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## **5.0 INTRODUCTION**

The office of assessor is probably the office that is most connected with the entire system of state and local taxation. In 2018, the property tax generated in excess of 7.8 billion dollars in revenue for local governmental entities. The work of the assessor lies at the very foundation of the system. Without effective administration, the burdens of taxation cannot be fairly distributed and the revenues needed to support government and its institutions cannot be generated.

The assessor's task of preparing an assessment roll which accurately reflects the true value in money of all taxable property within the county, in an efficient manner, is a tremendous challenge. Under Missouri law, assessments are set at a percentage of true value in money. Section 137.115 RSMo defines the percentages for each subclass of real and personal property. For example, residential real property is assessed at 19% of true value in money and most personal property is assessed at 33 1/3% of true value in money. Assessment accuracy refers to the degree to which each property in the county is assessed relative to the legally mandated percentage of true value. Assessment efficiency refers to the cost of assessment operations. The cost of assessment operations will vary with the type and nature of property within the county. Farm and commercial properties, for example, are more difficult and costly to appraise accurately than residential properties. Similarly, the appraisal of older custom built homes generally entails more time and expense than newer tract homes.

### **5.1 COMPONENTS OF AN EFFECTIVE ASSESSMENT SYSTEM**

Knowing that an appraisal is an opinion of value and that an assessment is a statutory regulation of that value does not comprise the development of an assessment system. There are certain key components common to an effective assessment system:

<b><u>Administration</u></b>	Adequate budget, competent staff, effective internal controls, data processing and storage, and public relations.
<b><u>Records</u></b>	Accurate sales data, property ownership and characteristics files.
<b><u>Assessment Maps</u></b>	Maps which reflect ownership configuration and parcel identification.
<b><u>Data Collection</u></b>	Required data, accurate physical and economic data.



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<b><u>Valuation</u></b>	Effective cost approach, effective income approach, and effective sales comparison approach.
<b><u>Statistical Studies</u></b>	Measure accuracy and uniformity of assessments.

In total, these elements represent the foundation of a cost-effective assessment system. Each is briefly described below:

**A. Administration**

An adequate budget is the first requirement of an effective assessment system. The budget must be sufficient to develop and maintain an accurate data base and to provide the personnel and support resources necessary to apply sound appraisal techniques. Standards for assessment budgeting are difficult to specify due to the complexities involved in the assessment system and the varying status of an individual assessment program within that system. The cost of a reappraisal program, beginning with the establishment of an effective mapping system, accurate data collection, and the development of accurate valuations, on a per parcel cost basis, would be higher than that of conducting an ongoing assessment operation. The total cost of the statewide reassessment program completed in 1985 was \$121,826,966. The cost per parcel ranged from \$25.65 to \$73.24, with an average per parcel cost of \$49.86, over the course of the program. In 2017, the assessment maintenance program cost on a per parcel basis ranged from \$9.03 to \$37.58 with an average cost of \$18.39 per parcel.

Staff salaries tend to represent 70-75% of an assessment budget. A staff should consist of competent and qualified personnel. Appraisers either should have had prior experience or should receive on-the-job training. In addition, appraisers should be encouraged to achieve designation and attend advanced appraisal courses, seminars, and workshops. All personnel should be utilized so as to take advantage of their appropriate knowledge and skills.

Internal controls bring discipline to an assessment system. The assessor should maintain at least the following internal controls:

- An organizational plan
- Statements of duties and responsibilities



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- Standards of practice
- Edit procedures
- Time and production reports
- Security procedures

Data processing systems reduce the time spent on routine clerical activities, speed mathematical computations, and generally improve assessment efficiency. In addition, computers can increase the accuracy of assessments by improving the quality and accessibility of data. Computers can be utilized in a number of assessment-related applications, including the storage of ownership files, automating the collection, organization, analysis of sale data and by automating the appraisal functions. In addition, computers are an effective tool for extracting the data for the myriad of requests received by the assessor's office.

The assessor should not expect the installation of a data processing system to reduce the number of staff, nor to reduce the cost of operating the office. Major advantages of automation are that the same size staff should be capable of handling the increasing workload of the office for years to come with little or no additional help. With automation, staff should be able to perform a much better and more accurate job in less time and with less effort. Although an effective maintenance program can be accomplished without the use of data processing, given the ever increasing demands on the assessor's resources, automation represents one of the best ways to improve efficiency.

Extremely important in a good assessment maintenance program is sound public relations between the assessor, local officials and the taxpayers. The cooperation of the assessment office with both the individual taxpayer and citizen groups is important to ensure a wider understanding and support of systematic and uniform property assessments.

Good public relations require that the assessment official obtain and hold the respect and confidence of the taxpayer. Such respect and confidence is generated with the use of efficient, impartial, and effective methods and procedures. Whether on assignment in the field or in the office, the staff acts as official representatives of the assessor. It is, therefore, of the utmost importance that in all contact with property owners, tenants, and others, they conduct themselves so as to reflect credit to the organization and the work with which they are engaged. In any case, where an owner or occupant is not clear about the purpose of field inspections and is reluctant to permit the inspection of the



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property, the assessor or deputy should explain briefly the objective of the field review. Such explanation will, in most instances, result in obtaining permission to proceed. Information gathered on the cost or appraised value of individual properties should be treated as private, although it is not confidential. Such information is critical in understanding the market, and should not be discussed or used for other purposes. The successful assessor conducts an open operation, explaining the assessment process as necessary, and responds promptly to inquiries and complaints. The more the assessor demonstrates that the responsibilities of the office are being performed effectively, efficiently and fairly, the more likely the public is to cooperate in return.

Section 137.115 RSMo. was amended by SB 676. Beginning with the 2021 reassessment cycle, before the assessor of any county may increase the assessed valuation of any residential real property by more than 15% since the last assessment, excluding increases due to new construction or improvements, the assessor shall conduct a physical inspection of such property.

- This amendment applies to all Missouri counties.
- The assessor must notify the property owner of the increase in writing and provide information regarding the owner's rights relating to a physical inspection.

### **B. Records**

The records of an assessor's office provide the foundation of the assessment system. Before property can be appraised and thus assessed, it must be located and described, ownership must be identified and the characteristics particular to that property affecting value analyzed.

To aid in the identification of property ownership, an effective set of records must be maintained. Requisites to the preparation of an assessment roll of high quality are records that detail ownership, property description and quantities, and methods or procedures for analyzing market value. Ownership indexes, both alphabetical and geographical as well as street indexes are valuable auxiliary records.

For real property, ownership data was compiled from past assessment rolls, deeds, and other records for the mapping program initiated during the statewide reassessment. Since 1985, every county has successfully maintained the ownership maps and, in turn, real property records on an on-going map maintenance program. Personal property ownership is maintained by several methods. One is simply



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through the mailing of the annual personal property rendition. In many counties, assessment staff have developed procedures to update ownership data based on information provided in cooperation with the collector, the 911 system and local service utilities.

The property characteristic file contains the current physical description and quantities of property. The real property record card (PRC) is an essential part of every assessment office. Personal property is inventoried on individual renditions or lists. The primary purpose of both forms is to provide a compact format for use in preparing a physical inventory of property in the county. Depending on the degree of automation, the inventory of both real and personal property may be accessed, which allows the assessor to systematically list the pertinent data required in making value estimates, record assessments, and facilitate comparisons of property of the same class.

Proper valuation depends on the successful development of base values or selection of valuation guides. For real property, the systematic recording of reliable sales information is an essential requirement of making equitable assessments. The assessor needs to be aware of the interactions of buyers and sellers in establishing market values. The basic premise is that the value of property tends to be indicated by sale prices of comparable properties. Therefore, a sales file furnishes the best evidence of value that the assessor can use. For personal property, procedures must be developed that allow the assessor to maintain valuation guides that reflect market value, for example, using published guides for automobiles or farm machinery.

#### **C. Assessment Maps**

The assessor's office maintains a complete set of continuously updated assessment maps. Maps are fundamental to the assessment of real estate; they help determine the location of the property, indicate the size and shape of each parcel, and reveal its relation to pertinent features that affect value. It is a natural consequence that maps are a basic record in an assessor's office.

The use of assessment maps facilitates the identification of each parcel within a county and ensures that all lands are inventoried. Each parcel is assigned a parcel identifier or parcel number, which represents a specific land parcel and serves to reduce a lengthy legal description to a uniform and manageable expression. For more about the map and parcel numbering system, see section 5.7.



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#### **D. Data Collection**

Assessments can be only as accurate as the data on which they are based. Therefore, if property data is incomplete or inaccurate, even the best appraisal procedures and techniques cannot produce accurate value estimates. Checks on completeness and accuracy of data involve both visual inspections to obtain and verify data and data edits to ensure that the data has been recorded correctly. If the appraiser knows that these tasks have been done or completes these checks at the time of the actual appraisal, the criteria for data completeness and accuracy may be presumed to have been met.

In order to keep abreast of construction or major remodeling activities that alter the property data base, it is helpful if the assessor regularly receives information about building permits, when available. However, building permits should not be relied upon as containing a complete record of construction and major remodeling activities. Physical inspections or field review should be conducted on a regular and systematic basis.

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To help ensure personal property is properly reported, an assessor may consult printouts from the Missouri Department of Revenue for vehicle registrations or from the Federal Aviation Administration for aircraft listings. Other potential sources would include records from the county or city clerk's office for business licenses or published business directories.

#### **E. Valuation**

For most personal property, valuation is a matter of identifying a source or published value guide that lists market values for the type of property found in the county. For livestock, monitoring local



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market activity will reveal the typical current price. Business personal property is generally categorized as to its typical life expectancy and depreciation applied to original or current cost. Effective in TY2007, business personal property, put into service after 1/1/2006, is to be assessed based on acquisition cost and depreciated according to the class life as published by the Internal Revenue Service (IRS) and found in IRS Publication 946.

Traditionally, there are three basic approaches applicable to the valuation of real property. These approaches are: the cost approach, where value is measured by the cost to reproduce a property of like utility; the sales comparison or market data approach, where the value of the subject property is estimated by the sale of similar properties; and the income approach, where value is defined as the present worth of future income benefits derived from the property.

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- This amendment applies to all Missouri counties.
- The assessor must notify the property owner of the increase in writing and provide information regarding the owner's rights relating to a physical inspection.

**F. Statistical Studies**

Sale ratio studies are the fundamental means of measuring the accuracy of the appraisal process. These studies should be made to determine the level and uniformity of appraisals of selected property categories for which sufficient sale data is available. The sale ratio indicates a relationship of appraised value to market value. It is found by dividing the appraised value of the property under consideration by its recent sale price.

$$\text{Ratio} = \frac{\text{Appraised Value}}{\text{Selling Price}}$$

For example, a residence that sold recently for \$115,000 had an appraised valuation of \$100,000 at the time of sale. Therefore, the ratio of appraised value to selling price is 87%.



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$$\frac{\$100,000}{\$115,000} = .87 \text{ or } 87\%$$

Since transactions in the marketplace bring out good estimates of value, a sales ratio analysis can be the assessor's yardstick for measuring the assessment level. For a review of other statistical tools, see section 5.7.

**G. Summary**

The nature of assessment clearly suggests the need for organization. In order for most assessors to approach their work in a systematic manner, the assessment function, its characteristics, and its political-economic environment should be examined briefly. The assessment function consists of the following basic elements:

- Discovery, the steps assessing officers must take to find and to describe taxable property
- Valuation, the appraisal of properties
- Listing, the keeping of records linking properties to their respective owners and the placing of assessed values and owner's names on the assessment roll.

Thus described, the assessment function appears relatively simple, while in reality, assessment is a complex process.

An appreciation of the characteristics of assessment is necessary for an understanding of assessment operations and the recommendations made in this manual. The property assessment system consists of a systematic process designed to gather and collate factual data necessary to effectively carry out the assessment function. However, this system must operate within the bounds of the market and governmental environment in which both the public and the private sectors are acting, reacting, and interacting.

The system treats the discovery, listing, and valuation activities separately, although they are closely related in practice. The component parts of a real property assessment system, their interrelationships, and the flow of information in the system are illustrated in *Exhibit 5.1*:



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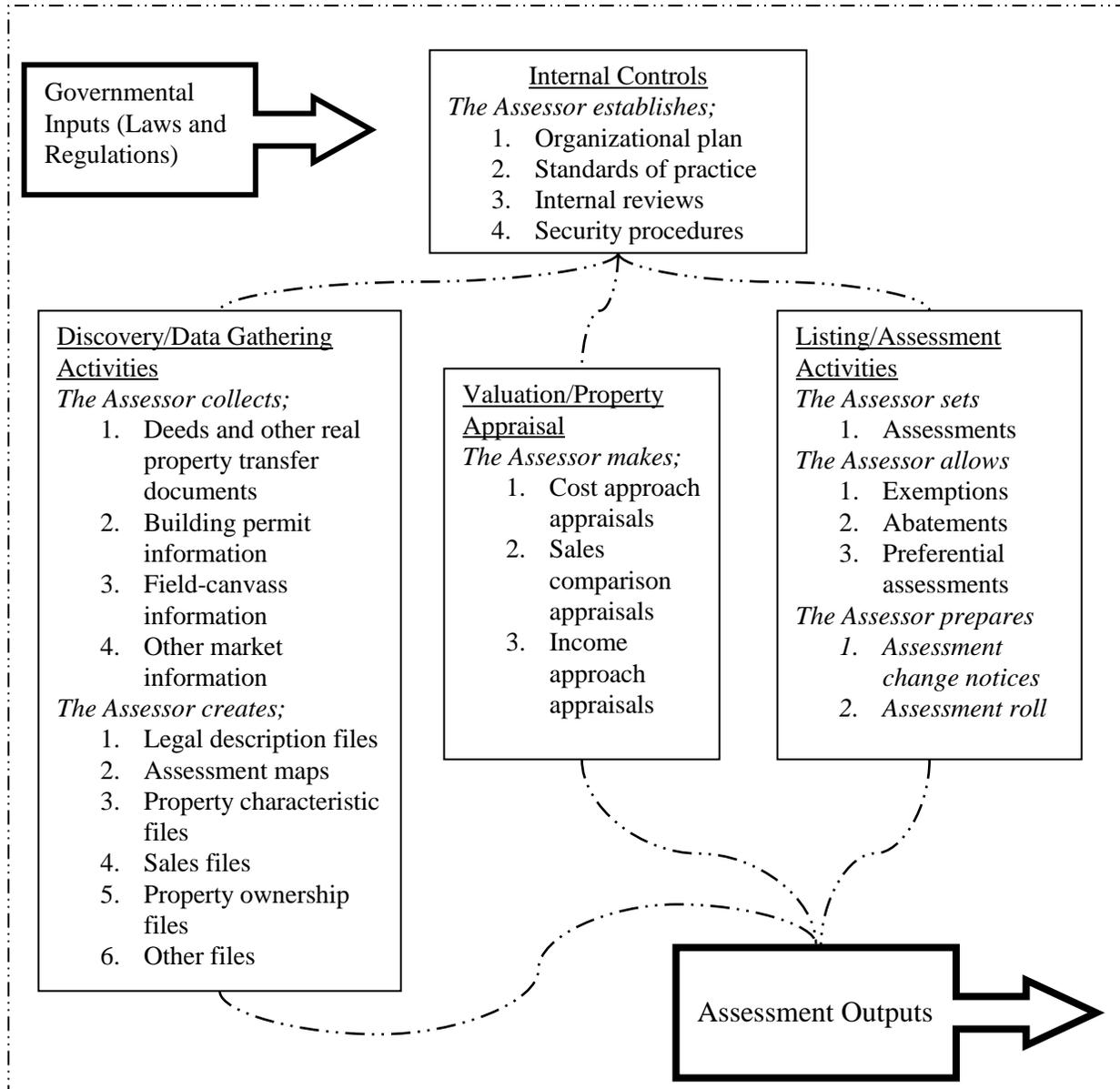
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EXHIBIT 5.1  
MAJOR ELEMENTS OF A REAL PROPERTY ASSESSMENT SYSTEM





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## 5.2 THE MASS APPRAISAL PROCESS

Mass Appraisal is the systematic appraisal of groups of properties as of a given date using standardized procedures and allowing for statistical testing. More particularly, a mass appraisal system may be described as an orderly and comprehensive assemblage of facts, principles, and methods designed to carry out the assessment function effectively and efficiently in accordance with property tax policy. The term appraisal process is meant to encompass the techniques used by appraisers and assessors in formulating opinions of property values. It is an orderly procedure through which they are enabled to accomplish their objective--estimation of value. Also provided for are standards for a common terminology readily understood by those in the field of property valuation.

In short, it defines the problem, provides methods for solving the problem, and furnishes common appraisal language so that anyone informed on the subject readily understands the means through which a property value has been determined.

As the value of a property is the result of interactions within a constantly fluctuating marketplace, property value can never be absolutely measured or determined. The appraisal of property is not an exact science. An appraisal is an estimate of value, and as such, an absolute definitive value should not be expected, however, a reasonable estimate of value can be and should be obtained. Standards of reasonable performance do exist and there are reliable means of measuring and applying these standards.

Due to the large number of properties that must be appraised for assessment purposes, there is a point beyond which the appraisal process cannot be simplified if accurate results are to be obtained. There is also a point beyond which the process becomes so complicated the results will not justify the work and expense involved. It would be impractical to make a detailed, narrative type of appraisal on each property. Instead, a method of appraising on a volume or a mass basis has been



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developed. When properly used, the mass appraisal process will, with few exceptions, give similar results as an appraisal made on an individual basis.

Basically, the same methods and procedures used for an individual appraisal are used in mass appraisal, although the application may be somewhat different. Appraisals made on an individual basis generally involve direct comparison between the subject and the specific properties. In mass appraisal work, a large volume of data (sales, income and expense data, construction cost and specifications) is developed into value indicators, or base unit values. When the base unit value is applied to a specific property, and modified by the adjustments applicable to that individual property, mass appraisal takes on the nature of direct comparison. The advantage and reason for using a mass appraisal system is to obtain accurate value estimates at a relatively low cost. Conducting a revaluation program requires careful planning.

Prior to planning any mass appraisal program, the assessment administrator must know:

- The condition of the present program
- The goals and standards which must be met
- The portion of present resources that may be reasonably allocated to the mass appraisal program
- What additional resources may be needed for the program
- The length of time available to complete the program
- The type of work activities required, and the volume of each type of work activity

After the above information is obtained, realistic plans can be formulated to meet the goals of a mass appraisal program.

The identification of available resources also has a major impact on goal establishments and the limitations placed by the availability of resources may, in some cases, virtually pre-plan the mass appraisal program. Resources that may be required by the assessor can be divided into four major areas: (1) Financial; (2) Personnel; (3) Data Elements; and (4) Data Processing.



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The planning of a mass appraisal program is analogous to the appraisal of an individual piece of property in that it may be formulated in compliance with the appraisal process.



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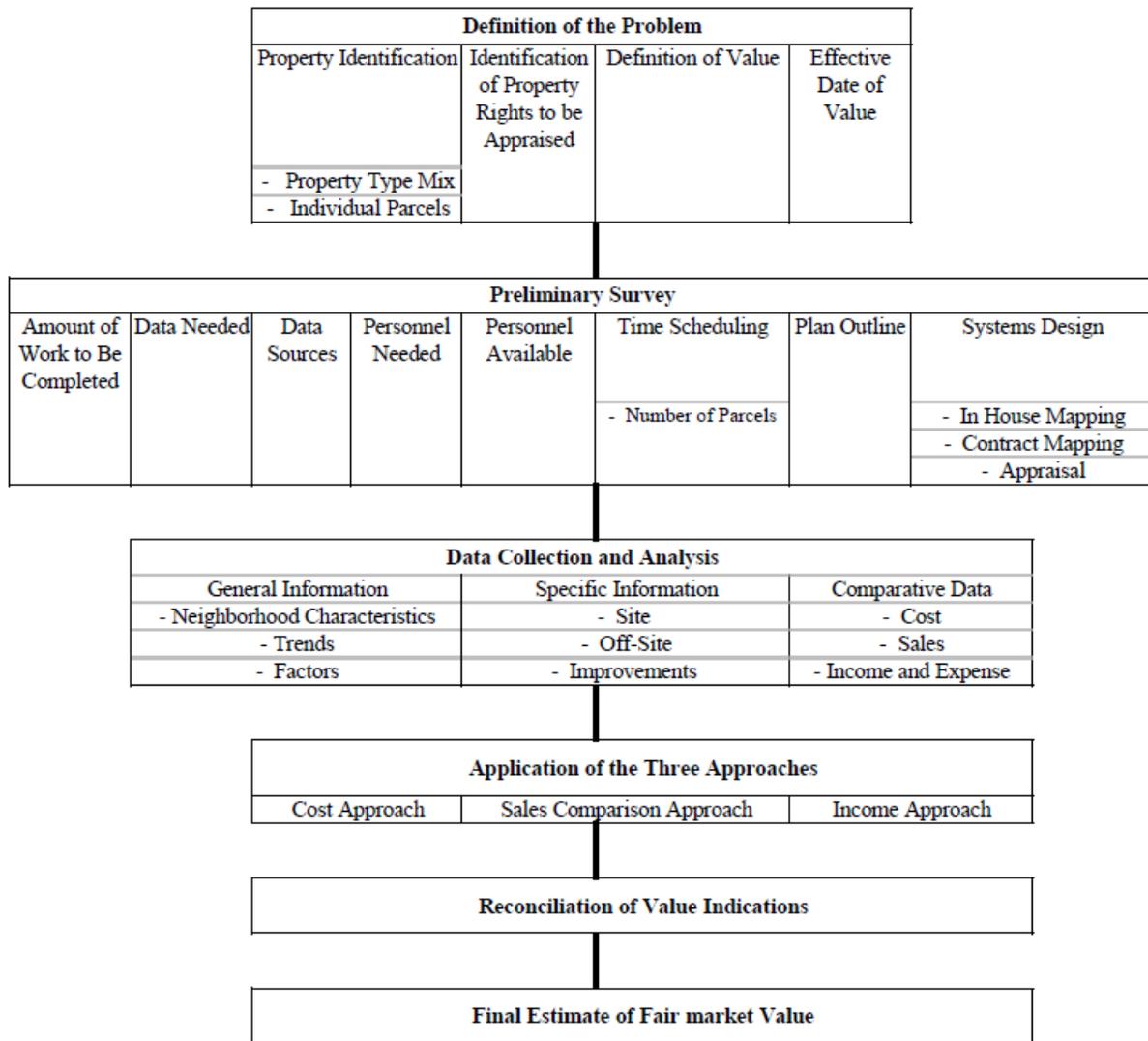
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**EXHIBIT 5.2  
THE APPRAISAL PROCESS**





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#### **1. Define the Appraisal Problem**

The beginning point in any appraisal problem is the identification of the property to be appraised. The mass appraisal process begins with the discovery and identification of all parcels within the county. A parcel is defined as all contiguous land owned by the same legal entity and of a single use within a section. It may be delineated by a metes and bounds description, lot and block within a subdivision, or a combination of both. In a mass appraisal program, the identification of a particular piece of property is usually conducted on a geographical basis with the aid of current ownership maps. A system of continually updated ownership maps show the size, shape, and location of each parcel of real estate and ensures that all taxable parcels are listed on the assessment roll.

The ownership maps serve two important functions. One is that it provides an inventory of property and secondly, a system of parcel identification. The work of the assessor in both the office and the field requires constant reference to information relative to a particular parcel of property. By organizing the records by parcel number, property records can be efficiently referenced and indexed. In most counties, an alphabetical index file of ownership is maintained which facilitates locating data when only the owner's name is known.

Another important factor in defining the appraisal problem is the mix of property types. The property type mix varies from county to county, and has a great impact on the resources needed to complete the assessment update. In Missouri, real property assessments are required to be updated every two years, (in the odd numbered year), and knowing the quantity and types of property allows the assessor to better estimate the time frame, manpower needs and production targets. Property types can be defined any number of ways. Typically, assessors track the number of residential, agricultural and commercial parcels and whether they are improved or vacant. In counties with a large area owned by the federal government, a count of the exempt parcels may help the assessor to better estimate the resources needed. For a detailed discussion on estimating manpower, time frame or production targets, see the text on assessment maintenance plans - personnel estimation charts,



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section 5.3.

After the property has been identified, the rights of ownership pertaining to that property must be identified. In the majority of instances, property should be appraised as if owned in a fee simple title, that is, all rights of ownership of the property are retained by the owner of the fee interest. However, there are exceptions, probably the most notable of which is that of severed mineral and surface rights. In such a situation, two distinct interests have been created for the same legal description and must be assessed as such. Another exception is a situation where a possessory interest exists. A possessory interest is usually thought of as a right to the use of a publicly owned property by a private entity. For instance, the Hertz counter at a publicly owned airport.

As part of the definition of the appraisal problem, the definition of the value sought must be determined. Pursuant to Section 137.115, RSMo, all properties are to be appraised at true value in money. In Missouri, the courts have defined true value in money as the highest price paid, in terms of dollars, which a property will bring if offered for sale for a reasonable period of time, both buyer and seller being fully aware of all the uses to which the property may be put and neither being under any compulsion. However, for general property assessment purposes those lands actively devoted to agricultural and horticultural purposes, as defined by Section 137.017 through 137.026 RSMo, shall be valued in accordance with guidelines set forth by the State Tax Commission. These procedures are discussed more fully in Chapter VII.

In the first statewide reassessment, the effective date of all appraisals was January 1, 1985. Since 1986, assessors have operated on a two-year assessment maintenance cycle, with real property assessment updates occurring each January 1st of the odd year.

### **2. Conduct a Preliminary Study and Outline the Appraisal Plan**

In preparation for the statewide reassessment, preliminary studies were conducted and a determination made as to the amount of work which had to be done, new mapping systems were



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developed, appraisal systems selected, data collection procedures designed and computer systems were implemented.

Since 1985, the focus of the preliminary study and assessment maintenance plan has shifted. Where before it was an almost overwhelming task to select and implement the necessary systems, it is now a matter of identifying areas which need updating or improvement and ensuring the resources are available to complete the project.

As part of the preliminary survey, an analysis will have to be made of the total personnel requirements and the staff presently available. Personnel may need to be hired and trained, work plans and assignments made, and quality control checks instituted. Such an analysis should include the number of clerks both needed and currently available for research and clerical functions, the number of appraisers (time must be allocated for regular maintenance work, new construction, etc.), and if data processing is available, the amount of work to be done by automation will need to be determined.

With the determinations made as to amounts and types of work to be done and the completion date of the program determined, time schedules for each of the varying activities involved in the program may be developed and phase delineation charts constructed.

At this point in the preliminary survey, the assessor should have enough information available to make the very basic decision as to who will conduct the appraisal update process. That is, whether the resources available are sufficient to conduct the program in-house or whether a contract will be needed for some services.

### **3. Develop and Analyze Market Data for the Three Approaches**

The next step in the mass appraisal process is collection and analysis of market data. In an effective appraisal system, there is a need for collection and analysis of market data for cost information, comparative sales information, and for income and expense information. The data collection of cost



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information is to assist in the establishment of cost manuals or for the updating of an existing manual. Cost manuals are used in estimating the replacement/reproduction cost of a building. Comparative sales data is used in almost every aspect of the mass appraisal process. It is used in estimating the value of land and estimating the value of improved real estate through the use of the market data approach. Comparative sales data may be the basis for the establishment of ratios or trends which can be used in property valuation as a benchmark for adjusting past appraisals. The comparable sales information is also useful where a computerized appraisal system is being utilized. In mass appraisal, it is during the market analysis phase that the base land rates and building costs are established. In addition, the sale data is also used to determine rates of depreciation and to set up depreciation schedules.

A system should be devised for the efficient collection of all market data that would relate to the value of any type of property. Much of this data can be systematically collected and then can be tabulated and supplied to the appraisers so that they can perform their task more efficiently, giving a quality job on a quantity production basis. Clerical personnel can be utilized to collect sales from deed records, property owners via mail, and published sale data services. Appraisal personnel should collect data through personal contact with property owners, brokers, managers, tenants, builders, and developers. General information from business and population trends and indications of increases and decreases of values for areas within the county should be noted. Trade journals will indicate trends for particular types of businesses, and zoning and building practices may help establish neighborhood patterns.

An appraisal is an opinion of value that considers physical and economic value influences as indicated by sales, cost, and income value indicators. Therefore, since appraisal includes a large number of variables that must be considered in the valuation of each property, base standards or values must be developed through the analysis of the basic sales, cost, and income information contained in the data file. The following list illustrates some of the items which would be considered base standards.



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#### **A. Cost Index\Manual Level\Cost Multiplier**

Information from builders, new home sales, building supply houses, and government indexes are used to establish a cost index\manual level\cost multiplier for use with the cost manual.

#### **B. Depreciation Benchmarks**

Sales, cost, and published tables are analyzed and developed into local guides for depreciation to be used on various types of improvements.

#### **C. Income and Expense Guides**

Information gathered from income producing properties is tabulated in order to establish economic rents and typical expenses.

#### **D. Capitalization Rates**

Sales are analyzed to establish the interest rate applicable to investment properties. Recapture and tax rates must also be established.

#### **E. Gross Rent Multipliers (GRM)**

Relationships between sale price and income are analyzed to determine GRM's to be used on various properties.

#### **F. Basic Unit Values**

From sale analysis and land residuals, unit values for land and various types of properties are set.

### **4. Application of the Data**

The basic data applicable to each of the three approaches to value is converted into base units and adjustment factors which are used to develop the final estimate of value for each property being



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appraised. To be effective, the entire valuation process must incorporate in proper balance the three approaches to value. (See *Exhibit 5.3*).



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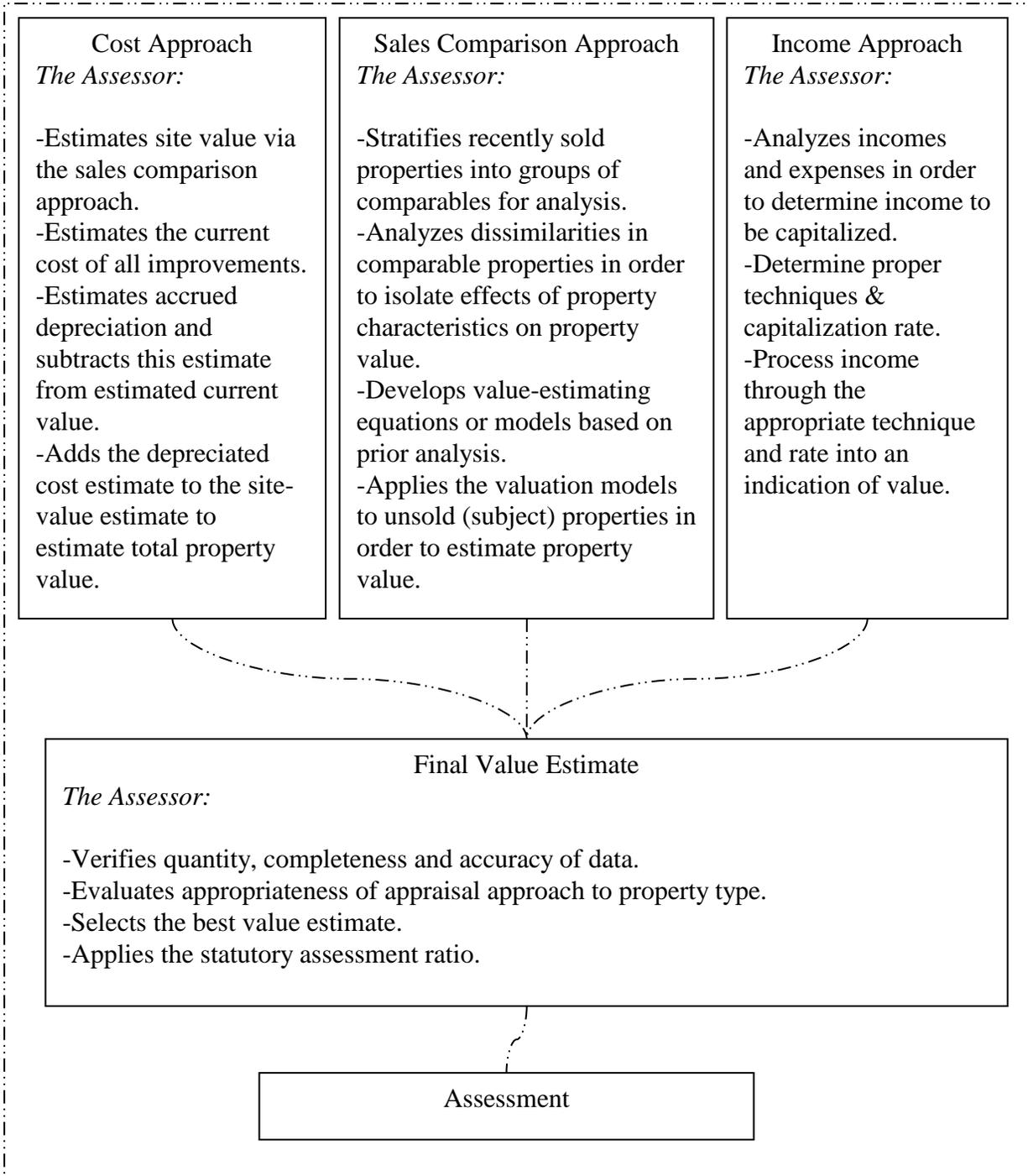
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EXHIBIT 5.3  
REAL PROPERTY  
APPRAISAL





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#### **A. Sales Comparison Approach**

The action of the market shown in prices paid for real property is a highly reliable indicator of value. It follows that the value of property might be reliably estimated by observing and analyzing the sale prices of comparable properties. This technique, often referred to as the “Sales Comparison Approach”, is dependent upon the availability of sale data of comparable properties and the validity of the judgments made in regard to the adjustment for their similarities and dissimilarities. Due consideration must be given to all the tangible and intangible factors influencing values such as location, construction, age, condition, desirability, and usefulness. In each case, prime consideration must be given to the time and conditions of each sale.

The selling price of comparable properties set the upper and lower limits of value, or the range, within which the value of the subject property should fall. Analysis of the value factors influencing each sale enables the appraiser to narrow the range down to a value level that is most applicable to the subject property.

The significance of this approach lies in its ability to produce estimates of value which directly reflect the attitude of the market. Its widest application is in the appraisal of vacant land and residential properties when there are enough sales from which to select comparable properties. However, even in these categories, an assessor in rural Missouri is severely hampered by the complete absence of certificates of value. Without this very valuable tool, the assessor is forced to expend great amounts of time and resources to gather the information.

#### **B. Income Approach**

The income approach has its widest application in the appraisal of income-producing property. Commercial property is bought and sold on its ability to generate and maintain a stream of income



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for its owner. The value of such property is a measure of the quantity, quality, and durability of the future net income that can be expected to be returned to an investor.

Since the justified price paid for income-producing property is no more than the amount of investment required to produce a comparable desirable return and since the market can be analyzed in order to determine the net return actually anticipated by investors, it follows that the value of income-producing property can be derived from the income stream which it is capable of producing.

The mathematical process for converting the net income produced by property into an indication of value is called capitalization.

The capitalization process evolves out of the principles of perpetuity and termination. “Perpetuity” affirms that the net income produced by land will continue for an infinite period of time. “Termination” affirms that the net income produced by a building will stop after a certain number of years. This in effect is to say that all buildings at some time in the future will cease to have an economic value.

If the income flow produced by a building will terminate in the future, it is reasonable to suggest that the investor in buildings is entitled to the return of his investment in addition to a return on his investment. In the capitalization process, this recovery of the investment is referred to as recapture.

Several methods of capitalization are currently employed by appraisers. The capitalization methods most prominent are direct, straight capitalization with straight-line recapture, and annuity. Each of these are valid methods for capitalizing income into an indication of value, the use of one or the other depends on the characteristics of the income stream.

The value of income producing property can be derived by measuring the net income against the net return anticipated by informed investors. This can be expressed in terms of a simple equation:



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#### **VALUE = NET INCOME / CAPITALIZATION RATE**

This capitalization rate should consist of percentage provisions for the return on the investment to land and buildings (interest rate) plus a return of the investment in the wasting asset (recapture). Net income refers to the residue of the potential gross income (having been adjusted by an allowance for vacancy and collection loss) remaining after all allowable operating expenses are paid. Selecting the proper capitalization rate and accurately estimating a realistic gross income along with applicable operating expenses are essential to the capitalization process.

#### **C. Cost Approach**

If the highest and best use of a property is its present use, an evaluation can be made by estimating the value of the land as if it were vacant and adding the depreciated cost of reproducing the improvements to the estimated land value.

The cost of “reproducing the improvements” as applied here refers to the replacement cost or the current cost of reproducing the improvements having equal characteristics with the subject property, which may or may not be the cost of producing a replica property. The distinction being drawn is between Replacement Cost, which refers to replacement of a substitute improvement of equal utility, and Reproduction Cost, which refers to replacement of an exact replica of the improvement. In any event, both replacement cost and reproduction cost have their application in the Cost Approach to value, and the differences are reconciled in the application of depreciation allowance.

The replacement cost includes the total cost of construction incurred by the builder whether preliminary to, during the course of, or after completing the construction of a particular type of building. Among these direct and indirect costs are material, labor, all subcontracts, builder’s overhead and profit, architectural and engineering fees, consultation fees, survey and permit fees, legal fees, taxes, insurance, and the cost of financing.



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There are various methods that may be employed to estimate replacement cost new. The methods most widely used in the appraisal field are the unit-in-place method, component-part or segregated method, and the model or comparison method. The unit-in-place method is employed by establishing in-place prices for the various components (lumber, concrete, steel, etc.) of a building or similar improvement. This method of using basic independent units can be extended to establish larger component prices such as entire walls in place or entire heating systems for a given area. The unit-in-place and segregated cost methods are generally used when the structure under appraisal is sufficiently unique in characteristics that it will not conform to a type and quality combination as listed in the cost manual. A further extension leads to the model or comparative method in which unit prices are established for the entire structure on a square foot or cubic foot basis. Depending on the method used, the unit prices are then multiplied by the respective quantities (linear feet, cubic feet, square feet, number of units, etc.) of each as they are found in the composition of the building, the sum of which is equal to the replacement cost.

The cost approach then takes on great similarity with the comparison method in that the subject properties to be appraised are compared with models to establish a base cost. Additions to and deductions from the base cost are then made in order to account for any variations in specifications and characteristics between the property and the base model. A cost index or cost multiplier may then be applied to adjust the base cost to current cost at the effective date of appraisal.

Replacement cost new represents the upper limit of value. The difference between replacement cost new and the present value is “depreciation”. The third and final step in completing the cost approach is to estimate the amount of depreciation or the loss of value from all causes. There are two distinct kinds of depreciation: deterioration, generally referred to as physical depreciation; and obsolescence, generally categorized into functional and economic depreciation. Physical depreciation may be readily defined as being the loss in value due to wear and tear, time, and the actions of the elements. An estimate of accrued physical depreciation represents the opinion of the appraiser as to the degree that the present and future appeal of a property has been diminished by its physical deterioration.



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There is no steady rate of physical depreciation. Actual age alone is a poor criterion. Physical depreciation begins while a building is under construction and continues until the life of a structure is at an end. The physical life of a building is dependent upon the degree of maintenance which it receives, upon the type and quality of the materials which are used in the construction, and upon the soundness of the methods employed by the builder.

Functional/economic depreciation may be generally defined as being the loss of value due to forces other than physical deterioration which act upon a structure in such a way as to limit its economic life. Functional depreciation refers to obsolescence resulting from conditions within the property such as an imbalance in construction features, architectural treatment, or design and arrangement which tend to lessen its desirability. Economic depreciation refers to obsolescence caused by influences outside the property such as physical, economic, social, and governmental changes which have an adverse affect upon the stability and quality of the neighborhood in general and the property in particular.

The significance of the cost approach is that it is the one approach that can be used on all types of construction. Its widest application is in the appraisal of property where the lack of adequate market and income data preclude the reasonable application of the other approaches to value.

The particular data relative to an individual parcel of property are collected and recorded on a property record card. The field appraiser completes the property record card as he measures the property, identifies the various property components affecting value, grades the structure as to the quality of construction, and places the structure's dimensions in the appropriate spaces on the card. The property record card is also used for updating or making additions or deletions to an existing property. There is no need to revisit, remeasure, and recheck every property every year. However, base values should be updated periodically and properties should be revisited at least once every two years. Once the property record card has been properly filled out and the improvement properly graded, with emphasis on the quality of construction, the property record card is returned from the



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field and the card, cost manual, land schedules, sale data, and income information are merged into a final value estimate. In many instances, the individual who measures the house and lists it in the field is not the same individual who actually places the ultimate valuation on the property record card. This is a perfectly legitimate procedure and in most cases the only manner by which a large number of appraisals may be accomplished within a specified time frame. Mass appraisal, by its very nature, dictates some degree of production-line appraisal. The use of standardized schedules and manuals provides the uniformity and equality which is necessary in maintaining a fair tax system. The end result, therefore, of the valuation portion of the assessment flow chart would be an equitable value estimate.

#### **5. Correlation**

Correlation of the mass appraisal program includes review by the supervising appraiser and comparisons between properties to establish that uniformity at market value has been achieved. With the final estimate of the defined values, the appraiser has achieved the immediate objective of the appraisal process. The value estimates should be the appraiser's opinion reflecting the application of his experience and judgment due to a consideration of all the assembled data.

#### **6. Final Estimate of Value**

The final phase of the assessment maintenance program deals with the assignment of the final value to each parcel appraised. Under Missouri law, assessments are updated each January 1 of the odd year and are to remain unchanged the subsequent even year, unless there is new construction or improvement to the parcel.

Prior to the final compilation of the real property assessment roll in an update year, a change notice should be mailed to all taxpayers of the new assessed valuation to be placed on the property. The purpose of this notice is to allow, prior to the local board of equalization, a review of the property's



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valuation. The notice should contain information such as the parcel number, the assessed value by subclass for the current and past year and a brief explanation of the appeal process. See *Exhibit 5.4* for a typical taxpayer change notice.

Thus described, the assessment system is a complex operation that requires knowledge and understanding. A detailed discussion and methods of application relating to these major components of the reappraisal process are covered in later sections of this manual. The purpose of this manual is to assist the local assessment personnel in developing and managing a mass appraisal system that is efficient, accurate and equitable.



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EXHIBIT 5.4

TAXPAYER CHANGE NOTICE

Map Parcel Number: \_\_\_\_\_

School District: \_\_\_\_\_ City: \_\_\_\_\_ Road District: \_\_\_\_\_

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City, State, Zip code: \_\_\_\_\_

Situs Address of Property: \_\_\_\_\_

Property Description: \_\_\_\_\_

Previous Appraised Value for 2018:

Table with 4 columns: Residential, Agricultural, Commercial, Total. Each column has a blank line for input.

Previous Assessed Value for 2018:

Table with 4 columns: Residential, Agricultural, Commercial, Total. Each column has a blank line for input.

Appraised Value as of January 1, 2019:

Table with 4 columns: Residential, Agricultural, Commercial, Total. Each column has a blank line for input.

Assessed Value as of January 1, 2019:

Table with 4 columns: Residential, Agricultural, Commercial, Total. Each column has a blank line for input.

If you have questions concerning this notice please call 555-555-1234 within fifteen (15) days of receipt of the notice. If your questions cannot be answered, or if you are not satisfied with an explanation, an informal meeting will be scheduled with an appraiser. In addition, the laws of the State of Missouri provide that you may appeal any assessment to the County Board of Equalization by calling 555-555-9876 before June XX, 2019.

\* \* \* Abated Property Summary \* \* \*As provided by law the following value has been abated in Superior County for tax year 2019

Table with 3 columns: Chapter 99, Chapter 135, Chapter 353. Values are 999,999,999 for each.



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### 5.3 ASSESSMENT MAINTENANCE PLAN

In 1986, the seventy-first general assembly passed legislation which provided for the on-going maintenance of the just completed statewide reassessment. Key provisions included:

- a two-year assessment cycle
- requirement of an assessment maintenance plan
- state funding of the assessment maintenance program

With passage of this legislation, the State Tax Commission began putting into place the framework for the on-going assessment maintenance.

#### 1. Two Year Assessment Cycle

Under section 137.115 the assessor is required to annually assess all real and personal property, however, the statute was re-worded to say that the assessor “...shall annually assess all real property in the following manner: New assessed values shall be determined as of January first of each odd-numbered year and shall be entered in the assessor’s books; those same assessed values shall apply in the following even-numbered year, except for new construction and property improvements which shall be valued as though they had been completed as of January first of the preceding odd-numbered year...” Thus the two-year assessment cycle was created.

#### 2. Assessment Maintenance Plan

In addition to the creation of the two-year assessment cycle, the legislation requires the county assessor to prepare and submit an assessment maintenance plan. The Commission created a sample maintenance plan patterned after the reassessment plan used by most counties. The assessment maintenance plan includes the following components:

- Functions and Responsibilities
- Charts and Reports



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- Personnel Estimation Chart/Employment Schedule
- Phase Delineation Chart
- Plan Budget

The objective of the assessment maintenance plan is to outline how the assessor is going to maintain both the real and personal property assessments, making the best use of the resources available.

Since 1986, the time line for developing, reviewing, approving and monitoring a county assessment maintenance plan has typically been:

- September to November of the Odd-Numbered Year: the Commission, based on legislative changes, reports and staff recommendations, drafts a letter to each county assessor outlining objectives and key concerns to be addressed in the upcoming assessment maintenance cycle.
- November to December: County assessors develop their assessment maintenance plan, and submit to the State Tax Commission and County Commission by January 1, of the even-numbered year.
- December, odd-year to April, even-year: the Commission reviews and approves assessment maintenance plans.
- January, even-year through December, odd-year: County assessors and staff implement the approved assessment maintenance plan, while the Commission staff monitors activity for compliance to the approved plan.

The Maintenance Plan is incorporated into an excel workbook to be utilized by all jurisdictions. The plans are prefilled with the current assessor's name and certified parcel count for state reimbursement funds. Each page of the report is a separate tab in the workbook. And corresponds with the page numbers.

The assessor will include their plan letter, up to five pages, into the "Assessor's Narrative" tab, see *EXHIBIT 5.5 – "Assessor's Narrative" Tab*. The narrative should explain the analysis and items that will be reviewed in the next two years that may result in assessment valuation changes



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for the following reassessment year.

EXHIBIT 5.5 – “Assessor’s Narrative” Tab

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Page 1 Assessor's Letter

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*Insert "Assessor's Signed Narrative Letter" that shall accompany signed plan. This can be accomplished by using the Snipping Tool or Scan/Copy/Paste assessor's original letter in the space provided.*



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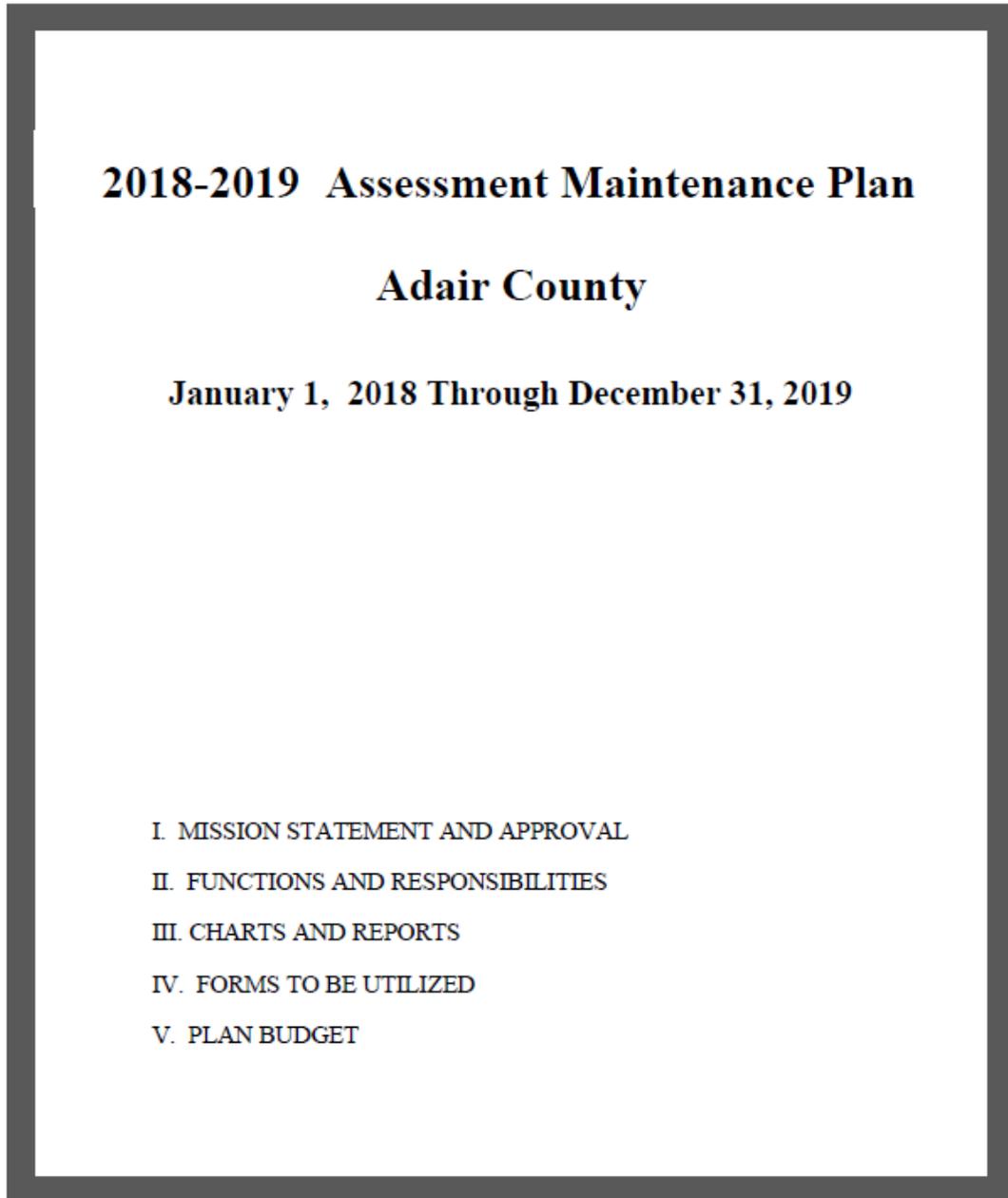
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See Exhibit 5.5 - "Page 1" tab for the plan title page.

EXHIBIT 5.5 – "Page 1" Tab



General terminology referenced in the plan is defined on the Page 4 tab, see *Exhibit 5.5 – "Page 4" tab*.



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EXHIBIT 5.5 – “Page 4” Tab

**Definitions**

As used in this agreement the following words shall have this meaning attributed to them in this subsection:

1. The word "County" means Adair County, Missouri.
2. The word "Commission" means the State Tax Commission of Missouri.
3. The words "Market Value" mean the most probable price in terms of money which a property will bring if exposed for sale on the open market for a reasonable length of time, providing there is a knowledgeable buyer and seller both aware of the uses to which a property is adapted and for which it is capable of being used. Used synonymously with True Value in Money.
4. For land used for agricultural purposes, the words "Market Value" or "True Value in Money" shall mean the value the land has for agricultural and horticultural use, which is based upon the land's productive capability as set out in Section 137.017 - 137.021.
5. The words "Project", "Plan", or "Agreement" shall mean the assessment maintenance plan.
6. The word "Ownership Maps or Mapping" means all ownership maps and related records which are prepared or compiled by the County under the guidelines of the original mapping contract or a more current mapping/GIS project.
7. The words "Replacement Cost New (RCN)" means the cost, including material, labor, and overhead, that would be incurred in constructing an improvement having the same utility to its owner as the improvement in question, without necessarily reproducing exactly any particular characteristic of the property.
8. The word "Depreciation" means the loss in value of an object, relative to its replacement cost new, whether the loss of value is caused by physical deterioration, economic obsolescence or functional obsolescence.
9. The words "Physical Deterioration" mean the loss of value caused by wear and tear.
10. The words "Economic Obsolescence" mean the loss in value of a property (relative to the cost of replacing it with a property of equal utility) that stems from factors external to the property.
11. The words "Functional Obsolescence" mean the loss in value of a property resulting from changes in tastes, preferences, technical innovations, or market standards.
12. The words "Submitting to Commission" for reports or PRC cards means mailing paper copies or emailing digital PDF or TIF files to [localassistance@stc.mo.gov](mailto:localassistance@stc.mo.gov).
13. The words "Index Study" are synonymous with "Manual Level Study."

**A. Functions and Responsibilities**



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The primary functions and responsibilities are broken into two sections, one for real property and one for personal property, see *Exhibit 5.5, "Page 5 through Page 9" tabs*. The key functions and a brief explanation of each function are provided. A general statement of Assessor and/or Staff is acceptable in the comment column.

7		
8	3.	Assessor and/or Staff
9	Sales information. Obtain, verify and log sales	
0	information from all sale letters. Copy corresponding	
1	PRC and file with the returned sale letter. Other	
2	sources may include certificates of value, real estate	
3	agents, appraisers, banks and savings & loans, etc. All	
4	sale information will be available for review and use by	
5	the Commission.	

The functions and responsibilities list the primary items in an assessment maintenance program. Individual counties may add items to fit individual needs. Urban counties with a large number of staff may need to adjust the listing to reflect the specialized nature of its organization. Rural counties with minimal staff may find the same position title listed many times, due to the more generalized responsibilities. Changes can be made to the gray highlighted cells.



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EXHIBIT 5.5 – “Page 5” Tab

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**Real Property**

**FUNCTIONS AND RESPONSIBILITIES**

	Responsibility	Job Title and Comments
1.	Public information and public relations - on going.	Assessor and/or Staff
2.	Update all property transfers on the mylars/digitized maps, property record cards, work index cards, final alpha cards and/or other related forms. Complete on a quarterly or monthly basis. Ownership data will be maintained to within 3 months.	Assessor and/or Staff
3.	Sales information. Obtain, verify and log sales information from all sale letters. Copy corresponding PRC and file with the returned sale letter. Other sources may include certificates of value, real estate agents, appraisers, banks and savings & loans, etc. All sale information will be available for review and use by the Commission.	Assessor and/or Staff
4.	Building Costs. Obtain and verify current building costs. The new construction log will be utilized to identify and locate new construction samples.	Assessor and/or Staff
5.	Conduct sale analysis of all available sales. Studies will be conducted to determine the base rates for building costs, land values, and rates of depreciation-both physical and obsolescence.	Assessor and/or Staff
A)	Building Cost Index for 2019. An index study/manual level study will be completed and submitted by 8 - 30 - 2018 to the Commission for their review and approval. The study will include PRC copies of all index samples.	Assessor and/or Staff
B)	Depreciation studies will be completed and submitted to the Commission by 8 - 30 - 2018 for review and comment. In addition, studies will be conducted by neighborhood or other strata to identify obsolescence.	Assessor and/or Staff



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**EXHIBIT 5.5 – “Page 6” Tab**



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**Real Property  
FUNCTIONS AND RESPONSIBILITIES**

Responsibility	Job Title and Comments
C) Land value studies will be conducted by neighborhood and land rates will be established which when properly applied result in a fair and reasonable land value for parcels assessed at market value. These studies will be submitted to the Commission for review and comment by 8 - 30 - 2018 .	Assessor and/or Staff
6. Complete interim untrended index study or preliminary manual level study, based on additional average quality, new construction, to be completed and submitted to the Commission by October 1, 2019.	Assessor and/or Staff
7. <u>Sale Ratio Reports</u> to be submitted to the State Tax Commission: Will be conducted by neighborhood or other strata. The object being to determine the relative level of assessment between the county's appraised value and the sale price of the sold property. Complete on a quarterly basis and generate summary by neighborhood or strata, listing the number of sales, the low, high, mean, median and weighted mean ratios, C.O.D., P.R.D. and the time-frame of the sales used within the study. Reports are to be sent to the State Tax Commission by March 31st, June 30th, September 30th, December 31st of each year	Assessor and/or Staff
8. Recalculate all proposed 2019 land values and improvement costs, up to replacement cost new prior to conducting field review, to be completed by 8 / 30 / 2018 .	Assessor and/or Staff
<b>If your county's 2015 Residential and/or Commercial Ratio Study were out of compliance and having a median ratio below 89.99%, a more detailed narrative shall be attached to this 2018-2019 plan detailing specific action(s) in steps 9A – 9H to bring the county in compliance.</b>	
9. Conduct final field review.	Assessor and/or Staff
A) Inspect recently sold properties to establish bench marks. Update neighborhood sales analysis. Based on the updated neighborhood sales analysis, corrective actions will be outlined and implemented to ensure final 2019 values will reflect local market conditions. This would include adjusting index level/manual adjustment level, neighborhood factors, special units, condition adjustments, site improvement values, etc.	Assessor and/or Staff



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**Real Property**

**FUNCTIONS AND RESPONSIBILITIES**

<b>Responsibility</b>	<b>Job Title and Comments</b>
B) Review, data collect, and photograph all new improvements and additions.	Assessor and/or Staff
C) Review changes resulting from mapping splits or combinations.	Assessor and/or Staff
D) Verify accuracy of all physical data, quality grades of improvements, subclassification of land and improvements. Property records will be updated to reflect changes or to correct errors. Take new photographs if none exists, or the improvement's condition has substantially changed.	Assessor and/or Staff
E) Review land value and apply adjustments as needed.	Assessor and/or Staff
F) Assign depreciation to improvements. Depreciation will be assigned to reflect the physical condition and obsolescence applied (whether economic or functional) as needed, to ensure the final value reflects current local market conditions. Notes will be listed on the PRC to explain any adjustments.	Assessor and/or Staff
G) Adjust agricultural land grades where required, changing the agricultural maps and property record cards accordingly.	Assessor and/or Staff
H) Update review date on property record card.	Assessor and/or Staff
10. Complete final calculations following field review, data entry, and finalize your estimate of market value.	Assessor and/or Staff
11. Income. Obtain and verify income and expense information for commercial property. Review records for 2016, 2017, 2018.	Assessor and/or Staff
12. Develop appropriate capitalization rates for income producing properties and calculate their values by the income approach.	Assessor and/or Staff
13. Prepare notices to taxpayers for increases in value, by June 15th annually.	Assessor and/or Staff



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**Real Property**

**FUNCTIONS AND RESPONSIBILITIES**

<b>Responsibility</b>		<b>Job Title and Comments</b>
14.	Conduct informal meetings with taxpayers, completed by <b>July 1st</b> annually.	Assessor and/or Staff
15.	Prepare for and defend values at board of equalization annually.	Assessor and/or Staff
16.	Complete the real property assessment roll by July 1st annually.	Assessor and/or Staff
17.	Submit electronic copy of assessment roll to the Commission for parcel count by August 1st annually.	Assessor and/or Staff
18.	Submit electronic file of appraisal/building data to Commission for ratio study by August 1st of odd numbered years.	Assessor and/or Staff
19.	Provide electronic file of previous two years sales to Commission for ratio study April 15th of even numbered year.	Assessor and/or Staff
20.	If the county is under a Memorandum of Understanding or an Equalization Order by the State Tax Commission, the memorandum and/or order shall be part of the Adair County Maintenance Plan. The document can be added to the plan in the Additional Pages tab.	Assessor
21.	Submit completed electronic file of Yearly Totals for Mapping Transactions, Sales Letters, Livestock Values, Informal Hearings and BOE totals, and Personal Property Totals to the State Tax Commission for January - July by September 1st and August - December by April 15th annually.	Assessor and/or Staff



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Personal Property

FUNCTIONS AND RESPONSIBILITIES

Responsibility	Job Title and Comments
1. Submit County Personal Property and Business Personal Property Assessment List for the following year to the State Tax Commission by November 20th annually for approval.	Assessor and/or Staff
2. Mail State Tax Commission approved personal property assessment forms by February 1st annually.	Assessor and/or Staff
3. Process railroad and utility returns for appraisal of locally assessed property by April 20th annually.	Assessor and/or Staff
4. Process State Tax Commission approved personal property assessment forms	Assessor and/or Staff
5. Prepare second notice to taxpayers whose assessment list has not been received April 1st annually. Track and log late lists, penalties, and waivers.	Assessor and/or Staff
6. Complete the personal property assessment roll by July 1st annually.	Assessor and/or Staff
<b>Additional Comments:</b>	

**B. Charts and Reports**



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The section is simply a listing of the standard charts and reports, whose use has been recommended by the Commission for use in an assessment maintenance plan, see *Exhibit 5.6, "Page 10" tab*. In completing this section of the plan, the assessor simply lists the date that the chart or report will be completed for the proposed plan. The reports are not required to be submitted to the State Tax Commission. The reports should be available upon request at the jurisdiction. If a chart or report is not to be utilized, the assessor lists "Not to be Used" on the blank provided for the specific item.



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**Charts and Reports**

The following charts and reports have been recommended by the State Tax Commission. We intend to prepare and incorporate into the plan the selected charts and reports by the date shown.

	<b>Date Available</b>
A. Parcel Count. All parcels, both taxable and exempt, including manufactured homes on leased land, REC's, CATV's, and other unmapped parcels where applicable.	Assessment Roll is to be submitted to the State Tax Commission by August 1st annually
B. Proposed budget through December 31, 2019	To be submitted upon being approved or no later than February 28, 2019
C. Phase charts through December 31, 2019	December 31, 2017
D. Personnel Estimation Chart through December 31, 2019	December 31, 2017
E. Employment Schedule through December 31, 2019	December 31, 2017
F. Organization Chart to show overall responsibility and accountability.	December 31, 2017
G. Duties and responsibilities itemized for each personnel position.	December 31, 2017
H. A narrative description of all major phases, including standard procedures and assignments of responsibility.	December 31, 2017
I. Abated property report. To be submitted by November 1, 2019	November 1, 2019
J. Annual Computer Inventory. A summary of disk usage by system users, and anticipated maintenance costs expected for the year. To be submitted by March 31st annually.	March 31st Annually
It is recommended a training outline for all personnel and a detailed field manual for data collectors be maintained in the assessor's office.	
<b>Additional Comments</b>	



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#### **C. Forms to be Utilized**

Similar to the Charts and Reports, there is a listing of recommended forms to be used in the assessment maintenance program, see *Exhibit 5.7, "Page 11" tab*. The primary difference is that the forms are used for activities that are of a day to day nature whereas the charts and reports are items that run the course of the assessment maintenance plan or cycle.

Most of the forms listed are self-explanatory; however, a few explanations may be beneficial.

- Income and Expense forms are used to gather specific information which may be used to develop typical income and expense rates for income producing property.
- Split tax statements are used to allocate a single parcel's value between multiple taxpayers, e.g. a landlord owns multiple lots, and for income tax purposes wants the taxes split between each lot and its improvements.
- Second notice for non-returned assessment lists, as required by statute, the assessor is required to notify taxpayers who fail to turn in a personal property assessment list by March 1.



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**EXHIBIT 5.7 - "Page 11" Tab**

Adair County		Revised:
<b>FORMS TO BE UTILIZED</b>		
The following forms have been recommended by the State Tax Commission. Adair County intends to incorporate the following forms into the plan. The forms are available for the State Tax Commission's review upon request.		
		<b>Date Available</b>
A.	Sales Questionnaire/Letter for mailing.	December 31, 2017
B.	Income and Expense Forms	December 31, 2017
C.	Assessment Change Notice	December 31, 2017
D.	Infomal Hearing Forms	December 31, 2017
E.	Board of Equalization Forms	December 31, 2017
F.	Split Tax Statement Forms	December 31, 2017
G.	Statistical Analysis Forms/Reports	December 31, 2017
H.	Data Verification Forms/Letters for New Construction	December 31, 2017
I.	New Construction Log	December 31, 2017
J.	Project Control Log to track different phases by map sheet	December 31, 2017
K.	Map Count Log to track parcel counts by Map Sheet	December 31, 2017
L.	Real Estate and Personal Property Assessment Roll	December 31, 2017
M.	Individual and Business Personal Property Lists	December 31, 2017
N.	Second Notice for Non-Returned Assessment Lists	December 31, 2017
<b>COUNTY MAY LIST ADDITIONAL FORMS UTILIZED (OPTIONAL)</b>		
O.		
P.		
Q.		
R.		
S.		
T.		
U.		
V.		
W.		
X.		
Y.		
Z.		



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**D. Personnel Estimation Chart and Employment Schedules**

It is important to read the definitions and instructions for page 12 through 15 to arrive at a realistic and reasonable phase chart and personnel estimation chart. *See Exhibit 5.8 "Page 12-15 Instructions" tab.*

Successfully estimating personnel needs is critical to conducting the assessment maintenance program. If estimates are too low, then the scheduled work will be completed late or not at all. If estimates are too high, then excess cost will be incurred. The following is a standard formula for estimating the number of personnel needed:

$$\frac{\text{Parcels}}{\text{Quantity X Days}} = \text{Personnel Needed}$$

Where:

**Parcels** is the amount of work to be accomplished, e.g. the number of parcels to be worked.

**Quantity** is a reasonable estimate of the number of parcels one person can typically work in one day.

**Days** - This provides a more realistic phase chart. The commission recommends using 20 working days a month. This provides a more realistic phase chart to allow for holidays, vacation, and medical leave, days lost due to weather conditions and training.

The trick to estimating personnel is in identifying the amount of work to be done, correctly estimating a reasonable standard level of production and allowing a reasonable amount of time to complete the assignment.



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**EXHIBIT 5.8, “Page 12-15 Instructions” Tab**

**Definitions and Instructions - Page 12 - Page 15**

1. The Phase Charts on Page 12 and Page 14 break down the monthly work schedule for each item to be completed by the assessor office. Page 12 is for the even year. Page 14 is for the odd year.
2. Page 13 and Page 15 provides the number of employees estimated to complete each project per month and the average number of employees in the assessor's office.
3. There are 52 weeks in a calendar year. The Phase Chart is based on 48 weeks, allowing 4 weeks of vacation, medical leave, and holidays.
4. Administration - Is the list of the assessor's office work.
5. Number of Parcels - An estimation of the amount of parcels estimated for the tasks.
6. Standard Level of Production - Number of items that can be done by one worker in one day. This is a required field to be complete for the following phases: Change Notices, Public Traffic, Processing Transfers, Map/GiS, Sales Letters, Sales Data Entry, New System Data Entry RP (if applicable), New Const Field Review, New Const Data Entry/Cal, New Const Office Review, Preliminary Calculations, Final Field Review, Final Data Entry/Cal., Final Office Review, PP Prepare/Mail, PP 2nd Notices, Process PP Lists, PP Data Entry, Informal Hearings, BOE Hearings.
7. RP is the abbreviation for Real Property.
8. PP is the abbreviation for Personal Property.
9. Const is the abbreviation for Construction.
10. Cal. is the abbreviation for Calculation.
11. Each box represents 1 week or 5 working days.
12. Enter x or X in each box for the week the work will be completed.
13. Upon entering the Number of Parcels, the Standard Level of Production, and x or X, the form will auto calculate and auto populate the corresponding week box for the work task on Page 13 and Page 15 respectively.



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**E. Phase Delineation Chart**

The phase delineation chart is useful in laying out the key phases in the assessment maintenance plan. The chart is broken into six primary areas which include:

- Administration
- Mapping
- Market Analysis
- Real Estate
- Personal Property
- Hearings

Within each of the six primary areas are listed a number of specific phases. As with the other components of the assessment maintenance plan, a county assessor may supplement the sample chart with additional items as needed.

**(1) Administration**

- Taxpayer Change Notice or Assessment Increase Notice. Under 137.180, 137.355, and 137.490 RSMO, whenever any assessor increases the valuation of any real property, the assessor is required to give notice to the owner of record of any such change. Missouri Revised Statutes specifies the assessor shall notify the property owner an increase in property valuation of the previous assessed value and the increase in property valuation (Charter counties before 1/1/2008 must include notice of projected tax liability) (Charter counties with more than 1 million inhabitants must provide notice that information regarding the assessment method computation of value is available on the website and provide the website address along with contact information for taxpayers without internet access.

Section 137.355.2 - First class counties must include on the face of such notice, in no less than



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twelve-point font, the following statement: NOTICE TO TAXPAYER: IF YOUR ASSESSED VALUE HAS INCREASED, IT MAY INCREASE YOUR REAL PROPERTY TAXES WHICH ARE DUE DECEMBER THIRTY-FIRST. IF YOU DO NOT AGREE THAT THE VALUE OF YOUR PROPERTY HAS INCREASED, YOU MUST CHALLENGE THE VALUE ON OR BEFORE \_\_\_\_ (INSERT DATE BY WHICH APPEAL MUST BE FILED) BY CONTACTING YOUR COUNTY ASSESSOR.

Section 137.490.2 - Cities not in a county must include a notice of projected tax liability which shall include:

- (1) Record owner's name, address, and the parcel number of the property;
- (2) A list of all political subdivisions levying a tax upon the property of the record owner;
- (3) The projected tax rate for each political subdivision levying a tax upon the property of the record owner, and the purpose for each levy of such political subdivisions;
- (4) The previous year's tax rates for each individual tax levy imposed by each political subdivision levying a tax upon the property of the record owner;
- (5) The tax rate ceiling for each levy imposed by each political subdivision levying a tax upon the property of the record owner;
- (6) The contact information for each political subdivision levying a tax upon the property of the record owner.
- (7) A statement identifying any projected tax rates for political subdivision levying a tax upon the property of the record owner, which were not calculated and provided by the political subdivision levying the tax; and
- (8) The total projected property tax liability of the taxpayer.

Impact notices can be sent on real or personal property. If no impact notice is sent on personal property, the tax bill shall serve as the impact notice. By doing so, this allows the assessor and staff to conduct informal hearings prior to the close of the assessment rolls.



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- Assessment Rolls are due to the county clerk by a specific date as outlined in the table below. In the phase chart, the assessor is showing the time frame for completing the assessment roll. The specific tasks of the phase will be defined by the assessor and may vary by county. Typically, the phase consists of final data entry and proofing of the assessment rolls.

ASSESSMENT ROLLS DUE TO THE COUNTY CLERK				
3rd/4th Class	Township Counties	2nd Class	1st Class	City of St. Louis
July 1 137.245	June 1 137.425	July 1 137.245	July 1 137.375	July 1 137.510

- The abated Property Report is a listing of property which contains abatements granted under one of three statutory sections. The three sections include Chapter 99-Tax Increment Financing, Chapter 135-Enterprise Zones, and Chapter 353-Urban Redevelopment Projects. Under 137.237, the assessor is required to submit the listing to the State Tax Commission by November 1, of each odd year.

(2) **Mapping**

- Sale Data Collection is best described as the process of mailing sale questionnaires, processing returned sale letters and preparing the necessary data so that the appraiser may analyze the information. Typically, this is a daily activity, however, in some counties, due to limited resources; there may be periods of time that this work is put on hold, for example, during the late spring when the assessment rolls are being finalized.
- Property Transfers is the process of collecting deeds, plats, surveys and other documents from



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the recorder's office and processing to identify changes in real property ownership, creation of new parcels and deletion of combined parcels.

- Work Maps refers to the updating of the ownership maps on a temporary basis. Some counties maintain a set of work maps which are used to pencil in changes to parcel boundaries. Typically, the work maps (or blue line maps or composite maps) are updated as the deeds or other documents are processed so that changes in parcel boundaries can be plotted. Work maps will become the source document for the inking of the final ownership overlay maps.
  
- Inking Updates are completed after the deeds and other documents are processed and the work maps updated. In counties with relatively little activity, that is the creation or deletion of parcels, inking will occur once or twice a year. In counties with a lot of activity, inking updates may be a daily activity.
  
- GIS - Many jurisdictions have converted all their paper and mylar maps into a digital or computerized format. GIS which stands for "Geographic Information System" is the most common. It is a combination of computer hardware, software, personnel and procedures capable of capturing, storing, manipulating, analyzing and displaying geographically referenced data. These geographic data can be thought of as layers or cards in a deck. These layers may hold such information as parcels, roads, soils, land use, taxing districts, utilities or zoning. Some jurisdictions choose to maintain the GIS with their staff while some utilize contractors to complete the updates and maintenance.

### (3) Market Analysis

The degree to which the biennial update will succeed is dependent on the quantity and quality of the



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market analysis. The greatest obstacle faced in the assessor's office is the lack of sale data upon which to base the comparisons in the appraisal process. The market analysis consists of four basic studies which gauge the quality of the appraisals and help determine the base rates or levels for cost, land and depreciation. For a more detailed discussion on market studies and sample forms, see section 5.9.

- Sale Ratios/Obsolescence are studies completed on a regular basis to determine the quality of the assessor's appraisal relative to a parcel's sale price. When conducted on a regular basis, e.g. quarterly, it allows the assessor to keep up with local market activity. The results of a neighborhood sale ratio study not only illustrate the relationship between appraisals and sale prices but provide an indication as to how consistent or uniform the appraisals are relative to the sales of property. Sale ratios conducted early in the assessment cycle should indicate how much change is needed, whereas studies conducted late in the cycle show assessors how successful the update has been.
- An Index\Manual Level Study is typically done once each year. The results provide the basis for the update to be completed in the current cycle. The interim study is primarily used to monitor market activity, which provides an indication as to how costs are changing.
- Land Studies are conducted once each cycle. In these studies sales are analyzed to determine the base land rates, whether they are front foot rates, square foot rates or acreage rates.
- Depreciation Studies are also conducted each assessment maintenance cycle. The objective is to take directly from the market an indication as to the amount of depreciation a building has suffered.
- Income and Expense studies are useful in determining the typical market rates for income and expenses of income producing property. Where the data is available, the results can provide the best indication to value for property that is held for income producing purposes.



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#### (4) **Real Estate**

- Preliminary Calculations refers to the time needed to apply a new cost index\manual level and calculate an updated replacement cost new (RCN) and update base land values. For counties with an automated appraisal system, this phase is generally a very short period of time. For counties who are converting to an automated system, this phase may be used to represent the initial data entry of the cost system components. For counties who update manually or are converting to an automated system, allowing sufficient time is critical to the timely implementation of the assessment maintenance plan.
  
- 20\_\_ Final Review is the phase where the assessor outlines when the parcel by parcel review for the odd-year update is to take place. The distinction between this phase and the new construction review is that in the final review a parcel by parcel review is conducted, checking closely for changes in physical characteristics, additions and deletions, and the reassignment of depreciation(or condition). In addition, any new construction and improvement is noted and valued. It is during this phase that values are set for the upcoming odd-year update as well as the subsequent even year.
  
- 20\_\_ New Construction Review is the phase conducted during the odd year for the subsequent even numbered year. It is primarily a time to identify, list and value new improvements and construction made to a property. Improvements that have been razed should be identified and the value deducted, however, adjustments in value due to economic situations are not made.
  
- Office Review is a time set aside to finalize values for the upcoming odd-year update. During this phase, the assessor and staff review in the office the updated values, resolve any questions or disparities and finalize values. A key objective to the office review is to ensure that comparable properties are valued consistently and that any unusual or extreme values are reviewed and either corrected or substantiated.



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- 20\_\_ Data Entry is the phase set aside for completing the necessary changes to the assessor's final records. Depending on the county's degree of automation, this may simply be the data entry of the final values for each parcel of real estate or it may be the time required to edit each appraisal record.

#### (5) **Personal Property**

- Prepare and Mail Lists refers to the time needed to print, address and mail the county's personal property lists. Typically mailing is completed by early January of each year.
- Process is the time needed to receive and value property listed on the returned personal property assessment lists. In addition, an allowance for preparation of the second notices should be incorporated into the phase.
- 20\_\_ Data Entry is the time for completing the data entry of the final information for the personal property assessment roll. This may include simply keying in the property owner's name, address and values or it may involve entry of individual property for automated valuation. In either case, time should be allowed to complete the data entry prior to the close of the assessment roll and preferably early enough to allow proofing of the final data.

#### (6) **Hearings**

- Informal hearings are set for taxpayers to meet with the assessor and staff prior to the closing of the assessment roll. During these meetings the assessor should attempt to correct any errors found and validate the final values.
- The BOE (Board of Equalization), under 138.010, RSMO, is required to meet each year. Various state statutes govern the dates that appeals are due, the date they begin business and the



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date the end business. The dates are dependent on the county's classification. See the following charts for Board of Equalization Schedules:



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**Second, Third and Fourth Class Counties**

Date	Event	Cite
2 <sup>nd</sup> Monday in July	Appeals to BOE due	137.275
July 1	BOE <i>may</i> start meeting in reassessment years <i>if needed</i>	138.010
3 <sup>rd</sup> Monday in July	BOE starts meeting	138.010 138.050
3 <sup>rd</sup> Monday in July	Counties of 2 <sup>nd</sup> (most), 3 <sup>rd</sup> , 4 <sup>th</sup> Class BOE Meet Acting as Boards of Appeal	138.050
July 31	BOEs in all counties except charter end business	138.050
September 30	Appeals from county BOEs to State Tax Commission due OR thirty (30) days after the decision of the BOE, whichever is later	12 CSR 30-3.010

**First Class Counties**

Date	Event	Cite
3 <sup>rd</sup> Monday in June	BOE appeals due, unless extended by board	137.385
July 1	BOE <i>may</i> meet in reassessment years <i>if needed</i>	138.090
1 <sup>st</sup> Monday in July	BOE starts meeting	138.090
July 31	BOE ends business	138.050 138.100
September 30	Appeals from county BOEs to State Tax Commission due. OR thirty (30) days after the decision of the BOE, whichever is later	138.110 12 CSR 30-3.010



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**Charter Counties**

(Jackson, Jefferson, St. Charles, St. Louis)

Date	Event	Cite
3 <sup>rd</sup> Monday in June	BOE appeals due, unless extended by board	137.385
July 1	BOE <i>may</i> start meeting in reassessment years <i>if needed</i>	138.090
1 <sup>st</sup> Monday in July	BOE starts meeting	138.090
4 <sup>th</sup> Saturday in August		138.050
		138.100
	BOE ends business	138.170
September 30	Appeals from county BOEs to State Tax Commission due OR thirty (30) days after the decision of the BOE, whichever is later	138.110 12 CSR 30-3.010

**St. Louis City**

Date	Event	Cite
2 <sup>nd</sup> Monday in July	Appeals to BOE due	138.180
July 1	BOE <i>may</i> start meeting in reassessment years <i>if needed</i>	138.170
1 <sup>st</sup> Monday in July	BOE starts meeting	138.170
4 <sup>th</sup> Saturday in August		138.050
		138.100
	BOE ends business	138.170
September 30	Appeals from BOE to State Tax Commission due OR thirty (30) days after the decision of the BOE, whichever is later	138.110 12 CSR 30-3.010



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### EXHIBIT 5.9 – “Page 12 PC1YR” Tab Original Form

Administration	Number of Parcels per Tasks	Standard Level of Production per Day	Phase Chart 2018														
			January	February	March	April	May	June	July	August	September	October	November	December			
Frank Shaker																	
Change Notices																	
Advert Roll																	
Small Advert Roll to SVC																	
Advert Prep																	
Computer Imp																	
Public Tracking																	
Processing Transfers																	
MapGIS Update																	
Sales Letters																	
Sales Data Entry																	
Sales Field Bureau																	
State to SVC the State																	
State System																	
Indo/Mon Ltd																	
Land Analysis																	
IT/Map/Device Study																	
New System Data Entry RP																	
New Const Field Review																	
New Const Data Entry RP																	
New Const Office Review																	
Preliminary Calculations																	
Final Field Review																	
Final Data Entry/CAL																	
Final Office Review																	
PP Program/Map																	
PP 2nd Notice																	
Present PP List																	
PP Data Entry																	
Informal Hearings																	
ROE Hearings																	
SVC Hearings																	







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Formulas are programmed to calculate the number of employees monthly after the Week/Month, Number of Parcels per Tasks, and Standard Level per Day is entered into the phase chart on tab “Page 12 PC1Year.” The number of employees will auto-populate on the “Page 13 PC1YR” tab per month. *See EXHIBIT 5.9 – “Page 13 PC1YR” Tab.*

By listing the total people needed each month; the assessor can quickly see where the peaks and valleys in staffing will occur and determine what actions will be needed. For example, do you hire additional staff for one or two months, or do you reconsider the time frame for the tasks and spread the work over a longer period to stabilize personnel needs? Most assessors do not have the luxury of adding people for short periods of time, rather, it becomes necessary to adjust the phase time frame and/or adjust the expected production level.





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### EXHIBIT 5.10 – “Page 14 PC2YR” Tab

Original Form

Administration	Number of Parcels per Tasks	Standard Level of Production per Day	Phase Chart 2019													
			January	February	March	April	May	June	July	August	September	October	November	December		
Frank Baker																
Change Notices																
Advert Roll																
Draw/Advert Roll to STC																
Advert Prep																
Computer App																
Public Tracts																
Processing Transactions																
MapGIS Update																
Sales Letters																
Sales Data Entry																
Sales Field Review																
Scan to STC for SPN																
Scan System																
Indochina Ltd																
Land Analysis																
Ballpark/Expense Study																
New System Data Entry RP																
New Court Field Review																
New Court Data for STC																
New Court Office Review																
Preliminary Calculations																
Final Field Review																
Final Data Entry/CA																
Final Office Review																
PP Program/Mail																
PP and Notices																
Present PP Lists																
PP Data Entry																
Informal Hearings																
HOE Hearings																
STC Hearings																











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#### **F. Plan Budget**

In order to implement any plan, provisions must be made for funding. The assessment maintenance plan is partially funded under 137.750, RSMO. The funding covers a portion of the costs incurred in the implementation of the approved assessment plan with a few exceptions. Those exceptions include:

- Premiums for property and casualty insurance and liability insurance
  
- Depreciation, interest, building and ground maintenance, fuel and utility costs, and other indirect expenses which can be classified as the overhead expenses of the assessor's office;
  
- Purchase of motor vehicles.

Other costs and expenses may qualify for reimbursement, but require specific approval unless they are contained within an assessment maintenance plan and include:

- Salaries and benefits of data processing and legal personnel not directly employed by the assessor;
  
- Costs and expenses of computer software, hardware and maintenance;
  
- Costs and expenses of any additional office space made necessary in order to carry out the county's maintenance plan;
  
- Costs of leased equipment;
  
- Costs of aerial photography.



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The state funding is limited to appropriations, and is dispersed on the state's fiscal year basis. At present, the limit is at the minimal funding of \$3.00 per parcel. There is also miscellaneous income such as interest, fees obtained from mapping, etc. The county may also provide additional General Revenue moneys for the assessment fund. To be eligible for state cost-share funds provided pursuant to section [137.750](#), every county shall provide from the county general revenue fund an amount equal to an average of the three most recent years of the amount provided from general revenue to the assessment fund. The county shall deposit the county general revenue funds in the assessment fund as agreed to in its original or amended maintenance plan, state reimbursement funds shall be withheld until the amount due is properly deposited in such fund.

Other funding comes from a percentage withheld from all taxes collected, and the county's general revenue. The percentage withheld from tax collections formally was 1% for third and fourth class counties, and one-half of 1% for first and second class counties, and cities not within a county. In 2010, legislation was enacted that provided for additional withholdings from tax collections. In third and fourth class counties, an additional one-half of 1%, up to a maximum of \$75,000 is withheld. In first and second class counties, and cities not within a county, an additional one-eighth of 1%, up to a maximum of \$125,000 is withheld.

The plan budget consists a summary by year. See *Exhibit 5.12* for the budget summary.

If computer, aerial photography, etc., are included in the county's budget, no approval is required by the State Tax Commission. Although allocated building and/or maintenance costs for county-owned property or other non-reimbursable costs may be contained within your plan they will not qualify for state reimbursement. The Commission will process quarterly reimbursement requests promptly when in compliance with the approved plan.



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EXHIBIT 5.12 – “Page 17” Tab

Adair County

Revised: \_\_\_\_\_

**Budget Summary**

Report amounts to nearest \$1.00 increment

<b>Expenditure Summary</b>	<b>Approved 2017</b>	<b>Requested 2018</b>	<b>Projected 2019</b>
Salaries			To be submitted upon being approved by county or no later than February 28, 2019
Office Expenses and Non-Computer Related Equipment			
Mileage Expense Only			
Education and Training			
Hardware/Software Computer			
Leased Equipment			
Contracts and Other Expenses			
<b>Total</b>	\$0	\$0	

<b>Sources of Revenue Available:</b>	<b>Approved 2017</b>	<b>Requested 2018</b>	
County General Revenue			
Tax Collection Withholding			
State Reimbursement			
Other			
Prior Year Net Cash Available December 31			
<b>Total</b>	\$0	\$0	

Current Parcel Count	0	0	
Cost Per Parcel			



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#### **G. Assessment Maintenance Plan - Sign off**

The Mission Statement and assessor's duties are listed on the "Page 2" tab. *See Exhibit 5.13.* The current assessor's name will replace the "Assessor First and Last Name" in the following exhibit.

#### EXHIBIT 5.13 – "Page 2" Tab

### **Mission Statement**

The Adair County Assessor and State Tax Commission shall strive to assess all property in a fair and uniform manner; shall strive to discover, list, and assess all taxable property within the county; shall faithfully and impartially execute this assessment maintenance plan, shall develop assessments based on current market value as of the date of appraisal; shall promptly and efficiently respond to questions, complaints, and needs of taxpayers and assessment officers; and shall uphold the constitution and statutes of the State of Missouri.

### **2018-2019 Assessment Maintenance Plan**

I, Assessor First and Last Name, the duly elected Adair County Assessor, submit the following assessment maintenance plan for the 2018-2019 assessment maintenance cycle. This plan contains the framework and all of the necessary elements to allow me to carry out my official duties as required by the constitution and laws of the State of Missouri.

*Exhibit 5.14, "Page 3" tab* is a sample sign-off page. This document is used by the assessor and county commission to affirm that the assessment fund has been established and to summarize the financial commitments to the assessment plan. The county will print "Page 3" tab, sign the document, then insert the document into "Page 3 Signed" tab. *See Exhibit 5.14, "Page 3 Signed" tab.*



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EXHIBIT 5.14 – "Page 3" Tab

2018-2019 Assessment Maintenance Plan
Agreement and Approval

The parties to this plan, the County Assessor, the County Commission, and the State Tax Commission, agree to its specific terms as well as these general obligations:

The Assessor will assess all taxable property in the county uniformly and at the statutorily required percentage of market value for the respective property. The actions of the assessor and staff will comply with the requirements found in Article X, Section 3 of the state constitution, Chapters 53, 137, 138 and any other pertinent chapter of the Revised Statutes of Missouri.

The County will provide office facilities and the budgetary support, as set out in this agreement, to allow the Assessor and staff to carry out the terms of this agreement and the duties of the Assessors Office.

The State Tax Commission will provide technical assistance, including regular visits by the field representative, educational training, guidelines and other resources to aid the assessor in the execution of this plan. Further, in consideration for the Assessor supplying assessment services in compliance with the terms and obligations of this plan, the state will provide cost-share reimbursement funds to the extent specified in 137.750, RSMo.

It is hereby affirmed by the County, that an Assessment Fund has been established, and that the general revenue funds required of this plan will be deposited into the Assessment Fund.

The undersigned approve and submit this plan.

Adair County, Missouri

State Tax Commission of Missouri

Table with 4 columns for signatures and dates. Rows include County Assessor, Presiding Commissioner, County Commissioner, and STC Chairman/Commissioner.



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EXHIBIT 5.14 – “Page 3 Signed” Tab

Adair County

Revised: \_\_\_\_\_

Page 3/Signatures

*Insert "Page 3 Signed" with  
all signatures*

## 5.4 PUBLIC RELATIONS

In any major program of modernization and revaluation, the assessor should advise the public of the program, its objectives, its need and importance and their part in it. The public perceptions of the assessment function affect public acceptance of the property tax and of a reappraisal program. In addition, the effective and efficient functioning of a reappraisal program is dependent upon the cooperation of the owners and the occupants of property. It is important that the taxpayer have an understanding of the property tax system and the assessment practices involved. Therefore, an effective public relations program should be an intricate part of the assessment system and also the



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responsibility of every member of the assessment staff.

The property tax, like other taxes, exists so that the public may pay for the services rendered to them by government. Each taxpayer should pay a fair share, and only a fair share, of the cost of supporting the local government and its institutions. Therefore, if all properties are valued using the same standards and approaches, then each property owner will pay their fair share of the cost of local government.

Revaluation systems are designed to permit more accurate and frequent reappraisals, which ensure that tax liabilities are apportioned fairly.

The greater the elapsed time between reappraisals the more dramatic the effects of the reappraisal program are apt to be. These effects are an unavoidable consequence of correcting the errors or updating caused by infrequent reappraisals in the past. The issues of higher taxes can be addressed by focusing responsibility on those who set tax levies. Higher assessments do not cause higher taxes.

The public should be made aware that the purpose of a reappraisal program is to distribute fairly the burden of taxation.

Assessors should adopt a well planned, step-by-step program of year-round communications, employing all communication vehicles--news media, public appearances, personal contacts, correspondence, forms and informational brochures. Each medium is important and each has its place in an effective public relations program.

#### **1. News Media**

The news media (newspapers, television, and radio) is an effective means for the assessor to reach a wide range of audiences several times a day. The press is usually vitally concerned with local



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government and its activities. Therefore, with rare exceptions, reporters are assigned to cover the public offices to pick up the news or developments which would be of interest to the public.

It is important that the assessor's office have good contact and working relations with the local press. One approach is to develop a working relationship with news people responsible for reporting local government news. As a start, the assessor should advise them of policies, the maintenance program, and of their willingness to cooperate fully at any time in answering questions and giving information to the press. Another step is to prepare news releases in which major points are clearly set forth. Technical terms should be defined in layman's language. It is important that the assessor be prepared for interviews. Rarely will a news release be sufficient; reporters may wish to clarify some point, elaborate on others, or ask entirely new questions. Therefore, it is important that the assessor be able to answer reporter's questions clearly, particularly if the interview is for television or radio.

In addition to pure news, it is sometimes possible to interest journalists in feature stories in which assessment subjects can be discussed in depth. Producers of public affairs programs are generally looking for show topics and one on the assessment process could be very positive. A number of assessing officers have appeared on panel discussions and phone-in programs during which specific questions were answered.

## **2. Public Appearances**

Presentations before service clubs, neighborhood associations, and civic organizations are other effective ways to educate the public. Public appearances before local civic organizations may be particularly successful because attendees are generally the movers and shakers of the community and are in tune with its needs. Assessors may wish to contact such organizations and offer their services as a speaker rather than waiting for an invitation.

For this medium, the assessor's office should have several prepared talks, using presentation



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software to display charts and slides. The assessor may wish to bring a supply of informational brochures prepared by the office for distribution to those present at the meeting. The assessor should encourage the use of these presentations to the maximum extent and whenever possible may wish to use other members of his staff.

Some counties have found that, in addition to a prepared lecture, the development of a presentation with inserted narration or other audio can be very effective. The pictures are excellent for telling the story and for gaining attention; while narration with a good voice is an appropriate medium to accompany the pictures. It has been found that a point can often be made clearer or more dramatic through the use of graphics.

### **3. Personal Contacts**

Personnel in the assessor's office should be thoroughly familiar with the assessment maintenance program and the ad valorem tax system. Each contact between a member of the public and the assessor's or staff is an opportunity to provide information and create a favorable impression. In discussing assessment matters, the staff should be courteous and businesslike at all times and remember that the taxpayer is probably unfamiliar with most assessment terminology.

Typically the public's first contact with the assessor's office is at the counter or by phone. There should be a smile, brevity, and friendliness in all office and telephone contacts.

At the counter, waiting time should be kept to a minimum and it is of the utmost importance that people be taken care of in the appropriate order. Counter contact should be businesslike, with visiting and excess discussion minimized, consistent with the courteous hearing of the taxpayer's story.

There is a growing use of the telephone in business and governmental activities, and more and more



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care needs to be taken in its use. During the telephone contact, the employee should have the data available, and should expedite the conversation.

In all forms of personal contact, an appropriate general strategy is as follows:

- A.** Obtain the name of the person(s) with whom one is conversing and the identification of the property in question.
- B.** Allow the person to describe the problem.
- C.** Obtain and record the necessary information. If this information is not immediately available, take steps to obtain it. For example, furnishing forms or planning a visual inspection.
- D.** Express pleasure at having the opportunity to discuss assessment matters with the person and thank him for his assistance.
- E.** Assure the person that the matter will be attended to immediately and that if any errors exist, they will be corrected. If the person is plainly wrong or argumentative, it is better to try to end the conversation politely than to become argumentative.
- F.** When a problem has been corrected, personally notify the taxpayer of the steps taken and the final solution.
- G.** Advise the person of appeal rights and procedures.
- H.** If available, offer to provide the person with any brochures that may help the taxpayer to understand the answers to his questions.

The second type of personal contact is that of field contacts by the assessor or by other representatives of the office. A substantial amount of time is spent gathering appraisal data in the field, interviewing property owners, obtaining information and inspecting a particular property. This contact may be the most important one and probably the primary contact of the majority of the citizens with the assessor's office. Here all the rules of courtesy and sympathetic understanding should be observed. The appraiser should be carefully trained to communicate the reason for the field review, the objective of the maintenance cycle and its impact on taxes.



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In order to reduce doubts about the identity of staff members and the purpose of their calls on property owners and generally make members of the public feel more comfortable in their contacts with the representatives of the assessor's office, the assessor should provide staff members with such items as identification badges or cards, business cards, and desk name plates. It is a sound policy to file with the county sheriff's department or police department a list of names, vehicle types, and license numbers for all field personnel. Appearances also are important. Attention should be paid to such things as the dress and grooming of the staff, housekeeping, and conduct of the staff when in public view.

Guidelines for personal conduct should be contained in procedural manuals or employee's handbooks and incorporated into the training program.

#### **4. Correspondence**

Correspondence can also be used to create a favorable impression. Inquiry letters should be answered promptly, either by letter, by telephone or by personal visit. The letter should be outlined so that it is well-organized, easily understood, and is as short as possible. Also, letters should be courteous but official, in each case stating the purpose of the letter and the authority for it.

There are many textbooks and publications which explain the fundamentals of good correspondence. They should be available to and be used by the staff.

#### **5. Informational Brochures**

An important form of public communication is through the use of brochures explaining the assessment process, state laws, time frame and dates, and the assessor's policies and program. They may also set out the taxpayer's responsibility insofar as the assessment of property is concerned.



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These brochures may be made up to correspond to the different facets of property assessment, such as; real property, personal property, mobile homes, business property, etc.

This medium can be distributed at the time the taxpayer has a question at the counter or through correspondence. Brochures are also timely in that they can be distributed whenever a talk is being given to service or other organizations.

The brochure should not be too elaborate, but sketches and some charts are frequently helpful. A folio size of about eight pages has been the most commonly used and has proven to be the most successful because it can be put in a pocket or a purse. They should cover the highlights and answer most frequently asked questions as briefly as possible. Many counties have found them very successful and a most important medium of public information, public education, and public relations.

#### 6. Quality Website

If someone needs to find information, they are most likely turning to the internet to find it. A quality website is clean, well-organized, is easy to navigate and is easy to use on a mobile device. The website should, at a minimum, explain the assessment process and the appeal process. It should give contact information for your office. Various other information can be provided and should be frequently updated. Forms utilized by your office can be made available. You may also want to provide links to various other websites.

The adoption of the two year assessment maintenance cycle requires continual efforts in the area of public relations. Therefore, a public information and relations program should play a very important role in the successful completion of the reappraisal system.

#### 5.5 USE OF ELECTRONIC DATA PROCESSING (EDP)



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With increasing population, rapid technological advances, inflation and other related changes, the assessor's task of maintaining fair assessments has become more difficult and complicated. Electronic data processing systems are a tool of modern technology that facilitates the assessor's ability to maintain and retrieve the vast amounts of data necessary for the operation of an effective assessment system.

The nature of the system and the essentials of its installation and use must be fully understood if the purchase of such a costly item is to be justified. There are many types of systems and it is essential that the proper type and size be obtained after consideration for the present and future needs of the office.

The primary purpose for EDP is to provide for high speed, accurate, and efficient performance of the following functions: (1) record storage and file maintenance (2) classifying, sorting, and correlating data, (3) computing, and (4) report and document preparation. With this in mind, it must be remembered that computer systems have limitations. They do not think, nor do they perform any process for which they are not programmed. If erroneous information is put into the machine, erroneous information will come out. Another limitation is that the systems require knowledgeable operators who are well-informed, not only as to the operation of the system, but also as to the tasks that the assessor is required to perform.

Management should be able to use the system to its fullest capabilities and not be limited to a few operations because of a lack of knowledge. Even though a system is complex, it is merely a tool to perform a task that management desires to have performed. The use of computers is only justified if the results and services obtained are greater than those which could be realized by comparable expenditures for alternative methods.

1. **Computer Applications** Because EDP systems have the capability of storing, updating, and



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retrieving vast amounts of data, the assessor can utilize the computer in a number of assessment-related applications.

#### **A. Record Management**

The elements of an effective assessment system require that the assessor store, maintain and be able to retrieve a large amount of information. The bulk of the information required by the assessor is found in ownership files, sales files, and property characteristics files. The information in these files must be gathered, sorted, stored, and updated by the assessor.

A computer system can be a tremendous help in the mass appraisal of property by maintaining a record of this data, by providing that the record be constantly updated, by providing rapid and efficient means of making computations from the data, and by producing hi-speed and efficient printouts summarizing the data in a convenient manner for the assessor. The computer system must be designed so that it is adaptable to the data processing operation. Under a well designed system, all of the information relating to ownership, sales, building and improvement characteristics, use, zoning, replacement cost data, depreciation, and other data can be stored on disk. The information then can be updated online each day thereby allowing the assessor to maintain a current database.

#### **B. Valuation Applications**

The objective of computerization is to feed complete and accurate data into a system in a form which can be manipulated and easily retrieved in the desired format. The information to be retrieved will include specific information about the property along with the calculated values. After the office has been computerized and has established a master property file, an accurate property characteristics file, and the appropriate data relating to construction costs, sale prices, and income/expense data, then the assessor will be in a position to apply the appropriate analytical techniques to appraise the properties within the county.



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#### (1) **Cost Approach**

Software is available which allows for the data entry of land and improvement characteristics, looking up base rates, calculating land values and replacement cost new, applying depreciation (or condition) and finalizing values. Cost approach programs are a tremendous asset when a mass update is required. In a mass update, new values can be calculated for tens of thousands of parcels in a matter of hours.

In addition to re-calculating values, the software has the ability to print property record cards or review sheets, which greatly facilitates the parcel by parcel review. *Exhibit 5.15* is an example of a printout showing the estimated property value by the cost approach.

The computation of current replacement cost new less depreciation, or RCNLD is a most important and essential operation if the assessor is to timely perform the task of maintaining current and fair assessed values. The use of computers affords the assessor the opportunity of updating the RCNLD of all structures within the county at one time, thereby allowing the assessor and staff time to concentrate on the valuation aspects, rather than being bogged down with the clerical concerns of manual calculations.





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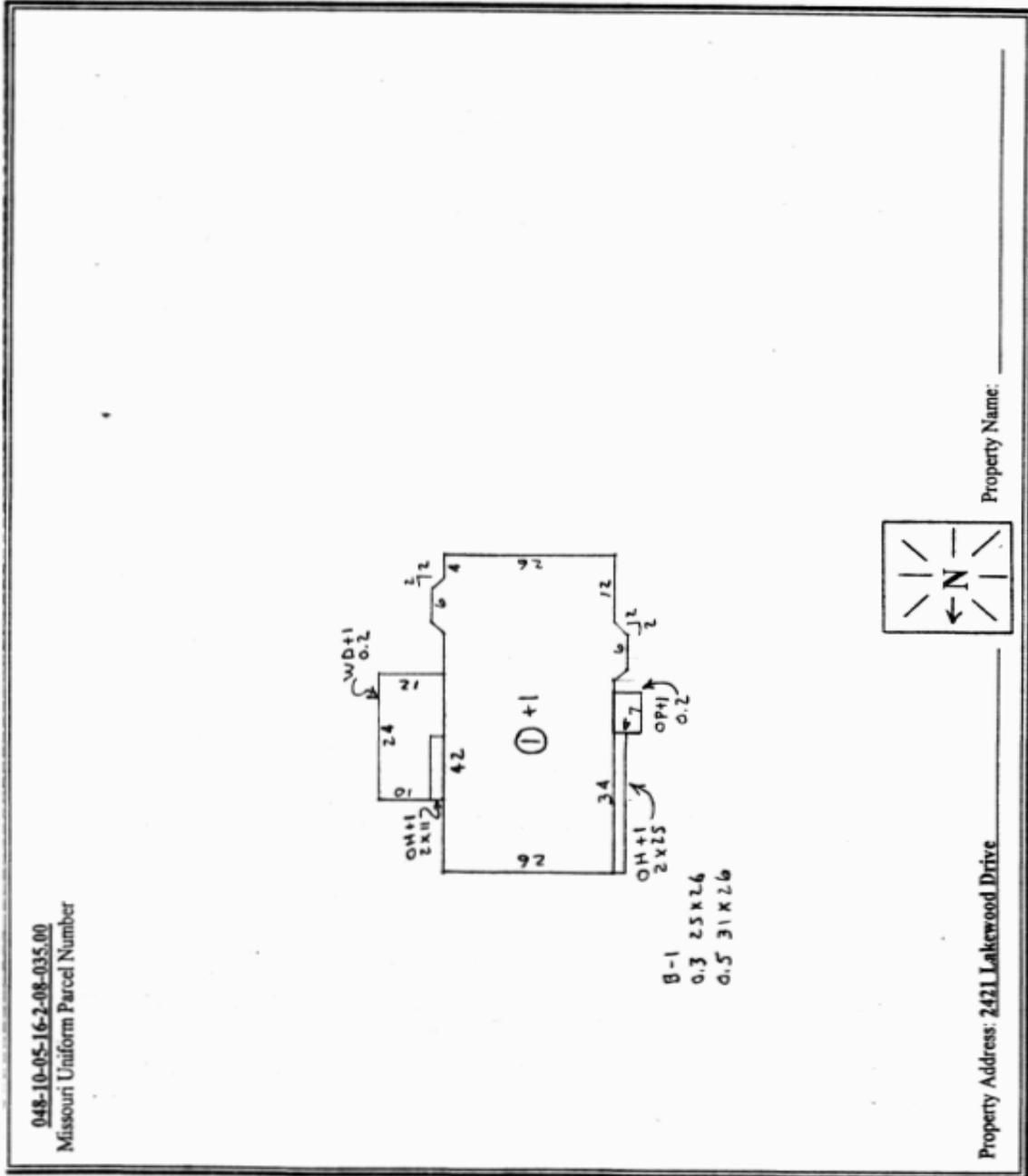
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EXHIBIT 5.15 continued page 2 of 2

PROPERTY RECORD CARD (PRC)



048-10-05-16-2-08-035.00  
Missouri Uniform Parcel Number

Property Name: \_\_\_\_\_

Property Address: 2421 Lakewood Drive



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#### (2) **Market Approach**

Systems have been developed using multiple regression analysis (MRA) and several have also developed more conventional computerized sales comparison models. These systems have proven to be effective in estimating market values for single family residential properties when sufficient numbers of sales are available. MRA may also be used in the appraisal of multi-family residential properties and urban land.

#### (3) **Income Approach**

A number of income approach applications have been computerized. Several of the other techniques used to value income-producing properties are suitable for computerization. For income-producing properties, several income valuation programs are needed if a complete and adequate job of analysis is to be realized.

#### (4) **Statistical Programs**

There are also a number of programs which allow the assessor to automate the analysis of market data. These programs can generate sale ratio studies, land value studies, depreciation studies and cost index/manual level studies. The use of computer generated statistics allows the assessor to measure the quality and consistency of current values, estimate base values for future use and to test the impact of given value changes. A good program will allow the assessor to ask "What if?" and see the impact almost immediately.

#### C. **Administrative Applications**

Computers can be used in countless administrative applications, including the printing of property records, new-work lists, value-change, audit reports, edit reports with error and warning messages,



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profile analysis (including histogram and statistical reports), assessment notices, assessment rolls, cross-reference indexes, mailing labels and letters for special mailing, valuation and property-use reports, and the like.

The task of computerizing data into a format that will allow the assessor to obtain accurate and useful results is a formidable undertaking which requires a serious commitment and effort. Considerable amounts of time and effort must be devoted to the task of learning about computers and their capabilities, investigating the cost of purchasing computer hardware (equipment) and software (programs) necessary to complete the task required by the assessor and determining the personnel requirements necessary for the completion of these tasks. The decision to automate and to utilize the capabilities of computer systems in property appraisal is a major one. Therefore, the decision to implement a computerized mass appraisal system must be based upon a thorough investigation into the advantages and disadvantages and the cost-effectiveness of incorporating the use of a computer system into the present assessment operation.

### **2. Computer Program Minimums**

In the fall of 1994, the State Tax Commission adopted a set of computer program minimums. In establishing the computer program minimums, the objective was to ensure a minimum level of program capability and to ease the transition from one vendor's program to another, should that be necessary.

The programming minimums are organized into four divisions:

- |                          |                        |
|--------------------------|------------------------|
| 1.0 General Requirements | 2.0 Personal Property  |
| 3.0 Real Property        | 4.0 Appraisal Programs |



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Within each division, there are one or more categories. The minimum requirements will be implemented at the category level. That is, if a current program does not meet the program minimums for its category, then before any further upgrade/purchase will be eligible for reimbursement, that program will have to be upgraded to meet its minimums. However, it will not require programming in other categories to be added. The following pages list the program minimums.

### **1.0 General Requirements**

#### 1.1 File Layouts and Storage Requirements

File layouts, listing field name, field type, and size will be required for all systems. File layouts will be required for the primary database(s).

Disk storage space needed for data files, application files and for operation of the programs need to be identified. In addition, space requirements for multiple years will need to be identified.

#### 1.2 Hardware Requirements

Reimbursement on hardware costs will be based on the assessor's share. In order to calculate the assessor's share, each county will be required to submit an annual computer inventory form. The assessor's share will be 100% for hardware needed and used exclusively by the assessor. Costs for system components will be allocated. The allocation or assessor's share is calculated in the following manner:

##### 1.2.1 Disk Utilization

For example, on a 600 Mb system where the assessor's files require 150 megabytes (Mb), the operating system utilizes 15 Mb, there are 200 Mb of free or unused space and three offices use the



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system (assessor, clerk, and collector) the calculation would be:

$150 \text{ Mb} / 385 \text{ Mb} = 0.39$	Used Space Share
$15 \text{ Mb} / 3 = 5 \text{ Mb}$	Oper. System Share
$200 \text{ Mb} \times 0.39 = 78 \text{ Mb}$	Free Space Share
$(150 \text{ Mb} + 5 \text{ Mb} + 78 \text{ Mb}) = 233 \text{ Mb}$	Assessor's Mb Share
$233 \text{ Mb} / 600 \text{ Mb} = 0.388 \text{ or } 39\%$	Assessor's Share

1.2.2 Other methods may be considered. For consideration of alternate allocation methods, contact the STC.

### 1.3 Annual Computer Inventory

The annual computer inventory provides for the listing, by office, of disk usage, the number of terminals, screens or workstations and the number of printers on the system.

Each county seeking reimbursement for computer related expenses shall submit an updated annual computer inventory form each year, prior to March 31.

## **2.0 Personal Property**

### 2.1 Assessment Roll

#### 2.1.1 Required information:

Name

Address

Account number

Tax district(s)

Property quantity



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Property description

Property value

Assessed value by subclass

Total assessed value

Property counts (number of units) for:

Cattle: cows/bulls, yearlings, calves

Hogs: sows/boars, barrows/gilts, pigs

Sheep: slaughter lambs, feeder lambs, replacement ewes

Horses, Mares, Geldings, Asses, Jennets and Mules

Poultry/All other livestock

Farm Machinery

Vehicles: (make, model and year); Auto, truck, motorcycle, bus, RV, Boat, Air, other vehicles, historic motor vehicles, historic aircraft, aircraft-kit

Note: If other categories are used for cattle, hogs or sheep, counts for each category shall be available and reported on the livestock breakdown.

### 2.1.2 Report Requirements

#### Assessment Roll

Ability to select print order by: name, account number, or tax districts, with subtotal values by subclass per page.

#### Livestock Breakdown

List each category for cattle, hogs and sheep and their respective count, cost (assessment) per head and the total assessed valuation. Provide a subtotal for cattle, hogs and sheep.



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#### 2.1.3 Add, Edit, View Ownership-Property-Values

Ability to enter property into appropriate subclass and tabulate quantity by subclass, and for Form 11/11A.

#### 2.2 Assessment Lists

Print Name, Address, and Taxing District on list

Ability to select print order: by name, tax district, account number, or zip code

Ability to track date received, and generate a second notice for non-returned lists

Ability to flag for penalty and track waiver code

#### 2.3 Property Valuation/Calculation

Ability by user to set up and maintain value tables which allow for look-up and valuation of property

#### 2.4 List and Value past year's property

Ability to list previous year's property and apply current year value

### **3.0 Real Property**

#### 3.1 Assessment Roll

##### 3.1.1 Required information

Name

Address

Acres

Parcel number

Property

Description, Section-Township-Range

Subdivision-Lot-Block



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Assessed value by subclass and total assessed value

District information

#### 3.1.2 Report Requirements

##### Assessment Roll

Ability to select print order by: parcel number, name, account number, or tax districts. Each page to include value subtotals by subclass. On split tax parcels, print only the parent or eligible parcel.

##### Exempt Property Parcel Report

List the parcel number, ownership, use, status (vac/imp).

Select the order by parcel number or ownership.

##### Abated Property Report

Print subclass, parcel number, true value in money, % abated, total appraised value abated, ending tax year and statutory authority for abatement. List each parcel and include a summary by authority, number of parcels and total abated value.

Note: This requirement is waived for counties with a system in place or have no abated property to report.

##### Split Tax Statements Parcel Report

Ability to list the parcel number, ownership, value by subclass, assessment by district for parent parcel (total) and for sub-parcels.

##### Parcel Count by Map Sheet

List each map number and the number of reimbursable parcels and non-reimbursable parcels on that map sheet.



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#### Control Samples

This is a three step process, consisting of a list of all parcels, random parcel reports, and lists of selected parcels.

#### **List of Parcels**

For each parcel show:

Parcel number (left justify in positions 1-24)

Value of agricultural property (right justify in positions 25-31)

Value of commercial property (right justify in positions 32-38)

Value of residential property (right justify in positions 39-45)

Delimit each record with a carriage return and a line feed (positions 46-47).

Write the report to a PC diskette or CD, or transmit to the STC via a standard electronic protocol. Files to diskette may be compressed if the decompression program is included on the diskette(s) with the data file. Name the file with the first 4 letters of the county name (except Maries - MARS, and Marion - MARN) followed by a two digit year.

#### **Random Parcel Reports**

The State Tax Commission will produce three reports, one each for agricultural, commercial, and residential parcels. At each county's request, these may be printed, placed on diskette, or transmitted via modem (parcel number left justified in positions 1-24 followed by a carriage return and a line feed in positions 25-26).

#### **List of Selected Parcels**

For each selected parcel, show parcel number, assessed value, mixed use assessments, owner's name, situs address, total acres, property description (either [section, township & range], or [subdivision, lot & block]).



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Input the selected parcels from the random parcel report, either from a computer file or as key-entered--only one method is required.

Produce the lists in the order shown on the STC random parcel reports.

The report should be electronically sent (via diskette or modem) to the STC.

To maintain compatibility with existing systems, the list of all parcels may contain a control number in positions 46-52 (the carriage return and line feed would go in positions 53-54). If used on the list of all parcels, the STC would report that same control number on its random parcel report (in positions 26-32). The list of selected parcels may also include that number.

#### Taxpayer Change Notice

Ability to generate notice, based on subclass values for increases only, decreases only or for a range of real estate parcels. Notice to include parcel number, assessment by subclass, tax year and instructions on whom to contact, the appeal process and time frame for appeals.

#### 3.1.3 Add, Edit, View Ownership-Property-Value

Ability to input necessary data for assessment roll and aggregate abstract (Form 11/11A).

### **4.0 Appraisal Programs**

#### 4.1 Cost Approach

##### 4.1.1 General Requirements

Ability to enter, edit, view improvements. Program shall look up base costs, calculate values and have override capabilities.

Ability to enter, edit, view land, both market value and agricultural-productive



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- use. Capability to complete a mass land value update.
- Ability to complete a mass update of improvement costs by user.
- Ability to allocate a single improvement value to multiple subclasses.

#### 4.1.2 Property Record Card/Review Sheet

Allow user to select individual, or a range of properties to be printed.

The design and specific requirements will vary with the cost system in use. The objective of the minimum requirements is to provide all the necessary data needed to list, cost and review real property. The following minimum data requirements are subject to modification at the discretion of the State Tax Commission.

Data required includes:

Parcel number, tax districts, property description.

Owner's name, address, date acquired, consideration, deed book & page  
land and improvement value, subtotals and assessed value by subclass.

Utilities, roads, topography, zoning, land use code, property type, building permits,  
construction code.

Data collection by and date, review by and date, information by.

Land quantity, lot size, acreage (deeded/calculated), type/description, land units, unit price,  
depth, depth factor, influence factor, value agricultural land grades, acres by grade, value by  
grade, total agricultural land value.

Type of structures, number of apartments, rooms, bedrooms, stories,  
situs address, property name.

Construction data, year built, effective age (year built), remodeled, quality, base rates, extra  
feature costs and description, improvement area, depreciation (physical, economic and  
functional), improvement subclass(es), and value.

#### 4.1.3 New Construction Report



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Ability to list, parcel number, addition/new, subclass, construction complete, notes, township, city, districts (school, road, fire, city, etc.), quality of construction, valuation and amount of assessment increase.

#### 4.2 Diagrams or Sketch Vectors

Ability to input improvement footprint(s), and calculate areas necessary for cost system application.

Print diagrams with appropriate notation and relative placement.

#### 4.3 Market analysis

Sale ratio: list parcel number, sale price, sale date, trended sale price, appraised value, sale ratio. Allow user to select neighborhood and time frame for sales. Descriptive statistics to include number of sales, low ratio, high ratio, mean sale ratio, median sale ratio, weighted mean ratio, coefficient of dispersion (about the median) and PRD (Price Related Differential).

Data to be arrayed based on sale ratio or parcel number order. Has the ability to complete mass updates of index\manual level and land value rates as well as the selection of the time adjustment factor. Includes the ability to print a summary neighborhood sale ratio report which includes the descriptive statistics for each neighborhood and the time frame of the study. In addition, it is most helpful to the analysis process if the assessor has the ability to also stratify the sales by various criteria, (age, sale price, size, quality, and style or condition assignment). These stratifications of the sales properties may assist the assessor in identifying areas of concern within the mass appraisal process.

Index\Manual Level study: list parcel number, sale price, sale date, trended sale price, land value, manual building value, year built, quality, indicated index\manual level and neighborhood. Reports to list data, array indicated indexes, determine number of sales,



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median indicated index\manual level and calculate indicated time adjustment factor. Ability to select a minimum of one year and up to three years (year built) for array.

Depreciation Study: list parcel number, sale price, sale date, trended sale price, land value, improvement RCN, age/year built, current condition and indicated condition. Reports to list data and array by age/year built-condition. Ability to select neighborhood, and quality range for study.

Land study: list parcel number, sale price, sale date, trended sale price, improvement value, residual land value, land units (type/number), adjustment factors (depth, influence etc.), indicated land value, indicated land value/unit, current unit price, neighborhood. Report should allow user to select neighborhood(s), current unit price range, vacant, improved or all sales. Report should array indicated land value/unit and identify median indicated land value/unit.

Prepare an analysis of improved samples in which the land is estimated as a percentage of the selling price, (allocation method) to determine if there is a proper balance between land value and improvement value.

#### 4.4 Agricultural Land

Ability to enter acres by agricultural land grade, calculate values, abstract totals (acres by grade, or value) by county or district.

Ability to edit and view grades by parcel.

### **5.6 CONTRACTING FOR SERVICES**

#### **1. Appraisal**

In examining the methods used to carry out a reappraisal program, an assessor may wish to consider



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employing the services of a professional mass appraisal firm. Two forms of professional assistance may be considered: (1) revaluation by the assessor with the assistance of a mass appraisal firm acting as a consultant; and (2) valuation by a professional mass appraisal firm.

The relative merits of all three methods of carrying out a revaluation program, including the in-house system of revaluation by an assessor and his staff, should be carefully and thoroughly investigated. Each of these methods has its own advantages and disadvantages. Whichever method is adopted, it is essential that the assessor realize that a properly conducted reappraisal program requires the thorough and careful appraisal of all property. For this reason, it is essential that assessors who plan to engage the services of a mass appraisal firm should become familiar with the steps to take and the issues to resolve in order to ensure satisfactory performance on the part of the mass appraisal contractor.

#### **A. Revaluation with a Consultant**

If the assessor is capable of handling much of the work of revaluation but has not had the experience or training to develop necessary schedules and tables, the revaluation may be done under the direction of a consultant. Before the consultant is chosen, a thorough investigation of the consultant's qualifications and background should be made. Also, to avoid any misunderstandings, a written agreement should be drawn up between the county and the consultant definitely stating what work the county can expect, the fee agreed upon, and what the consultant's charge will be if any additional work will be required.

When conducting an in-house program, technical assistance may be required in the planning and organizational phases of the mass appraisal system. A qualified mass appraisal firm, with its years of expertise, will be able to assist the assessor in designing systems and applying the modern methods and procedures of the appraisal of real property. Technical assistance may also be provided in the areas of mapping and data processing.



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The consultant's first responsibility may be to conduct a study of the local building situation, local construction costs, and local real estate sales transactions necessary to develop the valuation and classification schedules required for an effective mass appraisal system. It will also be necessary for the assessor to become acquainted with the use of these schedules in order to be completely familiar with the system. It may also be the consultant's responsibility to make sure that the persons employed to do the field work are trained in measuring and inspecting buildings and in recording the information obtained and also in the supervision of these personnel. The consultant may also assist the assessor in handling the revaluation of all real and personal property of commercial and industrial type properties.

The agreement may also provide that the consultant would appear at public meetings to assist the assessor in explaining how the updated assessments are derived. He should also instruct the local board of equalization in the use of the valuation schedules and techniques developed as they will need to be familiar with the system before the appeals are presented.

As discussed above, the range of duties of a consultant can vary from minimal requirements to virtually complete control over the day-to-day operations of the reappraisal program. It must be remembered, however, that the consultant is employed to assist and advise the assessor. The assessor is still in full charge of the revaluation program, and makes the final decision as to the methods, procedures, and basis of value used and makes sure that all phases of the revaluation program are adequately and competently accomplished.

#### **B. Revaluation by Professional Firm**

As many assessors lack staff, or the experience necessary to undertake the task of a general revaluation, it may be desirable to have the work done by a firm specializing in the reappraisal of property. While this method removes much of the burden of work from the assessor, it does not



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lessen the responsibility to the taxpayers in the county that the revaluation will result in current and fair assessments.

While the revaluation company takes the responsibility for updating cost schedules, doing the field work and computations, the assessor still has the final decision concerning valuations, procedures followed, method of depreciation adopted, and forms used. Throughout the program the assessor acts as appraiser-in-chief, working in full cooperation with the contractor, becoming thoroughly familiar with the procedures and methods, so that after the revaluation is completed the office will be able to maintain the values.

#### **C. Invitation to Bid**

The county should seek the bids of reputable and qualified mass appraisal firms who will be able to successfully and effectively complete the revaluation program. But before a contract is offered for bid, the assessor should review the local situation and then develop the county's specifications for revaluation. The assessor should ensure that these specifications clearly state the responsibilities, duties, and liabilities to be incurred by the company who obtains the contract, and the services and equipment to be provided by the county. It should also clearly state that every phase of the revaluation program is subject to approval and review by the assessor and the State Tax Commission. It must be remembered that the firm's bid is a response to the specifications contained within the invitation to bid documents and, therefore, nothing that is not specifically contained therein may be assumed.

County officials should develop a set of "Instructions to Bidders", "Specifications for Proposed Revaluation", and a "Bid Proposal Form". The "Instructions to Bidders" should include the following:

- The location to which sealed bids should be sent.
- The final date and time of day that sealed bids will be accepted.



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- A statement concerning examination of the proposed project in which the bidders should be instructed to inspect the proposed project's site, to determine the circumstances affecting the cost of the proposed reappraisal project, and the staff and facilities necessary for a successful and effective completion of the project in the allotted time.
- A clause regarding surety, stating that each bid should be accompanied with a bid security instrument for not less than a stipulated percentage of the proposed total bid price, and with the name of the appropriate county official to whom the surety instrument should be made payable.
- The date, time, and place that the bids will be opened and read.
- The rights reserved by the county officials in accepting or refusing the bids and the method of distribution of the bonds of unsuccessful bidders.
- A requirement of submission of the qualifications of each bidder to include a brief summary of the company's previous and current contracts of a similar nature, an organizational chart showing the staffing and lines of authority for the key personnel to be used on this project, the resumes of all key personnel to be assigned to this project, total staff available for this project, other affiliated companies, name of insurance company providing performance bond, etc. The county may wish to include the minimum qualifications of the company and its principle appraisers that it deems acceptable.
- A section delineating responsibility for interpretation of bid specifications.

Fundamentally, the primary and most important part of the bidding process is the "Specifications for the Proposed Revaluation". These specifications define the requirements expected by the county's governing body for an effective and efficient completion of the revaluation program. The following are some of the issues that should be covered in the contract specifications.

#### **(1) Purpose and Valuation Goals of the Reappraisal**

This section should set out the purpose of the reappraisal, the values sought, and the statutory requirements.



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**(2) General Scope of Company's Service**

This should be a brief description of the responsibilities of the company in reference to the services to be provided. Reference should be made to the properties inventoried and to the properties excluded from this reappraisal project.

**(3) Approval of Personnel**

The competence of personnel is always a sensitive issue, and the assessor should reserve the right to approve all personnel used by the contractor. This section may include reference to any specification as to work experience required by the county. Requirements for proper identification should also be included.

**(4) Appraisal of Land**

This section would contain the requirements to be used by the company in determining land values.

**(5) Appraisal of Residential, Agricultural and Commercial Properties**

The approaches to value and the appraisal techniques to be employed by the company in valuing the different types of property should be specified.

**(6) Property Record Card (PRC)**

If property record cards are not supplied to the contractor, PRC specifications should be prepared and the assessor should approve all forms developed by the contractor prior to use.



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**(7) Preparation of Base Cost Schedules\Cost Index\Manual Level**

The contractor should investigate and analyze local construction costs, market data, and economic conditions. If the county does not have a cost system in place, the contractor should supply base cost and valuation tables, formulas, and standards necessary for revaluation. All market studies used to establish the base rates or tables should be provided to the county in accordance with the approved assessment maintenance plan.

**(8) Use of County Records**

The types of county records and data to be provided by the county along with the policies for their use should be included in the specifications.

**(9) Final Review**

Final field inspections and review of each property should be made by a company's supervisory appraisers upon the completion of value computation.

**(10) Work and Delivery Schedules**

This section should contain starting and completion dates as well as a list of the items to be turned over to the assessor upon completion of the project.

**(11) Hearings and Defense of Values**

Requirements as to the company's obligation in notifying the taxpayers of the updated values as well as the holding of hearings to discuss these valuations should be defined. A company should also be required to defend its conclusions of value in the event of appeal.



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#### **(12) Public Relations**

Throughout the program, the company and its employees should endeavor to promote understanding and amicable relations with the property owners and the public. It should assist and advise the county governing authority and the assessor in the preparation of newspaper articles and other appropriate publicity. The company should, upon request, make available suitable speakers to acquaint groups and gatherings with the methods and values of the project.

#### **(13) Training of Assessment Personnel**

One concern with contracting for appraisal services is the subsequent maintenance of the assessment system. Thorough training of the assessor and staff in the procedures used in revaluation can alleviate this problem. The contractor should specify the man-hours and the time frame for the training to be provided.

#### **(14) Insurance and Performance Bonds**

The company should carry adequate insurance coverage to indemnify the county from loss resulting from the actions of the company, its employees, and agents arising in the course of the company's performance of this contract. The company should also provide the county with a performance surety bond in an amount equal to 100% of the contract.

#### **(15) Office Space and Equipment**

Specifications as to the amount and type of office space to be supplied to the company's staff should be made. The responsibility of supplying the necessary furniture and equipment should be addressed.



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**(16) Compensation and Progress Reports**

Provisions should also be made for the setting up of a payment schedule. A county should consider holding in abeyance a certain percentage of this payment until completion of the project. The company should be required to file a progress report at each billing interval declaring the type or types of work performed the preceding period, and a summary and percentage of total project completion. These progress reports will aid the assessor in determining if the project will be completed on schedule.

**(17) Restrictions and Completion Penalties**

Restrictions to the subletting and assigning of contracts should be imposed by the county. Should the company fail to meet any of the functions of this agreement or the date of completion, the county should be able to recover an amount of money for the incurred damages as stipulated in this agreement.

**D. Contractor Selection**

In considering bids, the county officials should consider not only the price for the work as stated in the proposed bid but also the experience and competence of the bidder. Further, consideration should be given to the nature and size of the bidder's organization and the quality of similar revaluations done by that firm.

A firm may be judged to be qualified if it has the resources--personnel, material, and financial--to accomplish the program as specified. The most important question today concerning material resources involves the use of data processing equipment. Financial resources include that the firm must be adequately capitalized to meet the financial obligations of carrying out the revaluation project. The experience of the firm and past business affiliations should be thoroughly investigated.



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Qualifications expected for individuals may be judged in terms of education and experience. Frequently, specifications may require a minimum educational requirement of a high school education or its equivalent. The requirements for work experience should vary with the type of task to be performed. Clerical personnel should have adequate training, but extensive experience is not always necessary. Field appraisers should have two to five years of appraisal experience, while project directors should have about five to ten years of experience. Care should be taken to ensure that personnel used or hired have no conflicts of interest. The assessor should always maintain the right to approve all personnel used in the reappraisal program.

#### **E. Contract Preparation**

It is the assessor's responsibility to make sure that the contract drawn up with the revaluation company clearly and fully states the duties and responsibilities of the company and the obligations of the county. When a contractor has been selected and a contract executed, it will then be the responsibility of the contractor to complete the work.

The contract is an agreement between the county and the mass appraisal firm stipulating that for an agreed sum of money the mass appraisal firm shall conduct a revaluation program based upon the specifications set down by the county. Therefore, it is important that the "Instructions to Bidders", "Specifications for the Proposed Revaluation", and the "Bid Proposal" be made a part of this contract.

#### **F. Completion of Work**

All buildings, structures and improvements must be thoroughly inspected by a trained representative or agent of the revaluation firm. On inspection, new construction should be measured, a perimeter sketch drawn, the appropriate data or details of construction, condition and land data should be recorded. Inspection of existing data should include a review of the physical characteristics, the



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improvement's quality or grade, the assignment of depreciation and a review of the resulting value.

All revaluation work must be completed in sufficient time for the assessor to review and make necessary changes. Final inspection and review should take into consideration any known or apparent changes in individual properties since the first inspection to ensure that the final appraisal will be as of the date of completion of revaluation.

The appraisal firm must leave with the assessor all schedules for residential, commercial, and industrial property used as a basis for reappraisal values, including details of income approach, if used, and depreciation schedules used.

Complete office and field instructions must be provided so the assessor may be entirely familiar with the work of the revaluation as performed. Depending on the size of the county, two or more copies of all real estate data, land valuation tables and cost data covering commercial and industrial construction should be left with the assessor for future use.

The contractor, following completion of revaluation, should have a qualified member of its staff present at all hearings held by the assessor or board of equalization. The contractor should furnish competent witnesses to defend valuations challenged in the courts for a period of at least one year after the completion of the reappraisal program.

## **2. Aerial Photography and Mapping**

Contracting for the professional services, whether it is for updated aerial photography, manual map maintenance, or digital (GIS) map creation and maintenance, should follow the same general steps as found in the following outline.

### **A. Invitation to Bid**



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The initial step in the contractual process is the issuance of bid requests. The following check list provides the minimum items to be included in a request for bid.

#### (1) **Instructions to Bidders**

- Name, address, and telephone number of contact officer for the project.
- Size of county: square miles, population, and total number of parcels to be mapped.
- Timing: Final bid acceptance date; anticipated contract awarding date; time estimate for fulfillment of mapping program; and any specific scheduling instructions--for example, aerial photography to be done next spring, city maps to be completed first, etc.
- Special instructions to clarify the specifications attached to the bid request, for example: special mapping scales for certain areas; county data to be supplied--assessment records, maps, county clerk's records, etc.; progress report and payment specifications; special work to be done not covered in the technical specifications; training to be performed by the contractor; special instructions concerning the form of the returned bid proposal, number of copies, data requirements, etc.; surety and bonding; bid submission requirements; the rights reserved in accepting or refusing bids; and delineating the responsibility for interpretation of the bid specifications.

#### (2) **Project Specifications**

- General scope of the services required
- Bid proposal packages developed during preliminary survey
- Work and delivery schedules
- Insurance and performance bonds
- Compensation and progress reports
- Restrictions and completion penalties

#### (3) **Date to be submitted by Respective Mapping Firms**



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- Mapping firm qualifications, staff and equipment to be used for the mapping project, and references.
- Total cost of the project. If subcontractors are to be used, contractors should specify their fees, the work they will perform, and submit their qualifications.
- The cost of extra services not called for in the technical specifications.
- A project schedule showing the time allotted to each phase.

#### **B. Selecting the Contractor**

In awarding a contract, the selection of the contractor to provide the professional services required should not be based upon the cost alone. The awarding of the contract should be based on lowest and best bid. Therefore, in considering the proposed bid, consideration should be given to the experience and competence of the bidder, the nature and size of the bidder's organization, and the quality of similar work completed by that firm. A firm may be judged to be qualified if it has the resources--personnel, material, and financial--to successfully complete the program as specified.

#### **C. Monitoring the Mapping Contract**

In drafting the contract, it is important that the duties and responsibilities of the company and the obligations of the county or state are explicitly delineated. The final contract is an agreement between the county or state's governing body stipulating that the completion of the mapping program will be based upon the specifications as set forth. Therefore, it is important that the instructions to bidders, project specifications, and bid proposal be made a part of the contract.

Throughout the mapping program, it is important that the assigned project director monitor the contract to verify that the work is being completed as specified. The monitoring process should include but not be limited to:



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- Making necessary data available to the mapper
- Supervising aerial photography to the extent of assuring that correct scales are observed
- Reviewing aerial photography coverage
- Checking quality and completeness of the finished product
- Keeping the project on schedule
- Providing for proper and timely distribution of the finished product

## 5.7 ASSESSMENT MAPPING

### 1. Aerial Photography

The first step in the development of the existing mapping program was the acquisition of aerial photography. Aerial photography provides the assessor with a complete pictorial record of all land within the county. This visual record furnishes the assessor with indications as to the type of improvements to the land, their location, the contour and the utilization of the land, and other features relevant to the assessment process.

In addition, the photographic base map facilitated the development of the base cadastral maps by providing evidence as to identifiable property boundary lines. With the aerial photo as a base, the identification of property boundary lines can be aided by the location of walls and fences, hedgerows, streets and highways, rivers and streams, railroad right-of-ways, etc. These indications as to probable property boundaries may be used in the development of the cadastral base map when existing deed descriptions are not complete or are inaccurate.

#### A. Preliminary Survey

To be an effective tool in an assessment mapping program, aerial photography must be relatively accurate. The development of accurate aerial photography is a specialized field requiring the employment of skilled technicians using precision equipment. To ensure the successful completion of the mapping program, the conditions under which the aerial photography was obtained were thoroughly specified. A preliminary survey was conducted and included the development of county



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index maps, the development of a basic mapping module, determination of required mapping scales, identification of the types of aerial enlargements, description of the county control network, delineation of flight plans, and development of photographic specifications.

#### **B. County Index Map**

A county index map is a smaller scale map on which are depicted the areas to be covered by each base map. The index map delineates each basic map unit, showing the area covered by each 1"=400' map (approximately four sections of land or four square miles, or 2,560 acres), 1"=200' map (covering 1 section of land or one square mile or 640 acres) and each 1"=100' map (which covers one-quarter section of land or 1/4 square mile, or 160 acres).

Included on the index map are township and range lines, location of cities and towns, primary road and street systems, lakes, rivers, and map identification numbers. The number used to identify each base map should be drafted to properly delineate and display an overall uniform and consistent county map numbering system. *Exhibit 5.16* is an illustration of a county index map.

#### **C. Basic Mapping Module**

All assessment maps should conform to certain uniform characteristics. Basic mapping characteristics include a standardized sheet size, map layout, and a uniform map numbering system.

A uniform size for each map-sheet facilitates their handling and storage. Commonly used map-sheet sizes include 20" x 24", 20" x 30", 24" x 36", 30" x 30", and 32" x 36". In Missouri, a 36" x 36" map sheet size was selected. This size allowed the basic modular system to cover the three standard map scales.

Map sheets should have consistent borders and a standardized layout. A standardized map layout should contain a title block, a revision block, a legend, a map key, a North arrow, and keys to adjoining maps.

The numbering system is nothing more than a mechanism whereby maps of subsequently larger scale (maps covering smaller portions of the same area) are sequenced. Using the 1" = 400' as the smallest



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scale map in the system, it was designated as the basic modular unit in the mapping system. The basic modules are then assigned a map sheet number. See section 5.7.4 for a detailed description of the Missouri Uniform Map and Parcel Numbering System.

#### **D. Map Scales**

The choice of map scales varies with the density of development and with the size of individual land parcels. Small parcels should be shown at a scale sufficient to allow space for entry of parcel dimensions, block and parcel numbers, and other essential data. In most situations, one of three basic map scales serves the needs of counties within the State of Missouri. Recommended scales of aerial photography are:

<i>Rural</i>	<i>1" = 400'</i>
<i>Semi-Rural</i>	<i>1" = 200'</i>
<i>Towns &amp; Cities</i>	<i>1" = 100'</i>

*Exhibits 5.17, 5.18, and 5.19* illustrates aerial photography taken at a scale of 1" = 400'; 1" = 200'; and 1" = 100'. Each larger scale of photography further defines coverage of an area reflected in the previous smaller scale of photography.



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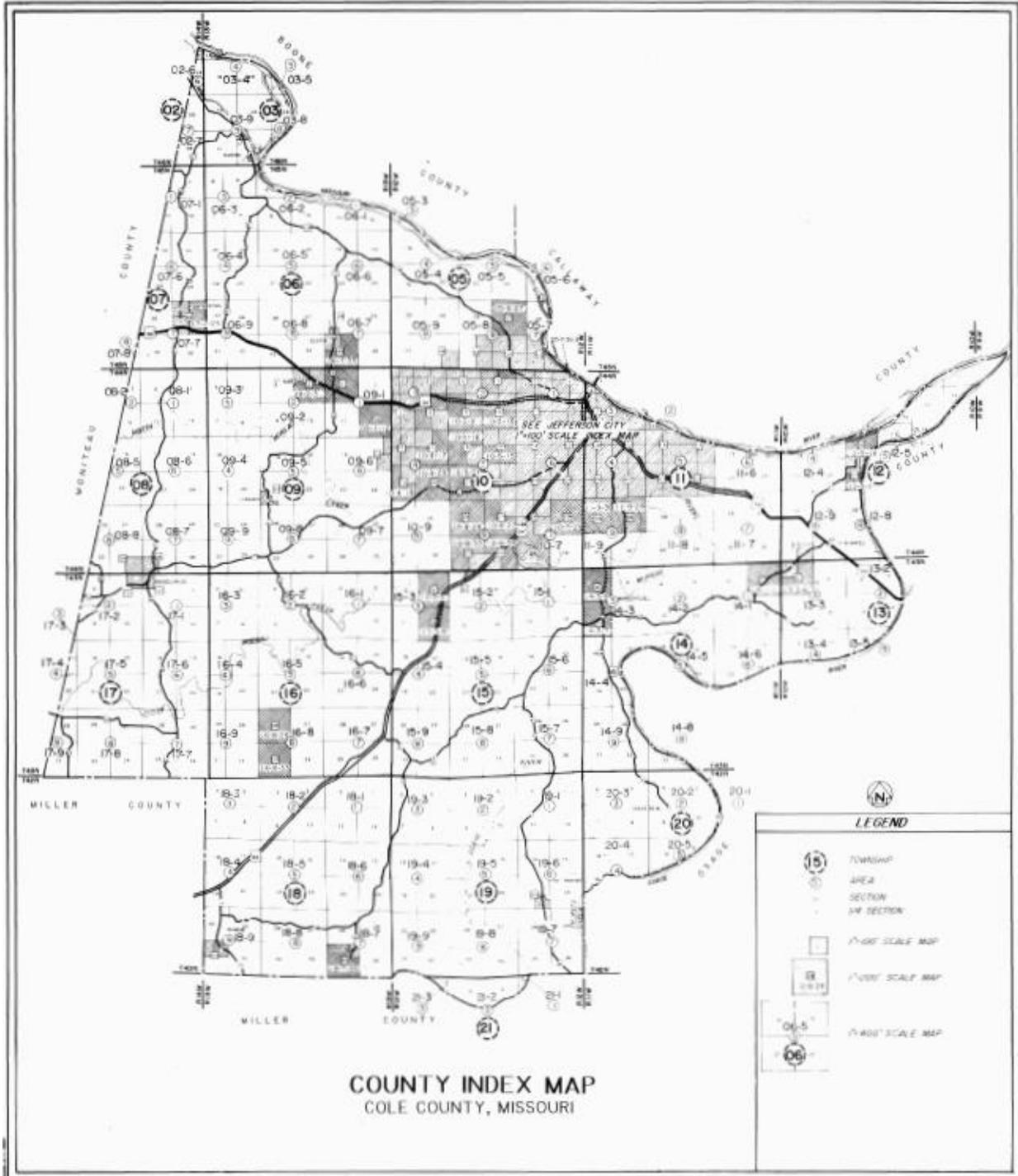
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### EXHIBIT 5.16





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EXHIBIT 5.17

AERIAL PHOTOGRAPHY - PROVIDED BY SURDEX CORP.

MAPPING SCALE 1" = 400'





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EXHIBIT 5.18

AERIAL PHOTOGRAPHY - PROVIDED BY SURDEX CORP.

MAPPING SCALE 1" = 200'





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EXHIBIT 5.19

AERIAL PHOTOGRAPHY - PROVIDED BY SURDEX CORP.

MAPPING SCALE 1" = 100'





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#### **E. Aerial Enlargement Types**

Aerial photography varies in accuracy and cost. The least expensive, a straight photo enlargement is the least accurate. Orthophotography, a highly controlled photogrammetric process resulting in a highly accurate product, is by comparison quite expensive. The determination of the type of photography required in a given area is a function of topographical relief and parcel density.

On an accurate planimetric map, all features are depicted at their correct horizontal position, and the observer would thus have a truly vertical view of every detail shown. This standard is not met by aerial photographic enlargements due to the various sources of distortion or image displacement. Objects pictured on aerial photography may fail to register in their correct horizontal plane positions because of optical deficiencies, tilting of the camera lens-axis at the instant of exposure, or variations in local ground relief. Rectified photo enlargements are based upon a process that reconciles the photography in order to form a single, two-dimensional representation of the surface features. Through the use of predetermined, identifiable, and measurable ground control monuments, the effects of the various sources of distortion or image displacement can be corrected. However, distortion within the photograph is only corrected in those areas relative to the control points, a certain amount of distortion will still exist.

The orthophoto map is a cartographic document prepared by a technique that corrects each point of a photograph for errors introduced by the effects of the various sources of distortion or image displacement. It is the same in appearance as an enlarged aerial photograph, but the orthophoto map has been completely restituted and is as accurate as a planimetric map. The assessor, then, would be able to measure the distances between defined points of interest to determine their horizontal positions on the surface of the earth; an inch on a 100' map corresponds to that identical 100' on the ground, at any point on the photograph.

For counties with hilly terrain or extreme ground relief, orthophotography produces a base on which to compile maps with an acceptable degree of accuracy. In counties with minimal ground relief, good rectified enlargements produce acceptable scaling accuracies.

For the statewide reassessment completed in 1985, the State Tax Commission provided two types of base photography.



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➤ **Rectified Photo Enlargements**

Areas with a minimal ground relief, small towns, and rural in nature were mapped through the use of rectified photo enlargements.

➤ **Orthophotography**

Highly developed areas and areas having considerable ground relief were provided with orthophotographic enlargements.

**F. County Control Network**

Sufficient horizontal and vertical control surveys are important in the establishment of a photogrammetric mapping system. Therefore, in order to develop the accuracy required for rectified and orthophotography and the development of the cadastral base maps, it was necessary to ascertain and delineate on each county map the existing control as established by the U.S. Coast and Geodetic Survey, the U.S. Geological Survey or State Geodetic Control Office. Where existing control data did not exist or was insufficient, a field survey was conducted to establish the necessary horizontal and vertical control.

The location of existing control stations and control points established by new ground surveys and/or aerial triangulation must be of sufficient accuracy and distribution so as to ensure that minimum standards of accuracy for the base cadastral maps may be met.

**G. Flight Plan**

Prior to the taking of aerial photography, a flight plan must be developed. A flight plan should include identification of flight altitudes and flight patterns. The altitude above average ground elevation for aerial photography shall be such that the negatives will be at the specified scale. A factor of greater than 5X is not recommended for assessment mapping. Photographic enlargements developed at a 1" = 400' scale would have a negative scale of 1" = 2,000'; enlargements developed at 1" = 200' would have a negative scale of 1" = 1,000'; and enlargements developed at 1" = 100' would require a negative scale of 1" = 500'.



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A flight line is a line drawn on a map or chart to represent the track of an aircraft necessary to take the desired photos. Therefore, the flight lines would be laid out in such a manner as to achieve each type of photographic coverage as specified on the county index map. Each flight line is developed to run through the center of each desired photograph at its individual scale and should run continuously across the entire project.

The base photographic maps of an assessment mapping program are most effective when the assessor is able to view the improvements upon each parcel. This requirement limits the amount of time available for the taking of aerial photographs. Aerial photographs for assessment mapping purposes are taken when trees are barren, and when the ground is not obscured by snow, haze, dust, etc. These requirements, therefore, limit the amount of time available during the year in which aerial photography may be conducted. In addition, another important and uncontrollable aspect is the weather. Therefore, in Missouri the taking of aerial photography is limited to a short period in the spring and fall seasons. Contracts for aerial photographic services should be awarded based upon these seasonal limitations.

#### **H. Photographic Specifications**

Aerial photographic work is ordinarily done by an outside organization under the terms of a contract. Fundamental responsibility for the content of the contract and its successful completion rests with the county. Thus, it is important that very careful attention be given to the accurate definition of expected products, the complete detailing of all essential steps in the process of map production, and the final completion of all work by a contractor. The specification should cover the following:

##### **(1) General Specifications**

General specifications should delineate the scope of the work to be completed. Descriptions of the areas to be photographed, the maps to be produced, and the type of map prints to be supplied should be identified.

##### **(2) Photogrammetry**

These specifications might cover ground control accuracy requirements, the qualifications of pilots



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and photographers, type of aircraft, cameras, and film to be used, the quality of the photography and standards for overlap, sidelap, crabbing, and tilt.

These detailed specifications covering the methods, procedures, and qualifications to successfully complete the aerial photography and base mapping program, including county index maps, mapping standards, mapping scales, types of enlargements, control networks, and flight plans, will be used as the basis in contracting for aerial photography and base mapping services.

## 2. **Map and Parcel Identification Systems**

An important part of the mapping program was the development and implementation of a map and parcel identification system. A description of various systems used by other counties is included. The development of the Missouri Uniform Parcel and Map Numbering system is included as well. As some counties had already developed mapping systems, which included parcel identification, the use of the uniform parcel numbering system was not mandatory. As a result, there are a number of different systems used within the state.

### ➤ **Characteristics of a Parcel Numbering System**

Parcel identification numbers, in order to perform their functions, possess a number of desirable characteristics.

### ➤ **Uniqueness and Permanence**

The uniqueness of the parcel numbering system relates to the assignment of the parcel numbers. A parcel number should be assigned to one and only one parcel.

Permanence is closely related to uniqueness in that a parcel identification number should not be changed unless there is a change in the boundaries or configuration of the parcel.

### ➤ **Simplicity**

Simplicity is achieved when the number of digits used in the parcel numbering system is minimized, when an identification system is comprised of only numerical symbols, and when the identification numbering system can be easily generated and understood.



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➤ **Convenience of Use**

Convenience of use is a function of the descriptive sequence of identifiers and the geographic location information contained therein. If the parcel identification numbering system is based upon geographic location information, the manipulation of property records based upon these numbers is greatly facilitated. Geographic location information could be based upon the Geographic Coordinate System (Geocodes) or the Federal Rectangular Survey System.

**A. Standard Parcel Identification Systems**

The most common systems include the Geographic Coordinate System, the U.S. Federal Rectangular Survey System, and the Assessor's Map Book and Page System. A description of these standard parcel identification systems is presented as follows:

**(1) Geographic Coordinate Systems**

A geographic coordinate-based parcel identification system would be based upon the established system of plain rectangular coordinates which have been established by the United States Coast and Geodetic Survey for defining and starting the positions or locations of points upon the surface of the earth within the State of Missouri. The use of this identification system offers many advantages. Coordinate identification numbers easily satisfy the criteria for uniqueness and permanence in that no two points can occupy the same, identical positions upon the surface of the earth.

The format of the identification number is based on the establishment of coordinate points, called X Y coordinates. The "X" coordinate identifies the easterly or westerly value of the point and the "Y" coordinate identifies the northerly or southerly value of the same point.

The Missouri State Coordinate System is divided into three separate zones, to be officially known as "The East Zone", "The Central Zone", and "The West Zone". The list of counties contained within each zone is set out in Section 60.410, RSMo. The precise identification of the X Y coordinates, adopted by the United States Coast and Geodetic Survey, is contained in Section 60.450, RSMo. Therefore, a geocoding identification number must delineate the zone and the appropriate X Y coordinate points located within that zone.



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An example of the format used to identify a parcel using the coordinate system is shown in *Exhibit 5.20*. This sample model is based upon the New York “Coordinate Locator Map Parceling Identification System”.

#### (2) **Rectangular Survey System**

The rectangular survey parcel identification system is based upon the legal description of the property as described by reference to the subdivisions, lines, or corners as set out in the United States Public Land Survey. Contained within this parcel identification system is the numerical description of the township, section, and quarter section within which the property is contained. Apart from being more complex but slightly more permanent, the government survey-based parcel identification system compares quite closely to the map-based parcel identification systems. This system may also be adapted to identify properties contained within urbanized and highly developed areas. An illustration of a parcel identification number based upon the Rectangular Survey System is illustrated in *Exhibit 5.20*.

#### (3) **Map Book-Page Identification System**

A map book-page system identifies a parcel by assigning to it a string of codes, each code describing certain elements.

##### ➤ **Map Book Number**

This number identifies the volume or book containing the map page upon which the identified parcel is contained. For example, the total number of map sheets required to delineate property within a county are contained in fifteen books.

##### ➤ **Map Page Number**

The map page number identifies the page upon which the parcel being identified is contained. For example, each of the fifteen books used in the previous example contained twenty-five pages. The map page number should also be set up to identify the modular layout of that particular page.



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➤ **Map Block Number**

The map block number is used to delineate a particular portion of the map page where the property is located. The boundaries of a map block may be delineated by street patterns for those maps containing urbanized or highly developed areas or quarter section boundaries for those maps containing rural areas. For example, a map page covering a rural portion of a county containing a section of land may be divided into four blocks with the following block numbers: NE one-quarter equals 01; NW one-quarter equals 02; SW one-quarter equals 03; SE one-quarter equals 04.

➤ **Parcel Number**

The parcel number is the number used to identify each individual parcel contained within a map block section. For example, the northwest quarter of a section may contain four individual parcels which would be assigned parcel numbers 01, 02, 03, and 04.

An illustration of a map book-page identifier is shown in *Exhibit 5.20*.



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<u>SYSTEM</u>	<u>IDENTIFIER</u>
<p><b>EXHIBIT 5.20</b></p> <p><b>PARCEL IDENTIFICATION SYSTEM</b></p>	
<p>Geographic Coordinate System</p>	<p>66868 - 109773 Grid Location E/W N/S</p>
<p>Map Book-Page System</p>	<p>10 - 410 - 02 - 03 Map Map Parcel Book Page Block Number Number Number</p>
<p>Rectangular Survey System</p>	<p>13 - 23 - 203 - 010 Township Section Block Parcel Code Number Number Number</p>
<p>Missouri Uniform Map and Parcel Number System</p>	<p>058 - 07 - 05 - 35 - 04 - 41.00 County Township Area Section 1/4Sec Block Parcel</p>



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### **3. Cadastral Base Mapping**

The concluding step in the assessment mapping program was the drafting of the cadastral maps. The purpose of the cadastral map is to accurately delineate and identify all the parcels of real estate within the county. The preparation of the cadastral map, a planimetric map upon which a draftsman plots or lays out the boundaries of the legal description for each parcel, is recognized as a highly specialized activity requiring skilled personnel and specialized equipment. The development of the cadastral map requires the compilation and coordination of all existing survey and property descriptive data.

The cadastral mapping system should consist of a complete set of detailed property boundary maps for the entire county. The cadastral map or ownership overlay should be recorded on a transparent medium (mylar), see *Exhibit 5.21*, to be superimposed upon the base aerial photo, see *Exhibit 5.22*, to provide for the development of the assessment map or composite map, see *Exhibit 5.23*. The use of the cadastral map on an overlay basis is highly recommended. Through the use of mylar overlays, a county may update base aerial photography without the complete redrafting of the cadastral maps.

In Missouri the development and installation of the cadastral mapping system was performed under the major steps listed and explained below.

#### **A. Planning**

The completion of an accurate and effective cadastral mapping program requires careful planning in the areas of map coverage, data to be recorded, and mapping standards.

Each individual cadastral map was drafted at the same scale as its aerial photographic base. Therefore, each county will have a cadastral map for each aerial base photo map at the same scale.

The ownership overlay contains the essential data pertinent to the county assessor. However, it should not be cluttered with excessive data which is of minor significance. A detailed assessment map should contain the following information:

- Boundaries of individual parcels



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- Parcel dimensions or areas
- Names and boundaries of subdivision plots including block and lot numbers
- Boundaries of county, township, municipalities, and other taxing districts
- Location and names of streets, highways, alleys, railroads, rivers, lakes, etc.



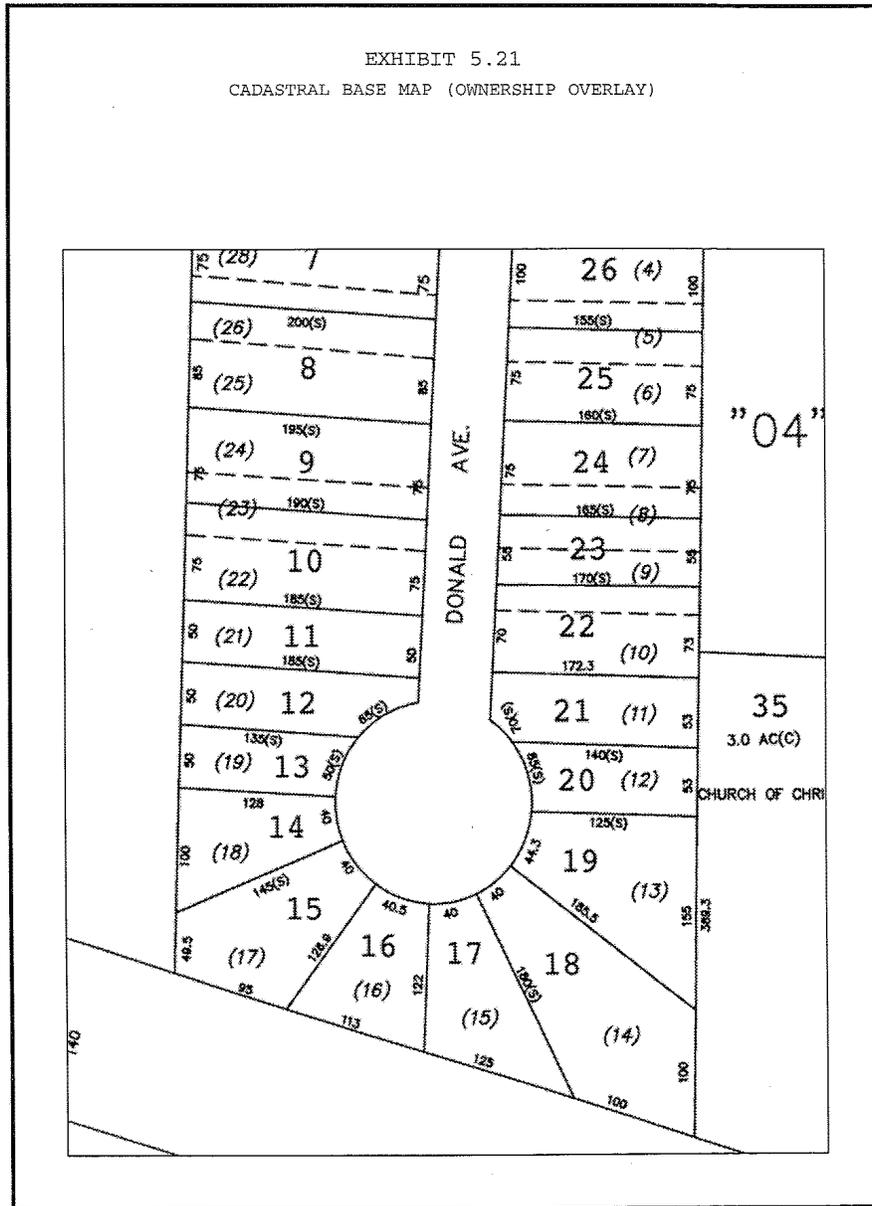
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EXHIBIT 5.22

BASE AERIAL PHOTO MAP

PHOTOGRAPHY PROVIDED BY **WALKER & ASSOCIATES**





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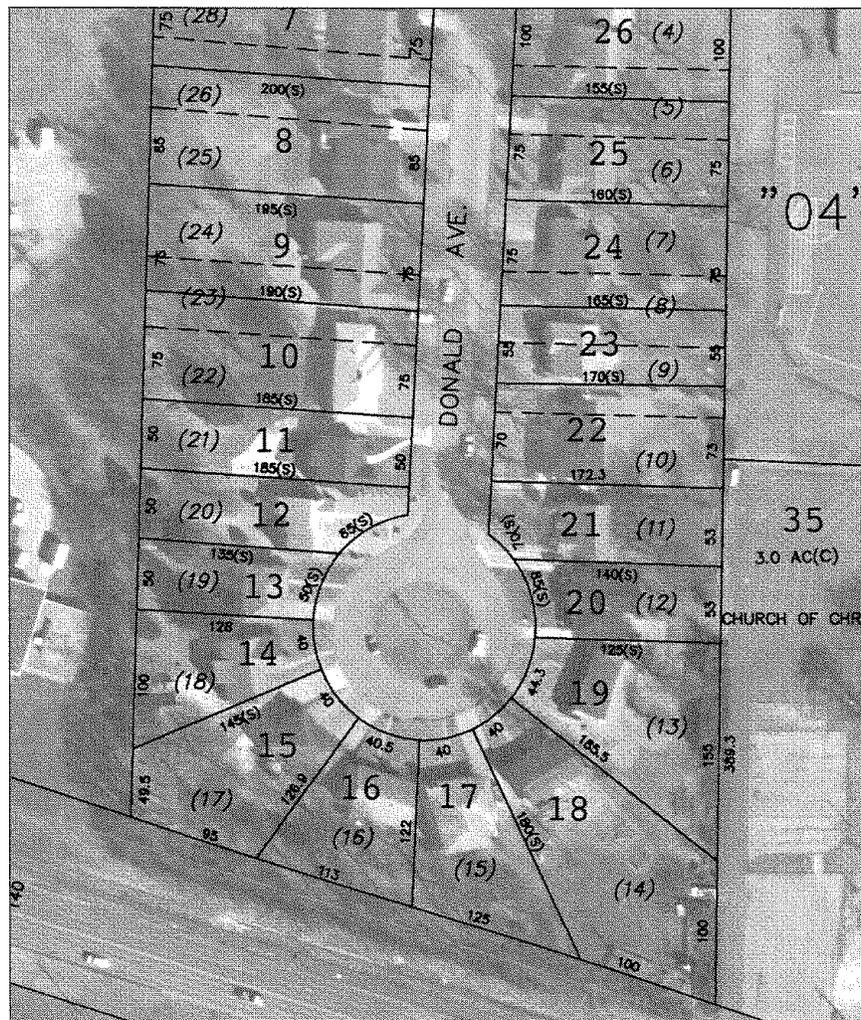
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EXHIBIT 5.23  
ASSESSMENT OWNERSHIP MAP  
(COMPOSITE COPY) PHOTOGRAPHY PROVIDED BY WALKER & ASSOCIATES





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- Parcel identification number of each respective parcel.
- Basic map information to include title block, page number, map scale and adjoining page number references.

If a cadastral mapping program is to be maintained on an out-of-house basis, a thorough understanding of the procedures to be followed is required of assessment personnel.

#### **B. Data Research**

The basic descriptive data for each parcel of real estate was obtained from deeds. In addition, the mapping contractors utilized recorded documents such as subdivision plats, right of way plans, and other maps which clarified the location of property boundaries or planimetric detail.

Deed research involved locating and examining the deeds of all parcels in the county which were not included in a subdivision. When collection of all descriptive data was completed, the data was sorted geographically so a draftsman could coordinate the data in preparation of the layout sheet.

#### **C. Initial Deed Plotting**

The next step in the cadastral mapping program consisted of carefully plotting, at the proper scale, all of the survey data relating to the identification of parcel boundaries. This was often a difficult task due to localized inaccuracies of the descriptive data which did not readily fit together. However, the base aerial photography was of great benefit at this stage. From the aerial photograph, it was possible to trace section lines, streams, lakes and rivers, roads and railroads, and many property boundaries. It was important, however, that mapping personnel constantly checked these indicated boundaries against available data for accuracy.

Upon completion of initial deed plotting, all conflicting property descriptions and boundaries were investigated and corrected where possible. The investigation of these conflicting boundaries may have required further deed research, field checks, or meetings with the owners of the parcels containing the conflicting boundaries.



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After the initial layout maps were prepared, the mapping personnel then assigned parcel identification numbers to each individual parcel. *Exhibit 5.24* illustrates the line work and notes which are plotted on the initial deed layout sheet.

#### **D. Final Ownership Maps**

When the respective layout sheets were complete and parceled, the final ownership map was inked. The final ownership maps were drafted on dimensionally stable drafting film (mylar) with waterproof ink. Doing so ensures the long life of the map with good reproductive qualities.

Upon completion of the cadastral maps, each map was checked for accuracy. Each map was compared with the sources of descriptive data and the initial layout sheets. All words, figures, numbers, title page references, and dimensions should have been carefully checked for accuracy and completeness.

The ownership maps provide the final overlay for the assessment map. By combining the base aerial photo with the ownership overlay, a composite print may be made, thus developing the final assessment map to be used by assessment personnel. The master ownership overlays represents a considerable investment and if damaged, lost, or destroyed would represent a substantial loss. Therefore, they should be stored in a fire-proof drawer cabinet. The masters should be removed only to reproduce additional copies of assessment maps or when they are being brought up-to-date by mapping personnel. *Exhibit 5.25* represents the final drafted base cadastral map for *Exhibit 5.24*.

#### **E. Assessment Map Prints**

With the acquiring of aerial photographic base maps and the development of cadastral base maps, the assessor will have an additional official record of assessment data relating to the parcels within the county. In effect, the assessor has acquired a visual representation of the assessment roll. As such, these maps will be subject to constant use by assessment personnel, county officials, real estate brokers and appraisers, taxpayers, and others interested in this information. Therefore, the assessor should arrange for the development of additional prints. Several sets of prints should also be retained for use by assessment personnel as follows:



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- Drafting use by mapping personnel
- General office use
- By appraisers for field work in locating, appraising properties and for display of appraisal valuation data and value conclusions







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**4. Missouri Uniform Map and Parcel Numbering System**

**A. The Missouri Uniform Parcel Numbering System**

The parcel numbering system contains seven sets of numbers, designed to locate the parcel geographically as well as by ownership map sheet. The numbering system identifies the county, township, map area, section, and the individual parcel number. The system is designed to be completely numerical rather than alphabetical to facilitate data processing. A description of the seven sets of numbers is as follows:

1. County Number

Is the same as the number appearing on each individual county contract map. This number will consist of up to three (3) digits.

2. Map Township Number

Is the number of the township in which the parcel is located (townships normally consist of thirty-six (36) sections, 1 thru 36). Each township within the county has been assigned a township number rather than reference the public land survey township and range. The townships shall be numbered sequentially from east to west and west to east in a serpentine manner within each tier so the easternmost township in the most northerly tier would be 01. If a township is less or larger than normal size, it is still numbered in its proper sequence. The township number will consist of up to two (2) digits.

3. Map Area Number

Is a reference to the four (4) section area within each township that would comprise a 1" = 400' scale ownership map sheet. Each township has been broken into four (4) section areas, two sections high (N and S) by two sections wide (E and W). Under normal conditions, there are nine (9) map areas to a township. The areas are numbered sequentially from east to west and west to east in a serpentine manner as are the townships. The northeasterly group of four (4) sections within a normal thirty-six (36) section township would be numbered 01 and the southwesterly would be 09, so that sections 1,2,11,12 comprise map area number 01 and sections 2,3,9,10 comprise map area number 02 etc. If a township is less than normal in size or cut by a county boundary, an area may contain less than four (4) sections. If the township is cut by a county boundary, the area will be assigned the same number



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it would normally have in its location within a thirty-six (36) section township. The map area number will typically consist of up to two (2) digits.

In areas where the four sections are too large to be included on a single base map and the area has to be split into more than one or two base maps, then the following will apply. If the two sections in the north portion of an area are separated from the two sections in the south portion, then the number for the top portion becomes 3.1 and the bottom portion is 3.2. If the area is split even further, then the counter clockwise numbering system takes effect. The northeast section will be 3.1, the northwest is 3.2, the southwest is 3.3 and the southeast becomes 3.4. See *Exhibit 5.26* for an example.



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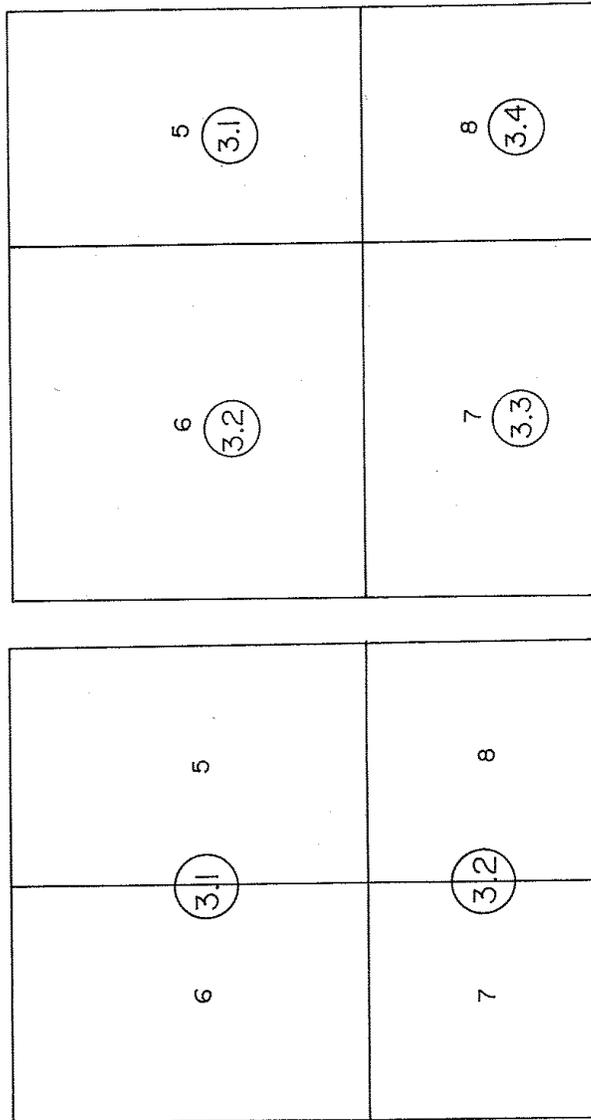
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EXHIBIT 5.26

MAP AREA LOCATOR NUMBERS  
FOR OVERSIZED SECTIONS





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#### 4. Section Number

Is the public land survey number of the section of land in which the parcel is actually located. This will be numbered from 1 to 36. The section number will consist of up to two (2) digits. In areas where land is not described in accordance with the public land survey, the section number has been projected.

#### 5. The Quarter Section or Quarter Quarter Section Number

Is to be the 1/4 section or 1/4 1/4 section in which the parcel is located. These numbers will run in a counter-clockwise manner with the NE quarter being number one (1), the northwest being two (2), the southwest being three (3), and the southeast four (4). In the case of 1" = 50' scale map sheets the northeast quarter of the northeast quarter will be 101, the NW 1/4 of NE 1/4 102, the SW 1/4 of NE 1/4 103 and the SE 1/4 of SE 1/4 would be 104, etc.

#### 6. Map block number

On 1" = 100', each map sheet will be broken down into blocks bounded by geographical features such as roads, streams, railroads etc. Each block will carry a separate map block number and will be numbered sequentially starting in the most northeasterly corner of the map sheet and running serpentine from east to west and west to east. The block number will be a three (3) digit number from 001 up to 999. NOTE: There should be no sub-blocking of the 1" = 50' scale map sheet. Each map at the 1" = 50' scale will constitute a map block.

#### 7. Parcel Number

Is the number assigned to each individual parcel. This number identifies individual parcels within a block, quarter section map sheet or section map sheet. The parcel number can consist of up to three (3) digits.

The following system will be used in establishing the parcel numbering system for splits or sell off, leasehold improvements and condominium owners:

#### ➤ Splits:

When an owner sells a part of the parcel, the split-off will be assigned the original number from which the land was sold plus the addition of a decimal number to identify the split.

EXAMPLE: Mr. Jones owns a parcel of land and the tract he owns is identified on the



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ownership map sheet as parcel 15. He sells part of this tract to Mr. Smith. The parcel number assigned to Mr. Smith to identify the split will be 15.01. Using this system of identifying splits, up to 99 split-offs can be sold off any individual tract of land, the sequence being from 15.01 thru 15.99.

➤ **Leasehold Improvements:**

The tract of land or lot in which a leasehold improvement is located will be assigned a basic parcel number and the improvements that are owned by other parties and considered to be a leasehold improvement will be assigned the basic parcel number plus the addition of a decimal number to identify the improvement.

➤ **Condominiums:**

The tract of land or lot on which a condominium is located will be assigned a basic parcel number. Each condominium owner will be assigned a decimal parcel number in the same manner as splits or leasehold improvements as stated above.

**B. Ownership Map Numbering System**

The ownership map numbering system will follow identical with the uniform parcel numbering system:

1. 1" = 400' Scale Map Sheets

The map sheet number for 1" = 400' will be the county number, the township number, and the map area number.

EXAMPLE:

048	-----	10	-----	05
Cole County		Township		Area
County Number		Number		Number
From Contract Map				

Thus three (3) sets of digits shown in the title block of a map sheet would indicate a 1" = 400' scale



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map.

2. 1" = 200' Scale Map Sheets

The map sheet number for 1" = 200' will be the county number, the township number, the map area number, and the section number that the map sheet actually covers.

EXAMPLE:

048	--	10	--	05	--	16
County		Township		Area		Section
Number		Number		Number		Number

3. 1" = 100' Scale Map Sheets

The map sheet number for 1" = 100' will be the county number, the township number, the map area number, the section number and the quarter section number.

EXAMPLE:

048	--	10	--	05	--	16	--	2
County		Township		Area		Section		Quarter
Number		Number		Number		Number		Section

NOTE: Quarter section #2 indicates the NW quarter of section 35. Thus five (5) sets of digits appearing in the title block would indicate a 1" = 100' scale map sheet.

4. 1" = 50' Scale Map Sheets

The map sheet number for 1" = 50' will be the county number, the township number, the map area number, the section number and the quarter quarter section number.

EXAMPLE: 048-10-05-16-201

048 - Being the number from the county contract map. In this case Cole County

10 - Being the township number.

05 - Being the area number. In this case 07 would be sections 25, 26, 35 & 36.

16 - Being the section number



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201 - Being the quarter section and the quarter quarter section number. In this case the first digit indicating the NW quarter and the last two (2) digits indicating the NE 1/4 of NW 1/4.

Thus five (5) sets of digits appearing in the title block with the last set being three (3) digits instead of one (1) would indicate a 1" = 50' scale map sheet.

NOTE: The ownership map number will never include the map block number. No map blocking will occur on the 1" = 50" scale map sheets.

*Exhibit 5.27* demonstrates the basic mapping module as defined by the Missouri Uniform Map Numbering System. In the example is the Cole County township locator, which shows how the township numbers have been assigned. In addition, the exhibit shows the map sheet index and a 1/4 section index and how the area numbers are assigned to specific sections.



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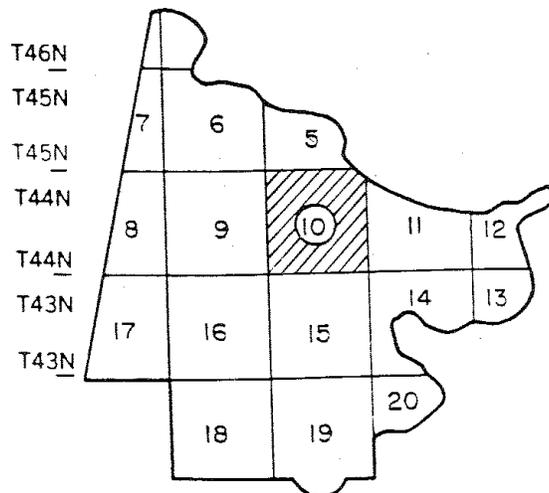
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EXHIBIT 5.27

Missouri Uniform Map Numbering System

TOWNSHIP LOCATOR

| R14W | R13W | R12W | R11W | R10W

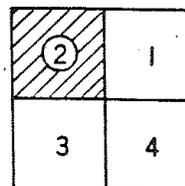


(COLE COUNTY)

MAP SHEET INDEX

6	5	4	3	2	1
3			2		
7	8	9	10	11	12
18	17	16 (hatched)	15	14	13
4			5		6
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1/4 SECTION INDEX





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#### **5. Assessment Map Maintenance**

Continual maintenance is necessary as this system provides the foundation for all real property files and assessment activities. The required update is usually keyed from information received from the recorder's office in the form of property transfer, new subdivision filings, new surveys, or highway and road surveys. If only a change in ownership is involved, the assessment staff makes the proper entries on the property record card, mapping index cards and the computer for the assessment roll. If a split or combination of existing properties is involved, the clerk forwards the deeds, map index cards and the appropriate property record card(s) to the mapper. After the needed modifications are made to the ownership map, the mapper forwards all data to the appraisers for review and/or allocation of existing values relating to the affected parcels.

Examples, one at each of the three basic map scales, of a complete assessment map with parcel boundary lines overlaid onto the aerial photography are illustrated in *Exhibit 5.28 through 5.30*.









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Once a mapping system has been installed, it is an absolute necessity to carry on with a maintenance program. Otherwise the initial effort and expense in installing will be negated in a year or two. The assessment process requires the timely collection, assimilation, and distribution of ownership-related data to ensure continuity of all records.

An organized maintenance program can be very routine and easy. It simply involves making ownership and boundary line changes periodically. This can be accomplished on a weekly, monthly, semi-annual or annual basis, whichever is most feasible. To make the changes, you will need a copy of all recorded deeds, wills, plats and surveys which are filed for record in the courthouse. Occasionally you will need to contact certain property owners about changes that occur that are not filed for record.

Each assessor's office can organize its maintenance program according to workload and personnel.

#### **A. Maintenance of Maps and Office Records**

The assessor is responsible for the maintenance of the assessment maps and records and often must initiate systems internally that will ensure the constant updating of ownership data.

Procedures, such as the following, have been initiated to ensure the integration of current ownership data into the assessment process:

1. Procedures to gather assessment-related data (recorded documents, building permits, field maps, etc.) from internal and external data sources (state, county, city, etc.).
2. Procedures for maintenance of mapping and office records.
3. Procedures for dissemination of updated assessment information to appropriate users.

A good assessment map system accomplishes the following:

1. Locate all parcels
2. Identifies the owner of record
3. Delineates boundaries
4. Provides unique parcel identifiers
5. Provides an inventory of all real property
6. Provides administrative data
7. Provides a graphic format appropriate for assessment uses



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8. Provides for convenient updating and corrections
9. Provides for easy reproduction

The cost of a good mapping system is great, but the benefits of such a system are also substantial. Cost effectiveness is achieved when the maps are prepared and maintained in such a manner as to give them utility for other agencies as well as the assessor's office. Planners, statisticians, demographers, engineers, and surveyors, are all potential users of the assessment map.

**B. Map Contract Deliverables**

The county received the following material under the original contract for mapping. It can be utilized by the county in a maintenance contract or for in-house map maintenance.

**(1) Aerial Film**

Scale: 1" = 40,000" and 1" = 12,000"

**(2) Aerial Photography (Rural)**

- 9" x 9" contact prints at the same scale as the aerial film
- One (1) photo index covering entire county, scale: 1" = 400'
- Screened enlargements of the same scale depicting (4) sections per sheet.

**(3) Orthophoto Base Photography**

Showing all ground features for use in preparation of the ownership maps at a scale of 1" = 200" or 1" = 100'

- One (1) set stereo contact prints, scale: 1" = 12,000"
- One (1) set original ortho negatives, scale: 1" = 1,000'
- One (1) set photo indexes of areas produced orthographically

**(4) Ownership Maps**

- Ownership maps scale 1" = 400' normally covering the rural area of the county and which is



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- normally comprised of 4 sections. 1 mylar overlay and 2 ozalid prints.
- Ownership maps, scale 1" = 200', is normally comprised of 1 section. 1 mylar overlay and 2 ozalid prints.
  - Ownership maps, scale 1" = 100', is normally comprised of a quarter section. 1 mylar overlay and 2 ozalid prints.
  - Ownership maps, scale 1" = 50', which will normally cover the downtown area and is broken on streets, roads or nature boundaries. 1 mylar and 2 ozalid prints.
  - One (1) mylar and two (2) ozalid prints each of index maps of entire county depicting all ownership map numbers. One index for the 1" = 400' and 1" = 200' scale maps, and one index for the areas mapped at 1" = 100' scale.

#### **(5) Additional Mapping Aids**

- Original plats and surveyor's field notes used in establishing township, range and section lines.
- All right-of-way acquisition surveys or plans for all highways which currently exist in the county.
- One set of topographic maps covering the entire county. (7 1/2' series or 15' series.)
- Railroad and cross country map type utility right-of-way plans.
- One (1) set Work Index Cards with deeds attached filed geographically by map and parcel number and one (1) set of Final Index Cards filed alphabetically.
- Microfilm copy of all Ownership Overlay Mylars and Final Alpha Index Cards indexed and labeled.

#### **C. Map Maintenance Requirements**

##### **(1) Source Documents**

The mapper will obtain and use the following materials in addition to other material or documents as required in the maintenance and updating of the ownership maps:

- All recorded vesting instruments that sell, transfer or convey ownership of real property or ownerships including wills and trusts during the period of the contract.



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- All newly recorded subdivisions or resubdivisions of existing subdivisions and all local surveys.
- All right-of-way plans for new roads, railroads, and changes of existing right-of-ways for all Federal, State, County and City streets. Final ownership maps must show the right-of-ways of all U.S., State, County and Municipal highways, roads, streets along with the dimensions of such right-of-ways.
- All new right-of-ways for transmission lines (gas or electric) as well as right-of-way dimensions.

**(2) Minimum Map Inclusions**

As a minimum, the final ownership maps will depict only the major detail from the planimetric base with at least the following detail shown:

- Each established parcel and its boundaries
- Township, Range and Section boundaries and numbers
- U.S., State, County, Municipal, etc., Highways, Roads, Streets and Name or Number. This includes determination of and the showing of ROW's and their dimension.
- Township, Range and Section boundaries and numbers
- Political boundaries and subdivisions
- County boundaries
- Municipal boundaries
- Government Lot Numbers
- Subdivision names, block and lot numbers, or other designations
- Canals, rivers, creeks, etc.
- Railroad Right-of-Way
- Major utility lines as shown on planimetric manuscripts
- Churches, schools, cemeteries, airports, government lands, etc. are to be identified on the ownership map by name.

**(3) Drafting**

Final Ownership maps have been drafted on a matte finish, both sides, .004" polyester stabilized base



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mylar, or equal. The overall sheet will be 36" x 36". The master to be used in printing the blank mylar map sheets will be furnished by the County. The final maps depict the following approximate areas:

- Scale : 1" = 400' - 4 sections per map
- 1" = 200' - 1 section per map
- 1" = 100' - 1/4 section per map
- 1" = 50' - 1/16 section per map

All maps shall contain an index showing where it fits into the adjoining map sheets. A suitable legend list shall also be provided on each map.

Unless otherwise noted, all maps have been oriented and constructed with north at the top of each sheet.

All maps will show deed or plat dimensions decimally on all parcels under three acres. All subdivisions or platted lots will, regardless of size, show dimensions. Area on all parcels under ten acres will be shown to the nearest one-tenth (1/10) acre, and all parcels over ten acres to the nearest acre. The acreage will be calculated on every parcel over one acre, either by electronic or polar planimeter or by scaled calculations. If a polar planimeter is utilized for this purpose, the computation should be based on the average of three (3) separate readings.

In those cases where differentials exist in the boundary dimensions as stated in the deed of more than 3%, the boundary will show both dimensions, designating deed dimensions with a small (d), and scale dimensions with a small (s) after the number. Where the differential between deed and scale is less than 3%, only deed dimensions will be shown. It will not be necessary in those cases for a small (d) to be shown. Where differentials exist in area as stated in the deed by a margin greater than the tolerance listed in the table below, then the parcel will show both deed and calculated acreage.

Over 1 acre up to 10 acres	5% difference
Over 10 acres up to 40 acres	4% difference
Over 40 acres up to 160 acres	3% difference
Over 160 acres up to 640 acres	2% difference

Deed acreage, designated by a small (d), will be placed directly under the parcel number and calculated acreage, designated by a small (c), will be under the deed acreage. Where the differentials



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are less than those listed only deed acreage will be shown and it will not be necessary that it be designated by a small (d). In cases where no acreage is defined in the vesting instrument or in cases where parcels must be split, calculated acreage only will be used and will be designated by a small (c). The differentials in both dimensions and acreage will be shown on the ownership index cards.

Final drafting shall be done in Pelican TN ink or approved equivalent. Drafting shall be accomplished to provide clear and legible lines, symbols and lettering. Uniformity of line weight, symbols, and lettering are required.

Lettering will be accomplished by use of mechanical lettering templates (Leroy or approved equivalent). No hand lettering will be permitted.

D. Drafting Standards

(1) PEN WEIGHT AND TEMPLATE GAUGE FOR 1" = 200', 1" = 100' MAPS

Table with 4 columns: SUBJECT, PEN WEIGHT, TEMPLATE, and additional specifications. Rows include Roads and Street Names, Alleys, Parcel Number, Original Lot Number, Creeks, Streams, Etc., Rivers, Lakes, Etc., Deed Dimensions, Scaled Dimensions, Road Dimensions, Deed Acreage, Calculated Acreage, Church, Cemetery, School Names, Ownership Block Number, Original Block Number, and Transmission Lines.



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See Note	0"/120L	“	
Adjoining Map Number	00"/100L	“	Slant
Conflict	0"/120L	“	
State Line	4 Pen		
County Line	4 Pen		
Township and Range Lines	4 Pen		
Section Lines	3 Pen		
Quarter Section Line	1 Pen		
Corporate Limit Line	3 Pen		
Railroad R/W	0 Pen		
Highway R/W	1 Pen		
Property Boundary Lines	1 Pen		
Original Lot Lines	00 Pen		
Water	00 Pen		
Land Hooks	00 Pen		
Transmission Lines	00 Pen		
State Name	2 Pen/200L Template		
County Name	2"/200L	“	
Township and Range Number	1"/140L	“	
Section Number	1"/140L	“	
Corporation Name	1"/140L	“	
Railroad Name	00"/120L	“Slant	
Interstate Highway	1"/140L	“	
U.S. Highway	1"/140L	“	
State Highway	1"/140L	“	
County Highway	1"/140L	“	
Map Number	2"/200L (Minimum)		
District Names	1"/140CL		

**(2) PEN WEIGHT AND TEMPLATE GAUGE FOR 1" = 400' MAPS**

<u>SUBJECT</u>	<u>PEN WEIGHT/TEMPLATE</u>
State Line	4 Pen



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County Line	4 Pen
Township and Range Lines	4 Pen
Section Lines	3 Pen
Corporation Lines	3 Pen
Railroad R/W	0 Pen
Highway R/W	1 Pen
Property Boundary Lines	1 Pen
Original Lot Lines	00 Pen
Water	00 Pen
Land Hooks	00 Pen
S/D Limit	00 Pen
Transmission Lines	00 Pen
State Name	2 Pen/200L Template
County Name	2 Pen/200L Template
Township and Range Number	1 Pen/140L Template
Section Number	1 Pen/140L Template
Corporation Name	1 Pen/140L Template
Railroad Name	00 Pen/80L Template Slant
Interstate Highway	00 Pen/140L Template
U.S. Highway	00 Pen/140L Template
State Highway	00 Pen/140L Template
County Highway	00 Pen/140L Template
Roads/Streets, and Names	1 Penn/120L Template
Alleys	00"/80L Template
Parcel Number	1"/140L Template
Original Lot Number	00"/120L Template Slant
Creeks, Streams Names	0"/120L Template Slant
Rivers, Lakes Names	1"/175L Template Slant
Deed Dimensions	00"/80L Template
Scaled Dimensions	00"/80L Template
Deed Acreage	0"/120L Template
Calculated Acreage	0"/120L Template
Church, Cemetery,	



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School, Etc. Names	0"/100L Template
Transmission Lines	00"/80L Template
Adjacent Map Reference	0"/120L Template
Easement Line	00"
Map Number	2" 200L (Minimum)

For those symbol line weights and lettering sizes not specified above, the mapper will use the same line weights and lettering size as the original mapping in each county done under the original mapping contract. When a stream becomes a property line, the mapper will increase the pen to a #1 pen, but will retain the stream symbol.

### **E. Ownership Index System**

To complete the working system of ownership indexing, the county will maintain two (2) sets of property index cards. One (1) set will be filed alphabetically and one (1) set will be filed geographically (by map and parcel number). Index cards will be maintained for each parcel and a new set of index cards will be prepared for each new parcel. A copy of the deed will be attached to the work index card that is filed geographically by map and parcel number. The cards will contain at least the following information:

- (1) Map number
- (2) Permanent parcel number
- (3) Owner's name and mailing address
- (4) Property address
- (5) Property description (subdivision, block, lot, city, etc.)
- (6) Dimensions and/or acreage (both deed, calculated or scaled) where applicable.
- (7) Section, township and range number.
- (8) Acquisition reference (book, page and date)
- (9) Plat book and page for subdivided property
- (10) Any notes explaining the plotting of or the ownership if different from the vesting instrument or if a field edit is made, information from field edit.

The final ownership index card shall be designed in such a format that would allow the County to add taxing district name or number, property class, and valuation should it desire to do so. The format of the final ownership index card shall be subject to the approval of the County and the State



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Tax Commission prior to its use. The final ownership index system may be automated provided it meets the criteria as outlined above.

#### **F. Updating Procedures**

The mapper will obtain copies of all vesting instruments, newly recorded subdivisions or resubdivisions of existing subdivisions, all local surveys, all new right-of-ways, acquisition plans and changes of right-of-ways for all federal, state, county and city roads and all new right-of-ways of transmission lines, etc. during the updating period of all maintenance activity.

##### **(1) Ownership Maps**

###### **➤ Documents**

All vesting instruments, documents affecting owners or boundaries, new subdivisions, survey maps, etc. will be sorted by map number and marked as such. Each transfer will be logged on the Maintenance Mapping Register. At this time it will be given a change number. This change number can be used to control each transfer throughout the maintenance period. A Property Change Form (in duplicate should be made and the transfer attached to the mapper's copy. One copy of the Property Change Form will go to the appraiser. Then each transfer or new survey map will be compared with the present ownership map to check the accuracy and completeness of the original mapping. The "card change" procedure will follow this phase of the updating procedure.

###### **➤ Correction & Updating**

Splits, sell-offs and/or map corrections will be indicated on a paper copy of the ownership map. The copies of the ownership maps will be furnished by the county. Recolored pencil or ink is suggested for property line changes and dimensions. New parcel or map block numbers should be indicated in green-colored pencil or ink. This color difference on the paper print makes the drafting or inking on the originals much easier and more identifiable. The tax assessor or like county official will record any report or information which indicates an error in owner or owners, or an error in parcel boundaries, on a parcel error change form, for review and required corrections as necessary by maintenance mapping contractor where applicable. Maps requiring corrections to the original mapping will be done in the same manner as splits or sell-offs.

###### **➤ Numbering**



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Numbering of parcels will be done in accordance with the “Missouri Uniform Parcel Numbering System”. See section 5.7.4.

➤ **Aerial Photo**

Each split, sell-off, or map correction will always be checked against the aerial photo covering the area.

➤ **Field Edit**

In those instances when the property cannot be plotted from the vesting instrument, or conflicts and ambiguities exist, or the transfer is vague, not complete enough to be located, identified or mapped, or where the grantor’s name is not the same as currently mapped, the mapper will make a field edit. The field edit will be attached to the property changed forms. No field edit will be made by phone, except for questions concerning ownership. It is not intended that the mapper go beyond a field interview(s) in an endeavor to interpret ownership or boundary disputes. It is not the mapper’s responsibility to settle or make a legal determination as to the true or proper owner, but rather to attempt to understand and reflect on the assessor’s ownership map the ownership interests that are present.

➤ **Drafting**

Drafting changes on the original will be done in accordance with mapping standards. This will insure uniformity of all maps. At the end of each maintenance period, the name of the mapper and the date through which the maps are updated will be inked on each map.

➤ **Right-of-ways (ROW)**

The addition of new or changed right-of-ways for roads, railroads, utility lines, new streets, etc. will be shown on the ownership maps. The predominate dimensions of each ROW will be shown along with any name and/or highway number.

➤ **Subdivision**

New subdivisions or resubdivisions will be mapped with all contiguous unimproved lots, under a single ownership, as a single parcel. As future transfers occur, parcels will be created for each contiguous ownership configuration. Parcel numbers will be assigned in a manner consistent with existing numbering and to facilitate field review and record keeping.



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➤ **Landhooks**

Lots of any plat separated by a public thoroughfare are not considered to be contiguous. Lots so separated will be mapped and appraised separately regardless of common ownership. Landhooks are to be used in rural areas only where a parcel is split by a railroad or highway right-of-way to denote single ownership. The exception to this will be where parcels are split by interstate highways, lakes or reservoirs.

➤ **Contiguous Parcels**

Contiguously owned parcels in two or more sections shall be mapped as separate parcels. Only contiguously owned parcels in the same section will be mapped as one parcel. However, parcels with a land area of two acres or less in the rural area, not subject to further subdivision, or a lot in a subdivision extending into an adjoining map area, can be included in the map which has the largest land area or facing a street or road, by indicating beyond the intelligence line of the map, lines showing the remaining part of the parcels. Dimensions will be shown. The portion of the parcel extended across the intelligence line will be shown by solid lines. The section or intelligence line will be dashed thru the parcel. The map that carries the remaining portion of the parcel will be referenced in the margin area. The map that has the land area not assigned the parcel number will have a reference note to which map and block the land area is parceled. In summary, any land area will be shown by solid lines to show that it is considered and included in another map and the maps will be cross-referenced and all land area in every map must be accounted for.

➤ **Encroachments (Conflicts)**

In plotting property where a field edit and deed have determined an encroachment actually exists, the area of encroachment will be visibly marked by the use of dashed lines on the map, and labeled as a "CONFLICT".

➤ **Supplemental Maps (Inserts)**

When it has been determined that an area needs to be enlarged (from 1" = 400' to 1" = 200' or 1" = 100') the area enlarged on the original ownership map will show the new map number for the land area enlarged. The map or maps created will then carry the map and uniform parcel numbers as determined by the Missouri Uniform Map Numbering and Parcel Numbering System. The area enlarged and the parcel numbers will be deleted and the index card removed from the current file and



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placed in an inactive file. New property boundary lines will be created along with new index cards with all required information and new parcel numbers for the land area enlarged.

➤ **Combinations**

The combining of parcels or the eliminating of parcel numbers should be handled very carefully in order that all parcels have a number unique to themselves. The index cards of the deleted parcel should be pulled and placed in the inactive file.

➤ **Placement of Drafted Information**

1. Names of streets, or street numbers and roads, should be placed in the center of the travel path, where possible.
2. Original subdivision (S/D) lot numbers should be placed in the rear of the lots in a slanted position.
3. Original S/D block numbers should be centered in the block with the printing being dashed and inside a dashed circle.
4. Parcel numbers should be placed in the middle of the parcel on platted parcels and in the northeast corner on unplatted parcels.
5. Block numbers should be placed in the center of the parcel with quotation marks included, with blocking limits indicated where applicable.
6. Small block numbers and ticking will be placed at block limit breaks where applicable.
7. Dimensions should be near the center portion of a property line.
8. Acreage should be placed directly under the parcel number and if both deed and calculated acreage are utilized, the deed acreage (d) should be listed first with the calculated acreage (c) being listed below the deed acreage.
9. All highway symbols should straddle the travel path, where possible.
10. Government property, churches, schools and cemetery names should be placed nearer the middle of the parcels.
11. Insert information should reference information and where to be found in the center of the unmapped area.

➤ **Photo Number**

When a mapper has created an additional map, the flight line and the exposure number of the aerial



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photograph that covers that map should be inked in the legend area below the subsheet index indicator.

#### (2) **Property Index Cards**

##### ➤ **Property Descriptions**

A property description is based on the description from the vesting instrument, is in an abbreviated form and eliminates information not essential to the plotting of the parcel. A property description does not require a verbatim copy of the vesting instrument description if the description is excessively long, but rather the description should describe the subject property as it found on the ownership map.

Land that can be described in the conventional manner, such as quarter-quarter section, half section, full section, etc. will be described this way.

The section, township and range will be shown. If the property is located within an urban area, the name of the city should be shown, where applicable.

The property description for subdivided property will be in the following manner: lot, block, subdivision, city or town, where applicable. There is no need to follow this description by a section, township and range, if the property is located within an urban area. If the subdivided property is located in the rural area, the description should be lot, block, subdivision, section, township and range. When a verbatim description in the vesting instrument cannot be used and a parcel must be described by metes and bounds, the following procedures should be utilized in writing the metes and bounds property description: The description should start with an existing photo-visible point on the ownership map, such as 1/4 1/4 section corner, an intersection of two (2) roads, an intersection of a road right-of-way and a section line etc. Once the point has been determined, then the distance and direction to a point of beginning (POB) of the parcel will be stated. The POB of the parcels will be used to describe the actual boundaries of the parcel. From the point of beginning the description continues around the boundaries of the parcel giving the direction and distances until the description closes back to the point of beginning. The deed dimensions and, if required, the scale dimensions or deed acreage and/or calculated acreage will be stated in the description. If the parcel is located within an incorporated area, the name of the city, town or community should be stated unless a space



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for this is provided on the index card.

➤ **Ownership**

Full names of all parties in tenancy will be shown. Full interest of all owners will be determined by vesting instrument and/or field edit. If tenants own a fractional interest, such interest will be indicated by each name on the Property Index Cards. This also includes estate property or trust.

➤ **Property Address**

Where the property is located on a street, road or boulevard, the property address will list the house number, name or number of the road, street, or boulevard and city, town or community. If located in the rural area not having an address similar to that in the urban or suburban area above, show the following as an address:

1. Property adjoining Federal, State or County Highway, the name or number of the highway will be acceptable as an address. If the property is located on a creek, river, railroad or any other identifiable point, the property address will show such identifiable point.
2. Property not located on or adjacent to the above: property not located on road, street, highway, creek, river or other identifiable point, but can be identified by property located north, south, etc., of a highway, river, creek and railroad will show the address that the property lies north or south or so forth of such physical feature. The location point shown in the address should be located within the section in which the parcel is located.
3. Parcels which are split by the above will reflect north and south, etc., of highway 164 and/or creeks, railroads, rivers and streets.
4. Parcels of land less than 1/4 1/4 section which cannot be given a property address in the above manner should show in the property address section of the Property Index Card the 1/4 1/4 section in which the parcel is located.

(3) **Storage**

➤ **Inactive File**



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Property index cards and prints of ownership maps that have been changed due to splits, sell-offs or corrections of errors will be marked inactive. They will be filed by the mapper in storage provided by the county in a manner which allows for ready reference.

➤ **Storage of Mapping Material**

All materials used in the updating and the maintenance of ownership maps; such as, Property Change Forms with deeds, subdivision plats and surveys, ROW plans, Field Edit Forms, etc., will be filed by the mapper in a manner which allows for ready reference.

## 5.8 MARKET STUDIES

There are four basic market studies conducted in the assessor's office. Each study has a distinct objective, although they all rely on the same basic information. The key to successful market analysis is the collection, verification and use of good sale data.

How do you verify that a sale is a good "arms-length" transaction? By learning all you can about the conditions and situations involved in a particular sale. Consider, does the sale meet the key elements of the market value definition? *Were both the buyer and seller willing, and neither at an unfair advantage over the other or under pressure to act? Was the subject property exposed to the market for a reasonable amount of time? Were both the buyer and seller knowledgeable of the property, its use and its potential uses?* If so, then the sale can be considered a good sale and is suitable for use in the market studies.

By knowing the parties involved and verifying the terms, conditions and particulars of a given sale the appraiser is prepared to analyze the sale and to draw from it reasonable conclusions about the market. See *Exhibit 5.31* for samples of the basic market study forms.



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Uniform Parcel Number	Rec Num	Sale Price	Sale Date	Trended Sale Price	Total Apprsd Value	Sale Ratio	Vacant or Imprvd	Depr. %	Base Area	Year Built	Nbhd	Style	Qty	Superior County, Missouri Sales Ratio Analysis	
														Select Neighborhood -- 17 Appraisal Date January, 2007	Order By Ratio Sale Years 2004 - 2006
22-0.4-19-02-04-090.000	330	127,500	9/2005	132,600	99,822	0.753	Imp	80	1,127	1969	17	SptLvl	D+		
22-0.4-19-02-11-080.000	327	125,000	4/2005	131,563	99,495	0.756	Imp	75	1,450	1965	17	Ranch	D+		
22-0.4-19-02-05-020.480	357	205,000	9/2005	213,200	163,481	0.767	Imp	98	1,616	2002	17	1-Sty	D+		
22-0.9-30-04-01-040.310	350	164,900	5/2005	173,145	139,490	0.806	Imp	90	1,680	1998	17	Ranch	D		
22-0.4-19-04-06-010.000	355	195,000	5/2005	204,750	172,389	0.842	Imp	90	1,051	1986	17	2-Sty	C-		
22-0.4-19-02-03-080.000	281	86,000	1/2006	88,580	76,265	0.861	Imp	75	1,040	1969	17	1-Sty	D		
22-0.4-19-02-11-030.000	336	135,000	6/2006	137,363	119,049	0.867	Imp	85	1,248	1981	17	1-1/2	D		
22-0.4-19-02-18-010.000	352	175,000	4/2005	184,188	160,745	0.873	Imp	98	1,630	2002	17	1-Sty	D		
22-0.4-19-02-11-008.000	117	100,000	1/2004	109,000	99,495	0.913	Imp	75	1,450	1965	17	Ranch	D+		
22-0.4-19-02-06-090.000	328	125,000	4/2006	127,813	117,116	0.916	Imp	80	728	1972	17	SptLvl	D+		
22-0.4-19-01-29-010.000	125	72,500	4/2004	78,481	72,170	0.920	Imp	70	1,080	1960	17	1-Sty	D		
22-0.4-19-02-05-020.120	347	156,000	4/2005	164,190	151,538	0.923	Imp	98	1,860	1999	17	SptLvl	D		
22-0.4-19-02-03-002.000	118	165,000	1/2004	179,850	167,015	0.929	Imp	85	1,908	1969	17	Ranch	C-		
22-0.9-30-04-01-040.290	346	155,000	6/2005	162,363	150,991	0.930	Imp	98	1,680	1998	17	Ranch	D		
22-0.4-19-01-40-011.001	196	141,500	8/2005	147,514	139,120	0.943	Imp	90	1,560	1984	17	Ranch	D+		
22-0.4-19-01-40-110.010	360	141,500	8/2005	147,514	139,120	0.943	Imp	90	1,560	1984	17	Ranch	D+		
22-0.3-07-03-01-010.060	353	176,000	6/2006	179,080	170,934	0.955	Imp	98	2,187	2003	17	1-Sty	D		
22-0.4-19-02-04-010.000	143	120,000	7/2004	129,000	123,358	0.956	Imp	75	1,688	1970	17	Ranch	D+		
22-0.4-19-03-02-140.000	348	160,000	6/2006	162,800	157,579	0.968	Imp	90	1,691	1987	17	SptLvl	D+		
22-0.4-19-02-18-020.000	356	196,500	5/2006	200,430	196,161	0.979	Imp	98	1,613	2002	17	1-1/2	D		
22-0.4-19-03-03-130.000	363	167,000	6/2006	169,923	166,369	0.979	Imp	75	1,840	1970	17	1-Sty	C-		
22-0.4-19-03-02-015.000	153	160,000	9/2004	171,200	173,541	1.014	Imp	80	1,840	1974	17	Ranch	D+		
22-0.4-19-03-04-050.000	195	146,400	10/2001	151,890	154,929	1.020	Imp	80	1,594	1974	17	Ranch	D+		
22-0.9-30-02-02-017.000	359	287,000	3/2006	294,175	301,920	1.026	Imp	98	2,032	2005	17	1-1/2	C		
22-0.4-19-03-03-050.000	364	164,000	5/2006	167,280	173,437	1.037	Imp	75	1,957	1969	17	Ranch	C-		
22-0.4-19-03-04-050.000	341	140,000	10/2001	145,250	154,929	1.067	Imp	80	1,594	1974	17	Ranch	C-		
22-0.4-19-04-03-020.000	188	161,500	7/2005	168,768	195,986	1.161	Imp	80	1,368	1979	17	1-1/2	D+		
22-0.4-19-04-03-020.000	349	161,500	7/2005	168,768	195,986	1.161	Imp	80	1,368	1979	17	1-1/2	D+		
22-0.4-19-02-04-020.000	314	116,000	5/2006	118,320	141,767	1.198	Imp	85	1,416	1980	17	1-Sty	D+		
				Number of Sales	29	Weighted Mean				0.95					
				Median Ratio	0.94	Mean Ratio				0.95					
				Coefficient of Dispersion	8.81	Price Related Differential				1.00					



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Superior County, Missouri  
Land Value Analysis

Abstraction Method

FRFT land; Neighborhood 17; All Prices; All sizes; All UPNs; Sale years 2004-2006

Uniform Parcel Number	Rec. Num.	Sale Price	Sale Date	Trm'd Sale Price	Frontg	Depth	Impr. Value	Ind. Land Value	Factors Dpth	Factors Inf	Eff. Units	Ind. Unit Value	Crmt Unit Price	Nbhd
22-0.3-07-03-01-010.060	353	176000	6/2006	179,080	75	135	152184	26896	1.00	1.00	75	359	250	17
22-0.4-19-01-29-010.000	125	72500	4/2004	78,481	66	108	56825	21656	0.93	1.00	61	353	250	17
22-0.4-19-01-40-011.001	196	141500	8/2005	147,514	83	141	109097	38416	1.01	1.00	120	320	250	17
					37	126			0.98	1.00				
22-0.4-19-01-40-110.010	360	141500	8/2005	147,514	83	140	109097	38416	1.01	1.00	120	320	250	17
					37	126			0.98	1.00				
22-0.4-19-02-03-002.000	118	165000	1/2004	179,850	144	132	134939	44911	0.99	0.90	128	350	250	17
22-0.4-19-02-03-080.000	281	86000	1/2006	88,580	82	122	50281	38299	0.96	0.65	104	368	250	17
					82	131			0.99	0.65				
22-0.4-19-02-04-010.000	143	120000	7/2004	129,000	120	105	98788	30212	0.91	0.90	98	307	250	17
22-0.4-19-02-04-020.000	314	116000	5/2006	118,320	75	120	123767	-5447	0.96	1.00	72	-76	250	17
22-0.4-19-02-04-090.000	330	127500	9/2005	132,600	75	120	81822	50778	0.96	1.00	72	705	250	17
22-0.4-19-02-05-020.120	347	156000	4/2005	164,190	93	102	130380	33810	0.91	1.00	85	400	250	17
22-0.4-19-02-05-020.480	357	205000	9/2005	213,200	99	102	138731	74469	1.00	1.00	99	752	250	17
22-0.4-19-02-06-090.000	328	125000	4/2006	127,813	79	128	96971	30841	1.02	1.00	81	383	250	17
22-0.4-19-02-11-008.000	117	100000	1/2004	109,000	75	81	84495	24505	0.80	1.00	60	408	250	17
22-0.4-19-02-11-030.000	336	135000	6/2006	137,363	139	122	89025	48337	0.96	0.90	120	402	250	17
22-0.4-19-02-11-080.000	327	125000	4/2005	131,563	75	118	84495	47067	0.80	1.00	60	784	250	17
22-0.4-19-02-18-010.000	352	175000	4/2005	184,188	200	96	115745	68442	0.90	1.00	180	380	250	17
22-0.4-19-02-18-020.000	356	196500	5/2006	200,430	200	111	149661	50769	0.93	1.00	186	273	250	17
22-0.4-19-02-02-015.000	153	160000	9/2004	171,200	99	165	147553	23647	1.05	1.00	104	227	250	17
22-0.4-19-03-02-140.000	348	160000	6/2006	162,800	94	141	133844	28956	1.01	1.00	95	305	250	17
22-0.4-19-03-03-050.000	364	164000	5/2006	167,280	123	134	143661	23619	1.00	0.85	119	198	250	17
					42	130			0.99	0.35				
22-0.4-19-03-03-130.000	363	167000	6/2006	169,923	96	147	141889	28033	1.02	1.00	98	286	250	17
22-0.4-19-03-04-050.000	195	146400	10/2005	151,890	90	135	132429	19461	1.00	1.00	90	216	250	17
22-0.4-19-03-04-050.000	341	140000	10/2005	145,250	90	135	132429	12821	1.00	1.00	90	142	250	17
22-0.4-19-04-03-020.000	188	161500	7/2005	168,768	134	131	162821	5946	0.99	1.00	133	45	250	17
22-0.4-19-04-03-020.000	349	161500	7/2005	168,768	134	131	162821	5946	0.99	1.00	133	45	250	17
22-0.4-19-04-06-010.000	355	195000	5/2005	204,750	111	120	145749	59001	0.96	1.00	107	554	250	17
22-0.9-30-02-02-017.000	359	287000	3/2006	294,175	96	311	274258	19917	1.02	1.13	111	180	250	17
22-0.9-30-04-01-040.290	346	155000	6/2005	162,363	130	90	123366	38996	0.85	1.00	110	353	250	17
22-0.9-30-04-01-040.310	350	164900	5/2005	173,145	130	90	111865	61280	0.85	1.00	110	555	250	17



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Superior County, Missouri
Land Value Analysis
Land / Sale Price Method, Using 20%
FRFT land; Neighborhood 17; All Prices; All sizes; All UPNs; Sale years 2004-2006

Table with columns: Uniform Parcel Number, Rec. Num., Sale Price, Sale Date, Traded Sale Price, Frontg, Dpth, Impr. Value, Ind. Land Value, Factors Dpth, Infl, Eff. Units, Ind. Unit Value, Crrnt Unit Price, Nbh



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**Superior County, Missouri  
Index Calculations**  
For Years 2003 2004 2005; Appraisal Dt. Jan. 2007; Trend 0.00000; Construction Quality D-...C

Parcel Number	Rec Num	Sale Price	Sale Date	Tm'd Sale Price	Land Val.	Ind. Bldg Value	Man'l Cost	Ind. Index	Year Blt	Cast Qty	Nbhd
22-0.4-17-02-07-070.010	316	119500	3/2006	119500	15665	103835	43497	2.39	2005	D	15
22-0.3-07-03-01-010.110	345	153500	3/2005	153500	17625	135875	56568	2.40	2005	D	15
22-0.4-17-02-01-100.400	351	165000	6/2005	165000	23970	141030	43476	3.24	2005	D	15
22-0.9-30-02-02-017.000	359	287000	3/2006	287000	27662	259338	107552	2.41	2005	C	17
22-0.3-07-03-01-001.021	146	152500	8/2004	152500	18976	133524	53840	2.48	2004	D	15
22-0.3-07-03-01-001.009	168	137000	2/2005	137000	11985	125015	45074	2.77	2004	D	15
22-0.3-07-03-01-010.270	311	114500	3/2005	114500	15872	98628	34565	2.85	2004	D	18
22-0.3-07-03-01-010.090	339	137000	2/2005	137000	11985	125015	45074	2.77	2004	D	15
22-0.3-07-03-01-005.000	109	122000	8/2003	122000	18800	103200	50604	2.04	2003	D	15
22-0.4-20-01-36-036.000	134	134000	3/2004	134000	19417	114583	46038	2.49	2003	D	18
22-0.3-07-03-01-005.030	145	134000	8/2004	134000	14805	119195	48359	2.46	2003	D	15
22-0.3-07-03-01-010.060	353	176000	6/2006	176000	18750	157250	59679	2.63	2003	D	17
29-0.2-04-03-10-030.010	388	55900	6/2005	55900	2262	53638	22413	2.39	2003	D	13



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Superior County, Missouri
Depreciation Study
Appraisal Yr 2007; Index 2.80; Neighborhood 17; Sale years 2004-2007; Construction Qualities F to A

Table with columns: Uniform Parcel Number, Rec Num, Sale Price, Sale Date, Trended Sale Price, Land Value, Indicated Building Value, RCN, Ind. Cond., Current Obs., Chart Chd, Yr Bld, Qlty, Nblhd. Contains 25 rows of data.



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#### **1. Neighborhood Sales Ratio**

The neighborhood sale ratio study is the primary tool used to measure mass appraisal performance. A ratio study compares appraised value to sale price. The sale ratio is calculated by dividing the appraised value by the sale price. Sale ratios over 100% indicate that the appraised value is higher than the sale price; ratios under 100% indicate that the appraisal is under the sale price or low, relative to the market.

Sale data should be grouped by neighborhood. Neighborhoods may be any size and may be defined as a geographical area which exhibits homogeneous traits such as age, quality, size, lot size, proximity to services, economic influence or use. A single neighborhood does not necessarily have to be contiguous, although single non-contiguous neighborhoods need to be examined closely in order to avoid drawing conclusions which misrepresent the influence of location. One concern in neighborhood definition is designating neighborhoods that are too small in area, which may not provide sufficient number of sales from which to draw meaningful conclusions.

After the sale ratios are calculated, they may be analyzed to determine some key statistics. Useful statistics include the mean, median and weighted mean ratios. These ratios are measures of central tendency and they provide an insight as to the LEVEL of the appraisals. The mean ratio is simply the arithmetic mean, calculated by summing the ratios and dividing by the number of observations or sales. The median ratio is the midpoint, where half of the ratios are above and the other half are below. To find the median, array the sale ratios (place them in ascending or descending order) and count to the midpoint. If the array contains an even number of ratios, then find the center two ratios, add them together and divide by two. The third average ratio to consider is the weighted mean. The weighted mean is calculated by summing the appraised values and dividing by the sum of the sale prices.

In addition to measures of central tendency, attention should be given to the degree of UNIFORMITY. Uniformity tells how consistent or uniform the appraisals are relative to their sale prices. The coefficient of dispersion (COD) is the primary statistic used in mass appraisal to measure the degree of uniformity or quality of the appraisal program. To calculate the COD, complete the following steps:



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- (1) find the absolute deviation from the median for each sale ratio. The difference between the sale ratio and the median (ignoring the plus or minus sign) is the absolute deviation.
- (2) sum the absolute deviations and divide by the number of ratios. This result is the average absolute deviation.
- (3) divide the average absolute deviation by the median and multiply by 100. The result is the coefficient of dispersion expressed as a percentage.

Ratio study performance standards published by the International Association of Assessing Officers (IAAO) include the following:

Appraisal level: within 10% of the statutory level or between 90% and 110%.

Appraisal uniformity: single-family residences, generally 15% or less.

Newer homogeneous areas: 10% or less.

Another useful statistic is the Price Related Differential (PRD). The price-related differential measures assessment regressivity or progressivity, and is calculated by dividing the mean by the weighted mean. Appraisals are considered *regressive*, PRD greater than 1.03, if high-value properties are under-appraised, and *progressive*, PRD under 0.97, if high-value properties are over-appraised.

Both regressive and progressive PRD's may be caused by misclassifications or systematic problems in appraisal schedules or techniques. Although the PRD may be an indicator of appraisal bias, it is not proof since sampling size can influence results or random sampling error may occur.

See *Exhibit 5.32* for a simple demonstration of the basic statistics described.

## **2. Land Analysis**

Land analysis is conducted to determine the proper land unit rate. The unit rate is expressed in terms of a unit of comparison and may be dollars per front foot, per square foot, or per acre. Ideally, the land unit rate is based on an analysis of vacant or unimproved land sales. Typically, however, the analysis will include improved sales which must be adjusted to account for the improvement value.

After the indicated unit prices are calculated, the appraiser will group the land value indications



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together for comparable areas, array the indicated land unit rates and determine the base land unit rate. In addition the appraiser should examine the indicated land unit rates for variations and determine the cause or reason. Differences in the indicated land unit rates may become the basis for adjustments. For example, parcels that suffer from extreme topography or benefit from an excellent view may yield indicated land unit rates far worse or much better than the typical in a given area. By comparing the extreme rate to the typical rate, a percentage adjustment may be determined which accounts for the difference. For example, if the typical indicated rate is \$100 per front foot, and a sale parcel with poor topography sells for \$80 a front foot, the appraiser might conclude that poor topography deserves an adjustment of \$20 per front foot ( $\$100 - \$80$ ) or a minus twenty percent (-20%). Note, in many applications the adjustment may be expressed as a factor, i.e. 80%.

### **3. Depreciation Study**

In the depreciation study, sales are analyzed to determine, directly from the market, the amount of accrued depreciation or the indicated condition of a sale parcel. The indicated condition, expressed as a percent good, is dependent on two key items. First, the land value abstracted from the sale price must be reasonably current or the resulting indicated building value will be misstated.

Second, the estimate of the replacement cost new (RCN) must be close to current cost or the indicated condition will be over-stated. For example, if a property sold for \$100,000 and the land value is estimated at \$10,000 when the land value is actually \$20,000, then the indicated building value appears to be \$90,000 when it should only be \$80,000. In addition, if the true RCN is \$125,000 but the study uses an RCN of \$100,000 then the resulting indicated condition appears to be 90% ( $90,000 / 100,000$ ) not the true 64% ( $80,000 / 125,000$ ).

The depreciation study provides an indication of net condition and caution must be exercised in applying the results. Net condition reflects not only physical condition, but also the influences of external obsolescence as well as any functional obsolescence that might be present in the subject improvement.

### **4. Index\Manual Level Study**

An index\manual level study is performed to determine a factor (index) which will update costs from



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an appraisal manual to current construction costs within a county.

Data used in the index\manual level study should consist of sales new construction or cost information from actual turn-key, contract built homes, including labor, profit, materials, and any other pertinent costs or fees associated with the construction. Homes built using owner labor are not proper subjects for this study, as construction costs (labor costs) typically are understated and quality are usually influenced. Homes should be of “average” quality for the year built, which may or may not be the “typical” home built in a particular county. Sales or construction costs from the past year up to the past three years may be used. By using data up to three years old, the appraiser may be able to observe market changes or trends. Depending on quantity and quality of the sale or construction cost data, emphasis may be placed on the results from the current year, past two or all three years samples.



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EXHIBIT 5.32  
NEIGHBORHOOD SALES RATIO

Sale Number	Appraised Value	Sale Price	Ratio	Absolute Deviation
8	\$ 82,000	\$ 118,000	0.70	0.19
4	90,000	120,000	0.75	0.14
7	98,750	125,000	0.79	0.10
2	92,400	105,000	0.88	0.01
6	82,800	92,000	0.90	0.01
3	95,000	100,000	0.95	0.06
5	111,550	115,000	0.97	0.08
1	86,700	85,000	1.02	0.13
Totals:	739,800	860,000	6.96	0.72

Mean Ratio 0.87

Median Ratio 0.89

Weighted Mean Ratio 0.86

Coefficient of Dispersion  $(0.72/8) = 0.09$

$(0.09/0.89) \times 100 = 10.11\%$

Price-Related Differential  $0.87 / 0.86 = 1.01$