



George E. Meyer  
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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Mr. Tim Nechvatal, Manager - Ash Marketing  
Wisconsin Electric Power Company  
231 W. Michigan, P.O. Box 2046  
Milwaukee, WI 53201

FILE REF: FID# 241219500  
Milwaukee County  
SW  
Correspondence

SUBJECT: Grant of Exemption for the Lightweight Aggregate to be  
manufactured from fly ash produced at the Oak Creek power  
plant.

Dear Mr Nechvatal:

I am pleased to inform you that the Department have completed review of your request for granting an exemption from solid waste regulations for the Lightweight Aggregate to be manufactured from the fly ash produced at the Oak Creek power plant. The review indicated that the proposed manufacturing plant and uses of the Lightweight Aggregate will not have an adverse impact on the environment.

The Department finds that valuable landfill space will be saved due to the reuse of both fly ash and municipal/paper mill waste water treatment sludge. This project is an excellent example of beneficial reuse of waste materials which is strongly encouraged by the Department. Based on the review of the submitted documents the Department hereby grants an exemption from solid waste regulations for the proposed uses of the Lightweight Aggregate to be manufactured from the fly ash produced at the Oak Creek power plant.

If you have any questions regarding this letter please contact Roger Klett at (414) 961-2707 or Amalendu Bagchi at (608) 267-7576.

Sincerely

*Lakshmi Sridharan*

Lakshmi Sridharan, Ph.D., P.E., Chief  
Solid Waste Management Section  
Bureau of Solid & Hazardous Waste Management.

cc. Roger Klett/Frank Schultz - SED  
Gene Mitchell - SW/3.

abdk7/wpcbennr.let



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MAY 13 1994

FID# 241219500  
Milwaukee County  
SW Approval

Mr. Tim Nechvatal, Manager - Ash Marketing  
Wisconsin Electric Power Company  
231 W. Michigan, P.O. Box 2046  
Milwaukee, WI 53201

SUBJECT: Conditional Grant of Exemption for the Beneficial Reuse of Fly  
Ash From Wisconsin Electric Power Company's (WEPCO) Oak Creek  
Power Plant

Dear Mr. Nechvatal:

We have reviewed your request for a grant of exemption from regulation under ss. 144.43 to 144.47, Stats., for fly ash from WEPCO's Oak Creek power plant for the manufacture of light weight aggregate. The process will also use sludge from either a municipal or papermill wastewater treatment plant. Based on our review, it is our opinion that the reuse of the fly ash from Oak Creek power plant can be performed in an environmentally acceptable manner if the conditions of this exemption are followed. Note that this approval allows installation of one processing unit only. You will need to apply for modifying this grant of exemption approval for installation of additional processing units. Approval of future expansion will be based primarily on the operating experience of this unit.

A construction documentation report and annual operations reports are required as conditions of this approval. Operation of the facility may not commence until a construction documentation report is approved by the Department. The Department will arrange to review the construction documentation within 30 days of receipt of the test results required in condition 4 of this approval.

WEPCO petitioned the Department to grant confidentiality status to the engineering detail drawings submitted as part of the report. A formal petition requesting confidentiality in accordance with s. 144.433, Stats., was received by the Department on March 2, 1994. The Department's decision indicating concurrence with the confidential status request was issued on April 11, 1994.

Mr. Tim Nechvatal

2.

Please call Roger Klett, District Solid Waste Investigator at (414) 961-2707 or Amalendu Bagchi, Waste Management Engineer, at (608) 267-7576 if you have questions regarding this approval.

Sincerely,

*Lakshmi Sridharan*

Lakshmi Sridharan, Ph.D., P.E., Chief  
Solid Waste Management Section  
Bureau of Solid & Hazardous Waste Management

LS:AB:lkp

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cc: Roger Klett/Frank Schultz - SED  
Joe Traynor - SW/3  
Tom Nelson - SED  
Greg Kester - WW/2

## PROJECT SUMMARY

### General Information:

Facility Contact: Tim Nechvatal  
Wisconsin Electric Power Company  
231 W. Michigan, P.O. Box 2046  
Milwaukee, WI 53201  
Phone (414) 221-2480

Licensee: Wisconsin Electric Power Company  
Milwaukee, WI

Property Owner: Wisconsin Electric Power Company  
Oak Creek Power Plant, WI

### Location of Facility:

The solid waste processing facility to manufacture a commercial grade lightweight aggregate will be located within the property boundary of Oak Creek power plant owned by WEPCO in the City of Oak Creek. Main entrance to the Oak Creek power plant is located on Elm Road. Elm Road intersects Hwy. 32 about 1 mile south of the T intersection of Hwy. 100 and Hwy. 32.

### Generators to be Served:

The facility will serve primarily the WEPCO Oak Creek plant. However, the process will use putrescible sludge from the Milwaukee Metropolitan Sewerage District municipal wastewater treatment plant or papermill sludge produced by the Repap Wisconsin Inc. papermill located in Kimberly. WEPCO may use other sources of sludge from either municipal or papermill wastewater treatment plant after notification to the Department. The product may be sold to any potential buyer.

### Acceptable Material:

The fly ash used in the process will come from the Oak Creek power plant. The sludge used in the process will come from Milwaukee Metropolitan Sewage District or Repap Wisconsin Inc. papermill in Kimberly.

### Capacity of the Facility:

The facility will process up to 84,000 tons of fly ash per year and up to 28,000 dry tons of municipal/papermill sludge per year. The facility will produce 95,000 tons of lightweight aggregate per year. The unit can be operated 24 hours a day for 330 days per year.

### Construction and Operation of the Facility:

The lightweight aggregate (LWA) process combines 65-100 percent fly ash with 35-0 percent municipal wastewater sludge to produce a lightweight aggregate. Waste heat from the process is recovered to produce either steam or electricity. Fly ash, wastewater sludge and a small amount of bentonite will be fed to a pan pelletizing device via a high intensity mixer. The pelletizing device rolls the mixer into spherical pellets of 3/8" to 3/4" in diameter. As the pellets pass through the first half of the kiln the organic fractions present in both the fly ash and the municipal wastewater solids are completely combusted producing a significant amount of heat. In the second half of the kiln, the pellets are exposed to high temperature gasses

(1,800-2,000°F) from the upstream combustion which act to heat-harden the pellets. The voids left inside the pellets from the combustion of the organic fractions and the subsequent high temperature heat hardening results in the production of a cellular, lightweight and strong aggregate.

The lightweight aggregate discharges from the rotary kiln into a cooling device to reduce the temperature of the aggregate for proper handling. The heat from cooling the hot aggregate is recovered and directed to the travelling grate drier for drying the incoming unfired pellets. The lightweight aggregate product is then screened and if necessary, depending on the market, crushed to meet specific size requirements. The gas generated in the process is cleaned using emission control devices prior to discharging into the atmosphere. The lightweight aggregate is proposed to be used in lightweight structural concrete, masonry, insulating concrete, lightweight mineral filler, landscaping ground cover and other similar uses.

BEFORE THE  
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL GRANT OF EXEMPTION  
FOR  
WISCONSIN ELECTRIC POWER COMPANY  
LIGHT WEIGHT AGGREGATE PROCESSING FACILITY  
AT THE OAK CREEK POWER PLANT

FINDINGS OF FACT

The Department finds that:

1. On April 9, 1992 Wisconsin Electric Power Company (WEPCO) submitted a request to exempt the use of fly ash for producing lightweight aggregate to be marketed for use in the concrete block industry and as landscaping material.
2. The proposed lightweight aggregate (LWA) processing facility is to be located within the property boundaries of the Oak Creek Power Plant owned by WEPCO. The Oak Creek Power Plant site includes the following lands: Section 1, T4N, R22E, and Section 5, T4N, R23E, Town of Caledonia, Racine County; Section 36, T5N, R22E and Section 31, T5N, R23E, City of Oak Creek, Milwaukee County.
3. The information submitted in connection with the exemption request review included a letter with attachments dated April 9, 1992.

The \$500.00 plan review fee was received by the Department on June 21, 1993.

4. Additional documents considered in the review of the grant of exemption approval include the following:
  - a. A letter and accompanying environmental impact report to Lyda Dorr of WPSR from David Porter of WEPCO dated July 9, 1992.
  - b. A memo from Frank Trcka of WDNR-SED (EA Section) to Marvin Paton of WDNR-SED (Air Management Section) dated December 1, 1992 providing comments on draft EA for the facility.
  - c. Environmental Analysis and decision issued by the Department on January 15, 1993.
  - d. An Initial Site Inspection memo from Roger Klett of WDNR-SED to Amalendu Bagchi of WDNR dated April 26, 1993.
  - e. A letter from Amalendu Bagchi of WDNR to Tim Nechvatal of WEPCO dated May 19, 1993 requesting additional information.
  - f. A letter from Tim Nechvatal of WEPCO to Amalendu Bagchi of WDNR dated August 20, 1993 providing additional information about physical characteristics of the light weight aggregate, details regarding sludge transportation, etc.

- g. Air pollution control construction permit issued by SED-Air Management, dated June 1, 1993.
  - h. A letter from Tim Nechvatal of WEPCO to Amalendu Bagchi of WDNR received on February 11, 1994 providing results of ASTM leachate test on LWA.
  - i. A letter from Tim Nechvatal of WEPCO to Gene Mitchell of WDNR received on March 8, 1994 providing a plan for physical and chemical tests of the LWA.
  - j. A letter from Tim Nechvatal of WEPCO to Amalendu Bagchi of WDNR dated March 15, 1994 providing additional information regarding physical test protocol.
  - k. A letter from Tim Nechvatal of WEPCO to Amalendu Bagchi of WDNR dated April 20, 1994 providing results of physical test performed on the LWA.
5. Additional facts relevant to the review of the grant of exemption request: This project will allow WEPCO to beneficially reuse the fly ash generated at the Oak Creek power plant. The process will also use sludge from either a municipal or papermill wastewater treatment plant. The project will save landfill space from disposal of both the fly ash and the sludge. Lightweight aggregate will be manufactured by this process which can be used in concrete block industry and in landscaping.
  6. On April 26, 1993 the Department's area solid waste investigator performed an initial site inspection of the proposed plant site.
  7. The conditions set forth below are needed to assure that exempted uses of the fly ash are conducted in an effective manner while preserving the Department's ability to minimize environmental impacts. If the conditions are complied with, the proposed exemption will not inhibit compliance with the applicable provisions of ch 30, 31, 144, 147, 160, 162 and 500-520 and ss. 1.11, 23.40, 59.971, 59.974, 61.351, 61.354, 62.231, 62.234, and 87.30 Stats.

#### CONCLUSIONS OF LAW

1. Based on the foregoing, the Department has the authority under ss. 144.44(7), Stats., s. NR 500.08(5), Wis. Adm. Code to issue a grant of exemption if the exemption would not inhibit compliance with the applicable provisions of ch. 30, 31, 144, 147, 160, and 162 and ss. 1.11, 23.40, 59.974, 61.351, 61.354, 62.231, 62.234, and 87.30, Stats.
2. The Department has authority to approve a grant of exemption with conditions if the conditions are needed to ensure compliance with the applicable provisions of ch. 30, 31, 144, 147, 160, and 162 and ss. 1.11, 23.40, 59.974, 61.351, 61.354, 62.231, 62.234, and 87.30, Stats.

3. The conditions set forth below are needed to ensure compliance with the applicable provisions of ch. 30, 31, 144, 147, 160, and 162 and ss. 1.11, 23.40, 59.974, 61.351, 61.354, 62.231, 62.234, and 87.30, Stats.
4. In accordance with the foregoing, the Department has the authority under s. 144.44(7), Stats., NR 500.08(5), Wis. Adm. Code to issue the following conditional grant of exemption.

#### CONDITIONAL GRANT OF EXEMPTION

The Department hereby issues an exemption to WEPCO for beneficially using fly ash (produced at the Oak Creek power plant) in manufacturing light weight aggregate subject to the following conditions:

##### General

1. This approval allows for the installation of a light weight aggregate manufacturing facility with an approved production capacity of 95,000 tons per year. Plan modification approvals are required in writing prior to the installation of any additional units. This approval is applicable only to the processing plant proposed in a report dated July 9, 1992.
2. WEPCO shall comply with all OSHA and other applicable federal and state safety standards for workers. This approval does not relieve WEPCO from any other applicable federal, state, or local regulations (e.g. structural or building code requirements).
3. All items of construction shall be completed as described in the July 9, 1992 report and subsequent relevant submittals. Any significant design changes must first be approved by the Department in writing prior to implementing those changes.
4. At least 5 samples shall be tested for particle size distribution, aggregate compressive strength and unit weight during the shake down period. The tests shall consistently demonstrate that the LWA is meeting the American Society of Testing and Material (ASTM) specifications. The results of these tests shall be submitted within 30 days from the date of starting the shakedown.
5. At least 3 samples shall be tested within 180 days from the date of approval of the construction documentation report required in condition 11. The tests shall consistently demonstrate that the LWA is meeting ASTM standards 330, 331 and 332. These results shall be included in the first annual report required in condition 12.
6. All materials which are not processed properly during the shakedown and all products which are found to be unmarketable because of substandard quality shall be landfilled within 30 days of production.
7. WEPCO shall notify the Department's area investigator and central office plan review staff a minimum of 1 week prior to each of the following construction events:
  - a. Installation of the gas cleaning unit.

- b. Initial shakedown of the unit.

The Department reserves the right to inspect additional construction events. The notices will allow Department's representatives to inspect the work as it proceeds.

### Operation

8. All vehicles used for transporting papermill sludge shall meet all specifications of NR 502.06(4), Wis. Adm. Codes and shall obtain a collection and transportation (C&T) license issued by the Department.
9. WEPCO shall develop a contingency plan for handling sludge on site due to sudden breakdown of the processing facility. WEPCO shall develop a written agreement with a landfill which will accept the sludge which is already delivered to the site, during such shut down. The contingency plan and the landfill agreement shall be submitted to the Department along with the site construction documentation report required in condition 11.
10. This approval is only for the use of fly ash from Oak Creek power plant, municipal wastewater sludge from Milwaukee Metropolitan sewerage district and papermill sludge from the Repap Wisconsin Inc. papermill. WEPCO shall obtain permission from the Department prior to the use of waste from any other source(s).
11. Within 90 days after the completion of construction, a site construction documentation report shall be submitted to the Department in accordance with NR 502.08(12) Wis. Adm. Codes. The report shall be under the seal of a registered professional engineer and shall include a statement as to whether the processing unit was constructed in substantial conformance with the approved plan of operation and conditions of approval, noting all changes from the approved plans and conditions. At a minimum the report shall include the following:
  - a. A narrative discussing all major aspects of facility construction, any unanticipated field conditions encountered, results of all testing performed, and any design changes that were made during construction.
  - b. A plan drawing of the final layout after construction and the flow of material from start to finish.
  - c. Cross-section(s) of the unit showing location of major components and major design features.
  - d. Appropriate construction details.
  - e. A series of properly labeled 35 millimeter color prints documenting all major components of the processing plant.
12. In addition to the annual reporting plan (proposed by WEPCO in a letter dated March 8, 1994), an operations report shall be submitted annually to the Department by March 31 for the preceding calendar year. The report shall include the following:

- a. A discussion of any operational problems that were encountered, accidents which may have occurred, and any plant or operational modifications that were made.
- b. Identification of any proposed modifications or additions to the facility.
- c. Results of TCLP and ASTM water leach tests performed on three samples of air pollution control dust collected at least 30 days apart. The parameters for the ASTM water leach tests shall be the same as indicated in the August 20, 1993, additional information package sent by WEPCO.

The Department reserves the right to require the submittal of additional information and to modify this grant of exemption at any time, if in the Department's opinion modifications are necessary. Unless specifically noted, the conditions of this grant of exemption do not supersede or replace any previous conditions of approval for this facility.

#### NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to section 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

This notice is provided pursuant to section 227.48(2), Stats.

Dated MAY 13 1994

DEPARTMENT OF NATURAL RESOURCES  
For the Secretary

Lakshmi Sridharan

Lakshmi Sridharan, Ph.D., P.E., Chief  
Solid Waste Management Section  
Bureau of Solid & Hazardous Waste Management

Amalendu Bagchi

Amalendu Bagchi, P.E., Waste Management Engineer  
Solid Waste Management Section

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