UNITED STATES DEPARTMENT OF AGRICULTURE

1930-220th St. SE, Ste. 102
Bothell, WA 98021
Phone: (425) 487-6009
Fax: (425) 487-2775
E-mail: fmmaseattle@fmmaseattle.com

Agricultural Marketing Service
Dairy Programs

FEDERAL MILK ORDERS 124 & 131

4835 E. Cactus Rd., Suite 365
Scottsdale, AZ 85254
Phone: (602) 547-2909
Fax: (602) 547-2906
E-mail: ma@fmma.net

COMPONENT TESTS OF CLASS I MILK AND FLUID MILK PRODUCTS

PACIFIC NORTHWEST ORDER: 2008 AND 2013

Staff Paper 14-02

John Mykrantz

September 2014

COMPONENT TESTS OF CLASS I MILK AND FLUID MILK PRODUCTS

PACIFIC NORTHWEST ORDER: 2008 AND 2013

John Mykrantz

Abstract

Milk component tests have risen significantly in the Pacific Northwest in recent years. These increases are primarily associated with milk produced in Eastern Oregon and Washington and to a lesser degree in the western regions of the two states. Another way to look at these increases in the component tests of milk is to look at how the components are used. It is well known that milk components are associated with the yield of many manufactured dairy products. In contrast, components do not affect the yield of most fluid products but are related to their nutrient profile. This study examines market-wide component tests of milk used in Class I fluid milk products in 2008 and 2013. Nonfat components are converted to a skim basis to make proper comparisons.

The component tests of producer milk classified as Class I milk and of route dispositions, both conventional and organic products, have increased like all producer milk, but to a lesser degree. Changes in tests of Class I milk and route dispositions were roughly the same for butterfat and other solids but route dispositions showed a slightly lower increase in protein tests. Between 2008 and 2013, the protein test of conventional milk increased three times more than that of organic milk but organic milk still tested higher than conventional milk by 0.14 percentage points in 2013. Lastly, average component tests in the Pacific Northwest, both conventional and organic, consistently exceed Federal order pricing formula assumptions/standards.

TABLE OF CONTENTS

COMPONENT TESTS OF CLASS I MILK AND FLUID MILK PRODUCTS PACIFIC NORTHWEST ORDER: 2008 AND 2013

John Mykrantz [1]

I. Introduction

Milk component tests have risen significantly in the Pacific Northwest in recent years. [2] These increases are primarily associated with milk produced in Eastern Oregon and Washington and to a lesser degree in the western regions of the two states. Another way to look at these increases in the component tests of milk is to look at how the components are used. Federal orders use a classification system to categorize how milk is used with Class I representing fluid uses (beverage milk) and Class II/III/IV primarily representing manufacturing uses. It is well known that milk components are associated with the yield of many manufactured dairy products. In contrast, components do not affect the yield of most fluid products but are related to their nutrient profile. This study examines the component test of milk used in Class I fluid milk products and changes in tests that have occurred over the past several years on a market-wide basis.

II. Data

Data of handlers fully regulated under the order for 2008 and 2013 are included in this analysis. Each month, handlers submit records to the Market Administrator's Office of deliveries of milk and components by producer and destination. The components include butterfat, protein and other solids. Other solids are comprised of lactose and minerals. Protein and other solids comprise nonfat solids. At times, milk of dairy farmers delivered to fully regulated distributing plants may not fully meet the definition of producer milk. [3] Milk that does not qualify as producer milk is included in parts of this analysis. Deliveries of milk and components are summarized by handlers in reports of receipts and utilizations. Utilizations of milk include Class I route disposition for both conventional and organic products. [4] Utilizations and route dispositions include pounds of milk and butterfat. Basic characteristics of the data are shown in Appendix A, Table A-1.

---

[1] John Mykrantz is an Agricultural Economist with the Market Administrator's Office, Bothell, Washington.
Special thanks are due Bill Wise and Lisa Wyatt for their comments on preliminary drafts.

[2] Analysis of Changes in Component Tests in Individual Herd Milk at the Farm Level: Pacific Northwest Order: 2000-2012, Staff Paper 13-01, December 2013 (Link to study).

[3] Milk qualifies to be producer milk based on criteria described in 1124.12 and .13.

[4] Route disposition is defined in 1124.3 as: a delivery to a retail or wholesale outlet (except a plant), either directly or through any distribution facility (including disposition from a plant store, vendor, or vending machine) of a fluid milk product in consumer-type packages or dispenser units classified as Class I milk.

III. Methodology

There are two different ways to look at the component tests of Class I products: 1) the test of producer milk classified as Class I (Class I Test); and 2) the imputed test of Class I route dispositions (Routes Test). The first method (Method 1), by definition, only looks at producer milk which is classified as Class I through the allocation process. The allocation process assumes that the components follow the skim and producer milk has a priority on Class I uses while other source milk receipts are down-allocated. Other source milk does not qualify as producer milk. The first method is probably easier but may be slightly less accurate. The second method (Method 2) looks more closely at the test of all milk receipts, producer milk and raw other source milk, arriving at plants and segregates organic milk from conventional milk. By including other source milk and segregating organic milk from conventional milk, a more accurate understanding of the component test of milk being used in Class I products can be achieved. [5] The segregation of organic and conventional milk is based on the fact that organic milk can be used in conventional labeled milk products but conventional milk cannot be used in organic labeled products. And while the former is possible, the price typically paid to the dairy farmer for organic milk would tend to discourage this. Method 2 requires more mathematical logistics but is relatively more accurate.

The butterfat test of farm milk is different than that of Class I milk. As a category, Class I fluid milk products have a lower butterfat test than the milk arriving at a plant. The butterfat in excess of Class I needs, in the form of cream, is used in other dairy products (e.g. whipping cream, ice cream, butter, etc.). When making comparisons across different aggregations of milk with differing butterfat contents, it is appropriate to look at protein, other solids, and nonfat solids tests on a skim basis. It is assumed that the nonfat components of protein and other solids follow the skim. Adjusting nonfat component tests to a skim basis is also helpful in making proper comparisons as the butterfat test of raw milk has a more pronounced seasonal variation than the nonfat components. In addition, seasonal and monthly variation does occur in the butterfat test of Class I milk products and the product profile of organic fluid milk products is different than that of conventional fluid milk. Lastly, since Federal orders use fixed, standard test levels when calculating Class skim and component prices, comparisons can be made between these assumptions and actual component skim tests. The assumptions, sometimes referred to as standards, for Class I skim are that it tests 3.1% protein and 5.9% other solids, or 9% nonfat solids (3.1% + 5.9% = 9%).

Skim tests are calculated as the actual component test (X.XX) divided by the result of 100 minus the butterfat test (X.XX). For example, if milk tests 3.5% butterfat and 2.9915% protein, then the skim test of the protein is 3.1:

$$Protein\ Skim\ Test\ = \frac{2.9915}{(100 - 3.5)} = \frac{2.9915}{96.5} = 3.1$$

[5] This analysis uses market average component tests and does not imply that milk purchased under a specific label whether conventional or organic has the characteristics described.

IV. Results

For 2013, milk of producers associated with the Pacific Northwest Order tested 3.88% butterfat, 3.22% protein, 5.73% other solids, and 8.96% nonfat solids. As a reminder, protein plus other solids equals nonfat solids. When adjusted to a skim basis, the skim milk tested 3.35% protein, 5.97% other solids, and 9.32 nonfat solids. All subsequent references to tests reflect protein/other solids/nonfat solids on a skim basis. (See the following table and Appendix B, Table B-1.) When compared to 2008, tests in 2013 were +0.21 percentage points higher for butterfat, +0.14 for protein, +0.05 other solids, and +0.19 nonfat solids. Class I producer milk (Method 1) tested about 1.83% butterfat, 3.30% protein, 5.96% other solids, and 9.26% nonfat solids in 2013. Skim component tests for all producer milk and Class I producer milk were roughly the same in 2008. Between 2008 and 2013, Class I milk rose +0.06 percentage points butterfat, +0.10 protein, and +0.04 other solids. By 2013, Class I skim protein tests were 0.05 percentage points lower than all milk.

Weighted Average Component Test of Producer Milk:
Classified as Class I and All Producer Milk for Pool Distributing Plants
Pacific Northwest Order: 2008 & 2013

	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/ 2/	
Year	Class I	All Milk	Class I	All Milk	Class I	All Milk	Class I	All Milk
2008	1.77%	3.67%	3.20%	3.21%	5.92%	5.92%	9.12%	9.13%
Class I - All Milk		-1.90		-0.01		0.01		-0.01
2013	1.83%	3.88%	3.30%	3.35%	5.96%	5.97%	9.26%	9.32%
Class I - All Milk		-2.05		-0.05		0.00		-0.05
Change (2013 - 2008)	0.06	0.21	0.10	0.14	0.04	0.05	0.14	0.19

1/ Skim test.
2/ Nonfat solids equals protein plus other solids.

A comparison of changes in the component test of route dispositions (Method 2) compared to Class I (Method 1) shows that butterfat and other solids tests have increased comparably. (See the following table and Appendix B, Table B-2.) Between 2008 and 2013, however, Class I producer milk skim tests increased by +0.10 percentage points protein while route dispositions only increased by +0.09 protein. As mentioned previously, the increase in protein of +0.09 is probably more accurate than the increase associated with Class I producer milk. And while Method 1 is less accurate, it is not appreciably less accurate.

Weighted Average Component Test of Milk:
Classified as Class I and Route Dispositions for Pool Distributing Plants
Pacific Northwest Order: 2008 & 2013

	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/ 2/	
Year	Class I	Routes	Class I	Routes	Class I	Routes	Class I	Routes
2008	1.77%	1.73%	3.20%	3.20%	5.92%	5.93%	9.12%	9.13%
Class I - Routes		0.04		0.00		0.00		-0.01
2013	1.83%	1.80%	3.30%	3.29%	5.96%	5.96%	9.26%	9.26%
Class I - Routes		0.03		0.01		0.00		0.00
Change (2013 - 2008)	0.06	0.07	0.10	0.09	0.04	0.04	0.14	0.13

1/ Skim test.
2/ Nonfat solids equals protein plus other solids.

The differences illustrated by Method 2 can be further broken down into differences associated with conventional milk and organic milk. (See the following table and Appendix B, Table B-3.) Changes in the component test of route dispositions of conventional labeled and organic labeled shows something different than the previous comparisons. As a reminder, the following results should be understood as market averages and do not imply that milk purchased under a specific label, whether conventional or organic, has the characteristics described. Route dispositions of organic milk also have a different profile of component tests than conventional milk. These differences may be attributable to: 1) the relative prevalence of whole (3.25% BF), reduced fat (2% BF), low fat (1% BF), skim (0.06% BF), etc., in routes for organic vs conventional products; 2) the relative prevalence of full fat milk (farm test); and 3) the prevalence of different breeds of cows supplying organic milk vs conventional milk used in Class I route dispositions.

Butterfat tests for conventional and organic milk have both increased, but the aggregate test of organic products increased +0.13 percentage points butterfat while conventional products only increased +0.06. Conversely, skim protein tests increased more for conventional products (+0.10 percentage points) than for organic (+0.03). Skim other solids tests increased by roughly the same amount for conventional and organic products (+0.03 - +0.04).

Weighted Average Component Test of Milk:
Classified as Class I and Route Dispositions for Pool Distributing Plants
Pacific Northwest Order: 2008 & 2013

	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/ 2/	
Year	Class I	Routes	Class I	Routes	Class I	Routes	Class I	Routes
2008	1.77%	1.73%	3.20%	3.20%	5.92%	5.93%	9.12%	9.13%
Class I - Routes		0.04		0.00		0.00		-0.01
2013	1.83%	1.80%	3.30%	3.29%	5.96%	5.96%	9.26%	9.26%
Class I - Routes		0.03		0.01		0.00		0.00
Change (2013 - 2008)	0.06	0.07	0.10	0.09	0.04	0.04	0.14	0.13

1/ Skim test.
2/ Nonfat solids equals protein plus other solids.

One final comparison can be made between the component tests assumed in Federal order prices and the skim component tests of route dispositions for protein and other solids. (See the following table and Appendix B, Table B-3.) The milk test assumptions used by Federal order pricing formulas are designed to create a reliable and consistent frame of reference for understanding the value of milk in the context of the ever-changing supply and demand of milk in the market amongst its many uses. The skim test assumptions of 3.1% protein and 5.9% other solids can be understood to reflect season lows of market averages. For the Pacific Northwest, the skim protein test of milk was higher than the assumptions of Federal orders in all months of 2013 and 2008 with only one exception in July 2008. Between 2008 and 2013, the margin by which skim protein tests exceeded Federal order assumptions increased by about 0.10 percentage points on average for Class I milk, total route dispositions and conventional route dispositions. Organic route dispositions increased by +0.03 percentage points skim protein over the same period. The skim other solids test of milk equaled or exceeded the Federal order assumption in all months with the exception of organic routes in September and October 2008, and October and November 2013. The margin by which skim other solids tests exceed Federal order assumptions increased by about 0.03 percentage points for Class I milk, and total, conventional and organic route dispositions.

Difference in Skim Component Tests for Pool Distributing Plants
Aggregation Less FO Pricing Assumption 1/
Pacific Northwest Order: 2008 & 2013

Year/Aggregation	Protein	Other Solids	Nonfat Solids 2/
2008			
Class I Milk	0.10	0.02	0.12
Route Dispositions	0.10	0.03	0.13
Conventional	0.09	0.03	0.12
Organic	0.30	0.02	0.32
2013			
Class I Milk	0.20	0.06	0.26
Route Dispositions	0.19	0.06	0.26
Conventional	0.19	0.06	0.25
Organic	0.33	0.05	0.38
Change 2013 - 2008			
Class I Milk	0.10	0.04	0.14
Route Dispositions	0.09	0.04	0.13
Conventional	0.10	0.04	0.14
Organic	0.03	0.03	0.06

1/ The assumption of the Class I skim price is that skim tests 9.0% nonfat solids, or 3.1% protein and 5.9% other solids.

2/ Nonfat solids equals protein plus other solids.

V. Summary

In recent years, milk component tests for butterfat, protein and other solids have risen in the Pacific Northwest. The component tests of producer milk classified as Class I milk and of route dispositions, both conventional and organic products, have increased as well, but to a lesser degree. Changes in tests of Class I milk and route dispositions were roughly the same for butterfat and other solids but route dispositions showed a slightly smaller increase in skim protein tests. Between 2008 and 2013, the skim protein test of conventional milk increased three times more than that of organic milk but organic milk tested higher than conventional milk by 0.14 percentage points. Lastly, average component tests in the Pacific Northwest, both conventional and organic, exceed Federal order pricing formula assumptions consistently.

APPENDICES

Appendix **Page Number**

Appendix A
Table A-1: Basic Characteristics of the Dataset

Pacific Northwest Order: 2008 & 2013

Category	2008	2013	Change
All Producer Milk			
Pounds (Million)	6,881.7	8,239.3	1,357.6
Butterfat %	3.674%	3.884%	0.210
Protein % 1/	3.212%	3.352%	0.140
Other Solids % 1/	5.916%	5.966%	0.049
Nonfat Solids % 1/ 2/	9.128%	9.318%	0.190
Class I			
Pounds (Million)	2,276.1	2,120.4	-155.7
Percent of Producer Milk	33.1%	25.7%	-7.3
Butterfat %	1.773%	1.834%	0.061
Protein % 1/	3.196%	3.300%	0.104
Other Solids % 1/	5.925%	5.964%	0.039
Nonfat Solids % 1/ 2/	9.120%	9.263%	0.143
Class II/III/IV			
Pounds (Million)	4,605.6	6,118.9	1,513.3
Percent of Producer Milk	66.9%	74.3%	7.3
Butterfat %	4.613%	4.594%	-0.019
Protein % 1/	3.220%	3.370%	0.150
Other Solids % 1/	5.912%	5.966%	0.054
Nonfat Solids % 1/ 2/	9.132%	9.337%	0.204
All Milk (Producer and Other Source)			
Butterfat %	3.671%	3.882%	0.211
Protein % 1/	3.209%	3.350%	0.141
Other Solids % 1/	5.917%	5.966%	0.050
Nonfat Solids % 1/ 2/	9.125%	9.316%	0.191
Route Dispositions			
Total, Pool Distributing Plants			
Pounds (Million)	2,253.1	2,099.9	-153.2
Butterfat %	1.73%	1.80%	0.068
Protein % 1/	3.20%	3.29%	0.095
Other Solids % 1/	5.93%	5.96%	0.038
Nonfat Solids % 1/ 2/	9.13%	9.26%	0.133
Conventional			
Pounds (Million)	2,140.6	1,976.1	-164.5
Percent of Total Routes	95.0%	94.1%	-0.9
Butterfat %	1.74%	1.80%	0.064
Protein % 1/	3.19%	3.29%	0.099
Other Solids % 1/	5.93%	5.96%	0.038
Nonfat Solids % 1/ 2/	9.12%	9.25%	0.137
Organic			
Pounds (Million)	113	124	11.3
Percent of Total Routes	5.0%	5.9%	0.9
Butterfat %	1.67%	1.81%	0.134
Protein % 1/	3.40%	3.43%	0.031
Other Solids % 1/	5.92%	5.95%	0.029
Nonfat Solids % 1/ 2/	9.32%	9.38%	0.061

1/ Skim test.

2/ Nonfat solids equals protein plus other solids.

Appendix B

Table B-1: Component Test of Producer Milk Classified as Class I and All Producer Milk for Pool Distributing Plants

Pacific Northwest Order: 2008 & 2013

2008	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/		Class I Test - Assumption 2/		
Month	Class I	All Milk	Class I	All Milk	Class I	All Milk	Class I	All Milk	Protein	Other Solids	Nonfat Solids
Jan	1.74%	3.81%	3.24%	3.26%	5.96%	5.96%	9.20%	9.21%	0.14	0.06	0.20
Feb	1.74%	3.74%	3.21%	3.22%	5.92%	5.91%	9.13%	9.13%	0.11	0.02	0.13
Mar	1.77%	3.71%	3.21%	3.23%	5.90%	5.89%	9.11%	9.12%	0.11	0.00	0.11
Apr	1.70%	3.70%	3.20%	3.22%	5.94%	5.93%	9.13%	9.15%	0.10	0.04	0.13
May	1.73%	3.58%	3.13%	3.15%	5.94%	5.93%	9.08%	9.08%	0.03	0.04	0.08
Jun	1.76%	3.55%	3.11%	3.12%	5.93%	5.92%	9.04%	9.05%	0.01	0.03	0.04
Jul	1.80%	3.56%	3.06%	3.09%	5.93%	5.93%	9.00%	9.02%	-0.04	0.03	0.00
Aug	1.80%	3.58%	3.11%	3.14%	5.94%	5.93%	9.05%	9.07%	0.01	0.04	0.05
Sep	1.73%	3.63%	3.18%	3.21%	5.92%	5.91%	9.10%	9.12%	0.08	0.02	0.10
Oct	1.81%	3.70%	3.28%	3.28%	5.90%	5.89%	9.18%	9.17%	0.18	0.00	0.18
Nov	1.85%	3.76%	3.29%	3.30%	5.90%	5.89%	9.19%	9.20%	0.19	0.00	0.19
Dec	1.85%	3.78%	3.30%	3.30%	5.92%	5.91%	9.21%	9.21%	0.20	0.02	0.21
2008 Avg.	1.77%	3.67%	3.20%	3.21%	5.92%	5.92%	9.12%	9.13%	0.10	0.02	0.12
All milk - Class I		1.90		0.01		-0.01		0.01			

2013	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/		Class I Test - Assumption 2/		
Month	Class I	All Milk	Class I	All Milk	Class I	All Milk	Class I	All Milk	Protein	Other Solids	Nonfat Solids
Jan	1.76%	4.01%	3.37%	3.42%	5.96%	5.96%	9.33%	9.39%	0.27	0.06	0.33
Feb	1.75%	3.92%	3.31%	3.37%	5.97%	5.98%	9.28%	9.34%	0.21	0.07	0.28
Mar	1.78%	3.92%	3.31%	3.35%	5.97%	5.98%	9.28%	9.33%	0.21	0.07	0.28
Apr	1.76%	3.85%	3.29%	3.33%	5.97%	5.97%	9.26%	9.30%	0.19	0.07	0.26
May	1.76%	3.77%	3.23%	3.27%	5.99%	6.00%	9.22%	9.27%	0.13	0.09	0.22
Jun	1.87%	3.76%	3.21%	3.26%	5.97%	5.97%	9.18%	9.23%	0.11	0.07	0.18
Jul	1.84%	3.72%	3.16%	3.21%	6.00%	5.99%	9.15%	9.20%	0.06	0.10	0.15
Aug	1.86%	3.74%	3.19%	3.24%	5.97%	5.97%	9.15%	9.21%	0.09	0.07	0.15
Sep	1.85%	3.82%	3.25%	3.32%	5.95%	5.95%	9.20%	9.27%	0.15	0.05	0.20
Oct	1.89%	3.98%	3.40%	3.47%	5.94%	5.94%	9.34%	9.41%	0.30	0.04	0.34
Nov	1.98%	4.03%	3.43%	3.49%	5.93%	5.93%	9.37%	9.42%	0.33	0.03	0.37
Dec	1.90%	4.08%	3.43%	3.49%	5.95%	5.94%	9.38%	9.44%	0.33	0.05	0.38
2013 Avg.	1.83%	3.88%	3.30%	3.35%	5.96%	5.97%	9.26%	9.32%	0.20	0.06	0.26
All milk - Class I		2.05		0.05		0.00		0.05			
Change (2013 - 2008)	0.06	0.21	0.10	0.14	0.04	0.05	0.14	0.19	0.10	0.04	0.14

1/ Skim test of component: Actual test/(1-Butterfat test). Nonfat Solids equals protein plus other solids.

2/ The assumption of the Class I skim price is that the skim tests 3.1% protein and 5.9% other solids, or 9% nonfat solids.

Note: Coloration is based on Microsoft Excel's Color Scale Conditional Formatting and serves merely to highlight relative test levels.

Appendix B

Table B-2: Component Test of Producer Milk Classified as Class I and Imputed Tests of Route Dispositions for Pool Distributing Plants

Pacific Northwest Order: 2008 & 2013

2008	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/		Routes - Assumption 2/		
Month	Class I	Routes	Class I	Routes	Class I	Routes	Class I	Routes	Protein	Other Solids	Nonfat Solids
Jan	1.74%	1.70%	3.24%	3.25%	5.96%	5.97%	9.20%	9.21%	0.15	0.07	0.21
Feb	1.74%	1.69%	3.21%	3.21%	5.92%	5.92%	9.13%	9.14%	0.11	0.02	0.14
Mar	1.77%	1.69%	3.21%	3.21%	5.90%	5.90%	9.11%	9.11%	0.11	0.00	0.11
Apr	1.70%	1.68%	3.20%	3.20%	5.94%	5.94%	9.13%	9.14%	0.10	0.04	0.14
May	1.73%	1.69%	3.13%	3.14%	5.94%	5.94%	9.08%	9.08%	0.04	0.04	0.08
Jun	1.76%	1.73%	3.11%	3.11%	5.93%	5.93%	9.04%	9.05%	0.01	0.03	0.05
Jul	1.80%	1.76%	3.06%	3.07%	5.93%	5.94%	9.00%	9.00%	-0.03	0.04	0.00
Aug	1.80%	1.75%	3.11%	3.12%	5.94%	5.94%	9.05%	9.05%	0.02	0.04	0.05
Sep	1.73%	1.69%	3.18%	3.19%	5.92%	5.92%	9.10%	9.11%	0.09	0.02	0.11
Oct	1.81%	1.75%	3.28%	3.29%	5.90%	5.90%	9.18%	9.19%	0.19	0.00	0.19
Nov	1.85%	1.83%	3.29%	3.29%	5.90%	5.90%	9.19%	9.20%	0.19	0.00	0.20
Dec	1.85%	1.84%	3.30%	3.30%	5.92%	5.92%	9.21%	9.22%	0.20	0.02	0.22
2008 Avg.	1.77%	1.73%	3.20%	3.20%	5.92%	5.93%	9.12%	9.13%	0.10	0.03	0.13
Class I - Routes		-0.04		0.00		0.00		0.01			

2013	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/		Routes - Assumption 2/		
Month	Class I	Routes	Class I	Routes	Class I	Routes	Class I	Routes	Protein	Other Solids	Nonfat Solids
Jan	1.76%	1.73%	3.37%	3.36%	5.96%	5.96%	9.33%	9.33%	0.26	0.06	0.33
Feb	1.75%	1.73%	3.31%	3.30%	5.97%	5.97%	9.28%	9.27%	0.20	0.07	0.27
Mar	1.78%	1.74%	3.31%	3.30%	5.97%	5.97%	9.28%	9.27%	0.20	0.07	0.27
Apr	1.76%	1.74%	3.29%	3.28%	5.97%	5.97%	9.26%	9.26%	0.18	0.07	0.26
May	1.76%	1.75%	3.23%	3.23%	5.99%	5.99%	9.22%	9.22%	0.13	0.09	0.22
Jun	1.87%	1.80%	3.21%	3.20%	5.97%	5.97%	9.18%	9.17%	0.10	0.07	0.17
Jul	1.84%	1.82%	3.16%	3.15%	6.00%	6.00%	9.15%	9.15%	0.05	0.10	0.15
Aug	1.86%	1.83%	3.19%	3.18%	5.97%	5.96%	9.15%	9.15%	0.08	0.06	0.15
Sep	1.85%	1.78%	3.25%	3.25%	5.95%	5.95%	9.20%	9.20%	0.15	0.05	0.20
Oct	1.89%	1.86%	3.40%	3.40%	5.94%	5.94%	9.34%	9.34%	0.30	0.04	0.34
Nov	1.98%	1.91%	3.43%	3.43%	5.93%	5.93%	9.37%	9.37%	0.33	0.03	0.37
Dec	1.90%	1.94%	3.43%	3.43%	5.95%	5.95%	9.38%	9.38%	0.33	0.05	0.38
2013 Avg.	1.83%	1.80%	3.30%	3.29%	5.96%	5.96%	9.26%	9.26%	0.19	0.06	0.26
Class I - Routes		-0.03		-0.01		0.00		0.00			
Change (2013 - 2008)											
	0.06	0.07	0.10	0.09	0.04	0.04	0.14	0.13	0.09	0.04	0.13

1/ Skim test of component: Actual test/(1-Butterfat test). Nonfat Solids equals protein plus other solids.

2/ The assumption of the Class I skim price is that the skim tests 3.1% protein and 5.9% other solids, or 9% nonfat solids.

Note: Coloration is based on Microsoft Excel's Color Scale Conditional Formatting and serves merely to highlight relative test levels.

Appendix B
Table B-3: Component Test of Imputed Tests of Conventional and Organic Route Dispositions for Pool Distributing Plants
Pacific Northwest Order: 2008 & 2013

2008	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/		Conventional - Assumption 2/			Organic - Assumption 2/		
Month	Conv.	Organic	Conv.	Organic	Conv.	Organic	Conv.	Organic	Protein	Other Solids	Nonfat Solids	Protein	Other Solids	Nonfat Solids
Jan	1.71%	1.57%	3.24%	3.46%	5.96%	5.97%	9.20%	9.43%	0.14	0.06	0.20	0.36	0.07	0.43
Feb	1.70%	1.55%	3.20%	3.42%	5.92%	5.93%	9.12%	9.35%	0.10	0.02	0.12	0.32	0.03	0.35
Mar	1.70%	1.59%	3.20%	3.40%	5.90%	5.91%	9.10%	9.31%	0.10	0.00	0.10	0.30	0.01	0.31
Apr	1.68%	1.62%	3.19%	3.41%	5.94%	5.93%	9.13%	9.34%	0.09	0.04	0.13	0.31	0.03	0.34
May	1.68%	1.86%	3.13%	3.34%	5.94%	5.94%	9.07%	9.28%	0.03	0.04	0.07	0.24	0.04	0.28
Jun	1.73%	1.70%	3.11%	3.25%	5.93%	5.93%	9.04%	9.18%	0.01	0.03	0.04	0.15	0.03	0.18
Jul	1.77%	1.69%	3.06%	3.23%	5.94%	5.92%	9.00%	9.15%	-0.04	0.04	0.00	0.13	0.02	0.15
Aug	1.75%	1.71%	3.11%	3.29%	5.94%	5.93%	9.05%	9.22%	0.01	0.04	0.05	0.19	0.03	0.22
Sep	1.69%	1.69%	3.18%	3.42%	5.92%	5.87%	9.10%	9.29%	0.08	0.02	0.10	0.32	-0.03	0.29
Oct	1.75%	1.67%	3.28%	3.51%	5.90%	5.89%	9.18%	9.41%	0.18	0.00	0.18	0.41	-0.01	0.41
Nov	1.83%	1.79%	3.28%	3.50%	5.90%	5.91%	9.19%	9.41%	0.18	0.00	0.19	0.40	0.01	0.41
Dec	1.85%	1.67%	3.30%	3.49%	5.92%	5.92%	9.21%	9.41%	0.20	0.02	0.21	0.39	0.02	0.41
2008 Avg.	1.74%	1.67%	3.19%	3.40%	5.93%	5.92%	9.12%	9.32%	0.09	0.03	0.12	0.30	0.02	0.32
Conventional - Organic		-0.06		0.21		-0.01		0.20						

2013	Butterfat		Protein 1/		Other Solids 1/		Nonfat Solids 1/		Conventional - Assumption 2/			Organic - Assumption 2/		
Month	Conv.	Organic	Conv.	Organic	Conv.	Organic	Conv.	Organic	Protein	Other Solids	Nonfat Solids	Protein	Other Solids	Nonfat Solids
Jan	1.73%	1.80%	3.36%	3.45%	5.96%	5.98%	9.32%	9.42%	0.26	0.06	0.32	0.35	0.08	0.42
Feb	1.73%	1.75%	3.30%	3.39%	5.97%	5.98%	9.27%	9.37%	0.20	0.07	0.27	0.29	0.08	0.37
Mar	1.74%	1.84%	3.29%	3.41%	5.97%	5.97%	9.26%	9.38%	0.19	0.07	0.26	0.31	0.07	0.38
Apr	1.73%	1.78%	3.28%	3.39%	5.97%	5.97%	9.25%	9.36%	0.18	0.07	0.25	0.29	0.07	0.36
May	1.74%	1.88%	3.22%	3.36%	5.99%	5.99%	9.21%	9.35%	0.12	0.09	0.21	0.26	0.09	0.35
Jun	1.81%	1.77%	3.19%	3.32%	5.97%	5.94%	9.17%	9.26%	0.09	0.07	0.17	0.22	0.04	0.26
Jul	1.82%	1.81%	3.15%	3.26%	6.00%	5.95%	9.14%	9.21%	0.05	0.10	0.14	0.16	0.05	0.21
Aug	1.82%	1.87%	3.18%	3.33%	5.97%	5.94%	9.14%	9.27%	0.08	0.07	0.14	0.23	0.04	0.27
Sep	1.78%	1.83%	3.24%	3.40%	5.95%	5.93%	9.19%	9.33%	0.14	0.05	0.19	0.30	0.03	0.33
Oct	1.86%	1.82%	3.40%	3.58%	5.94%	5.90%	9.34%	9.48%	0.30	0.04	0.34	0.48	0.00	0.48
Nov	1.92%	1.72%	3.43%	3.69%	5.94%	5.90%	9.36%	9.59%	0.33	0.04	0.36	0.59	0.00	0.59
Dec	1.95%	1.81%	3.42%	3.64%	5.95%	5.94%	9.37%	9.58%	0.32	0.05	0.37	0.54	0.04	0.58
2013 Avg.	1.80%	1.81%	3.29%	3.43%	5.96%	5.95%	9.25%	9.38%	0.19	0.06	0.25	0.33	0.05	0.38
Conventional - Organic		0.01		0.14		-0.01		0.13						

Change (2013 - 2008)														
	0.06	0.13	0.10	0.03	0.04	0.03	0.14	0.06	0.10	0.04	0.14	0.03	0.03	0.06

1/ Skim test of component: Actual test/(1-Butterfat test). Nonfat Solids equals protein plus other solids.
2/ The assumption of the Class I skim price is that the skim tests 3.1% protein and 5.9% other solids, or 9% nonfat solids.
Note: Coloration is based on Microsoft Excel's Color Scale Conditional Formatting and serves merely to highlight relative test levels.