

**Marine Boundary Working Group and FGDC Subcommittee on  
Cadastral Data  
Joint Session – January 10, 2003**

This document contains information generated for and as a result of the meeting between the Marine Boundary Working Group and the Subcommittee on cadastral data.

The consensus of the group was that the existing Cadastral Data Content Standard does meet the needs for the standardization of content for marine boundary information. The marine boundary content may expand the feature level metadata to include the elements specific to their boundaries.

The group discussed the types of standards that can be developed based on the FGDC standards. This discussion is included in Appendix A.

The group reviewed the types of legal descriptions that are addressed in the standard. These descriptions are included in Appendix B.

The Current FGDC Cadastral Data Content Standard is available on the web at <http://www.fairview-industries.com/ansi.html>

## **Appendix A**

### **Materials Developed Prior to the Meeting**

#### **Marine Cadastre**

Discussion with the cadastral Subcommittee and the Marine Boundary Working Group

The purpose of this discussion will be to get members of both groups familiar with the activities and goals of both groups. The Marine Boundary Working group may have standards needs that can be met by the Cadastral Content Standard and the Cadastral Subcommittee may have applications and needs for marine cadastral elements. The Cadastral Data Content Standard defines and describes what needs to be included when describing a cadastral parcel or boundary. It never was meant to define the process of how one goes about doing that since that will be a process unique to each (governmental) agency because of their "mission" and "business" requirements.

### **1. Standards – what are they and what can be standardized?**

The FGDC Standards Reference Model (March 1996) describes the types of standards that may apply to the NSDI. These include:

**Agency Standards** - Agency standards may be developed to support specific applications or mandates within one agency. Any agency or organization may support or recognize an agency standard. Typically the sphere of influence in the development, maintenance, and use of an agency standard is contained within a single agency. Cooperative agreements between or among agencies to develop specific standards are included in Agency Standards.

**Federal Information Processing System Standards** - Federal Information Processing System (FIPS) Standards are developed to standardize data and processes among federal agencies. Their goal is to gain efficiency and economy through widespread use. These standards are generally mandated for use by federal agencies.

**Federal Geographic Data Committee Standards** - FGDC Standards are developed in response to OMB Circular A-16 and EO 12906, which mandate data sharing, and adherence to common standards for Federal agencies. They are intended to be national in scope and to go beyond individual agencies and the federal government enterprise. They support national and collective decision-making and applications and are developed jointly by federal, state, and local governments and other interested participants. They are only mandatory for federal agencies.

**Industry Standards** - Industries Standards are developed in the private sector by cooperating firms. Their production may be coordinated by a single firm, a group of firms, a not-for-profit organization or a standards organization. These standards are voluntary unless conformance is mandated through contract or agreement.

**American National Standards** - American National Standards (ANS) are endorsed by the American National Standards Institute (ANSI) and are national in scope. These are voluntary standards developed and supported by commercial industries that implement technology, but any individual or organization including governments can participate in the development of an ANS.

**International Standards** - The International Organization for Standardization (ISO) is the primary international standards organization for information technology. Organizations gain access to ISO through their national standards body. In the U.S. this is ANSI.

Within the FGDC standards development process there are many types or categories of standards that can be developed to support the NSDI. These are described in the Standards Reference Model and are as follows:

#### Data Standards

**Data Classification** - Data classification standards provide groups or categories of data that serve an application. Data classification data standards are the attributes common to elements of a group. Examples are wetland and soil classifications. See process standards for standards on how to apply a data classification standard.

**Data Content** - Data content standards provide semantic definitions of a set of objects. Data content standards may be organized and presented in a data model such as an entity-relationship model or an IDEF1X model.

**Data Symbolology or Presentation** - Data symbolology or presentation standards define graphic symbols. They standardize the language for describing those symbols. See processes standards for methods for applying symbols and the rules for displaying them.

**Data Transfer** - Data transfer standards are independent of technology and applications and facilitate moving data among systems, without prior specification of the intended end use of the data. The Spatial Data Transfer Standard (SDTS) is an example of a data transfer standard, which is endorsed by FGDC. SDTS is FIPSPUB 173. Profiles or domains of values for SDTS will be defined by FGDC Subcommittees and working groups. Transfer standards that are specific to a technology, such as the FTP (File Transfer Protocol) on the Internet, are outside the scope of FGDC.

**Data Usability**- Data Usability standards describe how to express the applicability or essence of a data set or data element and include data quality, assessment, accuracy, and reporting or documentation standards. The FGDC Content Standard for Geospatial Metadata Standard is an example of a Data Usability Standard.

#### Process Standards

**General Data Transfer Procedures** - General data transfer procedure standards are the activities required to convert data to a general data format, such as SDTS, for general access.

**Specific data requires Specific Data Transfer Procedures** - Specific data transfer procedure standards are the activities or requirements needed to fulfill a specific data request for a known activity in a known data structure. This might be a repeated and ongoing data distribution as opposed to ad hoc data request

**Data Access Procedures** - Data access procedure standards are the procedures required to gain access to an existing data set in a known data format, such as the methods and procedures required to access an existing data posting on the World Wide Web or a bulletin board.

**Classification Methodology** - Classification methodology standards are the procedures to follow to implement a data classification standard. It describes how data are analyzed to produce a classification. The processes that are followed to achieve data precision are examples of classification methodologies.

**Data Collection** - Data collection procedure standards are the methods and processes for the collection of new or conversion of existing data.

**Storage Procedures** - Storage procedure standards address the mechanisms and schedules for archiving or backing up data. If appropriate, the storage procedures also address the storage media.

**Presentation Standards** - Presentation standards are the methods for displaying or formatting information from a data set or data standard.

**Data Analyzing Procedures** - Analytical procedures include the methods for computing, comparing, contrasting, assembling, or evaluating a data set for an application or specified product.

**Data Integration** - Data integration procedures are the methods for combining various data sets into a unified, geographically harmonious data set. Data generalization standards are a data integration process standard.

**Quality Control and Quality Assurance** - Quality control and quality assurance processes are respectively the methods followed to achieve a specified quality and the methods to check the quality of an existing data set. Precision for measurements or other activities are included in these standards.

## **2. The Cadastral Data Content Standard**

- The Cadastral Standard is a data content standard that describes the semantic definitions for cadastral features and the relationships among those features.
- Cadastral data describe the rights and interests in land, air and water. These rights and interests include restrictions, such as limitations on use, ownership, and leasing.
- The Cadastral Data Content Standard does not describe the authorities for agencies to assert their right to control, change or impose restrictions but it does capture the result of those actions on the land.
- The Cadastral Data Content Standard is not an implementation standard. It does not provide a physical data structure such as that needed for a geographic information system to implement the data in a particular system.
- The Cadastral Data Content Standard does support the description of the rights, interests, and restrictions of the marine cadastre including the description of restrictions to use off shore.
- The Cadastral Data Content Standard was not developed in an onshore vacuum. The Navy, the Core of Engineers (COE) and the MMS were active participants.

Other agencies with offshore interests were invited during comment periods and other review sessions.

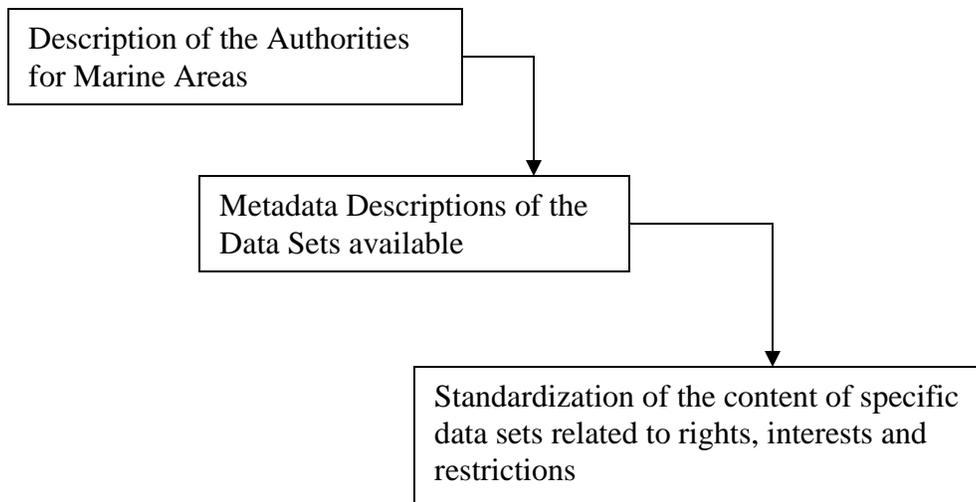
### 3. Offshore-Marine Standards and Issues

The offshore and marine areas have many authorities and jurisdictions that control how and where rights and interests and restrictions are placed and managed. One of the key differences between the offshore and onshore areas is that, in general, there are more public agencies that have a greater level of control over the definition of the rights, interests and restrictions in the offshore area than on land. The competing mandates and authorities among these public agencies can create confusion as to the extent and definition of rights, interests and restrictions offshore. For example, one agency may issue a lease for oil extraction; another may limit fishing rights and third may use the area for bombing practice. All of these rights and restrictions may be properly authorized and issued by Congress, yet there are clearly some competing priorities in these rights, interests and restrictions.

One of the first issues facing the marine communities, specifically the marine agencies, is to describe the authorities, the spatial extent of those authorities, and the rights, interests and restrictions within those authorities. If this information were available on a web portal, decision making by the agencies constructing the boundaries defining rights or limitations on use would be better known.

Once the extents of the authorities of the agencies have been well described, the next step is to describe what data are available. The FGDC metadata standard, as supplemented with cadastral content information, could describe the methods of construction, the spruce, the quality, the fitness for use and the boundaries contained within any given data set.

For any given data set the description of the specific boundaries, rights, interests, and restrictions can be supported by the Cadastral Content standard. The order of these events and standardization efforts might be as shown below.



These are the data standards, which means these are the standards that describe how information from a particular decision or action are captured in a way that it can be shared with others.

The Marine Community may also have a requirement to define process standards, which are standards describing how information from a decision or activity are captured and stored.

Some examples of process standards that may exist in the marine community are as follows

- Data Collection Standards – how information is collected or automated. For example, there might be a set of standards regarding digitizing a nautical chart. A nautical chart represents a decision or action and it is collected to a defined standard. A new standard may be needed to describe how to automate the chart.
- Data Analyzing Procedures – these standards might describe how particular information is evaluated or adjusted to define a particular marine boundary. Standards related to which datum to use, geodetic or plane computations and specification of particular algorithms fall into this category of standards. There are many existing data analyzing standards in the marine community already most of these are captured in agency mandates and manuals.
- Data Integration – These might be a set of standards that describe how information from multiple agencies will be assembled to produce a marine cadastral representation. Perhaps these standards describe which agencies have authority for which boundaries, the update frequency of these boundaries and how these boundaries are to be combined to produce a single marine cadastre. All of the contributing agencies would describe the data access, quality, fitness for use, and extent of the data they would contribute to a data integration effort.

## Appendix B

### Types of Legal Descriptions

The following are the types of legal descriptions that are addressed within the Cadastral Data Content Standard. This document is also included as a pdf file that may have clearer graphics.

#### Perimeter Descriptions

**Bounds Descriptions** - perimeter descriptions without a direction of travel.

**Metes Descriptions** - perimeter descriptions with a direction of travel described by a series of measurements.

#### Strip Descriptions

**Strip Descriptions** - description of a centerline with an offset on either side can also be a radial description with a center point and a distance or radius around the point. Sometimes stationing is provided along the line with the offset along the stationing.

#### Area Descriptions

**Descriptions by Reference** - Reference to a recorded map or plat. These are common "area descriptions". The map or plat contains the linear measurements necessary to describe the areas.

**Sectionalized Descriptions** - Sectionalized descriptions are based on divisions of the Public Land Survey System. The size and shape of areas are based the rules of division of the PLSS.

#### Other Descriptions

**Description by Calls** - Description by reference to physical objects. These are sometimes called deed calls or running out the calls.

**Description by Division Line** - This is a division of an existing or previously defined area, such as a lot or a PLSS Section, dividing by a described line. This type of description always creates a remainder or other area that must be described as well. The line may be a measurement, such as metes or a natural feature, such as call to a river or a road. This is a combination description because an area must be identified and then divided.

**Description by Distance** - This is a division of an existing or previously defined area, such as a lot, by dividing by a described line. This type of description always creates a remainder or other area that must be described as well. The distance is usually specified with respect to an existing boundary, such as the North 50 feet of a lot.

**Descriptions by Proportional Conveyances** - This is a division of an existing or previously defined area by specifying a proportion of area, such as half or quarter. This type of description always creates a remainder or other area that must be described as well. Proportional conveyances are not the same as sectional descriptions of the PLSS

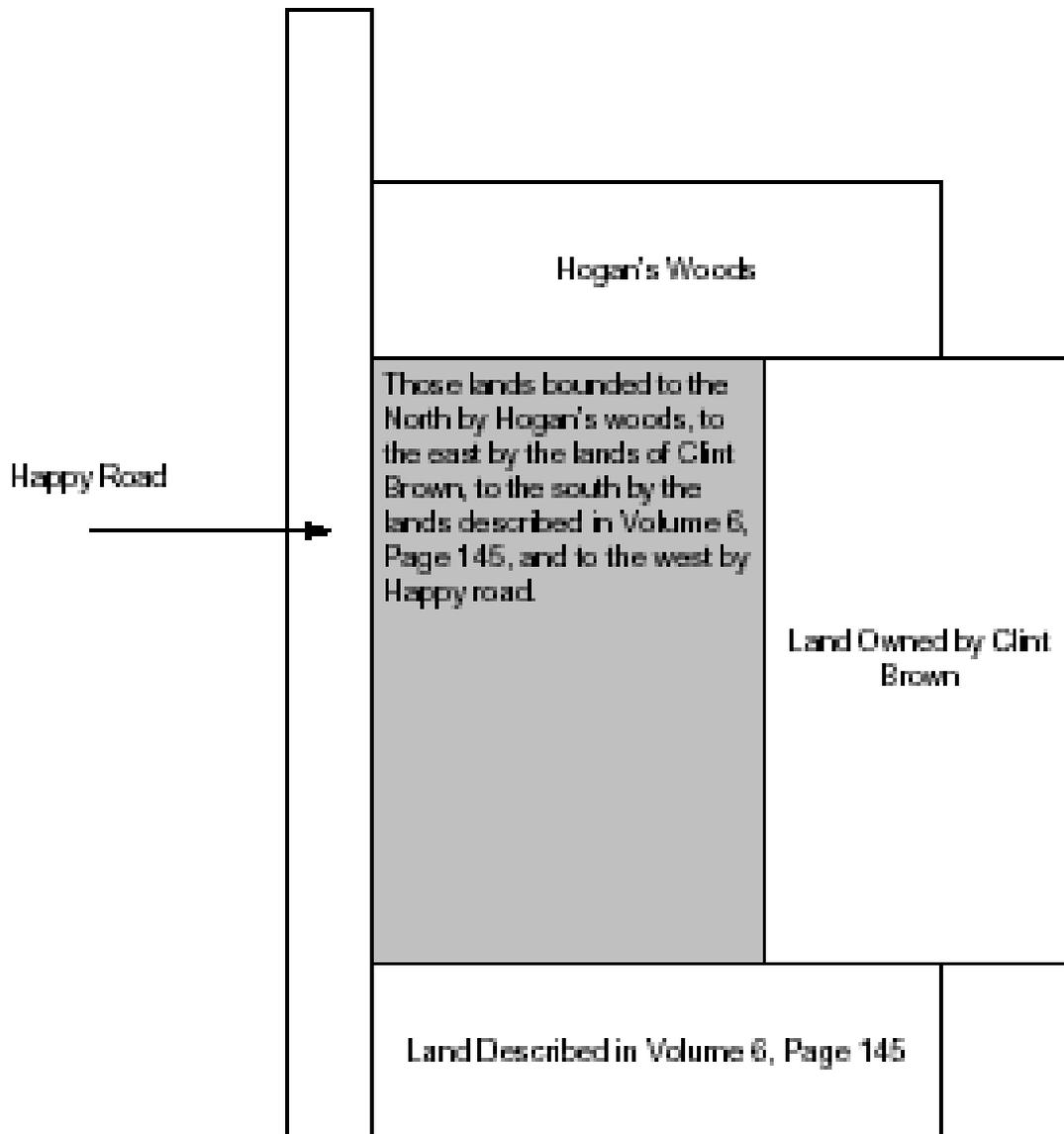
**Description by Exception** - This is a division of an existing or previously defined area, and then excepting out an area. The exception can be any

exempt area. This type of description always creates a remainder or other area that must be described

**Description by Acreage** - This is a division of an existing or previously defined area, such as a lot or a PLSS Section, by specifying an area amount. This is similar to the proportional area, except the amount of acreage being described is stated such as 10 acres.

**Ambiguous Descriptions** - These are descriptions of areas or extents of land that cannot be solved without significant research into the intent of the parties participating in the description and subsequent conveyance.

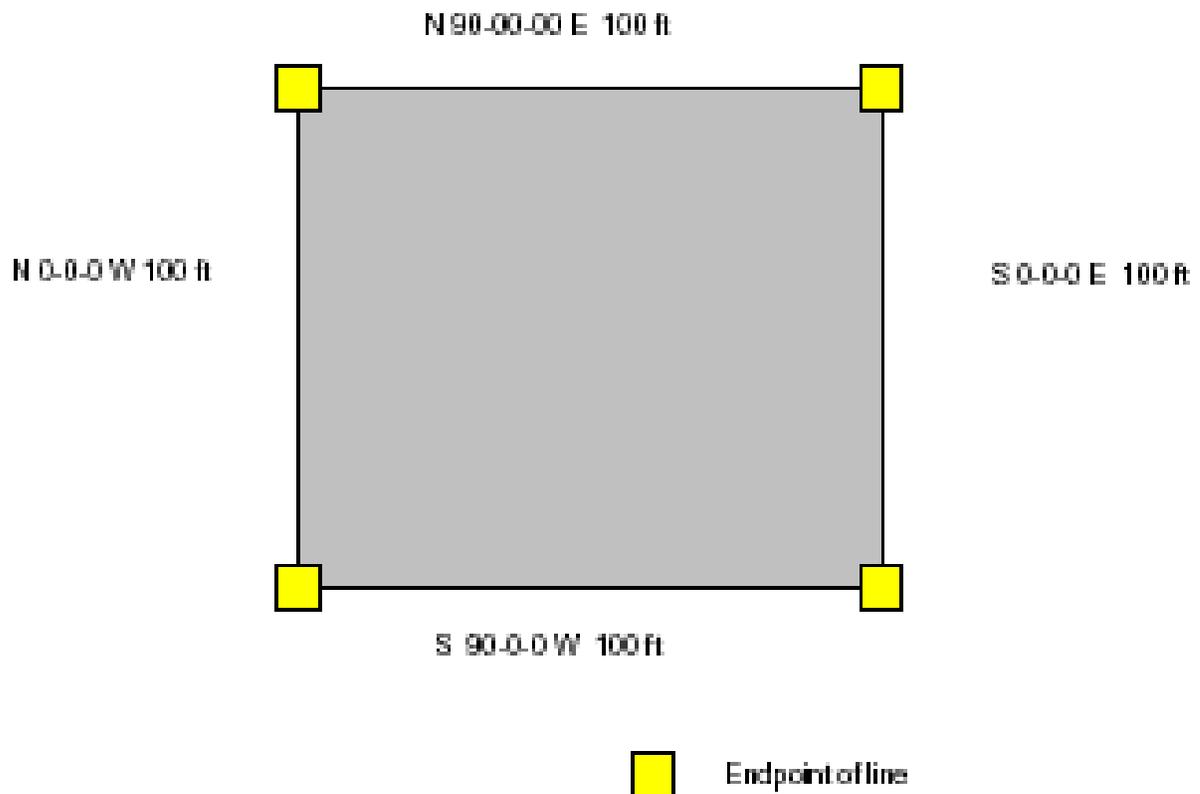
## Bounds Descriptions



Bounds descriptions - perimeter descriptions without a direction of travel. Problems include:

1. finding the adjoining lands or bounds and locating them,
2. uncertainty in locating where the adjoining or bounding lands are located with respect to the current parcel. For example in the example above, does the described land extend to the center of the road or the edge of the road.

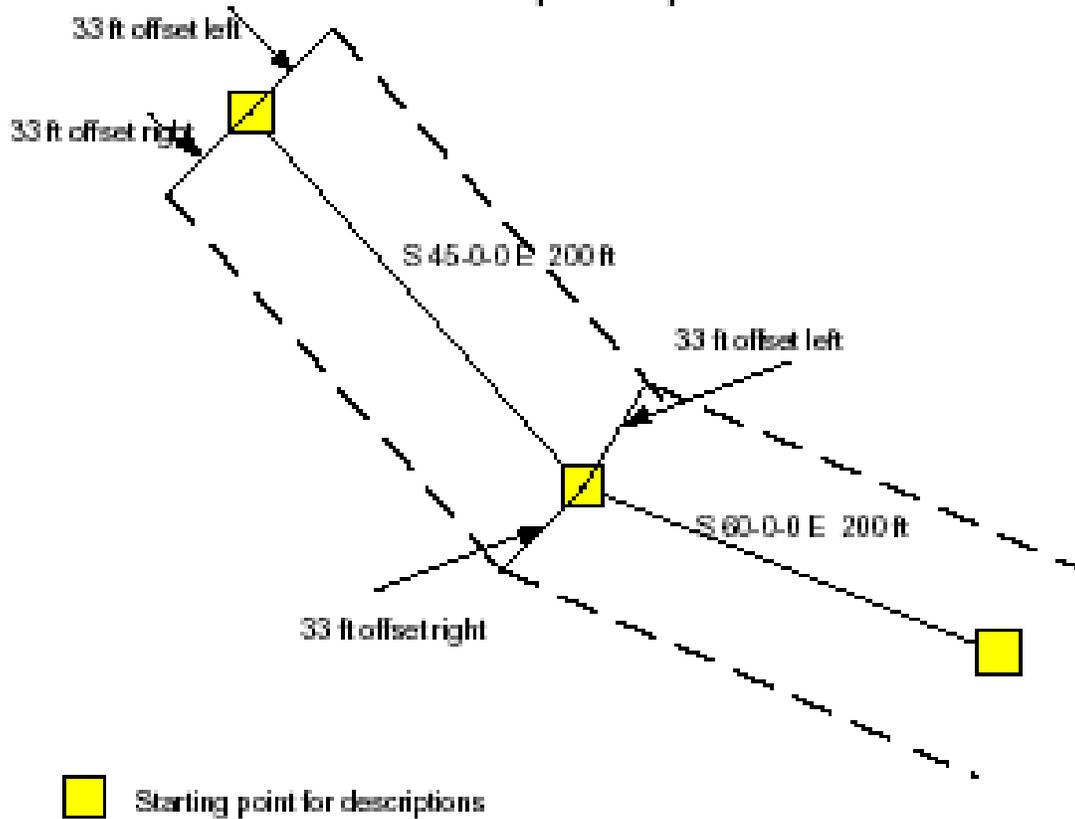
## Metes Descriptions



Metes descriptions - perimeter descriptions with a direction of travel described by a series of measurements. Problems include:

1. measurements may not form a closed area,
2. uncertainty in determining the basis of bearing for the directions
3. uncertainty of the units of measure for lengths or distances

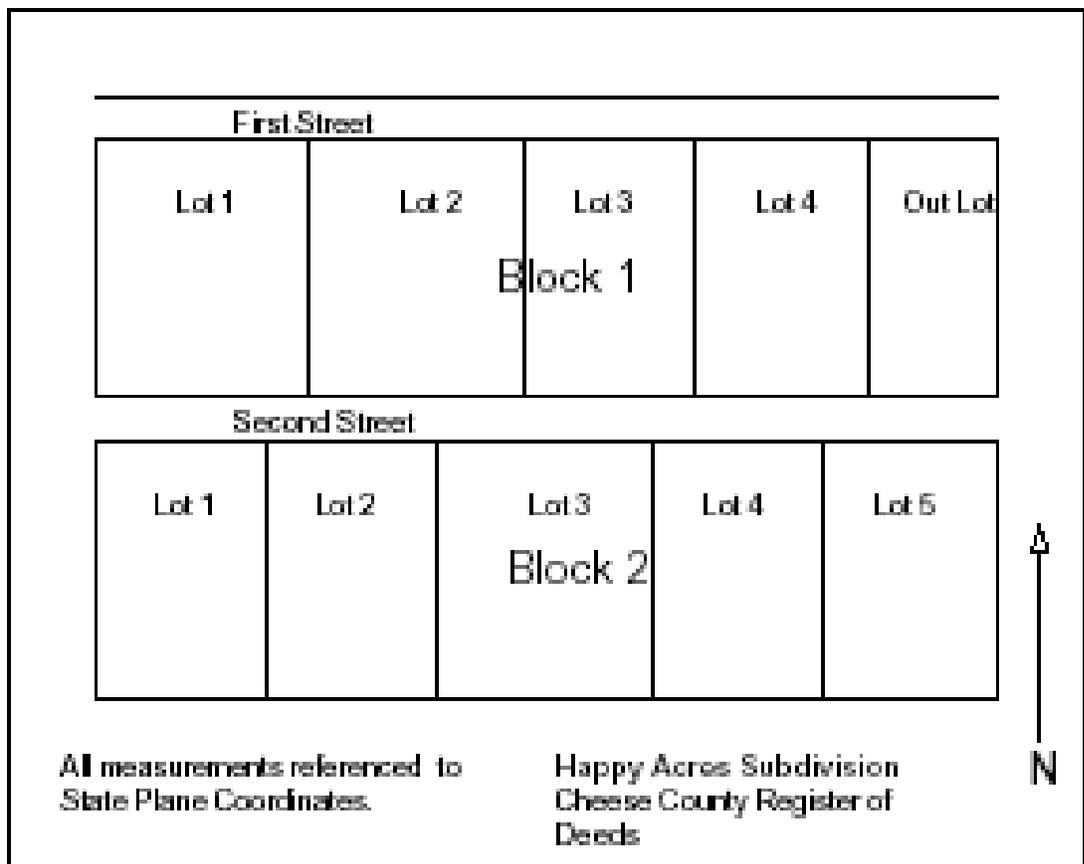
## Strip Descriptions



Strip descriptions - description of a centerline with an offset on either side. Can also be a radial description with a center point and a distance or radius around the point. Sometimes stationing is provided along the line with the offset along the stationing. Problems include:

1. determining the location and centerline,
2. determining the shape and location of the ends of the strip
3. handling stationing especially if it is based on project locations and not referenced to a real world location.

## Descriptions by Reference



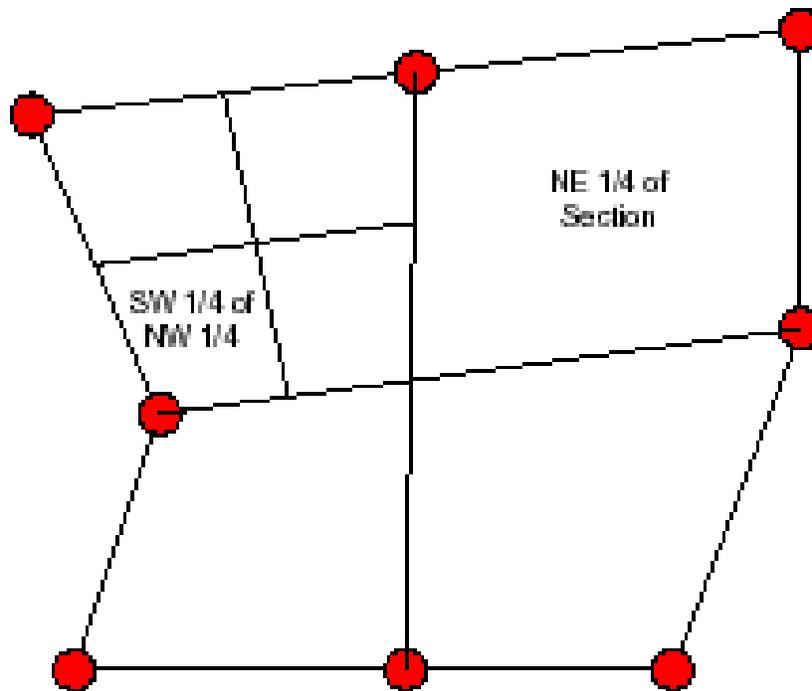
Sample description could be Lot 2 Block 2 Happy Acres Subdivision Cheese County.

Descriptions by Reference - Reference to a recorded map or plat. These are common "area descriptions". The map or plat contains the linear measurements necessary to describe the areas.

Problems include:

1. Sometimes these descriptions are made based on combinations of references such as lots 1 and 2 of a block and plat.
2. Plats can be overlapping.
3. It is possible that the measurements within a plat or map may not close into polygons.
4. The external boundaries of adjoining plats and maps may not match exactly.

## Sectionalized Descriptions

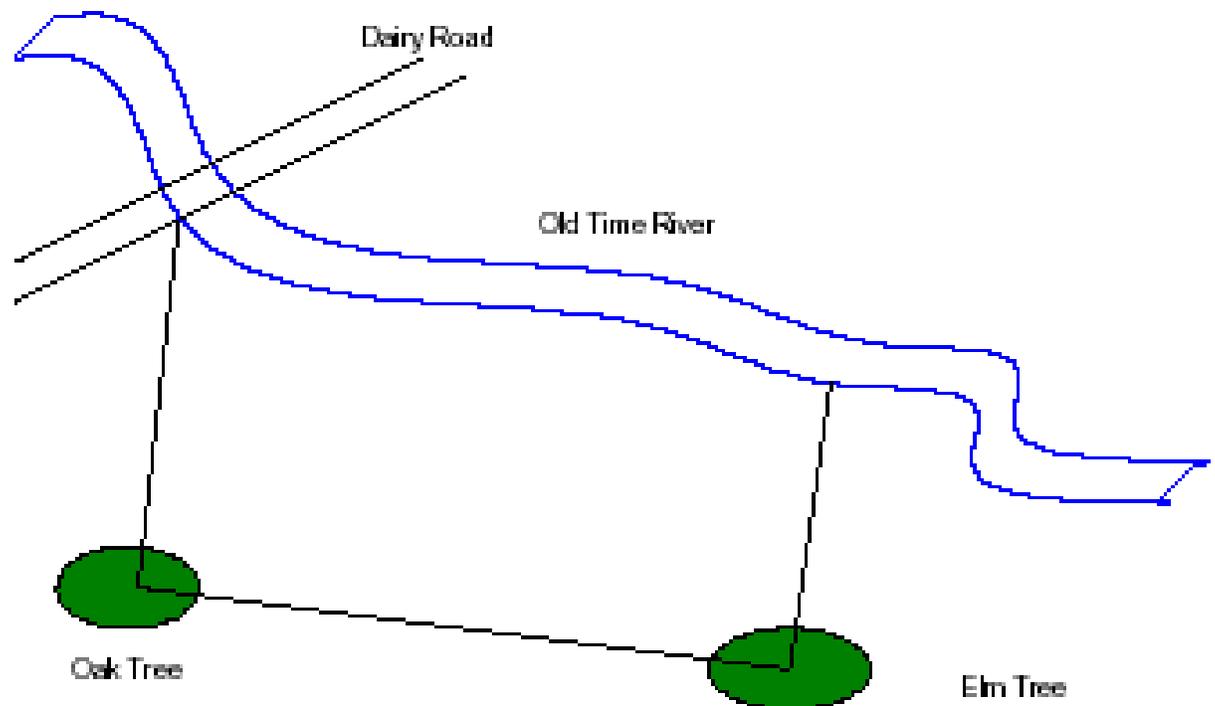


Sample descriptions are portions of sections described as quarters. The divisions are obtained through successive division of halving and quartering based on the rules of division present at the time of the section's first division.

Sectionalized Descriptions - Referenced to a division of the Public Land Survey System (PLSS). The rules and order of division are prescribed from sets of survey instructions, state laws, and possession evidence. Problems include:

1. The rules of the division are established at the time of first division
2. Placed monuments control successive divisions
3. Misunderstanding of the use and division of sections

## Description by Calls

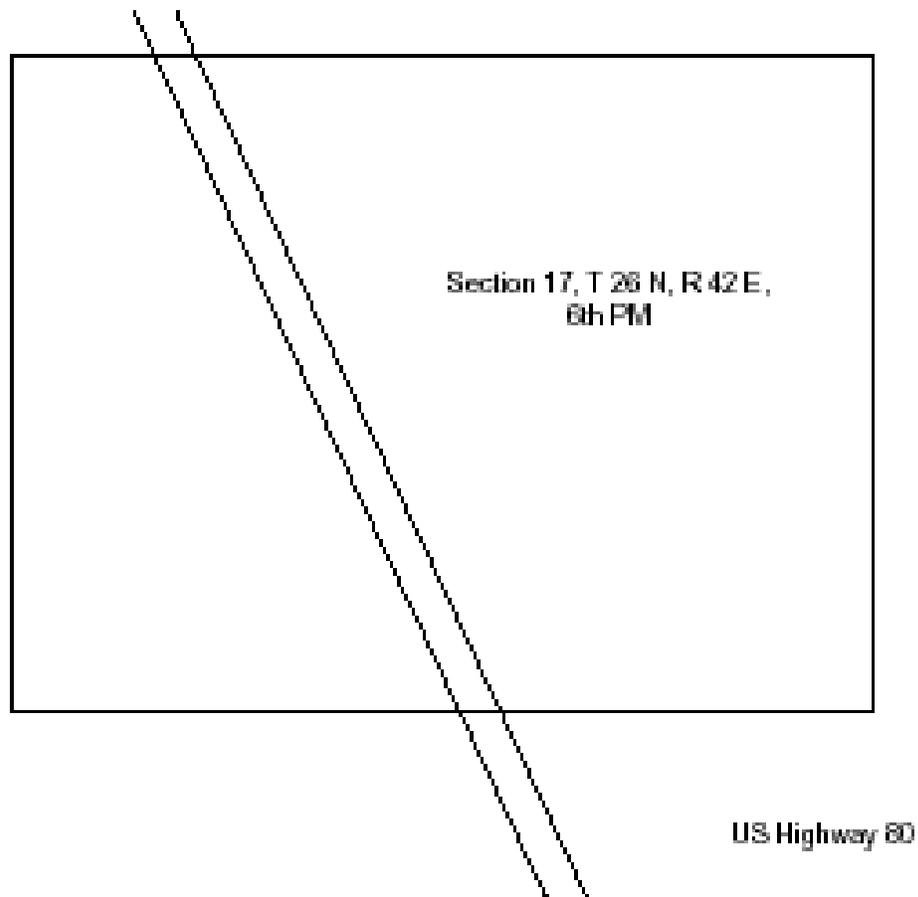


Beginning at the center of old time river where it crosses dairy road, thence southerly to an oak tree, thence easterly to an elm tree, thence northerly to the center of Old Time River, thence along the center of Old Time River to the point of beginning.

Descriptions by Call - Description by reference to physical objects. These are sometimes called deed calls or running out the calls. Problems with Descriptions by Call:

1. Locating the objects can create uncertainty
2. The order of importance of conflicting information from the calls can create uncertainty or ambiguity, for example, if a call mentions a river and a tree as the same point and the two objects are in different places, then the correct location has to be determined

## Description by Division Line

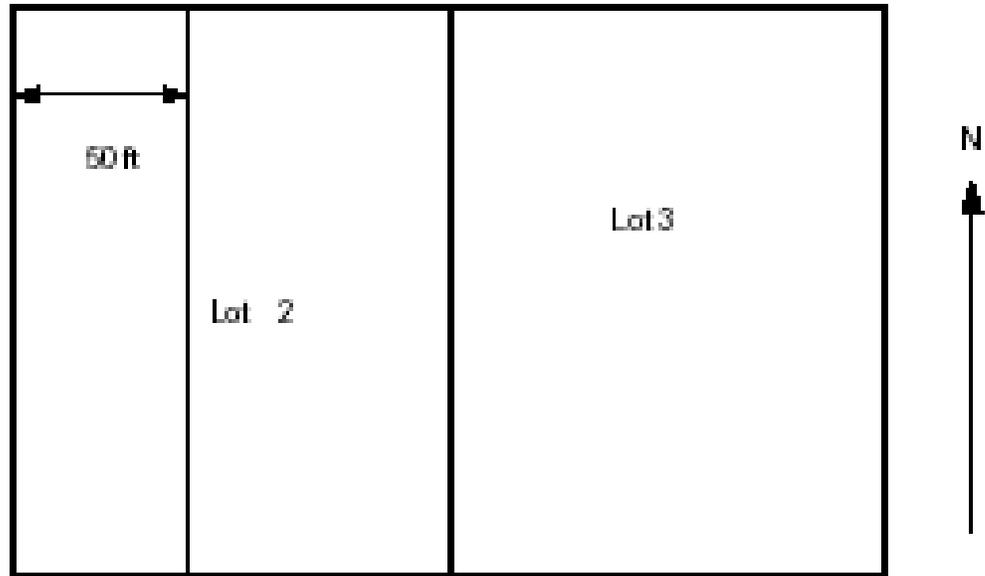


Sample description - all the lands laying west of highway 80, Section 17, T 26 N, R 42 E, 6th PM

**Description by Division Line** - This is a division of an existing or previously defined area, such as a lot, by dividing by a described line. This type of description always creates a remainder or other area that must be described as well. The line may be a measurement, such as metes, or a natural feature, such as a river, or other feature. This is a combination description because an area must be identified and then divided. **Problems with Description by Division Line:**

1. Locating the division lines can be difficult, see description by calls
2. This can create uncertainty if the description of the division does adequately account for the entire area.

## Description by Distance



The westerly 50 feet of lot 2.

**Descriptions by Distance** - This is a division of an existing or previously defined area, such as a lot, by dividing by a distance from a specified boundary line. This type of description always creates a remainder or other area that must be described as well. The distance has a reference boundary or side and a distance. **Problems with Descriptions by Distance:**

1. Where to measure the distance from can be a problem of interpretation
2. The definition of parallel and perpendicular can be problematic for the same reason as above, determining where and with reference to which lines and features can be a problem

## Descriptions by Proportional Conveyances

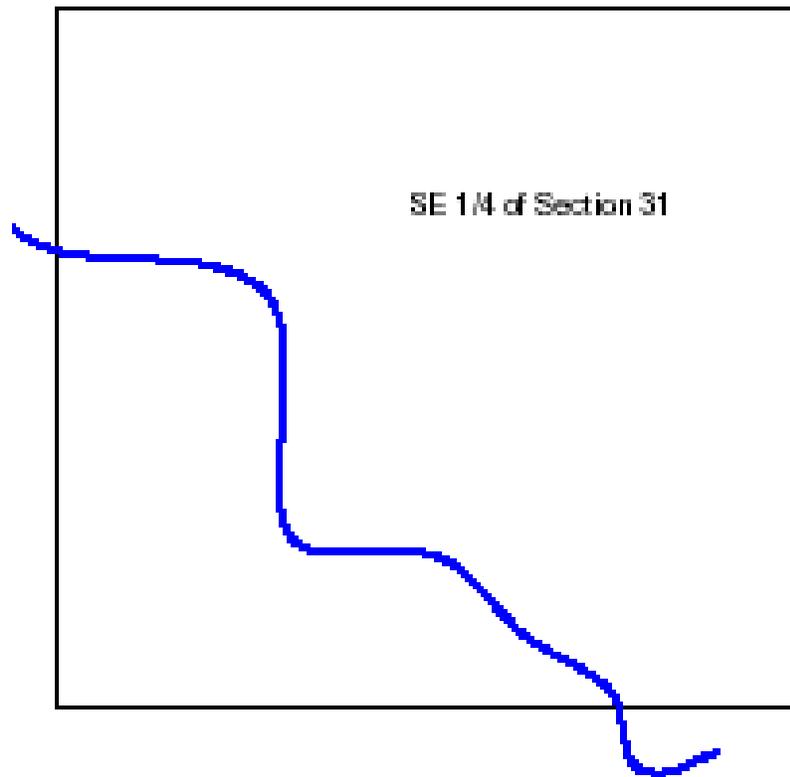


Example of a proportional description - North half of Lot 6.

Descriptions by Proportional Conveyances - This is a division of an existing or previously defined area, such as a lot, by specifying a proportion of area, such as half or third. If the amount of acres are specified, such as the North 30 acres, then it is a description by acreage and not a proportional description. This type of description always creates a remainder or other area that must be described as well. Problems with Descriptions by Proportional Conveyances:

1. The direction of the dividing line may be indeterminate, implied or not given
2. There can be many ways to divide an area in half.
3. The geometric shape of the parcel being divided can complicate proportionate descriptions.

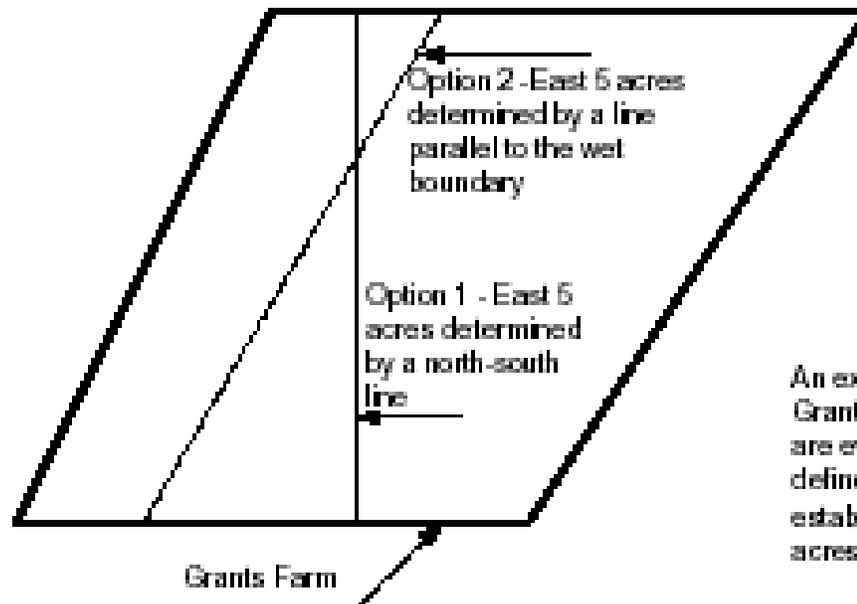
## Description by Exception



SE 1/4 of Section 31 except those lands lying south east of the river.

**Descriptions by Exception** - This is a division of an existing or previously defined area, and then excepting out an area. The exception can be any exempt area. This type of description always creates a remainder or other area that must be described as well. The exception can be described by any of the methods previously listed. Problems with Descriptions by Exception are the same as those problems with the methods used to exclude the area.

## Description by Acreage



An example - East 5 acres of Grants Farm. The problems are evident in how is east defined for the purpose of establishing which east 5 acres.

**Descriptions by Acreage** - This is a division of an existing or previously defined area, such as a lot or a PLSS Section, by specifying an area amount. This is similar to the proportional area, except the amount of acreage being described is stated such as 10 acres. This type of description always creates a remainder or other area that must be described as well.

**Problems with Descriptions by Acreage:**

1. The direction and placement of division lines may be uncertain and subject to interpretation.
2. The remainder description can be problematic.

## **Ambiguous Descriptions**

Ambiguous Descriptions - These are descriptions of areas or extents of land that cannot be solved without significant research into the intent of the parties participating in the description and subsequent conveyance. These are sometimes called "of descriptions" but can take other forms as well. For example 50 feet of lot 2 may be indeterminate and may not be able to be placed without additional information.

Another example is the East 350 feet of lot 3 except the south 150 feet. Some of these appear to be descriptions by distance, but depending on the configuration of the parcel or area being dividing the "of "in the description is a key to identifying a legal description that might be problematic.