


Analyst: DBR

Print Date: 04/04/2022 3:37:16PM



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CHAIN OF CUSTODY RECORD

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CLIENT: Turnagain Marine Construction					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u> 1 </u> of <u> 1 </u>						
CONTACT: Chris Nielsen PHONE #: 907-891-5499					Section 3		Preservative														
Section 1	PROJECT NAME: Skagway Ore Dock Sediment Remediation				PROJECT/ PWSID/ PERMIT#: 22-001		CONTAINERS	Comp Grab MI (Multi-incremental)	TCLP 3/dry	Total RCRA 2/hr	Analysis 1221265										NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS
	REPORTS TO: Chris Nielsen				E-MAIL: cnielsen@turnagain.us																
	INVOICE TO: Turnagain Marine Construction				QUOTE #: 378573																
					P.O. #: 22-001																
Section 2	RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	Grab	x	x											REMARKS/LOC ID	
	1A	S4 A	3/18/2022	7:30AM		1	Grab	x	x												
	2A	S4 B	3/18/2022	7:35AM		1	Grab	x	x												
	3A	S4 C	3/18/2022	7:40AM		1	Grab	x	x												
	4A	S4 D	3/18/2022	7:45AM		1	Grab	x	x												
	5A	S4 E	3/18/2022	7:50AM		1	Grab	x	x												
	6A	S4 F	3/18/2022	7:55AM		1	Grab	x	x												
Section 5	Relinquished By: (1) Chris Nielsen		Date 3/29/2022	Time 3:30PM	Received By:			Section 4		DOD Project? Yes No		Data Deliverable Requirements: Level 2									
	Relinquished By: (2)		Date	Time	Received By:			Requested Turnaround Time and/or Special Instructions: RUSH													
	Relinquished By: (3)		Date	Time	Received By:			Temp Blank °C: or Ambient <input checked="" type="checkbox"/>					Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT								
	Relinquished By: (4)		Date 3/29/22	Time 15:45	Received For Laboratory By: <i>[Signature]</i>			Delivery Method: Hand Delivery <input checked="" type="checkbox"/> Commercial Delivery <input type="checkbox"/>													

<http://www.sgs.com/terms-and-conditions>

Characterization of TCLP Samples for LIMS Login

Date Characterized: 3/29/22

Analyst: DBV

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
S4A	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S4B	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
S4C	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / <u>NA</u> If biphasic, was there only one layer with sufficient sample? Yes / No / <u>NA</u> Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.



e-Sample Receipt Form

SGS Workorder #:

1221265

1221265

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below																																			
Chain of Custody / Temperature Requirements																																					
Were Custody Seals intact? Note # & location	N/A	Yes Exemption permitted if sampler hand carries/delivers.																																			
COC accompanied samples?	Yes																																				
DOD: Were samples received in COC corresponding coolers?	N/A																																				
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required																																					
Temperature blank compliant* (i.e., 0-6 °C after CF)?	N/A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Cooler ID:</td> <td style="width: 150px;"></td> <td>@</td> <td style="background-color: #cccccc;">Ambient</td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td style="background-color: #cccccc;"></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td style="background-color: #cccccc;"></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td style="background-color: #cccccc;"></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> <tr> <td>Cooler ID:</td> <td></td> <td>@</td> <td style="background-color: #cccccc;"></td> <td>°C</td> <td>Therm. ID:</td> <td></td> </tr> </table>	Cooler ID:		@	Ambient	°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:		Cooler ID:		@		°C	Therm. ID:	
Cooler ID:		@	Ambient	°C	Therm. ID:																																
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Cooler ID:		@		°C	Therm. ID:																																
Cooler ID:		@		°C	Therm. ID:																																
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.																																					
*If >6°C, were samples collected <8 hours ago?																																					
	N/A																																				
If <0°C, were sample containers ice free?																																					
	N/A																																				
<p>Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.</p>																																					
Holding Time / Documentation / Sample Condition Requirements																																					
Note: Refer to form F-083 "Sample Guide" for specific holding times.																																					
Were samples received within holding time?	Yes																																				
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	Yes																																				
Note: If times differ <1hr, record details & login per COC. *Note: If sample information on containers differs from COC, SGS will default to COC information																																					
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	No	Analysis not clearly stated on CoC for each container. Client contacted. Continued with login per PM.																																			
Were proper containers (type/mass/volume/preservative***)used?	Yes	Yes ***Exemption permitted for metals (e.g.200.8/6020B).																																			
Volatile / LL-Hg Requirements																																					
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A																																				
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A																																				
Were all soil VOAs field extracted with MeOH+BFB?	N/A																																				
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.																																					
Additional notes (if applicable):																																					



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221265001-A	No Preservative Required	OK			
1221265002-A	No Preservative Required	OK			
1221265003-A	No Preservative Required	OK			
1221265004-A	No Preservative Required	OK			
1221265005-A	No Preservative Required	OK			
1221265006-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Laboratory Report of Analysis

To: Turnagain Marine Construction
9330 Vanguard, Suite 100
Anchorage, AK 99507
907-201-1043

Report Number: **1221267**

Client Project: **Skagway Ore Dock Sediment Rem**

Dear Josh Janssen,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Cameron at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Cameron Murphy
Project Manager
Cameron.Murphy@sgs.com

Date

Print Date: 04/04/2022 3:39:17PM

Case Narrative

SGS Client: **Turnagain Marine Construction**
SGS Project: **1221267**
Project Name/Site: **Skagway Ore Dock Sediment Rem**
Project Contact: **Josh Janssen**

Refer to sample receipt form for information on sample condition.

1221265004(1658479MS) (1658482) MS

6020B - Metals MS recoveries for several analytes do not meet QC criteria. The post digestion spike was successful.

1221265004(1658479MSD) (1658483) MSD

6020B - Metals MSD recoveries for several analytes do not meet QC criteria. The post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 04/04/2022 3:39:18PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
S5 A	1221267001	03/20/2022	03/29/2022	Solid/Soil (Wet Weight)
S5 B	1221267002	03/20/2022	03/29/2022	Solid/Soil (Wet Weight)
S5 C	1221267003	03/20/2022	03/29/2022	Solid/Soil (Wet Weight)
S5 D	1221267004	03/20/2022	03/29/2022	Solid/Soil (Wet Weight)
S5 E	1221267005	03/20/2022	03/29/2022	Solid/Soil (Wet Weight)
S5 F	1221267006	03/20/2022	03/29/2022	Solid/Soil (Wet Weight)

<u>Method</u>	<u>Method Description</u>
SW6020B TCLP	Metals by ICP-MS
SW6020B	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 04/04/2022 3:39:20PM

Detectable Results Summary

Client Sample ID: **S5 A**
 Lab Sample ID: 1221267001

TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	0.163	mg/L

Client Sample ID: **S5 B**
 Lab Sample ID: 1221267002

TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.430	mg/L
Lead	0.753	mg/L

Client Sample ID: **S5 C**
 Lab Sample ID: 1221267003

TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.409	mg/L
Lead	0.415	mg/L

Client Sample ID: **S5 D**
 Lab Sample ID: 1221267004

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	0.203	mg/kg
Barium	12.5	mg/kg
Cadmium	0.243	mg/kg
Chromium	0.683	mg/kg
Lead	1680	mg/kg
Mercury	0.0983	mg/kg
Silver	0.142	mg/kg

Client Sample ID: **S5 E**
 Lab Sample ID: 1221267005

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	0.211	mg/kg
Barium	13.3	mg/kg
Cadmium	0.207	mg/kg
Chromium	0.771	mg/kg
Lead	1320	mg/kg
Mercury	0.0841	mg/kg
Silver	0.115	mg/kg

Client Sample ID: **S5 F**
 Lab Sample ID: 1221267006

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	0.156	mg/kg
Barium	11.8	mg/kg
Cadmium	0.157	mg/kg
Chromium	0.699	mg/kg
Lead	972	mg/kg
Mercury	0.0631	mg/kg
Silver	0.0910	mg/kg



Results of S5 A

Client Sample ID: **S5 A**
Client Project ID: **Skagway Ore Dock Sediment Rem**
Lab Sample ID: 1221267001
Lab Project ID: 1221267

Collection Date: 03/20/22 14:00
Received Date: 03/29/22 16:32
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:50
Barium	0.150 U	0.150	0.0470	mg/L	25	(<100)	04/04/22 10:50
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/04/22 10:50
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:50
Lead	0.163	0.0500	0.0155	mg/L	25	(<5)	04/04/22 11:44
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/04/22 10:50
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/04/22 10:50
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/04/22 10:50

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Analyst: DSD
Analytical Date/Time: 04/04/22 10:50
Container ID: 1221267001-A

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 04/01/22 07:25
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Analyst: DSD
Analytical Date/Time: 04/04/22 11:44
Container ID: 1221267001-A

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 04/01/22 07:25
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:39:23PM



Results of S5 B

Client Sample ID: **S5 B**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221267002
 Lab Project ID: 1221267

Collection Date: 03/20/22 14:05
 Received Date: 03/29/22 16:33
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:53
Barium	0.430	0.150	0.0470	mg/L	25	(<100)	04/04/22 10:53
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/04/22 10:53
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:53
Lead	0.753	0.0500	0.0155	mg/L	25	(<5)	04/04/22 10:53
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/04/22 10:53
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/04/22 10:53
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/04/22 10:53

Batch Information

Analytical Batch: MMS11513
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/04/22 10:53
 Container ID: 1221267002-A

Prep Batch: MXT6215
 Prep Method: SW3010A
 Prep Date/Time: 04/01/22 07:25
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:39:23PM



Results of S5 C

Client Sample ID: **S5 C**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221267003
 Lab Project ID: 1221267

Collection Date: 03/20/22 14:10
 Received Date: 03/29/22 16:33
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:56
Barium	0.409	0.150	0.0470	mg/L	25	(<100)	04/04/22 10:56
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/04/22 10:56
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/04/22 10:56
Lead	0.415	0.0500	0.0155	mg/L	25	(<5)	04/04/22 10:56
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/04/22 10:56
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/04/22 10:56
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/04/22 10:56

Batch Information

Analytical Batch: MMS11513
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/04/22 10:56
 Container ID: 1221267003-A

Prep Batch: MXT6215
 Prep Method: SW3010A
 Prep Date/Time: 04/01/22 07:25
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:39:23PM



Results of S5 D

Client Sample ID: **S5 D**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221267004
 Lab Project ID: 1221267

Collection Date: 03/20/22 14:15
 Received Date: 03/29/22 16:33
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):81.9
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.203	0.0932	0.0289	mg/kg	1		03/31/22 11:10
Barium	12.5	0.0280	0.00876	mg/kg	1		03/31/22 11:10
Cadmium	0.243	0.0186	0.00578	mg/kg	1		03/31/22 11:10
Chromium	0.683	0.0932	0.0289	mg/kg	1		03/31/22 11:10
Lead	1680	1.86	0.578	mg/kg	100		03/31/22 12:49
Mercury	0.0983	0.0280	0.00932	mg/kg	1		03/31/22 11:10
Selenium	0.186 U	0.186	0.0578	mg/kg	1		03/31/22 11:10
Silver	0.142	0.0466	0.0140	mg/kg	1		03/31/22 11:10

Batch Information

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 03/31/22 11:10
 Container ID: 1221267004-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.073 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/31/22 12:49
 Container ID: 1221267004-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.073 g
 Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:39:23PM



Results of S5 E

Client Sample ID: **S5 E**
Client Project ID: **Skagway Ore Dock Sediment Rem**
Lab Sample ID: 1221267005
Lab Project ID: 1221267

Collection Date: 03/20/22 14:20
Received Date: 03/29/22 16:33
Matrix: Solid/Soil (Wet Weight)
Solids (%):83.8
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.211	0.0976	0.0302	mg/kg	1		03/31/22 11:13
Barium	13.3	0.0293	0.00917	mg/kg	1		03/31/22 11:13
Cadmium	0.207	0.0195	0.00605	mg/kg	1		03/31/22 11:13
Chromium	0.771	0.0976	0.0302	mg/kg	1		03/31/22 11:13
Lead	1320	1.95	0.605	mg/kg	100		03/31/22 12:53
Mercury	0.0841	0.0293	0.00976	mg/kg	1		03/31/22 11:13
Selenium	0.195 U	0.195	0.0605	mg/kg	1		03/31/22 11:13
Silver	0.115	0.0488	0.0146	mg/kg	1		03/31/22 11:13

Batch Information

Analytical Batch: MMS11510
Analytical Method: SW6020B
Analyst: DSD
Analytical Date/Time: 03/31/22 11:13
Container ID: 1221267005-A

Prep Batch: MXX35041
Prep Method: SW3050B
Prep Date/Time: 03/30/22 08:27
Prep Initial Wt./Vol.: 1.025 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS11508
Analytical Method: SW6020B
Analyst: DMM
Analytical Date/Time: 03/31/22 12:53
Container ID: 1221267005-A

Prep Batch: MXX35041
Prep Method: SW3050B
Prep Date/Time: 03/30/22 08:27
Prep Initial Wt./Vol.: 1.025 g
Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:39:23PM



Results of S5 F

Client Sample ID: **S5 F**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221267006
 Lab Project ID: 1221267

Collection Date: 03/20/22 14:25
 Received Date: 03/29/22 16:33
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):83.6
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.156	0.0943	0.0292	mg/kg	1		03/31/22 11:16
Barium	11.8	0.0283	0.00886	mg/kg	1		03/31/22 11:16
Cadmium	0.157	0.0189	0.00584	mg/kg	1		03/31/22 11:16
Chromium	0.699	0.0943	0.0292	mg/kg	1		03/31/22 11:16
Lead	972	1.89	0.584	mg/kg	100		03/31/22 13:10
Mercury	0.0631	0.0283	0.00943	mg/kg	1		03/31/22 11:16
Selenium	0.189 U	0.189	0.0584	mg/kg	1		03/31/22 11:16
Silver	0.0910	0.0471	0.0141	mg/kg	1		03/31/22 11:16

Batch Information

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 03/31/22 11:16
 Container ID: 1221267006-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.061 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Analyst: DMM
 Analytical Date/Time: 03/31/22 13:10
 Container ID: 1221267006-A

Prep Batch: MXX35041
 Prep Method: SW3050B
 Prep Date/Time: 03/30/22 08:27
 Prep Initial Wt./Vol.: 1.061 g
 Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:39:23PM



Method Blank

Blank ID: LB1 for HBN 1833547 [TCLP/1169]
Blank Lab ID: 1658713

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1221267001, 1221267002, 1221267003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.100U	0.200	0.0620	mg/L
Barium	0.0274J	0.0600	0.0188	mg/L
Cadmium	0.0200U	0.0400	0.0120	mg/L
Chromium	0.100U	0.200	0.0620	mg/L
Lead	0.0100U	0.0200	0.00620	mg/L
Mercury	0.00500U	0.0100	0.00360	mg/L
Selenium	0.200U	0.400	0.124	mg/L
Silver	0.0200U	0.0400	0.0124	mg/L

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/4/2022 10:19:15AM

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 4/1/2022 7:25:22AM
Prep Initial Wt./Vol.: 6.25 mL
Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:39:25PM



Method Blank

Blank ID: MB for HBN 1833648 [MXT/6215]
Blank Lab ID: 1658851

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1221267001, 1221267002, 1221267003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0250U	0.0500	0.0155	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.0250U	0.0500	0.0155	mg/L
Lead	0.00250U	0.00500	0.00155	mg/L
Mercury	0.00125U	0.00250	0.000900	mg/L
Selenium	0.0500U	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS11513
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/4/2022 10:13:34AM

Prep Batch: MXT6215
Prep Method: SW3010A
Prep Date/Time: 4/1/2022 7:25:22AM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 04/04/2022 3:39:25PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1221267 [MXT6215]
 Blank Spike Lab ID: 1658852
 Date Analyzed: 04/04/2022 10:16

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221267001, 1221267002, 1221267003

Results by SW6020B TCLP

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1	0.965	97	(84-116)
Barium	1	0.967	97	(86-114)
Cadmium	0.1	0.0971	97	(87-115)
Chromium	0.4	0.380	95	(85-116)
Lead	1	0.986	99	(88-115)
Mercury	0.01	0.00990	99	(70-124)
Selenium	1	0.975	98	(80-120)
Silver	0.1	0.0978	98	(85-116)

Batch Information

Analytical Batch: **MMS11513**
 Analytical Method: **SW6020B TCLP**
 Instrument: **P7 Agilent 7800**
 Analyst: **DSD**

Prep Batch: **MXT6215**
 Prep Method: **SW3010A**
 Prep Date/Time: **04/01/2022 07:25**
 Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1658850
 MS Sample ID: 1658853 MS
 MSD Sample ID: 1658854 MSD

Analysis Date: 04/04/2022 10:22
 Analysis Date: 04/04/2022 10:24
 Analysis Date: 04/04/2022 10:27
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221267001, 1221267002, 1221267003

Results by SW6020B TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.250U	10.0	9.7	97	10.0	9.69	97	84-116	0.08	(< 20)
Barium	0.110J	10.0	9.73	96	10.0	9.67	96	86-114	0.67	(< 20)
Cadmium	0.0500U	1.00	.997	100	1.00	0.979	98	87-115	1.79	(< 20)
Chromium	0.250U	4.00	3.8	95	4.00	3.73	93	85-116	1.85	(< 20)
Lead	1.22	10.0	11.2	100	10.0	11.1	99	88-115	0.96	(< 20)
Mercury	0.0125U	0.100	.1	100	0.100	0.101	101	70-124	0.24	(< 20)
Selenium	0.500U	10.0	9.48	95	10.0	9.71	97	80-120	2.43	(< 20)
Silver	0.0500U	1.00	.962	96	1.00	0.953	95	85-116	1.03	(< 20)

Batch Information

Analytical Batch: MMS11513
 Analytical Method: SW6020B TCLP
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 4/4/2022 10:24:56AM

Prep Batch: MXT6215
 Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
 Prep Date/Time: 4/1/2022 7:25:22AM
 Prep Initial Wt./Vol.: 2.50mL
 Prep Extract Vol: 25.00mL



Method Blank

Blank ID: MB for HBN 1833276 [MXX/35041]
Blank Lab ID: 1658480

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221267004, 1221267005, 1221267006

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.500U	1.00	0.310	mg/kg
Barium	0.150U	0.300	0.0940	mg/kg
Cadmium	0.100U	0.200	0.0620	mg/kg
Chromium	0.500U	1.00	0.310	mg/kg
Lead	0.100U	0.200	0.0620	mg/kg
Mercury	0.150U	0.300	0.100	mg/kg
Selenium	1.00U	2.00	0.620	mg/kg
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11510
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/31/2022 10:36:00AM

Prep Batch: MXX35041
Prep Method: SW3050B
Prep Date/Time: 3/30/2022 8:27:30AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 04/04/2022 3:39:29PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1221267 [MXX35041]

Blank Spike Lab ID: 1658481

Date Analyzed: 03/31/2022 10:39

Matrix: Soil/Solid (dry weight)

QC for Samples: 1221267004, 1221267005, 1221267006

Results by SW6020B

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Arsenic	50	50.9	102	(82-118)
Barium	50	52.1	104	(86-116)
Cadmium	5	5.14	103	(84-116)
Chromium	20	20.8	104	(83-119)
Lead	50	51.9	104	(84-118)
Mercury	0.5	0.505	101	(74-126)
Selenium	50	50.3	101	(80-119)
Silver	5	5.26	105	(83-118)

Batch Information

Analytical Batch: **MMS11510**

Analytical Method: **SW6020B**

Instrument: **P7 Agilent 7800**

Analyst: **DSD**

Prep Batch: **MXX35041**

Prep Method: **SW3050B**

Prep Date/Time: **03/30/2022 08:27**

Spike Init Wt./Vol.: 50 mg/kg Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1658479
 MS Sample ID: 1658482 MS
 MSD Sample ID: 1658483 MSD

Analysis Date: 03/31/2022 12:20
 Analysis Date: 03/31/2022 12:24
 Analysis Date: 03/31/2022 12:28
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1221267004, 1221267005, 1221267006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	879	46.8	1300	901 *	45.9	1510	1380 *	84-118	15.00	(< 20)
Arsenic	1.18	46.8	49.1	102	45.9	48.0	102	82-118	2.33	(< 20)
Barium	78.8	46.8	178	212 *	45.9	207	279 *	86-116	14.90	(< 20)
Cadmium	1.32	4.68	6.75	116	4.59	6.84	120 *	84-116	1.21	(< 20)
Chromium	5.31	18.7	26.2	112	18.3	28.7	127 *	83-119	8.91	(< 20)
Selenium	1.00U	46.8	46.3	99	45.9	44.2	96	80-119	4.58	(< 20)
Silver	0.785	4.68	5.82	108	4.59	5.98	113	83-118	2.72	(< 20)

Batch Information

Analytical Batch: MMS11508
 Analytical Method: SW6020B
 Instrument: Perkin Elmer Nexlon P5
 Analyst: DMM
 Analytical Date/Time: 3/31/2022 12:24:00PM

Prep Batch: MXX35041
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/30/2022 8:27:30AM
 Prep Initial Wt./Vol.: 1.07g
 Prep Extract Vol: 50.00mL

Analytical Batch: MMS11510
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 3/31/2022 10:44:00AM

Prep Batch: MXX35041
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 3/30/2022 8:27:30AM
 Prep Initial Wt./Vol.: 1.07g
 Prep Extract Vol: 50.00mL



Bench Spike Summary

Original Sample ID: 1658479
MS Sample ID: 1658484 BND
MSD Sample ID:

Analysis Date: 03/31/2022 12:20
Analysis Date: 03/31/2022 12:32
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1221267004, 1221267005, 1221267006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	879	1250	2180	104			75-125			
Barium	78.8	250	281	81			75-125			
Cadmium	1.32	125	141	112			75-125			
Chromium	5.31	125	143	110			75-125			

Batch Information

Analytical Batch: MMS11508
Analytical Method: SW6020B
Instrument: Perkin Elmer Nexlon P5
Analyst: DMM
Analytical Date/Time: 3/31/2022 12:32:00PM

Prep Batch: MXX35041
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/30/2022 8:27:30AM
Prep Initial Wt./Vol.: 1.00g
Prep Extract Vol: 50.00mL

Analytical Batch: MMS11510
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 3/31/2022 10:50:00AM

Prep Batch: MXX35041
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 3/30/2022 8:27:30AM
Prep Initial Wt./Vol.: 1.00g
Prep Extract Vol: 50.00mL

Print Date: 04/04/2022 3:39:32PM



Method Blank

Blank ID: MB for HBN 1833540 [SPT/11492]
Blank Lab ID: 1658685

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221267004, 1221267005, 1221267006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	98.6			%

Batch Information

Analytical Batch: SPT11492
Analytical Method: SM21 2540G
Instrument:
Analyst: DBR
Analytical Date/Time: 3/30/2022 5:05:00PM

Print Date: 04/04/2022 3:39:34PM



Duplicate Sample Summary

Original Sample ID: 1221265005

Duplicate Sample ID: 1658686

QC for Samples:

1221267004, 1221267005, 1221267006

Analysis Date: 03/30/2022 17:05

Matrix: Solid/Soil (Wet Weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	84.9	84.3	%	0.79	(< 15)

Batch Information

Analytical Batch: SPT11492

Analytical Method: SM21 2540G

Instrument:

Analyst: DBR

Print Date: 04/04/2022 3:39:35PM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1221267



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CLIENT: Turnagain Marine Construction					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u>1</u> of <u>1</u>																																																																																																																																			
CONTACT: Chris Nielsen PHONE #: 907-891-5499					Section 3		Preservative																																																																																																																																											
PROJECT NAME: Skagway Ore Dock Sediment Remediation PROJECT/ PWSID/ PERMIT#: 22-001					# C O N T A I N E R S	Comp Grab MI (Multi-incremental)	Analysis*										NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS																																																																																																																																	
REPORTS TO: Chris Nielsen E-MAIL: cnielsen@turnagain.us							TCLP 3-day Total RCRA 24-hr																																																																																																																																											
INVOICE TO: Turnagain Marine Construction QUOTE #: 376973							REMARKS/LOC ID																																																																																																																																											
P.O. #: 22-001							(Empty grid for analysis results)																																																																																																																																											
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">RESERVED for lab use</th> <th style="width:15%;">SAMPLE IDENTIFICATION</th> <th style="width:10%;">DATE mm/dd/yy</th> <th style="width:10%;">TIME HH:MM</th> <th style="width:10%;">MATRIX/ MATRIX CODE</th> <th style="width:5%;">#</th> <th style="width:5%;">Grab</th> <th style="width:5%;">TCLP 3-day</th> <th style="width:5%;">Total RCRA 24-hr</th> <th colspan="10"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1A</td> <td>S5 A</td> <td>3/20/2022</td> <td>2:00PM</td> <td></td> <td>1</td> <td>Grab</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td colspan="10"></td> </tr> <tr> <td style="text-align: center;">2A</td> <td>S5 B</td> <td>3/20/2022</td> <td>2:05PM</td> <td></td> <td>1</td> <td>Grab</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td colspan="10"></td> </tr> <tr> <td style="text-align: center;">3A</td> <td>S5 C</td> <td>3/20/2022</td> <td>2:10PM</td> <td></td> <td>1</td> <td>Grab</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td colspan="10"></td> </tr> <tr> <td style="text-align: center;">4A</td> <td>S5 D</td> <td>3/20/2022</td> <td>2:15PM</td> <td></td> <td>1</td> <td>Grab</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td colspan="10"></td> </tr> <tr> <td style="text-align: center;">5A</td> <td>S5 E</td> <td>3/20/2022</td> <td>2:20PM</td> <td></td> <td>1</td> <td>Grab</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td colspan="10"></td> </tr> <tr> <td style="text-align: center;">6A</td> <td>S5 F</td> <td>3/20/2022</td> <td>2:25PM</td> <td></td> <td>1</td> <td>Grab</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td colspan="10"></td> </tr> </tbody> </table>												RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	Grab	TCLP 3-day	Total RCRA 24-hr											1A	S5 A	3/20/2022	2:00PM		1	Grab	x	x											2A	S5 B	3/20/2022	2:05PM		1	Grab	x	x											3A	S5 C	3/20/2022	2:10PM		1	Grab	x	x											4A	S5 D	3/20/2022	2:15PM		1	Grab	x	x											5A	S5 E	3/20/2022	2:20PM		1	Grab	x	x											6A	S5 F	3/20/2022	2:25PM		1	Grab	x	x											Section 4 DOD Project? Yes No Data Deliverable Requirements:	
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	Grab	TCLP 3-day	Total RCRA 24-hr																																																																																																																																										
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6A	S5 F	3/20/2022	2:25PM		1	Grab	x	x																																																																																																																																										
Relinquished By: (1) Chris Nielsen Date: 3/29/2022 Time: 3:30PM Received By:					Cooler ID: _____ Level 2																																																																																																																																													
Relinquished By: (2) Date: Time: Received By:					Requested Turnaround Time and/or Special Instructions: <div style="text-align: center; font-weight: bold;">RUSH</div>																																																																																																																																													
Relinquished By: (3) Date: Time: Received By:					Temp Blank °C: _____ or Ambient []					Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT																																																																																																																																								
Relinquished By: (4) Date: Time: Received For Laboratory By:					Delivery Method: Hand Delivery [] Commerical Delivery []																																																																																																																																													

<http://www.sgs.com/terms-and-conditions>



Characterization of TCLP Samples for LIMS Login

Date Characterized: 03/29/22

Analyst: DBR

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
S5A	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	<p>If multiple jars were received, were they consistent? Yes / No / <u>NA</u></p> <p>If biphasic, was there <u>only</u> one layer with sufficient sample? Yes / No / <u>NA</u></p> <p>Sample description/other observations: <u>soil</u></p> <p>**Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.</p>
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	<u>100</u>		
S5B	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	<p>If multiple jars were received, were they consistent? Yes / No / <u>NA</u></p> <p>If biphasic, was there <u>only</u> one layer with sufficient sample? Yes / No / <u>NA</u></p> <p>Sample description/other observations: <u>soil</u></p> <p>**Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.</p>
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	<u>100</u>		
S5C	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	<p>If multiple jars were received, were they consistent? Yes / No / <u>NA</u></p> <p>If biphasic, was there <u>only</u> one layer with sufficient sample? Yes / No / <u>NA</u></p> <p>Sample description/other observations: <u>soil</u></p> <p>**Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.</p>
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	<u>100</u>		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	<p>If multiple jars were received, were they consistent? Yes / No / NA</p> <p>If biphasic, was there <u>only</u> one layer with sufficient sample? Yes / No / NA</p> <p>Sample description/other observations:</p> <p>**Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.</p>
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	<p>If multiple jars were received, were they consistent? Yes / No / NA</p> <p>If biphasic, was there <u>only</u> one layer with sufficient sample? Yes / No / NA</p> <p>Sample description/other observations:</p> <p>**Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.</p>
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F078 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.



e-Sample Receipt Form

SGS Workorder #:

1221267

1221267

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below			
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.		
Were Custody Seals intact? Note # & location	N/A					
COC accompanied samples?	Yes					
DOD: Were samples received in COC corresponding coolers?	N/A					
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required Temperature blank compliant* (i.e., 0-6 °C after CF)?		N/A	Cooler ID:	@	Ambient	°C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID:	@		°C Therm. ID:
			Cooler ID:	@		°C Therm. ID:
			Cooler ID:	@		°C Therm. ID:
			Cooler ID:	@		°C Therm. ID:
			Cooler ID:	@		°C Therm. ID:
*If >6°C, were samples collected <8 hours ago?		N/A				
If <0°C, were sample containers ice free?		N/A				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.						
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.				
Were samples received within holding time?		Yes				
Do samples match COC** (i.e., sample IDs, dates/times collected)? **Note: If times differ <1hr, record details & login per COC. ***Note: If sample information on containers differs from COC, SGS will default to COC information		Yes				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))		No	Analysis not clearly stated on CoC for each container. Client contacted. Continued with login per PM.			
Were proper containers (type/mass/volume/preservative***) used?		Yes	Yes	***Exemption permitted for metals (e.g. 200.8/6020B).		
Volatile / LL-Hg Requirements						
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A					
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A					
Were all soil VOAs field extracted with MeOH+BFB?	N/A					
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.						
Additional notes (if applicable):						



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221267001-A	No Preservative Required	OK			
1221267002-A	No Preservative Required	OK			
1221267003-A	No Preservative Required	OK			
1221267004-A	No Preservative Required	OK			
1221267005-A	No Preservative Required	OK			
1221267006-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.



Laboratory Report of Analysis

To: Turnagain Marine Construction
9330 Vanguard, Suite 100
Anchorage, AK 99507
907-201-1043

Report Number: **1221371**

Client Project: **Skagway Ore Dock Sediment Rem**

Dear Josh Janssen,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Cameron at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Cameron Murphy
Project Manager
Cameron.Murphy@sgs.com

Date

Print Date: 04/08/2022 10:15:53AM

Case Narrative

SGS Client: **Turnagain Marine Construction**
SGS Project: **1221371**
Project Name/Site: **Skagway Ore Dock Sediment Rem**
Project Contact: **Josh Janssen**

Refer to sample receipt form for information on sample condition.

1221370002(1659325DUP) (1659329) DUP

6020B - Metals DUP for several analytes does not meet QC criteria. The sample is non-homogeneous.

LB1 for HBN 1834041 [TCLP/1171 (1659333) LB1

6020B - Metals analyte Lead is detected in the LB above the LOQ. The associated sample concentrations are less than the regulatory limit.

1221370002(1659325MS) (1659326) MS

6020B - Metals MS recoveries for several analytes do not meet QC criteria. The post digestion spike was successful.

1221370002(1659325MSD) (1659327) MSD

6020B - Metals MSD recoveries for several analytes do not meet QC criteria. The post digestion spike was successful.

6020B - Metals MS/MSD RPD for several analytes do not meet QC criteria.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 04/08/2022 10:15:54AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
S6 A	1221371001	04/01/2022	04/04/2022	Solid/Soil (Wet Weight)
S6 B	1221371002	04/01/2022	04/04/2022	Solid/Soil (Wet Weight)
S6 C	1221371003	04/01/2022	04/04/2022	Solid/Soil (Wet Weight)
S6 D	1221371004	04/01/2022	04/04/2022	Soil/Solid (dry weight)
S6 E	1221371005	04/01/2022	04/04/2022	Soil/Solid (dry weight)
S6 F	1221371006	04/01/2022	04/04/2022	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
SW6020B TCLP	Metals by ICP-MS
SW6020B	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 04/08/2022 10:15:58AM

Detectable Results Summary

Client Sample ID: **S6 A**
 Lab Sample ID: 1221371001
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.378	mg/L
Lead	0.182	mg/L

Client Sample ID: **S6 B**
 Lab Sample ID: 1221371002
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.453	mg/L
Lead	1.06	mg/L

Client Sample ID: **S6 C**
 Lab Sample ID: 1221371003
TCLP Constituents Metals

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Barium	0.466	mg/L
Lead	2.02	mg/L

Client Sample ID: **S6 D**
 Lab Sample ID: 1221371004
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	2.48	mg/kg
Barium	137	mg/kg
Cadmium	2.74	mg/kg
Chromium	8.47	mg/kg
Lead	1600	mg/kg
Mercury	1.08	mg/kg
Silver	1.40	mg/kg

Client Sample ID: **S6 E**
 Lab Sample ID: 1221371005
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	2.13	mg/kg
Barium	132	mg/kg
Cadmium	2.36	mg/kg
Chromium	8.23	mg/kg
Lead	1530	mg/kg
Mercury	0.898	mg/kg
Silver	1.27	mg/kg

Client Sample ID: **S6 F**
 Lab Sample ID: 1221371006
Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Arsenic	2.26	mg/kg
Barium	158	mg/kg
Cadmium	2.68	mg/kg
Chromium	8.45	mg/kg
Lead	1460	mg/kg
Mercury	0.995	mg/kg
Silver	1.26	mg/kg



Results of S6 A

Client Sample ID: **S6 A**
Client Project ID: **Skagway Ore Dock Sediment Rem**
Lab Sample ID: 1221371001
Lab Project ID: 1221371

Collection Date: 04/01/22 09:00
Received Date: 04/04/22 17:00
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/07/22 13:11
Barium	0.378	0.150	0.0470	mg/L	25	(<100)	04/07/22 13:11
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/07/22 13:11
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/07/22 13:11
Lead	0.182	0.0500	0.0155	mg/L	25	(<5)	04/07/22 13:11
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/07/22 13:11
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/07/22 13:11
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/07/22 13:11

Batch Information

Analytical Batch: MMS11516
Analytical Method: SW6020B TCLP
Analyst: DSD
Analytical Date/Time: 04/07/22 13:11
Container ID: 1221371001-A

Prep Batch: MXT6218
Prep Method: SW3010A
Prep Date/Time: 04/06/22 13:53
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 04/08/2022 10:16:00AM



Results of S6 B

Client Sample ID: **S6 B**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221371002
 Lab Project ID: 1221371

Collection Date: 04/01/22 09:05
 Received Date: 04/04/22 17:00
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/07/22 13:14
Barium	0.453	0.150	0.0470	mg/L	25	(<100)	04/07/22 13:14
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/07/22 13:14
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/07/22 13:14
Lead	1.06	0.0500	0.0155	mg/L	25	(<5)	04/07/22 13:14
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/07/22 13:14
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/07/22 13:14
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/07/22 13:14

Batch Information

Analytical Batch: MMS11516
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/07/22 13:14
 Container ID: 1221371002-A

Prep Batch: MXT6218
 Prep Method: SW3010A
 Prep Date/Time: 04/06/22 13:53
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 04/08/2022 10:16:00AM



Results of S6 C

Client Sample ID: **S6 C**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221371003
 Lab Project ID: 1221371

Collection Date: 04/01/22 09:10
 Received Date: 04/04/22 17:00
 Matrix: Solid/Soil (Wet Weight)
 Solids (%):
 Location:

Results by TCLP Constituents Metals

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	0.500 U	0.500	0.155	mg/L	25	(<5)	04/07/22 13:17
Barium	0.466	0.150	0.0470	mg/L	25	(<100)	04/07/22 13:17
Cadmium	0.100 U	0.100	0.0300	mg/L	25	(<1)	04/07/22 13:17
Chromium	0.500 U	0.500	0.155	mg/L	25	(<5)	04/07/22 13:17
Lead	2.02	0.0500	0.0155	mg/L	25	(<5)	04/07/22 13:17
Mercury	0.0250 U	0.0250	0.00900	mg/L	25	(<0.2)	04/07/22 13:17
Selenium	1.00 U	1.00	0.310	mg/L	25	(<1)	04/07/22 13:17
Silver	0.100 U	0.100	0.0310	mg/L	25	(<5)	04/07/22 13:17

Batch Information

Analytical Batch: MMS11516
 Analytical Method: SW6020B TCLP
 Analyst: DSD
 Analytical Date/Time: 04/07/22 13:17
 Container ID: 1221371003-A

Prep Batch: MXT6218
 Prep Method: SW3010A
 Prep Date/Time: 04/06/22 13:53
 Prep Initial Wt./Vol.: 2.5 mL
 Prep Extract Vol: 25 mL

Print Date: 04/08/2022 10:16:00AM



Results of S6 D

Client Sample ID: **S6 D**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221371004
 Lab Project ID: 1221371

Collection Date: 04/01/22 09:15
 Received Date: 04/04/22 17:00
 Matrix: Soil/Solid (dry weight)
 Solids (%):85.0
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.48	1.14	0.353	mg/kg	10		04/06/22 15:44
Barium	137	0.342	0.107	mg/kg	10		04/06/22 15:44
Cadmium	2.74	0.228	0.0707	mg/kg	10		04/06/22 15:44
Chromium	8.47	1.14	0.353	mg/kg	10		04/06/22 15:44
Lead	1600	2.28	0.707	mg/kg	100		04/07/22 14:00
Mercury	1.08	0.342	0.114	mg/kg	10		04/06/22 15:44
Selenium	2.28 U	2.28	0.707	mg/kg	10		04/06/22 15:44
Silver	1.40	0.570	0.171	mg/kg	10		04/06/22 15:44

Batch Information

Analytical Batch: MMS11516
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 04/07/22 14:00
 Container ID: 1221371004-A

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 04/06/22 10:48
 Prep Initial Wt./Vol.: 1.032 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11515
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 04/06/22 15:44
 Container ID: 1221371004-A

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 04/06/22 10:48
 Prep Initial Wt./Vol.: 1.032 g
 Prep Extract Vol: 50 mL

Print Date: 04/08/2022 10:16:00AM

Results of S6 E

Client Sample ID: **S6 E**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221371005
 Lab Project ID: 1221371

Collection Date: 04/01/22 09:20
 Received Date: 04/04/22 17:00
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.0
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.13	1.07	0.333	mg/kg	10		04/06/22 15:47
Barium	132	0.322	0.101	mg/kg	10		04/06/22 15:47
Cadmium	2.36	0.215	0.0666	mg/kg	10		04/06/22 15:47
Chromium	8.23	1.07	0.333	mg/kg	10		04/06/22 15:47
Lead	1530	2.15	0.666	mg/kg	100		04/07/22 14:02
Mercury	0.898	0.322	0.107	mg/kg	10		04/06/22 15:47
Selenium	2.15 U	2.15	0.666	mg/kg	10		04/06/22 15:47
Silver	1.27	0.537	0.161	mg/kg	10		04/06/22 15:47

Batch Information

Analytical Batch: MMS11516
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 04/07/22 14:02
 Container ID: 1221371005-A

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 04/06/22 10:48
 Prep Initial Wt./Vol.: 1.071 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11515
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 04/06/22 15:47
 Container ID: 1221371005-A

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 04/06/22 10:48
 Prep Initial Wt./Vol.: 1.071 g
 Prep Extract Vol: 50 mL



Results of S6 F

Client Sample ID: **S6 F**
 Client Project ID: **Skagway Ore Dock Sediment Rem**
 Lab Sample ID: 1221371006
 Lab Project ID: 1221371

Collection Date: 04/01/22 09:25
 Received Date: 04/04/22 17:00
 Matrix: Soil/Solid (dry weight)
 Solids (%):79.3
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Arsenic	2.26	1.26	0.390	mg/kg	10		04/06/22 15:50
Barium	158	0.377	0.118	mg/kg	10		04/06/22 15:50
Cadmium	2.68	0.251	0.0780	mg/kg	10		04/06/22 15:50
Chromium	8.45	1.26	0.390	mg/kg	10		04/06/22 15:50
Lead	1460	2.51	0.780	mg/kg	100		04/07/22 14:05
Mercury	0.995	0.377	0.126	mg/kg	10		04/06/22 15:50
Selenium	2.51 U	2.51	0.780	mg/kg	10		04/06/22 15:50
Silver	1.26	0.629	0.189	mg/kg	10		04/06/22 15:50

Batch Information

Analytical Batch: MMS11516
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 04/07/22 14:05
 Container ID: 1221371006-A

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 04/06/22 10:48
 Prep Initial Wt./Vol.: 1.003 g
 Prep Extract Vol: 50 mL

Analytical Batch: MMS11515
 Analytical Method: SW6020B
 Analyst: DSD
 Analytical Date/Time: 04/06/22 15:50
 Container ID: 1221371006-A

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 04/06/22 10:48
 Prep Initial Wt./Vol.: 1.003 g
 Prep Extract Vol: 50 mL

Print Date: 04/08/2022 10:16:00AM



Method Blank

Blank ID: LB1 for HBN 1834041 [TCLP/1171]
Blank Lab ID: 1659333

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1221371001, 1221371002, 1221371003

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.250U	0.500	0.155	mg/L
Barium	0.0750U	0.150	0.0470	mg/L
Cadmium	0.0500U	0.100	0.0300	mg/L
Chromium	0.250U	0.500	0.155	mg/L
Lead	0.0631*	0.0500	0.0155	mg/L
Mercury	0.0125U	0.0250	0.00900	mg/L
Selenium	0.500U	1.00	0.310	mg/L
Silver	0.0500U	0.100	0.0310	mg/L

Batch Information

Analytical Batch: MMS11516
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/7/2022 12:37:00PM

Prep Batch: MXT6218
Prep Method: SW3010A
Prep Date/Time: 4/6/2022 1:53:27PM
Prep Initial Wt./Vol.: 2.5 mL
Prep Extract Vol: 25 mL

Print Date: 04/08/2022 10:16:02AM



Method Blank

Blank ID: MB for HBN 1834051 [MXT/6218]

Blank Lab ID: 1659352

QC for Samples:

1221371001, 1221371002, 1221371003

Matrix: Water (Surface, Eff., Ground)

Results by SW6020B TCLP

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.0250U	0.0500	0.0155	mg/L
Barium	0.00750U	0.0150	0.00470	mg/L
Cadmium	0.00500U	0.0100	0.00300	mg/L
Chromium	0.0250U	0.0500	0.0155	mg/L
Lead	0.00250U	0.00500	0.00155	mg/L
Mercury	0.00125U	0.00250	0.000900	mg/L
Selenium	0.0500U	0.100	0.0310	mg/L
Silver	0.00500U	0.0100	0.00310	mg/L

Batch Information

Analytical Batch: MMS11516
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/7/2022 12:31:59PM

Prep Batch: MXT6218
Prep Method: SW3010A
Prep Date/Time: 4/6/2022 1:53:27PM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 04/08/2022 10:16:02AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1221371 [MXT6218]

Blank Spike Lab ID: 1659353

Date Analyzed: 04/07/2022 12:34

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1221371001, 1221371002, 1221371003

Results by SW6020B TCLP

Parameter	Blank Spike (mg/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1	0.969	97	(84-116)
Barium	1	0.977	98	(86-114)
Cadmium	0.1	0.0985	99	(87-115)
Chromium	0.4	0.386	97	(85-116)
Lead	1	0.985	99	(88-115)
Mercury	0.01	0.0100	100	(70-124)
Selenium	1	0.975	98	(80-120)
Silver	0.1	0.0974	97	(85-116)

Batch Information

Analytical Batch: **MMS11516**

Analytical Method: **SW6020B TCLP**

Instrument: **P7 Agilent 7800**

Analyst: **DSD**

Prep Batch: **MXT6218**

Prep Method: **SW3010A**

Prep Date/Time: **04/06/2022 13:53**

Spike Init Wt./Vol.: 1 mg/L Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1659360
MS Sample ID: 1659362 MS
MSD Sample ID: 1659363 MSD

Analysis Date: 04/07/2022 12:40
Analysis Date: 04/07/2022 12:43
Analysis Date: 04/07/2022 12:46
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221371001, 1221371002, 1221371003

Results by SW6020B TCLP

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	0.250U	10.0	9.88	99	10.0	9.75	98	84-116	1.30	(< 20)
Barium	0.423	10.0	10.2	98	10.0	10.4	100	86-114	1.73	(< 20)
Cadmium	0.0500U	1.00	.991	99	1.00	1.00	100	87-115	1.13	(< 20)
Chromium	0.250U	4.00	3.83	96	4.00	3.90	97	85-116	1.67	(< 20)
Lead	15.6	10.0	25.4	99	10.0	25.7	101	88-115	1.09	(< 20)
Mercury	0.0125U	0.100	.0986	99	0.100	0.100	100	70-124	1.38	(< 20)
Selenium	0.500U	10.0	9.82	98	10.0	9.82	98	80-120	0.01	(< 20)
Silver	0.0500U	1.00	.992	99	1.00	0.986	99	85-116	0.58	(< 20)

Batch Information

Analytical Batch: MMS11516
Analytical Method: SW6020B TCLP
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/7/2022 12:43:00PM

Prep Batch: MXT6218
Prep Method: Waters Digest for Metals by ICP-MS(TCLP)
Prep Date/Time: 4/6/2022 1:53:27PM
Prep Initial Wt./Vol.: 2.50mL
Prep Extract Vol: 25.00mL

Print Date: 04/08/2022 10:16:05AM



Method Blank

Blank ID: MB for HBN 1834037 [MXX/35049]
Blank Lab ID: 1659320

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221371004, 1221371005, 1221371006

Results by SW6020B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	0.500U	1.00	0.310	mg/kg
Barium	0.150U	0.300	0.0940	mg/kg
Cadmium	0.100U	0.200	0.0620	mg/kg
Chromium	0.500U	1.00	0.310	mg/kg
Lead	0.100U	0.200	0.0620	mg/kg
Mercury	0.150U	0.300	0.100	mg/kg
Selenium	1.00U	2.00	0.620	mg/kg
Silver	0.250U	0.500	0.150	mg/kg

Batch Information

Analytical Batch: MMS11515
Analytical Method: SW6020B
Instrument: P7 Agilent 7800
Analyst: DSD
Analytical Date/Time: 4/6/2022 2:58:49PM

Prep Batch: MXX35049
Prep Method: SW3050B
Prep Date/Time: 4/6/2022 10:48:58AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 04/08/2022 10:16:06AM

Duplicate Sample Summary

Original Sample ID: 1659325
 Duplicate Sample ID: 1659329

Analysis Date: 04/06/2022 15:15
 Matrix: Solid/Soil (Wet Weight)

QC for Samples:
 1221371004, 1221371005, 1221371006

Results by SW6020B

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Barium	400	257	mg/kg	43.50*	(< 20)
Cadmium	3.97	3.14	mg/kg	23.30*	(< 20)
Chromium	39.2	26.8	mg/kg	37.60*	(< 20)

Batch Information

Analytical Batch: MMS11515
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 4/6/2022 10:48:58AM

Duplicate Sample Summary

Original Sample ID: 1659325
 Duplicate Sample ID: 1659329
 QC for Samples:
 1221371004, 1221371005, 1221371006

Analysis Date: 04/07/2022 13:57
 Matrix: Solid/Soil (Wet Weight)

Results by SW6020B

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Lead	253	474	mg/kg	61.00*	(< 20)

Batch Information

Analytical Batch: MMS11516
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD

Prep Batch: MXX35049
 Prep Method: SW3050B
 Prep Date/Time: 4/6/2022 10:48:58AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1221371 [MXX35049]
 Blank Spike Lab ID: 1659321
 Date Analyzed: 04/06/2022 15:01

Matrix: Soil/Solid (dry weight)

QC for Samples: 1221371004, 1221371005, 1221371006

Results by SW6020B

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Arsenic	50	47.5	95	(82-118)
Barium	50	47.8	96	(86-116)
Cadmium	5	4.92	99	(84-116)
Chromium	20	18.6	93	(83-119)
Lead	50	48.3	97	(84-118)
Mercury	0.5	0.473	95	(74-126)
Selenium	50	46.0	92	(80-119)
Silver	5	4.89	98	(83-118)

Batch Information

Analytical Batch: **MMS11515**
 Analytical Method: **SW6020B**
 Instrument: **P7 Agilent 7800**
 Analyst: **DSD**

Prep Batch: **MXX35049**
 Prep Method: **SW3050B**
 Prep Date/Time: **04/06/2022 10:48**
 Spike Init Wt./Vol.: 50 mg/kg Extract Vol: 50 mL
 Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1659325
 MS Sample ID: 1659326 MS
 MSD Sample ID: 1659327 MSD

Analysis Date: 04/06/2022 15:04
 Analysis Date: 04/06/2022 15:07
 Analysis Date: 04/06/2022 15:10
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221371004, 1221371005, 1221371006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	10.4	47.8	78.4	142 *	48.3	56.0	95	82-118	33.30	* (< 20)
Barium	400	47.8	242	-331 *	48.3	318	-171 *	86-116	27.00	* (< 20)
Cadmium	3.97	4.78	13.9	209 *	4.83	7.81	79 *	84-116	56.40	* (< 20)
Chromium	39.2	19.1	45.2	31 *	19.3	65.8	138 *	83-119	37.20	* (< 20)
Mercury	0.119J	0.478	.55	90	0.483	0.550	89	74-126	0.04	(< 20)
Selenium	0.925U	47.8	42.4	89	48.3	43.4	90	80-119	2.34	(< 20)
Silver	0.358J	4.78	4.62	89	4.83	4.62	88	83-118	0.05	(< 20)
Lead	253	47.8	247	-12 *	48.3	348	198 *	84-118	34.00	* (< 20)

Batch Information

Analytical Batch: MMS11515
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 4/6/2022 3:07:00PM

Prep Batch: MXX35049
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 4/6/2022 10:48:58AM
 Prep Initial Wt./Vol.: 1.05g
 Prep Extract Vol: 50.00mL

Analytical Batch: MMS11516
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 4/7/2022 1:48:46PM

Prep Batch: MXX35049
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 4/6/2022 10:48:58AM
 Prep Initial Wt./Vol.: 1.05g
 Prep Extract Vol: 50.00mL

Print Date: 04/08/2022 10:16:10AM

Bench Spike Summary

Original Sample ID: 1659325
 MS Sample ID: 1659328 BND
 MSD Sample ID:

Analysis Date: 04/06/2022 15:04
 Analysis Date: 04/06/2022 15:13
 Analysis Date:
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1221371004, 1221371005, 1221371006

Results by SW6020B

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Barium	400	231	625	97				75-125		
Cadmium	3.97	116	114	95				75-125		
Chromium	39.2	116	148	94				75-125		
Lead	253	578	845	103				75-125		

Batch Information

Analytical Batch: MMS11515
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 4/6/2022 3:13:00PM

Prep Batch: MXX35049
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 4/6/2022 10:48:58AM
 Prep Initial Wt./Vol.: 1.08g
 Prep Extract Vol: 50.00mL

Analytical Batch: MMS11516
 Analytical Method: SW6020B
 Instrument: P7 Agilent 7800
 Analyst: DSD
 Analytical Date/Time: 4/7/2022 1:54:00PM

Prep Batch: MXX35049
 Prep Method: Soils/Solids Digest for Metals by ICP-MS
 Prep Date/Time: 4/6/2022 10:48:58AM
 Prep Initial Wt./Vol.: 1.08g
 Prep Extract Vol: 50.00mL



Method Blank

Blank ID: MB for HBN 1834148 [SPT/11497]
Blank Lab ID: 1659465

Matrix: Soil/Solid (dry weight)

QC for Samples:
1221371004, 1221371005, 1221371006

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT11497
Analytical Method: SM21 2540G
Instrument:
Analyst: DBR
Analytical Date/Time: 4/6/2022 6:14:00PM

Duplicate Sample Summary

Original Sample ID: 1221371004

Duplicate Sample ID: 1659466

QC for Samples:

1221371004, 1221371005, 1221371006

Analysis Date: 04/06/2022 18:14

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	85.0	84.4	%	0.67	(< 15)

Batch Information

Analytical Batch: SPT11497

Analytical Method: SM21 2540G

Instrument:

Analyst: DBR



SGS North America Inc. CHAIN OF CUSTODY RECORD

278573 CPM

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CLIENT: Turnagain Marine Construction					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.					Page <u> </u> of <u> </u>				
CONTACT: Chris Nielsen PHONE #: 907-891-5499					Section 3		Preservative							
PROJECT NAME: Skagway Ore Dock Sediment Remediation PROJECT/PWSID/PERMIT#: 22-001					CONTAINERS	Comp Grab MI (Multi-incremental)	Analysis*					NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS		
REPORTS TO: Chris Nielsen E-MAIL: cnielsen@turnagain.us							TCLP 7-dg	Total RCRA 24-hr						
INVOICE TO: Turnagain Marine Construction QUOTE #: 378573														
P.O. #: 22-001														
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE							REMARKS/LOC ID			
(1A)	S6 A	4/1/2022	9:00AM		1	Grab	x							
(2A)	S6 B	4/1/2022	9:05AM		1	Grab	x							
(3A)	S6 C	4/1/2022	9:10AM		1	Grab	x							
(4A)	S6 D	4/1/2022	9:15AM		1	Grab		x						
(5A)	S6 E	4/1/2022	9:20AM		1	Grab		x						
(6A)	S6 F	4/1/2022	9:25AM		1	Grab		x						
Relinquished By: (1) Chris Nielsen		Date 4/4/2022	Time 4:55PM	Received By:		Section 4		DOD Project? Yes No		Data Deliverable Requirements: Level 2				
Relinquished By: (2)		Date	Time	Received By:		Requested Turnaround Time and/or Special Instructions: RUSH								
Relinquished By: (3)		Date	Time	Received By:		Temp Blank °C:			Chain of Custody Seal: (Circle)					
Relinquished By: (4)		Date 4/4/22	Time 17:00	Received For Laboratory By:		or Ambient []			INTACT BROKEN ABSENT					
						Delivery Method: Hand Delivery [X] Commerical Delivery []								

1221371





Characterization of TCLP Samples for LIMS Login

Date Characterized: 4/4/22

Analyst: DBR

Sample Container ID:	Matrix	%	Is sufficient volume/mass available?	Notes:
Slc A	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No (NA) If biphasic, was there only one layer with sufficient sample? Yes / No (NA) Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		
Slc B	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No (NA) If biphasic, was there only one layer with sufficient sample? Yes / No (NA) Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		
Slc C	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No (NA) If biphasic, was there only one layer with sufficient sample? Yes / No (NA) Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)	100%		
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No (NA) If biphasic, was there only one layer with sufficient sample? Yes / No (NA) Sample description/other observations: Soil **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			
	Xylene miscible (Top layer * = matrix 3 **)		Yes / No	If multiple jars were received, were they consistent? Yes / No / NA If biphasic, was there only one layer with sufficient sample? Yes / No / NA Sample description/other observations: **Are samples Glycol or Solvent in appearance or odor? If yes schedule TCLP Metals matrix 6 acode.
	Water miscible (Middle layer = matrix 6)			
	Solid (Bottom layer = matrix 7 or 2 if % solids required)			

Remember: * = Chlorinated oils will be heavier than water and present as the bottom later.
 ** = Oils must be filterable to be logged in as matrix 3. Nonfilterable oils must be logged in as matrix 7.
 *** = Refer to F07B 'Characterization of TCLP Samples for LIMS' to determine if there's sufficient volume/mass.



e-Sample Receipt Form

SGS Workorder #:

1221371

1221371

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below				
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.			
Were Custody Seals intact? Note # & location		N/A					
COC accompanied samples?		Yes					
DOD: Were samples received in COC corresponding coolers?		N/A					
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required Temperature blank compliant* (i.e., 0-6 °C after CF)?		Yes	Cooler ID:	1	@	Ambient °C Therm. ID:	
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.			Cooler ID:		@	°C Therm. ID:	
			Cooler ID:		@	°C Therm. ID:	
			Cooler ID:		@	°C Therm. ID:	
			Cooler ID:		@	°C Therm. ID:	
			Cooler ID:		@	°C Therm. ID:	
*If >6°C, were samples collected <8 hours ago?		N/A					
If <0°C, were sample containers ice free?		N/A					
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.							
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.					
Were samples received within holding time?			Yes				
Do samples match COC** (i.e., sample IDs, dates/times collected)? **Note: If times differ <1hr, record details & login per COC. ***Note: If sample information on containers differs from COC, SGS will default to COC information			Yes				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)			Yes				
Were proper containers (type/mass/volume/preservative***) used?			N/A	***Exemption permitted for metals (e.g. 200.8/6020B).			
Volatile / LL-Hg Requirements							
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		N/A					
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/A					
Were all soil VOAs field extracted with MeOH+BFB?		N/A					
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.							
Additional notes (if applicable):							



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1221371001-A	No Preservative Required	OK			
1221371002-A	No Preservative Required	OK			
1221371003-A	No Preservative Required	OK			
1221371004-A	No Preservative Required	OK			
1221371005-A	No Preservative Required	OK			
1221371006-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Appendix B

Disposal Facility Documentation



Displacement Survey Report

Date: 4/13/2022

Trip: Skagway_001

Vessel: Eglon

Owner: Turnagain Marine Construction

Cargo: 2 cy Supersacks

Shipper: Boyer

Port From & To: Skagway to DRF

Profile #: 137422OR

Place and Date Of Survey	Initial : 3/30/2022 @ DRF Final 4/13/2022 @ DRF						
Density of Water	1.0020	1.0030	1.0035	1.0005	1.0010	1.0010	1.003 1.001
Conditions	Initial: Overcast						
	Final: Mostly Cloudy						

	Initial Survey(A)		Final Survey(B)	
	FT-IN	Decimal Feet	FT-IN	Decimal Feet
Port Bow	11' 2"	11.1667	3' 5"	3.4167
Starboard Bow	11'6"	11.5000	3' 4"	3.3333
Port Stern	12' 4"	12.3333	3' 4"	3.3333
Starboard Stern	12' 8"	12.6667	3' 5"	3.4167
Mean		11.917		3.375
Displacement Table Tonnage		3502.00		93.50
Brackish Conversion		A 3426.84		B 91.31

Total Tons Offloaded (A)-(B)= 3335.53

Name: _____ WM Name Zach Jenkins

Signature: _____ WM Signat : Zach Jenkins

Date: _____ Date: 4/13/2022



Displacement Survey Report

Date: 5/23/2022

Trip: Skagway_002

Vessel: Klamath

Owner: Turnagain Marine Construction

Cargo: 2 cy Supersacks

Shipper: Boyer

Port From & To: Skagway to DRF

Profile #: 137422OR

Place and Date Of Survey	Initial : 5/5/2022 @ DRF Final 5/18/2022 @ DRF						
Density of Water	1.0010	1.0015	1.0015	1.0010	1.0015	N/A	1.001 1.001
Conditions	Initial: Overcast						
	Final: Clear						

	Initial Survey(A)		Final Survey(B)	
	FT-IN	Decimal Feet	FT-IN	Decimal Feet
Port Bow	6' 6"	6.5000	3' 5"	3.4167
Starboard Bow	6' 0"	6.0000	3' 3"	3.2500
Port Stern	8' 7"	8.5833	3' 6"	3.5000
Starboard Stern	8' 0"	8.0000	3' 5"	3.4167
Mean		7.271		3.396
Displacement Table Tonnage		2886.25		104.25
Brackish Conversion		A 2818.67		B 101.81

Total Tons Offloaded (A)-(B)= 2716.86

Name: _____ WM Name Zach Jenkins

Signature: _____ WM Signal: Zach Jenkins

Date: _____ Date: 5/23/2022

Appendix C
Sand Cover Material Chemistry
Documentation

Skagway RMC Sand Lab Analysis Comparison with Regulatory Standards

Appendix B Clean Sand Cover Chemistry Requirements			SGS Static Testing Lab Results_ Jan 29 19				SGS Analysis Report March 08 22		
Chemical	Required Reporting Limits	Maximum Level	BE-Haines 4 Mile-CR1	BE-Haines 4 Mile-CR2	BE-Haines 4 Mile-CR3	BE-Haines 4 Mile-CR4	Detection Limits	Results	Detection Limits
Conventional Sediment Parameters									
Grain size (%)	1%	N/A	--	--	--	--		--	
Total solids (%)	0.1% (wet weight)	N/A	--	--	--	--		--	
Total organic carbon (%)	1%	N/A	--	--	--	--		--	
Metals (mg/kg dw)									
Arsenic	0.2	57	1	<1	1	<1	1	--	
Cadmium	0.2	5.1	0.05	0.05	0.05	0.05	0.01	--	
Chromium	0.5	260	96	83	68	85	1	--	
Copper	0.5	390	120	135	169	145	0.5	--	
Lead	1.0	450	0.2	0.6	<0.2	0.4	0.2	--	
Mercury	0.05	0.41	<0.01	<0.01	<0.01	<0.01	0.01	--	
Silver	0.2	6.1	0.04	0.04	0.05	0.05	0.01	--	
Zinc	4.0	410	54	49	54	47	1	--	
PCBs (µg/kg dw)									
Total PCBs (Aroclors)	10	130						ND	49.4
Polycyclic Aromatic Hydrocarbons (µg/kg)									
Naphthalene	20	2,100	--	--	--	--		ND	25
Acenaphthylene	20	1,300	--	--	--	--		ND	25
Acenaphthene	20	500	--	--	--	--		ND	25
Fluorene	20	540	--	--	--	--		ND	25
Phenanthrene	20	1,500	--	--	--	--		ND	25
Anthracene	20	960	--	--	--	--		ND	25

Appendix B Clean Sand Cover Chemistry Requirements			SGS Static Testing Lab Results_ Jan 29 19					SGS Analysis Report March 08 22	
Chemical	Required Reporting Limits	Maximum Level	BE-Haines 4 Mile-CR1	BE-Haines 4 Mile-CR2	BE-Haines 4 Mile-CR3	BE-Haines 4 Mile-CR4	Detection Limits	Results	Detection Limits
2-Methylnaphthalene	20	670	--	--	--	--		ND	25
Total LPAH	N/A	5,200	--	--	--	--		ND	--
Fluoranthene	20	1,700	--	--	--	--		ND	25
Pyrene	20	2,600	--	--	--	--		ND	25
Benzo(a)anthracene	20	1,300	--	--	--	--		ND	25
Chrysene	20	1,400	--	--	--	--		ND	25
Benzo(a)pyrene	20	1,600	--	--	--	--		ND	25
Indeno(1,2,3-Cd)pyrene	20	600	--	--	--	--		ND	25
Dibenzo(a,h)anthracene	20	230	--	--	--	--		ND	25
Benzo(g,h,i)perylene	20	670	--	--	--	--		ND	25
Total benzofluoranthenes	20	3,200	--	--	--	--		ND	25
Total HPAH	N/A	12,000	--	--	--	--		ND	--

Notes:

µg/kg – micrograms per kilogram

dw – dry weight

HPAH – high-molecular-weight polycyclic aromatic hydrocarbon

LPAH – low-molecular-weight polycyclic aromatic hydrocarbon

mg/kg – milligrams per kilogram

N/A – not applicable

ng/kg – nanograms per kilogram

TEQ – toxic equivalence quotient

Screening values taken from Washington State Department of Ecology Sediment Cleanup User's Manual II, Table 8-1 - Marine and freshwater sediment chemical criteria for protection of the benthic community, Marine Sediment Apparent Effects Thresholds, Sediment Cleanup Objectives.

ND: Non- Detect

-- : No Result Provided

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Southeast Road Builders
SGS Project # : 08123
TEST : Acid-Base Accounting with Siderite Correction
Date : May 8, 2014

Sample ID	Paste pH	S(T) %	S(SO4) %	S(S-2) %	AP	NP	Net NP	Fizz Test
Method Code	Sobek	CSA06V	CSA07V	Calc.	Calc.	Siderite Corr.	Calc.	Sobek
LOD	0.20	0.005	0.01	#N/A	#N/A	0.5	#N/A	#N/A
SERB_4-Mile Haines_01_04112014_GC	9.11	0.008	<0.01	0.008	0.3	18.6	18.4	Slight
Duplicate								
SERB_4-Mile Haines_01_04112014_GC	9.01	0.008	<0.01			18.7		Slight
QC								
GTS-2A		0.33						
PD-1			4.75					
NBM-1						52.1		Slight
Certified Values		0.35	4.79			57.1		Slight
Tolerance +/-		0.03	0.3			5.2		

Note:

AP = Acid potential in tonnes CaCO₃ equivalent per 1000 tonnes of material. AP is determined from the calculated sulphide sulphur content: S(T) - S(SO₄).

NP = Neutralization potential in tonnes CaCO₃ equivalent per 1000 tonnes of material.

NET NP = NP - AP

Sulphate Sulphur is determined by Sodium Carbonate Leach with S by ICP Finish

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Southeast Road Builders
SGS Project # : 08123
Test : Metals by Aqua Regia Digestion with ICP-MS Finish
Date : May 8, 2014

Sample ID	Ag ppm	Al %	B ppm	Ba ppm	Ca %	Cr ppm	Cu ppm	Fe %	K %
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.01	0.01	10	5	0.01	1	0.5	0.01	0.01
SERB_4-Mile Haines_01_04112014_GC	0.11	1.65	30	24	1.24	104	195	3.38	0.03
Duplicate									
SERB_4-Mile Haines_01_04112014_GC	0.14	1.69	30	26	1.28	118	195	3.43	0.04
QC									
CH4	2.38	1.83	30	290	0.6	97	1940	4.57	1.43
Certified Values	2.13	1.85	#N/A	293	0.61	103.8	2000	4.79	1.43
Tolerance (%)	10.9	11.35	#N/A	14.3	14.1	12.4	10.1	10.52	11.74

Sample ID	Li ppm	Mg %	Mn ppm	Na %	Ni ppm	P %	S %	Sr ppm	Ti %
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	1	0.01	2	0.01	0.5	0.005	0.01	0.5	0.01
SERB_4-Mile Haines_01_04112014_GC	5	1.23	424	0.06	25.7	0.069	<0.01	20	0.3
Duplicate									
SERB_4-Mile Haines_01_04112014_GC	5	1.25	435	0.06	31.5	0.068	<0.01	20.6	0.32
QC									
CH4	12	1.16	306	0.07	44.9	0.061	0.6	9.7	0.2
Certified Values	12.6	1.18	324	0.06	49.57	0.072	0.73	9.38	0.21
Tolerance (%)	29.84	12.3	11.5	50.3	12.52	27.4	13.4	23.3	23.3

Sample ID	V ppm	Zn ppm	Zr ppm	As ppm	Be ppm	Bi ppm	Cd ppm	Ce ppm	Co ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	1	1	0.5	1	0.1	0.02	0.01	0.05	0.1
SERB_4-Mile Haines_01_04112014_GC	92	43	3	<1	0.2	<0.02	0.05	4.27	20.3
Duplicate									
SERB_4-Mile Haines_01_04112014_GC	96	46	3.7	<1	0.1	<0.02	0.05	4.37	20.7
QC									
CH4	73	186	12.2	7	<0.1	0.45	1.13	27.2	24.2
Certified Values	79.27	189.4	9	8.14	0.11	0.51	1.17	28.18	22.8
Tolerance (%)	13.2	11.3	17.7	13.1	241.3	19.7	12.1	10.4	11.1

Sample ID	Cs ppm	Ga ppm	Ge ppm	Hf ppm	Hg ppm	In ppm	La ppm	Lu ppm	Mo ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.05	0.1	0.1	0.05	0.01	0.02	0.1	0.01	0.05
SERB_4-Mile Haines_01_04112014_GC	0.08	4.7	<0.1	0.14	0.01	<0.02	1.7	0.11	2.63
Duplicate									
SERB_4-Mile Haines_01_04112014_GC	0.09	4.8	<0.1	0.14	<0.01	<0.02	1.7	0.11	3.53
QC									
CH4	2.75	9.2	0.2	0.33	<0.01	0.1	14.4	0.06	3.42
Certified Values	2.6	8.72	0.21	0.29	#N/A	0.1	14	#N/A	3.05
Tolerance (%)	14.8	12.9	127.4	52.8	#N/A	62.1	11.8	#N/A	14.1

Sample ID	Nb ppm	Pb ppm	Rb ppm	Sb ppm	Sc ppm	Se ppm	Sn ppm	Ta ppm	Tb ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.05	0.2	0.2	0.05	0.1	1	0.3	0.05	0.02
SERB_4-Mile Haines_01_04112014_GC	0.96	1.7	1.2	0.17	6.2	<1	<0.3	<0.05	0.24
Duplicate									
SERB_4-Mile Haines_01_04112014_GC	0.96	1.7	1.2	0.16	6.5	<1	0.3	<0.05	0.24
QC									
CH4	0.6	8.5	63.9	0.4	9	2	0.7	<0.05	0.29
Certified Values	0.19	8.24	67	0.34	7.99	1.57	0.6	0.3	0.27
Tolerance (%)	75	16.1	10.7	47.3	13.1	169.6	134.5	51.7	28.4

Sample ID	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Y ppm	Yb ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.05	0.1	0.02	0.05	0.1	0.05	0.1
SERB_4-Mile Haines_01_04112014_GC	<0.05	0.1	<0.02	0.06	0.2	7.67	0.8
Duplicate							
SERB_4-Mile Haines_01_04112014_GC	<0.05	0.1	<0.02	0.06	0.1	7.74	0.8
QC							
CH4	0.48	2.2	0.41	0.3	2.8	5.54	0.4
Certified Values	0.42	2.2	0.4	0.29	2.15	5.66	#N/A
Tolerance (%)	39.6	21.2	22.6	52.9	21.6	12.2	#N/A

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Southeast Road Builders
SGS Project # : 08123
Test : Whole Rock Analysis
Date : May 8, 2014

Sample ID	Al2O3 %	Ba %	CaO %	Cr2O3 %	Fe2O3 %	K2O %	MgO %	MnO %	Na2O %
Method Code	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A
LOD	0.01	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01
SERB_4-Mile Haines_01_04112014_GC	14.4	0.006	11.6	0.03	13.9	0.31	6.29	0.19	2.11
Duplicate									
SERB_4-Mile Haines_01_04112014_GC	14.3	0.006	11.5	0.04	13.8	0.31	6.24	0.2	2.1
QC									
SY-4	20.2	0.032	7.9	<0.01	6.16	1.56	0.51	0.1	6.97
TILL-4									
Recommended Values	20.69	0.034	8.05	<0.01	6.21	1.66	0.54	0.108	7.1

Sample ID	Nb %	P2O5 %	SiO2 %	Sr %	TiO2 %	Y %	Zn ppm	Zr %	LOI %
Method Code	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	PHY01K
LOD	0.001	0.01	0.01	0.001	0.01	0.001	5	0.001	0.01
SERB_4-Mile Haines_01_04112014_GC Duplicate	0.003	0.15	51.2	0.02	1.8	0.003	107	0.011	1.99
SERB_4-Mile Haines_01_04112014_GC QC	0.003	0.16	50.9	0.02	1.82	0.003	93	0.011	2.25
SY-4 TILL-4	0.001	0.12	48.4	0.114	0.28	0.011	95	0.05	- 5.61
Recommended Values	0.0013	0.131	49.9	0.1191	0.287	0.012	93	0.052	5.7

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Southeast Road Builders
SGS Project # : 08123
Test : Synthetic Precipitation Leaching Procedure (EPA Method 1312)
Date : at 20:1 Liquid to Solids Ratio
: April 28, 2014

Leachate Analysis **Extractant pH = 5.00**

Sample:			SERB_4-Mile Haines 01_04112014_GC	Blank
Parameter	Method	Units		
Volume Extractant		mL	2000	1000
Sample Weight		g	100	-
pH (18 Hr)	meter		9.26	5.00
pH (Titrator)	meter		8.39	-
Redox	meter	mV	399	-
Conductivity	meter	uS/cm	26	2
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	-
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	#N/A	-
Alkalinity	titration	mg CaCO3/L	16.7	-
Sulphate	Turbidity	mg/L	4	-
Ion Balance				
Major Anions	Calc	meq/L	0.42	#N/A
Major Cations	Calc	meq/L	0.41	#N/A
Difference	Calc	meq/L	0.01	#N/A
Balance (%)	Calc	%	0.8%	#N/A
Dissolved Metals				
Hardness CaCO3		mg/L	15.1	-
Aluminum Al	ICP-MS	mg/L	0.727	-
Antimony Sb	ICP-MS	mg/L	< 0.0002	-
Arsenic As	ICP-MS	mg/L	0.0007	-
Barium Ba	ICP-MS	mg/L	0.00082	-
Beryllium Be	ICP-MS	mg/L	0.000008	-
Bismuth Bi	ICP-MS	mg/L	0.000039	-
Boron B	ICP-MS	mg/L	0.0010	-
Cadmium Cd	ICP-MS	mg/L	< 0.000004	-
Calcium Ca	ICP-MS	mg/L	5.43	-
Chromium Cr	ICP-MS	mg/L	0.00016	-
Cobalt Co	ICP-MS	mg/L	0.000066	-
Copper Cu	ICP-MS	mg/L	0.00220	-
Iron Fe	ICP-MS	mg/L	0.095	-
Lead Pb	ICP-MS	mg/L	0.00020	-
Lithium Li	ICP-MS	mg/L	0.000057	-
Magnesium Mg	ICP-MS	mg/L	0.382	-
Manganese Mn	ICP-MS	mg/L	0.0021	-
Mercury Hg	CVAA	ug/L	< 0.01	-
Molybdenum Mo	ICP-MS	mg/L	0.00013	-
Nickel Ni	ICP-MS	mg/L	0.0002	-
Phosphorus P	ICP-MS	mg/L	0.017	-

Potassium K	ICP-MS	mg/L	0.245	-
Selenium Se	ICP-MS	mg/L	< 0.00004	-
Silicon Si	ICP-MS	mg/L	1.55	-
Silver Ag	ICP-MS	mg/L	0.000008	-
Sodium Na	ICP-MS	mg/L	0.38	-
Strontium Sr	ICP-MS	mg/L	0.0045	-
Sulphur (S)	ICP-MS	mg/L	0.07	-
Thallium Tl	ICP-MS	mg/L	< 0.000005	-
Tin Sn	ICP-MS	mg/L	0.00003	-
Titanium Ti	ICP-MS	mg/L	0.00375	-
Uranium U	ICP-MS	mg/L	< 0.000002	-
Vanadium V	ICP-MS	mg/L	0.00387	-
Zinc Zn	ICP-MS	mg/L	< 0.001	-
Zirconium Zr	ICP-MS	mg/L	< 0.002	-

QUANTITATIVE PHASE ANALYSIS OF ONE POWDER SAMPLE USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

Project: 08123 HGCMC – PO# 42761

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May 6, 2014

EXPERIMENTAL METHOD

The sample of **Project 08123 HGCMC** was reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone Micronizing Mill for 7 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range $3\text{-}80^\circ 2\theta$ with $\text{CoK}\alpha$ radiation on a Bruker D8 Advance Bragg-Brentano diffractometer equipped with an Fe monochromator foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6° .

RESULTS

The X-ray diffractogram was analyzed using the International Centre for Diffraction Database PDF-4 and Search-Match software by Bruker. X-ray powder-diffraction data of the sample were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plot is shown in Figure 1.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	Ideal Formula	SERB 4 Mile Haines 01_04112014_GC
Quartz	SiO ₂	10.3
Clinocllore	(Mg,Fe ²⁺) ₅ Al(Si ₃ Al)O ₁₀ (OH) ₈	8.0
Epidote	Ca ₂ (Fe ³⁺ ,Al) ₃ (SiO ₄) ₃ (OH)	24.0
Plagioclase	NaAlSi ₃ O ₈	16.8
Diopside	CaMgSi ₂ O ₆	2.8
K-feldspar	KAlSi ₃ O ₈	2.1
Calcite ?	CaCO ₃	0.4
Illite/Muscovite	K _{0.65} Al _{2.0} Al _{0.65} Si _{3.35} O ₁₀ (OH) ₂ / KAl ₂ AlSi ₃ O ₁₀ (OH) ₂	2.1
Actinolite	Ca ₂ (Mg,Fe ²⁺) ₅ Si ₈ O ₂₂ (OH) ₂	32.8
Ilmenite	Fe ²⁺ TiO ₃	0.8
Total		100.0

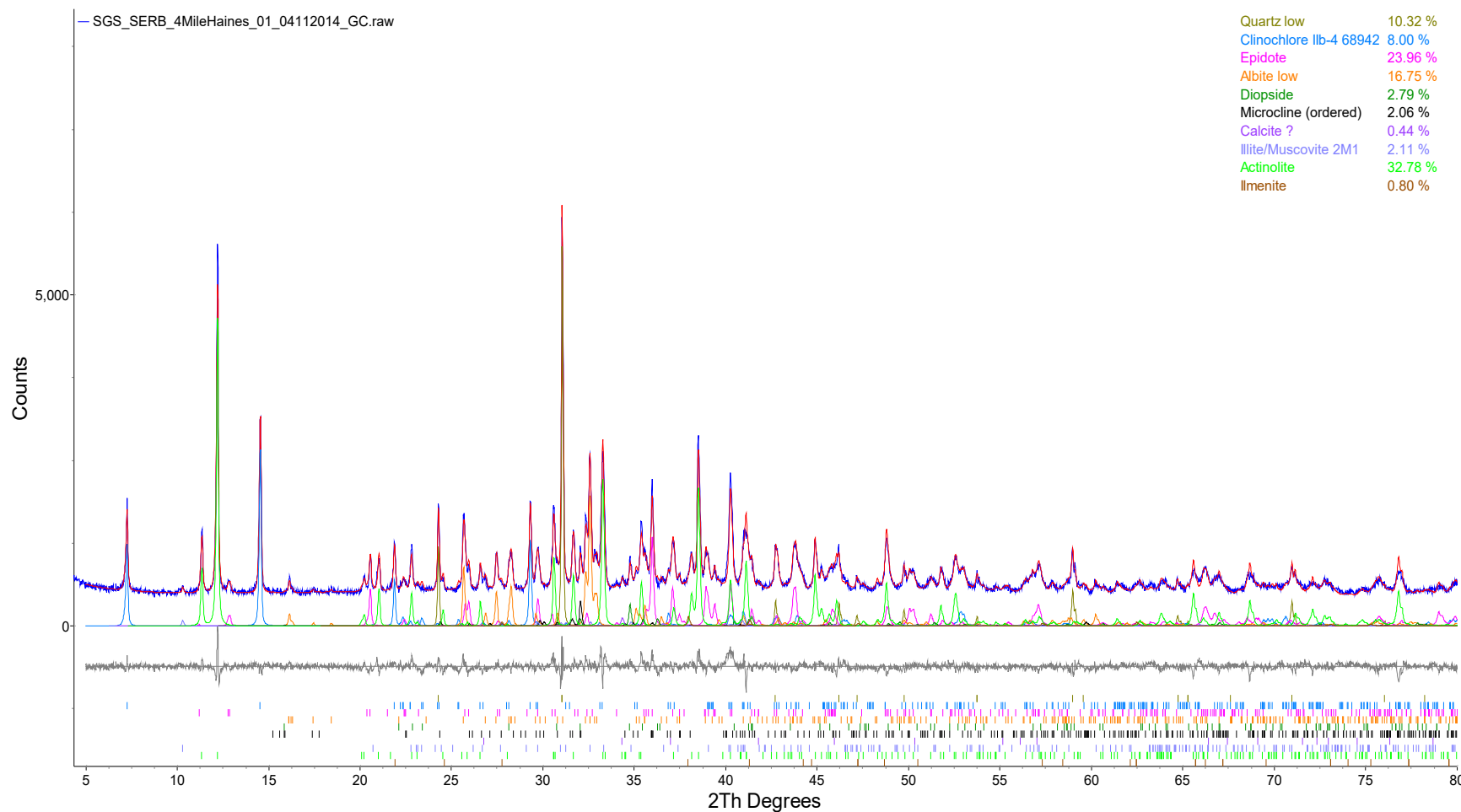


Figure 1. Rietveld refinement plot of sample **SGS Canada SERB 4 Mile Haines 01_04112014_GC** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.



Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for: SGS Canada Inc
Project Number/ LIMS No. 14094-01B/MI4522-DEC18
Batch No. 08123 HGCMC-Haines 4-Mile
Sample Receipt: December 28, 2018
Sample Analysis: January 7, 2019
Reporting Date: January 9, 2019

Instrument: BRUKER AXS D8 Advance Diffractometer
Test Conditions: Co radiation, 40 kV, 35 mA
Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°
Interpretations: PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.
Detection Limit: 0.5-2%. Strongly dependent on crystallinity.

Contents:
1) Method Summary
2) Quantitative XRD Results
3) XRD Pattern(s)

Kim Gibbs, H.B.Sc., P.Geol.
Senior Mineralogist

Huyun Zhou, Ph.D., P.Geol.
Senior Mineralogist

ACCREDITATION: SGS Minerals Services Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada - Minerals Services - Lakefield: <http://palcan.scc.ca/SpecsSearch/GLSearchForm.do>.



Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	BE-Haines 4 Mile-CR2	BE-Calport-Winter Sand-02	BE-Calport-Fine Rock-02	BE-Kensington-04
	DEC4522-01 (wt %)	DEC4522-02 (wt %)	DEC4522-03 (wt %)	DEC4522-04 (wt %)
Quartz	9.9	24.7	24.6	11.1
Chlorite	8.8	3.4	3.1	5.8
Muscovite	1.8	2.7	3.0	17.0
Epidote	15.0	3.2	2.5	3.7
Rutile	0.2	0.4	0.3	0.3
Albite	23.0	19.7	20.5	48.3
Magnetite	1.6	1.0	1.2	1.2
Diopside	1.6	2.2	1.6	4.6
Magnesiohornblende	33.7	8.7	7.0	2.4
Calcite	0.5	0.3	0.4	4.3
Anorthite	3.9	-	-	-
Microcline	-	6.7	4.2	1.4
Biotite	-	2.9	2.9	-
Andesine	-	24.3	28.7	-
TOTAL	100	100	100	100

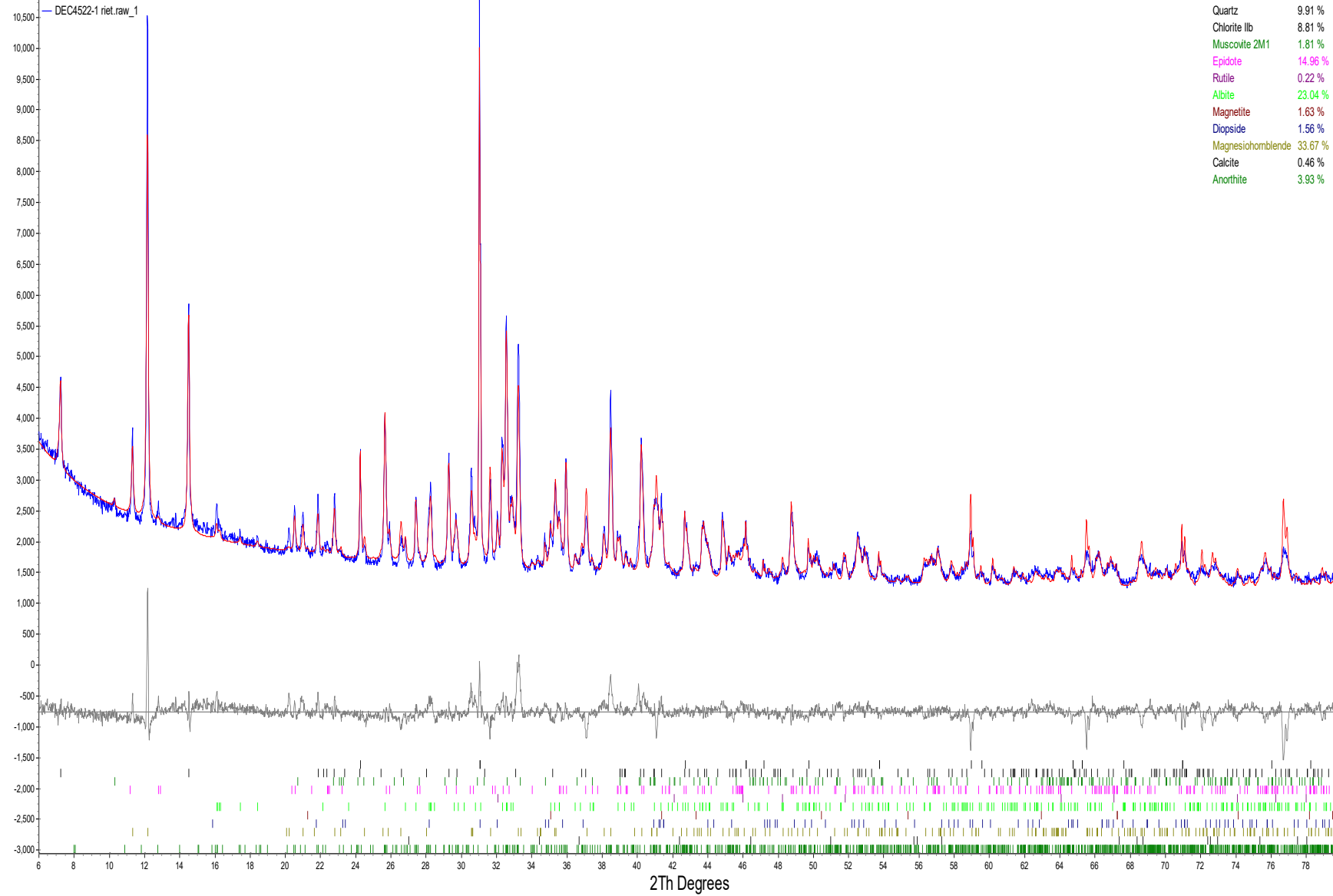
Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

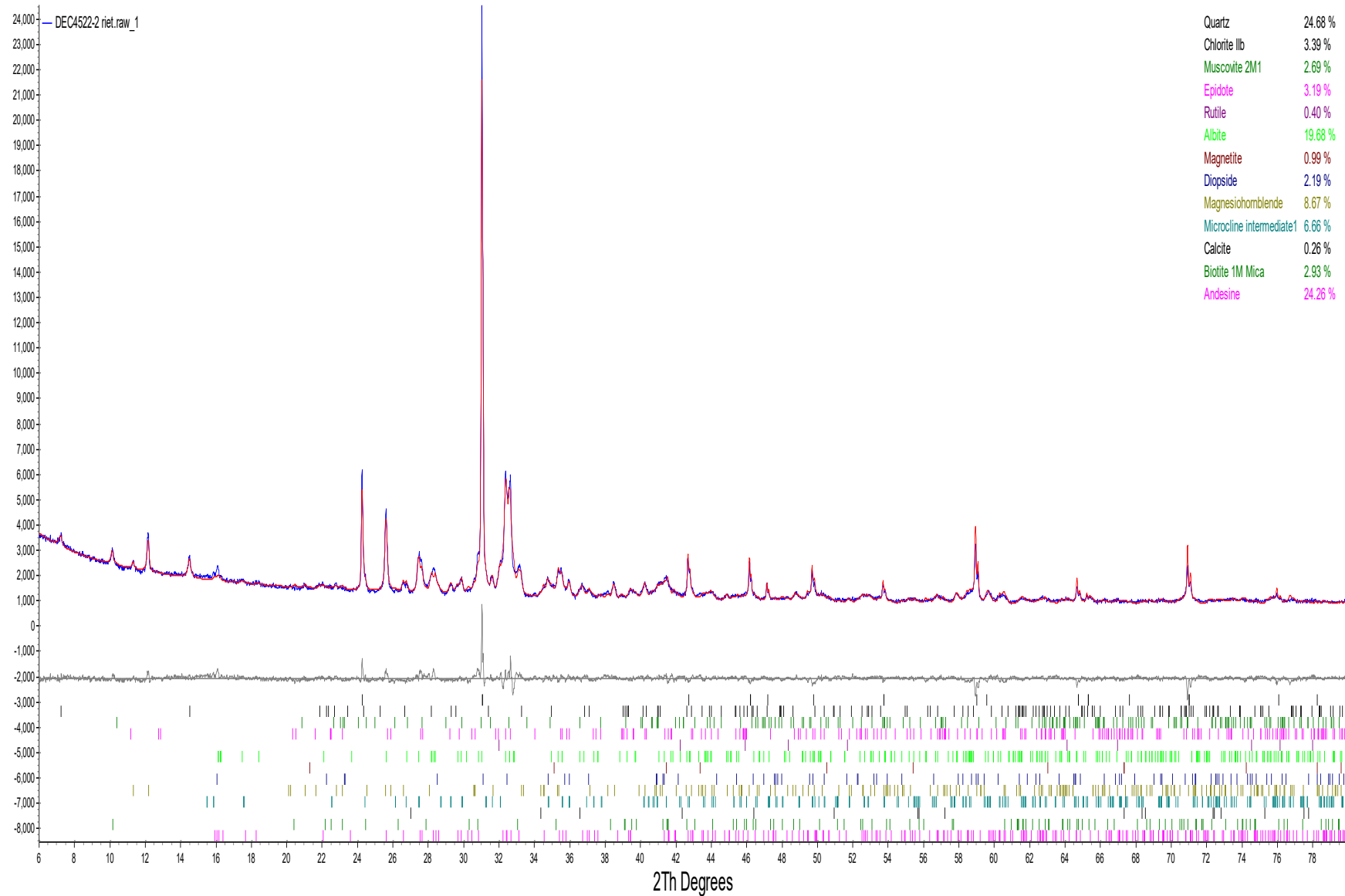
The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral/Compound	Formula
Quartz	SiO ₂
Chlorite	(Fe, ₁ (Mg,Mn) ₅ ,Al)(Si ₃ Al)O ₁₀ (OH) ₈
Muscovite	KAl ₂ (AlSi ₃ O ₁₀)(OH) ₂
Epidote	Ca ₂ (Al,Fe)Al ₂ O(SiO ₄)(Si ₂ O ₇)(OH)
Rutile	TiO ₂
Albite	NaAlSi ₃ O ₈
Magnetite	Fe ₃ O ₄
Diopside	CaMgSi ₂ O ₆
Magnesiohornblende	Ca ₂ (Mg,Fe) ₄ Al(Si ₇ Al)O ₂₂ (OH,F) ₂
Calcite	CaCO ₃
Anorthite	CaAl ₂ Si ₂ O ₈
Microcline	KAlSi ₃ O ₈
Biotite	K(Mg,Fe) ₃ (AlSi ₃ O ₁₀)(OH) ₂
Andesine	Na _{0.622} Ca _{0.368} Al _{1.29} Si _{2.71} O ₈

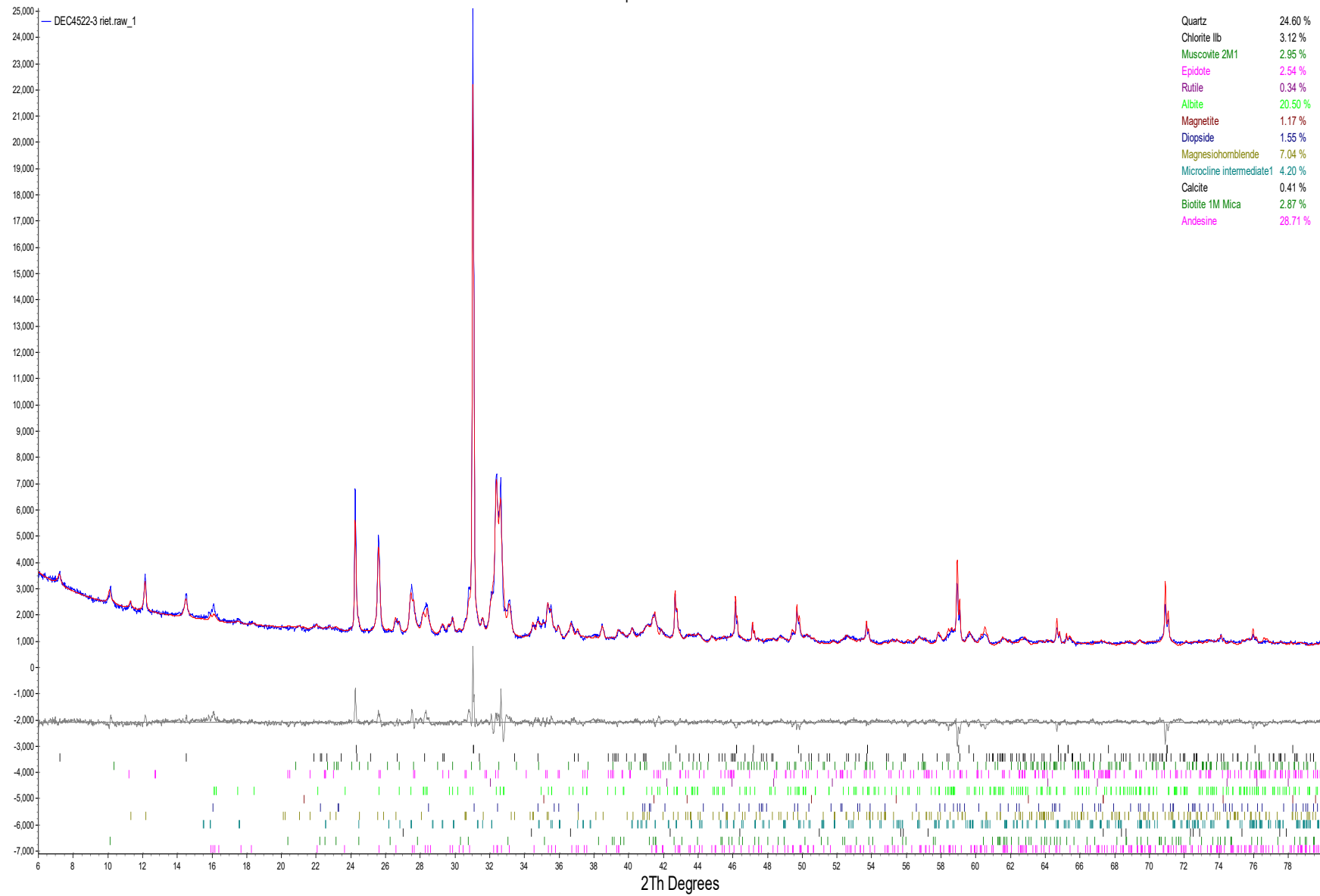
BE-Haines 4 Mile-CR2



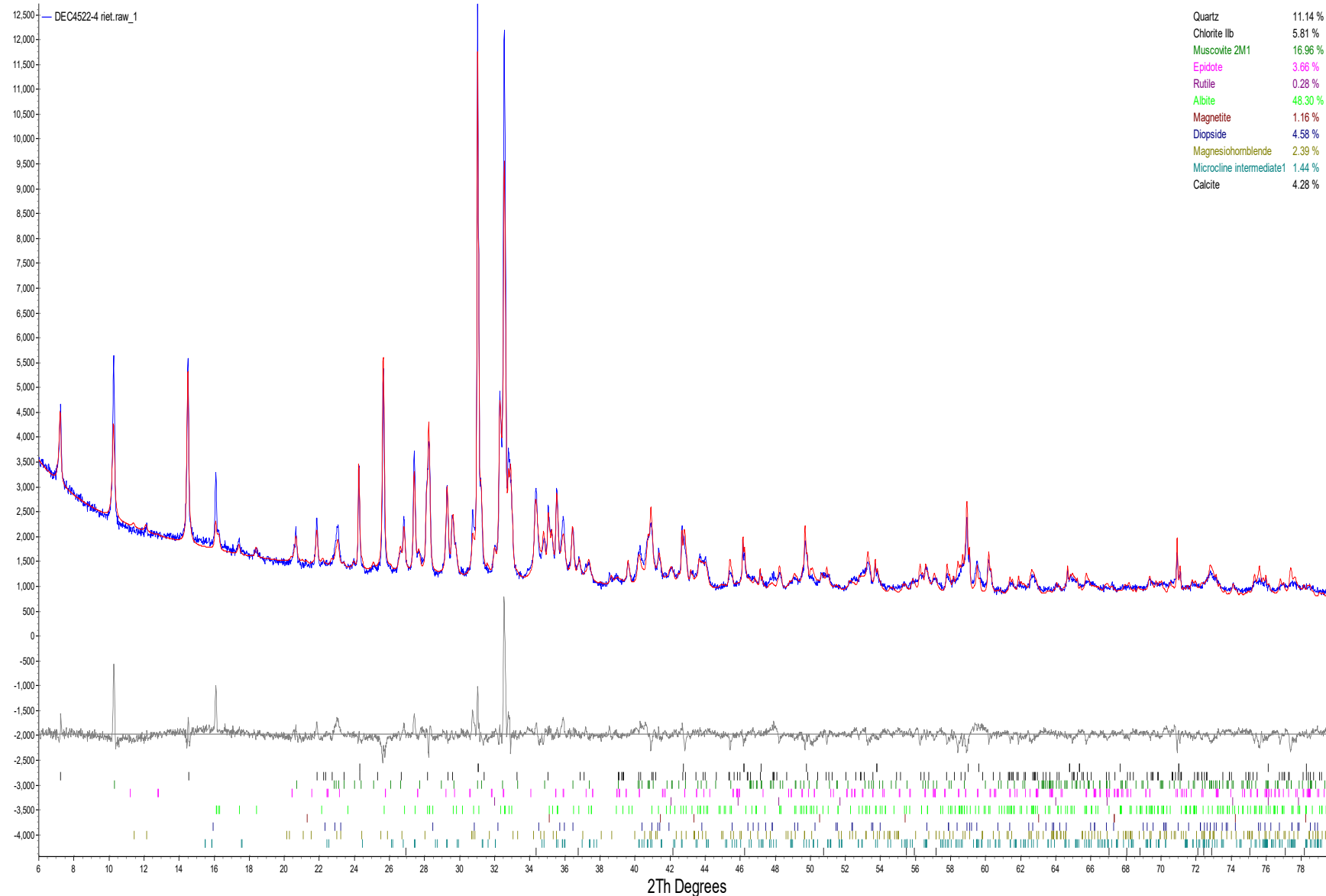
BE-Calport-Winter Sand-02



BE-Calport-Fine Rock-02



BE-Kensington-04



CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Haines 4-Mile Rock
SGS Project # : 08123
Test : Acid-Base Accounting with Siderite Correction
Date : January 29, 2019

Sample ID	Paste pH	TIC %	CaCO3 NP	S(T) %	S(SO4) %	S(S-2) %	Insoluble S %	AP	NP	Net NP	Fizz Test
Method Code	Sobek	CSB02V	Calc.	CSA06V	CSA07V	CSA08D	Calc.	Calc.	Siderite Corr.	Calc.	Sobek
LOD	0.20	0.01	#N/A	0.005	0.01	0.01	#N/A	#N/A	0.5	#N/A	#N/A
BE-Haines 4 Mile-CR1	9.31	0.15	12.5	0.006	<0.01	<0.01	<0.01	<0.3	30.8	30.8	Slight
BE-Haines 4 Mile-CR2	9.48	0.06	5.0	0.006	<0.01	<0.01	<0.01	<0.3	22.4	22.4	Slight
BE-Haines 4 Mile-CR3	9.35	0.19	15.8	0.007	<0.01	<0.01	<0.01	<0.3	31.8	31.8	Slight
BE-Haines 4 Mile-CR4	9.33	0.13	10.8	0.007	<0.01	<0.01	<0.01	<0.3	29.4	29.4	Slight
Duplicates											
BE-Haines 4 Mile-CR2					<0.01						
BE-Haines 4 Mile-CR3				0.009							
QC											
GTS-2A				0.328							
RTS-3A					0.96	2.42					
SY-4		0.91							54.3		Slight
NBM-1											
Certified Values		0.91		0.341	0.98	2.46			57.1		Slight
Tolerance +/-		0.07		0.03	0.12	0.25			5.2		

Note:

AP = Acid potential in tonnes CaCO3 equivalent per 1000 tonnes of material. AP is determined from the measured sulphide sulphur.

NP = Neutralization potential in tonnes CaCO3 equivalent per 1000 tonnes of material.

NET NP = NP - AP

Carbonate NP is calculated from TIC originating from carbonate minerals and is expressed in kg CaCO3/tonne.

Sulphate Sulphur determined by 25% HCl Leach with S by ICP Finish

Sulphide Sulphur determined by Sobek 1:7 Nitric Acid Leach with S by ICP Finish

Insoluble S is acid insoluble S (Total S - (Sulphate S + Sulphide S)).

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Haines 4-Mile Rock
SGS Project # : 08123
Test : Metals by Aqua Regia Digestion with ICP-MS Finish
Date : January 29, 2019

Sample ID	Ag ppm	Al %	Ba ppm	Ca %	Cr ppm	Cu ppm	Fe %	K %	Li ppm	Mg %	Mn ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.01	0.01	5	0.01	1	0.5	0.01	0.01	1	0.01	2
BE-CalPort-Fine Rock-01	0.03	1.69	75	0.89	93	27.1	2.82	0.23	12	0.87	395
BE-CalPort-Fine Rock-02	0.03	1.67	73	0.94	88	22.6	2.74	0.22	11	0.71	385
BE-CalPort-Winter Sand-01	0.03	1.89	64	0.98	70	36.3	2.99	0.21	12	0.73	414
BE-CalPort-Winter Sand-02	0.04	1.85	67	0.92	72	24.4	3	0.2	12	0.72	408
BE-Haines 4 Mile-CR1	0.04	1.76	<5	1.44	96	120	4.15	0.02	7	1.68	505
BE-Haines 4 Mile-CR2	0.04	1.61	<5	1.11	83	135	4.34	0.04	7	1.5	530
BE-Haines 4 Mile-CR3	0.05	1.89	<5	1.5	68	169	4.43	0.05	7	1.63	576
BE-Haines 4 Mile-CR4	0.05	1.78	<5	1.46	85	145	3.75	0.03	6	1.64	503
BE-Kensington-01	0.16	1.14	40	2.91	36	105	3.41	0.2	8	1.08	1090
BE-Kensington-02	0.15	1.09	39	3.05	28	96.7	3.61	0.21	7	1.2	1140
BE-Kensington-03	0.17	1.18	74	3.75	26	93.6	3.59	0.17	9	1.23	1390
BE-Kensington-04	0.34	1.28	43	3.17	24	84.3	4.09	0.21	10	1.31	1260
Duplicate											
BE-CalPort-Fine Rock-02	0.02	1.69	69	0.89	91	21.3	2.82	0.21	11	0.71	398
QC											
OREAS 263	0.31	1.2	167	1.05	52	94.4	3.76	0.32	22	0.61	502
Expected Values	0.285	1.29	175	1.03	48.0	87	3.68	0.288	20.1	0.593	490
Tolerance (%)	21.36	12.35	18.75	13.47	16.46	12.13	11.19	22.39	25.27	15.05	11.66

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Sample ID	Na %	Ni ppm	P %	S %	Sr ppm	Ti %	V ppm	Zn ppm	Zr ppm	As ppm	Be ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.01	0.5	0.01	0.01	0.5	0.01	1	1	0.5	1	0.1
BE-CalPort-Fine Rock-01	0.16	44.3	0.06	0.03	54.2	0.2	68	42	9.9	4	0.3
BE-CalPort-Fine Rock-02	0.2	25.3	0.06	0.02	59	0.22	66	38	11.9	6	0.3
BE-CalPort-Winter Sand-01	0.2	19.4	0.06	0.05	62.3	0.22	65	43	9.5	7	0.3
BE-CalPort-Winter Sand-02	0.18	19.8	0.07	0.03	64.2	0.23	63	44	10.3	5	0.3
BE-Haines 4 Mile-CR1	0.06	34.3	0.08	<0.01	25.7	0.39	117	54	3.7	1	0.1
BE-Haines 4 Mile-CR2	0.06	29.5	0.08	<0.01	19.2	0.37	106	49	3.9	<1	0.2
BE-Haines 4 Mile-CR3	0.05	33.7	0.08	<0.01	20.9	0.37	114	54	4.1	1	0.1
BE-Haines 4 Mile-CR4	0.05	37.1	0.07	<0.01	25.8	0.38	107	47	4.3	<1	0.2
BE-Kensington-01	0.04	2.1	0.16	0.34	143	0.1	63	76	1.8	5	0.2
BE-Kensington-02	0.04	2.4	0.17	0.26	132	0.1	72	69	1.8	3	0.2
BE-Kensington-03	0.04	2.1	0.17	0.19	205	0.09	71	84	1.9	2	0.2
BE-Kensington-04	0.04	1.9	0.19	0.32	174	0.07	62	77	1.8	3	0.2
Duplicate											
BE-CalPort-Fine Rock-02	0.2	23.7	0.07	0.02	58.4	0.21	62	38	11.2	6	0.3
QC											
OREAS 263	0.09	78.5	0.04	0.13	16.6	<0.01	21	124	15.6	32	1.2
Expected Values	0.079	72	0.041	0.126	16.9	BDL	22.8	127	12.0	30.8	1.22
Tolerance (%)	44.96	12.47	68.85	33.33	19.05	BDL	23.42	12.73	#N/A	19.92	35.75

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Sample ID	Bi ppm	Cd ppm	Ce ppm	Co ppm	Cs ppm	Ga ppm	Ge ppm	Hf ppm	Hg ppm	In ppm	La ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.02	0.01	0.05	0.1	0.05	0.1	0.1	0.05	0.01	0.02	0.1
BE-CalPort-Fine Rock-01	0.07	0.09	14.02	10.5	0.91	6.7	0.2	0.31	<0.01	0.02	7.1
BE-CalPort-Fine Rock-02	0.06	0.06	16.97	8.6	0.91	6.9	0.1	0.38	<0.01	0.02	8.2
BE-CalPort-Winter Sand-01	0.09	0.09	14.64	9.9	0.96	7.3	0.2	0.32	<0.01	0.02	7.3
BE-CalPort-Winter Sand-02	0.11	0.08	14.77	9.9	0.84	7.1	0.2	0.35	<0.01	0.02	7.6
BE-Haines 4 Mile-CR1	<0.02	0.05	4.4	24.9	<0.05	6.2	0.1	0.14	<0.01	<0.02	1.7
BE-Haines 4 Mile-CR2	<0.02	0.05	3.69	22.1	0.07	5	0.1	0.14	<0.01	<0.02	1.5
BE-Haines 4 Mile-CR3	<0.02	0.05	4.94	24.9	0.06	5.9	<0.1	0.12	<0.01	<0.02	1.9
BE-Haines 4 Mile-CR4	<0.02	0.05	4.28	24.3	<0.05	5.1	0.1	0.12	<0.01	<0.02	1.8
BE-Kensington-01	0.03	0.18	14.25	14.3	0.16	4.7	<0.1	0.05	<0.01	<0.02	6.6
BE-Kensington-02	0.02	0.11	14.56	15	0.2	4.9	<0.1	<0.05	0.02	<0.02	6.8
BE-Kensington-03	0.02	0.3	15.03	14	0.17	5.3	<0.1	0.05	0.07	0.03	6.9
BE-Kensington-04	0.06	0.15	17.07	16.3	0.15	5.2	<0.1	0.05	<0.01	0.02	7.7
Duplicate											
BE-CalPort-Fine Rock-02	0.06	0.07	16.27	8.8	0.93	6.7	0.1	0.38	<0.01	0.02	8
QC											
OREAS 263	0.59	0.29	58.49	32.2	2.8	4.9	<0.1	0.34	0.15	0.03	28.6
Expected Values	0.57	0.27	49.7	31.0	3.02	4.92	BDL	0.30	0.17	0.029	24.3
Tolerance (%)	21.36	20.41	#N/A	11.42	#N/A	16.26	BDL	#N/A	26.67	69.66	#N/A

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Sample ID	Lu ppm	Mo ppm	Nb ppm	Pb ppm	Rb ppm	Sb ppm	Sc ppm	Se ppm	Sn ppm	Ta ppm	Tb ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.01	0.05	0.05	0.2	0.2	0.05	0.1	1	0.3	0.05	0.02
BE-CalPort-Fine Rock-01	0.11	1.42	0.5	3.2	11.8	0.33	5.9	<1	0.7	<0.05	0.3
BE-CalPort-Fine Rock-02	0.12	1.94	0.58	3.2	11	0.39	6.3	<1	0.6	<0.05	0.34
BE-CalPort-Winter Sand-01	0.12	1.56	0.5	4	10.5	0.38	6	<1	0.7	<0.05	0.33
BE-CalPort-Winter Sand-02	0.12	1.54	0.53	3.8	9.3	0.37	5.5	<1	0.6	<0.05	0.32
BE-Haines 4 Mile-CR1	0.11	1.35	0.5	0.2	0.7	0.11	6.6	<1	<0.3	<0.05	0.22
BE-Haines 4 Mile-CR2	0.12	1.1	0.54	0.6	1.2	0.12	5.6	<1	<0.3	<0.05	0.23
BE-Haines 4 Mile-CR3	0.13	0.91	0.49	<0.2	1.6	0.06	5.6	<1	<0.3	<0.05	0.26
BE-Haines 4 Mile-CR4	0.12	0.86	0.64	0.4	0.9	0.09	6.1	<1	<0.3	<0.05	0.22
BE-Kensington-01	0.14	1.9	0.29	16.2	5.3	0.22	2.8	<1	<0.3	<0.05	0.3
BE-Kensington-02	0.15	2.09	0.38	2.9	5.7	0.24	2.9	<1	<0.3	<0.05	0.33
BE-Kensington-03	0.16	2.18	0.29	9	4.7	0.38	3.6	<1	<0.3	<0.05	0.34
BE-Kensington-04	0.17	3.62	0.21	3.6	4.9	0.23	3.4	<1	<0.3	<0.05	0.37
Duplicate											
BE-CalPort-Fine Rock-02	0.12	1.89	0.62	3.3	11.1	0.39	6	<1	0.6	<0.05	0.33
QC											
OREAS 263	0.15	0.6	<0.05	35.8	21.7	7.04	3.6	<1	0.4	<0.05	0.54
Expected Values	0.14	0.57	BDL	34.0	21.3	7.37	3.52	BDL	0.62	BDL	0.5
Tolerance (%)	#N/A	37.5	BDL	12.17	#N/A	12.39	18.63	BDL	#N/A	BDL	22.22

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Sample ID	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Y ppm	Yb ppm
Method Code	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B	ICM14B
LOD	0.05	0.1	0.02	0.05	0.1	0.05	0.1
BE-CalPort-Fine Rock-01	<0.05	2.1	0.1	0.43	0.2	8.86	0.8
BE-CalPort-Fine Rock-02	<0.05	2.2	0.1	0.42	0.2	10.38	0.9
BE-CalPort-Winter Sand-01	<0.05	2.1	0.11	0.4	0.2	9.96	0.9
BE-CalPort-Winter Sand-02	<0.05	2.3	0.09	0.45	0.1	9.54	0.9
BE-Haines 4 Mile-CR1	<0.05	0.2	<0.02	<0.05	<0.1	8.16	0.8
BE-Haines 4 Mile-CR2	<0.05	0.2	<0.02	<0.05	0.1	8.31	0.9
BE-Haines 4 Mile-CR3	<0.05	0.2	<0.02	<0.05	<0.1	8.97	1
BE-Haines 4 Mile-CR4	<0.05	0.3	<0.02	<0.05	<0.1	8.03	0.9
BE-Kensington-01	0.41	1.3	0.03	0.41	1.2	9.02	0.9
BE-Kensington-02	0.52	1.4	0.03	0.44	3	9.87	1
BE-Kensington-03	1.24	1.8	0.03	0.57	10.4	10.21	1.1
BE-Kensington-04	0.65	2.6	0.03	0.62	2.3	10.54	1.1
Duplicate							
BE-CalPort-Fine Rock-02	<0.05	2.2	0.1	0.42	0.2	10.25	0.9
QC							
OREAS 263	0.17	10.8	0.6	1.32	0.1	12.77	1.1
Expected Values	0.21	10.6	0.53	1.28	0.17	12	0.99
Tolerance (%)	111.11	13.17	20.83	21.65	#N/A	11.73	42.94

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Haines 4-Mile Rock
SGS Project # : 08123
Test : Whole Rock Analysis
Date : January 29, 2019

Sample ID	Al2O3 %	Ba %	CaO %	Cr2O3 %	Fe2O3 %	K2O %	MgO %	MnO %	Na2O %	Nb %
Method Code	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A
LOD	0.01	0.001	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001
BE-CalPort-Fine Rock-02	14.9	0.052	4.4	0.02	5.84	1.65	2.46	0.1	3.71	0.002
BE-CalPort-Winter Sand-02	14.9	0.05	4.67	0.02	6.38	1.55	2.54	0.11	3.43	0.003
BE-Haines 4 Mile-CR2	13.9	0.008	10.2	0.03	13.6	0.31	6.3	0.21	2.63	0.006
BE-Kensington-04	17.4	0.05	5.96	<0.01	7.05	2.69	2.58	0.16	4.67	0.003
Duplicate										
BE-Haines 4 Mile-CR2	13.9	0.008	10.2	0.03	13.7	0.29	6.07	0.21	2.63	0.006
QC										
SY-4	20.2	0.035	7.96	<0.01	6.22	1.66	0.51	0.11	7.3	0.002
OREAS 70B	-	-	-	-	-	-	-	-	-	-
Recommended Values	20.69	340	8.05	<0.01	6.21	1.66	0.54	0.108	7.1	0.001

CLIENT
PROJECT
SGS Project #
Test
Date

Sample ID	P2O5 %	SiO2 %	Sr %	TiO2 %	Y %	Zn ppm	Zr %	LOI %
Method Code	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	ICP95A	PHY01K
LOD	0.01	0.01	0.001	0.01	0.001	5	0.001	0.01
BE-CalPort-Fine Rock-02	0.16	64.4	0.027	0.67	0.002	56	0.016	1.48
BE-CalPort-Winter Sand-02	0.15	64.8	0.025	0.71	0.002	65	0.016	1.59
BE-Haines 4 Mile-CR2	0.18	49.5	0.015	1.56	0.003	102	0.01	1.94
BE-Kensington-04	0.4	53.1	0.055	0.62	0.002	87	0.006	5.59
Duplicate								
BE-Haines 4 Mile-CR2	0.17	49.4	0.012	1.61	0.003	100	0.01	1.85
QC								
SY-4	0.12	49.6	0.12	0.27	0.012	95	0.056	-
OREAS 70B	-	-	-	-	-	-	-	6.9
Recommended Values	0.131	49.9	0.119	0.287	0.012	93	0.052	6.69

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Haines 4-Mile Rock
SGS Project # : 08123
Test : Synthetic Precipitation Leaching Procedure (EPA Method 1312) at 20:1 Liquid to Solids Ratio
Date : January 29, 2019

Leachate Analysis Extractant pH = 5.00

Sample ID			BE-CalPort Fine Rock-02	BE-CalPort Winter Sand- 02	BE-Haines 4 Mile-CR2	BE-Ken- sington-04	Blank
Parameter	Method	Units					
Volume Extractant		mL	2000	2000	2000	2000	1000
Sample Weight		g	100	100	100	100	-
pH (18 Hr)	meter		8.07	7.95	8.85	8.78	4.94
pH (Titrator)	meter		7.67	7.74	8.61	8.51	-
Redox	meter	mV	401	400	375	378	-
Conductivity	meter	uS/cm	17	17	33	81	1
Acidity (to pH 4.5)	titration	mg CaCO3/L	#N/A	#N/A	#N/A	#N/A	-
Total Acidity (to pH 8.3)	titration	mg CaCO3/L	2.9	2.8	#N/A	#N/A	-
Alkalinity	titration	mg CaCO3/L	6.5	6.2	16.1	16.5	-
Sulphate	Turbidity	mg/L	5	4	4	17	-
Ion Balance							
Major Anions	Calc	meq/L	0.24	0.21	0.41	0.68	#N/A
Major Cations	Calc	meq/L	0.20	0.21	0.45	0.86	#N/A
Difference	Calc	meq/L	0.04	0.00	-0.04	-0.18	#N/A
Balance (%)	Calc	%	8.7%	0.7%	-5.2%	-11.4%	#N/A
Dissolved Metals							
Hardness CaCO3		mg/L	4.4	2.1	16.7	34.1	-
Aluminum Al	ICP-MS	mg/L	0.256	0.321	0.764	0.686	-
Antimony Sb	ICP-MS	mg/L	0.0002	0.0004	0.0002	0.0006	-
Arsenic As	ICP-MS	mg/L	0.0016	0.0012	0.0003	0.0006	-
Barium Ba	ICP-MS	mg/L	0.00095	0.00045	0.00053	0.00580	-
Beryllium Be	ICP-MS	mg/L	< 0.000007	< 0.000007	< 0.000007	< 0.000007	-
Bismuth Bi	ICP-MS	mg/L	< 0.000007	< 0.000007	< 0.000007	< 0.000007	-

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Haines 4-Mile Rock
SGS Project # : 08123
Test : Synthetic Precipitation Leaching Procedure (EPA Method 1312) at 20:1 Liquid to Solids Ratio
Date : January 29, 2019

Leachate Analysis Extractant pH = 5.00

Sample ID			BE-CalPort Fine Rock-02	BE-CalPort Winter Sand- 02	BE-Haines 4 Mile-CR2	BE-Ken- sington-04	Blank
Parameter	Method	Units					
Boron B	ICP-MS	mg/L	< 0.002	< 0.002	< 0.002	0.005	-
Cadmium Cd	ICP-MS	mg/L	< 0.000003	0.000004	< 0.000003	< 0.000003	-
Calcium Ca	ICP-MS	mg/L	1.02	0.48	5.92	12.6	-
Chromium Cr	ICP-MS	mg/L	0.00004	< 0.00003	0.00005	0.00009	-
Cobalt Co	ICP-MS	mg/L	< 0.000004	< 0.000004	< 0.000004	< 0.000004	-
Copper Cu	ICP-MS	mg/L	0.00024	0.00018	0.00029	0.00023	-
Iron Fe	ICP-MS	mg/L	0.009	< 0.007	< 0.007	< 0.007	-
Lead Pb	ICP-MS	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Lithium Li	ICP-MS	mg/L	0.0003	0.0004	< 0.0001	0.0002	-
Magnesium Mg	ICP-MS	mg/L	0.437	0.216	0.475	0.664	-
Manganese Mn	ICP-MS	mg/L	0.00103	0.00044	0.00010	0.00098	-
Mercury Hg	CVAA	ug/L	< 0.01	< 0.01	< 0.01	< 0.01	-
Molybdenum Mo	ICP-MS	mg/L	0.00034	0.00016	0.00055	0.00204	-
Nickel Ni	ICP-MS	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-
Phosphorus P	ICP-MS	mg/L	0.016	0.015	< 0.003	< 0.003	-
Potassium K	ICP-MS	mg/L	0.911	0.745	0.189	1.82	-
Selenium Se	ICP-MS	mg/L	< 0.00004	0.00023	0.00004	0.00006	-
Silicon Si	ICP-MS	mg/L	1.56	1.24	1.79	1.72	-
Silver Ag	ICP-MS	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005	-
Sodium Na	ICP-MS	mg/L	1.36	2.53	0.60	1.17	-
Strontium Sr	ICP-MS	mg/L	0.00575	0.00296	0.00534	0.197	-
Sulphur (S)	ICP-MS	mg/L	0.5	0.3	< 0.1	6.3	-
Thallium Tl	ICP-MS	mg/L	< 0.000005	< 0.000005	< 0.000005	< 0.000005	-

CLIENT : Hecla Greens Creek Mining Company
PROJECT : HGCMC - Haines 4-Mile Rock
SGS Project # : 08123
Test : Synthetic Precipitation Leaching Procedure (EPA Method 1312) at 20:1 Liquid to Solids Ratio
Date : January 29, 2019

Leachate Analysis Extractant pH = 5.00

Sample ID			BE-CalPort Fine Rock-02	BE-CalPort Winter Sand- 02	BE-Haines 4 Mile-CR2	BE-Ken- sington-04	Blank
Parameter	Method	Units					
Tin Sn	ICP-MS	mg/L	0.00003	0.00010	0.00005	0.00004	-
Titanium Ti	ICP-MS	mg/L	0.00057	0.00041	0.00021	< 0.00005	-
Uranium U	ICP-MS	mg/L	0.000003	0.000003	< 0.000002	0.000017	-
Vanadium V	ICP-MS	mg/L	0.00142	0.00121	0.00436	0.00247	-
Zinc Zn	ICP-MS	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	-
Zirconium Zr	ICP-MS	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	-

Buck Rockafellow
 Turnagain Marine Construction
 9330 Vanguard, Suite 100
 Anchorage, AK 99507

Work Order: 1220711
 Skagway

Client: Turnagain Marine Construction

Report Date: March 08, 2022

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. This document is issued by the Company under its General Conditions of Service accessible at <<http://www.sgs.com/en/Terms-and-Conditions.aspx>>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry (Provisionally Certified as of 2/15/2022 for 200.8 metals) & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO 17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.



SGS Ref.# 1220711001
Client Name Turnagain Marine Construction
Project Name/# Skagway
Client Sample ID PAH/PCB
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 03/08/2022 17:20
Collected Date/Time 02/18/2022 9:30
Received Date/Time 02/21/2022 12:01
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Polychlorinated Biphenyls</u>									
Aroclor-1016	ND	49.4	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Aroclor-1221	ND	98.9	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Aroclor-1232	ND	49.4	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Aroclor-1242	ND	49.4	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Aroclor-1248	ND	49.4	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Aroclor-1254	ND	49.4	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Aroclor-1260	ND	49.4	ug/kg	SW8082A	A		02/24/22	03/03/22	TMM
Surrogates									
Decachlorobiphenyl (surr)	110		%	SW8082A	A	60-125	02/24/22	03/03/22	TMM
<u>Polynuclear Aromatics GC/MS</u>									
1-Methylnaphthalene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
2-Methylnaphthalene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Acenaphthene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Acenaphthylene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Anthracene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Benzo(a)Anthracene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Benzo[a]pyrene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Benzo[b]Fluoranthene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Benzo[g,h,i]perylene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Benzo[k]fluoranthene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Chrysene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Dibenzo[a,h]anthracene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Fluoranthene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Fluorene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Indeno[1,2,3-c,d] pyrene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Naphthalene	ND	20.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM



SGS Ref.# 1220711001
Client Name Turnagain Marine Construction
Project Name/# Skagway
Client Sample ID PAH/PCB
Matrix Solid/Soil (Wet Weight)

Printed Date/Time 03/08/2022 17:20
Collected Date/Time 02/18/2022 9:30
Received Date/Time 02/21/2022 12:01
Technical Director Stephen C. Ede

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Phenanthrene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Pyrene	ND	25.0	ug/kg	8270D SIM (PAH)	A		03/01/22	03/02/22	IVM
Surrogates									
2-Methylnaphthalene-d10 (surr)	89.8		%	8270D SIM (PAH)	A	58-103	03/01/22	03/02/22	IVM
Fluoranthene-d10 (surr)	93.3		%	8270D SIM (PAH)	A	54-113	03/01/22	03/02/22	IVM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

334022CDM

www.us.sgs.com

Form with sections 1-5. Section 1: CLIENT: TURNAGAIN MARINE CONST; CONTACT: JOSH JANSSEN; PROJECT: SKAGWAY. Section 2: Table with columns for RESERVED, SAMPLE IDENTIFICATION, DATE, TIME, MATRIX/MATRIX CODE, CONTAINERS, Comp Grab MI, Analysis*, and REMARKS/LOC ID. Section 5: Relinquished By: (1) Josh Janssen; Received For Laboratory By: [Signature]; Delivery Method: Hand Delivery [X].

http://www.sgs.com/terms-and-conditions



e-Sample Receipt Form

SGS Workorder #:

1220711

1220711

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		Yes Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	ABSENT
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	N/A	Cooler ID: 1 @ ambient °C Therm. ID: N/A
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***)used?	No	N/A ***Exemption permitted for metals (e.g.200.8/6020A). Sample received in 5 gallon bucket. Sub sampled into an 8oz container.
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1220711001-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

Appendix D

Turnagain Marine Construction Letter Regarding Sand Placement Quantities



Thursday, April 7, 2022

White Pass & Yukon Route
Attn: Tyler Rose
231 Second Avenue
PO Box 535
Skagway, AK 99840

RE: Ore Basin Remediation

Mr. Rose,

On 4-4-2022 Turnagain Marine began placing the specified sand cap material at the Ore dock in Skagway. Before placement, survey of the area was reviewed to confirm the dredge depths and final basin elevations were acceptable to White Pass and were in general conformance with the project plan set. Starting at section DU1, Turnagain began placing cap material at the top of the slope adjacent to the dock face. Once the clam bucket was positioned adjacent to the dock, it would be slightly opened to allow sand to escape in a controlled manner without clumping.

Using the GPS boom tip location system on the crane to log the position of the clam bucket when deposition began and ended, the operator lowered the full bucket of sand to within two feet of the design dredge elevation and spread sand evenly slightly overlapping each pass to ensure complete coverage. Turnagain placed 200 CY of material during the first day of capping operations. After capping was halted for the day, the area was surveyed in an effort to document the sand cap placement.

On 4-5-2022 Turnagain continued sand cap placement but ended the day early due to weather. On 4-6-2022 Turnagain continued on the sand cover operation. Working south following the same methodology described above, Turnagain finished the cap placement at the south end of DU3.

Turnagain confirms and attests that 753.36 tons of sand capping material was purchased, delivered to the site, and spread evenly over the dredge area identified in the project plans.

I trust that this letter will serve as final confirmation that the sand cap material was placed in general conformance with the contract documents and that both Turnagain and White Pass & Yukon Route have successfully completed the scope of work described in the project work plan.

Sincerely,

A handwritten signature in black ink, appearing to read 'Pat Joens', with a long horizontal line extending to the right.

Pat Joens
Turnagain Marine Construction

Appendix E

Water Quality Monitoring Daily Reports



Remedial Dredging Water Quality Monitoring Form

DAY 1 INTENSIVE MONITORING

Date: 3/4 Monitoring Start Time: 3:30PM Monitoring Personnel: JOSHUA JANSSEN
 Dredging Start Time: 3:25 PM Weather Observations: OVERCAST, SLIGHT RAIN, WINDY

Station ID	Time	Water Depth (feet)	Coordinates		Turbidity Reading (NTU)			Exceed	Notes
			Northing Latitude	Easting Longitude	Surface	Middle	Bottom	Yes/No*	
BASE	3:30	3	59°26'55"N	135°19'49"W	.56	.56	.49	N/A	BASE
300'	3:35	M10	59°26'57"N	135°19'45"W	.62	.73	.65	N	
150'	3:40	3	59°26'58"N	135°19'43"W	4.38	1.91	2.31	N	
BASE	5:50	3	"	"	.62	.63	.57	N/A	
300'	5:55	M	"	"	.76	.73	.69	N	
150'	6:00	3	"	"	5.2	3.6	3.7	N	

1st
2nd

Notes: VISUAL INSPECTION SHOWED NO PLUME. EQUIPMENT FUNCTIONED WELL. EXISTING DOCK STRUCTURE PROVIDES PERFECT SPOT TO TAKE WATER SAMPLES.

*Water Quality Standard: Turbidity shall be < 10.0 NTU above BG.
 150EW = 150' Early Warning Station; 300C = 300' Compliance Station; BG = Background Station (1,000 feet up-current of in-water work location); NTU = Nephelometric Turbidity Unit

Tidal Elevations	Elevation	Time	Elevation	Time
High: 18.3	16.4	3:30PM	5.9	5:50PM
Low: -2.0				



Remedial Dredging Water Quality Monitoring Form

Date: 3/5/22 Monitoring Start Time: 3:06 PM Monitoring Personnel: JOSHUA JANSSEN

Dredging Start Time: 2:50 PM Weather Observations: VERY WINDY, LOTS OF CHOP, OVERCAST

Station ID	Time	Water Depth (feet)	Coordinates		Turbidity Reading (NTU)			Exceed	Notes
			Northing Latitude	Easting Longitude	Surface	Middle	Bottom	Yes/No*	
BASE	3:06	3	59.4468	-135.33057	0.43	0.50	0.51	N	BASE
300'	3:03	3	59.44921	-135.32967	2.58	0.54	1.01	N	
150'	3:09	3	55.44946	-135.32915	.67	.53	.79	N	3
300'	5:56		59.44970	-135.32863	1.99	3.68	1.12	N	
150'	6:01		59.44970	-135.32875	.86	1.05	3.17	N	

START

SUNSET

Notes:

*Water Quality Standard: Turbidity shall be < 10.0 NTU above BG.
 150EW = 150' Early Warning Station; 300C = 300' Compliance Station; BG = Background Station (1,000 feet up-current of in-water work location); NTU = Nephelometric Turbidity Unit

Tidal Elevations	Elevation	Time	Elevation	Time
High: <u>18.2</u>	<u>17.1</u>	<u>3:06 PM</u>	<u>8.1</u>	<u>6:01</u>
Low: <u>-0.9</u>				



Remedial Dredging Water Quality Monitoring Form

Date: **3/7/22** Monitoring Start Time: **9:32 AM** Monitoring Personnel: **JOSH JANSSEN**
 Dredging Start Time: **8:30 AM** Weather Observations: **WINDY, PARTLY SUNNY, CHOPPY WATER**

Station ID	Time	Water Depth (feet)	Coordinates		Turbidity Reading (NTU)			Exceed	Notes
			Northing Latitude	Easting Longitude	Surface	Middle	Bottom	Yes/No*	
BASE	9:32		59.44864	-135.33063	.50	.62	.62	N/A	BASE
300'	9:36		59.44941	-135.32921	.62	2.33	.81	N	
150'	9:47		59.44973	-135.32851	2.38	4.71	1.10	N	
	4:09								HIGH TIDE
300'	4:02		59.44972	-135.32843	0.88		3.69	N	WAS SKIPPED MIDDLE
150'	4:02		59.44942	-135.32919	1.10		1.56	N	WAS SKIPPED MIDDLE
2 AML TUGS MOVING IN HARBOR COULD HAVE CAUSED THE NTU'S. DREDGING STOPPED AT 2PM									

START

DONE
SUNSET

Notes: **WAS IN WEEKLY CONSTRUCTION MEETING COULDN'T TAKE SAMPLES AS SOON AS DREDGING WAS OVER.**

*Water Quality Standard: Turbidity shall be < 10.0 NTU above BG.

150EW = 150' Early Warning Station; 300C = 300' Compliance Station; BG = Background Station (1,000 feet up-current of in-water work location); NTU = Nephelometric Turbidity Unit

Tidal Elevations	Elevation	Time	Elevation	Time
High:	16.9	9:31	14.3	4:09
Low:	0.5			



Remedial Dredging Water Quality Monitoring Form

Date: 3/16 Monitoring Start Time: 11:14AM Monitoring Personnel: JOSHUA JANSEN
 Dredging Start Time: 11:20AM Weather Observations: WINDY RAIN/SNOW

Station ID	Time	Water Depth (feet)	Coordinates		Turbidity Reading (NTU)			Exceed	Notes
			Northing Latitude	Easting Longitude	Surface	Middle	Bottom	Yes/No*	
BASE	11:14		59.4468	-135.33057	.56	.58	.64	N/A	BASE
300'	11:20		59.44959	-135.32893	.60		1.60	N	
150'	11:24		59.44987	-135.32837	.68		1.70	N	
300'	5:25		59.44959	-135.32893	.72		2.24	N	
150'	5:30		59.44987	-135.32893 -135.32837	.90		3.21	N	

Notes:

*Water Quality Standard: Turbidity shall be < 10.0 NTU above BG.
 150EW = 150' Early Warning Station; 300C = 300' Compliance Station; BG = Background Station (1,000 feet up-current of in-water work location); NTU = Nephelometric Turbidity Unit

Tidal Elevations	Elevation	Time	Elevation	Time
High: 16.6	14.3	11:24AM	2.5	5:30PM
Low: 2.7				



Remedial Dredging Water Quality Monitoring Form

Date: 3-27-22	Monitoring Start Time: 8:45	Monitoring Personnel: PAT JOENS
Dredging Start Time: 8:42		Weather Observations: OVERCAST

Station ID	Time	Water Depth (feet)	Coordinates		Turbidity Reading (NTU)			Exceed Yes/No*	Notes
			Northing Latitude	Easting Longitude	Surface	Middle	Bottom		
BABE	8:45		59.44867	-135.	.51		.54	N/A	
300'			59.44953	-135.32896	.69		.71	N	
150'			59.44988	-135.32823	.50		.64	N	
300'			59.44954	-135.32896	.84		.50	N	
150'			59.44988	-135.32824	.86		1.05	N	

Notes:

*Water Quality Standard: Turbidity shall be < 10.0 NTU above BG.
 150EW = 150' Early Warning Station; 300C = 300' Compliance Station; BG = Background Station (1,000 feet up-current of in-water work location); NTU = Nephelometric Turbidity Unit

Tidal Elevations	Elevation	Time	Elevation	Time
High:	14.8	9:54 AM	14.0	11:34 PM
Low:	5.9	3:56 AM	0.8	4:44 PM



Remedial Dredging Water Quality Monitoring Form

Date: 3-29-22	Monitoring Start Time: 11:34	Monitoring Personnel: PAT JOENS
Dredging Start Time: 11:40		Weather Observations: OVERCAST / CALM WINDS

Station ID	Time	Water Depth (feet)	Coordinates		Turbidity Reading (NTU)			Exceed	Notes
			Northing Latitude	Easting Longitude	Surface	Middle	Bottom	Yes/No*	
BAGE	11:34		59.44868	-135.33064	.44		.43	N/A	
300'	11:40		59.44934	-135.32935	.53		.52	N	
150'	11:46		59.44965	-135.32860	.49		1.23	N	
300	6:46		59.44994	-135.32831	1.23		2.15		
150'	6:51		59.45005	-135.32788	1.45		1.98	N	

Notes:

*Water Quality Standard: Turbidity shall be < 10.0 NTU above BG.
 150EW = 150' Early Warning Station; 300C = 300' Compliance Station; BG = Background Station (1,000 feet up-current of in-water work location); NTU = Nephelometric Turbidity Unit

Tidal Elevations	Elevation	Time	Elevation	Time
High:	15.4	10:19 AM	16.6	12:06 PM
Low:	2.4	6:06 AM	-1.1	6:30 PM

Appendix F
Post-Construction Structural Monitoring
Results (TMC/KPFF)

STRUCTURAL MONITORING OF DOCK

A total of 7 PK nails were placed on the existing dock structure along the project limits. Each PK nail was logged for 3 minutes from our GPS base to record its current position before any onsite dredging occurred. Each day, weather depending, a 30 second shot will be logged on each PK nail to check for excessive movement. PK_BASE was set as control in concrete to help establish any GPS errors for the day. PK7 was set about 200' outside the project area to the NE of the dock, while not in the screen capture, it will still be logged. The target of 3/4" which is 0.0625' may be an unrealistic number as our normal daily check ins can start to approach that value thus the reason for setting PK_Base in concrete as to better determine "real" movement. All PK nail measurements will be done on the dock facing the same direction, meaning the rod bubble will be perpendicular to the dock to best achieve consistent results. When ΔELE is negative, that is a CUT from original.



PK_Base							PK1 Reset							PK2 Reset						
Name	Easting	Northing	Ele	ΔE	ΔN	ΔELE	Name	Easting	Northing	Ele	ΔE	ΔN	ΔELE	Name	Easting	Northing	Ele	ΔE	ΔN	ΔELE
PK_Base	2376415.108	2785856.27	29.436				PK1 Reset	2376617.624	2785782.999	28.976				PK2 Reset	2376661.344	2785825.949	28.999			
3.03 chk	2376415.131	2785856.240	29.415	-0.023	0.030	0.021	3.03 chk	2376617.643	2785783.018	28.979	-0.020	-0.020	-0.003	3.03 chk	2376661.348	2785825.939	28.983	-0.004	0.010	0.016
3.04 chk	2376415.123	2785856.263	29.395	-0.015	0.007	0.041	3.04 chk	2376617.633	2785783.005	29.007	-0.010	-0.007	-0.031	3.04 chk	2376661.347	2785825.948	29.005	-0.003	0.001	-0.006
chk 3.05b	2376415.117	2785856.267	29.435	-0.009	0.003	0.001	chk 3.04a	2376617.643	2785783.004	28.981	-0.020	-0.006	-0.005	chk 3.04b	2376661.354	2785825.911	28.927	-0.010	0.038	0.072
chk 3.07b	2376415.118	2785856.239	29.418	-0.010	0.031	0.018	chk 3.05c	2376617.630	2785783.008	28.972	-0.007	-0.010	0.004	chk 3.05d	2376661.354	2785825.937	28.996	-0.010	0.012	0.003
chk 3.09i	2376415.147	2785856.273	29.441	-0.039	-0.003	-0.005	chk 3.07d	2376617.664	2785782.997	28.938	-0.041	0.001	0.038	chk 3.07e	2376661.365	2785825.958	28.989	-0.021	-0.010	0.010
chk 3.09r	2376415.171	2785856.243	29.443	-0.063	0.027	-0.007	chk 3.09b	2376617.636	2785783.039	28.989	-0.013	-0.041	-0.013	chk 3.09c	2376661.357	2785825.953	28.987	-0.013	-0.005	0.012
chk 3.11c	2376415.168	2785856.243	29.438	-0.060	0.027	-0.002	chk 3.09q	2376617.674	2785783.007	28.980	-0.051	-0.009	-0.004	chk 3.09p	2376661.395	2785825.975	28.986	-0.051	-0.027	0.013
chk 3.12b	2376415.204	2785856.182	29.423	-0.096	0.088	0.013	chk 3.11d	2376617.659	2785783.010	29.014	-0.036	-0.012	-0.038	chk 3.11e	2376661.373	2785825.955	29.018	-0.029	-0.007	-0.019
chk 3.13b	2376415.142	2785856.239	29.468	-0.034	0.031	-0.032	chk 3.12i	2376617.670	2785783.001	29.014	-0.047	-0.003	-0.038	chk 3.12h	2376661.366	2785825.955	28.986	-0.022	-0.007	0.013
chk 3.14i	2376415.152	2785856.256	29.422	-0.044	0.014	0.014	chk 3.13i	2376617.651	2785783.005	28.991	-0.028	-0.007	-0.015	chk 3.13h	2376661.366	2785825.929	28.999	-0.022	0.019	0.000
chk 3.15b	2376415.146	2785856.214	29.363	-0.038	0.056	0.073	chk 3.14b	2376617.666	2785783.012	28.997	-0.043	-0.014	-0.021	chk 3.14c	2376661.372	2785825.960	28.975	-0.028	-0.012	0.024
chk 3.16i	2376415.150	2785856.226	29.400	-0.042	0.044	0.036	chk 3.15j	2376617.663	2785783.005	28.980	-0.040	-0.007	-0.004	chk 3.15i	2376661.385	2785825.945	28.984	-0.041	0.004	0.015
chk 3.17i	2376415.142	2785856.244	29.422	-0.034	0.026	0.014	chk 3.16b	2376617.642	2785782.988	29.027	-0.019	0.010	-0.051	chk 3.16c	2376661.364	2785825.935	28.975	-0.020	0.013	0.024
chk 3.18h	2376415.146	2785856.240	29.410	-0.038	0.030	0.026	chk 3.17b	2376617.650	2785782.956	28.941	-0.027	0.042	0.035	chk 3.17c	2376661.366	2785825.894	28.940	-0.022	0.055	0.059
chk 3.19b	2376415.148	2785856.229	29.404	-0.040	0.041	0.032	chk 3.18a	2376617.648	2785782.996	28.996	-0.025	0.002	-0.020	chk 3.18b	2376661.370	2785825.931	28.986	-0.026	0.018	0.013
chk 3.20i	2376415.144	2785856.229	29.455	-0.036	0.041	-0.019	chk 3.19c	2376617.649	2785783.001	29.000	-0.026	-0.003	-0.024	chk 3.19d	2376661.366	2785825.948	28.995	-0.022	0.001	0.004
chk 3.21i	2376415.146	2785856.235	29.423	-0.038	0.035	0.013	chk 3.20b	2376617.650	2785782.990	28.990	-0.027	0.008	-0.014	chk 3.20c	2376661.363	2785825.938	29.045	-0.019	0.010	-0.046
chk 3.22h	2376415.160	2785856.225	29.428	-0.052	0.045	0.008	chk 3.21b	2376617.668	2785782.994	29.017	-0.045	0.004	-0.041	chk 3.21c	2376661.366	2785825.930	29.010	-0.022	0.018	-0.011
3.24 pk chk	2376415.155	2785856.226	29.428	-0.047	0.044	0.008	chk 3.22a	2376617.647	2785782.979	29.005	-0.024	0.019	-0.029	chk 3.22b	2376661.354	2785825.923	29.021	-0.010	0.025	-0.022
pk chk 3.25	2376415.142	2785856.238	29.404	-0.034	0.032	0.032	3.24 pk chk	2376617.652	2785782.988	29.026	-0.029	0.010	-0.050	3.24 pk chk t	2376661.364	2785825.928	29.020	-0.020	0.021	-0.021
3.26 chk pk	2376415.147	2785856.234	29.428	-0.039	0.036	0.008	pk chk 3.25	2376617.647	2785782.987	28.978	-0.024	0.011	-0.002	pk chk 3.25b	2376661.366	2785825.934	28.973	-0.022	0.015	0.026
3.27 chk pk	2376415.139	2785856.231	29.420	-0.031	0.039	0.016	3.26 chk pk	2376617.652	2785782.999	28.992	-0.029	-0.001	-0.016	3.26 chk pk t	2376661.358	2785825.934	28.999	-0.014	0.015	0.000
3.28 chk pk	2376415.129	2785856.227	29.432	-0.041	0.043	0.004	3.27 chk pk	2376617.648	2785782.991	28.990	-0.025	0.007	-0.014	3.27 chk pk t	2376661.371	2785825.936	29.028	-0.027	0.012	-0.029
3.29 chk pk	2376415.126	2785856.229	29.412	-0.018	0.041	0.024	3.28 chk pk	2376617.656	2785782.999	29.009	-0.033	-0.001	-0.033	3.28 chk pk t	2376661.361	2785825.948	29.003	-0.017	0.001	-0.004
3.30 chk pk	2376415.159	2785856.249	29.413	-0.051	0.021	0.023	3.29 chk pk	2376617.658	2785782.992	28.971	-0.035	0.006	0.005	3.29 chk pk t	2376661.351	2785825.929	28.981	-0.007	0.019	0.018
3.31 chk pk	2376415.148	2785856.226	29.415	-0.040	0.044	0.021	3.30 chk pk	2376617.659	2785782.987	28.999	-0.036	0.011	-0.023	3.30 chk pk t	2376661.356	2785825.954	29.006	-0.012	-0.005	-0.007
chk 4.01a	2376415.132	2785856.234	29.417	-0.024	0.036	0.019	3.31 chk pk	2376617.630	2785782.984	28.973	-0.007	0.014	0.003	3.31 chk pk j	2376661.354	2785825.945	28.971	-0.010	0.004	0.028
chk 4.02i	2376415.145	2785856.242	29.437	-0.037	0.028	-0.001	chk 4.01b	2376617.650	2785782.993	28.975	-0.027	0.005	0.001	chk 4.01c	2376661.358	2785825.948	28.945	-0.014	0.001	0.054
chk 4.03h	2376415.152	2785856.239	29.437	-0.044	0.031	-0.001	chk 4.02h	2376617.643	2785783.007	29.018	-0.020	-0.009	-0.042	chk 4.02g	2376661.370	2785825.955	29.000	-0.026	-0.007	-0.001
							chk 4.03a	2376617.650	2785782.994	29.008	-0.027	0.004	-0.032	chk 4.03b	2376661.363	2785825.939	28.997	-0.019	0.010	0.002

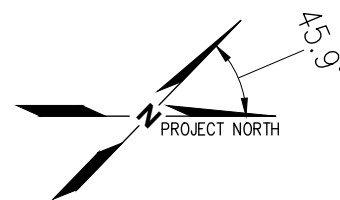
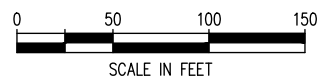
chk 3.15d	2376923.953	2786085.027	28.894	-0.019	-0.028	-0.006	chk 3.15c	2377006.892	2786166.123	28.782	0.007	0.035	0.023			
chk 3.16g	2376923.945	2786085.031	28.895	-0.010	-0.032	-0.007	chk 3.16h	2377006.884	2786166.126	28.771	0.015	0.032	0.034			
chk 3.17g	2376923.944	2786085.003	28.890	-0.010	-0.004	-0.002	chk 3.17h	2377006.871	2786166.102	28.774	0.028	0.056	0.031			
chk 3.18f	2376923.946	2786085.045	28.930	-0.012	-0.046	-0.042	chk 3.18g	2377006.891	2786166.141	28.808	0.008	0.017	-0.003			
chk 3.19h	2376923.955	2786085.037	28.951	-0.021	-0.038	-0.063	chk 3.19i	2377006.882	2786166.137	28.824	0.017	0.021	-0.019			
chk 3.20g	2376923.946	2786085.019	28.954	-0.012	-0.020	-0.066	chk 3.20h	2377006.868	2786166.123	28.826	0.031	0.035	-0.021			
chk 3.21g	2376923.939	2786085.018	28.915	-0.004	-0.019	-0.027	chk 3.21h	2377006.877	2786166.124	28.814	0.022	0.034	-0.009			
chk 3.22f	2376923.943	2786085.013	28.928	-0.008	-0.014	-0.040	chk 3.22g	2377006.893	2786166.112	28.767	0.006	0.046	0.038			
3.24 pk chk	2376923.957	2786085.006	28.932	-0.022	-0.007	-0.044	3.24 pk chk	2377006.889	2786166.103	28.792	0.010	0.055	0.013			
pk chk 3.25f	2376923.937	2786085.037	28.903	-0.002	-0.038	-0.015	pk chk 3.25g	2377006.875	2786166.132	28.783	0.024	0.026	0.022			
3.26 chk pk	2376923.944	2786085.011	28.912	-0.010	-0.012	-0.024	3.26 chk pk	2377006.873	2786166.113	28.812	0.026	0.045	-0.007			
3.27 chk pk	2376923.952	2786085.033	28.932	-0.018	-0.034	-0.044	3.27 chk pk	2377006.886	2786166.121	28.820	0.013	0.037	-0.015			
3.28 chk pk	2376923.949	2786085.031	28.938	-0.015	-0.032	-0.050	3.28 chk pk	2377006.885	2786166.129	28.837	0.014	0.029	-0.032			
3.29 chk pk	2376923.955	2786085.031	28.921	-0.021	-0.032	-0.033	3.29 chk pk	2377006.876	2786166.118	28.813	0.023	0.040	-0.008			
3.30 chk pk	2376923.954	2786085.032	28.946	-0.019	-0.033	-0.058	3.30 chk pk	2377006.879	2786166.140	28.816	0.020	0.018	-0.011			
3.31 chk pk	2376923.945	2786085.020	28.909	-0.010	-0.021	-0.021	3.31 chk pk	2377006.880	2786166.121	28.807	0.019	0.037	-0.002			
chk 4.01f	2376923.938	2786085.037	28.942	-0.004	-0.038	-0.054	chk 4.01e	2377006.874	2786166.143	28.820	0.025	0.015	-0.015			
chk 4.02c	2376923.954	2786085.037	28.934	-0.019	-0.038	-0.046	chk 4.02b	2377006.883	2786166.140	28.808	0.016	0.018	-0.003			
chk 4.03f	2376923.954	2786085.025	28.945	-0.019	-0.026	-0.057	chk 4.03g	2377006.888	2786166.136	28.797	0.011	0.022	0.008			
Average Δ							-0.012	-0.037	-0.039	Average Δ				0.020	0.023	0.008

Plotted: Mar 10, 2022 - 11:05am kkong Layout: Layout
M:\2021\2100135 Skagway Ore Peninsula Multi-use Dock\Drawings\Exhibit\2022-03-10 Dock Movement Exhibit\2022-03-10 Basemap.dwg



NOTES

- 1. VERTICAL DATUM: MLLW
- 2. HORIZONTAL DATUM: NAD83 ALASKA ZONE 1



kpff

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ORE PENINSULA MASS REMOVAL PROJECT SKAGWAY, ALASKA SITE MOVEMENT SURVEY LOCATION MAP

DATE: 2022-03-10	SCALE: 1" = 100'
DRAWN BY: KK	SHT 1 OF 2

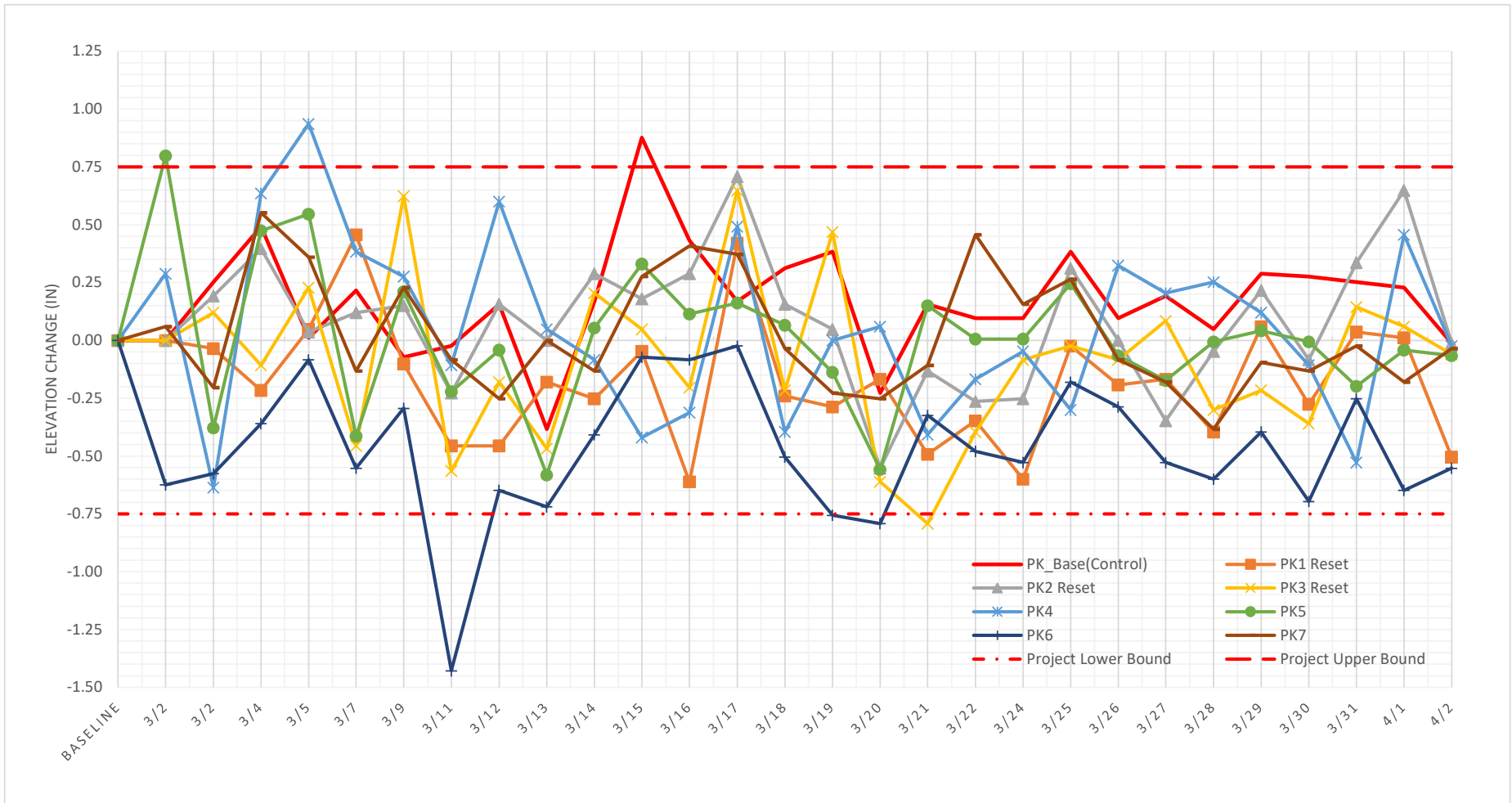


FIGURE 1 - VERTICAL MOVEMENT CHART

Project: Ore Peninsula Mass Removal Project
 Date: 4/5/2022
 By: CE

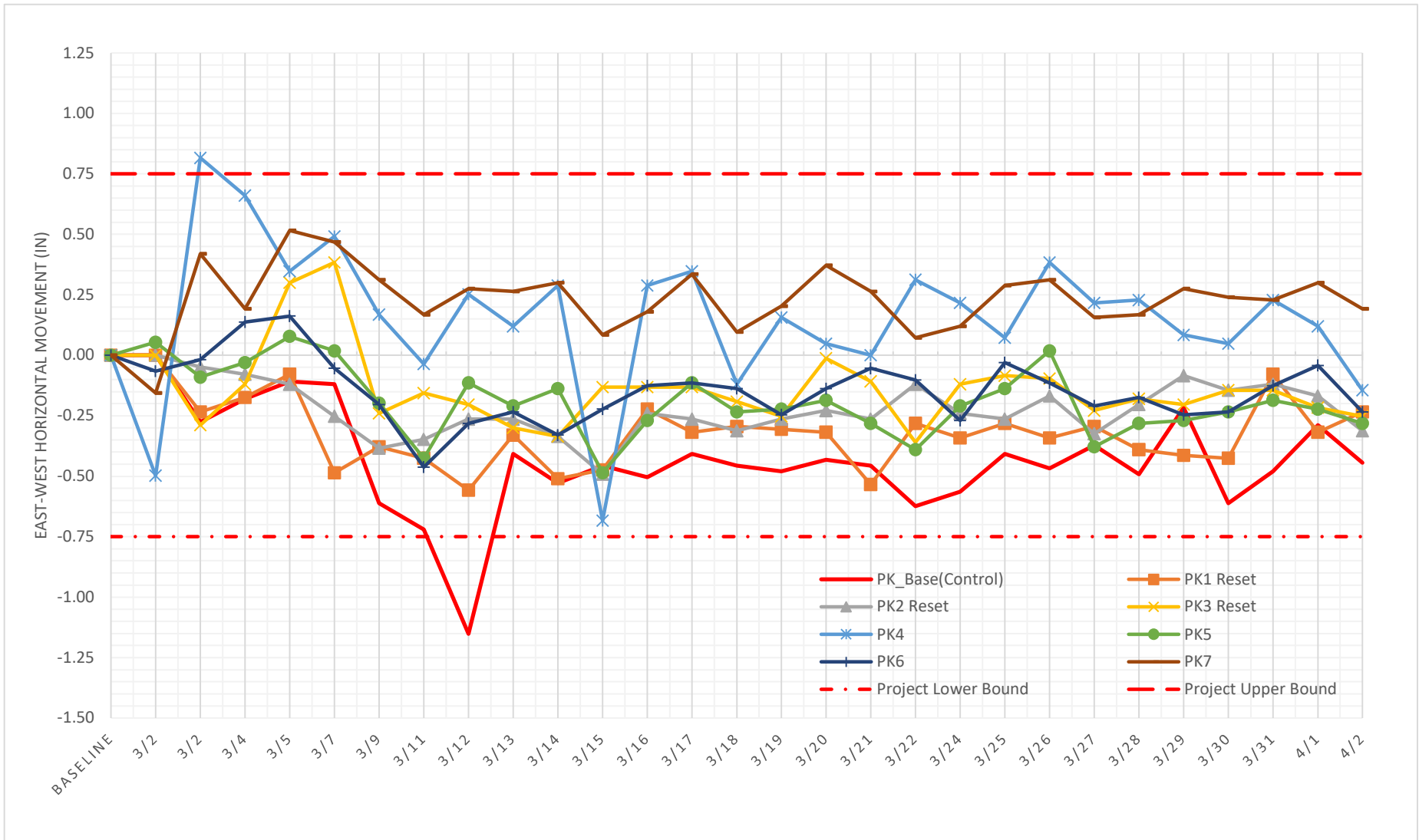


FIGURE 2 - EAST-WEST HORIZONTAL MOVEMENT CHART

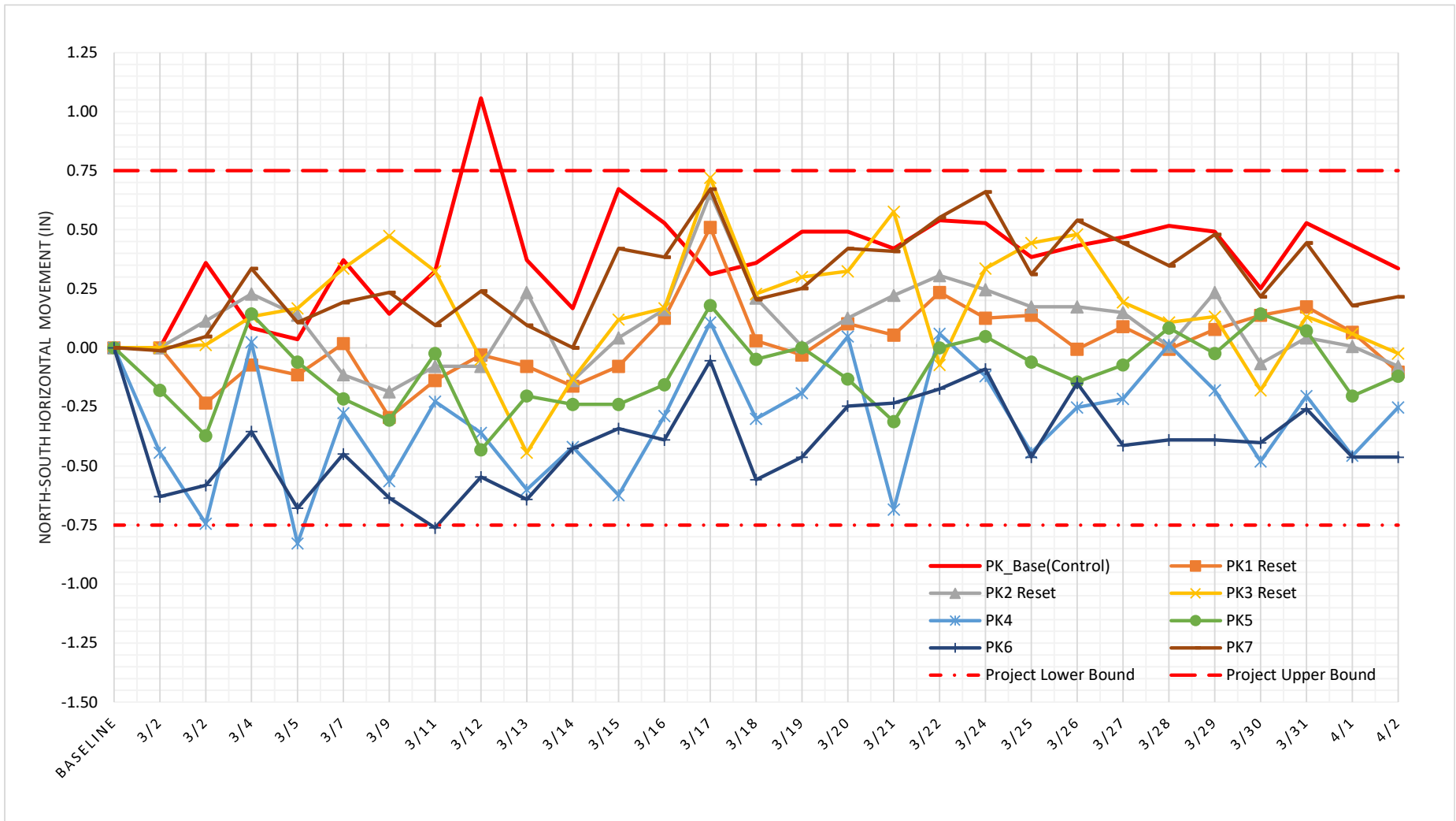


FIGURE 3 - NORTH-SOUTH HORIZONTAL MOVEMENT CHART

Appendix G
Marine Mammal Monitoring Summary
Memorandum

Memorandum

May 6, 2022

To: Sadie Wright, NOAA Fisheries
From: Barbara Bundy and Derek Ormerod, Anchor QEA, LLC
cc: Tyler Rose, White Pass and Yukon Railroad

Re: Skagway Ore Terminal Remediation Project, Marine Mammal Monitoring Summary Report

White Pass & Yukon Route conducted environmental dredging of contaminated sediments in the Skagway Ore Basin (Ore Basin) adjacent to the Skagway Ore Terminal facility (Ore Terminal; collectively, the site) in Skagway, Alaska. The Skagway Ore Terminal Sediment Remediation Project (Project) removed contaminated sediment from the site through mechanical dredging to address legacy contamination associated with spillage from historical ore loading operations.

The National Marine Fisheries Service (NMFS) completed informal consultation under section 7(a)(2) of the Endangered Species Act regarding the proposed dredging. Listed marine mammal species are Steller sea lions and Mexico distinct population segment (DPS) humpback whales. Required mitigation measures for potential impacts on listed species are described in a letter dated July 13, 2020, from NMFS to the U.S. Army Corps of Engineers. Measures included the following (among others):

- **Implementation of a 200-meter shutdown zone.** If a marine mammal were observed within or approaching the shutdown zone during in-water work, a stop-work order would be issued immediately.
- **Marine mammal monitoring.** A wildlife observer must be positioned to observe the entire shutdown zone during in-water work and must be able to identify the designated marine mammal species.
- **Reporting.** Weekly reports of observations would be submitted to NMFS, and a summary report detailing all observations during in-water work submitted within 30 days of the end of in-water work.

Weekly reporting was conducted during the in-water work and this memorandum is the summary report of marine mammal observations during in-water work for the Project.

In-Water Work

In-water work consisted of dredging and placement of sand cover and occurred on 17 working days over the period between March 3, 2022, and April 6, 2022. There were 7 full days and occasionally

partial days in this overall working period. On partial days, the contractor was not conducting dredging or material placement (in-water work) and the contractor was only conducting activities on the barge (e.g., material stabilization, routine maintenance, and housekeeping). Wildlife observer Rob May monitored in-water work from the Ore Dock, adjacent to the dredge barge, during all in-water work activities.

Marine Mammal Sightings

Table 1 and Figure 1 summarize all of the marine mammal sightings during the full course of the work. As noted in the table, marine mammals were observed both inside and outside of the shutdown zone on five occasions. On all five occasions, in-water work was not underway at the time of the sighting. On three of the occasions, the barge was repositioning, and on two of the occasions, the dredge was idle. The marine mammals exited the shutdown zone before in-water work resumed. Therefore, in-water work did not occur while a marine mammal was within or approaching the shutdown zone.

The only listed species sighting was on March 27, when three or four Steller sea lions were observed 1,200 feet (365 meters) from the in-water work. This is outside the shutdown zone and the mammals were traveling east, away from the shutdown zone. Mexico DPS humpback whales were not observed.

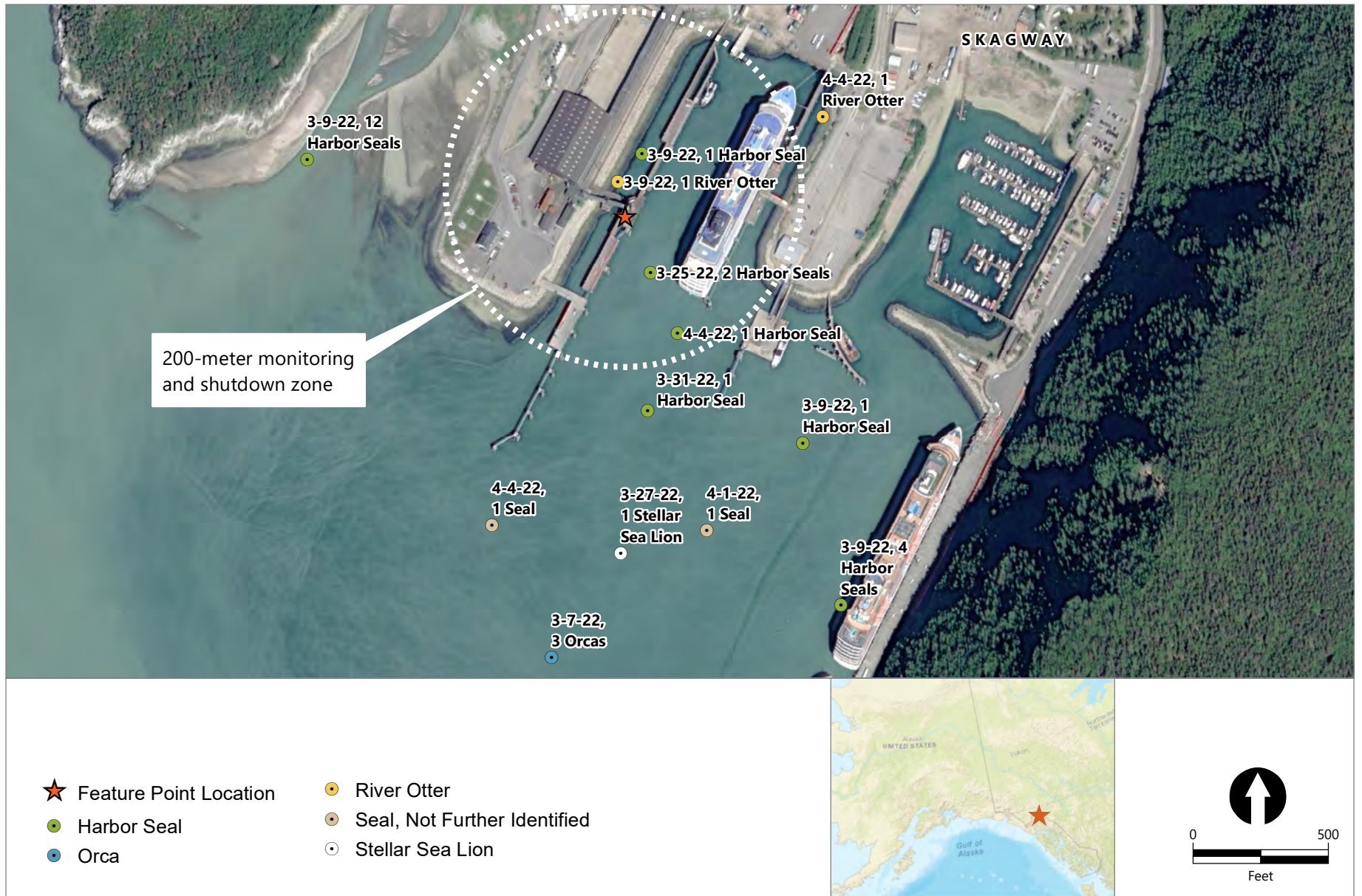
Table 1
Marine Mammal Sightings

Date	Mammal(s) Sighted	Response/Outcome
3/4/2022	None	None needed
3/5/2022	None	None needed
3/7/2022	<ul style="list-style-type: none"> 3 orcas (2 adults and 1 juvenile), travelling and foraging, 485 meters from in-water work 	None needed, marine mammals were outside of, and not approaching, the shutdown zone
3/9/2022	<ul style="list-style-type: none"> 4 harbor seals, foraging and playing, 485 meters from in-water work 1 harbor seal, travelling northeast, 305 meters from in-water work 12 harbor seals, foraging and playing, 395 meters from in-water work 	None needed, marine mammals were outside of, and not approaching, the shutdown zone
	<ul style="list-style-type: none"> 1 river otter, travelling southwest, through the shutdown zone 1 harbor seal, traveling northwest through the shutdown zone 	None needed, in-water work was not occurring during the time the marine mammals were approaching and within the shutdown zone
3/11/2022	None	None needed
3/12/2022	None	None needed
3/13/2022	None	None needed

Date	Mammal(s) Sighted	Response/Outcome
3/16/2022	None	None needed
3/24/2022	None	None needed
3/25/2022	<ul style="list-style-type: none"> • 2 harbor seals, travelling through and foraging in the shutdown zone 	None needed, in-water work was not occurring during the time the marine mammals were approaching and within and shutdown zone
3/27/2022	<ul style="list-style-type: none"> • 6 harbor seals, playing and foraging, 485 meters from in-water work • 3 or 4 Steller sea lions, travelling east and foraging, 365 meters from in-water work 	None needed, marine mammals were outside of, and not approaching, the shutdown zone
3/29/2022	None	None needed
3/31/2022	<ul style="list-style-type: none"> • 1 harbor seal, observing work and foraging in the shutdown zone 	None needed, in-water work was not occurring during the time the marine mammals were approaching and within the shutdown zone
4/1/2022	<ul style="list-style-type: none"> • 1 harbor seal, travelling east and foraging, 365 meters from in-water work 	None needed, marine mammals were outside of, and not approaching, the shutdown zone
4/4/2022	<ul style="list-style-type: none"> • 1 river otter, foraging and travelling northeast, 335 meters from in-water work • 1 harbor seal, travelling southeast and foraging, 365 meters from in-water work 	None needed, marine mammals were outside of, and not approaching, the shutdown zone
4/4/2022	<ul style="list-style-type: none"> • 1 harbor seal, observing work and foraging in the shutdown zone 	None needed, in-water work was not occurring during the time the marine mammals were approaching and within the shutdown zone
4/5/2022	None	None needed
4/6/2022	None	None needed

Note: Listed species sighting in **bold**

Figure



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Figure 1
Marine Mammal Sightings
 Skagway Ore Terminal Remediation Project