

Appendix A – Soil Borrow Site USGS Soil Reports



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NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Valley County, Montana**

Glasgow Levee Borrow Area 1



March 30, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

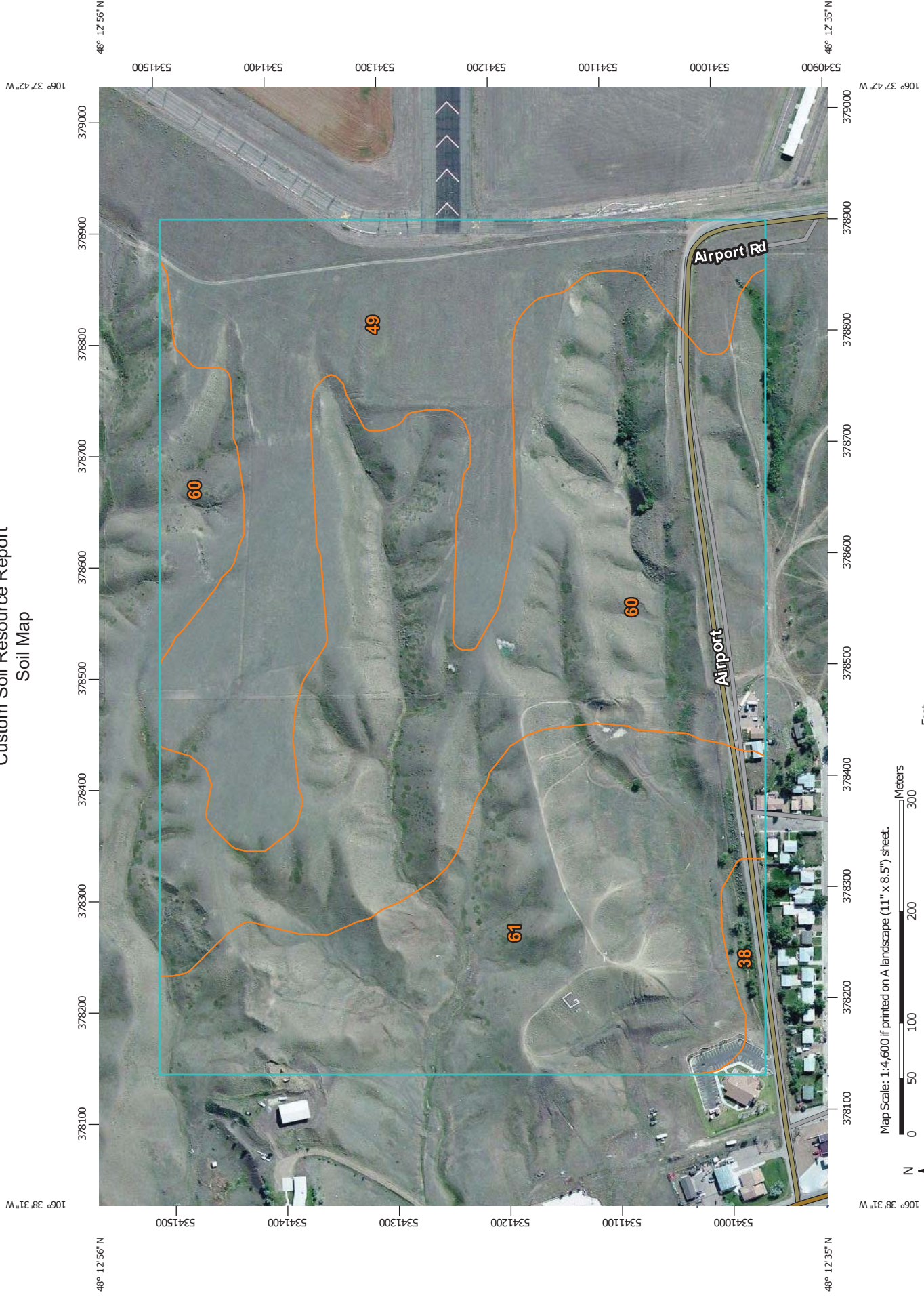
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:4,600 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84


MAP LEGEND


Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points


Special Point Features


 Blowout


 Borrow Pit


 Clay Spot


 Closed Depression


 Gravel Pit


 Gravelly Spot


 Landfill


 Lava Flow


 Marsh or swamp


 Mine or Quarry


 Miscellaneous Water


 Perennial Water


 Rock Outcrop


 Saline Spot


 Sandy Spot


 Severely Eroded Spot


 Sinkhole


 Slide or Slip


 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot


 Other


 Special Line Features


Water Features


 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Valley County, Montana
Survey Area Data: Version 19, Sep 28, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Valley County, Montana (MT105)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38	Marias clay, 1 to 9 percent slopes	1.5	1.4%
49	Phillips-Kevin complex, 2 to 8 percent slopes	27.9	26.9%
60	Sunburst clay loam, 9 to 35 percent slopes	46.4	44.8%
61	Sunburst-Lisam complex, 9 to 35 percent slopes	27.8	26.8%
Totals for Area of Interest		103.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic

classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Valley County, Montana

38—Marias clay, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: clkx
Elevation: 1,900 to 4,800 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Marias and similar soils: 95 percent
Marias and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marias

Setting

Landform: Lake plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: clay
Bss - 6 to 27 inches: clay
Bssy - 27 to 74 inches: clay

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

Description of Marias

Setting

Landform: Alluvial fans
Down-slope shape: Linear

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Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

A - 0 to 15 inches: silty clay
Bss - 15 to 33 inches: clay
Bssy - 33 to 60 inches: clay

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 6 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 13.0
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

Minor Components

Sunburst

Percent of map unit: 2 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) 10-14" p.z. (R054XE530MT)

Lonna

Percent of map unit: 1 percent
Landform: Lake plains, fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Silty (Si) RRU 58A-E 10-14" p.z. (R058AE001MT)

Absher

Percent of map unit: 1 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

Vaeda

Percent of map unit: 1 percent
Landform: Flood plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

Ecological site: Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

49—Phillips-Kevin complex, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2vyr1

Elevation: 2,000 to 3,870 feet

Mean annual precipitation: 10 to 14 inches

Mean annual air temperature: 39 to 46 degrees F

Frost-free period: 100 to 140 days

Farmland classification: Not prime farmland

Map Unit Composition

Phillips and similar soils: 45 percent

Kevin and similar soils: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Phillips

Setting

Landform: Moraines

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Clayey till

Typical profile

A - 0 to 2 inches: loam

E - 2 to 7 inches: loam

Bt - 7 to 11 inches: clay

Btk - 11 to 15 inches: clay loam

Bk - 15 to 36 inches: clay loam

BCyz - 36 to 50 inches: clay loam

Cz - 50 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 12 percent

Gypsum, maximum in profile: 4 percent

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Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 12.0

Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Description of Kevin

Setting

Landform: Moraines

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Clayey till

Typical profile

Ap - 0 to 6 inches: clay loam

Bt - 6 to 9 inches: clay loam

Bk1 - 9 to 23 inches: clay loam

Bk2 - 23 to 41 inches: clay loam

BCyz - 41 to 57 inches: clay loam

Cz - 57 to 79 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 14 percent

Gypsum, maximum in profile: 4 percent

Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 12.0

Available water storage in profile: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Minor Components

Hillon

Percent of map unit: 4 percent

Landform: Moraines

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Crest

Down-slope shape: Convex

Across-slope shape: Convex

Thoeny

Percent of map unit: 4 percent

Landform: Moraines

Down-slope shape: Linear

Across-slope shape: Linear

Elloam

Percent of map unit: 3 percent

Landform: Moraines

Down-slope shape: Linear

Across-slope shape: Linear

Ethridge

Percent of map unit: 3 percent

Landform: Ground moraines

Microfeatures of landform position: Swales

Down-slope shape: Linear

Across-slope shape: Concave

Nishon

Percent of map unit: 1 percent

Landform: Depressions on ground moraines

Down-slope shape: Concave

Across-slope shape: Concave

60—Sunburst clay loam, 9 to 35 percent slopes

Map Unit Setting

National map unit symbol: clhq

Elevation: 1,900 to 5,500 feet

Mean annual precipitation: 10 to 13 inches

Mean annual air temperature: 39 to 45 degrees F

Frost-free period: 110 to 130 days

Farmland classification: Not prime farmland

Map Unit Composition

Sunburst and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sunburst

Setting

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Typical profile

A - 0 to 4 inches: clay loam

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Bk - 4 to 28 inches: clay loam

Bky - 28 to 60 inches: clay loam

Properties and qualities

Slope: 9 to 35 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)

Minor Components

Scobey

Percent of map unit: 4 percent

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Hillon

Percent of map unit: 4 percent

Landform: Hillslopes on till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)

Thebo

Percent of map unit: 4 percent

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

Phillips

Percent of map unit: 4 percent

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Cabbart

Percent of map unit: 2 percent

Landform: Hillslopes, ridges

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Shallow (Sw) RRU 58A-E 10-14" p.z. (R058AE019MT)

Lisam

Percent of map unit: 2 percent

Landform: Hillslopes

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Shallow Clay (SwC) RRU 58A-E 10-14" p.z. (R058AE199MT)

61—Sunburst-Lisam complex, 9 to 35 percent slopes

Map Unit Setting

National map unit symbol: cllr

Elevation: 1,900 to 5,500 feet

Mean annual precipitation: 10 to 14 inches

Mean annual air temperature: 39 to 45 degrees F

Frost-free period: 100 to 130 days

Farmland classification: Not prime farmland

Map Unit Composition

Sunburst and similar soils: 40 percent

Lisam and similar soils: 35 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sunburst

Setting

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Typical profile

A - 0 to 4 inches: clay loam

Bk - 4 to 28 inches: clay loam

Bky - 28 to 60 inches: clay loam

Properties and qualities

Slope: 9 to 35 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)

Description of Lisam

Setting

Landform: Hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from clayey shale

Typical profile

A - 0 to 12 inches: clay
Cr - 12 to 60 inches: weathered bedrock

Properties and qualities

Slope: 9 to 35 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Shallow Clay (SwC) 10-14" p.z. (R052XC215MT)

Minor Components

Thebo

Percent of map unit: 10 percent
Landform: Hillslopes
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

Elloam

Percent of map unit: 5 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Dense Clay (DC) 10-14" p.z. (R052XC206MT)

Phillips

Percent of map unit: 3 percent
Landform: Till plains

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Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Tinsley

Percent of map unit: 2 percent

Landform: Hillslopes

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Gravelly (Gr) LRU 53A-Y (R053AE621MT)

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NRCS

Natural
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Conservation
Service

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agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Valley County, Montana**

Glasgow Borrow Area 2



March 30, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

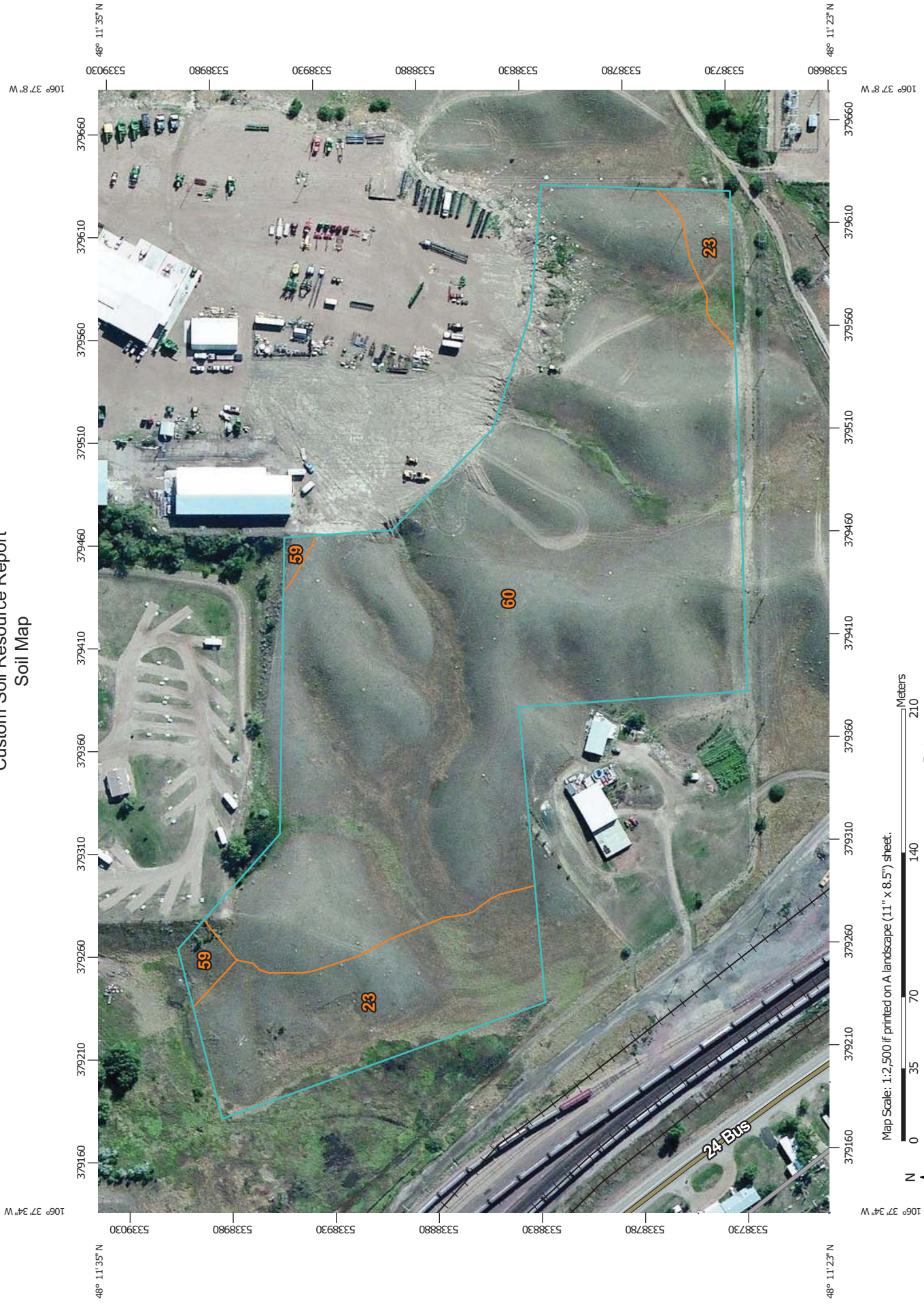
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

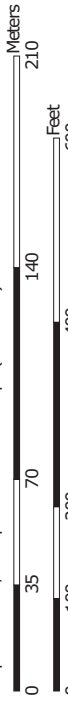
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:2,500 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84


MAP LEGEND


Area of Interest (AOI)

Area of Interest (AOI)


Soils


Soil Map Unit Polygons


Soil Map Unit Lines


Soil Map Unit Points


Special Point Features


Blowout


Borrow Pit


Clay Spot


Closed Depression


Gravel Pit


Gravelly Spot


Landfill


Lava Flow


Marsh or swamp


Mine or Quarry


Miscellaneous Water


Perennial Water


Rock Outcrop


Saline Spot


Sandy Spot


Severely Eroded Spot


Sinkhole


Slide or Slip


Sodic Spot


Spoil Area

Stony Spot


Very Stony Spot

Wet Spot


Other


Special Line Features


Water Features


Streams and Canals


Transportation

Rails


Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Valley County, Montana
Survey Area Data: Version 19, Sep 28, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Valley County, Montana (MT105)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
23	Harlem clay	2.7	17.7%
59	Scobey-Sunburst clay loams, 5 to 25 percent slopes	0.2	1.3%
60	Sunburst clay loam, 9 to 35 percent slopes	12.6	81.0%
Totals for Area of Interest		15.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Valley County, Montana

23—Harlem clay

Map Unit Setting

National map unit symbol: clkd
Elevation: 1,800 to 6,000 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 110 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Harlem and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harlem

Setting

Landform: Terraces, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium and/or clayey glaciolacustrine deposits

Typical profile

A - 0 to 6 inches: clay
C1 - 6 to 36 inches: stratified clay to silty clay loam
C2 - 36 to 72 inches: stratified silty clay loam to fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

Minor Components

Bowdoin

Percent of map unit: 6 percent
Landform: Stream terraces, flood plains
Down-slope shape: Linear

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Across-slope shape: Linear

Ecological site: Dense Clay (DC) RRU 58A-E 10-14" p.z. (R058AE014MT)

Havre

Percent of map unit: 4 percent

Landform: Terraces, flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

59—Scobey-Sunburst clay loams, 5 to 25 percent slopes

Map Unit Setting

National map unit symbol: clln

Elevation: 1,900 to 4,000 feet

Mean annual precipitation: 10 to 13 inches

Mean annual air temperature: 39 to 45 degrees F

Frost-free period: 110 to 130 days

Farmland classification: Not prime farmland

Map Unit Composition

Scobey and similar soils: 50 percent

Sunburst and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scobey

Setting

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Till

Typical profile

A - 0 to 5 inches: clay loam

Bt - 5 to 15 inches: clay loam

Bky - 15 to 60 inches: clay loam

Properties and qualities

Slope: 5 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Description of Sunburst

Setting

Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 4 inches: clay loam
Bk - 4 to 28 inches: clay loam
Bky - 28 to 60 inches: clay loam

Properties and qualities

Slope: 5 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)

Minor Components

Phillips

Percent of map unit: 5 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Elloam

Percent of map unit: 5 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Dense Clay (DC) 10-14" p.z. (R052XC206MT)

Hillon

Percent of map unit: 4 percent
Landform: Hillslopes on till plains

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Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Telstad

Percent of map unit: 3 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Thoeny

Percent of map unit: 3 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Dense Clay (DC) 10-14" p.z. (R052XC206MT)

60—Sunburst clay loam, 9 to 35 percent slopes

Map Unit Setting

National map unit symbol: clq
Elevation: 1,900 to 5,500 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 110 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Sunburst and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sunburst

Setting

Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 4 inches: clay loam
Bk - 4 to 28 inches: clay loam
Bky - 28 to 60 inches: clay loam

Properties and qualities

Slope: 9 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

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Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: Thin Hilly (TH) 10-14" p.z. (R052XC220MT)

Minor Components

Scobey

Percent of map unit: 4 percent

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Hillon

Percent of map unit: 4 percent

Landform: Hillslopes on till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty-Steep (SiStp) 10-14" p.z. (R052XC223MT)

Thebo

Percent of map unit: 4 percent

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Clayey (Cy) RRU 58A-E 10-14" p.z. (R058AE002MT)

Phillips

Percent of map unit: 4 percent

Landform: Till plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Silty (Si) 10-14" p.z. (R052XC217MT)

Cabbart

Percent of map unit: 2 percent

Landform: Hillslopes, ridges

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Shallow (Sw) RRU 58A-E 10-14" p.z. (R058AE019MT)

Lisam

Percent of map unit: 2 percent

Landform: Hillslopes

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Ecological site: Shallow Clay (SwC) RRU 58A-E 10-14" p.z. (R058AE199MT)

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Appendix B – Levee Construction Cost Estimates



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Alterntive 2A - Build SE Levee with New Material

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 29,000.00	\$29,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 25,000.00	\$25,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	2,100	CU YD	\$ 7.50	\$15,750
5	Excavation - Fill Material	19,500	CU YD	\$ 5.00	\$97,500
6	Transportation of Fill Material	19,500	CU YD	\$ 8.00	\$156,000
7	Fill Material Compaction	19,500	CU YD	\$ 10.00	\$195,000
9	Surface Restoration	750	SY	\$ 7.50	\$5,625
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 17,500.00	\$17,500
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
					\$0
Construction Cost					\$606,375
Engineering Design and Grant/Loan Administration 10%					\$60,638
Construction Administration 8%					\$48,510
Land Acquisition 0%					\$0
Contingencies 10%					\$60,638
Legal and Realtor Fees 1.3%					\$10,000
Total Project Cost					\$786,160



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Alternative 2B - Build SE Levee with Existing Material

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 35,000.00	\$35,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 50,000.00	\$50,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	7,750	CU YD	\$ 7.50	\$58,130
5	Excavation - Fill Material (100 Yards)	2,500	CU YD	\$ 5.00	\$12,500
6	Transportation of Fill Material	30,000	CU YD	\$ 4.00	\$120,000
7	Fill Material Compaction	30,000	CU YD	\$ 10.00	\$300,000
9	Surface Restoration	8,500	SY	\$ 7.50	\$63,750
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 17,500.00	\$17,500
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
					\$0
Construction Cost					\$721,880
Engineering Design and Grant/Loan Administration 10%					\$72,188
Construction Administration 8%					\$57,750
Land Acquisition 0%					\$0
Contingencies 10%					\$72,188
Legal and Realtor Fee 1%					\$10,000
Total Project Cost					\$934,006



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Alternative 2C - Build SE Levee with New Material Adjacent to the Hospital

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 10,000.00	\$10,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 5,000.00	\$5,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 10,000.00	\$10,000
4	Top Soil Stripping	800	CU YD	\$ 7.50	\$6,000
5	Excavation - Fill Material	6,250	CU YD	\$ 5.00	\$31,250
6	Transportation of Fill Material	6,250	CU YD	\$ 8.00	\$50,000
7	Fill Material Compaction	6,250	CU YD	\$ 10.00	\$62,500
9	Surface Restoration	3,125	SY	\$ 7.50	\$23,438
10	Traffic Control	1	LS	\$ 2,500.00	\$2,500
11	Seeding and Mulching	1	LS	\$ 5,000.00	\$5,000
					\$0
Construction Cost					\$205,688
Engineering Design and Grant/Loan Administration 10%					\$20,569
Construction Administration 8%					\$16,455
Land Acquisition 5%					\$15,000
Contingencies 10%					\$20,569
Legal and Realtor Fees 1.0%					\$2,900
Total Project Cost					\$281,180



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Alternative 2A - Build SW Levee with New Material

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 41,000.00	\$41,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 25,000.00	\$25,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	122	CU YD	\$ 7.50	\$920
5	Excavation - Fill Material	28,500	CU YD	\$ 5.00	\$142,500
6	Transportation of Fill Material	28,500	CU YD	\$ 8.00	\$228,000
7	Fill Material Compaction	28,500	CU YD	\$ 10.00	\$285,000
8	Fill Culverts	3	EACH	\$ 10,000.00	\$30,000
9	Surface Restoration	750	SY	\$ 7.50	\$5,625
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 17,500.00	\$17,500
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
Construction Cost					\$840,545
Engineering Design and Grant/Loan Administration 10%					\$84,055
Construction Administration 8%					\$67,244
Land Acquisition 12%					\$150,000
Contingencies 10%					\$84,055
Legal & Realtor Fees 1.5%					\$19,000
Total Construction Cost					\$1,244,898



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Alterntive 2B - Build SW Levee with Existing Material

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 44,000.00	\$44,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 50,000.00	\$50,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	7,800	CU YD	\$ 7.50	\$58,500
5	Excavation - Fill Material	31,000	CU YD	\$ 5.00	\$155,000
6	Transportation of Fill Material	31,000	CU YD	\$ 4.00	\$124,000
7	Fill Material Compaction	31,000	CU YD	\$ 10.00	\$310,000
8	Fill Culverts	3	Each	\$ 10,000.00	\$30,000
9	Surface Restoration	6,500	SY	\$ 7.50	\$48,750
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 17,500.00	\$17,500
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
Construction Cost					\$902,750
Engineering Design and Grant/Loan Administration 10%					\$90,275
Construction Administration 8%					\$72,220
Land Acquisition 11%					\$150,000
Contingencies 10%					\$90,275
Legal 1.4%					\$19,000
Total Construction Cost					\$1,324,520



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Alterntive 2C - Build SW Levee with New Material in New Location

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 17,500.00	\$17,500
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 17,500.00	\$17,500
3	Environmental/Stormwater Protection Features	1	LS	\$ 12,000.00	\$12,000
4	Top Soil Stripping	1,000	CU YD	\$ 7.50	\$7,500
5	Excavation - Fill Material	12,500	CU YD	\$ 5.00	\$62,500
6	Transportation of Fill Material	12,500	CU YD	\$ 8.00	\$100,000
7	Fill Material Compaction	12,500	CU YD	\$ 10.00	\$125,000
8	Fill Culverts	0	EACH	\$ 10,000.00	\$0
9	Surface Restoration	642	SY	\$ 7.50	\$4,815
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 17,500.00	\$17,500
12	Bisecting Roadway Reconstruction	0	LS	\$ -	\$0
Construction Cost					\$374,315
Engineering Design and Grant/Loan Administration 10%					\$87,431.50
Construction Administration 8%					\$29,945
Land Acquisition 8%					\$50,000
Contingencies 10%					\$37,432
Legal & Realtor Fees 2.2%					\$13,000
Total Construction Cost					\$592,123



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Cost/Benefit Reconstruction of NW Levee

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 67,500.00	\$67,500
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 25,000.00	\$25,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	8,000	CU YD	\$ 7.50	\$60,000
5	Excavation - Fill Material	40,000	CU YD	\$ 5.00	\$200,000
6	Transportation of Fill Material	40,000	CU YD	\$ 8.00	\$320,000
7	Fill Material Compaction	40,000	CU YD	\$ 15.00	\$600,000
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 12,500.00	\$12,500
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
Construction Cost					\$1,350,000
Engineering Design and Grant/Loan Administration 10%					\$135,000
Construction Administration 8%					\$108,000
Land Acquisition 0%					\$0
Contingencies 10%					\$135,000
Legal & Realtor Fees 0.0%					\$0
Total Construction Cost					\$1,728,000



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Construction of the NW Levee Expansion using current bed

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 60,000.00	\$60,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 25,000.00	\$25,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	16,000	CU YD	\$ 7.50	\$120,000
5	Excavation - Fill Material	42,000	CU YD	\$ 5.00	\$210,000
6	Transportation of Fill Material	42,000	CU YD	\$ 5.00	\$210,000
7	Fill Material Compaction	42,000	CU YD	\$ 12.00	\$504,000
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 35,000.00	\$35,000
Construction Cost					\$1,199,000
Engineering Design and Grant/Loan Administration 10%					\$119,900
Construction Administration 8%					\$95,920
Land Acquisition 0%					\$125,000
Contingencies 10%					\$129,900
Legal & Realtor Fees 1.0%					\$17,500
Total Construction Cost					\$1,687,220



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Full Reconstruction of the NW Levee Expansion

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 60,000.00	\$60,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 25,000.00	\$25,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	16,000	CU YD	\$ 7.50	\$120,000
5	Excavation - Fill Material	127,000	CU YD	\$ 5.00	\$635,000
6	Transportation of Fill Material	127,000	CU YD	\$ 5.00	\$635,000
7	Fill Material Compaction	127,000	CU YD	\$ 12.00	\$1,524,000
10	Traffic Control	1	LS	\$ 10,000.00	\$10,000
11	Seeding and Mulching	1	LS	\$ 35,000.00	\$35,000
Construction Cost					\$3,069,000
Engineering Design and Grant/Loan Administration 10%					\$306,900
Construction Administration 8%					\$245,520
Land Acquisition 0%					\$125,000
Contingencies 10%					\$316,900
Legal & Realtor Fees 0.4%					\$17,500
Total Construction Cost					\$4,080,820



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Cost/Benefit Reconstruction of SE Levee

No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 60,000.00	\$60,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 25,000.00	\$25,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 25,000.00	\$25,000
4	Top Soil Stripping	8,000	CU YD	\$ 7.50	\$60,000
5	Excavation - Fill Material	35,000	CU YD	\$ 5.00	\$175,000
6	Transportation of Fill Material	35,000	CU YD	\$ 8.00	\$280,000
7	Fill Material Compaction	35,000	CU YD	\$ 15.00	\$525,000
10	Traffic Control	1	LS	\$ 15,000.00	\$15,000
11	Seeding and Mulching	1	LS	\$ 22,500.00	\$22,500
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
Construction Cost					\$1,217,500
Engineering Design and Grant/Loan Administration 10%					\$121,750
Construction Administration 8%					\$97,400
Land Acquisition 0%					\$0
Contingencies 10%					\$121,750
Legal & Realtor Fees 0.0%					\$0
Total Construction Cost					\$1,558,400



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Cost/Benefit Reconstruction of SW Levee

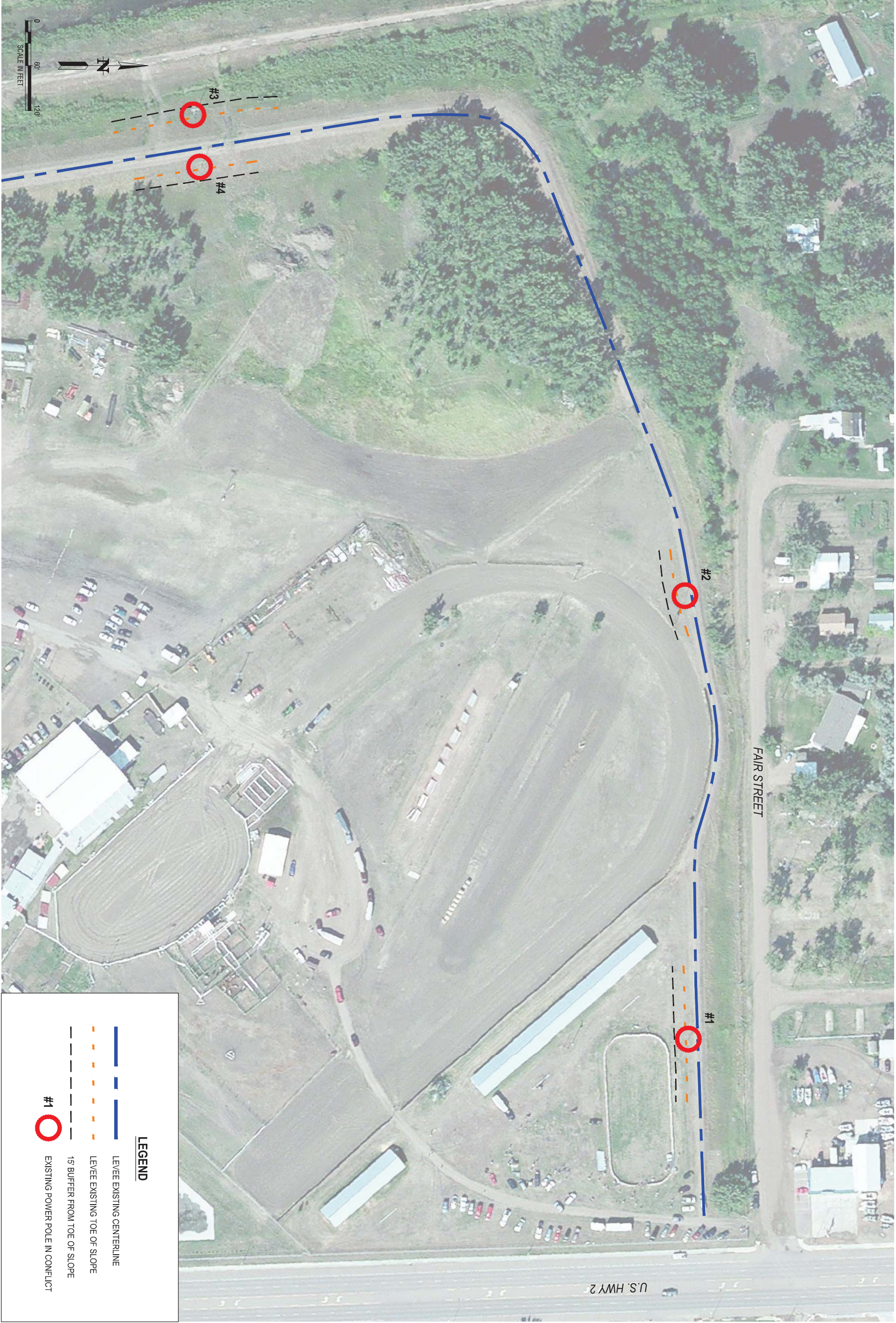
No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 100,000.00	\$100,000
2	Clearing/Grubbing/Fence Removal	1	LS	\$ 40,000.00	\$40,000
3	Environmental/Stormwater Protection Features	1	LS	\$ 45,000.00	\$45,000
4	Top Soil Stripping	12,000	CU YD	\$ 7.50	\$90,000
5	Excavation - Fill Material	60,000	CU YD	\$ 5.00	\$300,000
6	Transportation of Fill Material	60,000	CU YD	\$ 8.00	\$480,000
7	Fill Material Compaction	60,000	CU YD	\$ 15.00	\$900,000
10	Traffic Control	1	LS	\$ 20,000.00	\$20,000
11	Seeding and Mulching	1	LS	\$ 25,000.00	\$25,000
12	Bisecting Roadway Reconstruction	3	LS	\$ 10,000.00	\$30,000
Construction Cost					\$2,030,000
Engineering Design and Grant/Loan Administration 10%					\$203,000
Construction Administration 8%					\$162,400
Land Acquisition 0%					\$130,000
Contingencies 10%					\$203,000
Legal & Realtor Fees 0.6%					\$17,800
Total Construction Cost					\$2,746,200

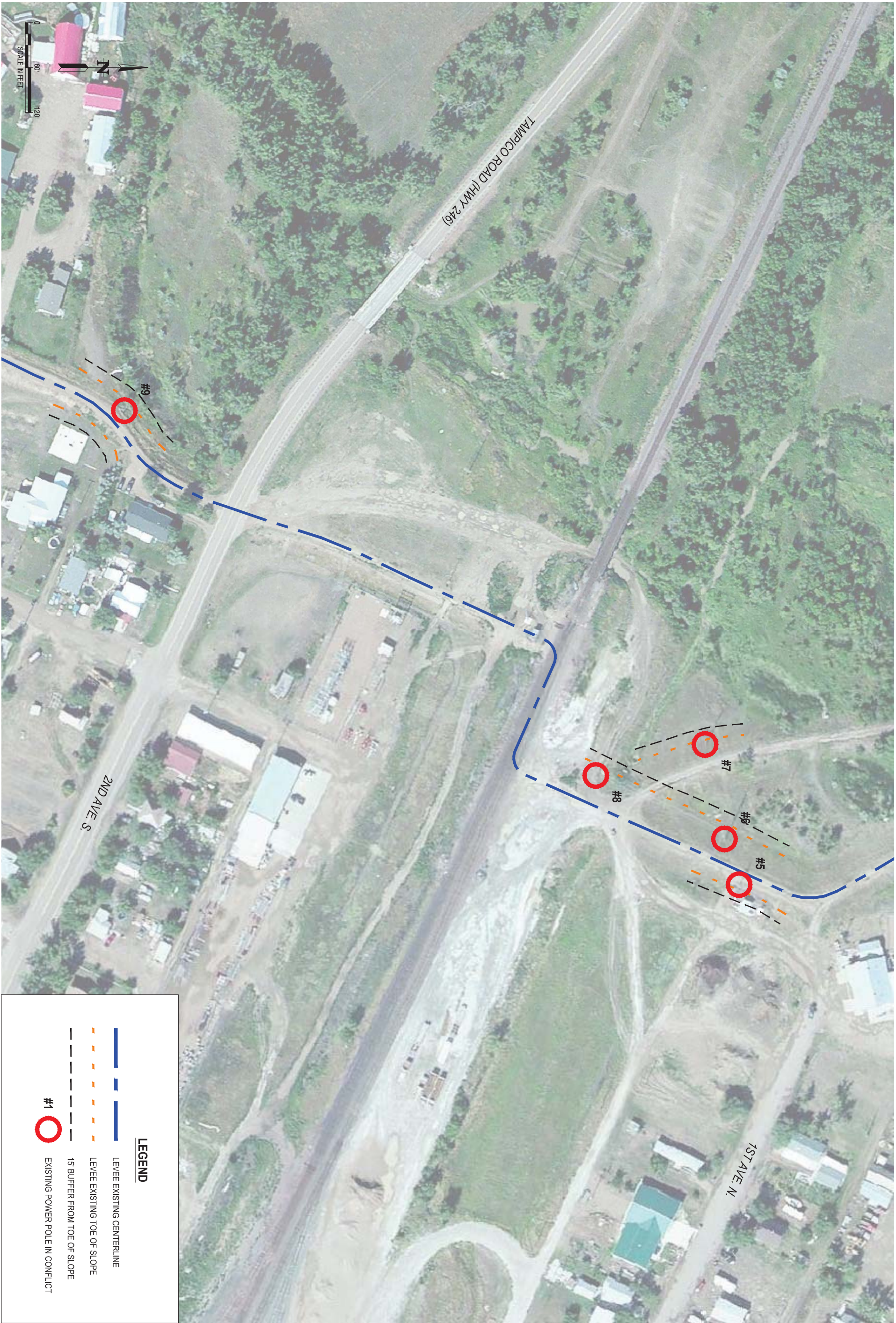
Appendix C – Utility Cost Estimates

Station	Pole #	Drawing #	Location & Comments
27+51 (North)	1,2	1	Landside slope (relocate outside of buffer zone)
16+30 (North)	3,4	2	Riverside slope (relocate outside of buffer zone)
3+40 (North)	5	3	Landside slope (relocate outside of buffer zone)
3+00 (North)	6	3	Riverside slope (relocate outside of buffer zone)
200+00 (North)	7	3	Riverside slope (relocate outside of buffer zone)
100+00 (North)	8	3	Riverside slope (relocate outside of buffer zone)
6+50 (South)	9	4	West of levee (relocate outside of buffer zone)
17+25 (South)	10	5	East of levee (relocate outside of buffer zone)
36+50 to 42+00	11,12,13,14	6	Both East and West of levee (relocate outside of buffer zone)
54+75 to 68+69 (South)	15,16,17,18,19,20	7	Landside slope (relocate outside of buffer zone)
82+00 (South)	21	8	Landside slope (relocate outside of buffer zone)
83+00 (South)	22	8	Landside slope (relocate outside of buffer zone)

Cost to move power line

Pole number	Estimated Cost to Relocate	Pole Number	Estimated Cost to Relocate
1	\$2,500	12	\$3,000
2	\$2,000	13	\$3,000
3	\$3,000	14	\$3,000
4	\$2,500	15	\$2,500
5	\$5,000	16	\$3,500
6	\$45,000	17	\$3,500
7	\$2,500	18	\$3,500
8	\$45,000	19	\$3,500
9	\$3,000	20	\$3,500
10	\$2,000	21	\$3,000
11	\$3,000	22	\$3,000






LEGEND

— LEVEE EXISTING CENTERLINE

--- LEVEE EXISTING TOE OF SLOPE

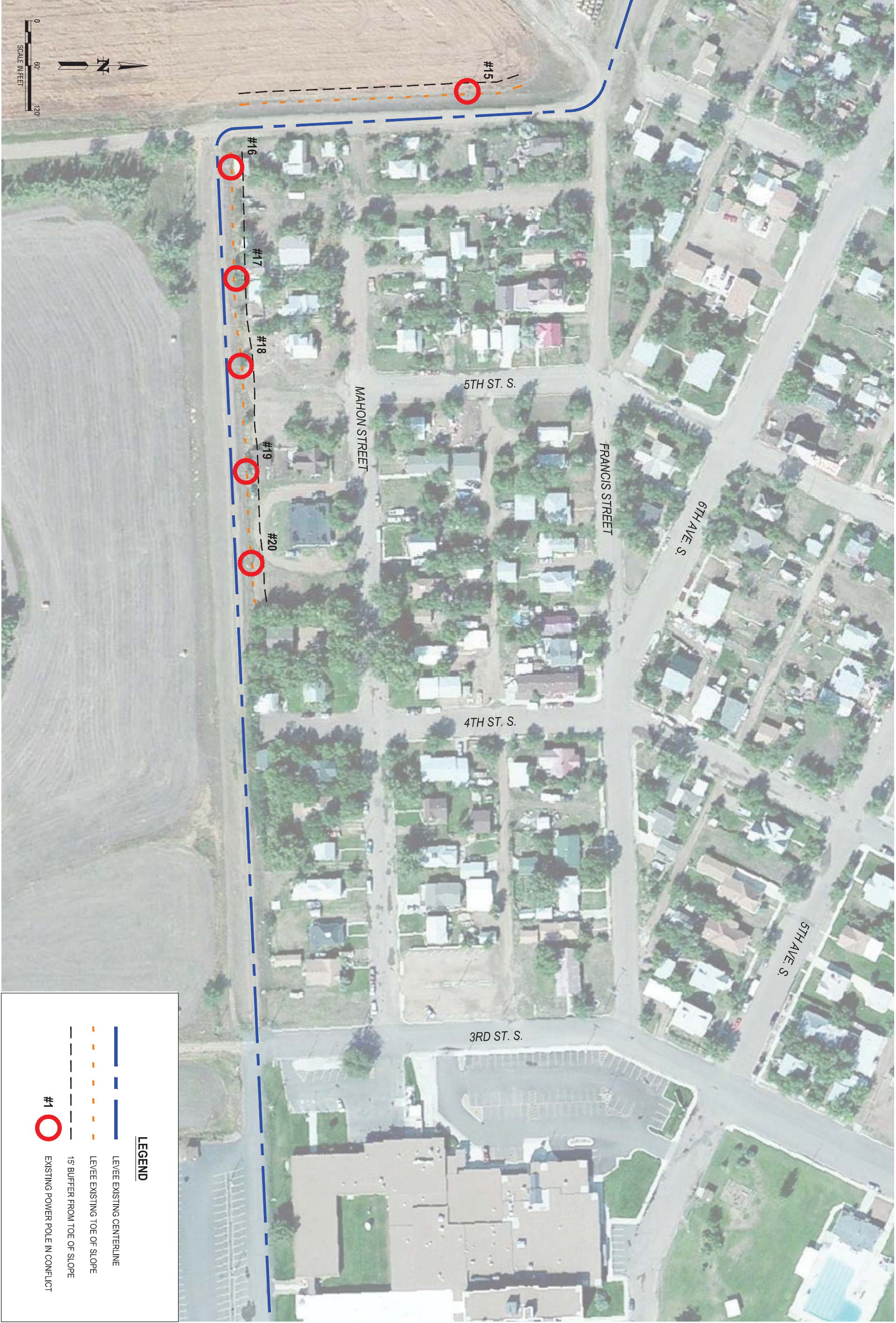
--- 15' BUFFER FROM TOE OF SLOPE

#1  EXISTING POWER POLE IN CONFLICT

Revision No.	Date	By	Description



Revision No.	Date	By	Description



LEGEND

— LEVEE EXISTING CENTERLINE

— LEVEE EXISTING TOE OF SLOPE

— 15' BUFFER FROM TOE OF SLOPE

#1 EXISTING POWER POLE IN CONFLICT

Revision No.	Date	By	Description



Revision No.	Date	By	Description

Appendix D – FEMA Levee Accreditation

Meeting the Criteria for Accrediting Levee Systems on Flood Insurance Rate Maps: How-To Guide for Floodplain Managers and Engineers

The National Flood Insurance Program (NFIP) defines a levee system in Title 44, Chapter 1, Section 59.1 of the Code of Federal Regulations ([44 CFR 59.1](#)) as a flood risk reduction system that consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices to protect a hydraulically distinct area. Within the NFIP, a levee is a manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.

As part of the [flood mapping process](#), the Federal Emergency Management Agency (FEMA), and its State and local mapping partners, review and evaluate levee system data and documentation. Any community and/or other party seeking recognition or continued recognition of a levee system must provide data and documentation, certified by a registered professional engineer, showing that the levee system is expected to provide 1-percent-annual-chance (base) flood risk reduction for FEMA to credit the levee system on a Flood Insurance Rate Map (FIRM).

To be mapped as providing flood risk reduction to the base level on the FIRMs, levee systems must meet and continue to meet the NFIP minimum design, operation, and maintenance requirements described in Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations ([44 CFR 65.10](#)). FEMA has posted several guidance documents related to levee accreditation, mapping, and other topics. Please access the [Levee Resources Library](#) for updated guidance documents. To help clarify the responsibilities of community officials, levee owners, or other parties seeking recognition of a levee system identified during a study/mapping project, FEMA has posted several [guidance documents](#) related to levee accreditation, mapping, and other related topics. This document provides information regarding how FEMA maps levee systems, a checklist of the types of data and documentation that must be submitted for levee systems to be accredited on FIRMs, and an index of further resources.

A NOTE ABOUT FLOOD RISK AND FLOOD INSURANCE

Levee systems are designed to provide a specific level of protection. They can be overtopped or fail during flood events larger than those for which the system was designed. Levee systems also decay over time, which may increase the likelihood of failure. They require regular maintenance and periodic upgrades to retain their level of protection. When levees do fail, the resulting damage, including loss of life, may be much greater than if the levee system had not been built.

For all these reasons, FEMA strongly encourages people in levee-impacted areas to understand their flood risk, know and follow evacuation procedures, and protect their property by purchasing flood insurance, flood proofing their structure, or taking other precautionary measures. For more information on flood insurance, please visit [FloodSmart.gov](#).

RISK MAPPING, ASSESSMENT, AND PLANNING PROGRAM (RISK MAP)

The Federal Emergency Management Agency's Risk MAP Program delivers quality data that increases public awareness and leads to action to reduce risk to life and property. Risk MAP is a nationwide program that works in collaboration with States, Tribes, and Local communities using best available science, rigorously vetted standards, and expert analysis to identify risk and promote mitigation action, resulting in safer, more resilient communities.

HOW FEMA MAPS LEVEE SYSTEMS

FEMA mapping requirements are designed to provide accurate, up-to-date flood hazard and risk information to people living and working landward of levee systems so that they may make wise decisions to minimize loss of life and damage to property and loss of life due to flooding. FEMA does not evaluate the performance of a levee system—this is the responsibility of the levee owner. FEMA is responsible for establishing levee system evaluation and mapping standards, determining flood insurance risk zones, and reflecting these determinations on FIRMs.

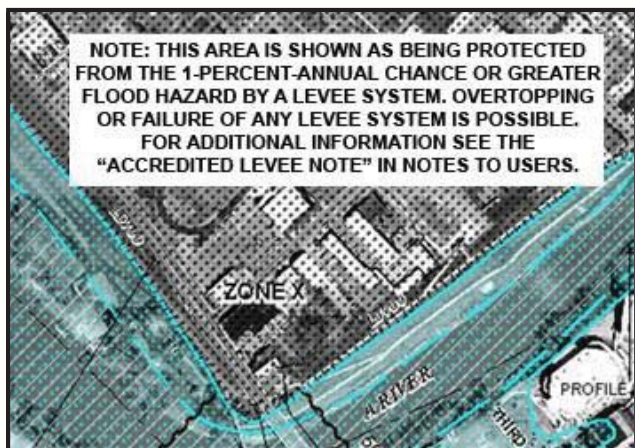


Figure 1. Accredited Levee System

Accredited Levee System

An accredited levee system is a system that FEMA has determined to meet the design, data, and documentation requirements of 44 CFR 65.10 and therefore can be shown on a FIRM as providing a base chance or greater level of flood hazard reduction. This determination is based on the submittal, on behalf of the community, which includes 44 CFR 65.10 compliant data and documentation, certified by a registered professional engineer. The area landward of an accredited levee system is shown as a moderate-hazard area, labeled Zone X (shaded), on the FIRM except for areas of interior drainage flooding, such as ponding areas, which will be shown as high-hazard areas, called Special Flood Hazard Areas ([SFHAs](#)). Flood insurance is not mandatory in Zone X (shaded) areas, but is mandatory in SFHAs. FEMA strongly encourages flood insurance for all structures in floodplains and especially in areas landward of levees.

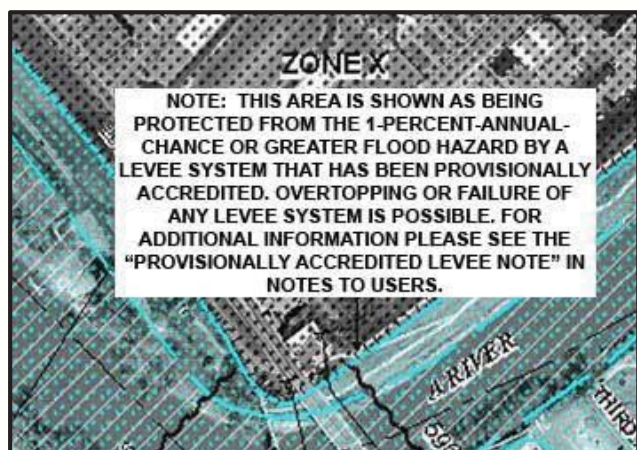


Figure 2. Provisionally Accredited Levee System

Provisionally Accredited Levee (PAL) System

The Provisionally Accredited Levee (PAL) designation may be used for a levee system that; FEMA has previously accredited as providing base flood hazard reduction on an effective FIRM, and for which FEMA is awaiting data and/or documentation that will show the levee system is compliant with 44 CFR 65.10. Before FEMA will apply the PAL designation to a levee system, the community or levee owner needs to sign and return an agreement indicating the data and documentation required for compliance with 44 CFR 65.10 will be provided within a specified timeframe. Where PAL requirements are met, the impacted area landward of a PAL system on the updated FIRM is shown as a moderate-hazard area, labeled Zone X (shaded) and a PAL note is added. Therefore, flood insurance is not mandatory for insurable structures in

the area landward of a levee system with a PAL designation; however, flood insurance and other protective measures are strongly encouraged by FEMA. A community is eligible to receive a PAL designation for a levee system only once.

Levee System: Non-Accredited or De-accredited

If the levee system is not shown as providing base flood hazard reduction on an effective FIRM, the system is considered a non-accredited system and the levee-impacted area is mapped as Zone AE or Zone A on a FIRM following [implementation of analysis and mapping procedures](#) depending on approaches and type of study performed for the area. If the levee system was previously shown as providing base flood protection on an effective FIRM but does not meet PAL requirements, FEMA will perform analysis procedures to effectively remove accreditation or “de-accredit” the levee system and re-map the impacted area landward of the levee as an SFHA, labeled Zone AE or Zone A depending on the type of study performed. Flood insurance is required for insurable structures with federally backed mortgages located in SFHAs.












Figure 3. Levee System: Non-Accredited or De-accredited








The checklist provided on the following pages is meant to assist local community officials and levee owners in gathering 44 CFR 65.10 compliant data and documentation required for FEMA to recognize a levee system with 1-percent-annual-chance flood hazard reduction on the community’s FIRM (accreditation). Where possible, text from the actual NFIP regulations (44 CFR 65.10) was used in the following table.

The checklist is set up according to the appropriate paragraph of 44 CFR Section 65.10. For example, Design Criteria can be found in Paragraph 65.10(b):

Design Criteria*	Section of the NFIP Regulations: 65.10(b)
<p>Description: For levee systems to be recognized (i.e., accredited) by FEMA, evidence that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection from the base flood exists must be provided.</p>	

Design Criteria	Section of the NFIP Regulations: 65.10(b)
<p>Description: For levee systems to be accredited by FEMA, communities and/or levee owners must submit data and documentation to show that adequate design and operations and maintenance systems are in place to provide reasonable assurance that the levee has, and will continue to have, base flood risk reduction capability.</p>	
<p>Checklist for Design Criteria:</p>	
	<p>Freeboard. The minimum freeboard required is 3 feet above the Base Flood Elevation (BFE) all along length of the levee with an additional 1 foot within 100 feet of structures (such as bridges) or wherever the flow is restricted, and an additional 0.5 foot at the upstream end of a levee. Levees impacted by coastal flooding have special freeboard requirements (see Paragraphs 65.10(b)(1)(iii) and (iv)).</p>
	<p>Closures. All openings must be provided with closure devices that are structural parts of the system during operation and designed according to sound engineering practice.</p>
	<p>Embankment Protection. Engineering analyses must be submitted that demonstrate that no appreciable erosion of the levee embankment can be expected during the base flood, as a result of either currents or waves, and that anticipated erosion will not result in failure of the levee embankment or foundation directly or indirectly through reduction of the seepage path and subsequent instability.</p>
	<p>Embankment and Foundation Stability Analyses. Engineering analyses that evaluate levee embankment stability must be submitted. The analyses provided must evaluate expected seepage during loading conditions associated with the base flood and must demonstrate that seepage into or through the levee foundation and embankment will not jeopardize embankment or foundation stability. An alternative analysis demonstrating that the levee is designed and constructed for stability against loading conditions for Case IV as defined in the U.S. Army Corps of Engineers (USACE) Engineer Manual 1110-2-1913, <i>Design and Construction of Levees</i>, (Chapter 6, Section II), may be used.</p>
	<p>Settlement Analyses. Engineering analyses must be submitted that assess the potential and magnitude of future losses of freeboard as a result of levee settlement and demonstrate that freeboard will be maintained. This analysis must address embankment loads, compressibility of embankment soils, compressibility of foundation soils, age of the levee system, and construction compaction methods. In addition, detailed settlement analysis using procedures such as those described in USACE Engineer Manual 1110-1-1904, <i>Soil Mechanics Design—Settlement Analysis</i>, must be submitted.</p>

	<p>Interior Drainage. An analysis must be submitted that identifies the source(s) of such flooding, the extent of the flooded area, and, if the average depth is greater than 1 foot, the water-surface elevation(s) of the base flood. This analysis must be based on the joint probability of interior and exterior flooding and the capacity of facilities (such as drainage lines and pumps) for evacuating interior floodwaters, as described in USACE Engineer Manual 1110-2-1914, <i>Hydrologic Analysis of Interior Areas</i>.</p>
<p>Operation Plan</p>	<p>Paragraph 65.10(c)(1) of the NFIP Regulations</p>
<p>Description: For a levee system to be accredited, the operational criteria described below must be provided. All closure devices or mechanical systems for internal drainage, whether manual or automatic, must be operated in accordance with an officially adopted operation manual, a copy of which must be provided to FEMA by the operator when levee or drainage system recognition is being sought or when the manual for a previously recognized system is revised in any manner. All operations must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP.</p>	
<p>Checklist for Operation Plan:</p>	
	<p>Flood Warning System. Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials that will be used to trigger emergency operation activities; and demonstration that sufficient flood warning time exists for the completed operation of all closure structures, including necessary sealing, before floodwaters reach the base of the closure.</p>
	<p>Plan of Operation. A formal plan of operation including specific actions and assignments of responsibility by individual name or title.</p>
	<p>Periodic Operation of Closures. Provisions for periodic operation, at not less than one-year intervals, of the closure structure for testing and training purposes.</p>
<p>Interior Drainage Plan</p>	<p>Paragraph 65.10(c)(2) of the NFIP Regulations</p>
<p>Description: Interior drainage systems associated with levee systems usually include storage areas, gravity outlets, pumping stations, or a combination thereof. These drainage systems will be recognized by FEMA on NFIP maps for flood risk reduction purposes only if the following minimum criteria are included in the operation plan.</p>	
<p>Checklist for Interior Drainage Plan:</p>	

	Flood Warning System. Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials that will be used to trigger emergency operation activities; and demonstration that sufficient flood warning time exists to permit activation of mechanized portions of the drainage system.
	Plan of Operation. A formal plan of operation including specific actions and assignments of responsibility by individual name or title.
	Manual Backup. Provision for manual backup for the activation of automatic systems.
	Periodic Inspection. Provisions for periodic inspection of interior drainage systems and periodic operation of any mechanized portions for testing and training purposes. No more than 1 year shall elapse between either the inspections or the operations.
Maintenance Plan	Paragraph 65.10(d) of the NFIP Regulations
Description: For levee systems to be recognized as accredited by FEMA, the maintenance criteria must be as described herein.	
Checklist for Maintenance Plan:	
	Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to FEMA by the owner of the levee system when recognition is sought or when the plan for a previously recognized system is revised in any manner.
	All maintenance activities must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP that must assume ultimate responsibility for maintenance.
	This plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained. At a minimum, the plan shall specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance.
Certification	Paragraph 65.10(e) of the NFIP Regulations

Description: Data submitted to support that a given levee system complies with the structural requirements set forth in “Design Criteria” (Paragraphs 65.10(b)(1) through (7) of the regulations) must be certified by a Registered Professional Engineer. Certifications are subject to the definition given in Section 65.2 of the NFIP regulations. In lieu of these structural requirements, a Federal agency with responsibility for levee design may certify that the levee has been adequately designed and constructed to provide protection from the base flood.

Checklist for Certification Requirement:

<input type="checkbox"/>	All data submitted is certified by Professional Engineer or certified by a Federal agency.
<input type="checkbox"/>	Certified as-built levee plans are included in the submittal.

Appendix E – Property Valuation

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 307 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 006, Lot 002 - 003, 5400 SQUARE FEET, L.3, W2 L.2

Property description: 2 bed, 1 bath, 768 sq. ft., fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

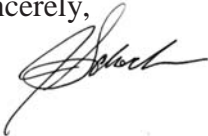
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$70,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', with a stylized flourish at the end.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 315 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 006, Lot 004 - 005, 7200 SQUARE FEET, LTS 4 AND 5

Property description: 3 bed, 1 bath, 1212 sq. ft., good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

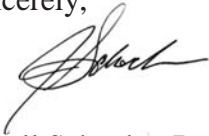
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$75,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 323 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 006, Lot 006 - 007, 5400 SQUARE FEET, L.6, E2 L.7

Property description: 3 bed, 1 bath, 880 sq. ft., poor condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

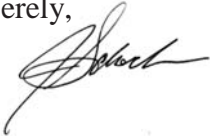
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$30,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
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406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail; jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 331 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 006, Lot 007 - 008, 5400 SQUARE FEET, L.8, W2 L.7

Property description: 1 bed, 1 bath, 572 sq. ft., good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

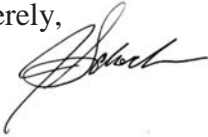
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$55,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written over a horizontal line.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

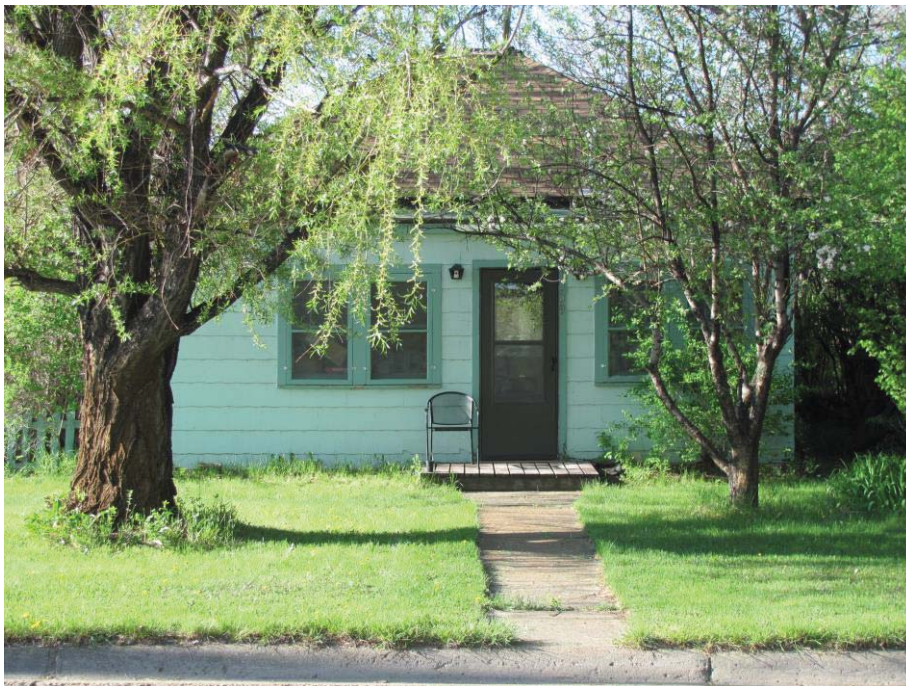
To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 339 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 006, Lot 009 - 010, 7200 SQUARE FEET, LTS 9 AND 10

Property description: 3 bed, 1 bath, 1138 sq. ft., fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

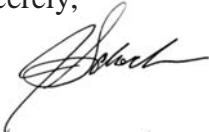
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$55,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', with a stylized, cursive script.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 345 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 006, Lot 011 - 012, 7200 SQUARE FEET, LTS 11 AND 12

Property description: 3 bed, 1 bath, 924 sq. ft., remodeled, good condition, detached garage



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$125,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 401 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 005, Lot 001 - 002, 7200 SQUARE FEET, LTS 1 AND 2

Property description: 3bed, 1 bath, 672 sq. ft., poor condition, detached garage



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

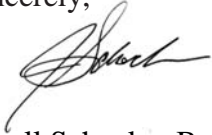
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$50,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 407 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 005, Lot 003 - 004, 7200 SQUARE FEET, LTS 3 AND 4

Property description: 1 bed, 1 bath, 400 sq. ft., large detached garage, good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

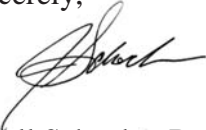
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$75,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

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111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 431 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 005, Lot 005 - 010, 21600 SQUARE FEET, LTS 5 THRU 10

Property description: 4-plex rental unit, fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

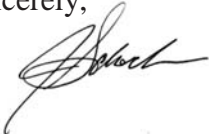
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$160,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 445 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 005, Lot 11A, 5400 SQUARE FEET

Property description: 3 bed, 1 bath, 1092 sq. ft., fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

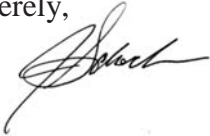
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$75,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read "Jarrell Schock", written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 451 Mahon St., Glasgow, Mt

Property legal description: MAHON ORIGINAL TOWNSITE, S13, T28 N, R39 E, BLOCK 005, Lot 12A, 5400 SQUARE FEET

Property description: Vacant lot, 5400 sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

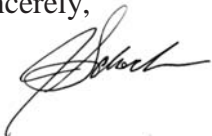
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$15,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 503 Mahon St., Glasgow, Mt

Property legal description: MAHON FIRST ADD (GLASGOW), S13, T28 N, R39 E, BLOCK 010, Lot 004, 7800 SQUARE FEET

Property description: Building has no value, lot value only. Lot size 7800 sq. ft.



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

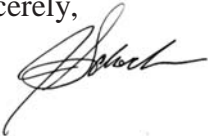
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written over a horizontal line.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 511 Mahon St., Glasgow, Mt

Property legal description: MAHON FIRST ADD (GLASGOW), S13, T28 N, R39 E, BLOCK 010, Lot 003, 7800 SQUARE FEET

Property description: 2 bed, 1 bath, 912 sq. ft., good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

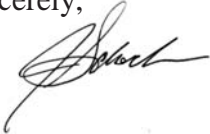
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$75,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 535 Mahon St., Glasgow, Mt

Property legal description: MAHON FIRST ADD (GLASGOW), S13, T28 N, R39 E, BLOCK 010, Lot 002, 7800 SQUARE FEET

Property description: 832 sq. ft. garage on 7800 sq. ft. lot, good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

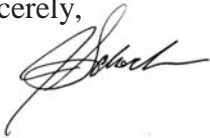
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$60,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail; jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 601 Mahon St., Glasgow, Mt

Property legal description: MAHON FIRST ADD (GLASGOW), S13, T28 N, R39 E, BLOCK 010, Lot 001, 14400 SQUARE FEET, ARNOLD ADD (GLASGOW) TRACT 2

Property description: no value on home, bad foundation, not lived in, 1440 sq. ft. lot



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

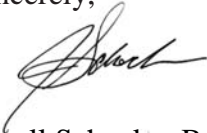
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$25,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 600 Mahon St., Glasgow, Mt

Property legal description: ARNOLD ADD (GLASGOW), S13, T28 N, R39 E, 7800 SQUARE FEET, A M&B TRACT IN NW4, SEE BK. 89, PG. 197-198 (THE NORTH LOT)

Property description: home in poor condition, not livable, 7800 sq. ft. lot



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

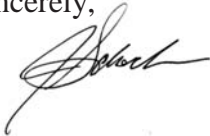
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$30,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail; jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 601 Francis St., Glasgow, Mt

Property legal description: HUGHES, S13, T28 N, R39 E, ALL (60' X 120')

Property description: 5 bed, 1 bath, older home with extensive remodeling, good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

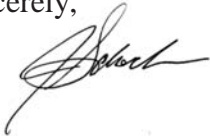
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$140,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written over a horizontal line.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 615 6th Street S, Glasgow, Mt

Property legal description: GLASGOW ORIGINAL TOWNSITE, S12, T28 N, R39 E, BLOCK 057, Lot 012 - 015, 5625 SQUARE FEET, PT.L.12,13,14,15

Property description: 696 sq. ft., 2 bed, 1 bath, fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

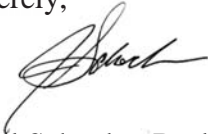
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$40,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail; jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 614 7th Street S, Glasgow, Mt

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 020 - 022, 11700 SQUARE FEET, LTS 20 THRU 22

Property description: 4 bed, 2 bath, 1080 sq. ft., fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

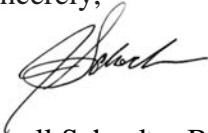
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$120,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 018 - 019, 7800 SQUARE FEET, LTS 18 AND 19

Property description: Vacant lots, 7800 sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

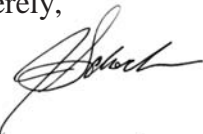
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$20,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 017, 3900 SQUARE FEET

Property description: vacant lot, 3900 sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

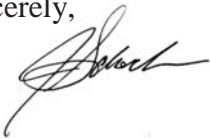
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 016, 3900 SQUARE FEET

Property description: vacant lot, 3900 sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

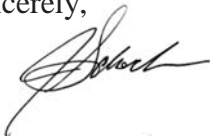
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 015, 3900 SQUARE FEET

Property description: vacant lot, 3900 sq.ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

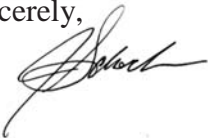
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 012 - 014, ACRES 0.27, LTS 12 THRU 14

Property description: vacant lots, 11,700 sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

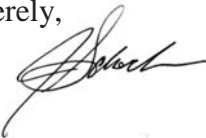
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$30,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 741 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 055, Lot 010 - 011, 7800 SQUARE FEET, LTS 10 AND 11

Property description: original 2 bed, 1 bath with many additions over the years, 1955 sq. ft., fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

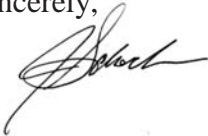
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$75,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 809 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE 007, S11, T28 N, R39 E, BLOCK 054, Lot 001 - 002, 7800 SQUARE FEET, LTS 1 AND 2

Property description: 1 bed, 1 bath, 448 sq. ft., fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

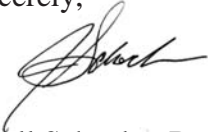
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$40,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

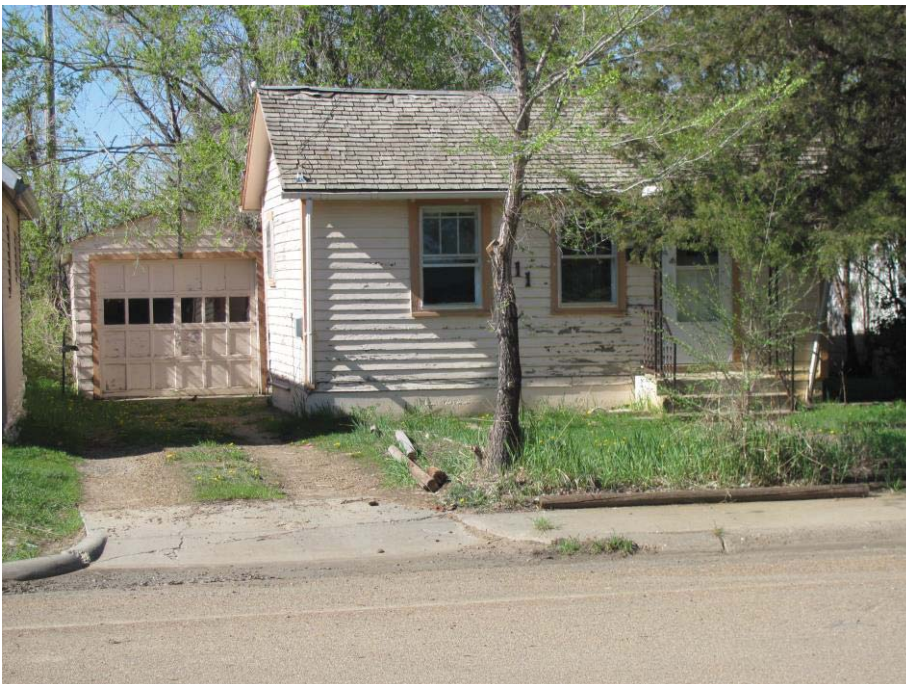
To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 811 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 054, Lot 003, 3900 SQUARE FEET

Property description: 1 bed, 1 bath, 576 sq. ft., poor condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

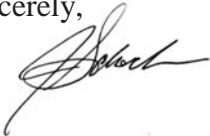
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$30,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read "Jarrell Schock", written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 817 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 054, Lot 004 - 005, 7800 SQUARE FEET, LTS 4 AND 5

Property description: 1 bed, 1 bath, 536 sq. ft., detached garage, fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

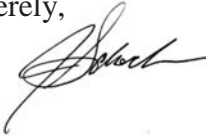
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$55,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', with a stylized, cursive script.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 819 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 054, Lot 006, 3900 SQUARE FEET, LOTS 7

Property description: 2 bed, 1 bath, 782 sq. ft., fair condition.



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

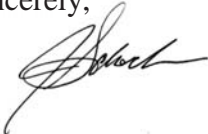
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$55,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

111 3RD Street South, Glasgow MT 59230 ♦ e-mail: jlschock@gmail.com
(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 823 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 054, Lot 007, 3900 SQUARE FEET, LOT 7

Property description: Vacant lot, 3900 sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

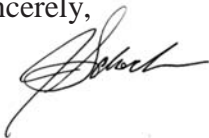
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

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Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 837 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 054, Lot 008, LTS 8 THRU 10

Property description: newer 4 bed, 2 bath, 988 sq. ft. main, finished basement, nice garage, good condition.



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

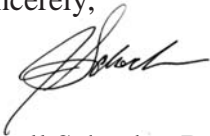
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$180,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
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406-480-5500

Jarrell Schock

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 841 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 054, Lot 011, 3900 SQUARE FEET

Property description: vacant lot, 3900sq. ft.

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

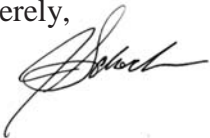
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
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406-480-5500

Jarrell Schock

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Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 901 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 053, Lot 001, LTS 1 AND 2

Property description: 6 bed, 2 bath, 840 sq. ft. main, finished basement, detached garage, house good condition, garage fair condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

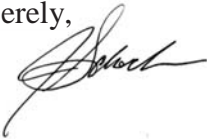
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$160,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read "Jarrell Schock", written in a cursive style.

Jarrell Schock – Broker
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406-480-5500

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 909 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 053, Lot 003 - 004, 7800 SQUARE FEET, LTS 3 AND 4

Property description: 2 bed, 1 bath, 984 sq. ft., detached garage, good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

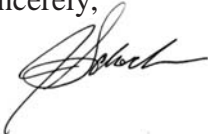
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$120,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

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406-480-5500

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: 915 6th Avenue S, Glasgow, MT

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 053, Lot 005 - 007, 11700 SQUARE FEET, LTS 5 THRU 7

Property description: 2 bed, 2 bath, 988 sq. ft., newly remodeled interior and exterior, new garage, good condition



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

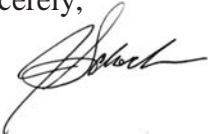
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$225,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
Missouri River Realty
406-480-5500

Jarrell Schock

Missouri River Realty

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: GLASGOW ORIGINAL TOWNSITE, S11, T28 N, R39 E, BLOCK 053, Lot 012 - 019, ACRES 0.69, LTS 12 THRU 19

Property description: Vacant lots

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

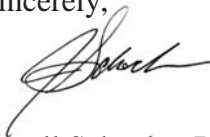
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$40,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
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Jarrell Schock

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(406) 480-5500 ♦ Fax (406) 228-2644 ♦

Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: BROWNING ADD (GLASGOW), S11, T28 N, R39 E, Lot 003, 11250 SQUARE FEET

Property description: vacant lots

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

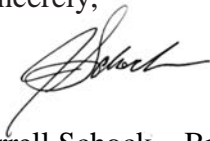
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$15,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



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Jarrell Schock

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Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: BROWNING ADD (GLASGOW), S11, T28 N, R39 E, Lot 002, 7800 SQUARE FEET, BROWNING OUTLOT 2 (AKA TRACT 2)

Property description: vacant lot

Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

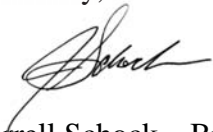
Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$10,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,



Jarrell Schock – Broker
Missouri River Realty
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Jarrell Schock

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Brokers Opinion of Value

May 5, 2016

To whom it may concern,

I have been employed by Interstate Engineering to give my opinion of value of the following described property:

Property address: none

Property legal description: S11, T28 N, R39 E, ACRES 4, TRACT IN SW4SE4

Property description: land with 2 small grain bins and a couple old utility buildings



Property information used for the purpose of this evaluation has been collected from currently posted county assessor information.

This Opinion of Value does not take interior condition of any structures into consideration as the property was only viewed from the exterior. For the purpose of this evaluation the interior will be considered to be in a condition similar to the exterior.

Having personally viewed the property and reviewed available information, I have determined the value of the subject property to be as follows:

Value of subject property

\$75,000

This valuation is based on my knowledge of the current local real estate market, recent comparable sales, and over 16 years of experience selling similar properties in the area.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jarrell Schock', written in a cursive style.

Jarrell Schock – Broker
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406-480-5500