Appendix T - SWMU Information
August 15, 2000

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Hillary Young
Oklahoma Department of Environmental Quality
Waste Management Division
P. O. Box 1677
Oklahoma City, OK 73101-1677

Subject: RCRA Corrective Action, Permit No. 000396549

Dear Ms. Young:

Based on the RCRA correction action criteria for designating an Environmental Indicator (EI) RCRA code, Wynnewood Refining Company (WRC) has achieved indicator codes CA725 (Current Human Exposures Under Control) and CA750 (Migration of Contaminated Groundwater Under Control).

With one exception (the northern leaded tank bottoms disposal area), WRC has completed correction action for all SWMUs identified at the facility that are subject to RCRA Corrective Action. The Oklahoma Department of Environmental Quality has agreed to defer any further RFI for the northern leaded tank bottoms disposal area until remediation of a free-product plume in proximity. However, since this area is contained within tank dikes under refinery security and has not shown EP toxicity levels of concern for lead, WRC does not consider this to be a hazard to the environment.

We have made substantial efforts to achieve our corrective action goals. Since the rationale is included in the many documents that have been provided to your office, we have only included references to these documents in this submittal. If you have any questions, please contact me at (405) 665-6655.

Sincerely,

Wynnewood Refining Company

Chris Hawley
Environmental Manager

Cc: Dave Roderick
1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   [ ] If yes - check here and continue with #2 below.
   [ ] If no - re-evaluate existing data, or
   [ ] if data are not available skip to #6 and enter “IN” (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of “Current Human Exposures Under Control” EI

A positive “Current Human Exposures Under Control” EI determination (“YE” status code) indicates that there are no “unacceptable” human exposures to “contamination” (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all “contamination” subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The “Current Human Exposures Under Control” EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program’s overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological...
Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).
2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated" above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

<table>
<thead>
<tr>
<th>Media</th>
<th>Yes</th>
<th>No</th>
<th>?</th>
<th>Rationale / Key Contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air (indoors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Soil (e.g., &lt;2 ft)</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Water</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediment</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsurf. Soil (e.g., &gt;2 ft)</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air (outdoors)</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

__If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.__

__If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.__

__If unknown (for any media) - skip to #6 and enter "IN" status code.__

Rationale and Reference(s): **INCLUDED IN:***

- LETTER 2/3/98, ODEQ to WRC (ATTACHED)
- LETTER 10/3/96, ODEQ to WRC (ATTACHED)
- LETTER 4/8/96, WRC to ODEQ (ATTACHED)
- RCRA FACILITY INVESTIGATIONS PHASE I, II, III (WRC & ODEQ FILES)
- POSTCLOSURE MONITORING REPORTS FOR STORMWATER RETENTION POND (WRC & ODEQ FILES)
- RCRA PART B PERMIT 000396549 (WRC & ODEQ FILES)
- HYDROCARBON RECOVERY PROGRAM/REPORTS (WRC & ODEQ FILES)
Footnotes:

1 "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

2 Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)
Page 3

3. Are there complete pathways between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

<table>
<thead>
<tr>
<th>&quot;Contaminated&quot; Media</th>
<th>Residents</th>
<th>Workers</th>
<th>Day-Care</th>
<th>Construction</th>
<th>Trespassers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation Food¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundwater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air (indoors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil (surface, e.g., &lt;2 ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil (subsurface e.g., &gt;2 ft)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air (outdoors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.
2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("_"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

   If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

   If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

   If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

3 Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

Page 4

4 Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant" (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

   If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE"
status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):
If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.
Can the “significant” exposures (identified in #4) be shown to be within acceptable limits?

_____ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”) - continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code.

Rationale and Reference(s): __________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

Page 6

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

√ YE - Yes, “Current Human Exposures Under Control” has been verified. Based on a review of the information contained in this EI Determination, “Current Human Exposures” are expected to be “Under Control” at the WYNNEWOOD REFINING COMPANY facility, EPA ID # OKD00396549, located at 9065 POWELL WYNNEWOOD, OK, under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - “Current Human Exposures” are NOT “Under Control.”

IN - More information is needed to make a determination.

Completed by (signature) CRISTHAWLEY Date 8/15/00
(print) CHRIS HAWLEY (title) ENV MNGR

Supervisor (signature) ____________________________ Date ____________
(print) ____________________________ (title) ____________________________

(EPA Region or State)

Locations where References may be found:

WYNNEWOOD REFINING COMPANY
9065 POWELL, P.O. BOX 305, WYNNEWOOD, OK 73098

OKLAHOMA DEPT. OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, OKLAHOMA CITY, OK 73102

Contact telephone and e-mail numbers

(name) CHRIS HAWLEY (phone #) 405-665-6655
(e-mail) cheawley@ewec.com
final Note: The Human Exposures EI is a Qualitative Screening of exposures and the determinations within this document should not be used as the sole basis for restricting the scope of more detailed (e.g., site-specific) assessments of risk.
Documentation of Environmental Indicator Determination

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

<table>
<thead>
<tr>
<th>Facility Name:</th>
<th>WYNNEWOOD REFINING COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Address:</td>
<td>906 S. POWELL, WYNNEWOOD, OK 73098</td>
</tr>
<tr>
<td>Facility EPA ID #:</td>
<td>OKD 000 396 549</td>
</tr>
</tbody>
</table>

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   - [ ] If yes - check here and continue with #2 below.
   - [ ] If no - re-evaluate existing data, or
   - [ ] if data are not available, skip to #8 and enter “IN” (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of “Migration of Contaminated Groundwater Under Control” EI**

A positive “Migration of Contaminated Groundwater Under Control” EI determination (“YE” status code) indicates that the migration of “contaminated” groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original “area of contaminated groundwater” (for all groundwater “contamination” subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The “Migration of Contaminated Groundwater Under Control” EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and
the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).
2. Is groundwater known or reasonably suspected to be "contaminated" above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

- If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

- If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

- If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): INCLUDED IN:

- LETTER 2/3/98, ODER TO LORC (ATTACHED)
- LETTER 10/3/96, ODER TO LORC (ATTACHED)
- LETTER 4/8/96, LORC TO ODER (ATTACHED)
- RCRA FACILITY INVESTIGATIONS PHASE I, II, III (LORC & ODER FILES)
- POST-CLOSURE MONITORING REPORTS FOR SWRP (LORC & ODER FILES)
- RCRA PART B PERMIT & APPLICATION 000296849 (LORC & ODER FILES)
- HYDRO CARBON RECOVERY PROGRAM/REPORTS (LORC & ODER FILES)
Footnotes:

¹"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).
Has the migration of contaminated groundwater stabilized (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination".

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination") - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
2 "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.
4. Does "contaminated" groundwater discharge into surface water bodies?

   _____ If yes - continue after identifying potentially affected surface water bodies.

   _____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater “contamination” does not enter surface water bodies.

   _____ If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s):

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

   If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting:
   1) the maximum known or reasonably suspected concentration of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

   If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

   If unknown - enter "IN" status code in #8.

Rationale and Reference(s):
6. Can the discharge of "contaminated" groundwater into surface water be shown to be "currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented)?

If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR

2) providing or referencing an interim-assessment, appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the
overseeing regulatory agency would deem appropriate for making the EI determination.

If no - (the discharge of “contaminated” groundwater can not be shown to be “currently acceptable”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

If unknown - skip to 8 and enter “IN” status code.

4 Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

5 The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.
Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 7

7. Will groundwater monitoring / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

____ If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE - Yes, “Migration of Contaminated Groundwater Under Control” has been verified. Based on a review of the information contained in this EI determination, it has been determined that the “Migration of Contaminated Groundwater” is “Under Control” at the **WYNNWOOD REFINING COMPANY**
The facility, EPA ID # OKD 000396549, located at 906 S. Powell, Wynnewood, OK, specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

NO - Unacceptable migration of contaminated groundwater is observed or expected.

IN - More information is needed to make a determination.

Completed by ____________________________________________________________________________
(signature) __________________________ (print) CHRI$ HAWLEY
(title) __________________________
Date 8/15/00

Supervisor ____________________________________________________________________________
(signature) __________________________ (print)
(title) __________________________
(EPA Region or State) __________________________
Date __________________________

Locations where References may be found:

WYNNEWOOD REFINING COMPANY
906 S. POWELL, P.O. BOX 305, WYNNEWOOD, OK 73098

OKLAHOMA DEPT. OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, OKLAHOMA CITY, OK 73102

Contact telephone and e-mail numbers

(name) CHRI$ HAWLEY
(phone #) 405-665-6655
(e-mail) chawley@6wec.com
January 26, 1998

David C. Roderick, Vice President, Refining
Wynnewood Refining Company
Post Office Box 305
Wynnewood, Oklahoma 73098

Re: Status of Solid Waste Management Units for RCRA Information System
EPA I.D. No. OKD000396549
Hazardous Waste Management Operations Permit No. 000396549

Dear Mr. Roderick:

In order to verify our files and to ensure that all information has been entered properly into the RCRA Information System (RCRIS), the Oklahoma Department of Environmental Quality has reviewed the corrective action status of each Solid Waste Management Unit (SWMU) at your facility. Below is a table of the SWMUs listing a brief summary of corrective action processes which have been implemented and the current corrective action determination at each SWMU.

<table>
<thead>
<tr>
<th>SWMU</th>
<th>Corrective Action</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Pit 1</td>
<td>Removed under Corrective Measures Implementation (CMI)</td>
<td>Corrective Action (CA) completed</td>
</tr>
<tr>
<td>Asphalt Pit 2</td>
<td>Removed under CMI</td>
<td>CA completed</td>
</tr>
<tr>
<td>Asphalt Pit 3</td>
<td>Removed under CMI</td>
<td>CA completed</td>
</tr>
<tr>
<td>Biosludge Pit</td>
<td>No significant hazardous constituents found during RCRA Facility Investigation (RFI)</td>
<td>CA completed</td>
</tr>
<tr>
<td>Drainage Ditch</td>
<td>Removed as part of a closure</td>
<td>CA completed</td>
</tr>
<tr>
<td>Storm Water Retention Pond</td>
<td>Closed with RCRA final cover</td>
<td>Monitored under post-closure permit</td>
</tr>
<tr>
<td>Process Wastewater Drainage Ditch</td>
<td>No significant hazardous constituents found during the RFI; concrete lined</td>
<td>CA completed</td>
</tr>
<tr>
<td>Settling Lagoons</td>
<td>No significant releases to soils or ground water were found during the RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>Location</td>
<td>Release Information</td>
<td>Status</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Closed Landfill</td>
<td>No significant releases to soils or ground water were found during the RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>API Separator</td>
<td>No significant releases to soils or ground water were found during the RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>API Separator</td>
<td>No significant releases to soils or ground water were found during the RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>API Separator Sludge Pit</td>
<td>No significant releases to soils or ground water were found during the RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>Closed Oil Trap</td>
<td>No significant releases to soils or ground water were found during the RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>Asphalt Pit 4 / Southern Leaded Tank Bottoms Disposal Area</td>
<td>No significant releases to soils or ground water were found during the Phase II RFI</td>
<td>CA completed</td>
</tr>
<tr>
<td>Northern Leaded Tank Bottoms Disposal Area</td>
<td>Further RFI is required, but is deferred due to this SWMU’s proximity to the free-product hydrocarbon plume. The RFI is deferred until the on-going remediation of this plume is completed.</td>
<td>RFI deferred.</td>
</tr>
</tbody>
</table>

All RCRIS entries will reflect the relevant corrective action information regarding each SWMU.

If you believe that any of the above information is incorrect, or if you have any questions regarding this letter, please contact Robert Replogle at (405) 271-7069.

Sincerely,

Donald D. Barrett, Chief Environmental Engineer
Waste Management Division

DDB/rr

WRC/CRIS/980123

cc: Richard Thomas, EPA Region 6
October 3, 1996

D.C. Roderick, Vice President Refining
Wynnewood Refining Company
Post Office Box 305
Wynnewood, OK 73098

Re: Phase III RCRA Facility Investigation (RFI) Findings Report for the Southern Leaded Tank Bottoms Disposal Area
EPA I.D. No. OKD000396549
RCRA Operations Permit No: 000396549

Dear Mr. Roderick:

The Waste Management Division (WMD) has completed a review of the Phase III RCRA Facility Investigation (RFI) Findings Report for the Southern Leaded Tank Bottoms Disposal Area which was submitted to this office by letter on July 24, 1996. The Findings Report appears to be consistent with the requirements set forth in the approved Phase III Workplan, Section 3004 of the Hazardous and Solid Waste Amendments of 1984 (HSWA) and the HSWA provisions of your facility’s RCRA operations permit.

Based upon the results of the Phase II and Phase III RFI for the Southern Leaded Tank Bottoms Disposal Area and subsequent telephone conversations between refinery staff and WMD staff during the past two months, no further work to characterize soil and groundwater, nor a corrective measures study is required for this SWMU area.

If you have any questions, please contact Robert Replogle of my staff at (405) 271-7069.

Sincerely,

H.A. Caves, Director
Waste Management Division

HAC/rr

cc: Richard Thomas (6H-HS), EPA Region VI
April 8, 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P 142 029 755

Mr. H.A. Caves
Oklahoma Department of Environmental Quality
Waste Management Division
1000 N.E. 10th Street
Oklahoma City, OK 73117-1212

Re: Wynnewood Refining Company
    RCRA Permit No. 000396549
    Asphalt Pit 1 & 2 Remediation Report

Dear Mr. Caves:

Wynnewood Refining Company (WRC) submits for your review a copy of the Asphalt Pits 1 & 2 Remediation Report. This submittal details WRC’s excavation, sampling and analytical procedures used in the removal and disposition of Asphalt Pits 1 & 2. All activities were performed under the guidelines of the RCRA Corrective Measure Study/Corrective Measure Implementation (CMS/CMI) Plan submitted to the USEPA on January 17, 1994 and approved on April 29, 1994. WRC believes this report meets all the objectives for finalizing the RCRA CMS/CMI Plan.

If you have any questions, please contact me at 405/665-6622.

Sincerely,

WYNNEWOOD REFINING COMPANY

D.G. Prucha
Manager Environmental Engineering

Attachment

0359DGP.fea

cc:  Mr. Robert Replogle (ODEQ-WMD) w/Attachment
     JCH w/a
     DCR wo/a
     John Goodrich wo/a
June 23, 2014

Donald A Hensch, P.E.
Engineering Manager, RCRA Permits and Corrective Action
Land Protection Division
Oklahoma Department of Environmental Quality
707 N. Robinson
Oklahoma City, OK 73102

RE: Notification of Newly Identified Potential SWMU
Wynnewood Refining Company, LLC (RCRA Permit No. 000396549)
Wynnewood, Oklahoma

Dear Mr. Hensch:

Wynnewood Refining Company, LLC (WRC) is submitting this written notification of the discovery of a newly identified potential Solid Waste Management Unit (SWMU). In accordance with Section VII.D.1 or our RCRA permit (No. 000396549), this notification is being made within 30 days after the discovery. This letter contains a summary of our investigation of the SWMU and, to the extent available, the information required in Section VII.D.

On May 28, 2014, buried drums were encountered during exploratory work for a new building east of the asphalt control building (Zone 4 Operators Shelter). Following identification of drums in the initial exploratory borings, several more borings were installed in order to delineate a potential SWMU. A total of 28 borings were installed to approximately 3-7 feet bgs, depending on the contents identified. Borings 1 through 22 were installed with a 12-inch diameter solid flight auger and 23 through 28 were installed using a hydro-excavator due to nearby subsurface utilities. The contents within each boring were cataloged for mapping purposes and screened using a photoionization detector (PID) to identify the best locations for confirmation sampling. The location figures and field notes (Enclosure 1) are enclosed.

Evidence of crushed drums, cans, buckets, lumber, and other miscellaneous debris were found in 14 of the 28 borings (see Figure 3). Asphalt and tar (presumably from the long history of asphalt storage and transfer operations in this area) were present in 20 of 28 borings. PID screening was conducted after the borings were installed, using a handheld Photovac 2020 ComboPro. The screening was conducted by inserting an extension tube (approximately 0.5 feet) from the unit into each boring and holding the tube in place until a peak value was measured. The screening results were generally low, ranging from 0.9 to 9.4 ppm. A background value of 0.7 ppm was measured outside of the borings at the site location.

A total of three samples were collected. A waste characterization sample was collected from the tarry material found associated with one of the buried drums (ID: #1 Borehole). A composite sample from borings 4 and 10 (ID: #2 & #4 Composite) was collected at the level of the debris. A soil sample from boring 28 (ID: WWZone4 ChangeHouse28 (4.5-5)) was collected from the downgradient
periphery of the drum field to determine if there has been a release of any hazardous constituents from the drum disposal area. The first two samples were collected on May 29, 2014 and sent to Environmental Resource Technologies (ODEQ Certification No. 8304) for analysis of VOCs, SVOCs, and metals commonly associated with petroleum refining. The third sample was collected on June 3, 2014 and sent to Trinity Analytical Labs (ODEQ Certification No. 9313) for analysis of VOCs, SVOCs, metals, TPH-GRO and TPH-DRO. The final laboratory reports are enclosed (Enclosure 2).

The analytical results were compared to US EPA Regional Screening levels (RSLs) for industrial soil, updated May 2014. All of the analytes detected were below RSLs.

The information required by Section VII.D.1 of the permit is included in this notification as listed below:

- **a. The location of the newly-identified SWMU or potential AOC on the topographic map required under 40 CFR Section 270.14(b)(19). Indicate all existing units (in relation to other SWMUs);**
  
  o See the attached figures. Figure 1 provides a topographic map, Figure 2 provides a site map with existing SWMUs, and Figure 3 provides the location of the exploratory borings.

- **b. The type and function of the unit;**
  
  o The unit was used for drum and debris disposal.

- **c. The general dimensions, capacities, and structural description of the unit (supply any available drawings);**
  
  o The dimensions are approximately 50 x 15 feet (as shown on Figure 3), but the capacity is unknown. WRC surmises that no actual structure for this unit exists and the drums were simply buried in an earthen trench.

- **d. The period during which the unit was operated;**
  
  o The operational period is unknown. Based on the age of the tank that formerly occupied this location, the drums and debris were apparently buried at least 50 years ago.

- **e. The specifics, to the extent available, on all wastes that have been or are being managed at the SWMU or potential AOC;**
  
  o Observed from exploratory borings: drums, cans, buckets, lumber, miscellaneous metal and debris.

- **f. Results of any sampling and analysis required for the purpose of determining whether releases of hazardous waste including hazardous constituents have occurred, are occurring, or are likely to occur from the SWMU or whether the AOC should be considered a SWMU.**
  
  o The laboratory results are attached for reference.

Due to the presence of above and below ground product transfer lines and utilities in this area excavation of the drum field is considered impractical; therefore the potential SWMU has been left in place. Based on the limited aerial extent of the drums, the absence of any hazardous constituents in excess of RSLs, and its location within the active asphalt blending storage and transfer operational area of the refinery, WRC recommends that this SWMU be catalogued with the other SWMUs in Table VII-1 of the permit, with no further action at this time. If you need additional information or
have any questions, please feel free to contact me at 913-982-0457 or Jerome McSorley in our Oklahoma City office at 405-945-0090.

Sincerely,

[Signature]

Sam A. McCormick
Project Manager

Enclosures

cc/encl:  Sidney Cabbiness – Wynnewood Refining Company, LLC
          Evan Hilburn – Wynnewood Refining Company, LLC
          Jerome McSorley – CVR Energy, Inc.
          Christine Warford – WSP
Figures
Enclosure 1
# DAILY LOG FORM

**Well(s):** __________  **Project/No.:** __________  **Site Location:** WRC - Wynnewood, OK  
**Prepared By:** JEROME MCGORLEY  

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Description of Activities</th>
</tr>
</thead>
</table>
| 02-14/1420      | CUR (SAM MCCORMICK, JEROME MCGORLEY) ON SITE TO MEET WRC AND REVIEW SUSPECTED LANDFILL  
                  | 1515 LANDFILL REVIEWED AT 041 SHELTER NOTED CANS/DRUMS/TAR AT 46' BGS.  
                  | - NEEDS FURTHER DELINEATION TO SOUTH  
                  | 1650 RETURN TO LANDFILL LOCATION - THREE ADDITIONAL TEST HOLES PLACED IN SW AREA APPEAR TO BE CLEAR OF DEBRIS/TAR. ALL HOLES PLACED ABOUT 80' BGS BY HYDRO CHEM. |
| 3/14/0930      | CUR ON SITE TO REVIEW LANDFILL AREA AND COLLECT CONFIRMATION SAMPLE. HYDRO CHEM ON SITE TO INSTALL ADDITIONAL DRILLS TO THE SOUTH.  
                  | 0930  **PLO SCREEN (LISTED BY MAP LOCATION #1)** BACKGROUND: 0.7 ppm  
                  | 1. 1.6 ppm  9. 3.0 ppm  17. 5.2 ppm  25. 5.4 ppm  
                  | 2. 0.9 ppm  10. 2.3 ppm  18. 8.9 ppm  26. 4.7 ppm  
                  | 3. 0.9 ppm  11. 6.9 ppm  19. 7.6 ppm  27. 5.6 ppm  
                  | 4. 1.8 ppm  12. 7.2 ppm  20. 9.4 ppm  28. 3.8 ppm  
                  | 5. 4.1 ppm  13. 0.8 ppm  21. 6.9 ppm  
                  | 6. 3.4 ppm  14. 4.1 ppm  22. 4.5 ppm  
                  | 7. 1.3 ppm  15. 7.1 ppm  23. 4.1 ppm  
                  | 8. 6.8 ppm  16. 4.8 ppm  24. 0.9 ppm  

**PIB:**  PHOSHC  
**Unit:** 2020 COMP800
<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Description of Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-3-14/1000</td>
<td>BORING DETAILS (LISTED BY MAP NUMBER)</td>
</tr>
<tr>
<td></td>
<td>1. 12&quot; Dia. / 6' Deep / 5' Cond. Metal</td>
</tr>
<tr>
<td></td>
<td>2. 12&quot; Dia / 6' Deep / Tar Seep @ 1' BGS</td>
</tr>
<tr>
<td></td>
<td>3. 12&quot; Dia / 6' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>4. 12&quot; Dia / 6' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>5. 12&quot; Dia / 6' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>6. 12&quot; Dia / 6' Deep</td>
</tr>
<tr>
<td></td>
<td>7. 12&quot; Dia / 5' Deep</td>
</tr>
<tr>
<td></td>
<td>8. 12&quot; Dia / 6' Deep</td>
</tr>
<tr>
<td></td>
<td>9. 12&quot; Dia / 1' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>10. 12&quot; Dia / 4' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>11. 12&quot; Dia / 4' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>12. 12&quot; Dia / 3' Deep / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>13. 12&quot; Dia / 5' Deep / Water w/Tar / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>14. 12&quot; Dia / 5' Deep / Water w/Tar / Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>15. 12&quot; Dia / 5' Deep / Metal - Drum / Root Zone @ 0' BGS</td>
</tr>
<tr>
<td></td>
<td>16. 12&quot; Dia / 4' Deep / Metal - Drum / Root Zone @ 2.5' BGS</td>
</tr>
<tr>
<td></td>
<td>17. 12&quot; Dia / 4' Deep / Metal - Drum / Root Zone @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>18. 12&quot; Dia / 4' Deep / Metal - Drum / Root Zone @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>19. 12&quot; Dia / 3' Deep / Metal - Drum / Root Zone @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>20. 12&quot; Dia / 5' Deep / Metal - Drum / Root Zone @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td>21. 12&quot; Dia / 6' Deep / Tar Layer @ 3' BGS</td>
</tr>
<tr>
<td></td>
<td>22. 12&quot; Dia / 6' Deep / Tar Layer @ 3' BGS</td>
</tr>
<tr>
<td></td>
<td>23. 10&quot; Dia / 4' Deep / Tar Seep After Install</td>
</tr>
<tr>
<td></td>
<td>24. 10&quot; Dia / 6' Deep / Solid Bottom / Metal Debris - Tar Seep @ 2' BGS</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### DAILY LOG FORM

**Well(s)**  
Project/No.  
**Site Location**  
WRC - WINNIEWOOD  
**Prepared By**  
JEROME MCGUINLEY

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>BORING DETAILS (CONT)</th>
<th>Description of Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. 10&quot; DIA / 4' DEEP - SOLID BOTTOM / Tar Layer @ 0.5'</td>
<td>Buried Transfer Pipe @ 3' BGS</td>
<td></td>
</tr>
<tr>
<td>26. 10&quot; DIA / 5' DEEP - SOLID BOTTOM / Rock Zone @ 0.5'</td>
<td>Electrical Conduit @ 4' BGS</td>
<td></td>
</tr>
<tr>
<td>27. 10&quot; DIA / 5' DEEP - SOLID BOTTOM / Tar Layer @ 0.5'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. 10&quot; DIA / 4.5' DEEP - SOLID BOTTOM / Confirmation Sample Collected</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**1400**  
**SAMPLE COLLECTED**

**ID:** WW TZONE 4 CHANGE HOUSE 28 (4.5-5)

**MATRIX:** SOIL @ 4.5-5' BGS

** ANALYSIS:** VOC, SVOC, Metals, OA-1, OA-2

**1430**  
**SAMPLE PACKED ON ICE.**

**1615**  
**CVR MTW WRC MANAGER (BILL WELCH) TO DISCUSS RESULTS.**

**04/14 0700**  
**CUR CURRIER SAMPLE TO TRINITY LABS.**
Perimeter sketch

Change room building size - 25' x 40'
Enclosure 2
Certificate of Analysis

Client Name: Wynnewood Refining Co LLC

Project:

ERT Lab Sample Date Analysis Analyzed Parameter Results Units Method
Log # Identification Sampled Date Time By

<table>
<thead>
<tr>
<th>Log #</th>
<th>Sample Identification</th>
<th>Date Sampled</th>
<th>Date Analyzed</th>
<th>Time</th>
<th>By</th>
<th>Parameter</th>
<th>Results</th>
<th>Units</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW1405450</td>
<td>#1 Borehole</td>
<td>05/29/14</td>
<td>06/03/14</td>
<td>08:30</td>
<td>628</td>
<td>Mercury</td>
<td>0.48 mg/kg</td>
<td>7471</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Antimony</td>
<td>&lt;2.0 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Arsenic</td>
<td>2.6 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Barium</td>
<td>92 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Beryllium</td>
<td>0.24 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Cadmium</td>
<td>&lt;0.50 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Chromium</td>
<td>11 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Cobalt</td>
<td>2.7 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Lead</td>
<td>23 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Nickel</td>
<td>15 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Selenium</td>
<td>2.3 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Vanadium</td>
<td>24 mg/kg</td>
<td>6010B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Benzene</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Carbon disulfide</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Chlorobenzene</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Chloroform</td>
<td>&lt;1.2 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>1,2-Dichloroethane</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>1,4-Dioxane</td>
<td>&lt;25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Ethylbenzene</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>1,2-Dibromoethane (Ethylene Dibromide)</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>2-Butanone (Methyl Ethyl Ketone)</td>
<td>&lt;2.5 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Styrene</td>
<td>&lt;0.25 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Toluene</td>
<td>&lt;1.2 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>11:16</td>
<td>644</td>
<td>Xylenes, Total</td>
<td>&lt;0.75 mg/kg</td>
<td>8260B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Anthracene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(a)anthracene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(b)fluoranthene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(k)fluoranthene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(a)pyrene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Bis(2-ethylhexyl)phthalate</td>
<td>&lt;33 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzylic butyl phthalate</td>
<td>&lt;33 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Chrysene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Dibenz(a,h)anthracene</td>
<td>&lt;3.3 mg/kg</td>
<td>8270C</td>
<td></td>
</tr>
</tbody>
</table>

NI* = Not identified in the tentatively identified compounds

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.
628,603,644,280= Subcontracted to ODEQ Lab #9915

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 15 DAYS AFTER THE SAMPLE IS REPORTED.
## Certificate of Analysis

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14

**Project:**  
**Report Date:** 06/06/14

<table>
<thead>
<tr>
<th>Log #</th>
<th>Sample Identification</th>
<th>Date</th>
<th>Analysis Date</th>
<th>Analysis Time</th>
<th>By</th>
<th>Parameter</th>
<th>Results</th>
<th>Units</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW1405450</td>
<td>#1 Borehole</td>
<td>05/29/14</td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>1,2-Dichlorobenzene</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>1,3-Dichlorobenzene</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>1,4-Dichlorobenzene</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Diethyl phthalate</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>14:31</td>
<td>280</td>
<td>Dimethylbenz (A) Anthracene</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Dimethyl phthalate</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Di-n-butyl phthalate</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Di-n-octyl phthalate</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Fluoranthene</td>
<td>&lt;3.3</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>1-Methylnaphthalene</td>
<td>&lt;3.3</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Naphthalene</td>
<td>3.4</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Phenanthrene</td>
<td>&lt;3.3</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Pyrene</td>
<td>&lt;3.3</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Pyridine</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>2-Methylnaphthalene</td>
<td>&lt;3.3</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>2-Methylphenol (cresol)</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>3,4-Methyl Phenol (m,p-cresol)</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>2,4-Dimethylphenol</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>2,4-Dinitrophenol</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>4-Nitrophenol</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Phenol</td>
<td>&lt;33</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td>Dibenz(a,h) acridine</td>
<td>NI*</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td>Indene</td>
<td>NI*</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td>Quinoline</td>
<td>NI*</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td>Benzenethiol</td>
<td>NI*</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
</tbody>
</table>

**MDL = Method Detection Limit.**

**BDL = Analyte was analyzed for but not detected above MDL.**

**628,603,644,280+ Subcontracted to ODEQ Lab #9915**

**OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 10 DAYS AFTER THE SAMPLE IS REPORTED.**
# Quality Control Report

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14  
**Report Date:** 06/08/14

<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Parameter</th>
<th>Method</th>
<th>MDL</th>
<th>Duplicate % Difference</th>
<th>BLANK</th>
<th>Spike Recovery</th>
<th>Standard % Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/29/14</td>
<td>Mercury</td>
<td>7471</td>
<td>0.02 mg/Kg</td>
<td>13.0</td>
<td>BLDL</td>
<td>97.6</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>Antimony</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>65.0</td>
</tr>
<tr>
<td></td>
<td>Arsenic</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>2.00</td>
<td>BLDL</td>
<td>93.9</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Barium</td>
<td>6010B</td>
<td>0.25 mg/Kg</td>
<td>1.00</td>
<td>BLDL</td>
<td>119</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Beryllium</td>
<td>6010B</td>
<td>0.1 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Cadmium</td>
<td>6010B</td>
<td>0.25 mg/Kg</td>
<td>4.00</td>
<td>BLDL</td>
<td>98.5</td>
<td>98.0</td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td>6010B</td>
<td>0.5 mg/Kg</td>
<td>2.00</td>
<td>BLDL</td>
<td>104</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Cobalt</td>
<td>6010B</td>
<td>0.5 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Lead</td>
<td>6010B</td>
<td>0.25 mg/Kg</td>
<td>7.00</td>
<td>BLDL</td>
<td>97.5</td>
<td>97.0</td>
</tr>
<tr>
<td></td>
<td>Nickel</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Selenium</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>7.00</td>
<td>BLDL</td>
<td>106</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>Vanadium</td>
<td>6010B</td>
<td>0.5 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>Benzene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>2.26</td>
<td>BLDL</td>
<td>78.8</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>Carbon disulfide</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>0.860</td>
<td>BLDL</td>
<td>102</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>Chlorobenzene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>5.07</td>
<td>BLDL</td>
<td>79.9</td>
<td>93.8</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
<td>8260B</td>
<td>0.005 mg/Kg</td>
<td>2.14</td>
<td>BLDL</td>
<td>73.4</td>
<td>94.9</td>
</tr>
<tr>
<td></td>
<td>1,2-Dichloroethane</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>2.65</td>
<td>BLDL</td>
<td>69.8</td>
<td>93.2</td>
</tr>
<tr>
<td></td>
<td>1,4-Dioxane</td>
<td>8260B</td>
<td>0.1 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Ethylbenzene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>3.77</td>
<td>BLDL</td>
<td>84.0</td>
<td>95.1</td>
</tr>
<tr>
<td></td>
<td>1,2-Dibromoethane (Ethylene Dibromide)</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>2.58</td>
<td>BLDL</td>
<td>81.2</td>
<td>97.4</td>
</tr>
<tr>
<td></td>
<td>2-Butanone (MEK)</td>
<td>8260B</td>
<td>0.01 mg/Kg</td>
<td>5.02</td>
<td>BLDL</td>
<td>88.4</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>Styrene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>4.56</td>
<td>BLDL</td>
<td>83.7</td>
<td>99.1</td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
<td>8260B</td>
<td>0.005 mg/Kg</td>
<td>2.18</td>
<td>BLDL</td>
<td>80.6</td>
<td>98.7</td>
</tr>
<tr>
<td></td>
<td>Xylenes, Total</td>
<td>8260B</td>
<td>0.003 mg/Kg</td>
<td>4.88</td>
<td>BLDL</td>
<td>81.4</td>
<td>93.6</td>
</tr>
<tr>
<td></td>
<td>Anthracene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>1.21</td>
<td>BLDL</td>
<td>58.7</td>
<td>61.2</td>
</tr>
<tr>
<td></td>
<td>Benzo[a]anthracene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>3.36</td>
<td>BLDL</td>
<td>62.1</td>
<td>58.8</td>
</tr>
<tr>
<td></td>
<td>Benzo[b]fluoranthenes</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>4.34</td>
<td>BLDL</td>
<td>60.8</td>
<td>61.2</td>
</tr>
<tr>
<td></td>
<td>Benzo[k]fluoranthenes</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>9.80</td>
<td>BLDL</td>
<td>65.0</td>
<td>61.9</td>
</tr>
<tr>
<td></td>
<td>Benzo[a]pyrene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>6.15</td>
<td>BLDL</td>
<td>57.8</td>
<td>58.4</td>
</tr>
<tr>
<td></td>
<td>Bis[2-ethylhexyl]phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.37</td>
<td>BLDL</td>
<td>58.9</td>
<td>58.5</td>
</tr>
<tr>
<td></td>
<td>Benzyldibutyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>2.82</td>
<td>BLDL</td>
<td>59.0</td>
<td>62.6</td>
</tr>
<tr>
<td></td>
<td>Chrysene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>1.76</td>
<td>BLDL</td>
<td>62.5</td>
<td>62.0</td>
</tr>
<tr>
<td></td>
<td>Dibenz[a,h]anthracene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>5.32</td>
<td>BLDL</td>
<td>65.0</td>
<td>61.8</td>
</tr>
</tbody>
</table>

**MDL = Method Detection Limit.**  
**BDL = Analyte was analyzed for but not detected above MDL.**

*Performance of this Analyte is outside of established criteria.*

---

*Ours letters and reports apply only to the sample tested and/or inspected, and are not indicative of the quantities of apparently identical or similar products. Unless notified in writing, samples are disposed of 15 days after the sample is reported.*

Page 1 of 2
131 Arlington St. Ada OK 74820
(580) 332-8808 Phone (580) 421-9110 Fax
## Quality Control Report

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14  
**Project:**  
**Report Date:** 06/08/14

<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Parameter</th>
<th>Method</th>
<th>MDL</th>
<th>Duplicate % Difference</th>
<th>BLANK</th>
<th>Spike Recovery</th>
<th>Standard % Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/29/14</td>
<td>1,2-Dichlorobenzene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.12</td>
<td>BDL</td>
<td>55.5</td>
<td>50.9</td>
</tr>
<tr>
<td></td>
<td>1,3-Dichlorobenzene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>1.16</td>
<td>BDL</td>
<td>53.2</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>1,4-Dichlorobenzene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>0.140</td>
<td>BDL</td>
<td>51.9</td>
<td>49.6</td>
</tr>
<tr>
<td></td>
<td>Diethyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>1.78</td>
<td>BDL</td>
<td>63.4</td>
<td>66.6</td>
</tr>
<tr>
<td></td>
<td>Dimethylbenz (A) Anthracene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Dimethyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>2.74</td>
<td>BDL</td>
<td>60.4</td>
<td>61.7</td>
</tr>
<tr>
<td></td>
<td>Di-n-butyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>2.11</td>
<td>BDL</td>
<td>54.4</td>
<td>61.5</td>
</tr>
<tr>
<td></td>
<td>Di-n-octyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>9.86</td>
<td>BDL</td>
<td>63.2</td>
<td>61.1</td>
</tr>
<tr>
<td></td>
<td>Fluoranthene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>0.780</td>
<td>BDL</td>
<td>54.4</td>
<td>60.2</td>
</tr>
<tr>
<td></td>
<td>1-Methylnaphthalene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>2.31</td>
<td>BDL</td>
<td>60.5</td>
<td>55.5</td>
</tr>
<tr>
<td></td>
<td>Naphthalene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>3.53</td>
<td>BDL</td>
<td>52.3</td>
<td>47.7</td>
</tr>
<tr>
<td></td>
<td>Phenanthrene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>1.10</td>
<td>BDL</td>
<td>66.9</td>
<td>60.8</td>
</tr>
<tr>
<td></td>
<td>Pyrene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>0.420</td>
<td>BDL</td>
<td>57.0</td>
<td>57.5</td>
</tr>
<tr>
<td></td>
<td>Pyridine</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>13.6</td>
<td>BDL</td>
<td>14.3</td>
<td>29.6</td>
</tr>
<tr>
<td></td>
<td>2-Methylnaphthalene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>0.500</td>
<td>BDL</td>
<td>55.1</td>
<td>51.3</td>
</tr>
<tr>
<td></td>
<td>2-Methylenphenol (o-cresol)</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.62</td>
<td>BDL</td>
<td>63.6</td>
<td>57.3</td>
</tr>
<tr>
<td></td>
<td>3&amp;4-Methyl Phenol (m,p-cresol)</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>1.41</td>
<td>BDL</td>
<td>79.6</td>
<td>70.2</td>
</tr>
<tr>
<td></td>
<td>2,4-Dimethylenphenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>0.230</td>
<td>BDL</td>
<td>68.0</td>
<td>56.8</td>
</tr>
<tr>
<td></td>
<td>2,4-Dinitrophenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>10.8</td>
<td>BDL</td>
<td>56.2</td>
<td>36.0</td>
</tr>
<tr>
<td></td>
<td>4-Nitrophenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>6.16</td>
<td>BDL</td>
<td>59.6</td>
<td>58.9</td>
</tr>
<tr>
<td></td>
<td>Phenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.80</td>
<td>BDL</td>
<td>71.8</td>
<td>63.7</td>
</tr>
</tbody>
</table>

__Laboratory Authorized Signature__

MDL = Method Detection Limit.  
BDL = Analyte was analyzed for but not detected above MDL.  
*Performance of this Analyte is outside of established criteria.

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 15 DAYS AFTER THE SAMPLE IS REPORTED.

Page 2 of 2  
131 Arlington St. Ada OK 74820  
(580) 332-8808 Phone  (580) 421-9110 Fax
## Certificate of Analysis

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14  
**Report Date:** 06/06/14

<table>
<thead>
<tr>
<th>ERT Lab</th>
<th>Sample</th>
<th>Date</th>
<th>Analysis</th>
<th>Analyzed</th>
<th>Parameter</th>
<th>Results</th>
<th>Units</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW1405451</td>
<td>#2 &amp; #4 Composite</td>
<td>05/29/14</td>
<td>06/03/14</td>
<td>08:30</td>
<td>Mercury</td>
<td>0.21</td>
<td>mg/kg</td>
<td>7471</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Antimony</td>
<td>&lt;2.0</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Arsenic</td>
<td>&lt;2.0</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Barium</td>
<td>100</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Beryllium</td>
<td>0.56</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Cadmium</td>
<td>&lt;0.50</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Chromium</td>
<td>13</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Cobalt</td>
<td>3.8</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Lead</td>
<td>8</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Nickel</td>
<td>8.5</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Selenium</td>
<td>&lt;2.0</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/02/14</td>
<td>10:51</td>
<td>603</td>
<td>Vanadium</td>
<td>25</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Benzene</td>
<td>0.34</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Carbon disulfide</td>
<td>&lt;0.025</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Chlorobenzene</td>
<td>&lt;0.025</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Chloroform</td>
<td>&lt;0.12</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>1,2-Dichloroethane</td>
<td>&lt;0.025</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>1,4-Dioxane</td>
<td>&lt;2.5</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Ethylbenzene</td>
<td>0.11</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>1,2-Dibromoethane (Ethylene Dibromide)</td>
<td>&lt;0.025</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>2-Butanone (Methyl Ethyl Ketone)</td>
<td>&lt;0.25</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Styrene</td>
<td>&lt;0.025</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Toluene</td>
<td>&lt;0.12</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/03/14</td>
<td>13:07</td>
<td>644</td>
<td>Xylenes, Total</td>
<td>0.17</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Anthracene</td>
<td>0.86</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(a)anthracene</td>
<td>0.86</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(b)fluoranthenes</td>
<td>0.86</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(k)fluoranthenes</td>
<td>0.86</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzo(a)pyrene</td>
<td>0.86</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Bis(2-ethylhexyl)phthalate</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Benzylbutyl phthalate</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Chrysene</td>
<td>&lt;0.66</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>280</td>
<td>Dibenzo(a,h)anthracene</td>
<td>&lt;0.66</td>
<td>mg/kg</td>
</tr>
</tbody>
</table>

NID = Not identified in the tentatively identified compounds

---

Laboratory Authorized Signature

MDL = Method Detection Limit.

BDL = Analyte was analyzed for but not detected above MDL.

628,603,644,280 = Subcontracted to ODEQ Lab #9915

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 15 DAYS AFTER THE SAMPLE IS REPORTED.

131 Arlington St. Ada OK 74820  
(580) 332-8808 Phone  (580) 421-9110 Fax
## Certificate of Analysis

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14

**Project:**

<table>
<thead>
<tr>
<th>Log #</th>
<th>Sample</th>
<th>Date</th>
<th>Analysis</th>
<th>Analyzed</th>
<th>Parameter</th>
<th>Results</th>
<th>Units</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW1405451</td>
<td>#2 &amp; #4 Composite</td>
<td>05/29/14</td>
<td>06/04/14</td>
<td>00:44</td>
<td>1,2-Dichlorobenzene</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,3-Dichlorobenzene</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,4-Dichlorobenzene</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Diethyl phthalate</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>14:31</td>
<td>Dimethylbenz (A) Anthracene</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dimethyl phthalate</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Di-n-butyl phthalate</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Di-n-octyl phthalate</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fluoranthene</td>
<td>&lt;0.66</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1-Methylnaphthalene</td>
<td>0.99</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Naphthalene</td>
<td>&lt;0.66</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Phenanthrene</td>
<td>&lt;0.66</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pyrene</td>
<td>&lt;0.66</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pyridine</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>06/04/14</td>
<td>00:44</td>
<td>2-Methylnaphthalene</td>
<td>1.2</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2-Methylphenol (o-cresol)</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>384-Methyl Phenol (m,p-cresol)</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,4-Dimethylphenol</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,4-Dinitrophenol</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4-Nitrophenol</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Phenol</td>
<td>&lt;6.7</td>
<td>mg/kg</td>
<td>8270C</td>
</tr>
<tr>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td></td>
<td></td>
<td>Dibenzo(a,h) acridine</td>
<td>Nt</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
<tr>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td></td>
<td></td>
<td>Indene</td>
<td>Nt</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
<tr>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td></td>
<td></td>
<td>Quinoline</td>
<td>Nt</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
<tr>
<td>06/04/14</td>
<td>-</td>
<td>9915</td>
<td></td>
<td></td>
<td>Benzenethiol</td>
<td>Nt</td>
<td>mg/L</td>
<td>TIC</td>
</tr>
</tbody>
</table>

Nt = Not identified in the tentatively identified compounds

Laboratory Authorized Signature

**MDL = Method Detection Limit.**  
**BDL = Analyte was analyzed for but not detected above MDL.**  
628,603,644,280 = Subcontracted to DEQ Lab #9915

**OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED. AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 15 DAYS AFTER THE SAMPLE IS REPORTED.**

Page 2 of 2  
131 Arlington St. Ada OK 74820  
(580) 332-8808 Phone (580) 421-9110 Fax
# Quality Control Report

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14  
**Report Date:** 06/06/14

<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Parameter</th>
<th>Method</th>
<th>MDL</th>
<th>Duplicate %</th>
<th>BLANK</th>
<th>Spike Recovery</th>
<th>Standard % Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/28/14</td>
<td>Mercury</td>
<td>7471</td>
<td>0.02 mg/Kg</td>
<td>13.0</td>
<td>BDL</td>
<td>97.6</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Antimony</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>65.0</td>
</tr>
<tr>
<td></td>
<td>Arsenic</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>2.00</td>
<td>BDL</td>
<td>93.9</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Barium</td>
<td>6010B</td>
<td>0.25 mg/Kg</td>
<td>1.00</td>
<td>BDL</td>
<td>119</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>Beryllium</td>
<td>6010B</td>
<td>0.1 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Cadmium</td>
<td>6010B</td>
<td>0.25 mg/Kg</td>
<td>4.00</td>
<td>BDL</td>
<td>98.5</td>
<td>96.0</td>
</tr>
<tr>
<td></td>
<td>Chromium</td>
<td>6010B</td>
<td>0.5 mg/Kg</td>
<td>2.00</td>
<td>BDL</td>
<td>104</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Cobalt</td>
<td>6010B</td>
<td>0.5 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Lead</td>
<td>6010B</td>
<td>0.25 mg/Kg</td>
<td>7.00</td>
<td>BDL</td>
<td>97.5</td>
<td>97.0</td>
</tr>
<tr>
<td></td>
<td>Nickel</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Selenium</td>
<td>6010B</td>
<td>1 mg/Kg</td>
<td>7.00</td>
<td>BDL</td>
<td>106</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>Vanadium</td>
<td>6010B</td>
<td>0.5 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>Benzene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>6.550</td>
<td>BDL</td>
<td>103</td>
<td>93.5</td>
</tr>
<tr>
<td></td>
<td>Carbon disulfide</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>7.09</td>
<td>BDL</td>
<td>109</td>
<td>96.7</td>
</tr>
<tr>
<td></td>
<td>Chlorobenzene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>5.28</td>
<td>BDL</td>
<td>97.4</td>
<td>97.2</td>
</tr>
<tr>
<td></td>
<td>Chloroform</td>
<td>8260B</td>
<td>0.005 mg/Kg</td>
<td>7.32</td>
<td>BDL</td>
<td>106</td>
<td>96.1</td>
</tr>
<tr>
<td></td>
<td>1,2-Dichloroethane</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>7.17</td>
<td>BDL</td>
<td>103</td>
<td>95.0</td>
</tr>
<tr>
<td></td>
<td>1,4-Dioxane</td>
<td>8260B</td>
<td>0.1 mg/Kg</td>
<td>NA</td>
<td>BDL</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Ethylbenzene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>1.10</td>
<td>BDL</td>
<td>94.7</td>
<td>95.5</td>
</tr>
<tr>
<td></td>
<td>1,2-Dibromoethane (Ethylene Dibromide)</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>6.59</td>
<td>BDL</td>
<td>101</td>
<td>92.7</td>
</tr>
<tr>
<td></td>
<td>2-Butanone (MEK)</td>
<td>8260B</td>
<td>0.01 mg/Kg</td>
<td>12.1</td>
<td>BDL</td>
<td>94.7</td>
<td>74.3</td>
</tr>
<tr>
<td></td>
<td>Styrene</td>
<td>8260B</td>
<td>0.001 mg/Kg</td>
<td>3.6</td>
<td>BDL</td>
<td>92.6</td>
<td>97.2</td>
</tr>
<tr>
<td></td>
<td>Toluene</td>
<td>8260B</td>
<td>0.005 mg/Kg</td>
<td>2.83</td>
<td>BDL</td>
<td>105</td>
<td>98.4</td>
</tr>
<tr>
<td></td>
<td>Xylenes, Total</td>
<td>8260B</td>
<td>0.003 mg/Kg</td>
<td>1.00</td>
<td>BDL</td>
<td>91.1</td>
<td>92.9</td>
</tr>
<tr>
<td></td>
<td>Anthracene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>1.21</td>
<td>BDL</td>
<td>58.7</td>
<td>61.2</td>
</tr>
<tr>
<td></td>
<td>Benzo(a)anthracene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>3.30</td>
<td>BDL</td>
<td>62.1</td>
<td>58.8</td>
</tr>
<tr>
<td></td>
<td>Benzo(b)fluoranthene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>4.34</td>
<td>BDL</td>
<td>60.8</td>
<td>61.2</td>
</tr>
<tr>
<td></td>
<td>Benzo(k)fluoranthene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>9.80</td>
<td>BDL</td>
<td>65.0</td>
<td>61.9</td>
</tr>
<tr>
<td></td>
<td>Benzo(a)pyrene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>6.15</td>
<td>BDL</td>
<td>57.8</td>
<td>56.4</td>
</tr>
<tr>
<td></td>
<td>Bis(2-ethylhexyl)phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.37</td>
<td>BDL</td>
<td>56.9</td>
<td>58.5</td>
</tr>
<tr>
<td></td>
<td>Benzyloxyphenyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>2.82</td>
<td>BDL</td>
<td>59.0</td>
<td>62.8</td>
</tr>
<tr>
<td></td>
<td>Chrysene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>1.76</td>
<td>BDL</td>
<td>62.5</td>
<td>62.0</td>
</tr>
<tr>
<td></td>
<td>Dibenz(a,h)anthracene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>5.32</td>
<td>BDL</td>
<td>65.0</td>
<td>61.8</td>
</tr>
</tbody>
</table>

**MDL** = Method Detection Limit.  
**BDL** = Analyte was analyzed for but not detected above MDL.

*Performance of this Analyte is outside of established criteria.*

**OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 15 DAYS AFTER THE SAMPLE IS REPORTED.*

---

Page 1 of 2  
131 Arlington St. Ada OK 74820  
(580) 332-8808 Phone  (580) 421-9110 Fax
**Quality Control Report**

**Client Name:** Wynnewood Refining Co LLC  
**Date Received:** 05/30/14

**Project:**

<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Parameter</th>
<th>Method</th>
<th>MDL</th>
<th>Duplicate % Difference</th>
<th>BLANK</th>
<th>Spike Recovery</th>
<th>Standard % Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/29/14</td>
<td>1,2-Dichlorobenzene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.12</td>
<td>BLDL</td>
<td>55.5</td>
<td>50.9</td>
</tr>
<tr>
<td></td>
<td>1,3-Dichlorobenzene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>1.16</td>
<td>BLDL</td>
<td>53.2</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>1,4-Dichlorobenzene</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>0.140</td>
<td>BLDL</td>
<td>51.9</td>
<td>48.6</td>
</tr>
<tr>
<td></td>
<td>Diethyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>1.78</td>
<td>BLDL</td>
<td>63.4</td>
<td>66.6</td>
</tr>
<tr>
<td></td>
<td>Dimethylbenz (A) Anthracene</td>
<td>8270C</td>
<td>0.03 mg/Kg</td>
<td>NA</td>
<td>BLDL</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Dimethyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>2.74</td>
<td>BLDL</td>
<td>60.4</td>
<td>61.7</td>
</tr>
<tr>
<td></td>
<td>Di-n-butyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>2.11</td>
<td>BLDL</td>
<td>54.4</td>
<td>61.5</td>
</tr>
<tr>
<td></td>
<td>Di-n-octyl phthalate</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>9.86</td>
<td>BLDL</td>
<td>63.2</td>
<td>61.1</td>
</tr>
<tr>
<td></td>
<td>Fluoranthene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>0.780</td>
<td>BLDL</td>
<td>54.4</td>
<td>60.2</td>
</tr>
<tr>
<td></td>
<td>1-Methylnaphthalene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>2.31</td>
<td>BLDL</td>
<td>60.5</td>
<td>55.5</td>
</tr>
<tr>
<td></td>
<td>Naphthalene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>3.53</td>
<td>BLDL</td>
<td>52.3</td>
<td>47.7</td>
</tr>
<tr>
<td></td>
<td>Phenanthrene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>1.10</td>
<td>BLDL</td>
<td>66.9</td>
<td>60.8</td>
</tr>
<tr>
<td></td>
<td>Pyrene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>0.420</td>
<td>BLDL</td>
<td>57.0</td>
<td>57.5</td>
</tr>
<tr>
<td></td>
<td>Pyridine</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>13.8</td>
<td>BLDL</td>
<td>14.3</td>
<td>29.6</td>
</tr>
<tr>
<td></td>
<td>2-Methylnaphthalene</td>
<td>8270C</td>
<td>0.033 mg/Kg</td>
<td>0.500</td>
<td>BLDL</td>
<td>55.1</td>
<td>51.3</td>
</tr>
<tr>
<td></td>
<td>2-Methylphenol (o-cresol)</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.62</td>
<td>BLDL</td>
<td>63.8</td>
<td>57.3</td>
</tr>
<tr>
<td></td>
<td>3&amp;4-Methyl Phenol (m,p-cresol)</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>1.41</td>
<td>BLDL</td>
<td>79.8</td>
<td>70.2</td>
</tr>
<tr>
<td></td>
<td>2,4-Dimethylphenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>0.230</td>
<td>BLDL</td>
<td>58.0</td>
<td>56.8</td>
</tr>
<tr>
<td></td>
<td>2,4-Dinitrophenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>10.8</td>
<td>BLDL</td>
<td>56.2</td>
<td>36.0</td>
</tr>
<tr>
<td></td>
<td>4-Nitrophenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>6.16</td>
<td>BLDL</td>
<td>59.6</td>
<td>58.9</td>
</tr>
<tr>
<td></td>
<td>Phenol</td>
<td>8270C</td>
<td>0.333 mg/Kg</td>
<td>3.80</td>
<td>BLDL</td>
<td>71.8</td>
<td>63.7</td>
</tr>
</tbody>
</table>

---

**Laboratory Authorized Signature**

**MDL** = Method Detection Limit.
**BDL** = Analyte was analyzed for but not detected above MDL.

*Performance of this Analyte is outside of established criteria.*

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND/OR INSPECTED, AND ARE NOT INDICATIVE OF THE QUANTITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. UNLESS NOTIFIED IN WRITING, SAMPLES ARE DISPOSED OF 15 DAYS AFTER THE SAMPLE IS REPORTED.
<table>
<thead>
<tr>
<th>Lab Log #</th>
<th>Date Sample Taken</th>
<th>Time Sample Taken</th>
<th>Matrix</th>
<th>C</th>
<th>Sample Location</th>
<th>Temp C, F</th>
<th>No. of Container</th>
<th>Size of Container</th>
<th>Analysis Requested</th>
<th>Sample Proven?</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/05/14</td>
<td>05/29/14</td>
<td>3:40 AM</td>
<td>Soil</td>
<td>X</td>
<td>#1 borehole</td>
<td>1</td>
<td>802</td>
<td>Skinner list, Metals, Vol/semivol</td>
<td>cool</td>
<td></td>
</tr>
<tr>
<td>05/05/14</td>
<td>05/29/14</td>
<td>3:40 AM</td>
<td>Soil</td>
<td>X</td>
<td>#2 &amp; #4 composite</td>
<td>1</td>
<td>802</td>
<td>Skinner list, Metals, Vol, semi vol</td>
<td>cool</td>
<td></td>
</tr>
</tbody>
</table>

Comments: Rush Email results to eHilburn@Curenergy.com

Sampled By: [Signature] Date/Time: 3:40 AM / 05/29/14

Received By: [Signature] Date/Time:

Relinquished By: [Signature] Date/Time: 5/30/14 8:35

Received By: [Signature] Date/Time:

Relinquished to Lab By: [Signature] Date/Time: 5/30/14 1300

Received By: [Signature] Date/Time: 5/30/14 1300
13 June 2014

Sam McCormick  
Coffeyville Resources Refining & Marketing, LLC  
10 E. Cambridge Circle Suite 250  
Kansas City, KS 66103

Subject: REW Analytical; Work Order No: 4060415

Under this cover, TRINITY ANALYTICAL LABORATORIES, INC., is pleased to submit the analytical results for the sample(s) received by the laboratory on 06/04/14 10:45.

Laboratory analyses were performed utilizing methodologies published in the:
* Most recently promulgated update of EPA Publication SW-846, 3rd Edition;
* Title 40 - Part 136 of the Code of Federal Regulations;
* Applicable ASTM Methods; and/or,
* Standard Methods for the Examination of Water and Wastewater, 20th Ed.
* All analyses were performed on samples as received and calculated on a wet basis, unless otherwise noted on the analytical report.

All data contained in this package is intended to meet NELAC requirements. Any data that does not meet these requirements will be qualified. See specific analytical reports for details.

Field Sampling activities performed by Trinity were in accordance with Trinity SOP FS-001, FS-002, or FS-003.

Unless other arrangements have been made, samples will be retained for thirty days from the date of receipt. Results tabulated within this report relate only to the item(s) tested or to the sample(s) as received by the Laboratory.

If you need assistance in evaluating the results of have questions concerning this package, please contact our Client Service Department at 620-328-3222. To expedite your request, please have your Work Order Number, listed in the "Subject:" section of this letter, readily available.

This report shall not be reproduced except in full, without the written approval of the Laboratory.

Thank you for choosing Trinity as your testing laboratory.

Sincerely,

TRINITY ANALYTICAL LABORATORIES, INC.

[Signature]

Scott A. Popejoy
Laboratory Manager
<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Laboratory ID</th>
<th>Matrix</th>
<th>Date Sampled</th>
<th>Date Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW Zone 4 Change House 28 (4.5-5)</td>
<td>4060415-01</td>
<td>Solid</td>
<td>06/03/14 14:00</td>
<td>06/04/14 10:45</td>
</tr>
</tbody>
</table>
## Extractable Petroleum Hydrocarbons by OA-2

<table>
<thead>
<tr>
<th>Substance</th>
<th>Result</th>
<th>Limit</th>
<th>Units</th>
<th>Analyst</th>
<th>Batch</th>
<th>Prepared</th>
<th>Analyzed</th>
<th>Method</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Spirits Range Organics</td>
<td>ND</td>
<td>10</td>
<td>mg/kg</td>
<td>B4F1106</td>
<td>06/11/14</td>
<td>06/12/14</td>
<td>OA-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerosene Range Organics</td>
<td>ND</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jet Fuel Range Organics</td>
<td>ND</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel Fuel Range Organics</td>
<td>ND</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Oil #6 Range Organics</td>
<td>ND</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mineral Oil Range Organics</td>
<td>ND</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Oil Range Organics</td>
<td>ND</td>
<td>10</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surrogate: o-Terphenyl</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>76.4 %</td>
<td>28-121</td>
</tr>
</tbody>
</table>

## Volatile Petroleum Hydrocarbons by OA-1

<table>
<thead>
<tr>
<th>Substance</th>
<th>Result</th>
<th>Limit</th>
<th>Units</th>
<th>Analyst</th>
<th>Batch</th>
<th>Prepared</th>
<th>Analyzed</th>
<th>Method</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surrogate: Bromofluorobenzene</td>
<td>91.7 %</td>
<td>60-140</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surrogate: 1,2-Dichloroethane-d4</td>
<td>122 %</td>
<td>60-140</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surrogate: Toluene-d8</td>
<td>106 %</td>
<td>60-140</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Metals by EPA 6000/7000 Series Methods

<table>
<thead>
<tr>
<th>Substance</th>
<th>Result</th>
<th>Limit</th>
<th>Units</th>
<th>Analyst</th>
<th>Batch</th>
<th>Prepared</th>
<th>Analyzed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>16.5</td>
<td>5.00</td>
<td>mg/kg</td>
<td>B4F1011</td>
<td>06/10/14</td>
<td>06/11/14</td>
<td>EPA 6010B</td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>2.38</td>
<td>2.00</td>
<td>&quot;</td>
<td>B4F1106</td>
<td>06/11/14</td>
<td>06/12/14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barium</td>
<td>121</td>
<td>1.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Beryllium</td>
<td>ND</td>
<td>1.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td>1.12</td>
<td>1.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>17.7</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Cobalt</td>
<td>ND</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>5.98</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>ND</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>9.57</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Selenium</td>
<td>ND</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>ND</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Vanadium</td>
<td>29.8</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>29.8</td>
<td>5.00</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td></td>
</tr>
</tbody>
</table>
### WW Zone 4 Change House 28 (4.5-5)
#### 4060415-01 (Solid)

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Result</th>
<th>Quantitation</th>
<th>Analyst</th>
<th>Batch</th>
<th>Prepared</th>
<th>Analyzed</th>
<th>Method</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mercury by CVAA EPA 7000 Methods</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>ND</td>
<td>0.1000 mg/kg</td>
<td>cmc</td>
<td>B4F1104</td>
<td>06/11/14</td>
<td>06/11/14</td>
<td>EPA 7471</td>
<td></td>
</tr>
<tr>
<td><strong>Volatile Organic Compounds by EPA Method 8260B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td>B4F0905</td>
<td>06/09/14</td>
<td>06/09/14</td>
<td>EPA 8260B</td>
<td></td>
</tr>
<tr>
<td>2-Butanone (MEK)</td>
<td>ND</td>
<td>0.050 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Tetrachloride</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Disulfide</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorobenzene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloroform</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2-Dibromoethane (EDB)</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2-Dichloroethane</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1-Dichloroethene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,4-Dioxane</td>
<td>ND</td>
<td>0.10 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Z(1)</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Styrene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetrachloroethylene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1,2-Trichloroethane</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,3,5-Trimethylbenzene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m- &amp; p-Xylene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o-Xylene</td>
<td>ND</td>
<td>0.005 mg/kg</td>
<td>cmc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: Bromofluorobenzene 91.7 % 50-157 * * *

Surrogate: 1,2-Dichloroethane-d4 122 % 31-170 * * *

Surrogate: Toluene-d8 106 % 60-140 * * *

---

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.
### WW Zone 4 Change House 28 (4.5-5)

#### 4060415-01 (Solid)

Trinity Analytical Laboratories

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Result</th>
<th>Quantitation Limit</th>
<th>Units</th>
<th>Analyst</th>
<th>Batch</th>
<th>Prepared</th>
<th>Analyzed</th>
<th>Method</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acenaphthene</td>
<td>ND</td>
<td>0.33</td>
<td>mg/kg</td>
<td>jrg</td>
<td>B4F0908</td>
<td>06/09/14</td>
<td>06/09/14</td>
<td>EPA 8270C</td>
<td></td>
</tr>
<tr>
<td>Anthracene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benz[a]anthracene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzo[a]Pyrene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzo[b]fluoranthene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzo[k]fluoranthene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzo[g,h,i]perylene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bis(2-ethylhexyl)phthalate</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butyl benzyl phthalate</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrysene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2-Dichlorobenzene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,4-Dichlorobenzene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7,12-Dimethylbenz(a)anthracene</td>
<td>ND</td>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Z(1)</td>
</tr>
<tr>
<td>2,4-Dimethylphenol</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,4-Dinitrotoluene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di-n-butyl phthalate</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di-n-octyl phthalate</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dibenz(a,h) anthracene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluoranthene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluorene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indeno[1,2,3-cd]pyrene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Methylnaphthalene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Methylnaphthalene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Methylphenol (o-cresol)</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3- &amp; 4-Methylphenol (m&amp;p-Cresol)</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naphthalene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrobenzene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyrene</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyridine</td>
<td>ND</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: 2-Fluorobiphenyl

<table>
<thead>
<tr>
<th>Surrogate</th>
<th>Result</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Fluorobiphenyl</td>
<td>43.8%</td>
<td>29-107</td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: 2-Fluorophenol

<table>
<thead>
<tr>
<th>Surrogate</th>
<th>Result</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Fluorophenol</td>
<td>29.5%</td>
<td>16-91</td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: Nitrobenzene-d5

<table>
<thead>
<tr>
<th>Surrogate</th>
<th>Result</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrobenzene-d5</td>
<td>37.0%</td>
<td>17-108</td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: Phenol-d6

<table>
<thead>
<tr>
<th>Surrogate</th>
<th>Result</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol-d6</td>
<td>39.2%</td>
<td>13-108</td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: p-Terphenyl-d14

<table>
<thead>
<tr>
<th>Surrogate</th>
<th>Result</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-Terphenyl-d14</td>
<td>55.3%</td>
<td>34-128</td>
<td></td>
</tr>
</tbody>
</table>

Surrogate: 2,4,6-Tribromophenol

<table>
<thead>
<tr>
<th>Surrogate</th>
<th>Result</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4,6-Tribromophenol</td>
<td>48.3%</td>
<td>32-120</td>
<td></td>
</tr>
</tbody>
</table>

Trinity Analytical Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.
Notes and Definitions

Z(1)  Non Certified Analyte
X(g)  Recovery is outside of control limits.
M(c)  The Matrix spike and/or matrix spike duplicate analyte recovery was outside of QC Limits because of matrix interference.
M(b)  The Matrix spike and/or matrix spike duplicate analyte recovery was outside of QC Limits because of high analyte concentration.
DET  Analyte DETECTED
ND   Analyte NOT DETECTED at or above the reporting limit
NR   Not Reported
dry  Sample results reported on a dry weight basis
RPD  Relative Percent Difference
**CHAIN OF CUSTODY**

**SEND RESULTS TO:**
- NAME: Sam McCormick
- COMPANY: CPRM
- MAILING ADDRESS: 10 E. Cambridge Circle, Dc.
- CITY/STATE/ZIP: Kansas City, Kansas
- TELEPHONE NO: (918) 982-0457

**SEND INVOICE TO:**
- NAME: Sam McCormick
- COMPANY: CPRM
- MAILING ADDRESS: 10 E. Cambridge Circle, Dc.
- CITY/STATE/ZIP: Kansas City, KS
- PROJECT NAME: Down South

**TURN AROUND TIME REQUESTED (Additional Charges May Apply):**
Samples Must Be Received Before Noon or Turn Around Time Will Start the Next Business Day, Business Days: ☐ X ☐ 3 ☐ 2 ☐ Next ☐ Same

Results: ☐ Mailed ☐ Faxed ☐ E-Mail Address

**ANALYSIS REQUESTED**

<table>
<thead>
<tr>
<th>SAMPLE IDENTIFICATION/DESCRIPTION</th>
<th>MATRIX TYPE</th>
<th>DATE SAMPLED</th>
<th>TIME SAMPLED</th>
<th>PRES.</th>
<th>QC OF CONT.</th>
<th>REV</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW Zone 4, Change House 28415no 5</td>
<td></td>
<td>6/31/14</td>
<td>1400</td>
<td>0</td>
<td>2</td>
<td>X</td>
<td>New 1st</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Enviro Sivco</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Metals, OA-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>OA-2</td>
</tr>
</tbody>
</table>

**SAMPLE SIGNATURE:**

RECEIVED DATE: 6-4-14 10:45
RECEIVED BY: [Signature]
RECEIVED FOR LABORATORY BY: [Signature]
CONDITION OF SAMPLES AT RECEIPT: [Y/N/A]
CUSTODY SEALS INTEGRITY: [Y/N/A]
COOLER TEMP: [FC]

**COMMENTS OR REMARKS:**
[Handwritten note]

**ORIGINAL - LABORATORY COPY**
**YELLOW - CUSTOMER COPY**

- pH Check ☐
## INVOICE

Number: 4504-1406029  
Date: 06/11/2014

115 East Fifth Street - P.O. Box C - Mound Valley, Kansas 67354  
Phone: 620-324-3227  
Fax: 620-328-2033

### Accounts Payable

Coffeyville Resources Refining & Marketing,  
P.O. Box 410420  
Kansas City, MO 64141-0420

### Results Submitted To:

Coffeyville Resources Refining & Marketing,  
Sam McCormick  
10 E. Cambridge Circle Suite 250  
Kansas City, KS 66103

### Terms

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>TAT Factor</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Volatile Petroleum Hydrocarbons</td>
<td>1</td>
<td>$51.00</td>
<td>1.00</td>
<td>$51.00</td>
</tr>
<tr>
<td>Volatiles, Total Purgeable</td>
<td>1</td>
<td>$147.40</td>
<td>1.00</td>
<td>$147.40</td>
</tr>
<tr>
<td>Total Extractable Petroleum Hydrocarbons</td>
<td>1</td>
<td>$52.50</td>
<td>1.00</td>
<td>$52.50</td>
</tr>
<tr>
<td>Semi-Volatiles, Total Extractable</td>
<td>1</td>
<td>$226.80</td>
<td>1.00</td>
<td>$226.80</td>
</tr>
<tr>
<td>Met-ICP - CRRM-14</td>
<td>1</td>
<td>$119.10</td>
<td>1.00</td>
<td>$119.10</td>
</tr>
<tr>
<td>CVAA Mercury - Solid</td>
<td>1</td>
<td>$28.40</td>
<td>1.00</td>
<td>$28.40</td>
</tr>
</tbody>
</table>

Invoice Total: $625.20

Project: REW Analytical
July 23, 2014

Mr. Sam McCormick
Project Manager
Wynnewood Refining Company
10 East Cambridge Circle Drive, Suite 250
Kansas City, Kansas 66103

Re: Notification of Newly Identified Solid Waste Management Unit (SWMU), Wynnewood Refining Company, Wynnewood Oklahoma, Permit #000396549 (Permit)

Dear Mr. McCormick:

On June 25, 2014 the Land Protection Division of the Department of Environmental Quality (DEQ) received the above-referenced notification. The notification outlined that on May 28, 2014 buried drums were encountered during exploratory work for a new building east of the asphalt control building. A total of 28 borings were installed to approximately 3-7 feet below ground surface, with the contents within each boring catalogued for mapping purposes and screened using a photoionization detector to identify locations for confirmation sampling.

A total of three samples were collected and analyzed to determine if there had been a release of any hazardous constituents from the drum disposal area. All of the analytes detected were below EPA Regional Screening Levels.

Information required by permit (Section VII.D.1) was included in the notification. Permit condition VII.D.1.a requires the location of a newly-identified SMWU be placed on a topographic map required under 40 CFR Section 270.14(b)(19), and to indicate all existing units in relation to other SWMUs.

The notification attempted to meet these requirements by including three figures: a topographic map (Figure 1), a site map with existing SWMUs (Figure 2), and the location of the exploratory borings (Figure 3). However, Figure 1 is at too great of a scale (1 inch to 2,000 feet) to be of much use.

The DEQ requests that a new topographic map that is the same size and scale as Figure 2 (1 inch to 600 feet) be submitted. A topographic map of that size and scale would more adequately meet the requirements of 40 CFR Section 270.14(b)(19).
Upon receipt of the requested topographic map the new SWMU will be catalogued with the existing SMUWs in Table VII-1 of the permit.

Questions may be directed to Adrian Simmons at (405) 702-5217.

Sincerely,

Donald A. Hensch, P.E.
Engineering Manager
RCRA Permits and Corrective Actions Section
Land Protection Division

DAH/as

cc: David Vogler (6PD-O), EPA Region 6
July 31, 2014

Donald A. Hensch, P.E.
Engineering Manager, RCRA Permits and Corrective Action
Land Protection Division
Oklahoma Department of Environmental Quality
707 N. Robinson
Oklahoma City, OK 73102

RE: Notification of Newly Identified Potential SWMU – Response to Comments
Wynnewood Refining Company, LLC (RCRA Permit No. 000396549)
Wynnewood, Oklahoma

Dear Mr. Hensch:

On July 23, 2014, in response to the notification of a newly identified Solid Waste Management Unit (SWMU), the Oklahoma Department of Environmental Quality (ODEQ) requested a new topographic map. Two new maps showing site topography are attached as follows:

- Figure 1b: Site Map with Topography
- Figure 1c: Site Map with Topography and Aerial View

In order to complete the SWMU notification, please add the figure to the notification that was dated June 23, 2014. If you need additional information or have any questions, please feel free to contact me at 913-982-0457 or Jerome McSorley in our Oklahoma City office at 405-945-0090.

Sincerely,

Sam A. McCormick
Project Manager

SAM:jdm

cc/encl: Jerome McSorley – CVR Energy, Inc.
Sidney Cabbiness – Wynnewood Refining Company, LLC
Evan Hilburn – Wynnewood Refining Company, LLC
Christine Warford – WSP USA Corp.
August 6, 2014

Mr. Sam McCormick
Project Manager
Wynnewood Refining Company
10 East Cambridge Circle Drive, Suite 250
Kansas City, Kansas 66103

Re: Supplemental Information Regarding Notification of Newly Identified Solid Waste Management Unit (SWMU), Wynnewood Refining Company, Wynnewood Oklahoma, Permit #000396549 (Permit), EPA ID#OKD000396549

Dear Mr. McCormick:

On June 25, 2014 the Land Protection Division of the Department of Environmental Quality (DEQ) received a notification of a newly identified SWMU at the Wynnewood Refining Company. On July 23, 2014 the DEQ requested submission of additional topographic maps the same size and scale as Figure 2 (1 inch to 600 feet). Two new maps were submitted July 31, 2014.

With the receipt of the new maps (Figures 1B and 1C) information required by permit (Section VII.D.1) has been adequately addressed.

The new SWMU will be catalogued with the existing SMUWs in Table VII-1 of the permit.

Questions may be directed to Adrian Simmons at (405) 702-5217.

Sincerely,

Donald A. Hensch, P.E.
Engineering Manager
RCRA Permits and Corrective Actions Section
Land Protection Division

DAH/as

cc: David Vogler (6PD-O), EPA Region 6