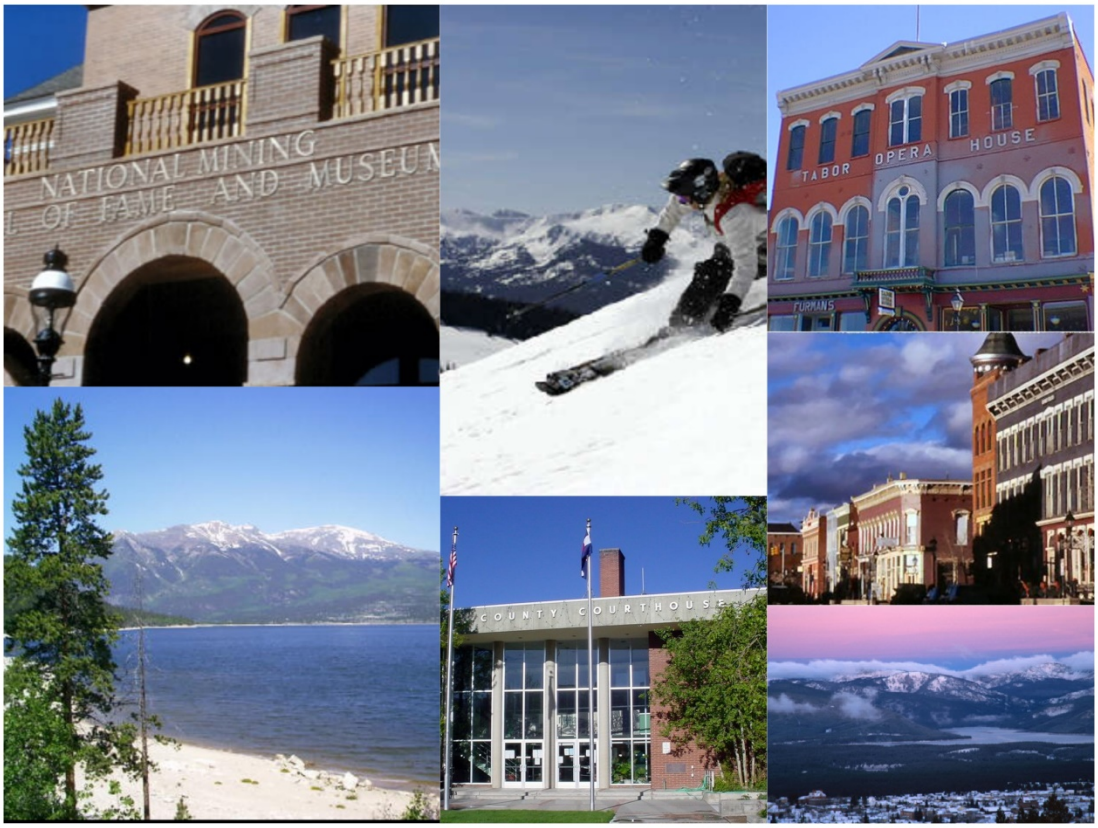
2021
LAKE COUNTY
PROPERTY ASSESSMENT
STUDY



WILDROSE
APPRAISAL, INCORPORATED
Audit Division

WILDROSE
APPRAISAL, INCORPORATED
Audit Division

September 15, 2021

Ms. Natalie Mullis
Director of Research
Colorado Legislative Council
Room 029, State Capitol Building
Denver, Colorado 80203

RE: Final Report for the 2021 Colorado Property Assessment Study

Dear Ms. Mullis:

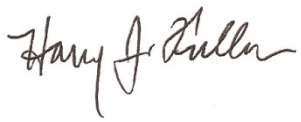
Wildrose Appraisal Inc.-Audit Division is pleased to submit the Final Reports for the 2021 Colorado Property Assessment Study.

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

TABLE OF CONTENTS

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.

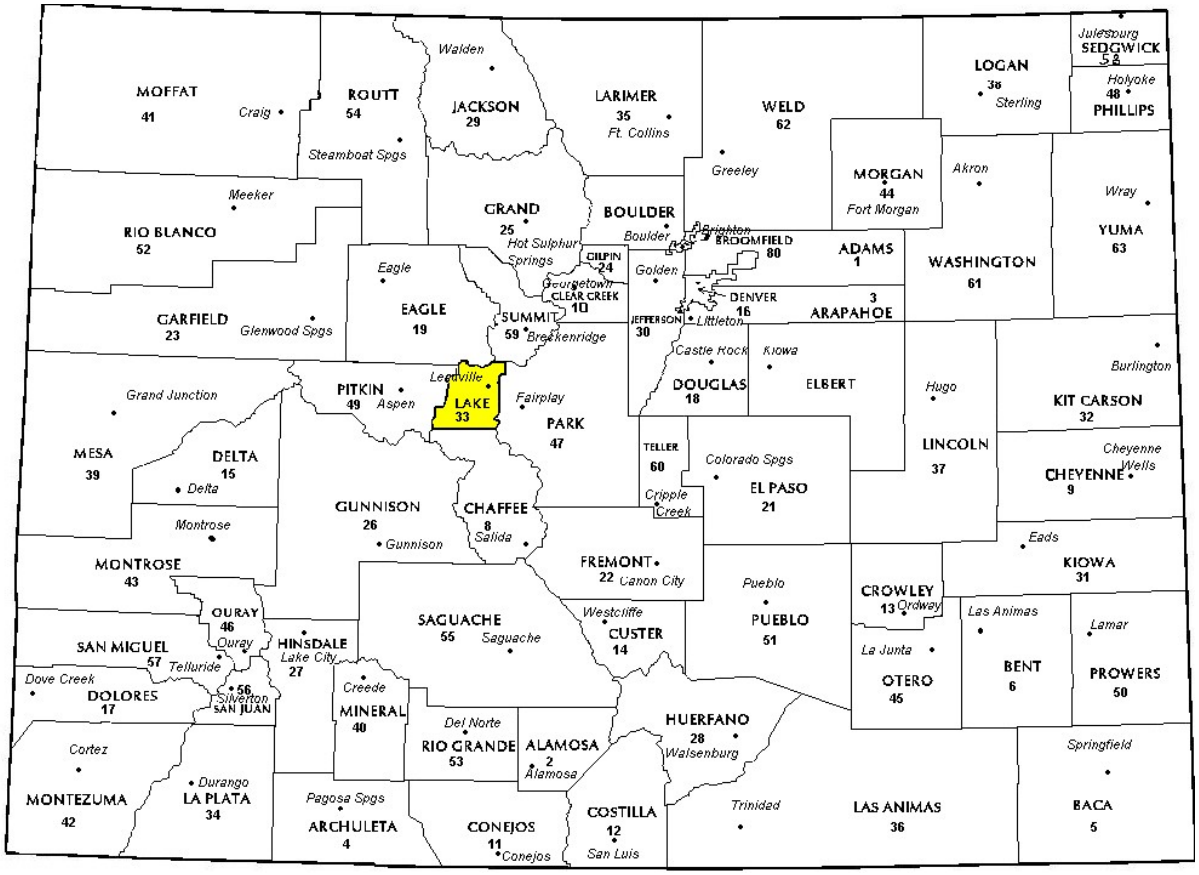
Statistical analysis is performed on vacant land, residential properties, commercial industrial properties, agricultural land, and personal property. The statistical study results are compared with State Board of Equalization compliance requirements and the manuals published by the State Property Tax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

Wildrose Audit has completed the Property Assessment Study for 2021 and is pleased to report its findings for Lake County in the following report.

REGIONAL / HISTORICAL SKETCH OF LAKE COUNTY

Regional Information

Lake County is located in the Central Mountains region of Colorado. The Central Mountains Region is in the central portion of Colorado. It extends from the northern Gilpin county boundary approximately 210 miles southeasterly to the southern boundary of Colorado, including Chaffee, Clear Creek, Custer, Fremont, Gilpin, Huerfano, Lake, Las Animas, Park, and Teller counties.



Historical Information

Lake County has approximately 376.9 square miles and an estimated population of approximately 8,127 people with 19.4 people per square mile, according to the U.S. Census Bureau's 2020 estimated census data. This represents an 11.2 percent change from April 1, 2010 to July 1, 2019.

Lake County was one of the original 17 counties created by the Colorado legislature on November 1, 1861. As originally defined, Lake County included a large portion of western Colorado to the south and west of its present boundaries. It was named for the Twin Lakes in the area.

Lake County slowly lost territory over the succeeding decades, losing to Saguache County in 1866, Hinsdale County in 1874, La Plata County in 1874, San Juan County in 1876 and to Ouray and Gunnison counties in 1877.

With its many reductions in size, Lake County's designated county seat also changed multiple times within just a few years, residing successively in Oro City (from 1861), Lourette (from 1863), Dayton (from 1866), and Granite (from 1868).

By 1878, Lake County had been reduced to an area including only present-day Lake and Chaffee counties. On February 8, 1879, the Colorado legislature renamed Lake County as Carbonate County, although this designation name only lasted for two days, until Chaffee County was split off from Carbonate's southern section on February 10 and the remaining northern portion was redesignated Lake County with its current county seat of Leadville.

Leadville sits in a high mountain valley surrounded by snow-capped peaks. It is North America's highest incorporated city at a lofty perch of 10,430 feet. With 310 days of sunshine each year and summer temperatures seldom over 80 degrees, Leadville, Twin Lakes, and Lake County have been a mountain retreat for over 100 years. The local ski area, Ski Cooper, is the place where the men of the 10th Mountain Division trained. Also located in Leadville is the National Mining Hall of Fame & Museum which is the only federally-chartered non-profit national mining museum.
(Wikipedia.org, mininghalloffame.org, Lakecountyco.com & leadville.com)

RATIO ANALYSIS

Methodology

All significant classes of property were analyzed. Sales were collected for each property class over the eighteen month period from January 1, 2019 through June 30th, 2020. Property classes with less than thirty sales had the sales period extended in six month increments up to an additional forty-two months. If this extended sales period did not produce the minimum thirty qualified sales, the Audit performed supplemental appraisals to reach the minimum.

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.

All sixty-four counties were examined for compliance on the economic area level. Where there were sufficient sales data, the neighborhood and subdivision levels were tested for compliance. Although counties are determined to be in or out of compliance at the class level, non-compliant economic areas, neighborhoods and subdivisions (where applicable) were discussed with the Assessor.

Data on the individual economic areas, neighborhoods and subdivisions are found in the STATISTICAL APPENDIX.

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
Residential Condominium	Between .95-1.05	Less than 15.99
Residential	Between .95-1.05	Less than 15.99
Vacant Land	Between .95-1.05	Less than 20.99

The results for Lake County are:

Lake County Ratio Grid					
Property Class	Number of Qualified Sales	Unweighted Median Ratio	Price Related Differential	Coefficient of Dispersion	Time Trend Analysis
*Commercial/Industrial	27	0.978	0.973	13	Compliant
Residential	225	0.951	1.007	13.2	Compliant
Vacant Land	154	0.999	1.051	11.9	Compliant

**County Sales File augmented by 3 supplemental appraisals*

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

Lake 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
Residential	Compliant
Vacant Land	Compliant

Conclusions

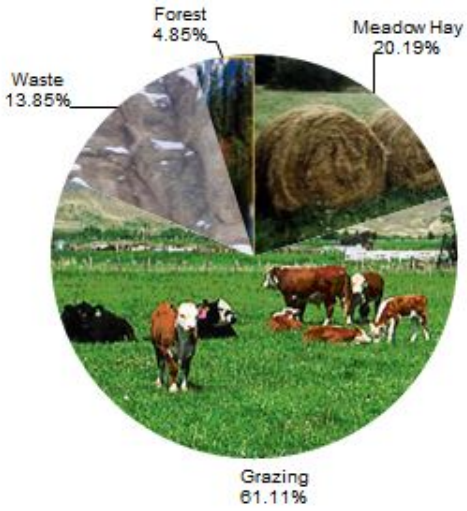
After applying the above described methodologies, it is concluded that Lake County is reasonably treating its sold and unsold properties in the same manner.

Recommendations

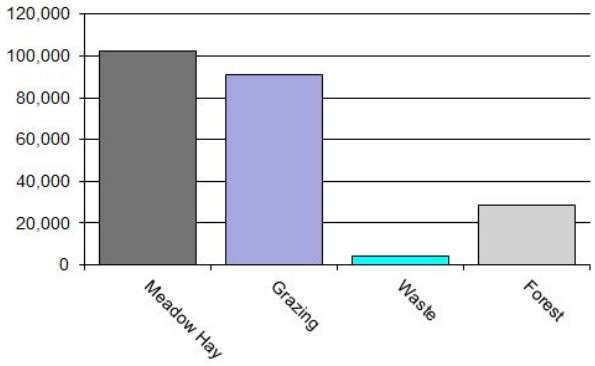
None

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:

Lake County Agricultural Land Ratio Grid						
Abstract Code	Land Class	Number Of Acres	County Value Per Acre	County Assessed Total Value	WRA Total Value	Ratio
4137	Meadow Hay	2,522	40.56	102,283	102,283	1.00
4147	Grazing	7,634	11.92	91,015	91,015	1.00
4177	Forest	605	47.42	28,708	28,708	1.00
4167	Waste	1,730	2.42	4,183	4,183	1.00
Total/Avg		**12,491**	**18.11**	**226,189**	**226,189**	**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

Lake 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

Lake 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
- Written Correspondence other than Questionnaire
- Personal Knowledge of Occupants at Assessment Date
- Word of mouth from Tax Payers

Lake 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
- Questionnaires
- Aerial Photography/Pictometry

Lake 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 2021 for Lake County. This study was conducted by checking selected sales from the master sales list for the current valuation period. Specifically WRA selected 36 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 $100,000, 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.
>
> When less than 50 percent of sales are qualified in any of the three property classes (residential, commercial, and vacant land), the contractor analyzed the reasons for disqualifying sales in any subclass that constitutes at least 20 percent of the class, either by number of properties or by value, from the prior year. 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.

If 50 percent or more of the sales are qualified, the contractor has reviewed a statistically significant sample of unqualified sales, excluding sales that were disqualified for obvious reasons.

Lake County did not qualify for in-depth subclass analysis.

Conclusions

Lake County appears to be doing an adequate 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

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

Producing Mines

Methodology

Colorado Revised Statutes (CRS) Article 39, Section 6, and the Assessor's Reference Library (ARL), Volume 3 are the basis for valuing producing mine property. The gross value of the ore extracted during the preceding year is determined. All costs of treatment, reduction, transportation and sale are deducted to estimate gross proceeds. The costs of extraction are deducted from the gross proceeds to estimate net proceeds.

The current value for assessment is determined by determining if 25% of the gross proceeds or 100% of the net proceeds is greater, then applying that number as the valuation for assessment.

Conclusions

The County valued the producing mine production using acceptable appraisal procedures.

Recommendations

None

VACANT LAND

Subdivision Discounting

Subdivisions were reviewed in 2021 in Lake County. The review showed that subdivisions were discounted pursuant to the Colorado Revised Statutes in Article 39-1-103 (14). Discounting procedures were applied to all subdivisions where less than 80 percent of all sites were sold using the present worth method. The market approach was applied where 80 percent or more of the subdivision sites were sold. An absorption period was estimated for each subdivision that was discounted. An appropriate discount rate was developed using the summation method. Subdivision land with structures was appraised at full market value.

Conclusions

Lake 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.

Lake 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

Lake 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

Lake 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.

Lake 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
- MLS Listing and/or Sold Books
- 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
- Social Media

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.

Lake County submitted their personal property written audit plan and was current for the 2021 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:

- Accounts with obvious discrepancies
- New businesses filing for the first time
- Accounts with greater than 10% change
- Incomplete or inconsistent declarations
- Accounts with omitted property
- Businesses with no deletions or additions for 2 or more years

- Non-filing Accounts - Best Information Available
- Accounts close to the $7,900 actual value exemption status
- Accounts protested with substantial disagreement
- New businesses

Conclusions

Lake 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*

STATISTICAL APPENDIX

STATISTICAL COMPLIANCE REPORT
FOR LAKE COUNTY
2021

I. OVERVIEW

Lake County is located in the central mountain region of Colorado. The county has a total of 7,511 real property parcels, according to data submitted by the county assessor's office in 2021. 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 59.6% of all vacant land parcels.

For residential improved properties, single family properties accounted for 93.2% of all residential properties.

Commercial and industrial properties represented a much smaller proportion of property classes in comparison. Commercial/industrial properties accounted for 1.9% of all such properties in this county.

II. DATA FILES

The following sales analyses were based on the requirements of the 2021 Colorado Property Assessment Study. Information was provided by the Lake Assessor's Office in May 2021. The data included all 5 property record files as specified by the Auditor.

Please note that we only included qualified and confirmed sales in this analysis, coded as a "C". Qualified sales not confirmed (coded as a "Q") were not included in this analysis.

III. RESIDENTIAL SALES RESULTS

A total of 227 qualified residential were initially analyzed; we trimmed 2 sales using IAAO standards. This resulted in 225 sales used in this analysis. They occurred between July 1, 2018 and June 30, 2020. The sales ratio analysis was analyzed as follows:

Median	**0.951**
Price Related Differential	**1.007**
Coefficient of Dispersion	**13.2**

We next stratified the sale ratio analysis by economic area and neighborhood. The minimum sales for neighborhoods was 10 sales. The following are the results of this stratification analysis:

Economic Area

Case Processing Summary

		Count	Percent
ECONAREA	1.00	136	61.5%
	2.00	10	4.5%
	3.00	10	4.5%
	5.00	65	29.4%
Overall		221	100.0%
Excluded		4	
Total		225	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
1.00	.926	1.002	.135
2.00	1.043	1.048	.145
3.00	1.012	1.093	.171
5.00	.964	1.000	.112
Overall	.948	1.006	.132

Neighborhoods with 10 or more sales

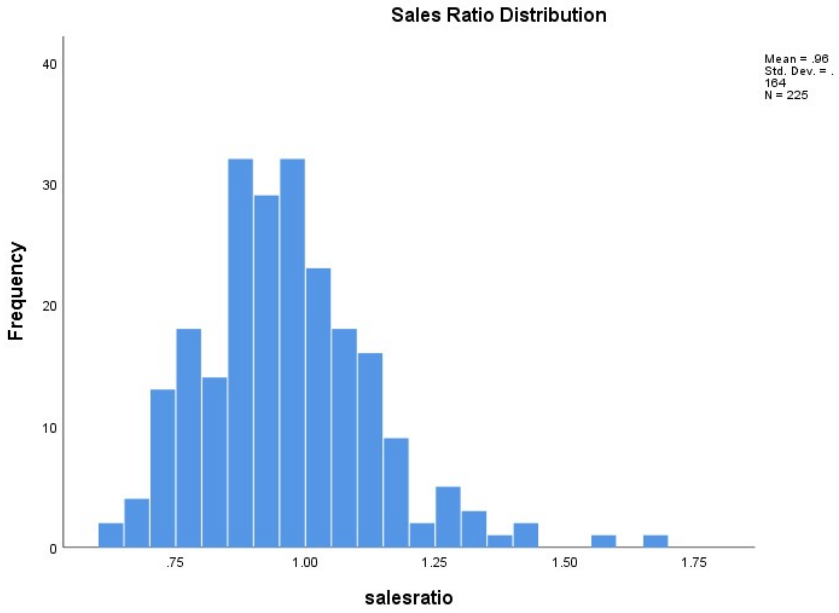
Case Processing Summary

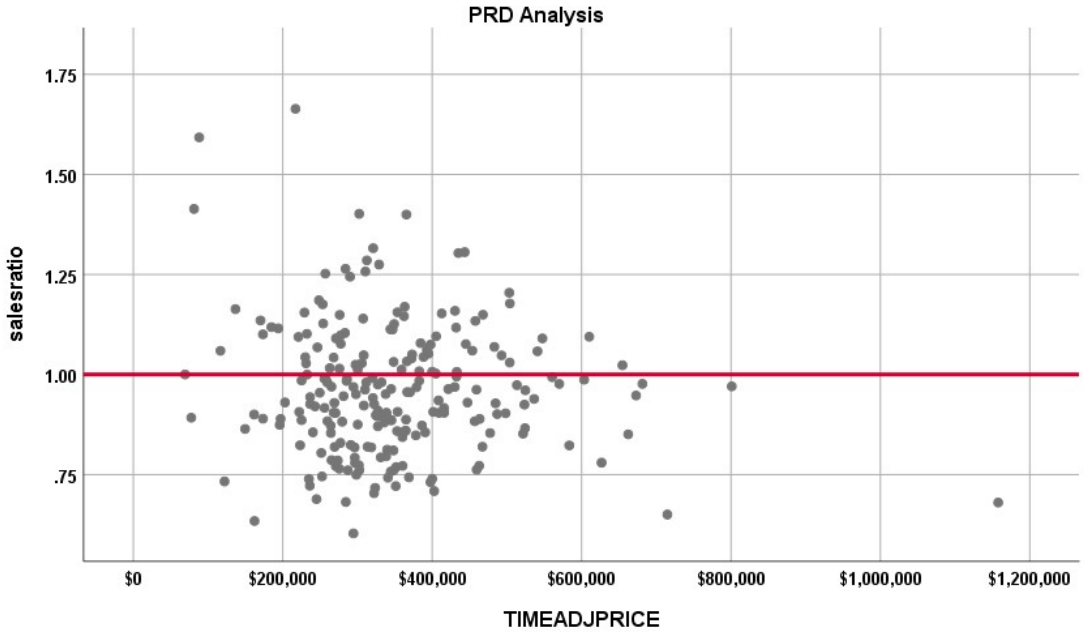
		Count	Percent
NBHD	1400	92	62.6%
	1440	31	21.1%
	1610	10	6.8%
	1640	14	9.5%
Overall		147	100.0%
Excluded		0	
Total		147	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
1400	.913	1.004	.135
1440	.917	1.002	.121
1610	.988	.990	.112
1640	1.022	.998	.072
Overall	.929	.999	.128

Although the overall sales ratio median was within SBOE standards, there were several economic areas and neighborhoods that were below the minimum limit. We will contact the assessor's office to advise them of these results. The following graphs describe further the sales ratio distribution for these properties:



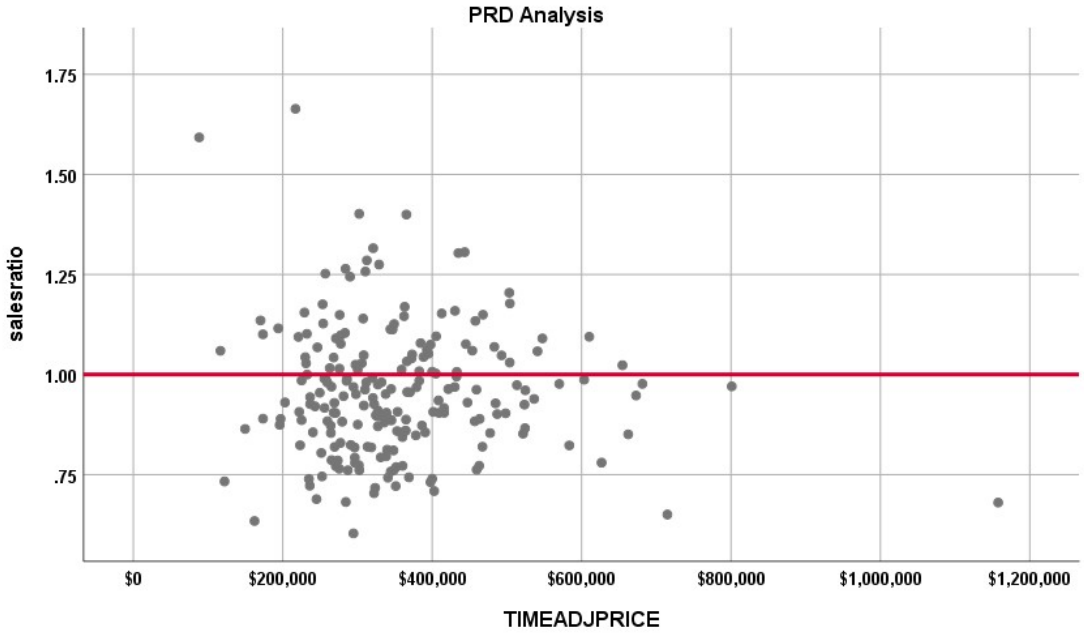


The above graphs indicate that the distribution of the sale ratios was within state mandated limits.

Subclass 1212 PRD Analysis

We next analyzed residential properties identified as 1212 using the state abstract code system. These include single family residences, town homes and purged manufactured homes. The following indicates the distribution of sales ratios across the sale price spectrum:

1212 SALES



The Price-Related Differential (PRD) for all sales is 1.005, which is within IAAO standards for the PRD. We also performed a regression analysis between the sales ratio and the assessor's current value to further test for regressivity or progressivity in the residential sales valuation, as follows:

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.804	.030		26.511	.000
	CURRTOT	.00000045	.000	.346	5.351	.000

a. Dependent Variable: salesratio

The slope of the line at 0.00000045 indicates that there is virtually no slope in the regression line, which indicates that sales ratios are similar across the entire sale price array.

We also stratified the sales ratio analysis by the sale price range, as follows:

Case Processing Summary

		Count	Percent
SPRec	LT $200K	11	5.2%
	$200K to $300K	67	31.5%
	$300K to $400K	78	36.6%
	$400K to $500K	34	16.0%
	Over $500K	23	10.8%
Overall		213	100.0%
Excluded		0	
Total		213	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion
LT $200K	.890	1.023	.205
$200K to $300K	.944	1.003	.133
$300K to $400K	.924	1.000	.132
$400K to $500K	.949	1.000	.118
Over $500K	.970	1.018	.104
Overall	.944	1.005	.130

The above indicates that was no consistent pattern indicating regressivity or progressivity in the sale data for Lake County.

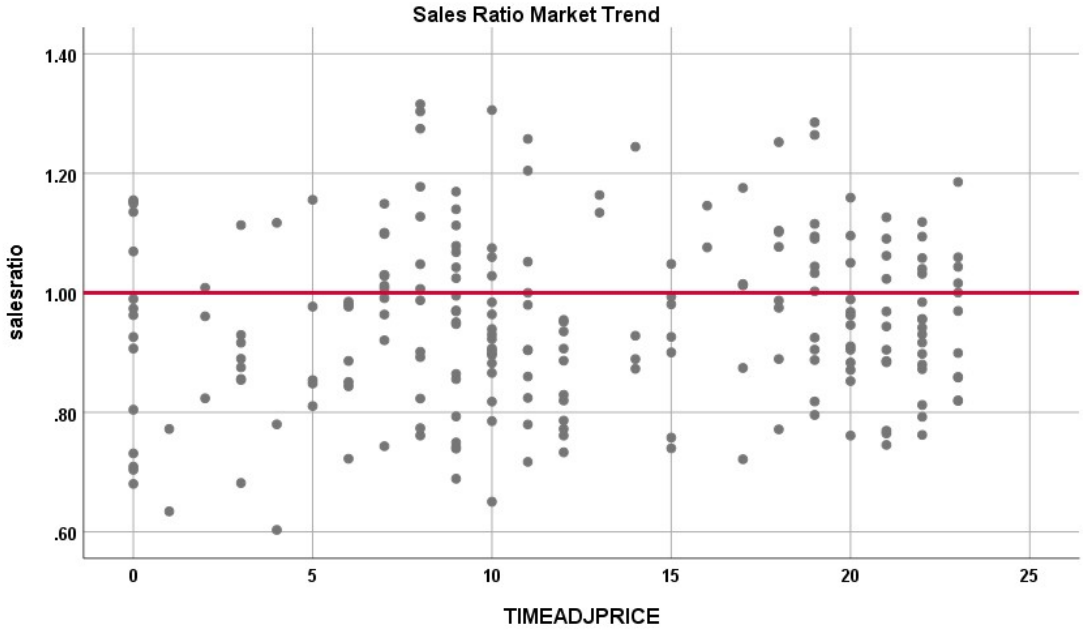
Residential Market Trend Analysis

We next analyzed the residential dataset using the 24-month sale period for any residual market trending, as follows:

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.925	.020		46.811	.000
	SalePeriod	.002	.001	.097	1.439	.152

a. Dependent Variable: salesratio



There was no residual market trending present in the sale ratio data. 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 sold and unsold residential properties using the median percent change in value between valuation year 2018 and valuation year 2020, as follows:

Report

DIFF

sold	N	Median	Mean
UNSOLD	3299	1.2045	1.2913
SOLD	225	1.2038	1.1882

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	.759	Retain the null hypothesis.

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

We next stratified the sold/unsold analysis by economic area, as follows:

Report
DIFF

ECONAREA	sold	N	Median	Mean
1.00	UNSOLD	1748	1.2112	1.2336
	SOLD	136	1.2121	1.1905
2.00	UNSOLD	363	1.1537	1.5900
	SOLD	10	1.1641	1.2687
3.00	UNSOLD	205	1.2225	1.3162
	SOLD	10	1.2283	1.2269
5.00	UNSOLD	651	1.1956	1.3279
	SOLD	65	1.1629	1.1629

We also next stratified the sold/unsold analysis by neighborhoods with at least 10 sales, as follows:

Report
DIFF

NBHD	sold	N	Median	Mean
1400	UNSOLD	1273	1.1970	1.1993
	SOLD	92	1.2089	1.1860
1440	UNSOLD	310	1.2185	1.1987
	SOLD	31	1.2186	1.1812
1610	UNSOLD	57	1.1620	1.2393
	SOLD	10	1.1571	1.1553
1640	UNSOLD	94	1.1883	1.2874
	SOLD	14	1.1992	1.1722

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

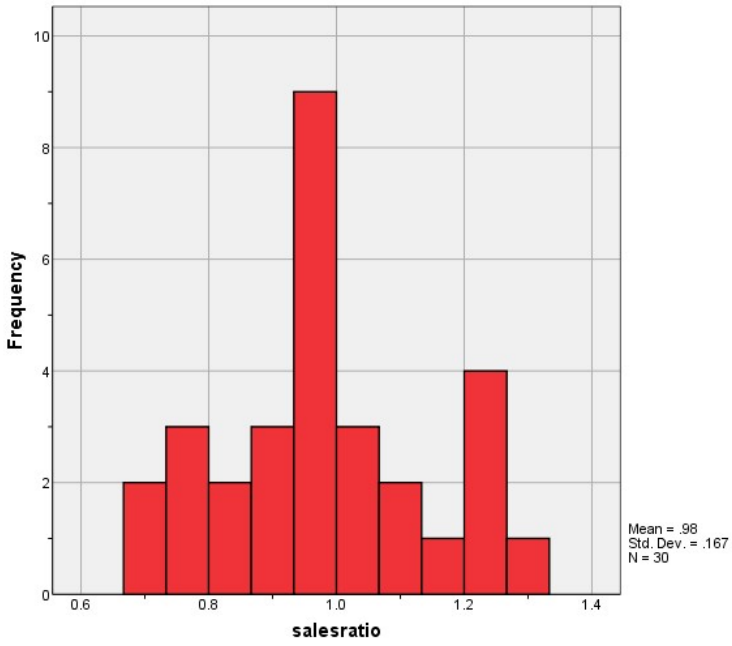
IV. COMMERCIAL/INDUSTRIAL SALE RESULTS

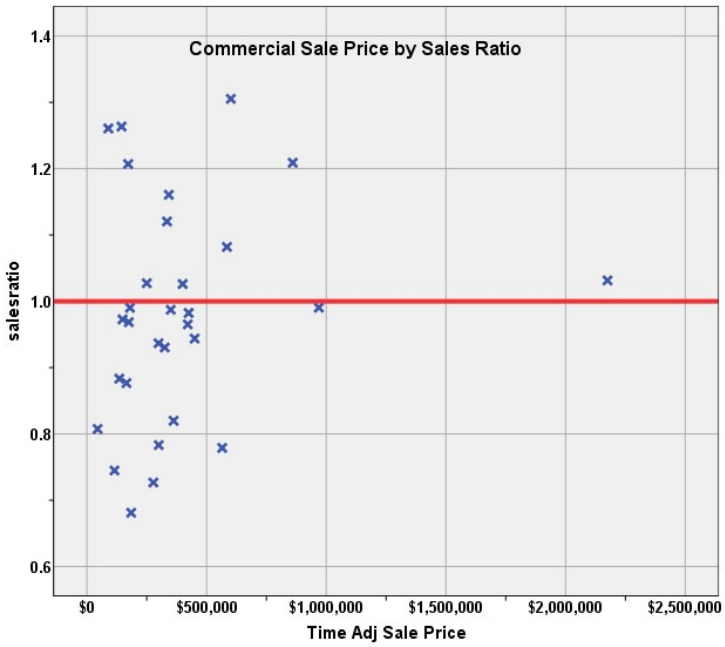
There were 27 qualified commercial sales qualified for analysis in the 60 month period prior to June 30, 2020. Based on the guidelines of the 2021 Audit, we augmented the 27 commercial sales with 3 supplemental appraisals. Please note that the 27 sales will be used to analyze the commercial market trend and for the sold and unsold comparison analysis.

The sales ratio analysis was analyzed with the following results:

Median	**0.978**
Price Related Differential	**0.973**
Coefficient of Dispersion	**13.0**

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





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

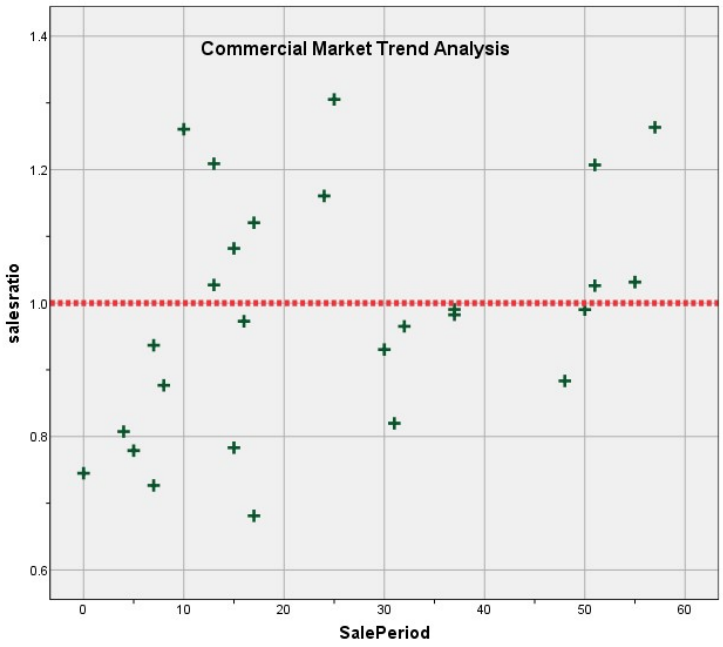
Commercial Market Trend Analysis

We next analyzed the commercial dataset using the 60-month sale period for any residual market trending, as follows:

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.893	.056		15.847	.000
	SalePeriod	.004	.002	.367	1.974	.059

a. Dependent Variable: salesratio



There was no significant residual market trending present in the sale ratio data. 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 commercial sold and unsold properties using the median 2021 actual value per square foot, as follows:

Report

VALSF

sold	N	Median	Mean
UNSOLD	121	$59	$68
SOLD	23	$73	$102

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	.018	Retain the null hypothesis.

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

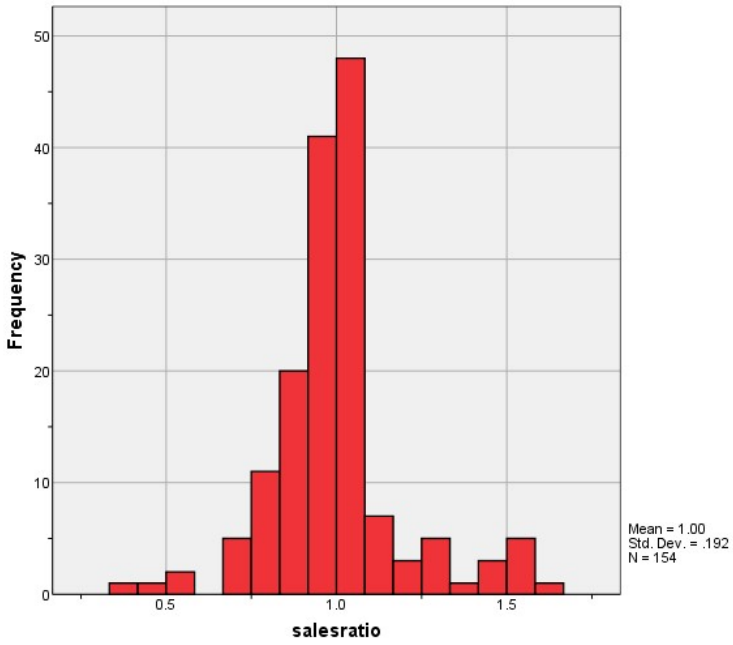
The above results indicate that sold and unsold commercial properties were valued in a consistent manner.

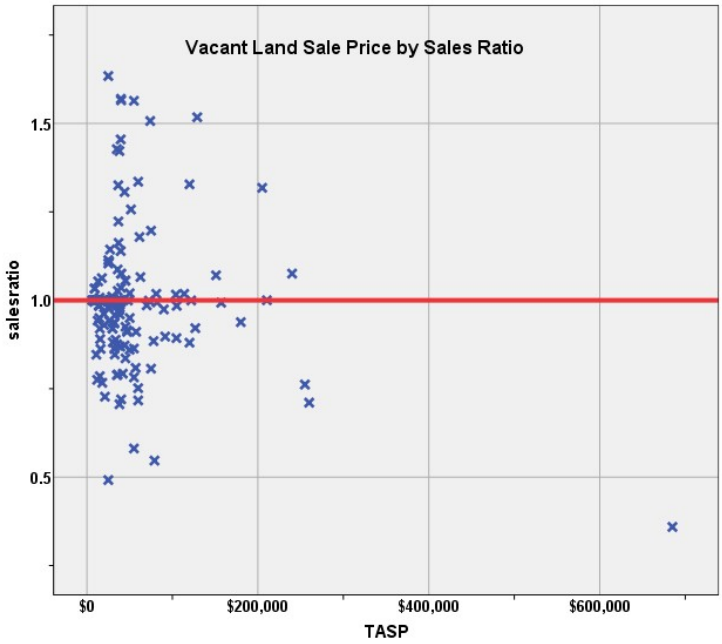
V. VACANT LAND SALE RESULTS

A total of 154 qualified vacant land sales were analyzed for the period between July 1, 2018 and June 30, 2020.

Median	**0.999**
Price Related Differential	**1.051**
Coefficient of Dispersion	**11.9**

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





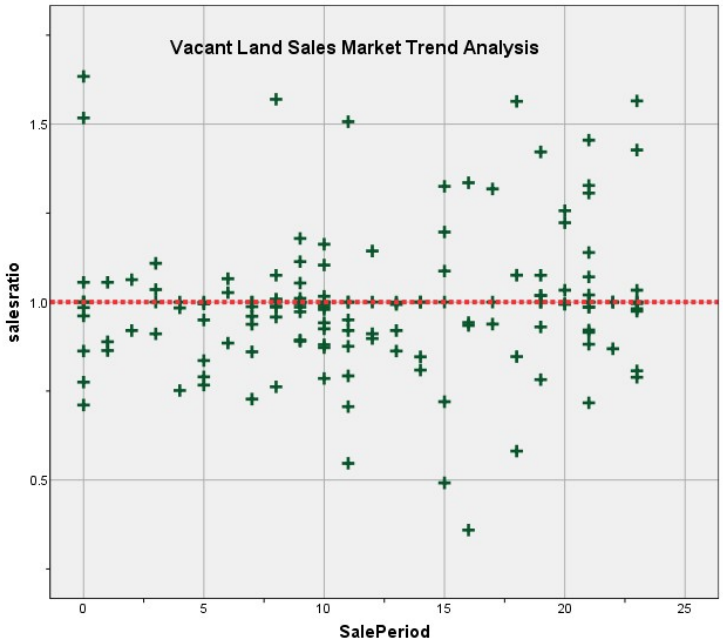
Vacant Land Market Trend Analysis

The vacant land sales were analyzed, examining the sale ratios across the 24 month sale period with the following results:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.961	.031		30.943	.000
	SalePeriod	.003	.002	.102	1.263	.208

a. Dependent Variable: salesratio



There was no residual market trending present in the vacant land sale ratios.

Sold/Unsold Analysis

We compared the median change in actual value between valuation year 2018 and valuation year 2020 for vacant land properties to determine if sold and unsold properties were valued consistently, as follows:

Report
DIFF

sold	N	Median	Mean
UNSOLD	1695	1.3585	1.3647
SOLD	129	1.2857	1.2562

We also stratified this analysis by subdivision with at least 10 sales, as follows:

Report
DIFF

SUBDIVNO	sold	N	Median	Mean
38	UNSOLD	134	1.3761	1.3783
	SOLD	23	1.3761	1.2850
39	UNSOLD	72	1.0747	1.0679
	SOLD	14	1.0747	1.1395
40	UNSOLD	289	1.6062	1.5962
	SOLD	17	1.6062	1.4291

The above results indicated that sold and unsold vacant land properties were valued consistently overall by Lake County.

V. CONCLUSION

Based on this 2021 audit statistical analysis, residential, commercial and vacant land properties were found to be in compliance with state guidelines. We will contact the assessor concerning the low median sales ratios in certain residential economic areas and neighborhoods.

STATISTICAL ABSTRACT

Residential

Ratio Statistics for CURRTOT / TASP

	95% Confidence Interval for Mean			95% Confidence Interval for Median				95% Confidence Interval for Weighted Mean				Coefficient of Variation
Mean	Lower Bound	Upper Bound	Median	Lower Bound	Upper Bound	Actual Coverage	Weighted Mean	Lower Bound	Upper Bound	Price Related Differential	Coefficient of Dispersion	Mean Centered
.961	.940	.983	.951	.921	.974	95.5%	.955	.933	.977	1.007	.132	17.1%

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

Ratio Statistics for CURRTOT / Time Adj Sale Price

	95% Confidence Interval for Mean			95% Confidence Interval for Median				95% Confidence Interval for Weighted Mean				Coefficient of Variation
Mean	Lower Bound	Upper Bound	Median	Lower Bound	Upper Bound	Actual Coverage	Weighted Mean	Lower Bound	Upper Bound	Price Related Differential	Coefficient of Dispersion	Mean Centered
.982	.920	1.044	.978	.930	1.027	95.7%	1.009	.950	1.068	.973	.130	17.0%

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.

Vacant Land

Ratio Statistics for CURRLND / TASP

	95% Confidence Interval for Mean			95% Confidence Interval for Median				95% Confidence Interval for Weighted Mean				Coefficient of Variation
Mean	Lower Bound	Upper Bound	Median	Lower Bound	Upper Bound	Actual Coverage	Weighted Mean	Lower Bound	Upper Bound	Price Related Differential	Coefficient of Dispersion	Mean Centered
.995	.965	1.026	.999	.986	1.000	95.6%	.947	.839	1.055	1.051	.119	19.3%

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

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	1212.00	213	94.7%
	1215.00	4	1.8%
	1225.00	1	0.4%
	1230.00	7	3.1%
Overall		225	100.0%
Excluded		0	
Total		225	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
1212.00	.944	1.005	.130	17.3%
1215.00	1.094	1.001	.128	19.4%
1225.00	.993	1.000	.000	.
1230.00	1.117	.996	.115	16.4%
Overall	.951	1.007	.132	17.3%

Age

Case Processing Summary

		Count	Percent
AgeRec	Over 100	76	33.8%
	75 to 100	10	4.4%
	50 to 75	38	16.9%
	25 to 50	43	19.1%
	5 to 25	52	23.1%
	5 or Newer	6	2.7%
Overall		225	100.0%
Excluded		0	
Total		225	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
Over 100	.909	1.012	.142	19.6%
75 to 100	.927	.985	.148	19.8%
50 to 75	.927	1.023	.128	18.1%
25 to 50	.905	.996	.128	16.6%
5 to 25	1.008	1.024	.115	15.5%
5 or Newer	.934	1.002	.066	9.8%
Overall	.951	1.007	.132	17.3%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	LE 500 sf	3	1.3%
	500 to 1,000 sf	42	18.7%
	1,000 to 1,500 sf	102	45.3%
	1,500 to 2,000 sf	47	20.9%
	2,000 to 3,000 sf	25	11.1%
	3,000 sf or Higher	6	2.7%
Overall		225	100.0%
Excluded		0	
Total		225	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LE 500 sf	.892	1.017	.051	8.8%
500 to 1,000 sf	.902	1.033	.153	21.3%
1,000 to 1,500 sf	.924	1.003	.118	15.1%
1,500 to 2,000 sf	1.012	1.021	.133	18.2%
2,000 to 3,000 sf	.987	1.016	.108	14.8%
3,000 sf or Higher	1.026	1.047	.111	17.1%
Overall	.951	1.007	.132	17.3%

Quality

Case Processing Summary

		Count	Percent
QUALITY	ABOVE AV	56	24.9%
	AVERAGE	167	74.2%
	BELOW AVG	2	0.9%
Overall		225	100.0%
Excluded		0	
Total		225	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
ABOVE AV	.974	1.019	.135	17.0%
AVERAGE	.946	1.004	.130	17.5%
BELOW AVG	.875	.997	.012	1.8%
Overall	.951	1.007	.132	17.3%

Condition

Case Processing Summary

		Count	Percent
CONDITION		90	40.0%
	AVERAGE	118	52.4%
	EXCELLENT	1	0.4%
	FAIR	4	1.8%
	GOOD	12	5.3%
Overall		225	100.0%
Excluded		0	
Total		225	

Ratio Statistics for CURRTOT / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.974	1.007	.126	17.7%
AVERAGE	.914	1.005	.133	17.3%
EXCELLENT	1.252	1.000	.000	.
FAIR	.877	1.003	.100	15.3%
GOOD	.949	1.041	.115	18.9%
Overall	.951	1.007	.132	17.3%

Commercial Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	$25K to $50K	1	3.3%
	$50K to $100K	1	3.3%
	$100K to $150K	4	13.3%
	$150K to $200K	5	16.7%
	$200K to $300K	4	13.3%
	$300K to $500K	9	30.0%
	$500K to $750K	3	10.0%
	$750K to $1,000K	2	6.7%
	Over $1,000K	1	3.3%
Overall		30	100.0%
Excluded		0	
Total		30	

Ratio Statistics for CURRTOT / Time Adj Sale Price

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
$25K to $50K	.807	1.000	.000	.
$50K to $100K	1.261	1.000	.000	.
$100K to $150K	.928	.986	.164	24.1%
$150K to $200K	.969	1.003	.132	19.9%

$200K to $300K	.860	1.005	.132	16.1%
$300K to $500K	.982	1.003	.072	10.4%
$500K to $750K	1.082	.995	.162	24.6%
$750K to $1,000K	1.100	1.006	.099	14.0%
Over $1,000K	1.031	1.000	.000	.
Overall	.978	.973	.130	17.1%

Subclass

Case Processing Summary

		Count	Percent
ABSTRIMP	.00	4	13.3%
	1712.00	1	3.3%
	1713.50	1	3.3%
	1725.00	1	3.3%
	2114.70	1	3.3%
	2212.00	7	23.3%
	2215.00	1	3.3%
	2216.82	1	3.3%
	2223.50	1	3.3%
	2225.00	1	3.3%
	2230.00	8	26.7%
	2235.00	3	10.0%
Overall		30	100.0%
Excluded		0	
Total		30	

Ratio Statistics for CURRTOT / Time Adj Sale Price

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
.00	.842	.822	.187	32.6%
1712.00	.727	1.000	.000	.
1713.50	1.161	1.000	.000	.
1725.00	.965	1.000	.000	.
2114.70	.990	1.000	.000	.
2212.00	.973	.938	.122	15.6%
2215.00	1.031	1.000	.000	.
2216.82	.982	1.000	.000	.
2223.50	.681	1.000	.000	.
2225.00	.987	1.000	.000	.
2230.00	1.074	1.077	.137	16.5%
2235.00	.969	1.008	.016	2.4%
Overall	.978	.973	.130	17.1%

Improved Area

Case Processing Summary

		Count	Percent
ImpSFRec	.00	4	13.3%
	500 to 1,000 sf	2	6.7%
	1,000 to 1,500 sf	2	6.7%
	1,500 to 2,000 sf	2	6.7%
	2,000 to 3,000 sf	5	16.7%

	3,000 sf or Higher	15	50.0%
Overall		30	100.0%
Excluded		0	
Total		30	

Ratio Statistics for CURRTOT / Time Adj Sale Price

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
.00	.842	.822	.187	32.6%
500 to 1,000 sf	.827	1.019	.176	24.9%
1,000 to 1,500 sf	.995	1.093	.270	38.1%
1,500 to 2,000 sf	1.002	.952	.118	16.7%
2,000 to 3,000 sf	.930	1.046	.168	22.6%
3,000 sf or Higher	.990	.991	.071	10.9%
Overall	.978	.973	.130	17.1%

Quality

Case Processing Summary

		Count	Percent
QUALITY		4	13.3%
	AVERAGE	19	63.3%
	GOOD	7	23.3%
Overall		30	100.0%
Excluded		0	
Total		30	

Ratio Statistics for CURRTOT / Time Adj Sale Price

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.842	.822	.187	32.6%
AVERAGE	.987	.993	.111	16.2%
GOOD	.930	.960	.131	15.6%
Overall	.978	.973	.130	17.1%

Condition

Case Processing Summary

		Count	Percent
CONDITION		11	36.7%
	AVERAGE	13	43.3%
	FAIR	2	6.7%
	GOOD	4	13.3%
Overall		30	100.0%
Excluded		0	
Total		30	

Ratio Statistics for CURRTOT / Time Adj Sale Price

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
	.987	.963	.123	17.3%
AVERAGE	.982	.980	.124	16.9%
FAIR	.854	.971	.203	28.7%
GOOD	.875	1.024	.129	18.1%
Overall	.978	.973	.130	17.1%

Vacant Land Median Ratio Stratification

Sale Price

Case Processing Summary

		Count	Percent
SPRec	LT $25K	47	30.5%
	$25K to $50K	66	42.9%
	$50K to $100K	23	14.9%
	$100K to $150K	9	5.8%
	$150K to $200K	3	1.9%
	$200K to $300K	5	3.2%
	$500K to $750K	1	0.6%
Overall		154	100.0%
Excluded		0	
Total		154	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
LT $25K	1.000	.998	.070	14.7%
$25K to $50K	.997	.999	.114	18.0%
$50K to $100K	.974	1.003	.203	27.0%
$100K to $150K	1.000	.993	.133	22.6%
$150K to $200K	.993	1.004	.044	6.8%
$200K to $300K	1.000	1.019	.184	24.9%
$500K to $750K	.359	1.000	.000	.
Overall	.999	1.051	.119	19.3%

Subclass

Case Processing Summary

		Count	Percent
ABSTRLND	100.00	110	71.4%
	200.00	1	0.6%
	350.00	1	0.6%
	433.33	1	0.6%
	520.00	4	2.6%
	530.00	1	0.6%
	540.00	2	1.3%
	550.00	6	3.9%

	1112.00	28	18.2%
Overall		154	100.0%
Excluded		0	
Total		154	

Ratio Statistics for CURRLND / TASP

Group	Median	Price Related Differential	Coefficient of Dispersion	Coefficient of Variation Median Centered
100.00	.998	.973	.115	18.2%
200.00	.359	1.000	.000	.
350.00	1.507	1.000	.000	.
433.33	.581	1.000	.000	.
520.00	.991	1.062	.081	14.1%
530.00	1.008	1.000	.000	.
540.00	.997	1.000	.003	0.4%
550.00	.978	1.040	.092	13.6%
1112.00	1.000	.999	.118	20.2%
Overall	.999	1.051	.119	19.3%