2016
JEFFERSON COUNTY PROPERTY ASSESSMENT STUDY

WILDROSE
APPRAISAL, INCORPORATED
Audit Division

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Audit Division

September 15, 2016

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

RE: Final Report for the 2016 Colorado Property Assessment Study

Dear Mr. Mauer:

Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2016 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.

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

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INTRODUCTION

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.

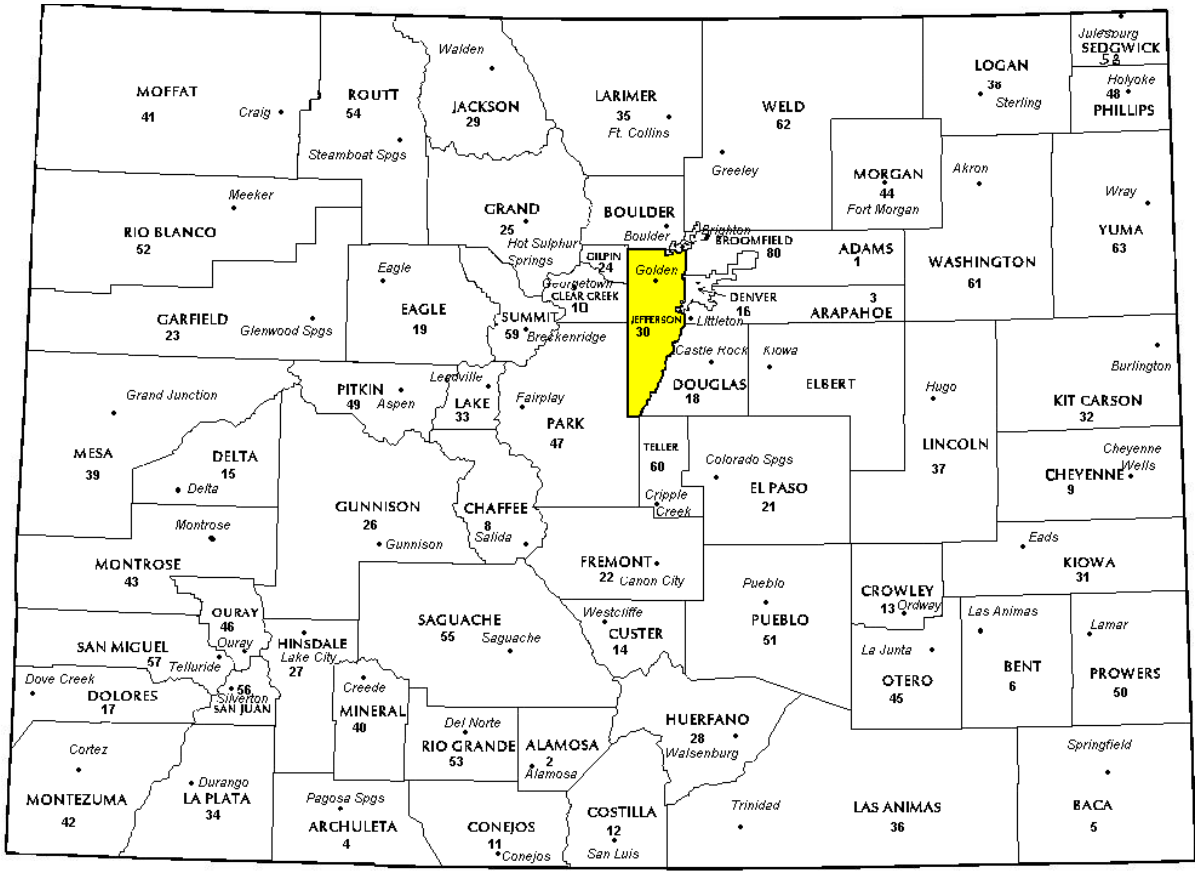
Statistical analysis is performed on vacant land, residential properties, commercial/industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax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

Wildrose Audit has completed the Property Assessment Study for 2016 and is pleased to report its findings for Jefferson County in the following report.

REGIONAL/HISTORICAL SKETCH OF JEFFERSON COUNTY

Regional Information

Jefferson County is located in the Front Range region of Colorado. The Colorado Front Range is a colloquial geographic term for the populated areas of the State that are just east of the foothills of the Front Range. It includes Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, El Paso, Jefferson, Larimer, Pueblo, and Weld counties.



Historical Information

Jefferson County had an estimated population of approximately 558,503 people with 699.5 people per square mile, according to the U.S. Census Bureau's 2014 estimated census data. This represents a 4.5 percent change from April 1, 2010 to July 1, 2014.

Jefferson County is one of the seventeen original territorial counties. On August 25, 1855, the Kansas Territorial Legislature created Arapahoe County to govern the entire western portion of the territory. The county was named for the Arapaho Nation of Native Americans that lived in the region.

In July 1858, gold was discovered along the South Platte River in Arapahoe County (in present day Englewood). This discovery precipitated the Pike's Peak Gold Rush. Many residents of the mining region felt disconnected from the remote territorial governments of Kansas and Nebraska, so they voted to form their own Territory of Jefferson on October 24, 1959. The following month, the Jefferson Territorial Legislature organized 12 counties for the new territory, including Jefferson County. Jefferson County was named for the namesake of the Jefferson Territory, Thomas Jefferson, the principal author of the Declaration of Independence and the nation's third president. Golden City served as the county seat of Jefferson County. Robert Williamson Steele, Governor of the Provisional Government of the Territory of Jefferson from 1859 to 1861, built his home in the county at Mount Vernon and later at Apex.

The Jefferson Territory never received federal sanction, but during his last week in office, President James Buchanan signed an act which organized the Territory of Colorado on February 28, 1861. That November 1, the new Colorado General Assembly organized the 17 original counties of Colorado, including a new Jefferson County. In 1908, the southern tip of Jefferson County was transferred to Park County, reducing Jefferson County to its present length of 54 miles. Several annexations by the City & County of Denver and the 2001 consolidation of the City & County of Broomfield removed eastern portions of the county.

A major employer in Jefferson County is the large Coors Brewing Company in Golden. Also, the state-supported Colorado School of Mines is located in Jefferson County, offering programs in mining and engineering. The county seat is Golden and the most populous city is Lakewood.
(www.wikipedia.org)

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 2013 and June 2014. Counties with less than 30 sales typically extended the sale period back up to 5 years prior to June 30, 2014 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 Jefferson County are:

Jefferson County Ratio Grid					
Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
Commercial/Industrial	454	0.957	1.785	14.6	Compliant
Condominium	N/A	N/A	N/A	N/A	N/A
Single Family	19,205	0.980	1.100	7.7	Compliant
Vacant Land	391	0.978	1.166	20.7	Compliant

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion
1	.987	1.027	.069
2	.976	1.162	.090
3	.980	1.224	.075
4	.974	1.069	.066
5	.990	1.008	.062
6	.973	1.011	.084
7	.983	1.017	.105
8	.988	1.016	.095
9	.989	1.028	.105
Overall	.980	1.100	.077

After applying the above described methodologies, it is concluded from the sales ratios that Jefferson 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 Jefferson County has complied with the statutory requirements to analyze the effects of time on value in their county. Jefferson 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

Jefferson 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.

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

Conclusions

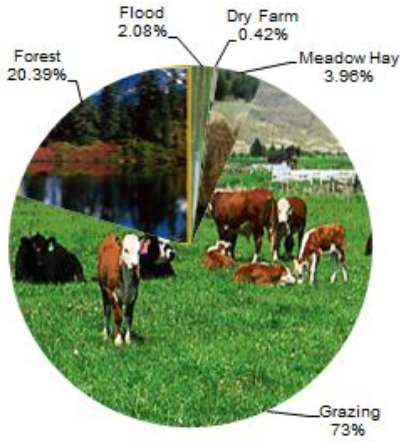
After applying the above described methodologies, it is concluded that Jefferson County is reasonably treating its sold and unsold properties in the same manner.

Recommendations

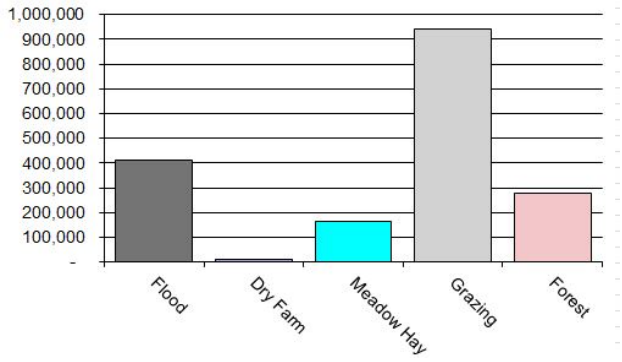
None

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:

Jefferson County Agricultural Land Ratio Grid						
Abstract Code	Land Class	Number Of Acres	County Value Per Acre	County Assessed Total Value	WRA Total Value	Ratio
4117	Flood	1,578	262.33	413,951	412,860	1.00
4127	Dry Farm	315	34.35	10,820	10,817	1.00
4137	Meadow Hay	3,006	54.16	162,802	162,802	1.00
4147	Grazing	55,522	16.94	940,379	940,379	1.00
4177	Forest	15,476	17.92	277,292	277,292	1.00
Total/Avg		**75,897**	**23.79**	**1,805,245**	**1,804,150**	**1.00**

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.

Conclusions

Jefferson County has substantially complied with the procedures provided by the Division of Property Taxation for the valuation of agricultural outbuildings.

Recommendations

None

Agricultural Land Under Improvements

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

Jefferson 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
- Phone Interviews
- In-Person Interviews with Owners/Tenants
- Personal Knowledge of Occupants at Assessment Date
- Aerial Photography/Pictometry

Jefferson 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

Jefferson 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 2016 for Jefferson County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 60 sales listed as unqualified.

All but five of the sales selected in the sample gave reasons that were clear and supportable. Five sales had insufficient reason for disqualification.

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

Jefferson County appears to be doing a good job of verifying their sales.

Recommendations

None

ECONOMIC AREA REVIEW AND EVALUATION

Methodology

Jefferson County has submitted a written narrative describing the economic areas that make up the county's market areas. Jefferson 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 Jefferson 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

Earth and Stone Products

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 2016 in Jefferson 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 was 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

Jefferson 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.

Jefferson 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

Jefferson 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

Jefferson 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.

Jefferson 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

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.

Jefferson County submitted their personal property written audit plan and was current for the 2016 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
- Incomplete or inconsistent declarations
- Same business type or use
- Non-filing Accounts - Best Information Available
- Accounts protested with substantial disagreement

Jefferson County's median ratio is .98. This is in compliance with the State Board of Equalization (SBOE) compliance requirements which range from .90 to 1.10 with no COD requirements.

Conclusions

Jefferson 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*

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Steve Kane, *Audit Statistician*

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

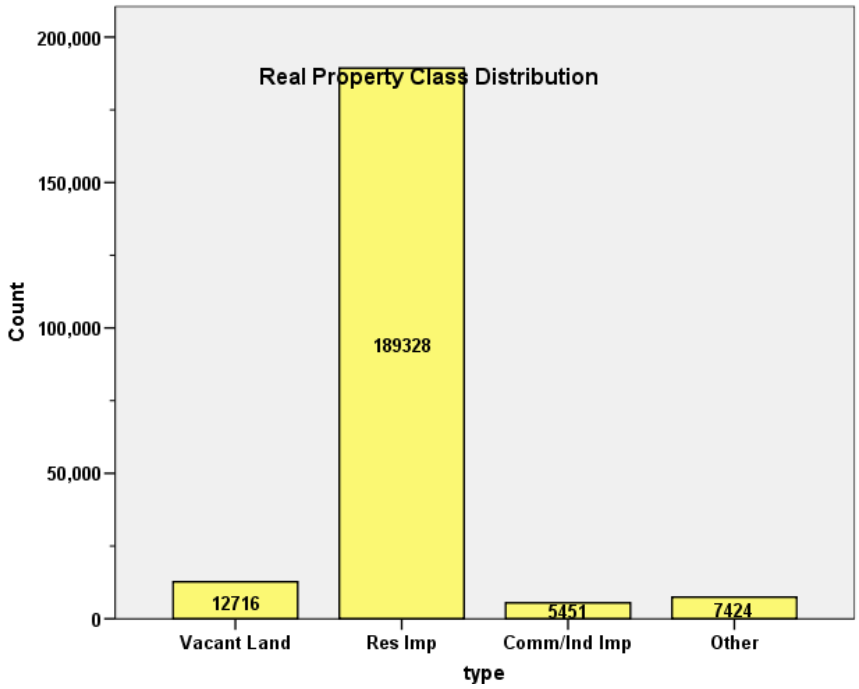
J. Andrew Rodriguez, *Field Analyst*

APPENDICES

STATISTICAL COMPLIANCE REPORT
FOR JEFFERSON COUNTY
2016

I. OVERVIEW

Jefferson County is an urban county located along Colorado's Front Range. The county has a total of 214,919 real property parcels, according to data submitted by the county assessor's office in 2016. The following provides a breakdown of property classes for this county:



The vacant land class of properties was dominated by residential land. Residential lots (coded 100 and 1112) accounted for 77.7% of all vacant land parcels.

For residential improved properties, single family properties accounted for 91.0% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial properties accounted for 2.5% of all such properties in this county.

II. DATA FILES

The following sales analyses were based on the requirements of the 2016 Colorado Property Assessment Study. Information was provided by the Jefferson Assessor's Office in May 2016. The data included all 5 property record files as specified by the Auditor.

III. RESIDENTIAL SALES RESULTS

There were 19,205 qualified residential sales in the 24-month period prior to June 30, 2014. The sales ratio analysis was analyzed as follows:

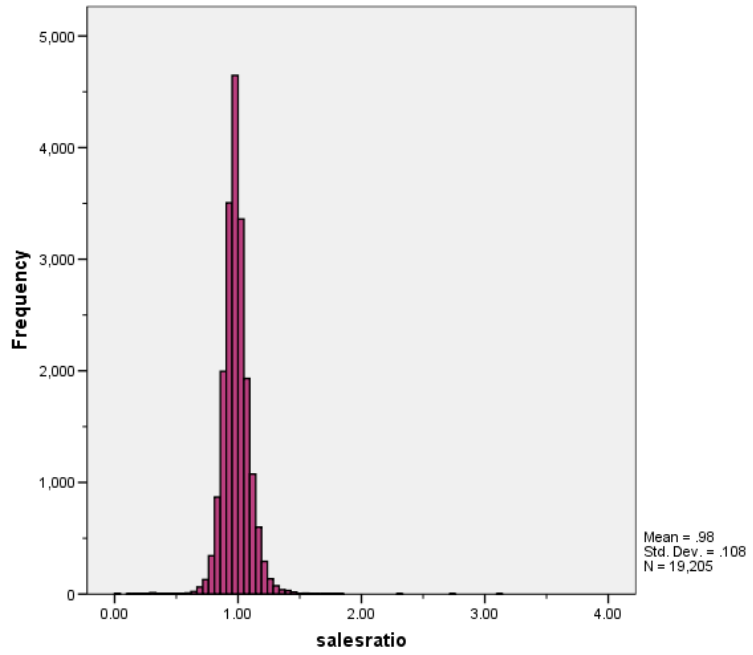
Case Processing Summary

		Count	Percent
econarea	1	3016	15.7%
	2	3624	18.9%
	3	3976	20.7%
	4	4632	24.1%
	5	1181	6.2%
	6	772	4.0%
	7	100	0.5%
	8	971	5.1%
	9	930	4.8%
Overall		19202	100.0%
Excluded		3	
Total		19205	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion
1	.987	1.027	.069
2	.976	1.162	.090
3	.980	1.224	.075
4	.974	1.069	.066
5	.990	1.008	.062
6	.973	1.011	.084
7	.983	1.017	.105
8	.988	1.016	.095
9	.989	1.028	.105
Overall	.980	1.100	.077

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 these properties:



NOTE: SALES OVER $5,000,000 EXCLUDED

The above graphs indicate that the distribution of the sale ratios was within state mandated limits.

Residential Market Trend Analysis

We next analyzed the residential dataset using the 24-month sale period for any residual market trending and broken down by economic area, as follows:

econarea	Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1		-.001	.000	-.093	-5.130	.000
2		-.001	.000	-.053	-3.189	.001
3		-.002	.000	-.114	-7.202	.000
4		.000	.000	-.016	-1.099	.272
5		.001	.000	.059	2.023	.043
6		-.002	.001	-.119	-3.325	.001
7		-.001	.002	-.028	-.282	.778
8		.000	.001	.024	.732	.464
9		-.002	.001	-.101	-3.099	.002

a. Dependent Variable: salesratio

There was no residual significant market trending present in the sale ratio data for any of the economic areas; we therefore concluded that the assessor has adequately addressed market trending in the valuation of residential properties.

Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold residential properties, we compared the median actual value per square foot for 2016 between each group. The data was analyzed both as a whole and broken down by economic area, as follows:

ValSF

sold	N	Median	Mean
UNSOLD	177,787	$175.83	$184.16
SOLD	19,200	$177.23	$186.11

Report

ValSF

econarea	sold	N	Median	Mean
1	UNSOLD	25,722	$165.38	$171.60
	SOLD	3,016	$167.44	$172.62
2	UNSOLD	38,486	$181.39	$181.86
	SOLD	3,624	$185.26	$187.16
3	UNSOLD	39,952	$172.92	$178.09
	SOLD	3,975	$174.40	$180.73
4	UNSOLD	36,546	$164.96	$174.47
	SOLD	4,632	$166.56	$172.71
5	UNSOLD	7,741	$189.13	$197.33
	SOLD	1,180	$181.01	$188.54
6	UNSOLD	8,437	$216.18	$223.52
	SOLD	772	$230.41	$233.30
7	UNSOLD	1,325	$185.23	$198.90
	SOLD	100	$200.02	$219.97
8	UNSOLD	8,874	$214.42	$222.83
	SOLD	970	$220.01	$225.39
9	UNSOLD	9,337	$209.25	$219.62
	SOLD	930	$224.61	$228.61

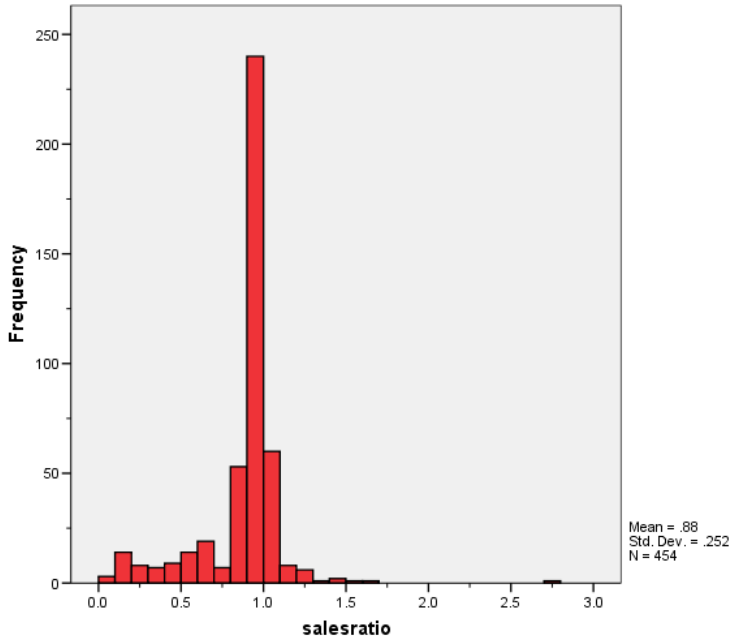
The above results indicate that sold and unsold residential properties were valued in a consistent manner.

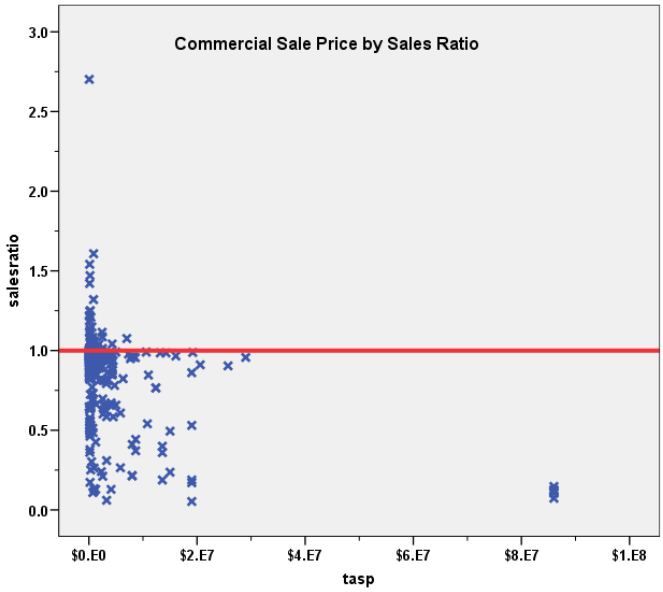
IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

There were 454 qualified commercial/industrial sales in the 24-month period prior to June 30, 2014. The sales ratio analysis was analyzed as follows:

Median	0.957
Price Related Differential	1.785
Coefficient of Dispersion	14.6

The above table indicates that the Jefferson County vacant land sale ratios were in compliance with the SBOE standards. The following histogram and scatter plot describe the sales ratio distribution further:



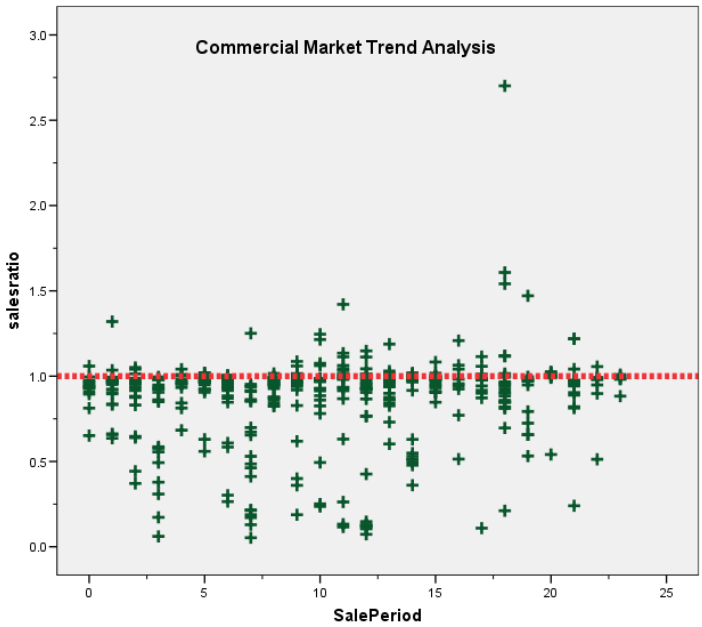


Commercial/Industrial Market Trend Analysis

The 2016 commercial/industrial sales were analyzed, examining the sale ratios across the 24-month sale period with the following results:

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.846	.022		37.663	.000
	SalePeriod	.004	.002	.086	1.846	.066

a. Dependent Variable: salesratio



There was no residual market trending present in the commercial sale ratios. We concluded that the assessor has adequately considered market trending adjustments as part of the commercial/industrial valuation.

Sold/Unsold Analysis

We compared the median value per square foot between sold and unsold commercial/industrial properties to determine if they were valued consistently, as follows:

Report

ValSF

sold	N	Median	Mean
UNSOLD	5,000	$89.91	$116.83
SOLD	454	$119.63	$135.57

Given that there was some difference between sold and unsold commercial/industrial properties overall, we employed the second comparison analysis that compared the median change in actual value between 2014 and 2016 for commercial/industrial properties to determine if sold and unsold properties were valued consistently, as follows:

Report

DIFF

sold	N	Median	Mean
UNSOLD	4,789	1.03	1.06
SOLD	375	1.06	1.16

Report

DIFF

abstrimp	sold	N	Median	Mean
2212		1,275	1.07	1.09
		88	1.20	1.24
2215		44	.98	1.01
		3	.79	.84
2220		545	1.00	1.01
		50	1.08	1.18
		595	1.00	1.02
2225		43	1.00	1.01
		2	1.06	1.06
		45	1.00	1.01
2230		1,093	1.00	1.05
		56	1.07	1.19
2235		711	1.05	1.07
		39	1.06	1.15
2245		381	1.00	1.03
		42	1.00	1.03
3230		556	1.06	1.05
		91	1.00	1.11

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The medians of DIFF are the same across categories of sold.	Independent-Samples Median Test	.068	Retain the null hypothesis.

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

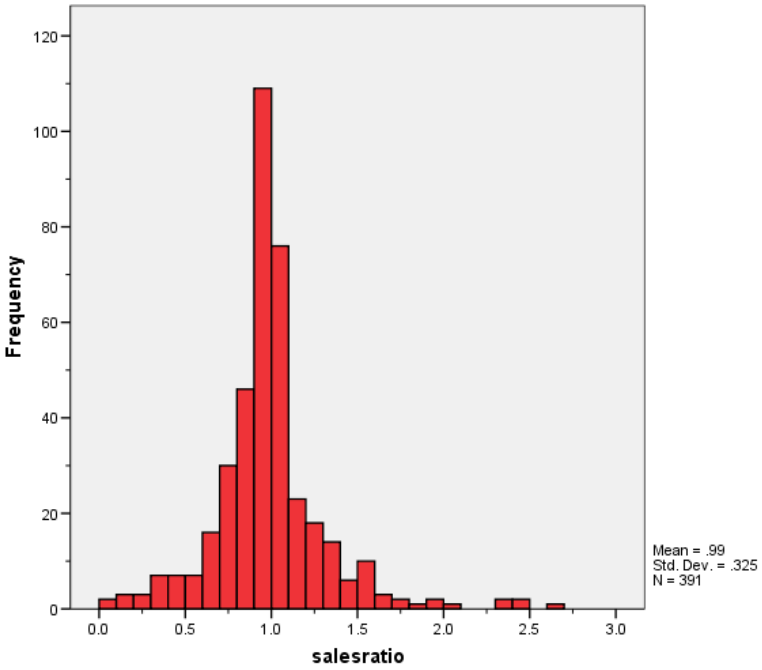
The above results indicated that there was no consistent pattern that sold properties were adjusted by a greater amount than unsold properties between 2014 and 2016.

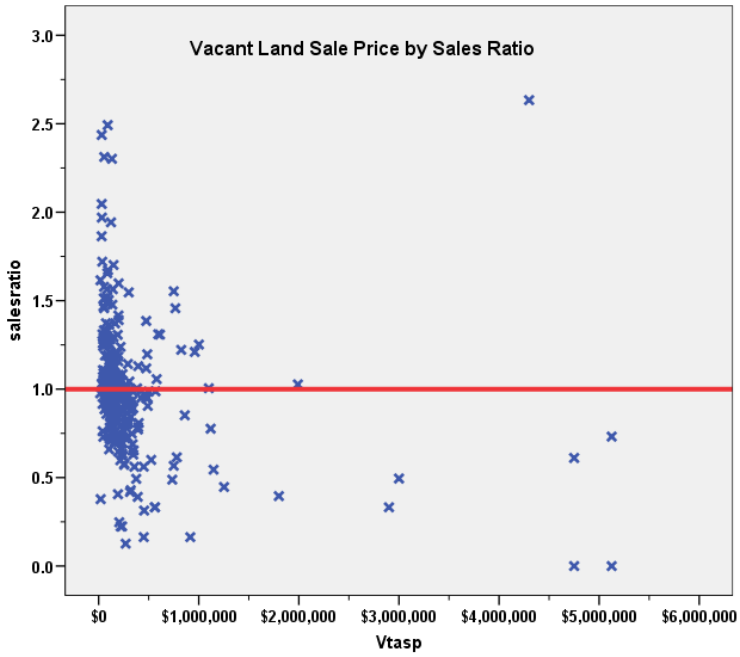
V. VACANT LAND SALE RESULTS

There were 391 qualified commercial/industrial sales in the 24-month period prior to June 30, 2014. The sales ratio analysis was analyzed as follows:

Median	0.978
Price Related Differential	1.166
Coefficient of Dispersion	20.7

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





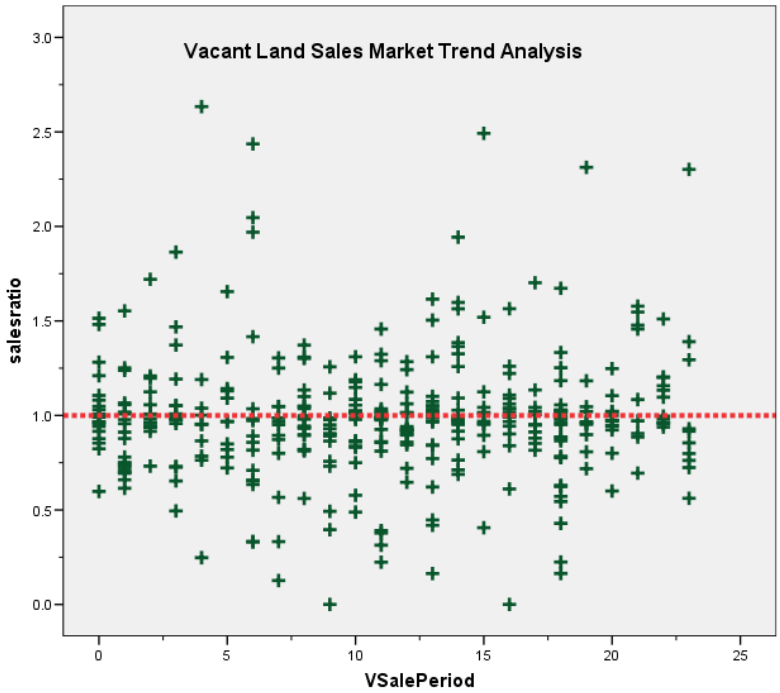
The above histogram indicates that the distribution of the vacant land sale ratios was within state mandated limits. No sales were trimmed.

Vacant Land Market Trend Analysis

We next analyzed the vacant land dataset using the 24-month sale period, with the following results:

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.967	.032		30.488	.000
	VSalePeriod	.002	.002	.040	.781	.435

a. Dependent Variable: salesratio



The above analysis indicated that there was no significant statistical trend. We therefore concluded that the assessor has adequately dealt with market trending for vacant land properties.

Sold/Unsold Analysis

In terms of the valuation consistency between sold and unsold vacant land properties, we compared the median change in value for 2014 and 2016 between each group, as follows:

Report

DIFF

sold	N	Median	Mean
UNSOLD	11,063	1.04	11.31
SOLD	358	1.13	13.42

We next performed the same comparison analysis by subdivision with at least 3 sales. This indicated that when broken down by subdivision, there was overall consistency between sold and unsold properties. The following table was developed using subdivision with at least 5 sales:

Report

DIFF

subdivno	sold	N	Median	Mean
	UNSOLD	1,892	1.00	1.04
	SOLD	37	.97	1.02
036405	UNSOLD	3	.96	1.06
	SOLD	5	1.10	1.25
186645	UNSOLD	2	.95	.95
	SOLD	5	1.02	1.00
213105	UNSOLD	4	1.00	1.00
	SOLD	6	1.23	1.31
603605	UNSOLD	1	.85	.85
	SOLD	6	.90	.99
615125	UNSOLD	14	.72	.72
	SOLD	7	.72	.75
636005	UNSOLD	14	1.05	1.12
	SOLD	5	1.05	1.08
638208	UNSOLD	3	1.04	1.02
	SOLD	9	.88	.96
693450	UNSOLD	10	1.33	1.33
	SOLD	9	1.33	1.35
781360	UNSOLD	1	1.13	1.13
	SOLD	7	1.13	1.02
835875	UNSOLD	4	1.16	1.09
	SOLD	25	1.41	1.44

Overall, we concluded that the county assessor valued sold and unsold vacant properties consistently.

V. AGRICULTURAL IMPROVEMENTS ANALYSIS

Based on the parameters of the state audit analysis, this county was exempt from this analysis for 2016.

VI. CONCLUSIONS

Based on this 2016 audit statistical analysis, residential and vacant land properties were found to be in compliance with state guidelines.

STATISTICAL ABSTRACT

Residential

econarea	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
		Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			Mean Centered
.	.547	-1.702	2.795	.024	.024	1.592	100.0%	.092	-.325	.509	5.962	21.635	165.6%
1	.993	.990	.996	.987	.983	.991	95.3%	.966	.937	.996	1.027	.069	9.2%
2	.982	.978	.986	.976	.972	.980	95.2%	.845	.727	.963	1.162	.090	12.8%
3	.978	.975	.982	.980	.977	.982	95.3%	.800	.701	.898	1.224	.075	10.6%
4	.982	.979	.984	.974	.972	.976	95.3%	.918	.860	.976	1.069	.066	9.2%
5	.992	.987	.997	.990	.986	.995	95.2%	.983	.978	.989	1.008	.062	8.6%
6	.983	.975	.991	.973	.967	.979	95.2%	.972	.964	.981	1.011	.084	11.8%
7	1.003	.972	1.034	.983	.961	.998	96.5%	.987	.947	1.026	1.017	.105	15.4%
8	.989	.981	.998	.988	.981	.992	95.3%	.974	.964	.984	1.016	.095	13.9%
9	1.003	.994	1.012	.989	.981	.997	95.5%	.976	.965	.987	1.028	.105	13.8%

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

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
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			Mean Centered
.881	.858	.904	.957	.949	.965	95.7%	.494	.365	.623	1.785	.146	28.6%

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.

Vacant Land

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
	Lower Bound	Upper Bound		Lower Bound	Upper Bound	Actual Coverage		Lower Bound	Upper Bound			Mean Centered
.989	.956	1.021	.978	.965	.989	95.7%	.848	.669	1.028	1.166	.207	32.9%

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	$25K to $50K	14	0.1%
	$50K to $100K	349	1.8%
	$100K to $150K	1244	6.5%
	$150K to $200K	1878	9.8%
	$200K to $300K	6697	34.9%
	$300K to $500K	6466	33.7%
	$500K to $750K	1938	10.1%
	$750K to $1,000K	408	2.1%
	Over $1,000K	211	1.1%
Overall		19205	100.0%
Excluded		0	
Total		19205	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
$25K to $50K	1.107	1.013	.143	17.9%
$50K to $100K	1.009	1.004	.103	14.2%
$100K to $150K	.995	1.001	.079	12.5%
$150K to $200K	.993	.999	.077	10.8%
$200K to $300K	.990	1.001	.074	10.2%
$300K to $500K	.971	1.001	.073	10.0%
$500K to $750K	.963	1.001	.074	9.8%
$750K to $1,000K	.929	1.001	.088	12.1%
Over $1,000K	.916	1.460	.185	28.9%
Overall	.980	1.100	.077	11.0%

Subclass

Case Processing Summary

		Count	Percent
abstrimp	0	5	0.0%
	1212	17002	88.5%
	1215	187	1.0%
	1220	82	0.4%
	1225	85	0.4%
	1230	1812	9.4%
	1240	1	0.0%
	1712	4	0.0%
	1714	2	0.0%
	1716	6	0.0%
	1721	4	0.0%
	1724	1	0.0%
	1881	1	0.0%
	1883	1	0.0%
	1891	1	0.0%
	1964	1	0.0%
	1968	1	0.0%
	2014	1	0.0%
	2215	2	0.0%
	2734	1	0.0%
	2745	1	0.0%
	4277	3	0.0%
	9270	1	0.0%
Overall		19205	100.0%
Excluded		0	
Total		19205	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.037	.914	6.731	1183.9%
1212	.980	1.012	.076	10.5%
1215	.960	1.010	.081	11.9%
1220	.980	1.251	.132	32.7%
1225	.958	1.549	.185	33.6%
1230	.979	1.009	.076	10.5%
1240	.913	1.000	.000	.
1712	.960	1.039	.092	13.6%
1714	1.020	.998	.016	2.2%
1716	.861	1.065	.188	24.9%
1721	.984	1.069	.192	34.8%
1724	.996	1.000	.000	.
1881	.964	1.000	.000	.
1883	.426	1.000	.000	.
1891	1.209	1.000	.000	.
1964	.462	1.000	.000	.
1968	1.082	1.000	.000	.
2014	1.061	1.000	.000	.
2215	.653	.785	.523	73.9%
2734	1.292	1.000	.000	.
2745	.968	1.000	.000	.
4277	.429	.925	.556	97.2%
9270	1.451	1.000	.000	.
Overall	.980	1.100	.077	11.0%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	0	5	0.0%
	Over 100	104	0.5%
	75 to 100	298	1.6%
	50 to 75	3112	16.2%
	25 to 50	9095	47.4%
	5 to 25	5022	26.1%
	5 or Newer	1569	8.2%
Overall		19205	100.0%
Excluded		0	
Total		19205	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.037	.914	6.731	1183.9%
Over 100	.877	1.006	.132	17.5%
75 to 100	.945	1.041	.133	18.3%
50 to 75	.974	1.025	.093	13.0%
25 to 50	.982	1.097	.076	10.6%
5 to 25	.978	1.092	.068	9.4%
5 or Newer	.988	1.226	.068	10.7%
Overall	.980	1.100	.077	11.0%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	0	5	0.0%
	LE 500 sf	40	0.2%
	500 to 1,000 sf	2361	12.3%
	1,000 to 1,500 sf	6181	32.2%
	1,500 to 2,000 sf	4817	25.1%
	2,000 to 3,000 sf	4536	23.6%
	3,000 sf or Higher	1265	6.6%
Overall		19205	100.0%
Excluded		0	
Total		19205	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
0	.037	.914	6.731	1183.9%
LE 500 sf	.960	1.015	.091	14.9%
500 to 1,000 sf	.973	1.014	.083	11.6%
1,000 to 1,500 sf	.982	1.009	.075	10.3%
1,500 to 2,000 sf	.981	1.009	.074	10.0%
2,000 to 3,000 sf	.980	1.011	.075	10.7%
3,000 sf or Higher	.978	1.380	.095	16.3%
Overall	.980	1.100	.077	11.0%

Commercial Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	LT $25K	1	0.2%
	$50K to $100K	30	6.6%
	$100K to $150K	60	13.2%
	$150K to $200K	61	13.4%
	$200K to $300K	42	9.3%
	$300K to $500K	55	12.1%
	$500K to $750K	43	9.5%
	$750K to $1,000K	24	5.3%
	Over $1,000K	138	30.4%
Overall		454	100.0%
Excluded		0	
Total		454	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT $25K	.647	1.000	.000	.
$50K to $100K	.960	1.015	.104	34.2%
$100K to $150K	.965	1.010	.131	22.1%
$150K to $200K	.975	1.002	.073	15.4%
$200K to $300K	.964	.993	.116	21.3%
$300K to $500K	.951	.999	.089	17.4%
$500K to $750K	.975	1.007	.090	17.7%
$750K to $1,000K	.947	1.004	.217	36.5%
Over $1,000K	.909	1.667	.229	36.0%
Overall	.957	1.785	.146	27.5%

Subclass

Case Processing Summary

		Count	Percent
abstrimp	1215	1	0.2%
	1712	1	0.2%
	2212	100	22.0%
	2215	3	0.7%
	2220	52	11.5%
	2225	3	0.7%
	2230	68	15.0%
	2235	45	9.9%
	2245	42	9.3%
	3215	2	0.4%
	3230	136	30.0%
	9279	1	0.2%
Overall		454	100.0%
Excluded		0	
Total		454	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1215	1.421	1.000	.000	.
1712	.883	1.000	.000	.
2212	.940	1.438	.181	31.0%
2215	1.086	1.053	.102	20.0%
2220	.922	2.538	.191	32.4%
2225	.923	.908	.342	61.9%
2230	.965	1.200	.139	25.7%
2235	.967	1.096	.109	23.0%
2245	.714	1.062	.372	45.3%
3215	.939	1.008	.057	8.0%
3230	.969	1.031	.056	17.4%
9279	1.060	1.000	.000	.
Overall	.957	1.785	.146	27.5%

Improvement Age

Case Processing Summary

		Count	Percent
AgeRec	Over 100	11	2.4%
	75 to 100	4	0.9%
	50 to 75	60	13.2%
	25 to 50	134	29.5%
	5 to 25	153	33.7%
	5 or Newer	92	20.3%
Overall		454	100.0%
Excluded		0	
Total		454	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	.843	1.141	.234	37.1%
75 to 100	.965	.999	.016	2.1%
50 to 75	.966	1.042	.155	25.6%
25 to 50	.952	1.151	.152	26.1%
5 to 25	.944	2.142	.196	35.6%
5 or Newer	.975	1.120	.043	8.6%
Overall	.957	1.785	.146	27.5%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	1	0.2%
	500 to 1,000 sf	81	17.8%
	1,000 to 1,500 sf	64	14.1%
	1,500 to 2,000 sf	28	6.2%
	2,000 to 3,000 sf	54	11.9%
	3,000 sf or Higher	226	49.8%
Overall		454	100.0%
Excluded		0	
Total		454	

Ratio Statistics for currtot / tasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	.361	1.000	.000	.
500 to 1,000 sf	.950	1.148	.126	23.8%
1,000 to 1,500 sf	.982	1.143	.095	21.0%
1,500 to 2,000 sf	.960	1.075	.189	40.0%
2,000 to 3,000 sf	.969	1.238	.121	25.4%
3,000 sf or Higher	.940	1.770	.166	28.7%
Overall	.957	1.785	.146	27.5%

Vacant Land Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	LT $25K	3	0.8%
	$25K to $50K	19	4.9%
	$50K to $100K	67	17.1%
	$100K to $150K	116	29.7%
	$150K to $200K	55	14.1%
	$200K to $300K	62	15.9%
	$300K to $500K	39	10.0%
	$500K to $750K	10	2.6%
	$750K to $1,000K	6	1.5%
	Over $1,000K	14	3.6%
Overall		391	100.0%
Excluded		0	
Total		391	

Ratio Statistics for currInd / Vtasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT $25K	.976	1.014	.422	63.4%
$25K to $50K	1.259	1.034	.268	37.4%
$50K to $100K	1.036	1.008	.186	31.9%
$100K to $150K	.974	1.001	.130	23.2%
$150K to $200K	.998	.996	.148	20.8%
$200K to $300K	.898	.996	.185	27.2%
$300K to $500K	.894	.990	.219	30.2%
$500K to $750K	.794	.988	.491	56.7%
$750K to $1,000K	1.031	1.011	.365	47.7%
Over $1,000K	.578	1.044	.720	116.8%
Overall	.978	1.166	.207	33.3%

Subclass

Case Processing Summary

		Count	Percent
abstrInd	100	102	26.1%
	200	13	3.3%
	300	4	1.0%
	510	4	1.0%
	520	9	2.3%
	530	7	1.8%
	540	3	0.8%
	550	6	1.5%
	560	2	0.5%
	600	3	0.8%
	1112	205	52.4%
	1125	6	1.5%
	1791	1	0.3%
	2112	4	1.0%
	2115	1	0.3%
	2120	1	0.3%
	2125	1	0.3%
	2130	16	4.1%
	2135	3	0.8%
Overall		391	100.0%
Excluded		0	
Total		391	

Ratio Statistics for currInd / Vtasp

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
100	.981	1.055	.155	27.1%
200	1.242	3.844	.423	60.2%
300	.737	.912	.227	31.6%
510	1.017	1.233	.152	34.0%
520	.951	1.680	.127	24.7%
530	.975	1.288	.199	34.6%
540	1.007	1.088	.102	18.5%
550	.975	1.002	.026	4.1%
560	.332	1.000	.000	0.0%
600	1.304	1.114	.216	37.4%
1112	.986	1.055	.164	25.1%
1125	1.577	1.101	.413	48.5%
1791	.878	1.000	.000	.
2112	.713	.939	.529	65.9%
2115	.776	1.000	.000	.
2120	.615	1.000	.000	.
2125	.852	1.000	.000	.
2130	.553	1.065	.519	76.1%
2135	.800	.919	.418	66.3%
Overall	.978	1.166	.207	33.3%