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October 10, 2006

Ms. LaDonna Castañuela
Office of Chief Clerk
Texas Commission on Environmental Quality
12100 Park 35 Circle
Building F, 1st Floor
Austin, Texas 78753

RE: Petition to Suspend and Revoke TCEQ Permit No. WQ0004674000;
TCEQ Docket No. 2006-0324-SLG

Dear Ms. Castañuela:

Please find enclosed for filing in the above referenced matter the original and eleven copies of the Petitioners Response. Thank you for your help and please call the number listed above with any questions.

Sincerely,

Barbara Hoffman

Barbara Hoffman

Enclosures

cc: Mailing List

TCEQ Docket No. 2006-0324-SLG

Petition to	§	
SUSPEND AND REVOKE	§	**Before the**
TCEQ Permit No. WQ0004674000	§	
submitted by	§	**TEXAS COMMISSION ON**
BARBARA HOFFMAN,	§	
ALFRED and BELITA HOFFMAN,	§	**ENVIRONMENTAL QUALITY**
and KENNETH WITTE	§	

PETITIONER'S RESPONSE TO APPLICANT'S RESPONSE TO PETITION TO SUSPEND AND REVOKE SYNAGRO'S AUTHORIZATION TO LAND APPLY CLASS B SEWAGE SLUDGE UNDER TCEQ PERMIT NO. 07674

COMES NOW BARBARA HOFFMAN, ALFRED AND BELITA HOFFMAN, AND KENNETH WITTE and responds to the Applicant's comments dated September 12, 2006 regarding the Petition to Suspend and Revoke the authority of Synagro of Texas-CDR, Inc. (Synagro) to land apply Class B sewage sludge and the facility's specific Permit No. 04674. Petitioners respectfully offer the following:

I. BACKGROUND

On February 15, 2006, Barbara Hoffman, Alfred and Belita Hoffman, and Kenneth Witte (Petitioners) filed a petition with the Commission to suspend and revoke Permit No. 04674 issued to Synagro. Permit No. 04674 was one of three very similar permit applications filed by Synagro in late August of 2003, specifically August 21, 2003 and declared administratively complete on August 29, 2003, exactly six working days later. The total acreage of the three Synagro permit applications covered 3,833.305 acres of land in Colorado and Wharton Counties.

The rules regarding this type of land application of Class B sewage sludge were changed by the Texas State Legislature and the new rules became effective on September 1, 2003. These new rules required a more stringent application process with very specific

guidelines regarding agronomic rates and Nutrient Management Plans, as well as insurance bonding requirements and much more. This new system replaced the earlier registration activities and gave affected parties the opportunity to participate in the permitting process.

All three Synagro permit applications were vigorously protested by numerous affected parties during the comment period for each application. Each application had named protestants after the comment periods. As a result of these protests and the ensuing investigations into the validity of these applications, Permit No. 07642 in Colorado County was withdrawn with prejudice by Synagro prior to the Hearing on the Merits conducted by the Administrative Law Judge. The protestants involved in Permit No. 04671 in Wharton County are currently awaiting a second Hearing on the Merits to be conducted in December of 2006. Permit No. 04671 was remanded back to the State Office of Administrative Hearings by the Commission in order to consider more complete testimony on the changes to the agronomic rate requested by Synagro and its affects on surface water runoff. The remaining Colorado County permit, No. 04674, was mediated on March 10, 2005 by a group of protestants and Synagro prior to the discovery of the information that forms the basis of this Petition to Suspend and Revoke.

II. ARGUMENT

The applicant would have TCEQ take the position that its oversight regarding the protectiveness of a permit ends upon issuance, regardless of misrepresentations by the applicant and regardless of newfound information regarding the harm being allowed by a permit. Under 30 TAC §§ 305.66(a)(4), a permit can be revoked due to "the permittee's failure in the application or hearing process to disclose fully all relevant facts, or the

permittee's misrepresentation of relevant facts at any time." Also, under 30 TAC §§ 305.66(a)(5), a permit can be revoked due to "a determination that the permitted activity endangers human health or safety or the environment to such an extent that permit termination is necessary to prevent further harm."

Petitioners do not attempt by this petition to re-litigate issues which they have had a previous opportunity to address during the permitting process. Instead, Petitioners ask the Commission for an opportunity to demonstrate what corrections are necessary to the permit as a consequence of misrepresentations by Synagro to the Commission during the permitting process, and to cure now-known dangers to human health and the environment. Synagro should not benefit from its misrepresentations during the permitting process, nor should the public be punished for these misrepresentations by Synagro.

III. ANALYSIS

According to the response issued by the Executive Director in this matter, Synagro "discovered" the error that led to the miscalculation of the agronomic rates during or about December of 2005. This is simply not correct. Synagro was made fully aware of the problems involving blank lines in the agronomic rate calculations during the first Hearing on the Merits for Permit No. 04671 which was held in Austin on September 20, 2005. Synagro's expert witness was questioned repeatedly regarding the incomplete calculations and yet Synagro made no effort to correct or even investigate the laboratory data until December of 2005. Synagro and TCEQ were unable to produce documentation of the applicant's interpretation of the laboratory data and the "minor amendment" that Synagro says they have submitted was not even discussed until after this Petition was

filed. In short, Synagro said nothing about their agronomic rate problems from September through December of 2005 and then after begrudgingly admitting to the problems, they did not even try to correct them until the Petitioners filed this Petition in February of 2006.

The Executive Director's response refers to a reporting error by the laboratory, [1] which is also incorrect. The laboratory made no known mistakes, and did not report any information incorrectly. Instead, Synagro simply misinterpreted and misapplied the laboratory information in a manner that served its own purposes. As "the country's leading independent, full service provider of residuals management services to municipalities and industrial customers," [2] it would seem likely that someone at Synagro should know how to correctly interpret fertilizer recommendations submitted by a laboratory. TCEQ should be able to have confidence that any application of laboratory data used to justify leaving portions of an application entirely blank should be clearly justified, but Synagro made no effort to obtain such justification.

During the discovery period in preparation for the Hearing on the Merits for Permit No. 04672, Mr. Bruce Wiland, as an agronomic rate expert, testified that Synagro had misused the soil lab analysis results.[3] He describes the incorrect method Synagro uses to average the amount of nitrogen in the soil samples for each field,[4] and describes the subsequent build up of nitrogen on the site because Synagro has not effectively calculated the nitrogen rate of removal.[5] The TCEQ has a very carefully crafted formula

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[1] *P. 4, Executive Director's Response to Petition to Suspend and Revoke Permit No. 04674*
[2] *Synagro.com, Company History*
[3] *Exhibit A, Page 3, Line 12-27*
[4] *Exhibit A, Page 5, Line 14-41*
[5] *Exhibit A, Page 7, Line 16-38*

to calculate the agronomic rate for Class B sludge land application purposes. The fact that there are blank lines in these calculation pages means that Synagro either does not know how to follow directions, or they deliberately chose to leave the lines blank. Whether it was negligent or intentional, this is still a misrepresentation of relevant facts.

Although Synagro has not land applied sewage sludge on fields encompassed by Permit No. 04674, it currently holds an active permit to apply 8.3 dry tons of Class B sewage sludge per acre per year on the site. They say they have submitted what they and the Executive Director call a "minor amendment" to correct the agronomic rate miscalculations. This is what is called a Bait and Switch, for lack of a better term. Synagro has submitted a permit application and received a permit based on flawed interpretations and faulty reasoning and now that they have been caught they seek to amend the permit. If allowed to submit an amendment, Synagro has a completely different permit than what they originally submitted and not one of the affected parties has had the opportunity to address these changes as they would if a new permit application were required. As the first permit applications in the door, TCEQ has a duty to be forceful and insure that this permitting process is not altered or manipulated by applicants. Allowing Synagro to submit amendments, that the Petitioners or other affected parties have never seen, to correct an inherently flawed application does not follow the intent of the new permitting requirements included in House Bill 2912 that the affected public have input on the basis for a sludge facility authorization.

Synagro's manipulation of the TCEQ permitting process is apparently not limited to attempting to rush the Duncan Ranch permits through the process with incomplete information. Synagro has two different registrations, No. 710777 and No.

710769 that have been on the docket since 1997. These facilities are apparently operating, yet Synagro has never been required to renew these or fill out the proper application information in order to obtain the now-needed permits. In fact, they have been placed on the back burner for almost ten years.

The Executive Director maintains that because these three applications were declared administratively complete prior to September 1, 2003, they are not subject to the provisions of the Texas Health and Safety Code § 361.121(h)(4). It is almost impossible to believe that all three of these related permit applications, submitted on August 21, 2003, involving nearly 4000 acres of land in two counties, were declared administratively complete in only six working days when TCEQ has for ten years virtually ignored other applications submitted by the same applicant. If the application had been declared administratively complete just one working day later, all of the requirements of the new rules implementing House Bill 2912 would have applied.

Prefiled testimony for the Hearing on the Merits for Permit No. 04672, also in Colorado County included testimony from Mr. Stephen Mahalitc.[6] The sites for Permit No. 04672 and No. 04674 are very similar Bermuda grass pastures located in the Colorado River floodplain and floodway. Mr. Mahalitc testified that he had a yield of 4.18 tons per acre per year during the previous growing season.[7] Due to his familiarity with Bermuda grass hay and this land, he was also asked if 9 tons per acre per year was a realistic yield goal for the area and he responded that it was not.[8] It is virtually

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[6] *See Exhibit B*
[7] *Exhibit B, Page 8, Line 26*
[8] *Exhibit B, Page 8, Line 35-44 & Page 9, Line 1-4*

impossible to achieve a 9 ton per acre per year yield of Bermuda grass on land in Colorado County that is not irrigated.

IV. CONCLUSION AND PRAYER

In summary, it is important for the Commission to remember that they are charged with the unique and extremely important task of protecting the environment and the citizens of the State of Texas. The Commission should take this opportunity to send the message to all current and future applicants for permitted activities within the state that they will not tolerate misrepresentations of relevant facts. The blank lines in the agronomic rate calculations were not merely accidental, Synagro made a voluntary and conscious choice to leave those lines blank. This is a misrepresentation of relevant facts that if not discovered by petitioners, would never have been acknowledged by Synagro. It is our prayer that the TCEQ revoke Synagro's authorization to land apply Class B sewage sludge under Permit No. 04674.

Respectfully submitted,

Barbara Hoffman

Barbara Hoffman

Alfred Hoffman

Alfred Hoffman

Belita Hoffman

Belita Hoffman

Kenneth Witte

Kenneth Witte

Mailing List
Synagro of Texas-CDR, Inc.
Petition to Suspend and Revoke Permit No. WQ0004674000
TCEQ Docket No. 2006-0324-SLG

I hereby certify that on this 10th day of October, 2006 a true and correct copy of the foregoing document has been sent via facsimile, mail or hand delivery to the following:

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Barbara Hoffman

SOAH DOCKET NO. 582-05-6429
TNRCC DOCKET NO. 2005-0070-SLG

APPLICATION OF SYNAGRO OF TEXAS-CDR, INC. FOR TCEQ PERMIT NO. 4672	§	BEFORE THE TEXAS COMMISSION
	§	ON ENVIRONMENTAL QUALITY
	§	AND THE STATE OFFICE OF
	§	ADMINISTRATIVE HEARINGS

PREFILED TESTIMONY OF MR. BRUCE WILAND

INDEX TO TESTIMONY

EXHIBITS

Exhibit A

I. INTRODUCTION

Q: Please state your name.

A: Bruce Wiland.

Q: Please state your address.

A: 1510 Oxford Avenue, Austin, TX 78704.

Q: What subjects were you asked to evaluate for your work on this case?

A: I have evaluated the agronomic rate calculations in the application and the proposed nutrient management practices for the application of Class B sludge at the proposed application site.

II. QUALIFICATIONS

Q: Please describe your educational background.

A: I have a Bachelor of Engineering Science from The University of Texas at Austin, which I received in January 1974. I have a Master of Science in Environmental Health Engineering from The University of Texas at Austin, which I received in December 1975.

Q: Please identify Exhibit 5A.

A: It is a copy of my resume.

Q: Is it accurate and up-to-date?

A: Yes.

Q: Please summarize your work experience related to your work here.

A: I have done extensive work related to nutrient management for the City of Waco in its ongoing evaluation and critique of the dairy operations and manure application in the Bosque River Watershed.

III. SUMMARY OF OPINIONS

Q: Have you developed any opinions regarding the application by Synagro of Texas-CDR, Inc. for Permit No. 0004672000?

A: Yes.

Q: On what subjects have you developed opinions?

A: I have developed opinions regarding whether the method of calculating agronomic rates presented in the application is technically sound. I have also developed opinions regarding the proposed nutrient management practices at the site.

Q: Please summarize your opinions with regard to the proposed agronomic application rates and nutrient management practices.

A: The agronomic application rates have not been accurately calculated. With regard to nitrogen, the Applicant has misused soil lab analysis results. The Applicant has used the lab's soil fertility recommendations, which have been made irrespective of the existing soil test results and do not reflect the agronomic needs of nitrogen after the nutrients available in the soil have been taken into account.

The Applicant has also failed to consider phosphorus in determining its application rates. This is significant because the Applicant is proposing to apply sludge at the nitrogen crop requirement rate, which will result in applying phosphorus in excess of the NRCS Code 590 requirements and lead to excessive runoff of phosphorus, which can lead to eutrophication in receiving water bodies.

Further, the Applicant does not have an adequate nutrient management plan. The Natural Resource Conservation Service (NRCS) has established standards for nutrient management plans at NRCS Code 590. The management practices proposed by the Applicant fail to meet these standards in several respects.

IV. NITROGEN APPLICATION

A. Determination of Nitrogen Crop Needs

Q: Where in the application materials has the Applicant presented its agronomic rate calculations of nitrogen for each field?

A: Those are provided in Appendix A to the application and included in the information provided on pages 64 through 92 of the application.

Q: Has Synagro fully completed these portions of the Application?

A: No, not completely.

Q: What information has the Applicant omitted in completing this portion of the application?

A: Synagro has not fully completed what the TCEQ has labeled as "Step 2 – Soil Test Analysis and Fertilizer Recommendations."

Q: What is the purpose of this step in the analysis?

A: Under the TCEQ rules, the Agronomic Rate is considered the amount of nitrogen needed by the crop or vegetation grown on the land. In order to determine how much nitrogen is needed by the crop, it is necessary to consider how much nitrogen is already present in the soil and available for the crop to meet the desired yield goal. If a sufficient quantity of nitrogen is already available in the soil of a particular field, then there is no need for more nitrogen to be added. If no additional nitrogen is needed, the agronomic application rate is zero. Synagro has failed to take into account the amount of nitrogen existing in the soil (Step 2A) in calculating the amount of nitrogen still needed.

Q: Why is it necessary to determine whether the soil needs fertilization with nitrogen in order to achieve the specified yield goal?

A: If the soil does not contain sufficient nutrients (*i.e.*, the soil nutrients are less than the agronomic need of the crop), the crop will not meet its yield goal. However, when nutrients are applied to a field in excess of the agronomic needs of the crop, this is not a beneficial use of the nutrients. The nutrients simply are not needed by the crops and will result in nutrients accumulating within the soil of that field. In the case of nitrogen, the higher the concentration of nitrogen in the soil, the more likely it is that nitrogen will either run off of the application field during a storm event or leach beneath the root zone of the crop. This is in conflict with the requirement that the agronomic rate minimize the amount of nitrogen that passes below the root zone.

Q: How does the application of nitrogen in a field in excess of the crop requirement impact the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater?

A: If nitrogen is applied to a field in excess of the crop requirement, and the concentration of nitrogen in the soil rises as a result, then there is an increased likelihood that nitrogen in the sewage sludge will pass below the root zone of the crop. Also, excess nitrogen will be present in the upper soil layers, and this could run off of the site with the erosion of the soil during a rain event, resulting in the contamination of downstream surface waters by elevated nitrogen levels.

Q: So, in order to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop, and in order to minimize the potential for surface water contamination, is it necessary to limit the application of nitrogen to an amount equal to or less than the agronomic rate?

A: Yes.

Q: In completing "Step 2" for each of the fields, has Synagro set forth the nutrients needed by the crop?

A: No.

Q: Has Synagro accurately determined the nutrient amount still needed in each field?

A: No.

B. Evaluation of Nitrogen Available in the Soil

Q: How many composite samples were taken in Field No. 1?

A: Three.

Q: Which samples were these?

A: Samples 10, 11, and 12.

Q: What were the values for total nitrogen in these samples?

A: Sample 10 had 1712 lb/ac total nitrogen, Sample 11 had 2068 lb/ac total nitrogen, and Sample 12 had 34 lb/ac total nitrogen.

Q: Would you consider the differences between these values to be significant?

A: Yes.

Q: How should Synagro have addressed these differences in values?

A: When the difference between values is significant, the average should not be used. It would be more appropriate to subdivide the fields into smaller land management units and manage the application of sludge separately in each. This would minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop and minimize the potential for surface water contamination. However, in other situations, such as Synagro's application for Permit No. 04671, the TCEQ has required that the applicant use the highest sampled values for nitrogen in each field when considering nitrogen available in the soil.

Q: Of the fields contained in Synagro's application for Permit No. 4672, which fields had multiple composite samples collected within them?

A: Fields Nos. 1, 6, 7, 8, and 9 each had multiple composite samples.

Q: In completing Step 2 of the agronomic rate calculation worksheets, did Synagro utilize the average nitrogen value of the samples in each field or the highest nitrogen value of the samples in each field?

A: Synagro used the average value of the sampled nitrogen values in each field.

Q: Is there a maximum field size recommended by Texas NRCS Code 590?

A: Yes, Texas NRCS Code 590 nutrient management practices require that the current soil sample collection guidance provided by the Soil, Water, and Forage Testing Laboratory, Soil and Crop Sciences, Texas A&M University, Texas Agricultural Extension Service be followed. The maximum field size under this guidance is 40 acres.

Q: Were there any fields in this application that exceeded 40 acres?

A: Yes, the following fields exceeded 40 acres: Field 1 (244.63 ac), Field 3 (45.57 ac), Field 4 (62.33 ac), Field 6 (220 ac), Field 7 (88 ac), Field 8 (128 ac), Field 9 (145 ac), Field 12 (70 ac), and Field 15 (59.36 ac).

Q: Please identify Exhibit 5B.

A: Exhibit 5B is a copy of Texas NRCS Code 590.

C. Consideration of Nitrogen Available In the Soil

Q: In completing what the TCEQ has set forth as Step 2 and Step 4 in the agronomic rate worksheets, has Synagro properly used the results provided by A&L Laboratories?

A: No.

Q: Please explain.

A: Synagro has treated the fertilizer recommendations as if they have been reduced to account for the use of nitrogen already available in the soil. I do not believe that A&L Laboratories considered the nutrient in the soil in the way that Synagro has assumed. Although land grant university soil labs generally consider existing soil test results in preparing their soil fertility recommendations, A&L, the lab used by Synagro, like many private labs, has prepared its soil fertility recommendations based on the crop requirements irrespective of the existing soil test results. One can see this by noting that this lab is recommending 50 lb/ac N initially and 30 lb/ac N per cutting on both Field 1 (which contains an average of 1291 lb/ac N) and Field 9 (which contains an average of 9 lb/ac N).

Further, A&L Laboratories has provided an explanation of the lab results on the back of the sampling result reports (for example, page APP 00115.A in the application). Under Section D of this explanation, A&L Laboratories states that "If your soil test levels are all high or very high then the fertilizer recommendation will be just a maintenance application to replace losses of nutrients by crop removal." By this statement, it is clear that this particular laboratory will always recommend the addition of fertilizer to the field, even if enough nitrogen is already present in the soil to entirely provide for the needs of the crop. This is inconsistent with the approach to the calculation of the agronomic rate reflected in the TCEQ analysis, where the amount of fertilizer to be added is reduced in consideration of the nitrogen already available in the soil. The TCEQ Technical Report forms require that nutrient requirements be based on the difference between the nutrient requirements and the available nutrients existing in the soil.

Q: What is the result of this misuse of the lab results?

A: As a result of the misuse of the lab results, the agronomic rates calculated by Synagro exceed the actual nutrient needs of the crops. In some cases, the rates calculated far exceed the application rates necessary, because significant quantities of nitrogen are already present in many of the fields, but the method used by Synagro to calculate the application rates treated this nitrogen as if it is not available for use by the crop.

Q: What is the proposed application rate of plant available nitrogen on Fields 1 through 9 in the first year?

A: 140 lb N/ac/yr.

Q: In subsequent years, will additional plant available nitrogen become available from the biosolids applied in year one?

A: Yes, of the organic nitrogen portion, 15% additional will become available in year 2, 8% additional will become available in year 3, and 4% additional will become available in year 4. So, if 140 new lb N/ac is applied each year in the biosolids, the amount of plant available nitrogen actually being added to the soil is 151 lb N/ac in year 2, 157 lb/ac in year 3, and 160 lb N/ac in year 4 and every year afterwards.

Q: What is the crop removal rate of nitrogen from Fields 1 through 9?

A: 113 lb N/ac/yr based on a yield of 3 tons/ac/yr.

Q: What is the source of the nitrogen crop removal rate?

A: Values from the Texas NRCS Code 590 Nutrient Management Spreadsheet, which are based on the Texas land grant university (Texas A&M) recommendations.

Q: What will happen to the concentration of nitrogen in the soil over time?

A: The concentration of nitrogen in the soil will steadily increase over time.

Q: Can you estimate by how much?

A: Yes, by taking the application rate and subtracting the crop removal rate, we find that the soil nitrogen increases by 27 lb/ac in year 1, 38 lb/ac in year 2, 44 lb/ac in year 3, and 47 lb/ac in each subsequent year.

Q: Can you estimate increase in the soil nitrogen (N) concentration at the end of year 5 in Fields 1 through 9?

A: Yes, the soil N concentration would have increased by 203 lb/ac or 102 ppm in the 0-6" depth. This is simply the sum of the increases occurring each year (27+38+44+47+47).

Q: Can you estimate increase in the soil nitrogen concentration at the end of year 5 in Fields 11 through 15 through a similar method?

A: Yes, based on a proposed application rate of 420 lb N/ac/yr from the application in Fields 11-15 and a nitrogen crop removal rate of 339 lb N/ac/yr based on a yield of 9 tons/ac/yr, the soil N concentration would have increased by 473 lb/ac or 237 ppm in the 0-6" depth.

D. Fields Without Requirement for Additional Nitrogen

Q: Has Synagro accurately determined the nutrient amount still needed in Field No. 1?

A: No.

Q: Please explain.

A: In order to calculate the nutrient amount still needed, you would first determine the total nutrient needs of the crop for the desired yield goal and then subtract the nutrients available in the soil. As discussed earlier, Synagro has not done this.

Q: What is the total nutrient needed by the crop for the specific yield goal in Field No. 1?

A: According to A&L Eastern Agricultural Laboratories, the quantity of nitrogen needed to replace nutrients removed by the crop in a single year for the specified yield goal is 140 lbs/acre. The NRCS Code 590 Spreadsheet also indicates that the crop requirement for Common Bermuda producing 3 tons/ac is 140 lb/ac N. This number should have been entered at step 2A.

Q: Did Synagro properly determine the nutrient available in the soil for Field No. 1?

A: No.

Q: Please explain.

A: Synagro used an average of the sampling results for nitrogen levels to determine this value. If the goal is to minimize the potential for leaching or the runoff of nutrients, Synagro should have split the field into smaller management units. In lieu of this, Synagro should have utilized the highest sampled values, as recommended by the TCEQ in previous applications, not an average.

Q: If the maximum value is used, what value for the nutrient available in the soil results if the method set forth by the TCEQ is used?

A: Sample 11 returned the highest values for nitrogen in Field No. 1. Sample 11-1 reflected the nitrogen level in the soil from 0-6" in depth, and sample 11-2 reflected the nitrogen level in the soil from 6-24" in depth. As shown on page APP 00099, these values were 395 ppm and 213 ppm, respectively. The equation used by the TCEQ to calculate the nutrient available in the soil is set out at step 2B on page APP 00065, and is:

Nutrient Available = 2x NO_3-N(ppm)(0-6" depth)+6xNO_3-N(ppm)(6-24" depth)

Substituting the values from Sample 11, we have

Nutrient Available = 2 x 395 ppm + 6 x 213 ppm = 2068 lb/ac

Q: Based on these values for the nutrient needed by the crop, and the nutrient available in the soil for nitrogen, what amount of nutrient is still needed in order to achieve the yield goal Synagro has established for Field No. 1?

A: As set forth at Step 2C on the TCEQ worksheet, the nutrient amount still needed is obtained by subtracting the nutrient available in the soil from the nutrient needed by the crop. In this case that would be 140 – 2068, which produces a negative number. An answer with a negative value indicates that the amount of nitrogen available in the soil exceeds the nutrient needed by the crop, so that no additional nitrogen is still needed.

Q: If no additional nitrogen is needed, what would be the agronomic need for nitrogen?

A: The agronomic need for nitrogen is zero.

Q: Are there any other fields where no additional nitrogen is needed?

A: Yes.

Q: Please identify those fields.

A: Field 6.

Q: Would Field 1 and Field 6 need additional nitrogen, even if the average value were used rather than the maximum value?

A: No.

Q: Are there other fields where the amount of nitrogen needed would be reduced from what Synagro is proposing, even if the nitrogen requirement was not zero?

A: Yes, all of the others.

E. Fields without Realistic Yield Goals

Q: Are the yield goals proposed by Synagro for each field realistic?

A: No.

Q: For which fields has Synagro proposed unrealistic yield goals?

A: I believe that a yield of 9 tons/ac Coastal Bermuda in Fields 11, 12, 13, 14, and 15 is not realistic. The yield of 3 tons/ac Common Bermuda on Fields 1, 2, 3, 4, 5, 6, 7, 8, and 9 is probably unrealistic depending on the Applicant's definition of "Heavy Grazing."

Q: Why are these yield goals unrealistic?

A: I believe that a yield of 9 tons/ac in Fields 11, 12, 13, 14, and 15 is not realistic unless the field is heavily irrigated. There is no information provided that this is an irrigated field or that yields this high are even possible in Colorado County. I believe the yield of 3 tons/ac Common Bermuda on Fields 1, 2, 3, 4, 5, 6, 7, 8, and 9 is probably unrealistic because if the fields are heavily grazed, there will not be sufficient grass to harvest, the grass having been eaten by the cattle.

Q: If the fields are not able to make the projected yields, what will be the impact on the agronomic needs?

A: The agronomic needs will be significantly reduced.

V. PHOSPHORUS APPLICATION

Q: Is phosphorus also a nutrient?

A: Yes.

Q: What types of negative environmental impacts can result as a consequence of the over-application of phosphorus at an application field?

A: Over-application results in increased phosphorus runoff from a field increasing the potential for eutrophication in the receiving waters.

Q: Is a nutrient management plan prepared in accordance with Texas NRCS Code 590 required to consider the need for limitations on the amount of phosphorus applied in an application field?

A: Yes.

Q: How are these limitations determined?

A: Texas NRCS Code 590 specifies a maximum application rate based on the Phosphorus Index Rating.

Q: Has a Phosphorus Index Rating been prepared for any of the fields in the Synagro application?

A: No.

Q: Does Texas NRCS Code 590 require a Phosphorus Index Rating to be performed?

A: Yes, a Phosphorus Index Rating is required to be performed whenever organic soil amendments are applied.

Q: Please identify Exhibit 5C.

A: Exhibit 5C is a true and correct copy of the Natural Resource Conservation Service Agronomy Technical Note Number 15. This document describes the proper procedures for determining the phosphorus index. The phosphorus index is used to determine the proper application rates for phosphorus.

Q: What is the Bray method of analysis for phosphorus levels in a soil sample?

A: It is a soil extraction method utilized for determining plant available phosphorus in the soil. It is applicable for acidic soils and non-calcareous soils.

Q: What is the Melich III by ICP method of analysis for phosphorus levels in a soil sample?

A: Mehlich III is a soil extraction method utilized for determining plant available phosphorus in the soil. It is applicable in both acidic and alkaline soils. ICP (Inductively Coupled Plasma Spectroscopy) is an analytical method for determining the amount of phosphorus in the extractant. Mehlich III by ICP is the only acceptable method for determining soil phosphorus under Texas NRCS Code 590.

Q: How does the use of these different methods impact the detection of phosphorus levels in a soil sample?

A: The Bray method will underestimate the phosphorus levels as compared to the Melich III by ICP, especially under higher pH conditions and in calcareous soils.

Q: Are the soils present in the proposed application fields calcareous soils?

A: Yes.

Q: Which method for soil phosphorus determination does Texas NRCS Code 590 require be used in the development of a nutrient management plan?

A: Mehlich III by ICP.

Q: Which method of analysis has Synagro relied upon in evaluating the phosphorus levels in the soil samples gathered on-site?

A: Bray.

Q: Has Synagro determined the existing phosphorus levels in the soil in accordance with the methods required by Texas NRCS 590?

A: No.

Q: Please explain.

A: They have not determined the phosphorus levels using Mehlich III by ICP.

Q: Has Synagro adequately evaluated the need for limitations on the application of phosphorus to the application areas proposed in the permit?

A: No.

Q: Please explain.

A: They have not evaluated the phosphorus application rates as required in a Nutrient Management Plan by Texas NRCS Code 590.

Q: Without an evaluation of phosphorus loading rates, is the nutrient management plan proposed by Synagro adequate to minimize the entry of phosphorus to surface water as required by Texas NRCS Code 590?

A: No.

Q: Please explain.

A: The sludge contains significant amounts of phosphorus in much greater proportion to nitrogen than is required by plants. As a result, the phosphorus will build up in the soil at a much greater rate than nitrogen. As phosphorus builds up in the soil, sludge application rates must be reduced to minimize runoff of phosphorus from the fields. Additionally, fields with a medium, high, or very high Phosphorus Index require phosphorus application rates lower than the annual nitrogen crop requirement. NRCS Texas Code 590 provides these recommendations. If the Phosphorus Index is not calculated and if a phosphorus evaluation is not performed, there is no way to determine the appropriate nutrient recommendations.

Q: How much available phosphorus will be added to Fields 1 through 9 each year?

A: 361 P_2O_5/ac/yr in years 1 through 3 and 451 lb P_2O_5/ac/yr thereafter.

Q: How did you calculate that number?

A: The applicant is applying 4.32 tons sludge/ac/yr. The application indicates that there is 45.6 lb P/ton sludge. This is 197 lb P/ac/yr. Converting to P_2O_5 by multiplying by 2.29 we get 451 lb P_2O_5/ac/yr. In the first three years, only about 80% is available.

Q: What is the crop removal rate of phosphorus from Fields 1 through 9?

A: 26 lb P_2O_5/ac/yr based on a yield of 3 tons/ac/yr.

Q: What is the source of this phosphorus crop removal rate?

A: The source of this value is the Texas NRCS Code 590 Nutrient Management Spreadsheet, which is based on the Texas land grant university (Texas A&M) recommendations.

Q: What will happen to the concentration of available phosphorus (P) in the soil over time?

A: The concentration of available phosphorus in the soil will steadily increase over time.

Q: Can you estimate by how much?

A: Yes, by taking the application rate of phosphorus and subtracting the crop removal rate, we find that the available soil phosphorus increases by 335 lb P_2O_5/ac/yr in years 1 through 3 and 425 lb P_2O_5/ac/yr thereafter.

Q: Can you estimate the increase in the soil phosphorus concentration at the end of year 5 in Fields 1 through 9?

A: Yes, the soil phosphorus concentration would have increased by 1855 lb P_2O_5/ac or 810 lb P/ac or 405 ppm phosphorus.

Q: Can you estimate the increase in the soil phosphorus concentration at the end of year 5 in Fields 11 through 15 through a similar method?

A: Yes, based on a proposed application rate of 12.97 tons sludge/ac/year (1354 lb P_2O_5/ac/yr) from the permit application in Fields 11 through 15 and a phosphorus crop removal rate of 78 lb P_2O_5/ac/yr based on a yield of 9 tons/ac/yr, the soil phosphorus concentration would increase by 5567 lb P_2O_5/ac or 2431 lb P/ac or 1215 ppm phosphorus.

Q: Do expect that the elevation of soil phosphorus levels in the soils at this site will result in an increased amount of phosphorus entering downstream surface waters?

A: Yes.

Q: Would you expect that the increased amount of phosphorus entering downstream surface waters could result in eutrophication occurring in those waters?

A: Yes.

VI. CONCLUSION

Q: Does this conclude your testimony?

A: Yes.

SOAH DOCKET NO. 582-05-6429
TNRCC DOCKET NO. 2005-0070-SLG

APPLICATION OF	§	BEFORE THE TEXAS COMMISSION
SYNAGRO OF TEXAS-CDR, INC.	§	ON ENVIRONMENTAL QUALITY
FOR TCEQ PERMIT NO. 4672	§	AND THE STATE OFFICE OF
	§	ADMINISTRATIVE HEARINGS

PREFILED TESTIMONY OF STEPHEN MAHALITC

INDEX TO TESTIMONY

EXHIBITS

Exhibit B

I. INTRODUCTION

Q: Please state your name.

A: Stephen Mahalitc.

Q: Please state your address.

A: 1839 County Road 79, Eagle Lake, Texas.

Q: Please describe the location of your property relative to the proposed application site.

A: Immediately south of the proposed application site.

II. FLOODING OBSERVATIONS

Q: Have you observed flooding in the area of the proposed application site?

A: Yes.

Q: When was the last time that the area of the proposed site was flooded that you observed?

A: The area was flooded on May 8, 2005.

Q: Do you know how many inches it rained during this event?

A: Yes.

Q: What was that amount?

A: 4 ½ inches.

Q: How do you know this?

A: A rain gauge on our property.

Q: Over what period of time did this amount of rain occur?

A: About 3 hours.

Q: Did you videotape this flooding?

A: Yes.

Q: What is Exhibit 2E?

A: It is a map of the proposed site and the immediate vicinity, upon which I have marked the location where I was standing when I took the videotape of flooding in the area of the site.

Q: What is Exhibit 2B?

A: It is a copy of the video that I took of the floodwater runoff from the proposed site on May 8, 2005. It shows floodwater rushing through a drainage slough on the proposed site and across neighboring property where it washed out roads and culverts.

Q: Is it a true and accurate copy?

A: Yes.

Q: Is the DVD a fair depiction of the flooding that it purports to depict?

A: Yes.

Q: How have you indicated on Exhibit 2E your location when taking this videotape?

A: I have drawn a small X with a red pen at my location when I took this videotape. I have written "2B" next to this mark and I have drawn a small arrow from this X to indicate the direction the camera was facing when I began shooting the videotape.

Q: Has the vicinity of your land, and the proposed site, flooded on other occasions?

A: Yes.

Q: During what times are you aware of flooding occurring in this area?

A: I know of two times that have not previously been discussed by other fact witnesses.

Q: What were those times?

A: A May and June flood in 1973 and a fall flood in 1997.

Q: What is Exhibit 2A?

A: It is a map showing the greatest extent of the flooding during the flood occurring in May and June of 1973.

Q: How have you demonstrated the extent of flooding on this map?

A: I have outlined the areas where flooding occurred on the proposed site and shaded those areas in blue.

Q: Does Exhibit 2A fairly depict the features that it purports to depict?

A: Yes.

Q: What is Exhibit 2F?

A: It is a map indicating the greatest extent of the flooding during the flood occurring in the fall of 1997.

Q: How have you demonstrated the extent of flooding on the map?

A: I have outlined the areas on the proposed site where flooding occurred and shaded those areas in blue.

Q: Does Exhibit 2F fairly depict the features that it purports to depict?

A: Yes.

III. AREA SURFACE WATER FEATURES

Q: Are there any surface waters located on your property?

A: Yes, the Colorado River to the far east of the property, a 120 acre lake and a bayou that is connected to the Colorado River.

Q: Do you and your family use these surface waters?

A: Yes.

Q: Please explain.

A: All three are used for fishing, swimming, and recreation, as well as water for livestock and occasional crop irrigation from the lake.

Q: Have you observed water flowing from the proposed site into the bayou?

A: Yes.

Q: Please explain.

A: During flash floods or heavy rains, Field No. 1 is drained by at least one large culvert pipe under FM 102 into the bayou.

Q: Have you observed water flowing from the proposed site into the lake?

A: Yes.

Q: Please explain.

A: When the Colorado River floods, water runs over the surface of the land and into the lake in a southwesterly direction from the proposed site. There are also three sets of large drainage culvert pipes that run into the lake from the proposed site.

Q: Other than the drainage culvert pipes running into the lake, is there any other man-made construction that affects the drainage of the area?

A: Yes.

Q: Please explain.

A: There is a 4'x4' gated concrete spillway running between the lake and the Colorado River.

Q: What is the purpose of this spillway?

A: It allows the lake to receive the runoff drainage from all of the neighboring fields and release it into the Colorado River. During flood events that do not involve the Colorado River, the spillway prevents the lake from flooding neighboring property.

IV. GROUNDWATER USE

Q: Do you have a residence on you property?

A: Yes.

Q: What is the primary water supply for your residence?

A: A water well.

Q: Do other family members have residences on property near the proposed site?

A: Yes.

Q: What is the primary water supply for their residences?

A: They each have a water well.

Q: What is Exhibit 2C?

A: It is a map of the existing water wells in the vicinity of the proposed site.

Q: How have you indicated the location of these water wells?

A: I have marked the water wells used for livestock in red, the irrigation water wells in green, and the residential water wells in blue.

Q: Is Exhibit 2C a fair depiction of the features it purports to depict?

A: Yes.

Q: Are these all of the water wells in the area?

A: No, probably not. These are the wells that I had access to or could see from the road.

Q: Please identify Exhibit 2D.

A: Exhibit 2D is a list of groundwater well locations in the area. These are the coordinates of the groundwater wells displayed on Exhibit 2C.

Q: How did you obtain these coordinates?

A: I visited each well with a global positioning system (GPS) handheld and determined the location of the wells.

V. CROP GROWTH

Q: Are crops grown on any of your family's land near the proposed application site?

A: Yes.

Q: What types of crops are grown?

A: Cotton, field corn, sweet corn, soybeans, potatoes, hay, oats, rye grass, and pecans.

Q: Are any of these crops for human consumption?

A: Yes.

Q: Which are for human consumption?

A: Sweet corn, soybeans, potatoes, and pecans.

Q: Do members of your family eat the crops or cattle that are raised on your land?

A: Yes.

Q: Do others eat the crops or cattle that are raised on your land?

A: Yes.

Q: Do you or any member of your family farm the crops or own the cattle on your land?

A: Yes.

Q: Please explain.

A: My father and my three brothers and I have farmed and raised cattle on this land all of our lives.

Q: Do you use fertilizer on your land?

A: Yes.

Q: In growing your crops, do you evaluate the quantity of nutrients needed by the crop in determining the quantity of fertilizer to apply?

A: Yes.

Q: What nutrients do you consider when you evaluate the amount of fertilizer needed by the crop?

A: We have crop consultants who take soil samples and then recommend fertilizer applications based on nitrogen, phosphorous, and potash levels for specific crop yields.

Q: Are those the only three nutrients that are ever considered?

A: No.

Q: Please explain.

A: Sometimes amendments like lime or sulphur are required to help balance pH levels and allow the plant to use the nitrogen that is already available in the soil.

Q: Do you grow Bermuda grass for hay?

A: Yes.

Q: Do you have a hay pasture near the proposed application site?

A: Yes.

Q: How have you shown on Exhibit 2E the location of this hay pasture?

A: I have outlined the hay pasture in red and written "HAY" in the center.

Q: How many acres is this field?

A: This field contains fourteen (14) acres.

Q: What was the yield on this field for the last growing season?

A: About 4.18 tons.

Q: Please explain.

A: We cut 78 round bales of hay in three cuts. Each bale weighs approximately 1500 pounds. The total number of pounds is 117,000 and that number divided by 2000 will give you the tons, which is 58.5. You then need to divide by the number of acres, 14, and get 4.18 tons/acre/year.

Q: Is this considered a good yield?

A: Yes, we were very pleased with this yield.

Q: To your knowledge, is 9 tons/acre/year in three cuts for improved Bermuda pasture a normal yield goal for the area?

A: No.

Q: How does this yield goal compare to the normal yield goal for improved Bermuda pasture grown in the area?

A: 9 tons/acre/year in three cuts for improved Bermuda pasture is significantly more than the normal yield goal for Bermuda pasture in the area.

Q: Do you consider 9 tons/acre/year in three cuts for improved Bermuda pasture to be a realistic yield goal?

A: No.

VII. CONCLUSION

Q: Does this conclude your testimony?

A: Yes.