



**Petroleum Services Division**  
3437 Landco Dr.  
Bakersfield, California 93308  
Tel: 661-325-5657  
Fax: 661-325-5808  
www.corelab.com

June 26, 2020

Delaney Peterson  
Anchor QEA, LLC  
1605 Cornwall Ave  
Bellingham, WA 98225

Subject: Gasco PDI  
Project: Mobility  
CL File No: 2003091

Dear Mr. Peterson,

The attached file presents the final Mobility results for the soil samples submitted from your Gasco PDI Project.

Appropriate ASTM, EPA or API methodologies were used for this project and SOP's are available on request. The sample for this project is currently in storage and will be retained for thirty days past completion of testing at no charge. At the end of thirty days, the sample will be disposed. You may contact me regarding continued storage, disposal, or return of the sample.

Thank you for this opportunity to be of service to Anchor QEA, LLC. Please do not hesitate to contact us at (661-325-5657) if you have any questions regarding these results or if we can be of any additional service.

Sincerely,  
Core Laboratories LP

Eva Lopez  
Core Analyst

The analyses, opinions or interpretations contained in this report are based upon observations and material supplied by the client for whose exclusive and confidential use this report has been made. The interpretations or opinions expressed represent the best judgment of Core Laboratories. Core Laboratories assumes no responsibility and makes no warranty or representations, expressed or implied, as to the productivity, proper operations or profitability, however, of any oil, gas, coal or other mineral, property, well or sand in connection with which such report is used or relied upon for any reason whatsoever.





# Free Product Mobility Summary

## Centrifugal Method

(Methodology: ASTM D425M, API RP 40)

Petroleum Services

**Anchor QEA, LLC**  
Project Name: Gasco PDI

Core Lab File No: 2003091

Sample ID.	Depth ft.	Sample Orientation <sup>(1)</sup>	Density		Porosity	Initial Fluid Saturations <sup>(4)</sup>		Applied Force <sup>(6)</sup>		Final Fluid Saturations <sup>(4)</sup>	
			Bulk (Dry) g/cc	Grain g/cc	Total <sup>(2)</sup> %Vb <sup>(3)</sup>	Water %Pv <sup>(5)</sup>	Oil %Pv <sup>(5)</sup>	G	cm water	Water %Pv <sup>(5)</sup>	Oil %Pv <sup>(5)</sup>
PDI-080NAPL	5.6	H	1.33	2.67	50.0	82.5	5.96	25.00	87.7	63.0	5.96
PDI-080NAPL	6.9	H	1.32	2.65	50.2	82.6	6.41	25.00	91.1	69.7	6.41
PDI-085NAPL	4.7	H	0.635	2.37	73.2	83.1	5.23	25.00	86.9	70.4	5.23
PDI-085NAPL	6.0	H	0.811	2.50	67.6	80.2	10.7	25.00	87.1	68.9	10.7
PDI-085NAPL	6.7	H	0.856	2.48	65.4	70.4	13.9	25.00	85.8	58.4	13.9
PDI-085NAPL	9.3	H	0.797	2.41	67.0	73.4	21.9	25.00	88.6	63.3	21.9

(1) H = horizontal, V = vertical

(2) Total Porosity = no pore fluids in place; all interconnected pore channels.

(3) Vb = Bulk Volume, cc.

(4) Assumed Oil density = 0.8000 g/cc. Water density = 1.000 g/cc

(5) Pv = Pore Volume, cc.

(6) Applied force on samples for 10 hours



## ENVIRONMENTAL SAMPLE CHAIN OF CUSTODY

**POC: #** Delaney Peterson (360-715-2707)  
1605 Cornwall Avenue, Bellingham, WA 98225

**Project:** Gasco PDI  
**Client:** NW Natural

**COC ID:** COREL-20200512-134123  
**Sample Custodian:** CO  
**Lab:** Core Laboratories

COC Sample Number	Field Sample ID	Sample Type	Matrix	Collected		Containers #	Lab QC*	Test Request	Method	TAT**	Preservative
				Date	Time						
001	PDI-080NAPL-4.5-5.9-200511	N	SE	05/11/2020	9:24	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
002	PDI-080NAPL-5.9-7.3-200511	N	SE	05/11/2020	9:24	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
003	PDI-080NAPL-7.3-8.5-200511	N	SE	05/11/2020	9:24	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
004	PDI-080NAPL-8.5-9.7-200511	N	SE	05/11/2020	9:24	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
005	PDI-085NAPL-4.5-5.9-200511	N	SE	05/11/2020	11:13	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
006	PDI-085NAPL-5.9-7.3-200511	N	SE	05/11/2020	11:13	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
007	PDI-085NAPL-7.3-8.7-200511	N	SE	05/11/2020	11:13	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
008	PDI-085NAPL-8.7-9.9-200511	N	SE	05/11/2020	11:13	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C
009	PDI-085NAPL-9.9-11.1-200511	N	SE	05/11/2020	11:13	1	<input type="checkbox"/>	NAPL Mobility	NAPL Mobility Tests	30	4°C

\* SEE MIKE GEFELL FOR MORE INSTRUCTIONS \*

\* Samples arrived on wet ice @ 51°F

Comment:					
Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	<i>[Signature]</i>	Signature	<i>[Signature]</i>	Signature	<i>[Signature]</i>
Print Name	Amanda Lowken	Print Name		Print Name	
Company	Corelab	Company		Company	
Date/Time	5/12/20 2:30pm	Date/Time		Date/Time	