

Kayne Anderson MLP Investment CO  
Form N-Q  
October 30, 2008

**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**  
**Washington, D.C. 20549**  
**FORM N-Q**  
**QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED**  
**MANAGEMENT INVESTMENT COMPANY**

Investment Company Act file number 811-21593

**KAYNE ANDERSON MLP INVESTMENT COMPANY**

(Exact name of registrant as specified in charter)

717 Texas Avenue, Suite 3100, Houston, Texas

77002

(Address of principal executive offices)

(Zip code)

David Shladovsky, Esq.

KA Fund Advisors, LLC, 1800 Avenue of the Stars, Second Floor, Los Angeles, California 90067

(Name and address of agent for service)

Registrant's telephone number, including area code: (713) 493-2020

Date of fiscal year end: November 30, 2008

Date of reporting period: August 31, 2008

**Item 1: Schedule of Investments****KAYNE ANDERSON MLP INVESTMENT COMPANY  
SCHEDULE OF INVESTMENTS****AUGUST 31, 2008****(amounts in 000 s)****(UNAUDITED)**

<b>Description</b>	<b>No. of Shares/Units</b>	<b>Value</b>
<b>Long-Term Investments - 161.1%</b>		
<b>Equity Investments(a) - 160.2%</b>		
<b>Midstream MLP(b) - 108.8%</b>		
Atlas Pipeline Partners, L.P.	755	\$ 25,765
Copano Energy, L.L.C.	3,429	108,472
Copano Energy, L.L.C. Unregistered, Class E Units(c)(d)	157	4,792
Crosstex Energy, L.P.	2,963	75,470
DCP Midstream Partners, LP	250	6,120
Duncan Energy Partners L.P.	213	3,852
Eagle Rock Energy Partners, L.P.	201	2,857
El Paso Pipeline Partners, L.P.	724	13,372
Enbridge Energy Partners L.P.	1,418	68,851
Energy Transfer Partners, L.P.	3,514	156,375
Enterprise Products Partners L.P.	4,963	146,175
Global Partners LP(e)	1,465	18,210
Hiland Partners, LP	162	7,447
Holly Energy Partners, L.P.	184	6,199
Magellan Midstream Partners, L.P.	3,199	118,937
MarkWest Energy Partners, L.P.	2,190	75,409
Martin Midstream Partners L.P.	352	11,019
ONEOK Partners, L.P.	823	49,429
Plains All American Pipeline, L.P.(f)	3,112	148,275
Regency Energy Partners LP	1,949	48,575
Spectra Energy Partners, LP	241	5,545
Targa Resources Partners LP	445	10,640
TC PipeLines, LP	1,194	40,786
TEPPCO Partners, L.P.	463	14,846
Western Gas Partners LP	722	11,026
Williams Partners L.P.	453	13,745
Williams Pipeline Partners L.P.	303	5,210
		1,197,399
<b>Propane MLP - 7.5%</b>		
Ferrellgas Partners, L.P.	375	7,764
Inergy, L.P.	2,841	74,914
		82,678
<b>Shipping MLP - 2.0%</b>		

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Capital Product Partners L.P.	113	1,763
K-Sea Transportation Partners L.P.	157	4,022
Navios Maritime Partners L.P.	151	1,891
OSG America L.P.	264	3,170
Teekay LNG Partners L.P.	303	6,892
Teekay Offshore Partners L.P.	254	4,085
		21,823
<b>Coal MLP - 6.6%</b>		
Alliance Resource Partners L.P.	145	6,754
Clearwater Natural Resources, LP Unregistered(c)(g)(h)	3,889	46,667
Clearwater Natural Resources, LP Unregistered Deferred Participation Units (c)(g)(h)(i)	41	167
Natural Resource Partners L.P.	176	6,107
Penn Virginia Resource Partners, L.P.	517	12,876
		72,571

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**KAYNE ANDERSON MLP INVESTMENT COMPANY**  
**SCHEDULE OF INVESTMENTS (CONTINUED)**  
**AUGUST 31, 2008**  
**(amounts in 000 s)**  
**(UNAUDITED)**

<u>Description</u>	<b>No. of Shares/Units</b>	<b>Value</b>
<b>Upstream MLP(b) - 9.1%</b>		
Atlas Energy Resources, LLC	1,566	\$ 54,933
BreitBurn Energy Partners L.P.	1,947	32,318
Constellation Energy Partners LLC	717	9,945
Legacy Reserves LP	65	1,306
Pioneer Southwest Energy Partners, L.P.	119	2,221
		100,723
<b>MLP Affiliates(b) - 16.3%</b>		
Enbridge Energy Management, L.L.C.(j)	569	28,755
Kinder Morgan Management, LLC(j)	2,708	150,271
		179,026
<b>General Partner MLP(b) - 7.8%</b>		
Atlas Pipeline Holdings, L.P.	76	2,263
Buckeye GP Holdings L.P.	173	3,286
CNR GP Holdco, LLC Unregistered(c)(g)(h)(k)	N/A	7,069
Energy Transfer Equity, L.P.	208	6,007
Enterprise GP Holdings L.P.	1,239	36,817
Hiland Holdings GP, LP	140	3,120
Inergy Holdings GP	108	3,520
Magellan Midstream Holdings, L.P.	1,087	24,094
		86,176
<b>Other MLP - 2.1%</b>		
Calumet Specialty Products Partners, L.P.	492	7,034
Exterran Partners, L.P.	702	15,576
		22,610
<b>Total Equity Investments (Cost \$1,329,656)</b>		<b>1,763,006</b>

**KAYNE ANDERSON MLP INVESTMENT COMPANY**  
**SCHEDULE OF INVESTMENTS (CONCLUDED)**  
**AUGUST 31, 2008**  
(amounts in 000 s)  
(UNAUDITED)

	Interest Rate	Maturity Date	Principal Amount	Value
<b>Fixed Income Investment - 0.9%</b>				
<b>Coal MLP - 0.9%</b>				
Clearwater Natural Resources, LP(c)(g) (Cost \$10,156)	(1)	12/03/09	\$10,130	10,130
<b>Total Long-Term Investments (Cost \$1,339,812)</b>				1,773,136
<b>Short-Term Investment - 0.9%</b>				
<b>Repurchase Agreement - 0.9%</b>				
Bear, Stearns & Co. Inc. (Agreement dated 8/29/08 to be repurchased at \$10,266), collateralized by \$10,564 in U.S. Treasury Bonds (Cost \$10,264)	1.980%	09/02/08		10,264
<b>Total Investments - 162.0% (Cost \$1,350,076)</b>				1,783,400
<b>Liabilities</b>				
<b>Senior Unsecured Notes</b>				(450,000)
<b>Deferred Taxes</b>				(153,003)
<b>Other Liabilities</b>				(14,254)
<b>Unrealized Depreciation on Interest Rate Swap Contracts</b>				(1,713)
<b>Total Liabilities</b>				(618,970)
<b>Unrealized Appreciation on Interest Rate Swap Contracts</b>				106
<b>Income Tax Receivable</b>				1,202
<b>Other Assets</b>				9,675
<b>Total Liabilities in Excess of Other Assets</b>				(607,987)
<b>Preferred Stock at Redemption Value</b>				(75,000)
<b>Net Assets Applicable to Common Stockholders</b>				\$ 1,100,413

(a) Unless otherwise noted, equity investments are common units/common

shares.

- (b) Includes Limited Liability Companies.
- (c) Fair valued securities, restricted from public sale.
- (d) Security is currently not paying cash distributions but is expected to pay cash distributions or convert to securities which pay cash distributions within the next 12 months.
- (e) Security or a portion thereof is segregated as collateral on interest rate swap contracts.
- (f) The Company believes that it is an affiliate of Plains All American, L.P.
- (g) Clearwater Natural Resources, LP is a privately-held MLP that the Company believes is a controlled affiliate.
- (h) Security is non-income

producing.

- (i) Holders of Clearwater Natural Resources, LP's deferred participation units are entitled to receive a portion of value realized in a sale or initial public offering by certain of the Partnership's common unitholders.
- (j) Distributions are paid in-kind.
- (k) CNR GP Holdco, LLC is the general partner of Clearwater Natural Resources, LP. The Company owns 83.7% of CNR GP Holdco, LLC and believes it is a controlled affiliate.
- (l) Floating rate unsecured working capital term loan. Interest is paid in-kind at a rate of the higher of one year LIBOR or 4.75% plus 900 basis points (13.75% as of August 31, 2008).





From time to time, certain of the Company's investments may be restricted as to resale. For instance, securities that are not registered under the Securities Act of 1933 and cannot, as a result, be offered for public sale in a non-exempt transaction without first being registered. In other cases, certain of the Company's investments have restrictions such as lock up agreements that preclude the Company from offering these securities for public sale. At August 31, 2008 the Company held the following restricted investments:

Investment	Security (1)	Type of Restriction	Number of Units, Principal (in 000's) (\$)	Acquisition Date	Cost Basis	Fair Value	Fair Value Per Unit	Percent of Net Assets	Percent of Total Assets
Clearwater Natural Resources, L.P.	Common Units	(2)	3,889	(3)	\$ 72,860	\$ 46,667	\$12.00	4.2%	2.6%
Clearwater Natural Resources, L.P.	Term Loan	(2)	\$10,130	(4)	10,156	10,130	n/a	0.9	0.5
Clearwater Natural Resources, L.P.	Deferred Participation Units	(2)	41	3/5/2008		167	4.08	0.0	0.0
CNR GP Holdco, LLC	Interests	(5)	n/a	3/5/2008	1,083	7,069	7,069	0.7	0.4
Copano Energy, L.L.C.	Class E Units	(6)	157	10/19/07	5,000	4,792	30.45	0.5	0.3
					\$ 89,099	\$ 68,825		6.3%	3.8%

- (1) Restricted security that represent Level 3 under SFAS No. 157. Security is valued using inputs reflecting the Company's own assumptions.
- (2) Security of a privately-held MLP.
- (3) The Company purchased common units

on August 1,  
2005 and  
October 2,  
2006.

(4) The Company purchased term loans on January 11, 2008; February 28, 2008; May 5, 2008; July 8, 2008 and August 6, 2008.

(5) Security of a private company.

(6) Unregistered security of a publicly-traded company.

At August 31, 2008, the cost basis of investments for Federal income tax purposes was \$1,246,518. At August 31, 2008, gross unrealized appreciation and depreciation of investments for Federal income tax purposes were as follows:

Gross unrealized appreciation	\$ 628,887
Gross unrealized depreciation	(92,006)
Net unrealized appreciation	\$ 536,881

The identified cost basis for federal tax purposes is estimated based on information available from the Company's portfolio companies. In some cases, this information is very limited. Accordingly, the actual cost basis may prove higher or lower than the estimated cost basis included in this footnote.

Securities valuation policies and other investment related disclosures are hereby incorporated by reference to the Company's semi-annual report previously filed with the Securities and Exchange Commission on Form N-CSR on August 7, 2008, with a file number 811-21593.

Other information regarding the Company is available in the Company's most recent annual report. This information is also available on the Company's website at <http://www.kaynefunds.com>; or on the website of the Securities and Exchange Commission, <http://www.sec.gov>.

SFAS No. 157. In September 2006, the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards (SFAS) No. 157, Fair Value Measurements. This standard establishes a single authoritative definition of fair value, sets out a framework for measuring fair value and requires additional disclosures about fair value measurements. SFAS No. 157 applies to fair value measurements already required or permitted by existing standards. SFAS No. 157 is effective for financial statements issued for fiscal years beginning after November 15, 2007 and interim periods within those fiscal years. The changes to current generally accepted accounting principles from the application of this Statement relate to the definition of fair value, the methods used to measure fair value, and the expanded disclosures about fair value measurements.

As of December 1, 2007, the Company adopted SFAS No. 157. The Company has performed an analysis of all existing investments and derivative instruments to determine the significance and character of all inputs to their fair value determination. Based on this assessment, the adoption of this standard did not have any material effect on the Company's net asset value. However, the adoption of the standard does require the Company to provide additional disclosures about the inputs used to develop the measurements and the effect of certain measurements on changes in net assets for the reportable periods as contained in the Company's periodic filings.

SFAS No. 157 establishes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into the following three broad categories.

*Level 1* Quoted unadjusted prices for identical instruments in active markets to which the Company has access at the date of measurement.

*Level 2* Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets. Level 2 inputs are those in markets for which there are few transactions, the prices are not current, little public information exists or instances where prices vary substantially over time or among brokered market makers.

*Level 3* Model derived valuations in which one or more significant inputs or significant value drivers are unobservable. Unobservable inputs are those inputs that reflect the Company's own assumptions that market participants would use to price the asset or liability based on the best available information.

The following table presents our assets and liabilities measured at fair value on a recurring basis at August 31, 2008.

		<b>Quoted Prices in Active Markets (Level 1)</b>	<b>Prices with Other Observable Inputs (Level 2)</b>	<b>Unobservable Inputs (Level 3)</b>
<b>Assets at Fair Value</b>	<b>Total</b>			
Long-Term Investments	\$ 1,773,136	\$1,704,311		\$68,825
Unrealized appreciation on interest rate swaps	106		\$106	
<b>Total</b>	<b>\$ 1,773,242</b>	<b>\$1,704,311</b>	<b>\$106</b>	<b>\$68,825</b>

**Liabilities at Fair Value**

Unrealized depreciation on interest rate swaps	1,713	\$1,713
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The following table presents our assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) at November 30, 2007 and at August 31, 2008.

		<b>Long-Term Investments</b>
<b>Assets at Fair Value Using Unobservable Inputs (Level 3)</b>		
Balance November 30, 2007		\$195,919
Transfers out of Level 3		(151,962)
Realized gains/(losses)		
Unrealized gains, net		13,631
Purchases, issuances or settlements		11,237
Balance August 31, 2008		\$68,825

The \$13,631 of unrealized gains, presented in the table above relate to investments that are still held at August 31, 2008.

The Company did not have any liabilities that were measured at fair value on a recurring basis using significant unobservable inputs (Level 3) at November 30, 2007 and at August 31, 2008.

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**Item 2: Controls and Procedures**

(a) As of a date within 90 days from the filing date of this report, the principal executive officer and principal financial officer concluded that the registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940 (the Act)), were effective based on their evaluation of the disclosure controls and procedures required by Rule 30a-3(b) under the Act and Rules 13a-15(b) or 15d-15(b) under the Securities and Exchange Act of 1934.

(b) There were no changes in the registrant's internal control over financial reporting (as defined in Rule 30a-3(d) under the Act) that occurred during the registrant's last fiscal quarter that have materially affected, or are reasonably likely to materially affect, the registrant's internal control over financial reporting.

**Item 3: Exhibits**

1. The certifications of the registrant as required by Rule 30a-2(a) under the Act are exhibits to this report.
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**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

KAYNE ANDERSON MLP INVESTMENT  
COMPANY

/s/ Kevin S. McCarthy  
Name: Kevin S. McCarthy  
Title: Chairman, President and Chief  
Executive Officer  
Date: October 30, 2008

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ Kevin S. McCarthy  
Name: Kevin S. McCarthy  
Title: Chairman, President and Chief  
Executive Officer  
Date: October 30, 2008

/s/ Terry A. Hart  
Name: Terry A. Hart  
Title: Chief Financial Officer and Treasurer  
Date: October 30, 2008