TBPF Dig 14 Characterization Plan

Date	24 September 2021
To	Mike Evans – Alaska Department of Environmental Conservation
From	Kelley Nixon – Hilcorp Alaska LLC.
Subject	**Trading Bay Production Facility Dig 14 Characterization Plan**

Introduction

This characterization plan, prepared for Hilcorp Alaska, LLC (Hilcorp) by Jacobs Engineering Group Inc. (Jacobs), describes the excavation characterization analytical sampling tasks to be performed at Trading Bay Production Facility (TBPF) (Figure A-1). The TBPF is classified by Alaska Department of Environmental Conservation (ADEC) Contaminated Sites (CS) program as an active contaminated site, Hazard ID:1263. ADEC describes the Trading Bay Facility as "a site that has contamination extending from ground surface to the water table in most areas in the facility due to past work practices" (ADEC 2021b). The intention of this excavation characterization is to determine the maximum concentrations of contamination remaining in the excavation at this time to inform long term management decisions for Dig 14 as part of the Trading Bay Facility contaminated site.

Excavation and characterization activities are being performed in response to a spill discovered on 8/20/21 during an inspection dig (Dig 14) of buried pipelines adjacent the Flare Trap Building (Figure A-2). This spill was recorded by ADEC Prevention, Preparedness, and Response (PPR) program as the Hilcorp TBPF Inspection Dig #14 Piping Leak, Spill Number 21239923201. The source of the spill appears to be an 8-inch line that tapered to a 4-inch line just outside the Flare Trap Building. The line appears to have been intentionally severed along the taper, and abandoned in place, but not properly cleaned or capped. The 8-inch side of the line is a dead leg on the current sand drain system, which operated at 0-30 pounds head pressure when draining the Battery 2 tanks to the sand drain. The 4-inch side of the line appears to be the primary source of the spill and runs from the excavation to the old sand drain pit. This line has been located running to the east from the Flare Trap Building and turning south between the two produced water retention ponds for approximately 90 feet. Both ends of the severed line exposed within Dig 14 were capped and secondary containment placed beneath the lines. The 8-inch dead leg line has since been removed. The spill volume has been estimated to be 15 gallons of crude oil from produced water, which has been through the initial separation phase;

approximately 60% crude oil and 40% water. A slow, unpressurized leak at the decommissioned line may have been occurring for an unknown period of time.

Trading Bay Production Facility Description

The TBPF is a remote onshore crude oil and natural gas processing facility on the west side of Cook Inlet, Alaska, that has been in operation for more than 50 years. Crude oil, produced water, and natural gas are transported to the TBPF via pipelines from offshore platforms in Cook Inlet and separated into three product streams. The crude oil is piped via sub-sea pipeline to the east side of Cook Inlet, and the natural gas is piped north for distribution by utility companies. The produced water is held in onsite retention ponds, before being treated and discharged to Cook Inlet under National Pollution Discharge Elimination System permit AKG-31-5002. The TBPF is located on private property, currently owned by Hilcorp in Sections 5 and 6, Township 8 North, Range 14 West, Seward Meridian, latitude 60.816507, longitude 151.788497. Figure A-1 (Appendix A) shows the location of the TBPF.

Dig 14 Description and Background

Excavation of contaminated material was conducted on 8/20/21 while exposing pipelines for inspection. Approximately 20 gallons of contaminated soil were containerized, and soil understood to be clean was stockpiled on site. The dimensions of the dig were approximately 4 feet long, 3 feet wide, and 6 feet deep.

On 8/31/21 qualified environmental professionals (QEPs) dug a test pit on the floor of the Dig 14 excavation approximately 1 foot long, 1 foot wide, and 2 feet deep to better understand the nature and extent of the spill. Headspace organic vapor analysis using a photoionization detector (PID) as a field screening method indicated that contamination is concentrated beneath the 4-inch line to depths of 6-8 feet below ground surface (bgs), but the vertical extent of contamination had not yet been delineated. Screening samples from beneath the outfalls of the 8x4 inch line resulted in screening concentrations of 60 parts per million (ppm) at 7 feet bgs, 68.0 ppm at 7.5 feet bgs, and 96.3 ppm at 8 feet bgs.

Following the 8/31/21 site visit by QEPs, TBPF field personnel have containerized the remaining, accessible soil that exhibited visual and/or olfactory evidence of contamination. Approximately 3.25 cubic yards of contaminated soil have been removed from Dig 14 in total. The excavation is now approximately 10 feet by 10 feet, to a maximum depth of 8 feet bgs.

Practicable excavation limits have been reached laterally to the south and west due to limiting infrastructure on site, including the Flare Trap building to the west the produced water retention ponds to the south.

Soil Screening and Sampling

QEPs will be brought back to the site to conduct field screening and analytical characterization sampling at Dig 14 and at the stockpile staged on site. Screening and sampling will be conducted in accordance with ADEC's *Field Sampling Guidance* (ADEC 2019a) and the Alaska Administrative Code (AAC) Title 18, Chapter 75 (18 AAC 75) (ADEC 2021a).

Stockpiles

The stockpile on site is understood to be made up of clean material and will be screened and sampled by a QEP. The QEP will perform headspace organic vapor analysis using a PID as a field screening method and will collect analytical confirmation soil samples based on field screening results. Table 2A in ADEC's *Field Sampling Guidance* (ADEC 2019a) will dictate soil screening and sampling frequency and procedures. Field sketches and photos will record the locations of field screening samples. Field screening samples will consist of freshly uncovered soil to minimize the potential for volatilization.

Soil in the stockpile understood to be contaminated based on PID readings and visual and olfactory evidence of contamination will be containerized in super sacks using a Hurricane 500 industrial vacuum. The stockpile will then be screened and sampled in accordance with Table 2A in ADEC's *Field Sampling Guidance* (ADEC 2019a) and the stockpile will remain in place on site until analytical confirmation sample results confirm contamination is not present (below the cleanup levels described below) and the soil may be used as backfill.

Analytical stockpile samples will be analyzed by SGS North America Inc. for:

- Gasoline-range organics (GRO) by AK101
- Diesel-range organics (DRO) by AK102
- Residual-range organics (RRO) by AK103
- Petroleum-related volatile organic compounds (VOCs) by SW8260
- Polynuclear aromatic hydrocarbons (PAHs) by SW8270-Selected Ion Monitoring (SIM)

Soil sample results will be compared to both the ADEC Tables B1 and B2 Method Two Under 40-Inch Zone human health and migration to groundwater cleanup levels (ADEC 2021a) to assess the potential human health impacts and the nature and extent of contamination. If all results are below cleanup levels the soil may be used as excavation backfill.

Excavation Screening and Characterization Sampling

The QEPs will conduct headspace organic vapor analysis field screening using a PID within the Dig 14 excavation to ensure the removal of contaminated soil has been completed to practicable extents. At excavation boundaries understood to be clean, screening and analytical confirmation sampling will be conducted in accordance with Table 2B in ADEC's *Field Sampling Guidance* (ADEC 2019a). At excavation boundaries understood to contain contamination that cannot not be removed due to existing infrastructure, analytical characterization samples will be collected directly from the location exhibiting the greatest evidence of contamination, taking into consideration PID readings, visual and/or olfactory evidence of contamination, and QEP best professional judgement. Due to depth of the excavation, steep sidewalls, and presence of limiting infrastructure the QEPs may not be able to enter the excavation for safety reasons. If the excavation is unsafe to enter, sidewalls may be sloped and/or benched, or samples will be collected from an excavator bucket or similar.

Analytical characterization samples will be analyzed SGS North America Inc. for:

- Gasoline-range organics (GRO) by AK101
- Diesel-range organics (DRO) by AK102
- Residual-range organics (RRO) by AK103
- Petroleum-related volatile organic compounds (VOCs) by SW8260
- Polynuclear aromatic hydrocarbons (PAHs) by SW8270-Selected Ion Monitoring (SIM)

Soil sample results will be compared to both the ADEC Tables B1 and B2 Method Two Under 40-Inch Zone human health and migration to groundwater cleanup levels (ADEC 2021a) to assess the potential human health impacts and the nature and extent of contamination. It is anticipated that some analytical results will exceed cleanup levels and continued management of this site will be conducted in cooperation with Hilcorp and ADEC Contaminated Sites Program.

Investigation Derived Waste

Contaminated soil removed as part of spill response activities at Dig 14 falls under the Resource Conservation and Recovery Act exploration & production exemption (E&P exempt) and may be disposed of at the TBPF recycling sand pit, the Kenai Gas Field (KGF) Grind & Inject (G&I) facility, or the G&I facility at Drill Site 4 in Prudhoe Bay. Prior to offsite shipment of contaminated material, an ADEC Transport, Treatment, & Disposal Approval Form for Contaminated Media will be completed and submitted to ADEC for review and approval. Disposable sampling supplies will be eligible for disposal in the TBPF incinerator.

Documentation and Reporting

Documentation and reporting in association with this plan will be conducted by the project QEP. The project QEP will maintain a field logbook and take digital photographs to document daily project activities and site conditions. Approximate dimensions of the final excavation boundaries and locations of field screening and analytical samples will be measured by applying swing-tie surveying and will be documented in the field logbook.

Following the completion of applicable earthwork, sampling, and receipt of the analytical results, the QEP will prepare a summary report. The report will include field screening and sampling results (including the laboratory reports) and figures with excavation and sampling locations. The report will also contain the field notes, waste tracking, and photograph log. An ADEC Laboratory Data Review Checklist and quality assurance report will be prepared for all analytical data used for confirmation sampling following ADEC's *Minimum Quality Assurance Requirements for Sampling Handling, Reports, and Laboratory Data* guidance (ADEC 2019b).

References

ADEC. 2019a (22 October). *Field Sampling Guidance*. Division of Spill Prevention and Response, Contaminated Sites Program.

ADEC. 2019b (22 October). Minimum Quality Assurance Requirements for Sampling Handling, Reports, and Laboratory Data. Division of Spill Prevention and Response, Contaminated Sites Program.

ADEC. 2021a (June). Oil and Other Hazardous Pollution Control Regulations—Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances. Division of Spill Prevention and Response, Contaminated Sites Program. 18 AAC 75.

ADEC. 2021b (September). State of Alaska, ADEC, Contaminated Sites Program; Site Name: Trading Bay Facility; File Number: 2337.38.007; Hazard ID: 1263; Status: Active. Online Database: https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/1263. Accessed September 2021.

Appendices

Appendix A Figures

APPENDIX A
Figures

Trading Bay
Production Facility (TBPF)
Area of Interest

TRADING BAY
PRODUCTION FACILITY
(TBPF)

DRIFT RIVER
TERMINAL

Christy Lee

CIPL 20 (Abandoned)

GRANITE POINT
TANK FARM
(GPTF)

MOQUAWKIE

NICOLAI CREEK
AMAROQ

LONE CREEK
AURORA

LEWIS RIVER
HILCORP

STUMP LAKE
HILCORP

PRETTY CREEK
HILCORP

IVAN RIVER
HILCORP

BELUGA RIVER
HILCORP
(OPERATOR)

N COOK INLET UNIT
HILCORP

TYONEK

North
Foreland

GRANITE POINT
HILCORP

N. TRADING BAY
HILCORP

TRADING BAY
HILCORP

W. MCARTHUR
RIVER
GLACIER

KITCHEN LIGHTS
FURIE

MGS
HILCORP

MGS

West
Foreland

East
Foreland

KPL
JCT

NIKISKI

Kenai
Spur Rd

REDOUBT
GLACIER OIL AND GAS

Redoubt Bay

Kalgin
Island

Cook Inlet

State Waters

Federal Waters

Fire
Island

ANCHORAGE

Possession,
Point

Knik Arm

Turnagain Arm

BIRCH HILL
HILCORP

SWANSON RIVER
HILCORP

WOLF LAKE
HILCORP

BEAVER CREEK
HILCORP

WEST FORK
HILCORP

Swanson River Rd

KENAI

CANNERY LOOP
HILCORP

KENAI
HILCORP

Kenai
Spur Rd

STERLING
HILCORP

STERLING

Sterling Hwy

SOLDOTNA

COOPER
LANDING

Skilak Lake

Sterling Highway

Tustumena Lake

NINILCHIK
HILCORP

NINILCHIK

Oilwell Rd

DEEP CREEK
HILCORP

COSMOPOLITAN
BLUECREST ENERGY

NIKOLAEVSK
HILCORP

ANCHOR
POINT

NORTH FORK
GLACIER OIL AND GAS

SEAVIEW
HILCORP

East End Rd

HOMER

Kachemak Bay

Document Path: O:\Alaska\GIS\cook_inlet\infrastructure\prod-trans\TBPF\mxds\TBPF_PFAS_Sampling_Jacobs_Fig1_11x17P_v01.mxd

Legend

- Onshore Facilities
- Offshore Platforms
- State/Federal Boundary (3 Mile Limit)
- Oil and Gas Units Operated by HAK
- Oil and Gas Units - Other
- Major Roads

PIPELINE OWNERSHIP

- HARVEST; Hilcorp/Harvest; Hilcorp; XTO
- Glacier Oil and Gas
- ENSTAR
- Furie
- Tesoro

Alaska State Plane Zone 4 NAD 1983 (feet)

0 10 20 Kilometers

0 10 20 Miles

N

Hilcorp Alaska, LLC

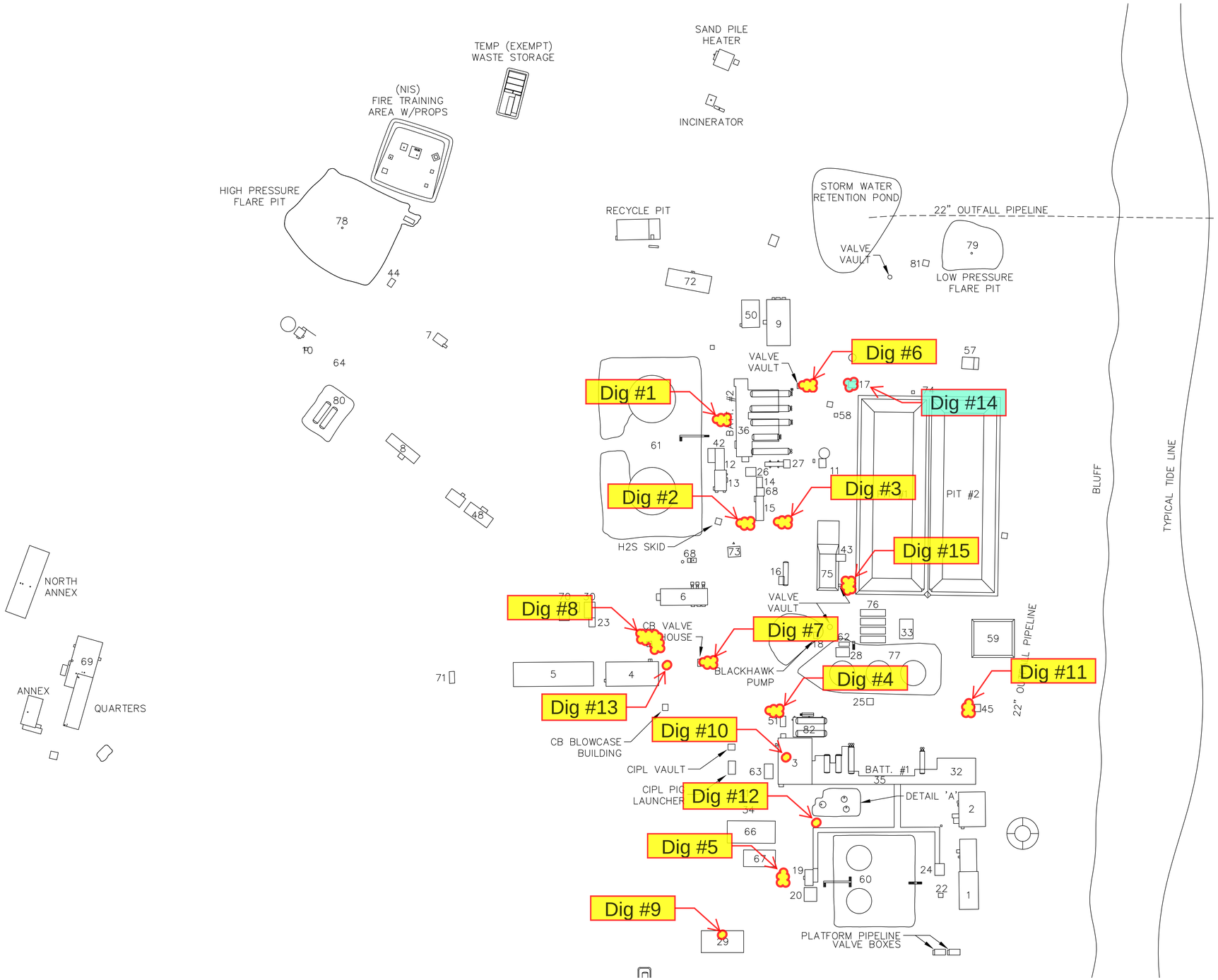
3800 Centerpoint Drive, Suite 1400
Anchorage, AK 99503

Date Prepared:	Company Name:	Drawn By:
11/17/2020	Hilcorp Alaska, LLC.	HAK - MRA

LOCATION AND VICINITY

Trading Bay Production Facility (TBPF), COOK INLET, ALASKA

Scale: @ 11x17 map size	Figure No:
1 in = 10 miles	A-1



KEY NO.	DESCRIPTION
1	BLDG 1, WAREHOUSE
2	BLDG 2, UTILITY & GLYCOL BOILERS & ROUSTABOUT SHOP
3	BLDG 3, UNIT PIG TRAP
4	BLDG 4, COOPER BESSEMER #1 & #2 & JOY #4 COMP.
5	BLDG 5, BIG CB BLDG.
6	BLDG 6, CENTRAL CONTROL, BREAK RM, SOLAR GENERATOR RM
7	BLDG 7, LEX CONTROL BUILDING
8	BLDG 8, VEHICLE FUEL DISPENSING STATION
9	BLDG 9, VEHICLE STORAGE BUILDING
10	BLDG 10, ELECTRIC FIRE WATER BUILDING, TANK 17
11	BLDG 11, DIESEL FIRE WATER BUILDING, TANK 16
12	BLDG 12, BATTERY CHARGE PUMP #2
13	BLDG 13, VAPOR RECOVERY UNIT #2
14	BLDG 14, MCC SHOP #2 & VRU2 ANNEX
15	BLDG 15, ELECTRICAL SHOP
16	BLDG 16, LIQUID RELIEF VESSEL
17	BLDG 17, FLARE TRAP BUILDING
18	BLDG 18, VALVE HOUSE
19	BLDG 19, BATTERY #1 CHARGE PUMP
20	BLDG 20, VAPOR RECOVERY UNIT #1 (NIS)
21	EMULSION HEATER/OLD LEX HOT OIL HEATER
22	BLDG 22, WATER WELL #4
23	BLDG 23, WELL #3 PUMP HOUSE
24	BLDG 24, MONOPOD CHARGE PUMP
25	BLDG 25, PIG COOKER
26	BLDG 26, HYDROCYCLONE
27	BLDG 27, BATTERY #2 UNIFLUX HEATER CONTROL BUILDING
28	BLDG 28, ACCUMULATOR PUMP HOUSE
29	BLDG 29, STEELHEAD PIG TRAP BUILDING
30	BLDG 30, ELECTRICAL/INSTRUMENTAION SHOP
32	BLDG 32, MONOPOD PIG TRAP
33	BLDG 33, MONITOR, CONTROL & WATER LABORATORY
34	BLDG 34, EMULSION HEATER CONTROL BULDING
35	BLDG 35, BATTERY #1 PIPEWAY
36	BLDG 36, BATTERY #2 PIPEWAY
42	BLDG 42, SHIPPING PUMP
43	BLDG 43, SAND DRAIN PUMP HOUSE
44	BLDG 44, HI PRESSURE FLARE PILOT CONTROL PANEL BLDG
45	BLDG 45, VERTICAL HEATER TREATER (NIS)
48	BLDG 48, OFFICE BUILDING/BREAK ROOM (SMOKING RM)
50	BLDG 50, WELDING SHOP
51	BLDG 51, BATTERY #1 F.W.K.O. CONTROL BUILDING
57	BLDG 57, OUTFALL BUILDING
58	PAINT STORAGE BUILDING
59	5K SLOP TANK 19 DIKE AREA & SLOP PUMP HOUSE (NIS)
60	TANK 4 DIKE AREA
61	TANK 7 & 8 DIKE AREA
62	ACCUMULATOR TANK
63	GAS HEATER BUILDING
64	WATER WELL #4
66	CI PIPELINE BUILDING
67	LACT BUILDING
68	SOLAR FILTER
69	CREW QUARTERS
70	FIRE STATION
71	CIGGS PIG LAUNCHER
72	CHEMICAL STORAGE BUILDING/LOADING DOCK
73	RADIO STATION
74	50,000 BBL LINED PITS #1 & #2
75	SAND DRAIN PIT
76	WEMCO AREA
77	TANK 10, 11, 12 & 13 DIKE AREA
78	HIGH PRESSURE FLARE
79	LOW PRESSURE FLARE
80	GASOLINE AND DIESEL STORAGE TANKS
81	BLDG 81, LO PRESSURE FLARE CONTROL BUILDING (NIS)
82	BLDG 82, BATTERY #1 F.W.K.O. BUILDING

DWG. NUMBER	SHT	REFERENCE DRAWINGS

NOTES:

REV	DATE	REVISED	REV. BY	CKD BY	APP'D BY
00	12/15/98	DRAWN PER JULY 98 AERIAL PHOTO	BDB	SHF	
01	12/14/99	AS-BUILT PER FCR R-99011/REMOVED TANKS 1, 3, 6/MODIFIED BERM.REMOVED SLUDGE BURNER	TKM	BDB	
02	11/08/00	AS-BUILT PER FCR R-00010/ADDED NEW 22" LINE	EKH	BDB	
03	11/07/01	AS-BUILT PER MISC. UPDATES/ADDED WEMCO #3	EKH	BDB	
04	03/20/03	AS-BUILT PER TUNDRA PRE-SEPARATION PROJECT REDLINES	JN		
05	03/18/04	ADDED WATER WELL #4 PER FCR R-03009	ML		FIELD
06	11/08/04	REMOVED TANK 5 PER FCR R-2003-016	ML	RWN	RWN
07	08/15/06	REMOVED TANK 10 PER FACILITY ENGINEER INSPECTION	CMR	ET	JB
08	03/24/21	PRELIMINARY REDLINES FOR EQUIPMENT & UNDERGROUND PIPING CONFIGURATION.	COS	EB	

ENGINEERING APPROVAL

DRAWN BY	LD
CHD BY	
PROJECT	
STRUCTURAL	
MECHANICAL	
ELECTRICAL	
INSTRUMENT	
SCALE	NONE
DATE	09/29/95

CONTRACTOR

JOB NUMBER

TRADING BAY PROD. FACILITY

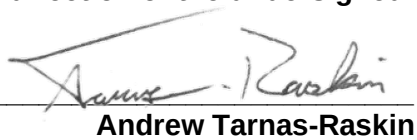
COOK INLET ALASKA

PLOT PLAN

HILCORP ALASKA, LLC

DRAWING NO.	SHT NO.	REV NO.
R-C-0061	001	08

This document has has been prepared by Jacobs Engineering Group Inc. The material and data in this plan were prepared under the supervision and direction of the undersigned.



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