



Sitelab Corporation
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TO Ms. Kathy Somoza
Chesapeake Bay Trust
108 Severn Avenue
Annapolis, MD 21403Award

DATE: March 25, 2022

SUBJECT: **Final Report for CB Trust Award No. 16770**

Since June 2019, Sitelab Corporation has been contracted with Chesapeake Bay Trust working with DOEE and U.S. EPA in Washington, DC to develop a laboratory protocol and certification program testing the content of Polycyclic Aromatic Hydrocarbons (PAHs) in sealcoat products used on driveways and parking lots.

This report summarizes work performed for the project's Task 1, Task 2 and Task 3 goals. DOEE will summarize Task 4, Task 5 and provide conclusions, including the value, impacts and future work resulting from this project. This report follows the objectives outlined in CB Trust's GIT 2018 "Table 2: Defining Project Scope of Work" document.

Task 1 Summary

The goal for this task was to develop a robust, scientifically sound, Standard Operating Procedure (SOP) or "Quality Assurance Protocol" for testing and certifying the PAH content in pavement sealants. This protocol was designed to be a national standard for use around the country where communities want to ban and regulate the use of high PAH products.

Task 1.1 A Review Committee was formed by Sitelab Corporation with assistance from DOEE. Members are listed below:

<u>Name:</u>	<u>Affiliation:</u>
Steve Greason	Sitelab Corporation
Nancy Rothman	New Environmental Horizons, Inc.
Lillian Power	DOEE, Dept. of Energy & Environment (Project Lead)
John Materi	DOEE, Dept. of Energy & Environment
Greg Allen	U.S. Environmental Protection Agency
Rebecca Esselman	U.S. Environmental Protection Agency
Tom Ennis	City of Austin, TX, Watershed Protection Dept.
Hilary Swartwood	Huron River Watershed Council
Leonard Schugam	Maryland Dept. of the Environment
Stan Edwards	Montgomery County, MD
Barbara Mahler	USGS Austin, TX (volunteer, limited attendance)

Review Committee meetings were conducted fairly regularly until delays caused by the Covid-19 pandemic. Meeting agendas and conference calls were scheduled by DOEE and meeting minutes were recorded by Sitelab Corporation. The last meeting with the Review Committee was in September 2020. Since then, meetings were conducted with DOEE only, with comments and feedback received by Review Committee members when emailing the protocol drafts and test data.

Attempts were made to add members from sealcoat manufacturers and industry trade organizations, but few trade organizations exist and it was decided to work independently with manufacturers instead to avoid any conflicts or show favoritism. Sitelab was successful establishing relationships with multiple manufacturers, who offered samples of their products to help with this project. Much of this effort contributed to the outreach plan conducted in Tasks 3 and Task 4.

Task 1.2 Sitelab Corporation developed a draft laboratory "QA Protocol" for the pavement sealant certification program. Much of this work was performed by Nancy Rothman from New Environmental Horizons, Inc., Sitelab's consultant, an

experienced expert in this field. Prior to developing the protocol, a year was spent testing both dry and wet sealcoat samples. Samples provided by manufacturers and purchased from retail stores were analyzed for PAHs using Pace Contest and Alpha Analytical Laboratories. Sitelab developed Standard Operating Procedures (SOPs) to dry sealcoats indoors to best mimic field conditions. Concentrations exhibited by both laboratories were similar in both dry and wet samples testing sealcoats having high, medium and low/no PAH concentrations. Wet sample results are corrected for moisture content and reported in dry weight (mg/Kg). The water content in sealcoats vary, most products contain about 50% water plus coal tar, asphalt or other ingredients.

Task 1.3 Sitelab Corporation demonstrated the ability to accurately measure the concentrations of PAHs using certified laboratories performing EPA Method 8270D or 8270E (updated version). This method detects and reports 17 PAH compounds (Figure 1), which includes the EPA's regulated priority pollutant compounds. Samples in Task 1 were measured by the laboratories for PAHs by EPA Method 8270D, plus EPA Method 8270D-SIM and Mass DEP's EPH Method. The 8270D-SIM test detects up to 80 PAH compounds. This test was chosen to determine how many other PAHs exist in the sealcoats. The EPH test detects the 17 compounds and detects the aromatic and aliphatic fractions. This test was chosen to better understand the full hydrocarbon content in the sealcoats.

The protocol was designed to meet and qualify sealcoat products having concentrations below DOE's 1,000 ppm (Gold) and 10,000 ppm (Silver) certification levels. These limits match the PAH limits regulated throughout the country (Figure 2).

FIGURE 1

17 PAH Compounds

1. Naphthalene
2. 2-Methylnaphthalene
3. Acenaphthylene
4. Acenaphthene
5. Fluorene
6. Phenanthrene
7. Anthracene
8. Fluoranthene
9. Pyrene
10. Benzo(a)anthracene
11. Chrysene
12. Benzo(b)fluoranthene
13. Benzo(k)fluoranthene
14. Benzo(a)pyrene
15. Indeno(1,2,3-cd)pyrene
16. Dibenzo(a,h)anthracene
17. Benzo(g,h,i)perylene

- Total PAH is calculated by adding the 17 compounds.
- Both labs correlated; results were similar in wet and dry sealcoats, including the two batches of each product.

- Example Task 1 data showing PAHs in 3 product types:

Asphalt-Based Sealcoats

Brand 1: ND (0 ppm)
Brand 2: ND (0 ppm)

ECR-Based Sealcoats

Brand 3: 17,989 ppm
Brand 4: 20,158 ppm

Coal Tar-Based Sealcoats

Brand 5: 62,410 ppm
Brand 6: 108,139 ppm

FIGURE 2

Current Bans in U.S. With and Without PAH Limits

Coal Tar Bans with 1,000 ppm PAH Limit

States: 0

Federal Districts
Washington, D.C.

Counties & Cities
Wisconsin: 15
Michigan: 12
North Carolina: 2
Maryland: 1
Texas: 1

↓
Austin, TX, is the largest municipal ban with a PAH limit. See below:

<https://coaltarfreeusa.com/bans-2/>

Coal Tar Bans with 10,000 ppm PAH Limit

States: 2
New York
Maine

Counties & Cities
Wisconsin: 1

Coal Tar Bans without a PAH Limit

States: 2
Minnesota
Washington

Counties & Cities
Illinois: 14
Pennsylvania: 9
Michigan: 3
Texas: 3
Maryland: 3
Wisconsin: 2
Kansas: 1
Maine: 1
Massachusetts: 1
South Carolina: 1
New York: 1

Samples used in Task 1 included two different brands each of asphalt-based, ECR-based and coal-tar based products. To see if these products vary during the manufacturing process or if manufacturers use different ingredients to make their products at different locations throughout the United States, samples were collected and tested in two batches. ECR and coal tar products contained very high concentrations. These products are well above the 10,000 ppm limit. Asphalt-based products contain no PAHs, results were non-detect (ND) for all 17 compounds. The 80 compound test performed by Alpha using Method 8270D-SIM, detected very few other compounds. These PAHs were well below the 1,000 PAH ppm limit.

The Task 1 round of testing was very successful. Using the two laboratories proved useful to account for any differences from one lab to the other. It was decided to only test wet samples for the QC Protocol and to use EPA Method 8270D or 8270E only, as originally specified, to analyze the PAH content in sealcoat products. To ensure accuracy, the QA Protocol was revised to include a number of QA/QC measurements. Laboratories used must be NELAC certified and must perform

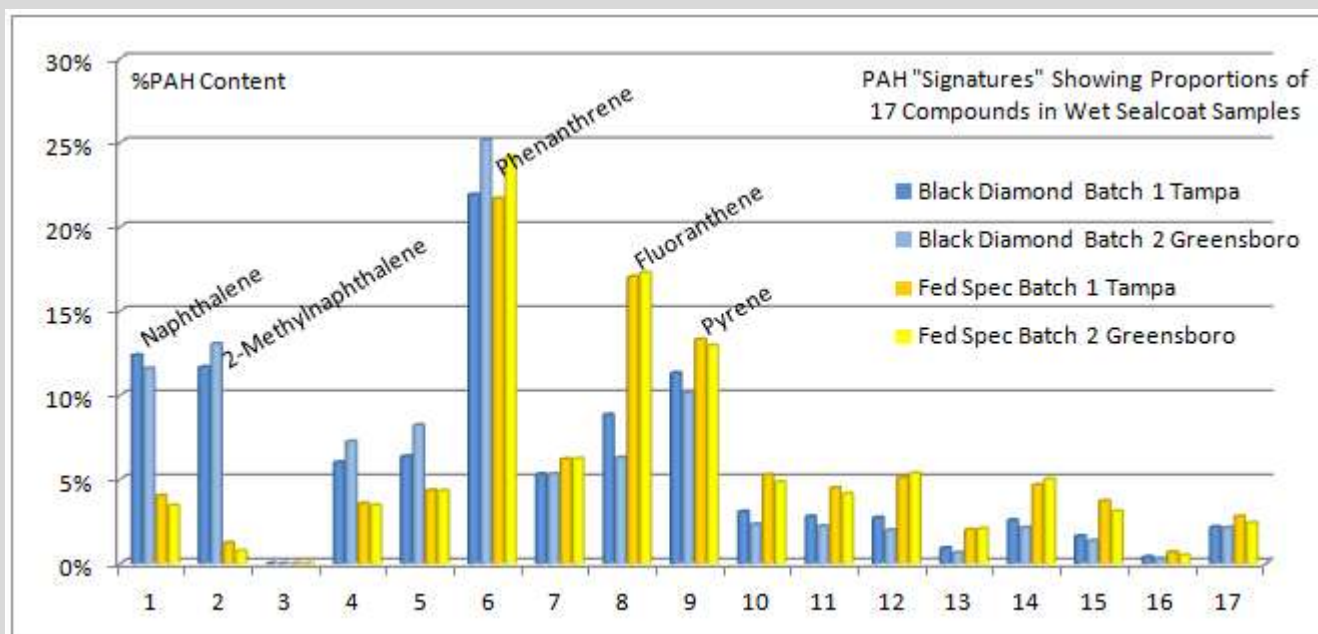
a Method Blank (solvent), two Laboratory Control Samples (solvent plus PAH spike) and two Matrix Spikes (sealcoat plus PAH spike) with each sealcoat sample to qualify for the certification program. The laboratories must report any flags or outliers exhibited in the data. An Appendix was added to the QA Protocol. This included an Example Data Package and Data Review Process. These were developed to help manufacturers and regulators interpret the lab reports.

Sitelab provided reports summarizing the laboratory results for each product tested. These reports included photos of samples, PAH screening analysis using Sitelab's UVF-Trilogy analyzer and in some cases, PAH forensic graphs comparing the hydrocarbon ingredients found in different types of sealcoat products. See Figure 5 for example.

Task 1.4 Sitelab Corporation completed the required Quality Assurance Project Plan (QAPP). This work was performed by Sitelab's consultant, Nancy Rothman from New Environmental Horizons, Inc.

FIGURE 3

PAH Forensic Graph Comparing ECR and Coal Tar Products with Most Abundant Compounds Highlighted



Gemseal's Black Diamond (ECR) and Fed Spec (Coal Tar) were collected from two different plants. PAH concentrations in each compound were similar, including the percent PAH content graphed here. ECR-based sealcoats contain more lighter compounds, while coal tar-based sealcoats contain more heavier compounds. Both types are most abundant with Phenanthrene, which makes up 20-25% of the PAH content. These signatures were similar to other ECR and Coal Tar products tested.

Task 2 Summary:

The goal of this task was to validate the procedures and quality assurance/quality control (QC/QC) mechanisms in the protocol to ensure sealcoat products are measured accurately and the data is defensible.

Task 2.1 The improved QA Protocol developed by Sitelab and New Environmental Horizons, Inc., with input from DOE and the Review Committee was used for the Task 2 round of testing.

Task 2.2 Sealcoats having high, medium and low concentrations of PAHs were split and analyzed by four NELAC certified laboratories from around the country. In addition, the labs used four different EPA extraction methods to prepare the samples for 8270D analysis. One of the samples chosen for Task 2 included an asphalt-based sealcoat cross-contaminated

with coal tar. This was first discovered using Sitelab's PAH screening test. This was also the case with several other samples received from manufacturers who make all three product types at their facilities. Manufacturers were advised of this problem and new products were collected and submitted for analysis with no PAHs detected.

It was fortunate, however, these samples were available since the PAH concentrations were between the Gold and Silver PAH limits. To date, no products have been found having PAHs between these two ranges. Sealcoats either have no PAHs or contain very high PAHs, above the Silver limit. Figure 4 highlights some of the data in Task 2.

FIGURE 4

4 Labs Used for EPA 8270D PAHs	4 EPA Extraction Methods Used	Asphalt Sealcoat-Wet ppm (mg/Kg)	ECR Sealcoat-Wet ppm (mg/Kg)	Asphalt*-Dry ppm (mg/Kg)	Asphalt*-Wet ppm (mg/Kg)	Wet Duplicate ppm (mg/Kg)	% RPD
Pace Contest	3546 Microwave	ND <42	27,872	2,049	2,837	2,560	10.3%
EMSL	3546 Microwave	9 ppm	13,354	1,732	2,778	2,789	0.4%
Pace Contest	3540C Soxhlet	ND <26	19,303	1,750	2,062	2,356	13.3%
GEL	3541 Auto Soxhlet	ND <9.6	14,339	2,312	1,866	1,545	18.8%
Analab	3550C Ultrasonic	ND <2.6	28,701	2,318	2,105	1,586	28.1%
EMSL	3550C Ultrasonic	10 ppm	20,320	1,453	2,676	2,516	6.2%

Combined Laboratory Results, Good Correlation Exhibited

Average Total PAH Concentration:	ND <10 ppm	20,648	1,936	2,387	2,225
Standard Deviation:	0	6,511	349	423	530

*Asphalt-based sealcoat with residual coal tar due to sample collection error by Manufacturer. The same tank was used to prepare both products at plant.

Task 2.3 Sealcoat products were run through the QA Protocol. Each lab in Task 2 was given the protocol and reported the Blank, LCS, LCSD, MS, MSD and other information as required. Results were all good. The only change made to the protocol after Task 2 was by DOEE, replacing the CAM-IIB acceptance limits with tighter acceptance limits (Figure 5).

FIGURE 5

Quality Assurance Protocol: PAH Measurement Performance Criteria

Data Quality Indicators	Measurement Performance Criteria	CAM-11B Limits	DOEE Limits in Protocol
Sensitivity	Method Blank:	<QL (29.4 ppm each compound)	
Accuracy/Precision	LCS/LCSD Recoveries: LCS/LCSD RPD	40%-130% RPD ≤30%	60%-130% RPD ≤30%
Accuracy	Surrogate Recoveries:	30%-130%	70%-130%
Accuracy/Precision	MS/MSD Recoveries: MS/MSD RPD	40%-130% RPD ≤30%	60%-130% RPD ≤30%
Precision/Representativeness	Lab Sample Duplicate:	RPD ≤50%	RPD ≤50%
Completeness	100% sample collection 100% laboratory analysis	Data Completeness Check	

- Labs must perform and report QA/QC analysis with each product tested. This includes a Blank, LCS, LCSD, MS, MSD and Duplicate to ensure results are accurate. Labs normally use the Mass DEP's CAM-11B limits to qualify data.
- Surrogate and spike recoveries in sealcoat products can often be low due to matrix interference.
- DOEE uses tighter limits, but specifies: "Data packages with qualifiers falling outside but close to stated ranges (at least above 50% recovery) may still be submitted without reanalysis for consideration by DOEE if all other QC data is found within acceptance ranges."

Task 2.4 The final QAPP was completed and approved by Durga Ghosh, the U.S. EPA's QC Officer assigned to this project.

Task 3 Summary:

The goal of this task was to develop an outreach plan for recruiting manufacturers to test and certify the PAH content in their products. Much of this effort began early on in the project.

Task 3.1 Sitalab notified sealant manufacturers of the new certification program and recruited products for testing. Most asphalt-based products were purchased at retail stores, while others were provided by the manufacturers. This included ECR and Coal Tar products that are only sold to commercial suppliers and are not available at retail stores. See Figure 6 for examples.

Currently, there are over 100 different products available in this industry. Most products used on commercial parking lots are coal tar-based, where as most products used on driveways by homeowners are asphalt-based and are sold in buckets at retail stores. As a result of the coal tar bans around the country, manufacturers have introduced new “alternative coal tar” products made with ethylene cracked residues (ECR or steam cracked residues). The source of hydrocarbons used in each product is identified in each product’s Material Safety Data Sheet (MSDS), which are available on the internet. Sitalab has been updating this database on a frequent basis and has all the MSDS on file. Figure 7 summarizes all the products available.

FIGURE 6

Samples Acquired from Retail Stores & Manufacturers



Asphalt-based sealcoat products were purchased in 5-gallon buckets at Home Depot and Lowes stores.



ECR and Coal Tar sealcoat products were provided by manufacturers.

FIGURE 7

Types of Parking Lot Sealcoats, Total PAH Concentration Ranges and Products Available in U.S. Market

1 Asphalt-Based Sealcoats
 Hydrocarbons CAS# 8052-42-4

- Total PAHs = 0 ppm (ND <50)
- Number of products in market = 86
- Qualify for DOE’s Gold <1,000 ppm or Silver <10,000 ppm certification

2 ECR-Based, “Cracked Residue” Sealcoats
 Hydrocarbons CAS# 64742-90-1

- Total PAHs = 20,000 to 30,000 ppm
- Number of products in market = 9
- Do not qualify, PAHs > 10,000 ppm

3 Coal Tar-Based Sealcoats
 Hydrocarbons CAS# 65996-93-2

- Total PAHs = 50,000 to 180,000 ppm
- Number of products in market = 29
- Do not qualify, PAHs > 10,000 ppm

- 4 Other: Latex-Based Sealcoats, CAS# 25085-34-1 or CAS# 25067-01-0. Products are made with soybean oil or acrylic latex (like paint). Number of products in market = 6. These products have not yet been tested but are expected to have no or little PAHs.**

To date, a total of 13 sealcoat products have been tested which meet DOE’s Gold PAH limit and qualify for the certification program. 7 of these products were tested for the City of Austin, TX, under a different contract. Sitalab began working with Austin testing sealcoat products used in their city. Austin adopted this protocol for their own certification program. This work began in the Spring of 2021, picking up where the work with DOE left off. No products were tested for DOE since December 2020 due to legal delays.

The “Parking Lot Sealcoat List” in Figure 8 identifies all the products available and which brands of products have been tested. Most manufacturers contacted have been reluctant to participate in this program, despite the fact that testing is free. This is expected to change as more bans with PAH limits go into effect in the future.

FIGURE 8

PARKING LOT SEALCOAT LIST: MARCH 25, 2022



EACH PRODUCT LISTED HAS MATERIAL SAFETY DATA SHEETS (MSDS) AVAILABLE.
CAS NUMBER IN MSDS SECTION "COMPOSITION" IDENTIFIES SOURCE OF HYDROCARBONS.

ASPHALT-BASED SEALCOATS

SOURCE OF HYDROCARBONS: CAS# 8052-42-4

MANUFACTURER	BRAND NAME	TESTED	COMMENTS
ASPHALT COATINGS ENGINEERING	ACE SEAL		
ASPHALT COATINGS ENGINEERING	ACE SEAL HD		
ASPHALT SYSTEMS, INC.	G5B-88 GILSONITE		CONTAINS UP TO 12% DIESEL FUEL
ASPHALT SEALCOATING DIRECT	BIG A		
B&E SEALCOATS	SAFE SEAL		NO MSDS AVAILABLE
CASCADE	ARMOSEAL A100		
CASCADE	ARMOSEAL A100-HD		
DALTON ENTERPRISES	LATEXITE AIRPORT GRADE	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
DALTON ENTERPRISES	LATEXITE COLOR GRADE		
DALTON ENTERPRISES	LATEXITE OPTIMUM		
DALTON ENTERPRISES	LATEXITE PREMIUM		
DALTON ENTERPRISES	LATEXITE SAND MIX SEALER		
DALTON ENTERPRISES	LATEXITE SEALRIGHT		
DALTON ENTERPRISES	LATEXITE THERMASEAL		
DALTON ENTERPRISES	LATEXITE ULTRASHIELD		
DALTON ENTERPRISES	LATEXITE ACRYLIC GRADE		
DALTON ENTERPRISES	LATEXITE XL1000		
DALTON ENTERPRISES/PMI	SUPERSEAL DRIVE MATE 6		
DALTON ENTERPRISES/PMI	SUPERSEAL NEW DRIVE 3		
DALTON ENTERPRISES/PMI	SUPERSEAL XS10		
DEWITTS	518-DMAX DRIVESHIELD	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
DEWITTS	DS2000		
DEWITTS	DS4000		
DEWITTS	DS5000		
DEWITTS	DS6000		
ENVIRONMENTAL SEALER SUPPLIES	ENVIROKOTE		
GARDNER GIBSON	APOC 330		
GARDNER GIBSON	BLACKJACK DRIVEASEAL 200		
GARDNER GIBSON	BLACKJACK DRIVEKOTE 500		
GARDNER GIBSON	BLACKJACK DRIVEMAXX 500		
GARDNER GIBSON	BLACKJACK NEWBLACK 300	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
GARDNER GIBSON	BLACKJACK DRIVEMAXX 700	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
GARDNER GIBSON	BLACKJACK DRIVEMAXX 1000	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
GARDNER GIBSON	BLACKJACK ULTRAMAXX 1000		
GARDNER GIBSON	CAS73 COMMERCIAL SEALER		
GARDNER GIBSON	GAS6470 COMMERCIAL SEALER		
GARDNER GIBSON	GAS6480 COMMERCIAL SEALER		
GARDNER GIBSON	DRIVESEAL 2		
GARDNER GIBSON	DRIVESEAL 4		
GARDNER GIBSON	DRIVESEAL 8		
GARDNER GIBSON	DRIVESEAL 10		
GARDNER GIBSON	BJ ARMORMAX		
GEMSEAL	GUARDIAN AE		
GEMSEAL	GUARDIAN PM	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
GUARDTOP	NEYRA GUARDTOP	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
GUARDTOP	ULTRAHIGH		
HENRY	HE130		
HENRY	HE175		
HENRY	HE200		
HENRY	HE532		
INTEGRATED PAVEMENT SOLUTIONS	HA5		NO CAS#, ONLY "PETROLEUM ASPHALT"

FIGURE 8

ASPHALT-BASED SEALCOATS CONTINUED

SOURCE OF HYDROCARBONS: CAS# 8052-42-4

MANUFACTURER	BRAND NAME	TESTED	COMMENTS
JETCOAT	DRIVEWAY SEALER 25705		
JETCOAT	EZ STIR 25735		
JETCOAT	PREMIUM 25745		
JETCOAT	SELECT 25775		
JETCOAT	STANDARD 25715		
JETCOAT	SUPREME 25765		
JETCOAT	ULTRA 25755		
KST	KOOLSEAL KS0073300		
KST	KOOLSEAL KS0073600		
KST	KOOLSEAL KS0073900		
NEYRA INDUSTRIES	JENNITE AE		
NEYRA INDUSTRIES	NEYRA AE	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
NEYRA INDUSTRIES	PAVESHIELD	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
RAYNGUARD	OVERCOAT		
RAYNGUARD	STEEL GUARD		
RAYNGUARD	STEEL GUARD 65		
SEABOARD	AE-36		
SEABOARD	EM-50-TT		
SEABOARD	EQUINOX LN-11 GILSONITE		
SEALMASTER	ASPEN		
SEALMASTER	EZ STIR		
SEALMASTER	LIQUID ROAD	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
SEALMASTER	LIQUID ROAD ULTRA		
SEALMASTER	MASTERSEAL	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
SEALMASTER	MASTERSEAL PMM	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
SEALMASTER	MASTERSEAL PMM ULTRA		
SEALMASTER	MASTERSEAL ULTRA		
SEALMASTER	OPTIPAVE		
STAR	MICROPAVE	YES	<1,000 PPM, MEETS DOE "GOLD" LIMIT
STAR	MICROPAVE AVIATOR		
STAR	MICROPAVE PRO BLEND		
STAR	MICROPAVE SUPREME		
U.S. SEAL INTERNATIONAL	PITCH BLACK		
VANCE BROTHERS	ULTRA SEAL		ALSO CONTAINS COKE, CAS# 64743-05001
VELVETOP	ASPHALT SEALER		

LATEX-BASED SEALCOATS

SOURCE OF HYDROCARBONS: ALKYD LATEX (SOYBEAN OIL) or ACRYLIC LATEX, CAS#25085-34-1 or CAS# 25067-01-0

MANUFACTURER	BRAND NAME	TESTED	COMMENTS
AEXCEL	BIOSEALCOAT		
REICHOLD	BECKOSOL AQ-510		
DALTON ENTERPRISES	ACRYLIC GRADE SEALER		
DALTON ENTERPRISES	LIFT DRIVEWAY OVERLAY		
GARDNER GIBSON	ARMOR MAXX		
REICHOLD	BECKOSOL AQ-510		

ECR-BASED, "CRACKED RESIDUE" SEALCOATS

SOURCE OF HYDROCARBONS: CAS# 64742-90-1

MANUFACTURER	BRAND NAME	TESTED	COMMENTS
BREWER	ECLIPSE 167710		
CRAFCO	ACTIONPAVE LP		
DALTON ENTERPRISES	XL 1000		
GEMSEAL	BLACK DIAMOND	YES	PAHs >10,000 PPM, DOES NOT QUALIFY

FIGURE 8

ECR-BASED, "CRACKED RESIDUE" SEALCOATS <i>CONTINUED</i>			
SOURCE OF HYDROCARBONS: CAS# 64742-90-1			
MANUFACTURER	BRAND NAME	TESTED	COMMENTS
GEMSEAL	BLACK DIAMOND XL		
GEMSEAL	BLACK DIAMOND XL		
NEYRA INDUSTRIES	NEYRA FORCE	YES	PAHs >10,000 PPM, DOES NOT QUALIFY
SEALMASTER	LP SEALER		
STAR	TRITON	YES	PAHs >10,000 PPM, DOES NOT QUALIFY
VELVETOP	SUPER PAVEMENT SEALER		

COAL TAR-BASED SEALCOATS			
SOURCE OF HYDROCARBONS: CAS# 65996-93-2			
MANUFACTURER	BRAND NAME	TESTED	COMMENTS
BREWER	BREWER COTE		
BREWER	POLY COTE		
BREWER	SPEC COTE		
COSMICOAT	SPEC SEAL		
CRAFCO	ACTION PAVE RT		
FACTORY DIRECT CHEMICALS	ASPHALT SEALER		
GEMSEAL	FED SPEC	YES	PAHs >10,000 PPM, DOES NOT QUALIFY
GEMSEAL	TARPRIME POLYTAR		
GEMSEAL	PRO BLEND		COAL TAR AND ASPHALT MIX
MAINTENANCE, INC	ADVANCED FORMUA J16		
MAINTENANCE, INC	FASS DRI		
NEYRA INDUSTRIES	JENNITE		
NEYRA INDUSTRIES	TARCONITE		
SAKRETE	BLACKTOP SEALER	YES	PAHs >10,000 PPM, DOES NOT QUALIFY
SAKRETE	FLO COAT		
SAKRETE	PREMIUM SEALER		
SEABOARD	TE1		
SEABOARD	TE2		
SEABOARD	TE36		
SEALMASTER	CONCENTRATE SMT 100		
SEALMASTER	EZ STIR		
SEALMASTER	POLYMER MODIFIED		
SEALMASTER	S1000		
SEALMASTER	ULTRA		
STAR	STARSEAL		
STAR	STARSEAL AVIATOR		
STAR	STARSEAL PROBLEND		
STAR	STARSEAL SUPREME		
VANCE BROTHERS	PROTEC TAR		

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It is expected that only the asphalt-based sealcoats will qualify for the certification program. ECR-based and coal tar-based sealcoats contain PAHs too high in concentration. A small 4th group of sealcoat products made with latex have not yet been tested, but are not expected to contain PAH compounds.

Many brands exist that contain the same source of hydrocarbons used to make the product, but include special polymers and other additives used to enhance the look and longevity of the product. This is the case with most brand varieties sold at retail stores. Despite this, every brand of product must be tested to be certified and each product must be retested every two years to stay certified.



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Deliverables

The goals and objectives completed by Sitelab Corporation for this project are below.

1. A procedure for certifying pavement sealants to Gold (<0.1% PAH) and Silver (>0.1% to <1% PAH) standards or appropriate equivalent as determined by review committee? **YES**
2. A laboratory standardized operating procedure (SOP) for testing sealant samples? ... **YES**
3. A Quality Assurance Project Plan, to be reviewed and approved by EPA? **YES**
4. Outreach to sealant manufacturers about the certification program and routine recruitment? **YES**
5. An initial round of testing and certifying of sealant products? **YES**
6. A public list of sealant products meeting proposed Gold and Silver standards? **YES**
7. A final report summarizing development and administration of the certification program, including a detailed plan for ongoing maintenance? **NO → To be provided by DOEE**

It was a pleasure working the Chesapeake Bay Trust with this grant over the last 3 years. Thank you for the opportunity to work on this important topic.

Steve Greason
Scientist/President