

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

June 16, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. C. M. Farris
Vice President of Operations
Farmland Hydro, L.P.
P. O. Box 960
Bartow, Florida 33830

Dear Mr. Farris:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for the modification of the North GTSP/MAP/DAP Granulation Plant at the Green Bay phosphate fertilizer chemical complex located on County Road 640 West near Bartow, Polk County, Florida.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Preston Lewis of the Bureau of Air Regulation.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/WH/plm

Attachments

c: Bill Thomas, SWD
Jewell Harper, EPA
John Koogler, P.E.
Chris Shaver, NPS

*Farmland's (original)
and J. Koogler copies
sent Sid. Cupress
6-19-92
Billed To J. Koogler*

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CERTIFIED MAIL

In the Matter of an
Application for Permit by:

DER File No. AC 53-210886
PSD-FL-186
Polk County

Mr. C. M. Farris
Farmland Hydro, L.P.
P. O. Box 960
Bartow, Florida 33830

INTENT TO ISSUE

The Department of Environmental Regulation gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above, for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Farmland Hydro, L.P., applied on March 25, 1992, to the Department of Environmental Regulation for a permit to modify the North GTSP/MAP/DAP Granulation Plant at the Green Bay phosphate fertilizer chemical complex located on County Road 640 West near Bartow, Polk County, Florida 33830.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that a construction permit is required for the proposed work.

Pursuant to Section 403.815, Florida Statutes and Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding

(hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a

waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION



C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE and all copies were mailed by certified mail before the close of business on 6-17-92 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to
§120.52(11), Florida Statutes,
with the designated Department
Clerk, receipt of which is hereby
acknowledged.



Clerk

6-17-92
Date

Copies furnished to:

Bill Thomas, SWD
Jewell Harper, EPA
John Koogler, P.E.
Chris Shaver, NPS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Regulation gives notice of its intent to issue a construction permit (AC 53-210886/PSD-FL-186) to Farmland Hydro, L.P., P. O. Box 960, Bartow, Florida 33830. The permit will allow the applicant to modify and increase production of the North GTSP/MAP/DAP Granulation Plant located on County Road 640 West near Bartow, Polk County, Florida. The allowable emissions will be 22.5 lbs/hr (98.6 TPY) of particulate matter, 3.7 lbs/hr (16.4 TPY) fluorides, and 46.7 lbs/hr (204.7 TPY) ammonia. The proposed project is subject to Prevention of Significant Deterioration (PSD) regulations for fluorides. A determination of Best Available Control Technology (BACT) was required for fluorides. There are no PSD increments or ambient air quality standards for fluorides. These emissions will not cause a violation of any ambient air standard or Prevention of Significant Deterioration (PSD) increment. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Southwest District
4520 Oak Fair Blvd.
Tampa, Florida 33610-7347

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

Technical Evaluation
and
Preliminary Determination

Farmland Hydro, L.P.
Bartow, Polk County, Florida

North GTSP/MAP/DAP Granulation Plant Modification
File No.: AC 53-210886 (PSD-FL-186)

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

June 16, 1992

I. General Information

A. Applicant

Farmland Hydro, L.P.
P. O. Box 960
Bartow, Florida 33830

B. Request

On March 25, 1992, Farmland Hydro, L.P., submitted an application for permit to construct (modify) their existing North GTSP/MAP/DAP* Granulation Plant located at the Green Bay phosphate fertilizer chemical complex (SIC 2819) on County Road 640 West near Bartow, Polk County, Florida 33830. The UTM coordinates of this facility are Zone 17, 409.5 km E and 3079.5 km N. The application was considered complete on April 21, 1992, when the Department received additional information on the project from Koogler & Associates.

*GTSP - Granular Triple Superphosphate
MAP - Monoammonium Phosphate
DAP - Diammonium Phosphate

C. Project

The applicant proposes to modify the North GTSP/MAP/DAP Granulation Plant to discontinue the manufacture of GTSP, increase the allowable production of MAP from 70 to 120 TPH, and increase the allowable production of DAP from 50 to 100 TPH. No associated modifications are needed to the sulfuric acid plant, phosphoric acid plant, or granular fertilizer handling and storage facilities to accomplish the higher MAP and DAP production from the North Granulation Plant.

The primary physical changes to the existing North Granulator Plant are:

1. A new reactor-granulator (R/G) scrubber system consisting of a two stage scrubber (second stage is a venturi scrubber) with each stage followed by a cyclonic separator.
2. A new BFL* scrubber, following the R/G scrubber (described above), which is a shell and tube heat exchanger (ammonia on shell side) that circulates either condensed water from the gas stream or pond water, to control fluoride emissions, and a new stack that is 129 feet high and 5.5 feet in diameter.

*Scrubber based on process developed by Belladune Fertilizer, Limited of Nova Scotia.

3. A new cooler-chiller to evaporate ammonia and uses the cold air produced to cool the granulated product in the fluid bed cooler.
4. A new venturi-cyclonic scrubber system to control the emissions from the fluid bed cooler. The scrubbing liquid will be 10% P_2O_5 . This system will discharge to the existing main stack (along with the dryer and screen and mill (S/M) scrubber systems). This stack is 129 feet high and 7.5 feet in diameter.
5. A new MAP pipe reactor and granulator.
6. New screens and recycle conveyor along with relocated screens, elevators, elevator drive, and recycle conveyor in the screening system.
7. New controls for the dryer scrubber and screen/mill scrubber.
8. Relocated pipe reactor feed tank system.
9. Relocated and modified DAP reactor system.
10. Smaller fans for the screens and mills which will reduce the air flow from 35,000 to 28,000 scfm.
11. Relocation of the north fines bin.
12. Relocation of the reclaim water tank system.
13. Removal of the existing GTSP scrubber system used to control the GTSP reactor.

D. Emissions

The increased production in the MAP/DAP Granulation plant will cause an increase in actual particulate matter (PM) and fluoride (F) emissions. Ammonia (NH_3) emissions are expected to decrease. The cooler scrubber system discharges through the existing plant stack. The S/M and dryer scrubber systems discharge to the cross-flow scrubber which also discharges to the existing plant stack. The proposed discharges to the cross-flow scrubber, as projected by the applicant, are summarized in the following tables.

Cooler Scrubber System

Pollutant	Emissions*			
	DAP Production		MAP Production	
	lbs/hr	TPY	lbs/hr	TPY
PM	1.98	8.67	5.52	24.18
F	0.94	4.12	1.21	5.39
NH ₃	3.29	14.41	4.46	19.53

*Emissions though the existing stack, along with the cross-flow scrubber's emissions, to the ambient air.

Screen and Mill Scrubber System

Pollutant	Emissions*			
	DAP Production		MAP Production	
	lbs/hr	TPY	lbs/hr	TPY
PM	6.60	28.91	6.60	28.91
F	0.20	0.88	0.20	0.88
NH ₃	1.50	6.57	1.50	6.57

*Emissions to the cross-flow scrubber, not directly to the ambient air.

Dryer Scrubber System

Pollutant	Emissions*			
	DAP Production		MAP Production	
	lbs/hr	TPY	lbs/hr	TPY
PM	4.90	21.46	7.32	32.06
F	0.48	2.10	0.48	2.10
NH ₃	1.80	7.88	2.67	11.69

*Emissions to the cross-flow scrubber, not directly to the ambient air.

The gases leaving the screen and mill, and dryer scrubber systems pass through the cross-flow scrubber before being discharged to the atmosphere through the main stack.

Cross-Flow Scrubber System

Pollutant	Emissions*			
	DAP Production		MAP Production	
	lbs/hr	TPY	lbs/hr	TPY
PM	8.64	37.84	10.36	45.38
F	0.66	2.89	0.66	2.89
NH ₃	1.88	8.23	2.55	11.17

*Emissions through the existing stack, along with the cooler scrubber system's emissions, to the ambient air.

The reactor/granulator process will be controlled by a new scrubber system that discharges through a new stack for the plant.

Reactor/Granulator (R&G) Scrubber System

Pollutant	Emissions*			
	DAP Production		MAP Production	
	lbs/hr	TPY	lbs/hr	TPY
PM	5.52	24.18	6.62	29.00
F	1.16	5.08	1.87	8.19
NH ₃	41.56	182.03	30.93	135.47

*Emissions to the ambient air.

The total emissions from the plant are discharged through two stacks; the existing one and the new R/G stack. The total emissions to the ambient air from the plant during DAP and MAP production are summarized in the following tables.

100 TPH DAP Production (46.0 TPH P₂O₅)

Pollutant	Existing Stack	R/G Stack	Total	
	lbs/hr	lbs/hr	lbs/hr	TPY
PM	10.62	5.52	16.14	70.69
F	1.60	1.16	2.76	12.09
NH ₃	5.17	41.56	46.73	204.68

120 TPH MAP Production (62.4 TPH P ₂ O ₅)				
Pollutant	Existing Stack lbs/hr	R/G Stack lbs/hr	Total lbs/hr	TPY
PM	15.88	6.62	22.50	98.55
F	1.87	1.87	3.74	16.38
NH ₃	7.01	30.93	37.94	166.18

From the above tables, it can be seen that the maximum proposed PM emissions (98.55 TPY) and fluorides (F) emissions (16.38 TPY) will occur during the manufacture of MAP and the maximum NH₃ emissions (204.68 TPY) would occur during the manufacture of DAP.

The applicant has reported the actual emissions from the GTSP/MAP/DAP plant for 1989-90 (average for PM) and 1990-91 (average for F and ammonia) to be: 45.2 TPY PM, 9.4 TPY F, and 291.4 TPY NH₃.

The plant will also emit small quantities of the products of combustion (CO, NO_x, VOC) from the natural gas or No. 2 fuel oil fuels used in the dryer. None of the pollutants from the fuel are emitted at a rate that will require regulation of them. As there is no increase in heat input to the dryer, the emissions on these products are unchanged.

The applicant has noted that the dry rock system at this facility (rock unloading, PAD 1 Ball Mill, and PAD 2 Ball Mill) ceased operation in 1990-91 when the plant began to use wet rock. Actual particulate matter emissions from this equipment was 49.3 TPY.

II. Rule Applicability

The proposed project, modification of the north GTSP/DAP/MAP granulation plant, is subject to preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2, Florida Administrative Code (F.A.C.).

The source is in Polk County, an area designated attainment for all criteria pollutants (F.A.C. Rule 17-2.420).

The phosphate fertilizer chemical facility (SIC 2874) is a major source of particulate matter and sulfur dioxide because the potential emissions of each of these air pollutants exceed 100 TPY. Chemical process plants are listed in Table 500-1, Major Facility Categories.

The proposed project is subject to the Prevention of Significant Deterioration Regulations, F.A.C. Rule 17-2.500, including the preconstruction review requirements listed in this rule, because the contemporaneous emissions increase of fluorides exceed the significant emission rate listed in Table 500-2 of F.A.C. Rule 17-2. The emission limit for fluorides will be established by a Best Available Control Technology (BACT) determination pursuant to F.A.C. Rule 17-2.500(5).

In addition, the proposed modification is subject to 40 CFR 60, Subpart V, Standards of Performance for the Phosphate Fertilizer Industry: Diammonium Phosphate Plants.

III. Technical Evaluation

The applicant has stated that the higher production rate will not require an increase in the fuel consumption of the dryer. The dryer is permitted for a heat input of 50 MMBtu/hr from natural gas, or for up to 400 hrs/yr No. 2 fuel oil, when natural gas fuel is curtailed. The estimated air pollutant emissions from the burning of this fuel were based on the emission factors in the publication referred to as AP-42 and the net emissions of the products of combustion are not expected to change.

Ammonia is one of the air pollutants that will be emitted by this plant. The proposed scrubber systems will be more efficient at capturing the ammonia than the present system. The applicant estimates that the ammonia loss from the plant will be reduced from 291.4 TPY to 204.7 TPY.

Particulate matter (PM) will be emitted from both the new cooler scrubber system stack and the dryer and S/M scrubber systems that discharge through the cross-flow scrubber and existing stack. The applicant requested that the PM emission limit for the facility be reduced from 26.9 lbs/hr (117.8 TPY) to 22.5 lbs/hr (98.6 TPY) during the manufacture of MAP and 16.1 lbs/hr (70.7 TPY) during the manufacture of DAP. The proposed standard is equivalent to an emission slightly greater than 0.02 grains PM/dscf which the Department believes is reasonable for a scrubber in this application. The actual PM emissions from this plant have been 45.2 TPY. As part of this application, a contemporaneous PM emission credit is requested for a 1990-1991 process change that resulted in the facility being able to use wet instead of dry phosphate rock in their plant. This allowed the plant to cease operation of the dry rock unloading equipment (AO 53-151296), PAD 1 Ball Mill (AO 53-157062), and PAD 2 Ball Mill (AO 53-157064). The total PM permitted emissions for this equipment was 389.4 TPY and the average actual emissions were 49.3 TPY.

Allowable fluoride emissions will be set by a BACT analysis. The applicant has proposed meeting the new source performance standard of 0.06 lbs F/T P_2O_5 for DAP plants during both MAP and DAP manufacture. This will be accomplished by use of the following:

Reactor-granulation equipment will be controlled by a three stage scrubbing system. The first stage will use low strength phosphoric acid as the scrubbing liquid to minimize fluoride being evolved from the acid. The second stage will be a venturi-cyclonic scrubber. The third stage will be a BFL scrubber which uses condensate from the cooler-chiller and processes water as the scrubbing liquid.

The product cooler will use a venturi-cyclonic scrubber with low strength phosphoric acid as the scrubbing liquid to capture particulate matter.

The dryer will be controlled by a downflow scrubber which will use phosphoric acid as the scrubbing liquid and be followed by a cyclonic separator and another downflow scrubber that will use process water to remove fluorides. This scrubber system will discharge to the cross-flow scrubber which will also use process water as the scrubbing liquid. The cross-flow scrubber will also control the emissions from the screens and mills equipment.

The screens and mills equipment will be controlled by a system that is identical to that used for the dryer.

Because fluorides are recovered at this facility, the fluoride content of the process water is relatively low - 0.45%. Other considerations prevent the use of fresh water in the cross-flow scrubber which should further lower fluoride emissions. The cost of using treated water in the scrubber is prohibitive - up to \$77,000/ton fluoride removed. The Department's BACT analysis has concluded that 0.06 lbs F/T P_2O_5 is BACT for this process. Thus, the allowable fluoride emissions from the facility will be 3.74 lbs/hr and 16.4 TPY.

IV. Air Quality Analysis

The production rate increases due to the proposed GTSP/MAP/DAP North plant production increase will result in emissions increases which are projected to be greater than the PSD significant rates for fluorides. Therefore, the project is subject to the PSD review requirements contained in F.A.C. Rule 17-2.500. Part of these requirements is an air quality impact analysis which includes:

- o A PSD increment analysis.
- o An Ambient Air Quality Standards (AAQS) analysis.
- o An analysis of existing air quality.
- o An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts.
- o A Good Engineering Practice (GEP) stack height determination.

In the case of this proposed project, no PSD or AAQS analysis was required since there are no PSD increments or AAQS established for fluorides. The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with EPA guidelines.

However, EPA's general position for a pollutant for which there is no AAQS is to not require monitoring data, but to base the air quality analysis on modeled impacts.

The applicant modeled the impact of increased fluorides emissions from the project by using the EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model. All recommended EPA default options were used. Direction-specific downwash parameters were used because the stacks were less than the good engineering practice (GEP) stack height. Five years of sequential hourly surface and mixing depth data from the Tampa, Florida National Weather Service (NWS) station collected during 1982 through 1986 were used in the model.

The EPA does have a significant monitoring concentration of 0.25 ug/m^3 , 24-hour average, for fluorides whereby an applicant may be exempted from preconstruction monitoring if the maximum predicted impact is less than this value. The maximum concentration increase for this project is 3.41 ug/m^3 , 24-hour average. However, even though the maximum predicted impact is greater than the significant monitoring concentration, the Department is not requiring preconstruction monitoring for this project because there are no EPA-approved monitoring methods for fluorides. Additionally, the Department has a draft Air Toxics Permitting Strategy which defines no threat levels (NTLs) for fluorides for the 8-hour and 24-hour averaging times. The maximum predicted 8-hour and 24-hour concentration increases are 6.66 ug/m^3 and 3.41 ug/m^3 , respectively. These values are less than the NTLs of 25.0 ug/m^3 , 8-hour average and 6.0 ug/m^3 , 24-hour average. If all of the fluoride sources at the facility were modeled, however,

the NTLs would likely be exceeded. The NTLs, though, are guideline values and since the fluoride emission limits will be established by a BACT determination, the Department is not requiring more stringent limitations for the project than those set by the Department's BACT determination.

The draft Air Toxics Permitting Strategy also defines NTLs for ammonia. The applicant modeled the reduction in ammonia emissions using the same modeling procedure used for fluorides. The maximum predicted increase in ammonia concentrations (the increases are due to plume downwash) in the ambient air are 120.0 ug/m³, 8-hour average and 30.0 ug/m³, 24-hour average. These values are lower than the 8-hour average NTL of 180 ug/m³ and the 24-hour average NTL of 43.2 ug/m³.

The applicant performed an analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts. No significant air quality impacts are expected.

V. Conclusion

Based on the information provided by Farmland Hydro, L.P., the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

[Handwritten signature]
#41755

the NTLs would likely be exceeded. The NTLs, though, are guideline values and since the fluoride emission limits will be established by a BACT determination, the Department is not requiring more stringent limitations for the project than those set by the Department's BACT determination.

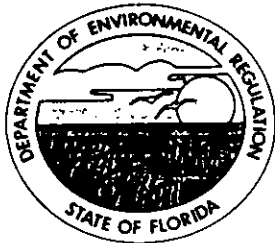
The draft Air Toxics Permitting Strategy also defines NTLs for ammonia. The applicant modeled the reduction in ammonia emissions using the same modeling procedure used for fluorides. The maximum predicted increase in ammonia concentrations (the increases are due to plume downwash) in the ambient air are 120.0 ug/m³, 8-hour average and 30.0 ug/m³, 24-hour average. These values are lower than the 8-hour average NTL of 180 ug/m³ and the 24-hour average NTL of 43.2 ug/m³.

The applicant performed an analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts. No significant air quality impacts are expected.

V. Conclusion

Based on the information provided by Farmland Hydro, L.P., the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

Plowman
#41755



Florida Department of Environmental Regulation

Twin Towers Office Bldg: • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
Farmland Hydro, L.P.
P. O. Box 960
Bartow, Florida 33830

Permit Number: AC 53-210886
PSD-FL-186
Expiration Date: January 1, 1994*
County: Polk
Latitude/Longitude: 27°50'37"N
81°56'05"W
Project: North GTSP/MAP/DAP
Granulation Plant Modifications

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Authorization to modify the existing North GTSP/MAP/DAP** Granulation Plant to increase allowable production from 70 to 120 TPH MAP and from from 50 to 100 TPH DAP. The modifications include: installing a new reactor-granulator scrubber system followed by a new BFL scrubber system; a new cooler-chiller; a new venturi-cyclonic scrubber system; a new MAP pipe reactor and granulator; new screens and recycle conveyor; new smaller fans for the screens and mills; relocation of existing screens, elevators, elevator drive, and recycle conveyor in the screen system; new controls for the dryer scrubber and the screen/mill scrubber; relocation of the pipe reactor feed tank system; relocation and modification of the DAP reactor system; relocation of the north fines bin; relocation of the reclaim water tank system; removal of the existing GTSP scrubber systems; and other associated alterations. The plant will discharge air pollutants through the existing MAP/DAP main stack (114,000 acfm/88,000 dscfm/129 ft. elevation/7.5 ft. diameter/108°F) and the new reactor-granulator stack (49,700 acfm/27,000 dscfm/129 ft. elevation/5.5 ft. diameter/178°F). The North MAP/DAP Granulation Plant is located at Farmland Hydro, L.P.'s phosphate fertilizer chemical manufacturing facility on County Road 640 West, near Bartow, Polk County, Florida. The UTM coordinates of this facility are Zone 17, 409.5 km E and 3079.5 km N.

PERMITTEE:
Farmland Hydro, L.P.

Permit Number: AC 53-210886
PSD-FL-186
Expiration Date: January 1, 1994

This permit will replace operation permit No. AC 53-171758 (40 TPA 53005329) when the permittee places any of the new/modified equipment authorized by this permit in service.

*This permit is void if construction does not commence within 18 months of its issuance, if construction is discontinued for more than 18 months, or if construction is not completed and the plant placed in operation within a reasonable time.

**GTSP - Granular Triple Superphosphate
MAP - Monoammonium Phosphate
DAP - Diammonium Phosphate

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application received March 25, 1992.
2. Koogler & Associates' memo dated April 16, 1992.
3. Koogler & Associates' memo dated April 20, 1992.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or

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regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

- a. Have access to and copy any records that must be kept under the conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

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13. This permit also constitutes:

- (x) Determination of Best Available Control Technology (BACT)
- (x) Determination of Prevention of Significant Deterioration (PSD)
- (x) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
- c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the dates analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is

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needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

Construction Requirements

1. The modification of this facility shall reasonably conform to the plans and schedule submitted in the application.
2. The stack sampling facilities must comply with F.A.C. Rule 17-2.700(4).
3. The air pollution control systems shall be designed to meet the ammonia, fluorides, and particulate matter standards in this permit.
4. The plant shall be equipped with flow monitoring devices that comply with 40 CFR 60.223 (July 1, 1991) to continuously measure and record the phosphorus-bearing feed material to the process and the total pressure drop across each scrubbing systems.

Emission Restrictions

5. Emissions from the modified plant shall not exceed any of the limits listed in the following tables:

<u>MAP Production</u>				
<u>Pollutant</u>		<u>Main Stack</u>	<u>R/G Stack</u>	<u>Plant Total</u>
Fluorides	lbs/TP ₂ O ₅	--	--	0.06
	lbs/hr	1.87	1.87	3.74
	TPY	8.2	8.2	16.4
Particulate Matter	lbs/hr	15.9	6.6	22.5
	TPY	69.6	29.0	98.6
Ammonia	lbs/hr*	7.0	30.9	37.9
	TPY	30.7	135.5	166.2

*24-hour average

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SPECIFIC CONDITIONS:

<u>DAP Production</u>				
<u>Pollutant</u>		<u>Main Stack</u>	<u>R/G Stack</u>	<u>Plant Total</u>
Fluorides	lbs/TP ₂ O ₅	--	--	0.06
	lbs/hr	1.60	1.16	2.76
	TPY	7.0	5.1	12.1
Particulate Matter	lbs/hr	10.6	5.5	16.1
	TPY	46.5	24.2	70.7
Ammonia	lbs/hr*	5.2	41.6	46.7
	TPY	22.7	182.0	204.7

*24-hour average

6. Visible emissions from any part of this plant shall not exceed 20% opacity.

7. No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor (F.A.C. Rule 17-2.620).

Operation Requirements

8. Production shall not exceed 120 TPH MAP and 100 TPH DAP.

9. Phosphoric acid feed shall not exceed 62.4 TPH P₂O₅ during MAP manufacture and 46.0 TPH P₂O₅ during DAP manufacture. Consumption of sulfuric and nitric acids shall be reported in the AOR.

10. Ammonia feed shall not exceed 16.1 TPH during MAP manufacture and 21.9 TPH during DAP manufacture.

11. The system shall be properly operated and maintained (F.A.C. Rule 17-2.210(2)). No person shall circumvent any pollution control device or allow the emissions of air pollutants without the applicable air pollution control device operating properly (F.A.C. Rule 17-2.240). Pressure drop across the R-G venturi scrubbers shall be at least 12 inches of water.

12. Any process equipment, vessel, seal tank, duct, etc., having the potential to emit air pollutants shall be sealed or covered during plant operation to minimize fugitive emissions.

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13. This plant shall not manufacture GTSP.
14. The plant may operate continuously, 8760 hrs/yr.
15. Heat input to the dryer shall not exceed 50 MMBtu/hr. Only natural gas (max. 0.05 MMCF/hr) shall be burned in the dryer; except when the natural gas supply to the plant is curtailed, then No. 2 fuel oil with a maximum of 0.5% sulfur may be burned for up to 400 hrs during any 12 month period.
16. Lignosulphonates (lignin) shall be used when needed to control unconfined dust emissions when handling MAP and DAP product. Defoamers may be added to the 28% P₂O₅ scrubbing liquid.
17. Reasonable precautions for minimizing fugitive emissions of ammonia shall include routine inspection of vessels, piping, and hoses; placing scrubbers in operation prior to feeding ammonia to the process; and prompt repair of any leaks.

Testing Requirements

18. This plant shall be tested at a production rate of 108 to 120 TPH MAP and 90 to 100 TPH DAP within 60 days of commercial production of these products by the modified plant and annually thereafter for particulate matter, fluorides, and visible emissions. It shall also be tested for ammonia on achieving commercial production and prior to the renewal of any permit to operate issued for the modified plant (test every 5 years). The annual test during MAP and DAP production will be waived if that product is not manufactured during that year. All compliance tests shall meet the requirements listed in F.A.C. Rule 17-2.700. The unit shall not operate above the maximum permitted MAP or DAP production rates; except during the time of the compliance tests.
19. Test methods to determine compliance are EPA Method 5 for particulate matter, EPA Method 9 for visible emissions, and EPA 13A or 13B for fluorides. These methods are described in 40 CFR 60, Appendix A (July 1, 1991). Ammonia emissions shall be determined using a variation of the EPA Draft Method, using large impingers with 100 mls of 1.0 normal sulfuric acid in the first three impingers, the last impinger dry and a probe with an external design similar to that used in EPA Method 16, or any other test method agreed to by the Department.

Administrative Requirements

20. The Department's Southwest District shall be notified in

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writing a minimum of 15 days in advance of any compliance test to be conducted on this source. The permittee shall comply with the notification and recordkeeping requirements of 40 CFR 60.7 (July 1, 1991).

21. The permittee shall maintain records showing the plant's operating time, phosphoric acid (P_2O_5), and ammonia consumption; MAP and DAP production (TPY); and scrubber pressure drops for a minimum of 2 years.

22. The permittee shall submit annual operation reports (AOR) that include a summary of the consumption of phosphoric acid and ammonia, the production of MAP and DAP, the fuel consumption, and a complete test report (F.A.C. Rule 17-2.700(7)) which includes the production and operation parameters (scrubber pressure drops) during the test and a report of any recent maintenance on the scrubbers.

23. Prior to placing the modified plant in service, the permittee shall surrender the permits for the rock unloading section (AO 53-151296), the PAD 1 Ball Mill (AO 53-157062), and the PAD 2 Ball Mill (AO 53-157064) to the Southwest District.

24. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

25. An application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rules 17-4.055 and 17-4.220).

Issued this _____ day
of _____, 1992

**STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION**

Carol M. Browner
Secretary

Best Available Control Technology (BACT) Determination
Farmland Hydro, L.P.
Polk County
MAP/DAP Granulation Plant

The applicant proposes to modify their existing MAP/DAP granulation plant and increase production to 100 TPH diammonium phosphate (DAP) and 120 TPH monammonium phosphate (MAP). This plant is located at their phosphate fertilizer chemical manufacturing facility on County Road 640 West near Bartow, Polk County, Florida.

The proposed project will result in a significant increase in the emissions of fluorides and is therefore subject to Prevention of Significant Deterioration (PSD) review in accordance with F.A.C. Rule 17-2.500(5). The BACT review is part of the PSD review requirements in accordance with F.A.C. 17-2.500(5)(c).

Date of Receipt of a BACT Application

March 25, 1992

Control Technology

The proposed reactor-granulator scrubbing system is a "double mole" three stage scrubber using 10% and 28% P_2O_5 acid as the scrubbing liquids. The second stage is a low pressure (12" water) venturi scrubber. Each stage is followed by a cyclonic separator. This system is followed by a BFL scrubber that uses recirculated condensate and process water as the final scrubbing liquid. The gases are discharged through a new stack that served only this scrubber system.

The existing dryer scrubber system consists of a down flow scrubber using 28% P_2O_5 phosphoric acid scrubber liquid followed by a cyclonic separator. The gases from this separator pass through a cross-flow scrubber that is shared with the screen and mill (S/M) scrubber. The cross-flow scrubber uses recycled process water as the scrubber medium. The gases are discharged through the existing plant stack to the atmosphere. Except for new controls and fans, this scrubber system is not being modified.

The description of the S/M scrubber system is identical to the above one for the dryer scrubber system.

The product cooler system will cool air by the evaporation of ammonia which is then used to cool the product. (The condensate from cooling the air is used in the BFL scrubber.) The air leaving the product cooler passes through a venturi scrubber that uses 10% P_2O_5 phosphoric acid as the scrubber liquid and through a cyclonic separator before being mixed with the gases leaving the cross-flow scrubber and discharged through the existing plant stack to the atmosphere.

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account: energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Determination by DER

The Department accepts the applicant's recommendation for BACT. The following table summarizes the fluoride emission standards for the modified MAP/DAP plant.

Control	Fluoride Emissions					
	DAP Production (46 TPH P ₂ O ₅)			MAP Production (62.4 TPH P ₂ O ₅)		
	lbs/hr	TPY	lbs/TP ₂ O ₅	lbs/hr	TPY	lbs/TP ₂ O ₅
R-G Scrubber System	1.16	5.08	0.025	1.87	8.19	0.030
Cross-Flow Scrubber System (Dryer plus S/M scrubbing)	0.66	2.89	0.014	0.66	2.89	0.011
Product Cooler Scrubbing System	0.94	4.12	0.020	1.21	5.30	0.03
TOTAL	2.76	12.09	0.06	3.74	16.38	0.06

BACT Determination Rationale

DER's BACT determination is the same as proposed by the applicant, earlier BACT determinations for similar processes in Florida, and the new source performance standards for diammonium phosphate plants, 40 CFR 60, Subpart V. The MAP/DAP plants emit both fluoride and ammonia -- along with particulate matter. Most first stage scrubbers in these plants use phosphoric acid scrubbing liquid to recover ammonia. Ammonia is a raw material for the plant and a generally unregulated air pollutant that has the potential to cause objectionable odors, even in low ambient air concentrations. Fluorides are evolved from the phosphoric acid in the scrubber. This plant modification uses a lower strength acid (10% P₂O₅ instead of the more common 28% acid) in the first stage of some scrubbers. This lowers the amount of fluoride evolved. Final fluoride removal occurs in a scrubber using recycle process water. The recycle process water contains traces of fluoride (0.45%) that limit the amount of fluoride that can be readily adsorbed from the gas stream. Fluosilicic acid production at this facility will also help reduce the quantity of fluorides getting into the recycle plant process water which will lower the fluoride emissions. Fresh or treated water in the final scrubber would lower fluoride emissions. However, because of the large consumption of fresh water by the phosphate industry in Florida which is concentrated near this plant, the companies are being forced to lower the quantity of fresh water used. Using treated water does not appear cost effective as the proposed system is estimated to achieve over 99.9% fluoride removal while also providing reasonable control of ammonia emissions.

Environmental Impact Analysis

The actual ambient air impact of the increased fluorides emissions is expected to be approximately:

<u>Averaging Time (hrs)</u>	<u>Increase Impact ug/m³</u>
8	6.7
24	3.4
Annual	0.2

The Department and U. S. Environmental Protection Agency (EPA) do not have an ambient air standard for fluorides. Fluorides are classified by EPA as a welfare-related pollutant (no demonstrated effect on public health).

Conclusion

There will be no significant change in the ambient effects of fluorides on the soils and vegetation as a result of the increased fluoride emissions resulting from the modification of this plant.

Details of the Analysis May be Obtained by Contacting:

Preston Lewis, P.E.
Department of Environmental Regulation
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

Carol M. Browner, Secretary
Dept. of Environmental Regulation

Date 1992

Date 1992