IN THE MATTER OF	**:**	**September 17, 1998**
APPLICATION OF	**:**	**Application No. 18623**
PHOENIX SOIL LLC	**:**	

PROPOSED FINAL DECISION ON REMAND

Summary

Pursuant to Regulations of Connecticut State Agencies ("RCSA") 22a-174-3, Phoenix Soil LLC ("the applicant") has applied for a permit to operate a soil remediation facility ("the unit") located at 130 Freight Street in Waterbury. On December 30, 1997, following a public hearing on the application, I issued a proposed final decision in which I recommended issuance of a permit to operate in accordance with specific conditions set out in a draft permit. Following oral argument, the final decison-maker[1] remanded the matter to me. In his decision ("the Remand Decision"), he afforded the applicant an opportunity to demonstrate (1) that the unit incorporates Best Available Control Technology ("BACT") for sulfur emissions and (2) that the unit's emissions will meet Maximum Allowable Stack Concentration ("MASC") limits for hazardous substances.

[1] Commissioner Arthur J Rocque delegated to David K. Leff the authority to render the final decision in this case.

I conducted a public hearing, accepting evidence and testimony in accordance with the Remand Decision. At hearing, the applicant established that the unit's dry lime injection system, properly operated, together with use of low sulfur fuel, is Best Available Control Technology (BACT) for sulfur oxides and sulfuric acid. Using data from the United States Geological Survey concerning the concentrations of various metals that occur naturally in New England soils, the applicant also demonstrated that the unit will not process soils containing high enough concentrations of these elements to cause emissions above the MASC limits. In addition, I accepted a revised draft permit submitted jointly by the applicant and the staff of the Department of Environmental Protection Bureau of Air Management ("the staff").

The revised draft permit is the second draft permit the staff has submitted in this case. The earlier draft permit includes conditions requiring the permittee to test soils, prior to treatment, for compliance with the permit's material feed limits for specific pollutants. At the conclusion of the first evidentiary hearing, the staff recommended that the permittee be required both to perform testing of the soils to be treated and also to conduct research and testing to determine the amounts of naturally occurring sulfur ("natural soil sulfur") in the soils the unit treats. The revised draft permit does not include such conditions. It also eliminates all of the earlier draft permit's conditions requiring the permittee to test soils and blended piles[2] of soils for compliance with the permit's

[2]The revised draft permit retains material feed limits on the pollutants the soil entering the

material feed limits for specific pollutants.

The revised draft permit replaces these conditions with new permit conditions that (1) allow DEP to test soil samples taken by DEP inspectors, (2) require the applicant to conduct annual stack testing for a range of emissions, and (3) require the applicant to install continuous emissions monitoring (CEM) of the unit's operating temperature, oxygen levels and carbon monoxide levels. The staff asserts that these new permit conditions would adequately protect the environment and insure the permittee's compliance with emission limits, making the testing of soils prior to treatment unnecessary. However, the record is devoid of supportive evidence establishing that these new conditions would insure that the unit's emissions and the material feed concentrations of pollutants would remain consistently within permit limits.

The revised draft permit shifts the burden of soil testing from the applicant to the DEP staff for the entire five-year life of the permit. The record fails to demonstrate that the

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treatment process can contain and would allow the permittee to accept soil that exceeds one or more of these limits and then bring the soil within the permit limits by blending such soil with less polluted soil. The result of this blending process is a blended pile of soil suitable for treatment.

DEP is willing and able to test soils often enough, or that DEP should allocate adequate manpower and resources to perform this function for the unit's five years of operation. Stack testing once a year would also fail to establish compliance with the emission limits and material feed limits throughout the operating year. Furthermore, although CEM for oxygen and carbon monoxide would indicate the efficiency of the unit's combustion process, it would not demonstrate compliance with these permit limits.

Accordingly, I recommend that the commissioner issue a permit to operate, but I cannot recommend that the commissioner base that permit on the revised draft permit. Rather, I recommend that the permit to operate include the conditions, contained in the earlier draft permit, that require the applicant to test the soils prior to treatment.

In my original proposed final decision, I recommended that the applicant be required to conduct a research study and soil testing to determine the concentrations of sulfur present in the soils the unit would treat. Because of the revised draft permit's annual stack testing requirement and because the applicant has now demonstrated the effectiveness of dry lime injection for sulfur emission control, these recommendations are no longer warranted. Instead, I recommend that the permit to operate require the applicant to continue to characterize the sulfur content of soils fed to the unit by using standard methods for measuring the elemental composition of sulfur in solids and liquids.

Findings of Fact

Background

On July 1, 1993, pursuant to Conn. Gen. Stat. 22a-454, the Commissioner of Environmental Protection ("the commissioner") issued Phoenix Soil LLC ("the applicant") a regulated waste permit for a soil remediation facility ("the unit") located at 130 Freight Street in Waterbury. On February 1, 1993, pursuant to Regulations of Connecticut State Agencies ("RCSA") 22a-174-3, the commissioner issued to the applicant a permit to construct the unit. The permit established limits for the unit's air pollutant emissions and allowed the applicant to operate the unit for the purpose of testing to determine whether the unit met those limits. (Ex. DEP-3)

The applicant constructed the unit and performed tests which showed that sulfur emissions exceeded permit limits. Thereafter, the applicant modified the unit by adding a dry lime injection system to reduce sulfur emissions and by making several other changes to the equipment. The modified unit emitted sulfur within permit limits during a performance test in October 1996. However, the test did not conclusively establish that the unit would consistently emit sulfur within permit limits because the applicant did not know the amount of natural sulfur present in other soils the unit would process after a permit to operate issued. (Exs. DEP-1, DEP-4; Test. Wholean 7/9/97)

I conducted hearings on this application on July 9, July 10, July 11, July 14, July 15, and August 16, 1997. On December 30, 1997, I issued a proposed final decision recommending that the commissioner issue a permit containing a number of specific conditions addressing sulfur oxide and sulfuric acid emissions.

On January 14,1998, pursuant to RCSA¸ 22a-3a-6(y), the applicant and the staff of the DEP Bureau of Air Management ("the staff") each filed written exceptions to the proposed final decision and requested oral argument. The final decision-maker held oral argument on March 2, 1998 and, on April 6, 1998, issued a decision remanding the matter to me.

The final decision-maker determined that

> [n]o analysis was conducted to determine the overall impact of these modifications [of the equipment] or whether the lime injection system is the Best Available Control Technology for sulfur; and there is no evidence on the record to assure that the facility would adequately control sulfur oxide and sulfuric acid emissions

Remand Decision, 4. The final decision-maker explained the reference to "overall impact of these modifications, " stating ". . .some of the post-construction facility modifications could potentially increase air emissions. This issue should also be resolved satisfactorily before an operating permit is issued." Remand Decision, 5 n.3. The remand decision also states that

> [a]n independent and equally important reason why an operating permit may not be issued at this time is that the record fails to show that the facility will meet regulatory emissions limits for hazardous air pollutants, particularly sulfuric acid but possibly others as well.

Remand Decision, 7. Because of this lack of evidence, the Remand Decision requires me to

> afford the Applicant an opportunity to revise its operating permit application . . . Such a revision would require the Applicant to 1) undertake a study to determine whether the facility presently incorporates BACT for sulfur, and 2) demonstrate that the facility can meet all applicable MASCs.[3]

Remand Decision, 7-8.

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[3]MASC means Maximum Allowable Stack Concentration. Section 22a-174-3(m)(1) of the Regulations of Connecticut State Agencies provides:

> The Commissioner shall not grant any permit . . . unless he also finds that the operation of that source will not exceed any applicable Maximum Allowable Stack Concentration for any hazardous air pollutant at the discharge point.

The applicant subsequently undertook such a study and moved that I reopen the record. I conducted a hearing on July 8, 1998, accepting evidence and testimony on the issues raised in the Remand Decision. In addition, I accepted from the applicant and the staff a draft permit to operate ("the revised draft permit") (Ex. DEP-16A), which is a modification of the draft permit the staff submitted at the conclusion of the first evidentiary hearing ("the earlier draft permit.")[4]

Based on the record, I make the following additional findings of fact, conclusions of law and recommendations.

1. Pursuant to RCSA 22a-174-3, the applicant filed an application for a Final Permit to

[4]In addition to Exhibit DEP-16A, the staff also submitted Exhibit DEP-16, a Ared-lined@ version of the revised draft permit. This document not only sets out new permit conditions that the applicant and the staff recommend jointly, but also identifies which language, either from the earlier draft permit (Exhibit DEP-2) or from my proposed final decision, has been eliminated from, or retained in, the revised draft permit.

Operate ("permit to operate") the unit at 130 Freight Street in Waterbury. (Ex. APP-6)

2. The unit treats non-hazardous contaminated soil, sand, concrete and granular absorbents of oil and fuel ("contaminated soils") by low temperature thermal desorption, a process which vaporizes petroleum-based contaminants in soils by heating the soils to between 550 and 900 degrees F. Low temperature thermal desorption takes place in the unit's primary treatment unit ("the PTU"). The unit's secondary treatment unit ("the STU") treats the PTU's exhaust gases, which contain the petroleum-based contaminants vaporized in the PTU, by burning them at high temperature (1500 degrees F). The applicant would operate the unit at a maximum throughput of 50 tons per hour. (Exs. DEP-1, APP-16A)

3. Prior to emission from the unit's stack, the exhaust from the STU goes through the unit's air pollution control system, where it is cooled with a water quench, then exposed to lime (which reacts with sulfur and hydrogen chloride), filtered in a fabric filter bag house and emitted from the stack. (Exs. DEP-2, DEP-3, APP-37)

4. Stack tests of the unit in December 1994 and February 1995 showed that the applicant was not in compliance with the limits on sulfur emissions set out in its 1993 Permit to Construct. After these stack tests, the applicant (1) replaced the unit's heat exchanger, which had been damaged by exposure to high operating temperatures, acid gases and abrasive dust, with a more durable water quench, (2) enlarged the STU and

changed its orientation from horizontal to vertical, thereby increasing its ability to burn the vaporized contaminants from the PTU, (3) increased the size of the bag house and the number of bags, thereby increasing the air-to-cloth ratio and improving the removal of particulates, (4) changed the bag material from Nomex to felt, thereby improving the effectiveness and durability of the bags, and (5) increased the height of the stack, thereby increasing the dispersion of emissions from the unit and compensating for the fact that the stack was not located as far from the property line as the Permit to Construct required. (Exs DEP-1, DEP-2, APP-6)

5. Because of the modifications to the unit and the violations of sulfur emission limits during the 1994 and 1995 stack tests, the commissioner required further stack testing, which the applicant performed in August 1996. The test, conducted in accordance with the procedures required by the Permit to Construct, showed (1) that the PTU and STU destroyed methyl naphthalene, benzene and No. 2 fuel oil with a destruction efficiency of at least 99.7 %, at or above the destruction efficiency requirements of the Permit to Construct, (2) that the unit's metal emissions were below the limits set by the Permit to Construct, and (3) that the unit's total suspended particulates (TSP) emissions were below the limits set by the Permit to Construct. However, the unit's sulfur emissions were approximately twice the limit set by the Permit to Construct. (Exs. APP-9, DEP-1, DEP-2, DEP-3) The excess sulfur emissions were caused by the PTU's operating temperature, a maximum of 900 degrees F, which releases sulfur that is naturally

present in soil ("natural soil sulfur"). (Exs. DEP-1, APP-37)

6. Subsequent to the August 1996 stack test, the applicant installed a temporary lime injection system in the unit so that lime would react with acid gases and thereby control sulfur emissions. On October 29, 1996, with the temporary lime injection system positioned after the water quench and before the bag house, the applicant retested the unit for sulfur and TSP emissions. (Exs. DEP-4-D, APP-37) The test showed an 82 % removal efficiency for sulfur dioxide and a 44 % removal efficiency for sulfuric acid. Sulfur dioxide emissions were 25% of the emission limit contained in the Permit to Construct, and the efficacy of lime injection was further demonstrated by the fact that the soils used in the test were from the same site as those use in the August 1996 stack test. The October 29 test also showed that TSP emissions were not increased by the addition of lime injection. (Exs. APP-37, DEP-4-D) Performance tests conducted by the applicant on October 8, 1996 specifically to examine the efficacy of lime injection showed a 97 % removal efficiency for sulfur dioxide (Ex. APP-37))

7. Pursuant to the Remand Decision, the applicant performed a BACT analysis for emissions from the unit. The applicant used the RACT/BACT/LAER Clearinghouse ("the RBLC") database to examine technologies used by similar facilities.[5] Because the

[5]RACT is reasonably available control technology, BACT is best available control technology and LAER is lowest achievable emission rate technology. The RBLC is a database the federal Environmental Protection Agency compiles from numerous permit requirements the states submit. The database covers all criteria air pollutants as regulated by thousands of permits for air pollution sources and shows what the states have considered to be RACT, BACT and

RBLC database has no code for facilities that treat nonhazardous soils through low temperature thermal desorption, the RBLC code that best characterizes the unit is 22.006, with the first two numbers representing hazardous waste and the following three digits representing soil treatment processes. The unit is not and will not be permitted to handle hazardous waste, but this database code applies to many soil treatment processes that are similar to the unit's. The RBLC database identifies 64 BACT determinations. (Ex. APP-37; Test. Hultman, 7/8/98)

Forty-eight of the 64 BACT determinations are concerned with control of volatile organic compounds (VOCs), with the most often prescribed control being thermal oxidation with particulate control by bag house technology. The unit uses these technologies and therefore incorporates BACT for VOCs. (Exs. APP-37, DEP-2)

Control of sulfur oxides is addressed in only two of the relevant RBLC entries. One of them states that no control is necessary for a 40 ton per hour facility and the other states that BACT for sulfur emissions is use of low sulfur fuel. The applicant, prior to the installation of the lime injection system, used low sulfur fuel to limit sulfur emissions. If the applicant receives a permit, it will use both lime injection and low sulfur fuel. (Ex. APP-37)

LAER for a wide range of facilities. (Test. Hultman, 7/8/98)

8. According to a technical reference document, Air *and Waste Management Association Air Pollution Engineering Manual, 1992*, wet scrubber technology and dry lime injection are both used to control sulfur emissions, but dry lime injection is less expensive because it requires much less equipment and fewer operating costs ($1, 406.00 per ton of sulfur oxides removed as opposed to $4,493.00 per ton for wet scrubber systems); dry lime injection is only slightly less efficient in removing sulfur oxides (70 to 90 % removal as opposed to 75 to 95 % for wet scrubbers), and dry lime injection, unlike wet scrubbers, produces no waste water needing treatment and disposal, and no solids buildup to plug up the control system and thereby hamper efficacy. Dry lime injection is BACT for control of sulfur emissions from other incineration facilities, specifically resources recovery facilities, and has been used in those facilities for many years, thus establishing the reliability and effectiveness of the technology. (Test. Hultman 7/8/98) Dry lime injection provides high emissions reduction, high reliability, low energy consumption, small generation of additional waste streams and low costs. (Ex. APP-37)

9. Dry lime injection works best with hydrated lime. The applicant has always used hydrated lime in the unit's lime injection systems. (Test. Hultman 7/8/98; Ex. APP-37)

10. Although Astec, the manufacturer of the unit's permanent dry lime injection system, has not tested gases entering and leaving the system to obtain a control efficiency for

sulfur oxides, it estimates 70 to 90% control efficiency for the system based on the actual efficiency of similar systems which have been operating for many years. Astec's engineers conservatively designed their system to meet discharge requirements for soil treatment facilities. The stack tests of the unit in October 1996 demonstrate the efficacy of lime injection in the unit. (Exs. APP-37, APP-39, DEP-1, DEP-4-D)

11. Design factors affecting the efficiency of the lime injection unit are contact time and concentration of lime available to treat the acid gases. The Astec lime injection unit uses a screw auger to insure continuous introduction of lime and a consistent concentration of lime within the unit. (Ex. APP-39)

12. Operating conditions affecting the efficiency of the lime injection unit are charging rate, retention time, and cake thickness on the bag surfaces. (The bags are most effective when a cake of material accumulates on their surfaces.) The unit has mechanisms with which it can control these variables. The screw auger insures a continuous charging rate. The unit's induction fan controls the retention time, the time that the gases being treated are retained in the unit, and thus contact time as well. A computer helps to maintain the cake levels on the bags by controlling differential pressure in the bag house. (Ex. APP-39)

13. In Consent Order 1435, modified, issued to the applicant On October 31, 1996, the commissioner required the applicant to feed lime at a minimum rate of 200 pounds per

hour (Ex. DEP-4-D), but the applicant fed lime at a rate of 470 pounds per hour throughout 1997. The higher feed rate (1) compensated for any hydrogen chloride that may have been present,[6] (2) insured that the feed rate was never below 200 pounds per hour, and (3) insured adequate lime concentrations for maximum control efficiency. The grain size of the lime is much larger than the pore size of the bags and therefore the addition of extra lime did not and will not cause excess particulate emissions due to the migration of lime through the bags. (Ex. DEP-39)

14. The degree of sulfur oxide control bears a direct relationship to the of the degree of control of sulfuric acid, and the lime injection system will cause the unit to meet the MASC limits for sulfuric acid as well as the sulfur oxide limits. (Test. Canora, 7/8/98; Test. Wholean 7/8/98; Exs. APP-37, DEP-1)

15. In addition to low sulfur fuel and dry lime injection, the applicant has also used a bomb calorimeter[7] to characterize the sulfur content of the soils fed into the unit. This test method measures both organic and inorganic forms of oxidizable sulfur and is therefore especially appropriate for conservatively predicting sulfur oxide emissions

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[6]When present in exhaust gases, chlorides bond with lime and thereby interfere with lime=s ability to control sulfur emissions. The levels of chlorides in the soils treated in the unit do not exceed 50 parts per million or five pounds per hour at a feed rate of 50 tons per hour of soil. In this amount, chlorides would not significantly interfere with sulfur emissions control. (Test Hultman. 7/8/98, Ex. APP-39)

[7]A bomb calorimeter is a laboratory device used to measure the energy value of a material (in calories) through combustion of the material.

from the unit. Limiting sulfur input to the unit on the basis of bomb calorimeter test results would conservatively assure compliance with permit limits for sulfur emissions. (Ex. APP-39)

16. The applicant's stack testing in August 1996 established that the unit adequately controls emissions of arsenic, lead and nickel, which are the volatile metals most likely to be released at the operating temperatures of the unit. (Test. Canora, 7/7/98; Exs. APP-23, APP-38)

The applicant has not conducted stack testing for aluminum, antimony, cobalt, iron, magnesium, thallium and tin emissions. However, United States Geographical Survey (USGS) data indicate that extremely low concentrations of these metals are found in the soils of the eastern United States. Given these low concentrations and the unit's maximum processing rate of 50 tons per hour, the unit would meet MASC limits for these metals. (Test. Canora, 7/8/98; Ex. APP-38)

17. The unit's water quench is located after the STU and before the bag house. Its function is to cool the hot gases from the STU before they reach the bag house. The water quench also increases stack flow because it adds steam to the flow of exhaust gas, but neither it, nor any other of the modifications to the unit, decreases the unit's control efficiency in removing any pollutant. (Ex. DEP-1)

18. The revised draft permit differs from the earlier draft permit in the following

significant ways:

(1) The earlier draft permit had no expiration date but the revised draft permit has an expiration date of five years from date of issuance.

(2) The revised draft permit does not include the requirements, contained in the earlier draft permit, that the applicant test the soils to be treated for compliance with the permitted feed limits for concentrations of sulfur, total petroleum hydrocarbons, polychlorinated biphenyls, total halogenated solvents, mercury, cyanides and chromium. Instead, it adds requirements that the applicant (1) install continuous emissions monitoring (CEM) for oxygen, carbon monoxide and temperature, (2) annually conduct performance testing of the unit for emissions of other pollutants, and (3) allow DEP inspectors to take samples of the soils to be treated.

(3) To reflect the proposed number of hours the unit may operate, the revised draft permit corrects the rate at which natural gas may be used from 250 Mmf^3 (million cubic feet) to 325 Mmf^3.

(4) The revised draft permit increases the minimum feed rate for hydrated lime from the 200 pounds per hour required by the earlier draft permit to 300 pounds per hour in order to insure that a sufficient concentration of lime will be available to control sulfur

emissions.

(5) The earlier draft permit required corrosion inspections of the heat exchanger. The revised draft permit eliminates the reference to corrosion inspections of the heat exchanger because the unit now has a water quench instead of a heat exchanger.

(6) Because CEM for oxygen and carbon monoxide in the stack would reliably indicate the condition of the unit prior to the stack, the revised draft permit eliminates the earlier draft permit's requirement that the applicant conduct corrosion inspections of the STU burner, the quench system, and the duct work prior to the unit's acid gas control (the lime injection unit).

(Test. Wholean, 7/7/98; Exs. DEP-1, DEP-16, DEP-16A)

19. The CEM equipment would be located in the stack, after the unit's air pollution control equipment. CEM for carbon monoxide and oxygen would show whether the unit was operating with good combustion and would thus show whether the burner or the stack, prior to the location of the CEM monitor, was corroded. If corrosion of the stack was occurring after the CEM monitor, then CEM would not indicate it, and routine visual inspections would be required to detect it. The staff conducts such inspections during its regular monitoring of the CEM system. (Test. Anderson, 7/8/98)

20. CEM would not indicate the amounts of total petroleum hydrocarbons, polychlorinated biphenyls, total halogenated solvents, mercury, total cyanides and chromium emitted by the unit. (Test. Anderson, 7/8/98)

Discussion and Conclusions

A. According to RCSA 22a-174-3(g)(2)(H), the commissioner shall not issue an operating permit unless the applicant "has incorporated Best Available Control Technology" in accordance with RCSA 22a-174-3(c)(1)(G). Section 174-22a-3(c)(1)(G) of the regulations of Connecticut State Agencies requires an applicant to submit to the commissioner a BACT determination for each air pollutant ". . . as required by the Commissioner . . . " In the Remand Decision, the final decision-maker afforded the applicant an opportunity to demonstrate that the unit incorporates BACT for sulfur. On remand, the applicant established, and I so conclude, that the unit, using natural gas (which is a low sulfur fuel), equipped with an Astec lime injection system, and operated with hydrated lime and at a charging rate of over 200 pounds of lime per hour, incorporates BACT for sulfur oxide and for sulfuric acid emissions.

B. According to RCSA 22a-174-29(m) (1), the commissioner shall not issue a permit unless he finds that "the operation of that source will not exceed any applicable Maximum Allowable Stack Concentration for any hazardous air pollutant at the discharge point." The Remand Decision afforded the applicant an opportunity to

demonstrate that the unit would meet all applicable MASC limits. On remand, the applicant has established that the unit, operated at a maximum rate of 50 tons per hour and processing soils which are from the eastern United States and which contain amounts of pollutants within the revised draft permit's material feed limits, would not exceed any MASC limits, including limits for those metals that were not stack tested, the limit for sulfuric acid, and any MASC limits for VOCs. (*See* Findings of Fact 5, 7, 13,14, 16) Therefore, I conclude that the applicant has satisfied RCSA¸ 22a-174-29 (m) (1) and the Remand Decision.

C. The applicant has established that dry lime injection not only is BACT for the unit but also that it can effectively control sulfur emissions from the unit so that the unit will comply with the permit's emission limits for sulfur oxides and for sulfuric acid. In addition, the annual stack testing recommended by the revised draft permit would provide a way to monitor the efficacy of the dry lime injection system annually throughout the permit's five-year term. Therefore, I no longer recommend that the applicant be required to perform soil testing and conduct a research study to determine concentrations of natural soil sulfur in the soils it is likely to treat. However, I do recommend that the permit to operate require the applicant continue to monitor, record and limit the sulfur content of soils prior to feeding them into the unit for treatment.

D. The revised draft permit retains the material feed limits for total petroleum hydrocarbons, polychlorinated biphenyls, total halogenated solvents, coal tar pitch

volatiles, mercury, cyanides and chromium set out in the earlier draft permit, but jettisons the requirement, contained in the earlier draft permit, that the applicant sample and test for these pollutants before feeding materials into the unit. Annual stack testing, which the revised draft permit requires, would not be frequent enough to insure daily compliance with the material feed limits. CEM for oxygen, carbon monoxide and temperature, which the revised draft also requires, likewise would not provide sufficient information to insure compliance with these limits.

Merely according DEP staff the opportunity to take soil samples during inspection visits, as the revised draft permit does, may not result in testing frequent enough to insure compliance with these limits. Furthermore, it is inappropriate for the permit to require DEP to expend manpower and funds to do work that the applicant ought to do in order to insure that the unit operates within permit limits. Thus, I conclude that the new draft permit contains no reliable means of determining whether operation of the unit is in compliance with the material feed limits and the emission limits.

Therefore, I recommend that the permit to operate contain the earlier draft permit conditions insofar as they require the applicant to test the soils to be treated for compliance with the material feed limits for total petroleum hydrocarbons, polychlorinated biphenyls, total haloginated solvents, coal tar pitch volatiles, mercury, cyanides and chromium.

Recommendations

In light of the foregoing, I recommend that the commissioner issue to Phoenix Soil LLC a Final Permit to Operate the unit consistent with the revised draft permit (Ex. DEP-16A), with the following modifications to the language of that draft permit. (Additions to the language of the revised draft permit are in **bold** print)

1. Part IV, paragraph F should contain the following language:

   Records indicating continual compliance with the conditions of Part I. A.1.a, Part IV. A, Part IV. B, Part IV. E, the site information required under Part IV. G, the allowable material type conditions of Part V. A, the allowable material limits of Part VI. A, **the material sampling and analysis conditions of Part VI. C** and continuous emissions monitoring and stack test results obtained as required by the Department shall be kept on site at all times and made available upon Department request for the duration of this and any subsequently issued permits for this equipment for at least three years after the expiration of this and any subsequently issued permits for this equipment, and for at least three years after the complete shutdown of operations at this facility.

2. Part IV, paragraph G should be modified as follows, in order to include language

from the earlier draft permit:

For each shipment of material received from a site, the following information shall be maintained at the facility:

1. The owner of the land from which the material originated.
2. The name(s) of the company(s) located on this land.
3. The amount (in tons) of material received from the site.
4. A brief history of the site and an explanation of how the material became contaminated.
5. All types of contaminants found or expected to be found in the material.
6. **All results of lab tests conducted as required by this permit. Results are to be presented for each composite sample analyzed and must include: the identity of the lab conducting the test, the date each test was conducted, the concentration of the contaminant measured, identification of the method used to determine the concentration, the accuracy of the method, the detection limits of the method.**
7. **If the material was blended before being processed through the PTU then all information in the list above shall be included for each blend composite. Intermediate and final blend composites shall be identified. Additionally, the materials blended shall be identified and shall include the quantities of material blended from each site for each stage of**

blending.

8. **The feed rate (in tons per hour) of the material (or material blend) as it was fed into the PTU, including the date and times the material was fed into the PTU.**

3. The caption for Part V should be replaced with "**Additional** Conditions."

4. In order to restore language from the earlier draft permit, Part V. C. 6 should be added as follows:

When testing for the material TPH concentration, such testing shall be conducted not more than 48 hours prior to the material being processed in the PTU. That is, if the material in a given material storage pile is not processed within 48 hours of determining an acceptable TPH concentration (i.e., below the level indicated in Part VI. A), the material shall be retested before it is processed in the PTU. Such a retest shall require only one composite sample to be taken, consisting of individual samples taken from the top center, middle center and bottom center of the material storage pile.

5. In order to restore language from the earlier draft permit, Part V. C.7 should be

added as follows:

For each material storage pile, the permittee shall insure that all sampling results for all applicable contaminant concentrations are readily available to the equipment operators and to the Department.

6. In order to include language from the earlier draft permit, Part VI. A, paragraph 2, should be modified as follows:

The permittee shall demonstrate, both prior to material treatment and during stack testing, compliance with all applicable material limits as specified under Part VI. A, and with the requirement that it test and control the sulfur content of the material to be treated.

7. In order to incorporate certain requirements set forth in the earlier draft permit, Part VI. C should be added as follows:

VI. CMaterial Sampling and Analysis

1. Phoenix Soil, LLC shall take one sample from the front, middle and back of each truck/container entering the site and composite these samples into a single truck/container sample.

Phoenix Soil, LLC shall be allowed to composite ten single truck/container samples from the same waste stream. For any small containers (≤ 1 cubic yard) entering the facility, Phoenix Soil, LLC shall sample each container and may composite up to 20 samples from the same waste stream. The permitee shall test each composited truck/container sample and each composited small container sample for total petroleum hydrocarbons (THP), polychlorinated biphenyls (PCB), total halogenated solvents (THS), and for any contaminant listed in Part VI. A. The Permittee shall test materials contaminated with coal tar residue/coal tar pitch for coal tar pitch volatiles. The permittee shall test each composited sample for sulfur content.

2. For materials containing waste oils, all of the requirements of No. 1 above shall apply. In addition, off site (i.e., prior to shipment to Phoenix Soil, LLC) material testing is required for all of the contaminants listed in Part VI. A (with the exception of coal tar pitch volatiles).

3. Material with contaminant concentrations greater than the

limits stated in Part VI. A may not be processed in the PTU. However material blending and reblending is allowed in order to reduce contaminant concentrations to acceptable levels. The STU shall be in operation (and subject to all applicable STU permit conditions) at all times that material blending is conducted. Material with sulfur concentrations that would cause the unit to exceed the permit limits for sulfur oxides and/or the MASC limit for sulfuric acid may not be processed in the unit. However, material blending and reblending is allowed in order to reduce sulfur concentrations to acceptable levels.

4. If the truck/container samples indicate excess sulfur concentration or exceedances of the limits in Part VI. A and material blending is necessary, or if any other test data indicates excess sulfur concentration or exceedance of the limits in Part VI. A and material blending is necessary, then after such blending the material shall be sampled and analyzed for the contaminant(s) for which blending is necessary. Actual sampling and analysis is required for post blending verification, certifications alone shall not suffice. This sampling and

analysis shall be carried out in the following manner:

A minimum of one composite sample from three discrete sample locations for up to 10 cubic yards shall be taken. A core of soil shall then be removed and composited with the other two core samples from the other two locations. For quantities of greater than 10 but less than or equal to 50 cubic yards, a minimum of two composite samples shall be collected; for quantities of greater than 50 but less than or equal to 100 cubic yards, three composite samples shall be collected for each additional 100 cubic yards. Physical manipulation of the soil samples during the collection shall be minimized. The samples shall then be composited and analyzed for the appropriate contaminant(s). Samples shall be composited from a maximum contaminated soil area of 250 cubic yards. At least one additional soil sample shall be taken from the most heavily contaminated area of the stockpiled soil. The Bureau of Air Management may require additional analysis if circumstances or previous results show that there may be additional hazardous constituents or contaminates in concentrations greater than what is regulated or allowed under this permit. The results of this sampling and analysis procedure shall be used to

demonstrate compliance with the limits stated in Part VI. A. and that the sulfur concentration of soils fed into the unit will not cause the unit to exceed permit limits on sulfur oxide emissions or the MASC limit for sulfuric acid.

5. All sampling shall be performed in accordance with "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", EPA Publication SW 846. All analyses to determine concentrations of pollutants or chemicals required to demonstrate compliance with any part of this permit shall be conducted by a laboratory that is certified by both the State of Connecticut and the Environmental Protection Agency. All test methods used to demonstrate compliance with the levels in Part VI. A shall be capable of detecting contaminant levels at least as low as the levels indicated in Part VI. A. All test methods used to demonstrate compliance with Part VI. A shall be capable of detecting contaminant concentrations at least as low as one part per million. The above methods shall also be used to determine if the contaminated material is considered allowable, per Part VI. A.

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Date Deborah R. Green,

Hearing Officer