



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-001  
**Client Sample ID:** PC, 0-2 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	10	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	57	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	33	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.40	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	0.92	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	59.4	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	5.99	meq/L		0.05		SW6010B	06/12/08 16:05 / rlh
Magnesium, sat. paste	3.56	meq/L		0.08		SW6010B	06/12/08 16:05 / rlh
Sodium, sat. paste	0.58	meq/L		0.04		SW6010B	06/12/08 16:05 / rlh
Sodium Adsorption Ratio (SAR)	0.27	unitless		0.01		Calculation	06/13/08 13:47 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	1.5	%		0.1		USDA23c	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	44.6	meq/100g	D	0.08		SW6010B	06/11/08 17:33 / rlh
Exchangeable Sodium Percentage	0.16	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.11	meq/100g	D	0.00039		SW6010B	06/10/08 23:52 / rlh

**Report Definitions:**

RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-002  
**Client Sample ID:** PC, 0-6 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	16	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	52	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	32	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.60	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	0.69	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	59.6	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	3.80	meq/L		0.05		SW6010B	06/12/08 16:13 / rlh
Magnesium, sat. paste	2.62	meq/L		0.08		SW6010B	06/12/08 16:13 / rlh
Sodium, sat. paste	0.63	meq/L		0.04		SW6010B	06/12/08 16:13 / rlh
Sodium Adsorption Ratio (SAR)	0.35	unitless		0.01		Calculation	06/13/08 13:47 / srm
Sulfate	2.29	meq/L		0.02		ASA10-3	06/12/08 17:05 / qed
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	1.3	%		0.1		USDA23c	06/13/08 14:24 / srm
Phosphorus, Olsen	7	mg/kg		1		ASA24-5	06/13/08 13:10 / srm
Nitrate as N, KCL Extract	3	mg/kg		1		ASA33-8	06/13/08 14:54 / srm
Organic Matter	4.07	%		0.02		ASA29-3	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	45.3	meq/100g	D	0.08		SW6010B	06/11/08 17:41 / rlh
Exchangeable Sodium Percentage	0.25	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.15	meq/100g	D	0.00039		SW6010B	06/11/08 00:00 / rlh
Potassium, available	245	mg/kg	D	0.13		SW6010B	06/11/08 00:00 / rlh
<b>METALS, DTPA EXTRACTABLE</b>							
Zinc	1.2	mg/kg		0.1		SW6010B	06/13/08 21:25 / rlh

**Report Definitions:**

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MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-003  
**Client Sample ID:** PC, 6-12 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	11	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	55	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	34	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.70	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	0.73	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	55.5	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	3.99	meq/L		0.05		SW6010B	06/12/08 16:17 / rlh
Magnesium, sat. paste	2.99	meq/L		0.08		SW6010B	06/12/08 16:17 / rlh
Sodium, sat. paste	0.95	meq/L		0.04		SW6010B	06/12/08 16:17 / rlh
Sodium Adsorption Ratio (SAR)	0.51	unitless		0.01		Calculation	06/13/08 13:47 / srm
Sulfate	3.81	meq/L		0.02		ASA10-3	06/12/08 17:16 / qed
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	1.8	%		0.1		USDA23c	06/13/08 14:24 / srm
Nitrate as N, KCL Extract	3	mg/kg		1		ASA33-8	06/13/08 14:55 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	39.3	meq/100g	D	0.08		SW6010B	06/11/08 18:19 / rlh
Exchangeable Sodium Percentage	0.42	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.22	meq/100g	D	0.00039		SW6010B	06/11/08 00:15 / rlh

**Report Definitions:**

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MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-004  
**Client Sample ID:** PC,12-24 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	20	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	51	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	29	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.90	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	1.65	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	47.0	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	9.89	meq/L		0.05		SW6010B	06/12/08 16:20 / rlh
Magnesium, sat. paste	8.55	meq/L		0.08		SW6010B	06/12/08 16:20 / rlh
Sodium, sat. paste	1.65	meq/L		0.04		SW6010B	06/12/08 16:20 / rlh
Sodium Adsorption Ratio (SAR)	0.54	unitless		0.01		Calculation	06/13/08 13:47 / srm
Sulfate	18.5	meq/L	D	0.1		ASA10-3	06/12/08 17:28 / qed
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	4.6	%		0.1		USDA23c	06/13/08 14:24 / srm
Nitrate as N, KCL Extract	2	mg/kg		1		ASA33-8	06/13/08 14:55 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	30.0	meq/100g	D	0.08		SW6010B	06/11/08 18:23 / rlh
Exchangeable Sodium Percentage	0.52	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.23	meq/100g	D	0.00039		SW6010B	06/11/08 00:19 / rlh

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LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-005  
**Client Sample ID:** PC, 24-36 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	17	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	48	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	35	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	7.90	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	3.62	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	51.4	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	25.0	meq/L		0.05		SW6010B	06/12/08 16:24 / rlh
Magnesium, sat. paste	28.6	meq/L		0.08		SW6010B	06/12/08 16:24 / rlh
Sodium, sat. paste	3.64	meq/L		0.04		SW6010B	06/12/08 16:24 / rlh
Sodium Adsorption Ratio (SAR)	0.70	unitless		0.01		Calculation	06/13/08 13:47 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	4.7	%		0.1		USDA23c	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	30.9	meq/100g	D	0.08		SW6010B	06/11/08 18:27 / rlh
Exchangeable Sodium Percentage	0.78	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.43	meq/100g	D	0.00039		SW6010B	06/11/08 00:23 / rlh

**Report Definitions:**

RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



**LABORATORY ANALYTICAL REPORT**

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-006  
**Client Sample ID:** PC, 36-48 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	16	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	50	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	34	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	8.00	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	4.35	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	49.8	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	24.9	meq/L		0.05		SW6010B	06/12/08 16:39 / rlh
Magnesium, sat. paste	39.9	meq/L		0.08		SW6010B	06/12/08 16:39 / rlh
Sodium, sat. paste	8.61	meq/L		0.04		SW6010B	06/12/08 16:39 / rlh
Sodium Adsorption Ratio (SAR)	1.51	unitless		0.01		Calculation	06/13/08 13:47 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	5.0	%		0.1		USDA23c	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	26.4	meq/100g	D	0.08		SW6010B	06/11/08 18:31 / rlh
Exchangeable Sodium Percentage	1.28	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.77	meq/100g	D	0.00039		SW6010B	06/11/08 00:26 / rlh

**Report Definitions:**

RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-007  
**Client Sample ID:** PC, 48-60 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	22	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	47	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	31	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	CL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	8.00	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	4.49	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	47.9	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	24.8	meq/L		0.05		SW6010B	06/12/08 16:43 / rlh
Magnesium, sat. paste	39.2	meq/L		0.08		SW6010B	06/12/08 16:43 / rlh
Sodium, sat. paste	11.4	meq/L		0.04		SW6010B	06/12/08 16:43 / rlh
Sodium Adsorption Ratio (SAR)	2.02	unitless		0.01		Calculation	06/13/08 13:47 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	5.4	%		0.1		USDA23c	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	26.6	meq/100g	D	0.08		SW6010B	06/11/08 18:34 / rlh
Exchangeable Sodium Percentage	1.66	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	0.99	meq/100g	D	0.00039		SW6010B	06/11/08 00:30 / rlh

**Report Definitions:**

RL - Analyte reporting limit.  
 QCL - Quality control limit.  
 D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



**LABORATORY ANALYTICAL REPORT**

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-008  
**Client Sample ID:** PC, 60-72 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	16	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	49	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	35	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	8.00	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	4.42	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	51.1	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	24.4	meq/L		0.05		SW6010B	06/12/08 16:47 / rlh
Magnesium, sat. paste	33.4	meq/L		0.08		SW6010B	06/12/08 16:47 / rlh
Sodium, sat. paste	13.3	meq/L		0.04		SW6010B	06/12/08 16:47 / rlh
Sodium Adsorption Ratio (SAR)	2.48	unitless		0.01		Calculation	06/13/08 13:47 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	6.4	%		0.1		USDA23c	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	24.8	meq/100g	D	0.08		SW6010B	06/11/08 18:38 / rlh
Exchangeable Sodium Percentage	2.30	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	1.3	meq/100g	D	0.00039		SW6010B	06/11/08 00:34 / rlh

**Report Definitions:**

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 QCL - Quality control limit.  
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MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.



LABORATORY ANALYTICAL REPORT

**Client:** Marathon Ashland Pipeline  
**Project:** PDC AMPP  
**Lab ID:** B08060401-009  
**Client Sample ID:** PC, 72-96 Inches

**Report Date:** 07/24/08  
**Collection Date:** 06/02/08 16:00  
**Date Received:** 06/04/08  
**Matrix:** Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>PHYSICAL CHARACTERISTICS</b>							
Sand	14	%		1		ASA15-5	06/13/08 14:24 / srm
Silt	51	%		1		ASA15-5	06/13/08 14:24 / srm
Clay	35	%		1		ASA15-5	06/13/08 14:24 / srm
Texture	SiCL					ASA15-5	06/13/08 14:24 / srm
- C = Clay, S = Sand(y), Si = Silt(y), L = Loam(y)							
<b>SATURATED PASTE</b>							
pH, sat. paste	8.10	s.u.		0.10		ASAM10-3.2	06/13/08 13:47 / srm
Conductivity, sat. paste	4.19	mmhos/cm		0.01		ASA10-3	06/13/08 13:47 / srm
Saturation	54.8	%		0.1		USDA27a	06/13/08 13:47 / srm
Calcium, sat. paste	24.6	meq/L		0.05		SW6010B	06/12/08 16:50 / rlh
Magnesium, sat. paste	29.8	meq/L		0.08		SW6010B	06/12/08 16:50 / rlh
Sodium, sat. paste	11.6	meq/L		0.04		SW6010B	06/12/08 16:50 / rlh
Sodium Adsorption Ratio (SAR)	2.22	unitless		0.01		Calculation	06/13/08 13:47 / srm
<b>CHEMICAL CHARACTERISTICS</b>							
Lime as CaCO3	6.1	%		0.1		USDA23c	06/13/08 14:24 / srm
<b>EXCHANGEABLES</b>							
Cation Exchange Capacity	28.3	meq/100g	D	0.08		SW6010B	06/11/08 18:42 / rlh
Exchangeable Sodium Percentage	1.64	%		0.01		USDA20a	06/16/08 08:33 / srm
<b>METALS, AMMONIUM ACETATE EXTRACTABLE</b>							
Sodium, extractable	1.1	meq/100g	D	0.00039		SW6010B	06/11/08 00:38 / rlh

**Report Definitions:**

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 QCL - Quality control limit.  
 D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.  
 ND - Not detected at the reporting limit.