



2018

# OTERO COUNTY PROPERTY ASSESSMENT STUDY

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**WILDROSE**  
APPRAISAL, INCORPORATED  
**Audit Division**



September 15, 2018

Mr. Mike Mauer  
Director of Research  
Colorado Legislative Council  
Room 029, State Capitol Building  
Denver, Colorado 80203

**RE: Final Report for the 2018 Colorado Property Assessment Study**

Dear Mr. Mauer:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2018 Colorado Property Assessment Study.

These reports are the result of two analyses: A procedural audit and a statistical audit.

The procedural audit examines all classes of property. It specifically looks at how the assessor develops economic areas, confirms and qualifies sales, develops time adjustments and performs periodic physical property inspections. The audit reviews the procedures for determining subdivision absorption and subdivision discounting. Valuation methodology is examined for residential properties and commercial properties. Procedures are reviewed for producing mines, oil and gas leaseholds and lands producing, producing coal mines, producing earth and stone products, severed mineral interests, and non-producing patented mining claims.

Statistical audits are performed on vacant land, residential properties, commercial/industrial properties and agricultural land. A statistical analysis is performed for personal property compliance on the eleven largest counties: Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo and Weld. The remaining counties receive a personal property procedural study.

Wildrose Appraisal Inc. – Audit Division appreciates the opportunity to be of service to the State of Colorado. Please contact us with any questions or concerns.

A handwritten signature in black ink that reads "Harry J. Fuller". The signature is written in a cursive style.

Harry J. Fuller  
Project Manager  
Wildrose Appraisal Inc. – Audit Division

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# INTRODUCTION

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## Colorado

The State Board of Equalization (SBOE) reviews assessments for conformance to the Constitution. The SBOE will order revaluations for counties whose valuations do not reflect the proper valuation period level of value.

The statutory basis for the audit is found in C.R.S. 39-1-104 (16)(a)(b) and (c).

The legislative council sets forth two criteria that are the focus of the audit group:

To determine whether each county assessor is applying correctly the constitutional and statutory provisions, compliance requirements of the State Board of Equalization, and the manuals published by the State Property Tax Administrator to arrive at the actual value of each class of property.

To determine if each assessor is applying correctly the provisions of law to the actual values when arriving at valuations for assessment of all locally valued properties subject to the property tax.

The property assessment audit conducts a two-part analysis: A procedural analysis and a statistical analysis.

The procedural analysis includes all classes of property and specifically looks at how the assessor develops economic areas, confirms and qualifies sales, and develops time adjustments. The audit also examines the procedures for adequately discovering, classifying and valuing agricultural outbuildings, discovering subdivision build-out and subdivision discounting procedures. Valuation methodology for vacant land, improved residential properties and commercial properties is examined. Procedures for producing mines, oil and gas leaseholds and lands producing, producing coal mines, producing earth and stone products, severed mineral interests and non-producing patented mining claims are also reviewed.

Statistical analysis is performed on vacant land, residential properties, commercial/industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax Administrator.

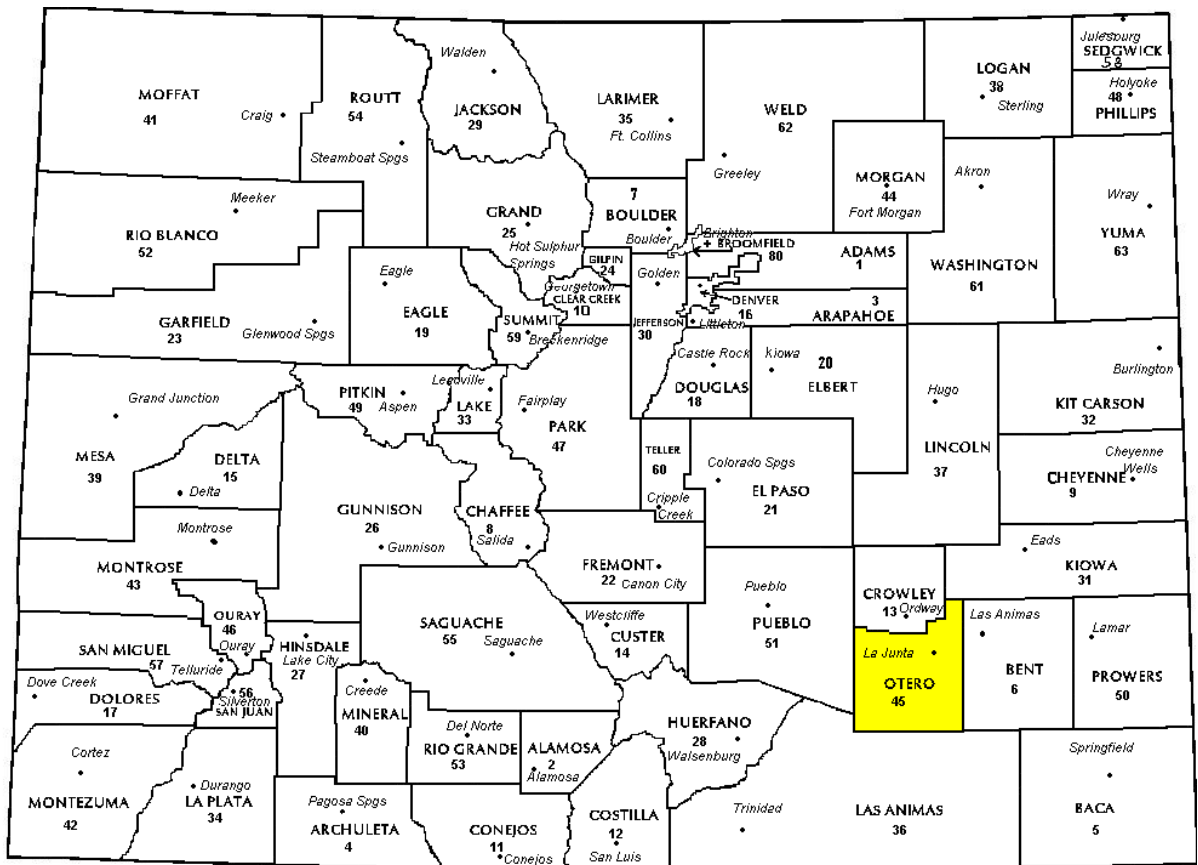
Wildrose Audit has completed the Property Assessment Study for 2018 and is pleased to report its findings for Otero County in the following report.

# REGIONAL/HISTORICAL SKETCH OF OTERO COUNTY

## Regional Information

Otero County is located in the Eastern Plains region of Colorado. The Eastern Plains of Colorado refer to the region on the east side of the Rocky Mountain. It is east of the population centers of the Front Range,

including Baca, Bent, Cheyenne, Crowley, Elbert, Kiowa, Kit Carson, Lincoln, Logan, Morgan, Otero, Phillips, Prowers, Sedgwick, Washington, and Yuma counties.



## Historical Information

Otero County had an estimated population of approximately 18,295 people with 14.49 people per square mile, according to the U.S. Census Bureau's 2016 estimated census data. This represents a -2.84 percent change from April 1, 2010 to July 1, 2016.

Otero County, formed from Bent County, was established in 1889 and has an area of 1,254 square miles. The county was named for Miguel Antonio Otero, lawyer, congressional delegate, entrepreneur and one of the founders of the town of La Junta.

La Junta, the county seat, is located in southeast Colorado on the Arkansas River east of Pueblo. La Junta, which roughly translates to "the meeting place" in Spanish, is aptly named. Half a dozen national and state highways meet at this historic crossroads, along the Santa Fe Trail and the shores of the Arkansas River. A pleasant small town, La Junta offers services for travelers and frequent cultural events such as the traditional Koshare Indian dances.

La Junta is home to two well-known museums: Bent's Old Fort National Historic Site, an important trading post in the Old West, and the Koshare Indian Museum, housed at Otero Junior College which is regarded as one of the finest collections of Native American artifacts

in the world. The Koshare Indian museum hosts a unique Boy Scout/Explorer program which trains the Scouts in both Indian dance and costumes. The Scouts give dance performances during the summer and also host many other Scout troops passing through the area.

Other pioneer and Native American structures can be seen in the Comanche National Grassland to the south, which is also home to a large section of preserved dinosaur tracks. To the north is a series of lakes and reservoirs, popular with boaters and anglers as well as animal watchers.

La Junta is also home of the Picketwire Center for Performing Arts, home of the local theater company. In 1979, the first episodes of the CBS western miniseries *The Chisholms*, starring Robert Preston, was filmed near La Junta.

During World War II, La Junta had an Army Air Force Training Base outside town. The airport, located 5 miles north of La Junta, has 77 acres of tarmac and two runways which are still in use.

*(www.Wikipedia.org, www.go-colorado.com, William Bright, Colorado Place Names, 3rd Edition, Johnson Books, 2004, p. 130 and 100)*

# RATIO ANALYSIS

## Methodology

All significant classes of properties were analyzed. Sales were collected for each property class over the appropriate sale period, which was typically defined as the 18-month period between January 1, 2015 and June 30, 2016. Counties with less than 30 sales typically extended the sale period back up to 5 years prior to June 30, 2016 in 6-month increments. If there were still fewer than 30 sales, supplemental appraisals were performed and treated as proxy sales. Residential sales for all counties using this method totaled at least 30 per county. For commercial sales, the total number analyzed was allowed, in some cases, to fall below 30. There were no sale quantity issues for counties requiring vacant land analysis or condominium analysis. Although it was required that we examine the median and coefficient of dispersion for all counties, we also calculated the weighted mean and price-related differential for each class of property. Counties were not passed or failed by these

latter measures, but were counseled if there were anomalies noted during our analysis. Qualified sales were based on the qualification code used by each county, which were typically coded as either “Q” or “C.” The ratio analysis included all sales. The data was trimmed for counties with obvious outliers using IAAO standards for data analysis. In every case, we examined the loss in data from trimming to ensure that only true outliers were excluded. Any county with a significant portion of sales excluded by this trimming method was examined further. No county was allowed to pass the audit if more than 5% of the sales were “lost” because of trimming. For the largest 11 counties, the residential ratio statistics were broken down by economic area as well.

## Conclusions

For this final analysis report, the minimum acceptable statistical standards allowed by the State Board of Equalization are:

ALLOWABLE STANDARDS RATIO GRID		
Property Class	Unweighted Median Ratio	Coefficient of Dispersion
Commercial/Industrial	Between .95-1.05	Less than 20.99
Condominium	Between .95-1.05	Less than 15.99
Single Family	Between .95-1.05	Less than 15.99
Vacant Land	Between .95-1.05	Less than 20.99

The results for Otero County are:

<b>Otero County Ratio Grid</b>					
<b>Property Class</b>	<b>Number of Qualified Sales</b>	<b>Unweighted Median Ratio</b>	<b>Price Related Differential</b>	<b>Coefficient of Dispersion</b>	<b>Time Trend Analysis</b>
Commercial/Industrial	35	0.977	1.061	18.4	Compliant
Condominium	N/A	N/A	N/A	N/A	N/A
Single Family	248	0.999	1.022	11	Compliant
Vacant Land	N/A	N/A	N/A	N/A	N/A

After applying the above described methodologies, it is concluded from the sales ratios that Otero County is in compliance with

SBOE, DPT, and Colorado State Statute valuation guidelines.

**Recommendations**

None





# TIME TRENDING VERIFICATION

## Methodology

While we recommend that counties use the inverted ratio regression analysis method to account for market (time) trending, some counties have used other IAAO-approved methods, such as the weighted monthly median approach. We are not auditing the methods used, but rather the results of the methods used. Given this range of methodologies used to account for market trending, we concluded that the best validation method was to examine the sale ratios for each class across the appropriate sale period. To be specific, if a county has considered and adjusted correctly for market trending, then the sale ratios should remain stable (i.e. flat) across the sale period. If a residual market trend is detected, then the county may or may not have addressed market

trending adequately, and a further examination is warranted. This validation method also considers the number of sales and the length of the sale period. Counties with few sales across the sale period were carefully examined to determine if the statistical results were valid.

## Conclusions

After verification and analysis, it has been determined that Otero County has complied with the statutory requirements to analyze the effects of time on value in their county. Otero County has also satisfactorily applied the results of their time trending analysis to arrive at the time adjusted sales price (TASP).

## Recommendations

None

## SOLD / UNSOLD ANALYSIS

### Methodology

Otero County was tested for the equal treatment of sold and unsold properties to ensure that “sales chasing” has not occurred. The auditors employed a multi-step process to determine if sold and unsold properties were valued in a consistent manner.

We test the hypothesis that the assessor has valued unsold properties consistent with what is observed with the sold properties based on several units of comparison and tests. The units of comparison include the actual value per square foot and the change in value from the previous base year period to the current base year. The first test compares the actual value per square foot between sold and unsold properties by class. The median and mean value per square foot is compared and tested for any significant difference. This is tested using non-parametric methods, such as the Mann-Whitney test for differences in the distributions or medians between sold and unsold groups. It is also examined graphically and from an appraisal perspective. Data can be stratified based on location and subclass. The second test compares the difference in the median change in value from the previous base year to the current base year between sold and unsold properties by class. The same combination of non-parametric and appraisal testing is used as with the first test. A third test employing a valuation model testing a sold/unsold binary variable while controlling for property attributes such as location, size, age and other attributes. The model determines if the sold/unsold variable is statistically and empirically significant. If all three tests indicate a significant difference between sold and unsold properties for a given class, the Auditor may meet with the county to determine if sale chasing is actually occurring,

or if there are other explanations for the observed difference.

If the unsold properties have a higher median value per square foot than the sold properties, or if the median change in value is greater for the unsold properties than the sold properties, the analysis is stopped and the county is concluded to be in compliance with sold and unsold guidelines. All sold and unsold properties in a given class are first tested, although properties with extreme unit values or percent changes can be trimmed to stabilize the analysis. The median is the primary comparison metric, although the mean can also be used as a comparison metric if the distribution supports that type of measure of central tendency.

The first test (unit value method) is applied to both residential and commercial/industrial sold and unsold properties. The second test is applied to sold and unsold vacant land properties. The second test (change in value method) is also applied to residential or commercial sold and unsold properties if the first test results in a significant difference observed and/or tested between sold and unsold properties. The third test (valuation modeling) is used in instances where the results from the first two tests indicate a significant difference between sold and unsold properties. It can also be used when the number of sold and unsold properties is so large that the non-parametric testing is indicating a false rejection of the hypothesis that there is no difference between the sold and unsold property values.

These tests were supported by both tabular and graphics presentations, along with written documentation explaining the methodology used.

<b>Sold/Unsold Results</b>	
<b>Property Class</b>	<b>Results</b>
Commercial/Industrial	Compliant
Condominium	N/A
Single Family	Compliant
Vacant Land	N/A

### **Conclusions**

After applying the above described methodologies, it is concluded that Otero County is reasonably treating its sold and unsold properties in the same manner.

### **Recommendations**

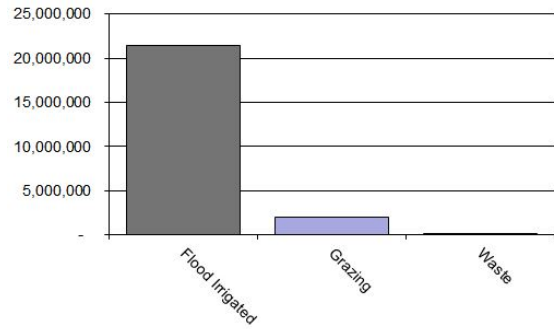
None

# AGRICULTURAL LAND STUDY

Acres By Subclass



Value By Subclass



## Agricultural Land

County records were reviewed to determine major land categories such as irrigated farm, dry farm, meadow hay, grazing and other lands. In addition, county records were reviewed in order to determine if: Aerial photographs are available and are being used; soil conservation guidelines have been used to classify lands based on productivity; crop rotations have been documented; typical commodities and yields have been determined; orchard lands have been properly classified and valued; expenses reflect a ten year average and are typical landlord expenses; grazing lands have been properly classified and valued; the number of acres in each class and subclass have been determined; the capitalization rate was properly applied. Also, documentation was required for the valuation methods used and any locally developed yields, carrying capacities, and expenses. Records were also checked to ensure that the commodity prices and expenses, furnished by the Property Tax

Administrator (PTA), were applied properly. (See Assessor Reference Library Volume 3 Chapter 5.)

### Conclusions

An analysis of the agricultural land data indicates an acceptable appraisal of this property type. Directives, commodity prices and expenses provided by the PTA were properly applied. County yields compared favorably to those published by Colorado Agricultural Statistics. Expenses used by the county were allowable expenses and were in an acceptable range. Grazing lands carrying capacities were in an acceptable range. The data analyzed resulted in the following ratios:

<b>Otero County Agricultural Land Ratio Grid</b>						
<b>Abstract Code</b>	<b>Land Class</b>	<b>Number Of Acres</b>	<b>County Value Per Acre</b>	<b>County Assessed Total Value</b>	<b>WRA Total Value</b>	<b>Ratio</b>
4117	Flood	62,323	343.04	21,379,133	21,028,602	1.00
4147	Grazing	385,306	5.29	2,038,505	2,038,505	1.00
4167	Waste	40,670	2.22	90,362	90,362	1.00
<b>Total/Avg</b>		<b>488,299</b>	<b>48.14</b>	<b>23,508,001</b>	<b>23,157,470</b>	<b>1.02</b>

### **Recommendations**

None

## **Agricultural Outbuildings**

### **Methodology**

Data was collected and reviewed to determine if the guidelines found in the Assessor's Reference Library (ARL) Volume 3, pages 5.74 through 5.77 were being followed.

Property Taxation for the valuation of agricultural outbuildings.

### **Recommendations**

None

### **Conclusions**

Otero County has substantially complied with the procedures provided by the Division of

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## Agricultural Land Under Improvements

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### Methodology

Data was collected and reviewed to determine if the guidelines found in the Assessor's Reference Library (ARL) Volume 3, pages 5.19 and 5.20 were being followed.

### Conclusions

Otero County has used the following methods to discover land under a residential improvement on a farm or ranch that is determined to be not integral under 39-1-102, C.R.S.:

- Questionnaires
- Field Inspections
- In-Person Interviews with Owners/Tenants
- Personal Knowledge of Occupants at Assessment Date

Otero County has used the following methods to discover the land area under a residential improvement that is determined to be not integral under 39-1-102, C.R.S.:

- Property Record Card Analysis
- Field Inspections
- Personal Knowledge of Occupants at Assessment Date

Otero County has substantially complied with the procedures provided by the Division of Property Taxation for the valuation of land under residential improvements that may or may not be integral to an agricultural operation.

### Recommendations

None

## SALES VERIFICATION

According to Colorado Revised Statutes:

*A representative body of sales is required when considering the market approach to appraisal.*

*(8) In any case in which sales prices of comparable properties within any class or subclass are utilized when considering the market approach to appraisal in the determination of actual value of any taxable property, the following limitations and conditions shall apply:*

*(a)(I) Use of the market approach shall require a representative body of sales, including sales by a lender or government, sufficient to set a pattern, and appraisals shall reflect due consideration of the degree of comparability of sales, including the extent of similarities and dissimilarities among properties that are compared for assessment purposes. In order to obtain a reasonable sample and to reduce sudden price changes or fluctuations, all sales shall be included in the sample that reasonably reflect a true or typical sales price during the period specified in section 39-1-104 (10.2). Sales of personal property exempt pursuant to the provisions of sections 39-3-102, 39-3-103, and 39-3-119 to 39-3-122 shall not be included in any such sample.*

*(b) Each such sale included in the sample shall be coded to indicate a typical, negotiated sale, as screened and verified by the assessor. (39-1-103, C.R.S.)*

*The assessor is required to use sales of real property only in the valuation process.*

*(8)(f) Such true and typical sales shall include only those sales which have been determined on an individual basis to reflect the selling price of the real property only or which have been adjusted on an individual basis to reflect the selling price of the real property only. (39-1-103, C.R.S.)*

Part of the Property Assessment Study is the sales verification analysis. WRA has used the above-cited statutes as a guide in our study of the county's procedures and practices for verifying sales.

WRA reviewed the sales verification procedures in 2018 for Otero County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 44 sales listed as unqualified.

All of the sales in the unqualified sales sample had reasons that were clear and supportable.

For residential, commercial, and vacant land sales with considerations over \$500, the contractor has examined and reported the ratio of qualified sales to total sales by class and performed the following analyses of unqualified sales:

The contractor has examined the manner in which sales have been classified as qualified or unqualified, including a listing of each step in the sales verification process, any adjustment procedures, and the county official responsible for making the final decision on qualification.

The contractor has reviewed with the assessor any analysis indicating that sales data are inadequate, fail to reflect typical properties, or have been disqualified for insufficient cause. In addition, the contractor has reviewed the disqualified sales by assigned code. If there appears to be any inconsistency in the coding, the contractor has



conducted further analysis to determine if the sales included in that code have been assigned appropriately.

### **Conclusions**

Otero County appears to be doing a good job of verifying their sales. WRA agreed with the

county's reason for disqualifying each of the sales selected in the sample. There are no recommendations or suggestions.

### **Recommendations**

None



# ECONOMIC AREA REVIEW AND EVALUATION

## **Methodology**

Otero County has submitted a written narrative describing the economic areas that make up the county's market areas. Otero County has also submitted a map illustrating these areas. Each of these narratives have been read and analyzed for logic and appraisal sensibility. The maps were also compared to the narrative for consistency between the written description and the map.

## **Conclusions**

After review and analysis, it has been determined that Otero County has adequately

identified homogeneous economic areas comprised of smaller neighborhoods. Each economic area defined is equally subject to a set of economic forces that impact the value of the properties within that geographic area and this has been adequately addressed. Each economic area defined adequately delineates an area that will give "similar values for similar properties in similar areas."

## **Recommendations**

None

# NATURAL RESOURCES

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## Earth and Stone Products

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### Methodology

Under the guidelines of the Assessor's Reference Library (ARL), Volume 3, Natural Resource Valuation Procedures, the income approach was applied to determine value for production of earth and stone products. The number of tons was multiplied by an economic royalty rate determined by the Division of Property Taxation to determine income. The income was multiplied by a recommended Hoskold factor to determine the actual value. The Hoskold factor is determined by the life of the reserves or the lease. Value is based on two

variables: life and tonnage. The operator determines these since there is no other means to obtain production data through any state or private agency.

### Conclusions

The County has applied the correct formulas and state guidelines to earth and stone production.

### Recommendations

None

## VACANT LAND

### **Subdivision Discounting**

Subdivisions were reviewed in 2018 in Otero County. The review showed that subdivisions were discounted pursuant to the Colorado Revised Statutes in Article 39-1-103 (14) and by applying the recommended methodology in ARL Vol 3, Chap 4. Subdivision Discounting in the intervening year can be accomplished by reducing the absorption period by one year. In instances where the number of sales within an approved plat was less than the absorption rate

per year calculated for the plat, the absorption period was left unchanged.

### **Conclusions**

Otero County has implemented proper procedures to adequately estimate absorption periods, discount rates, and lot values for qualifying subdivisions.

### **Recommendations**

None

# POSSESSORY INTEREST PROPERTIES

## Possessory Interest

Possessory interest property discovery and valuation is described in the Assessor's Reference Library (ARL) Volume 3 section 7 in accordance with the requirements of Chapter 39-1-103 (17)(a) (II) C.R.S. Possessory Interest is defined by the Property Tax Administrator's Publication ARL Volume 3, Chapter 7: A private property interest in government-owned property or the right to the occupancy and use of any benefit in government-owned property that has been granted under lease, permit, license, concession, contract, or other agreement.

Otero County has been reviewed for their procedures and adherence to guidelines when assessing and valuing agricultural and

commercial possessory interest properties. The county has also been queried as to their confidence that the possessory interest properties have been discovered and placed on the tax rolls.

## Conclusions

Otero County has implemented a discovery process to place possessory interest properties on the roll. They have also correctly and consistently applied the correct procedures and valuation methods in the valuation of possessory interest properties.

## Recommendations

None

# PERSONAL PROPERTY AUDIT

Otero County was studied for its procedural compliance with the personal property assessment outlined in the Assessor's Reference Library (ARL) Volume 5, and in the State Board of Equalization (SBOE) requirements for the assessment of personal property. The SBOE requires that counties use ARL Volume 5, including current discovery, classification, documentation procedures, current economic lives table, cost factor tables, depreciation table, and level of value adjustment factor table.

The personal property audit standards narrative must be in place and current. A listing of businesses that have been audited by the assessor within the twelve-month period reflected in the plan is given to the auditor. The audited businesses must be in conformity with those described in the plan.

Aggregate ratio will be determined solely from the personal property accounts that have been physically inspected. The minimum assessment sample is one percent or ten schedules, whichever is greater, and the maximum assessment audit sample is 100 schedules.

For the counties having over 100,000 population, WRA selected a sample of all personal property schedules to determine whether the assessor is correctly applying the provisions of law and manuals of the Property Tax Administrator in arriving at the assessment levels of such property. This sample was selected from the personal property schedules audited by the assessor. In no event was the sample selected by the contractor less than 30 schedules. The counties to be included in this study are Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer, Mesa, Pueblo, and Weld. All other counties received a procedural study.

Otero County is compliant with the guidelines set forth in ARL Volume 5 regarding discovery procedures, using the following methods to discover personal property accounts in the county:

- Public Record Documents
- Chamber of Commerce/Economic Development Contacts
- Local Telephone Directories, Newspapers or Other Local Publications
- Personal Observation, Physical Canvassing or Word of Mouth
- Questionnaires, Letters and/or Phone Calls to Buyer, Seller and/or Realtor

The county uses the Division of Property Taxation (DPT) recommended classification and documentation procedures. The DPT's recommended cost factor tables, depreciation tables and level of value adjustment factor tables are also used.

Otero County submitted their personal property written audit plan and was current for the 2018 valuation period. The number and listing of businesses audited was also submitted and was in conformance with the written audit plan. The following audit triggers were used by the county to select accounts to be audited:

- Businesses in a selected area
- Accounts with obvious discrepancies
- New businesses filing for the first time
- Incomplete or inconsistent declarations
- Same business type or use
- Non-filing Accounts - Best Information Available
- Accounts close to the \$7,400 actual value exemption status



- Accounts protested with substantial disagreement

### **Conclusions**

Otero County has employed adequate discovery, classification, documentation,

valuation, and auditing procedures for their personal property assessment and is in statistical compliance with SBOE requirements.

### **Recommendations**

None

## WILDROSE AUDITOR STAFF

**Harry J. Fuller**, *Audit Project Manager*

**Suzanne Howard**, *Audit Administrative Manager*

**Steve Kane**, *Audit Statistician*

**Carl W. Ross**, *Agricultural / Natural Resource Analyst*

**J. Andrew Rodriguez**, *Field Analyst*

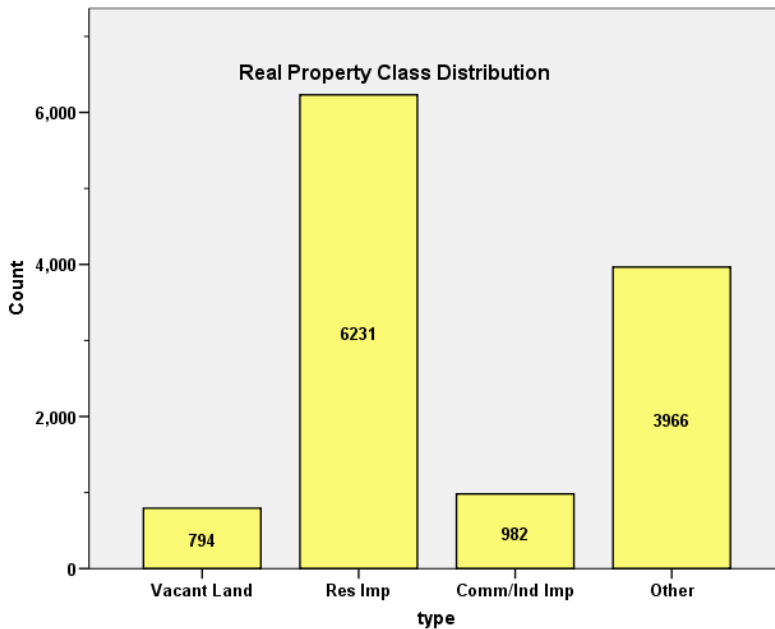
# APPENDICES



## STATISTICAL COMPLIANCE REPORT FOR OTERO COUNTY 2018

### I. OVERVIEW

Otero County is a major agricultural county located in southeastern Colorado. The county has a total of 11,973 real property parcels, according to data submitted by the county assessor’s office in 2018. The following provides a breakdown of property classes for this county:



Based on the number of vacant land parcels in Otero County, we were not required to analyze this class of property for audit compliance.

For residential improved properties, single family properties accounted for 96.5% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial sales accounted for 8.2% of all such properties in this county.

### II. DATA FILES

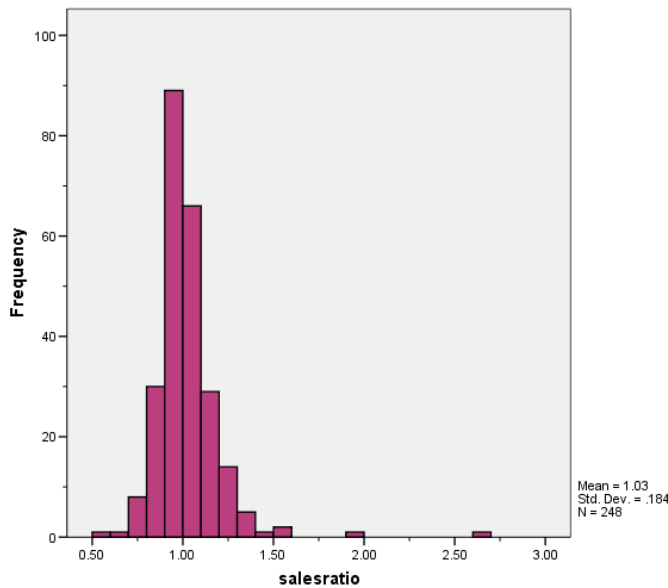
The following sales analyses were based on the requirements of the 2018 Colorado Property Assessment Study. Information was provided by the Otero Assessor’s Office in April 2018. The data included all 5 property record files as specified by the Auditor.

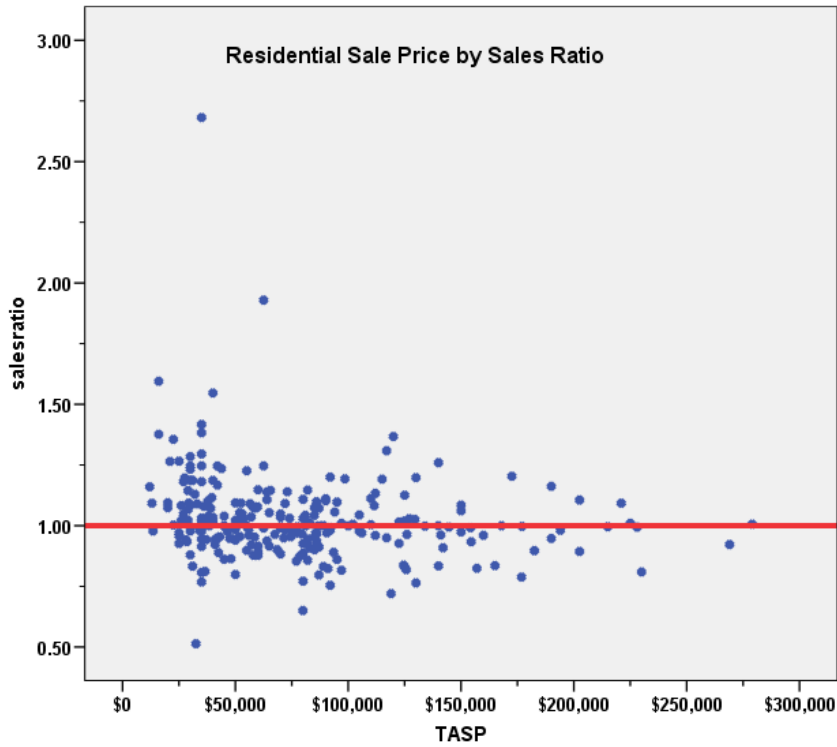
### III. RESIDENTIAL SALES RESULTS

There were 248 qualified residential sales in the 18-month sale period ending June 30, 2016. The sales ratio analysis was analyzed as follows:

Median	<b>0.999</b>
Price Related Differential	<b>1.022</b>
Coefficient of Dispersion	<b>11.0</b>

The above ratio statistics were in compliance with the standards set forth by the Colorado State Board of Equalization (SBOE) for the overall residential sales. The following graphs describe further the sales ratio distribution for all of these properties:





The above graphs indicate that the distribution of the sale ratios was within state mandated limits, and that there were no significant price-related differential issues. No sales were trimmed.

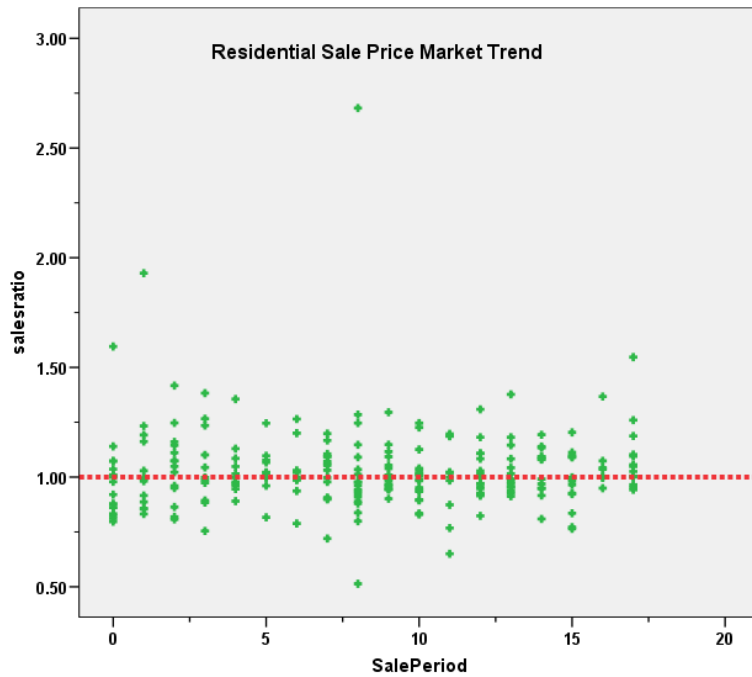
### Residential Market Trend Analysis

We next analyzed the residential dataset using the 18-month sale period, with the following results:

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.022	.022		45.648	.000
	SalePeriod	.001	.002	.015	.236	.814

a. Dependent Variable: salesratio



The above analysis indicated that no market trend was present in the sale ratio data. We concur with the assessor that no market trend adjustments were warranted.

### Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold residential properties, we compared the median and mean actual value per square foot for 2018 between each group, as follows:

Group	No.	Median Val/SF	Mean Val/SF
Unsold	5,975	\$44	\$46
Sold	248	\$49	\$52

### Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VALSF is the same across categories of sold.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .01.

Because the difference in the median value per square foot was significant based on the above non-parametric test, we next compared the change in actual value for taxable years 2016 and 2018 between residential sold and unsold groups, with the following results:

Group	No.	Median Chg Val	Mean Chg Val
Unsold	5,995	1.00	1.00
Sold	248	1.00	1.02

### Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of DIFF is the same across categories of sold.	Independent-Samples Mann-Whitney U Test	.001	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .00.

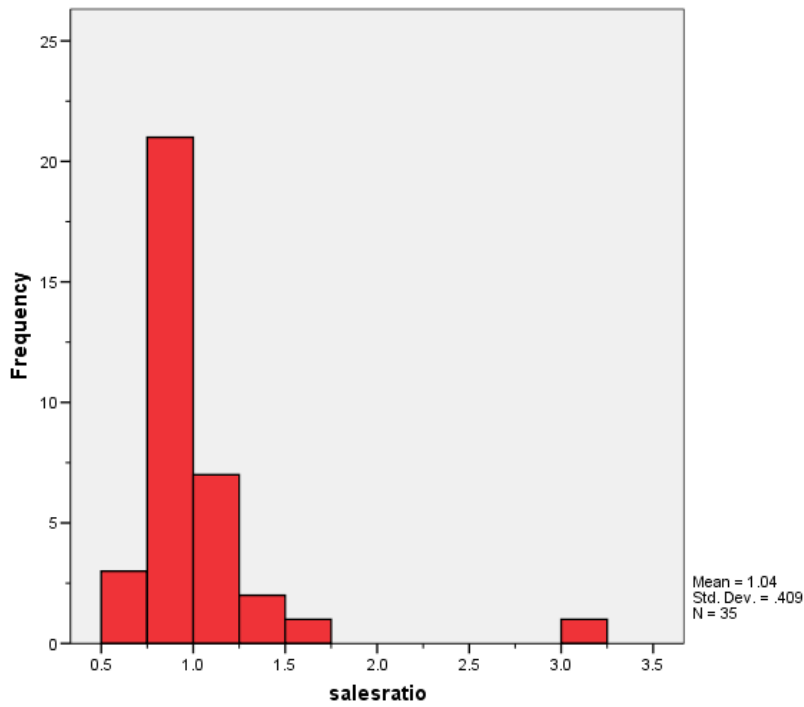
The above results indicate that sold and unsold residential properties were valued in a consistent manner.

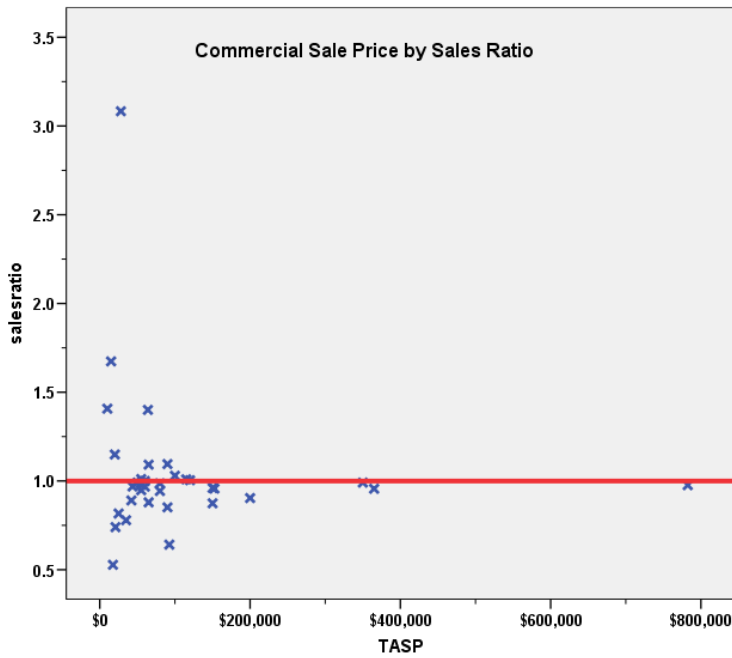
#### IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

There were 35 qualified commercial/industrial sales in the 36 month sale period ending June 30, 2016. The sales ratio analysis was analyzed as follows:

Median	<b>0.977</b>
Price Related Differential	<b>1.061</b>
Coefficient of Dispersion	<b>18.4</b>

The above table indicates that the Otero County commercial/industrial sale ratios were in compliance with the SBOE standards. The following histogram and scatter plot describe the sales ratio distribution further:





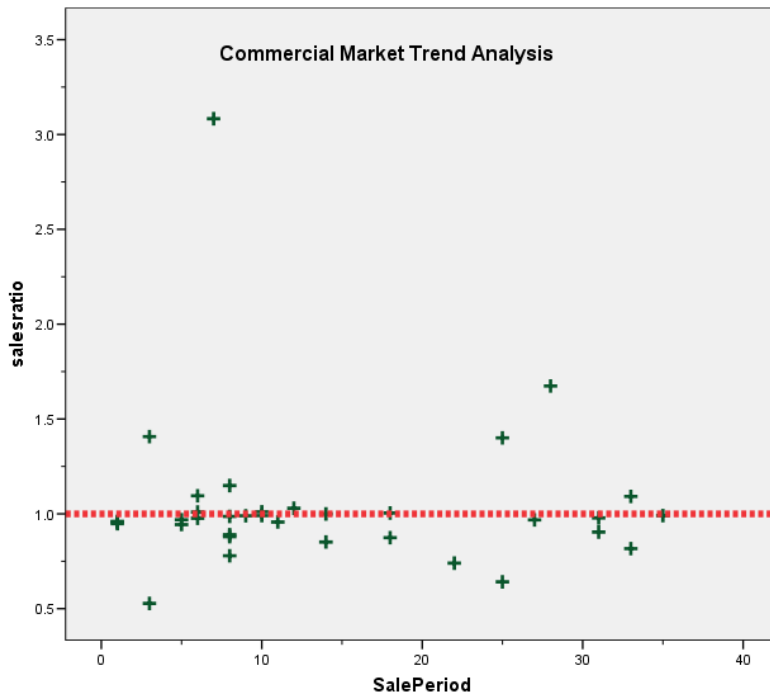
### Commercial Market Trend Analysis

The commercial sales were analyzed, examining the sale ratios across the 36-month sale period with the following results:

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.068	.117		9.127	.000
	SalePeriod	-.002	.007	-.047	-.271	.788

a. Dependent Variable: salesratio



Based on the above results, we concluded that the assessor has adequately dealt with market trending in the commercial/industrial sale data.

### Sold/Unsold Analysis

We compared the median actual value per square foot between sold and unsold commercial properties to determine if the assessor was valuing each group consistently. While this is a challenge to prove in this county, given the small number of sales and the overall small number and diversity of commercial/industrial properties in general, the following results indicate that based on the median actual value, both groups were valued in a consistent manner:

Group	No.	Median Val/SF	Mean Val/SF
Unsold	950	\$20	\$67
Sold	34	\$22	\$35



### Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VALSF is the same across categories of sold.	Independent-Samples Mann-Whitney U Test	.064	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .01.

The above results indicated that sold and unsold commercial properties were valued consistently.

### V. AGRICULTURAL IMPROVEMENTS ANALYSIS

The final statistical verification concerned the assigned actual values for agricultural residential improvements. We compared the actual value per square foot rate for this group and compared it to rates assigned to residential single family improvements in Otero County, as follows:

IMPSPSF	ABSTRIMP	N	Median	Mean
	1212	6009	\$40.21	\$42.28
	4277	104	\$34.98	\$42.90

### Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of IMPSPSF is the same across categories of ABSTRIMP.	Independent-Samples Mann-Whitney U Test	.100	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The above indicates that agricultural residential improvements were valued in a manner similar to the single family residential improvements in this county:

### VI. CONCLUSIONS

Based on this statistical analysis, there were no significant compliance issues concluded for Otero County as of the date of this report.

**STATISTICAL ABSTRACT**

**Residential**

**Ratio Statistics for CURRTOT / TASP**

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			
1.026	1.003	1.049	.999	.991	1.014	95.1%	1.004	.984	1.024	1.022	.110	18.0%

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.

**Commercial/Industrial**

**Ratio Statistics for CURRTOT / TASP**

Mean	95% Confidence Interval for Mean		Median	95% Confidence Interval for Median			Weighted Mean	95% Confidence Interval for Weighted Mean		Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Mean Centered
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			
1.042	.902	1.183	.977	.948	.999	95.9%	.982	.938	1.027	1.061	.184	39.3%

The confidence interval for the median is constructed without any distribution assumptions. The actual coverage level may be greater than the specified level. Other confidence intervals are constructed by assuming a Normal distribution for the ratios.



**Residential Median Ratio Stratification**

**Sale Price**

**Case Processing Summary**

		Count	Percent
SPRec	LT \$25K	14	5.6%
	\$25K to \$50K	73	29.4%
	\$50K to \$100K	103	41.5%
	\$100K to \$150K	36	14.5%
	\$150K to \$200K	13	5.2%
	\$200K to \$300K	9	3.6%
Overall		248	100.0%
Excluded		0	
Total		248	

**Ratio Statistics for CURRTOT / TASP**

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	1.094	1.011	.138	18.8%
\$25K to \$50K	1.022	1.006	.137	24.8%
\$50K to \$100K	.992	1.005	.087	13.9%
\$100K to \$150K	1.002	1.001	.102	14.2%
\$150K to \$200K	.960	.998	.089	12.5%
\$200K to \$300K	.996	1.002	.066	9.6%
Overall	.999	1.022	.110	18.6%

**Subclass**

**Case Processing Summary**

		Count	Percent
ABSTRIMP	1212	231	93.1%
	1215	4	1.6%
	1220	1	0.4%
	1235	1	0.4%
	2235	1	0.4%
	2746	1	0.4%
	2746	6	2.4%
	3257	1	0.4%
	3513	2	0.8%
Overall		248	100.0%
Excluded		0	
Total		248	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1212	1.000	1.023	.109	18.7%
1215	.992	.992	.033	3.9%
1220	1.106	1.000	.000	.
1235	.514	1.000	.000	.
2235	.824	1.000	.000	.
2746	1.367	1.000	.000	.
2746	.936	1.015	.053	6.8%
3257	.809	1.000	.000	.
3513	.979	.989	.025	3.6%
Overall	.999	1.022	.110	18.6%

### Improvement Age

#### Case Processing Summary

AgeRec	Count	Percent
Over 100	78	31.5%
75 to 100	35	14.1%
50 to 75	71	28.6%
25 to 50	40	16.1%
5 to 25	23	9.3%
5 or Newer	1	0.4%
Overall	248	100.0%
Excluded	0	
Total	248	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	1.001	1.023	.135	20.2%
75 to 100	1.006	1.033	.132	30.8%
50 to 75	.999	1.009	.082	11.8%
25 to 50	.997	1.005	.103	14.8%
5 to 25	.974	1.011	.089	11.1%
5 or Newer	1.093	1.000	.000	.
Overall	.999	1.022	.110	18.6%

## Improved Area

### Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	1	0.4%
	500 to 1,000 sf	55	22.2%
	1,000 to 1,500 sf	106	42.7%
	1,500 to 2,000 sf	46	18.5%
	2,000 to 3,000 sf	24	9.7%
	3,000 sf or Higher	16	6.5%
Overall		248	100.0%
Excluded		0	
Total		248	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	.926	1.000	.000	.
500 to 1,000 sf	.998	1.030	.118	16.7%
1,000 to 1,500 sf	1.000	1.030	.108	21.1%
1,500 to 2,000 sf	.986	1.014	.117	18.8%
2,000 to 3,000 sf	1.013	1.012	.093	15.1%
3,000 sf or Higher	1.005	1.006	.101	14.8%
Overall	.999	1.022	.110	18.6%

## Improvement Quality

### Case Processing Summary

		Count	Percent
QUALITY	Average	168	67.7%
	Fair	60	24.2%
	Fair Plus	6	2.4%
	Good	13	5.2%
	Low	1	0.4%
Overall		248	100.0%
Excluded		0	
Total		248	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Average	.994	1.013	.114	20.5%
Fair	1.034	1.037	.101	14.3%
Fair Plus	1.044	.993	.056	6.8%
Good	.943	1.017	.081	10.8%
Low	1.021	1.000	.000	.
Overall	.999	1.022	.110	18.6%

## Improvement Condition

### Case Processing Summary

		Count	Percent
CONDITION	Average	169	68.1%
	Fair	65	26.2%
	Good	12	4.8%
	Storage	1	0.4%
	Worn Out	1	0.4%
Overall		248	100.0%
Excluded		0	
Total		248	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Average	.991	1.013	.107	19.9%
Fair	1.072	1.015	.101	14.1%
Good	.949	1.009	.077	10.4%
Storage	1.160	1.000	.000	.
Worn Out	1.021	1.000	.000	.
Overall	.999	1.022	.110	18.6%

## Commercial Median Ratio Stratification

### Sale Price

### Case Processing Summary

		Count	Percent
SPRec	LT \$25K	6	17.1%
	\$25K to \$50K	5	14.3%
	\$50K to \$100K	15	42.9%
	\$100K to \$150K	4	11.4%
	\$150K to \$200K	2	5.7%
	\$300K to \$500K	2	5.7%
	\$750K to \$1,000K	1	2.9%
Overall		35	100.0%
Excluded		0	
Total		35	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT \$25K	.983	1.063	.364	45.0%
\$25K to \$50K	.969	1.098	.496	109.6%
\$50K to \$100K	.986	1.009	.095	16.0%
\$100K to \$150K	.982	1.006	.045	6.8%
\$150K to \$200K	.930	1.004	.028	4.0%
\$300K to \$500K	.974	1.000	.018	2.5%
\$750K to \$1,000K	.977	1.000	.000	.
Overall	.977	1.061	.184	42.4%

### Subclass

#### Case Processing Summary

	Count	Percent
ABSTRIMP 0	1	2.9%
2212	9	25.7%
2214	1	2.9%
2216	1	2.9%
2220	5	14.3%
2224	1	2.9%
2230	11	31.4%
2234	1	2.9%
2235	3	8.6%
5750	1	2.9%
9229	1	2.9%
Overall	35	100.0%
Excluded	0	
Total	35	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.528	1.000	.000	.
2212	.978	1.010	.098	17.9%
2214	.956	1.000	.000	.
2216	1.149	1.000	.000	.
2220	1.011	1.020	.110	19.2%
2224	.948	1.000	.000	.
2230	.960	1.057	.109	24.3%
2234	.991	1.000	.000	.
2235	.999	1.101	.210	32.8%
5750	3.083	1.000	.000	.
9229	.817	1.000	.000	.
Overall	.977	1.061	.184	42.4%

## Age

### Case Processing Summary

		Count	Percent
AgeRec	0	1	2.9%
	Over 100	11	31.4%
	75 to 100	6	17.1%
	50 to 75	6	17.1%
	25 to 50	9	25.7%
	5 to 25	2	5.7%
Overall		35	100.0%
Excluded		0	
Total		35	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.528	1.000	.000	.
Over 100	.991	.980	.086	16.1%
75 to 100	.986	1.241	.488	97.4%
50 to 75	.950	1.135	.267	39.3%
25 to 50	.956	.978	.036	5.4%
5 to 25	.980	1.009	.020	2.8%
Overall	.977	1.061	.184	42.4%

## Improved SF

### Case Processing Summary

		Count	Percent
ImpSFRec	0	1	2.9%
	500 to 1,000 sf	2	5.7%
	1,000 to 1,500 sf	6	17.1%
	1,500 to 2,000 sf	7	20.0%
	2,000 to 3,000 sf	6	17.1%
	3,000 sf or Higher	13	37.1%
Overall		35	100.0%
Excluded		0	
Total		35	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.528	1.000	.000	.
500 to 1,000 sf	.865	.944	.145	20.5%
1,000 to 1,500 sf	1.007	1.081	.142	30.2%
1,500 to 2,000 sf	.957	.990	.081	15.5%
2,000 to 3,000 sf	.977	1.027	.081	11.8%
3,000 sf or Higher	.991	1.190	.276	63.7%
Overall	.977	1.061	.184	42.4%



## Improvement Quality

### Case Processing Summary

	Count	Percent
QUALITY	1	2.9%
Average	31	88.6%
Fair	2	5.7%
Low	1	2.9%
Overall	35	100.0%
Excluded	0	
Total	35	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.528	1.000	.000	.
Average	.969	1.044	.151	42.0%
Fair	1.412	1.027	.186	26.3%
Low	1.407	1.000	.000	.
Overall	.977	1.061	.184	42.4%

## Improvement Condition

### Case Processing Summary

	Count	Percent
CONDITION	1	2.9%
Average	26	74.3%
Fair	7	20.0%
Worn Out	1	2.9%
Overall	35	100.0%
Excluded	0	
Total	35	

### Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.528	1.000	.000	.
Average	.965	.984	.072	10.9%
Fair	1.149	1.077	.421	73.2%
Worn Out	1.407	1.000	.000	.
Overall	.977	1.061	.184	42.4%