FILED BY ENTERPRISE PRODUCTS PARTNERS L.P.
PURSUANT TO RULE 425 UNDER THE SECURITIES ACT OF 1933, AS AMENDED
AND DEEMED FILED PURSUANT TO RULE 14A-12 AND RULE 14D-2(b)
OF THE SECURITIES EXCHANGE ACT OF 1934

SUBJECT COMPANY: GULFTERRA ENERGY PARTNERS, L.P. COMMISSION FILE NO.: 1-11680

ENTERPRISE PRODUCTS PARTNERS L.P. ("ENTERPRISE") AND GULFTERRA ENERGY PARTNERS, L.P. ("GULFTERRA") WILL FILE A JOINT PROXY STATEMENT/PROSPECTUS AND OTHER RELEVANT DOCUMENTS WITH THE SECURITIES AND EXCHANGE COMMISSION. INVESTORS AND SECURITY HOLDERS ARE URGED TO READ CAREFULLY THE JOINT PROXY STATEMENT/PROSPECTUS AND OTHER RELEVANT DOCUMENTS WHEN THEY BECOME AVAILABLE, BECAUSE THEY WILL CONTAIN IMPORTANT INFORMATION REGARDING ENTERPRISE, GULFTERRA AND THE MERGER. A DEFINITIVE JOINT PROXY STATEMENT/PROSPECTUS WILL BE SENT TO SECURITY HOLDERS OF ENTERPRISE AND GULFTERRA SEEKING THEIR APPROVAL OF THE MERGER TRANSACTIONS. INVESTORS AND SECURITY HOLDERS MAY OBTAIN A FREE COPY OF THE JOINT PROXY STATEMENT/PROSPECTUS (WHEN IT IS AVAILABLE) AND OTHER RELEVANT DOCUMENTS CONTAINING INFORMATION ABOUT ENTERPRISE AND GULFTERRA AT THE SEC'S WEB SITE AT WWW.SEC.GOV. COPIES OF THE DEFINITIVE JOINT PROXY STATEMENT/PROSPECTUS AND THE SEC FILINGS THAT WILL BE INCORPORATED BY REFERENCE IN THE JOINT PROXY STATEMENT/PROSPECTUS MAY ALSO BE OBTAINED FOR FREE BY DIRECTING A REQUEST TO THE RESPECTIVE PARTNERSHIPS.

ENTERPRISE AND GULFTERRA AND THE OFFICERS AND DIRECTORS OF THEIR RESPECTIVE GENERAL PARTNERS MAY BE DEEMED TO BE PARTICIPANTS IN THE SOLICITATION OF PROXIES FROM THEIR SECURITY HOLDERS. INFORMATION ABOUT THESE PERSONS CAN BE FOUND IN ENTERPRISE'S AND GULFTERRA'S RESPECTIVE ANNUAL REPORTS ON FORM 10-K FILED WITH THE SEC AND IN THE SCHEDULE 13D FILED BY DAN L. DUNCAN WITH THE SEC, AS AMENDED ON DECEMBER 18, 2003, AND ADDITIONAL INFORMATION ABOUT SUCH PERSONS MAY BE OBTAINED FROM THE JOINT PROXY STATEMENT/PROSPECTUS WHEN IT BECOMES AVAILABLE.

This filing relates to the restructuring of the board of directors of Enterprise Products GP,LLC, the general partner of Enterprise Products Partners L.P. This filing includes a press release dated January 5, 2004 announcing the restructuring.

1

PRESS RELEASE

[LOGO] Enterprise Products Partners L.P.

P.O. Box 4324 Houston, TX 77210 (713) 880-6500

Enterprise Restructures Board To Achieve Majority of Independent Members

Houston, Texas – (January 5, 2004) — Enterprise Products Partners L.P. (NYSE: EPD) announced today that its general partner has restructured its Board of Directors so that a majority of the general partner's directors are independent. In connection with the restructuring, two inside directors, Randa Duncan Williams and Richard H. Bachmann have agreed to resign from the Board of Directors of its general partner effective immediately.

"This initiative by our general partner enables us to achieve an important independence goal of our board and provides our unitholders with increased transparency with respect to our corporate governance," said O.S. "Dub" Andras, President and Chief Executive Officer of Enterprise. "Consistent with this goal, under the terms of our recently announced merger with GulfTerra, the Board of Directors of the general partner of the combined company will consist of ten directors, six of whom will be independent directors. This is an important step toward achieving that mix of directors."

With the resignations of these two inside directors, the majority of the general partner's remaining five-member Board qualifies as independent directors under the criteria established by the New York Stock Exchange. The two remaining inside directors are Dan L. Duncan, Chairman and co-founder of Enterprise, and O.S. Andras, President and Chief Executive Officer of Enterprise. The three outside directors will continue to be Dr. Ralph S. Cunningham, Lee W. Marshall, Sr., and Richard S. Snell. All three are members of the general partner's Audit and Conflicts Committee, and Dr. Cunningham serves as chairman of the committee.

Bachmann was elected a director of Enterprise's general partner in June 2000 and will continue to serve as Executive Vice President, Chief Legal Officer and Secretary of the general partner. Williams was elected a director of Enterprise's general partner in April 1998, and is currently President and Chief Executive Officer of privately held Enterprise Products Company.

Enterprise Products Partners L.P. is the second largest publicly traded, midstream energy partnership with an enterprise value of over \$7.0 billion. Enterprise is a leading North American provider of midstream energy services to producers and consumers of natural gas and NGLs. The Company's services include natural gas transportation, processing and storage and NGL fractionation (or separation), transportation, storage and import/export terminaling.

This press release contains various forward-looking statements and information that is based on Enterprise's beliefs and those of its general partner, as well as assumptions made by and information currently available to Enterprise. When used in this press release, words such as "anticipate," "project," "expect," "plan," "goal," "forecast," "intend," "could," "believe," "may," and similar expressions and statements regarding the pending merger and related transactions and the plans and objectives of Enterprise for future operations, are intended to identify forward-looking statements.

Although Enterprise and its general partner believe that such expectations reflected in such forward-looking statements are reasonable, neither Enterprise nor its general partner can give assurances that such expectations will prove to be correct. Such statements are subject to a variety of risks,

2

uncertainties and assumptions. If one or more of these risks or uncertainties materialize, or if underlying assumptions prove incorrect, Enterprise's actual results may vary materially from those Enterprise anticipated, estimated, projected or expected. Among the key risk factors that may have a direct bearing on Enterprise's results of operations and financial condition are:

- fluctuations in oil, natural gas and NGL prices and production due to weather and other natural and economic forces;
- · a reduction in demand for its products by the petrochemical, refining or heating industries;
- a decline in the volumes of NGLs delivered by its facilities;
- the failure of its credit risk management efforts to adequately protect it against customer non-payment;
- terrorist attacks aimed at the Company's facilities;
- the failure to complete the proposed merger;
- the failure to successfully integrate the respective business operations upon completion of the merger or its failure to successfully integrate any future acquisitions; and
- · the failure to realize the anticipated cost savings, synergies and other benefits of the proposed merger.

The Company has no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

Contact: Randy Burkhalter, Investor Relations, Enterprise Products Partners L.P. (713) 880-6812, www.epplp.com

###